## NRR-PMDAPEm Resource

**From:** Joe Waters [jrwaters@aep.com]
**Sent:** Monday, June 22, 2015 11:07 AM
**To:** Wyman, Stephen
**Subject:** [External_Sender] D.C. Cook ESEP Clarification Questions
**Attachments:** Responses to NRC Requests Re. D. C. Cook ESEP.pdf

Mr. Wyman,

Your June 8, 2015, e-mail to Michael Scarpello identified three questions regarding the D. C. Cook ESEP report transmitted to the NRC by letter dated December 18, 2014. Responses to the three questions are attached to this e-mail. Please let me know if you or other NRC staff have questions or concerns.

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**Hearing Identifier:** NRR_PMDA
**Email Number:** 2167

**Mail Envelope Properties** (37A2BE2418CFBF44A763D90F2A93C9190CC6D611)

**Subject:** [External_Sender] D.C. Cook ESEP Clarification Questions
**Sent Date:** 6/22/2015 11:06:45 AM
**Received Date:** 6/22/2015 11:06:47 AM
**From:** Joe Waters

**Created By:** jrwaters@aep.com

**Recipients:**
"Wyman, Stephen" <Stephen.Wyman@nrc.gov>
Tracking Status: None

**Post Office:** VMAEPHQMS004.corp.aepsc.com

| **Files** | **Size** | **Date & Time** |
|---|---|---|
| MESSAGE | 628 | 6/22/2015 11:06:47 AM |
| Responses to NRC Requests Re. D. C. Cook ESEP.pdf | 67974 | |

**Options**
**Priority:** Standard
**Return Notification:** No
**Reply Requested:** No
**Sensitivity:** Normal
**Expiration Date:**
**Recipients Received:**

**Indiana Michigan Power Company (I&M) Responses to NRC Requests Re.**
**Donald C. Cook Nuclear Plant (CNP)**
**Expedited Seismic Evaluation Process (ESEP) Report**

NRC Request No. 1

The DC Cook ESEP report includes the following tanks in the ESEL for Unit 1:

Middle Boric Acid Tank (12-TK-12M),
Middle Boric Acid Tank Level Transmitter (12-QLA-420)
Middle Boric Acid Tank Temp Transmitter (12-QTC-420)

The FSAR 9.2.2 states that one boric acid tank provides sufficient boric acid solution for hot shutdown for one unit. The FSAR also states that all three boric acid tanks are shared with the third tank as a spare. The licensee is requested to clarify how each of these tanks is credited for in relation to each unit for the ESEP success path.

I&M Response to NRC Request No. 1

The Donald C. Cook Nuclear Plant (CNP) boric acid system includes three Boric Acid Storage Tanks. The North Boric Acid Storage Tank (1-TK-12N) is designated as a Unit 1 component. The South Boric Storage Acid Tank (2-TK-12S) is designated as a Unit 2 component. The Middle Boric Acid Storage Tank (12-TK-12M) is common and can be aligned to serve either unit.

The CNP ESEP success path credits one Boric Acid Storage Tank for each unit. Therefore, at least two tanks must be available. The Middle tank can be credited for either the Unit 1 success path or the Unit 2 success path, but not both units simultaneously. Accordingly, ESEP report includes all three tanks and associated instrumentation. As shown below, the ESEP report "Attachment A – CNP Unit 1 ESEL," contains Unit 1 and common equipment which includes the North and Middle Boric Acid Storage Tanks and associated instrumentation. To preclude duplication, the ESEP report "Attachment B – CNP Unit 2 ESEL," includes the only the South Boric Acid Storage Tank and associated instrumentation. Although the Middle Boric Acid Storage Tank is not on the Unit 2 ESEL, it is credited in the Unit 2 success path.

Attachment A – CNP Unit 1 ESEL

| | |
|---|---|
| Page 51, Line 8 | Middle Boric Acid Storage Tank Level Transmitter (12-QLA-420) |
| Page 51, Line 9 | Middle Boric Acid Tank Heater Temp. Controller (12-QTC-420) |
| Page 51, Line 10 | Middle Boric Acid Storage Tank (12-TK-12M), |
| | |
| Page 61, Line 166 | North Boric Acid Storage Tank Level Transmitter (1-QLA-410) |
| Page 62, Line 170 | North Boric Acid Storage Tank Heater Temp. Controller (1-QTC-410) |
| Page 63, Line 198 | North Boric Acid Storage Tank (1-TK-12N) |

Attachment B – CNP Unit 2 ESEL

| | |
|---|---|
| Page 78, Line 163 | South Boric Acid Storage Tank Level Transmitter (2-QLA-430) |
| Page 78, Line 167 | South Boric Acid Storage Heater Tank Temp. Controller (2-QTC-430) |
| Page 80, Line 195 | South Boric Acid Storage Tank (2-TK-12S) |

NRC Request No. 2

The licensee described in the Section 6.3.2 that information from recent walkdowns was used, and inaccessible items in Units 1 & 2 were screened based on documentation and similarity to items that were included in the walkdowns. However, it is unclear why there is such difference in the number of screened items listed between Unit 1 and Unit 2 despite the similarity between the units. The licensee is requested to provide a clarification statement explaining this difference.

I&M Response to NRC Request No.2

The CNP ESEP report, Section 6.3.2, lists nine (9) Unit 1 components and 34 Unit 2 components that were screened, in part, based on recent walkdown data. As noted in Section 6.3.2, the EPRI NP-6041-SL guidance recognizes that a 100% walk-by of all items may not be possible because some items may be inaccessible due to the equipment being in a high radiation area or cannot be looked at (like buried tanks).

As noted in Section 3.1 of the ESEP report, the selection of equipment to be included on the ESEL was based on the CNP Overall Integrated Plan (OIP) and updates, which were submitted in 2013 and 2014. The ESEP walkdowns were performed between March and November 2014 to support submittal of the ESEP report in December 2014. During 2014, CNP Unit 1 had a refueling outage which provided greater accessibility to the ESEL components located within the containment building, such as the Containment Hydrogen Ignition Lower Volume Glow Plug Assemblies. CNP Unit 2 did not have a refueling outage during 2014. Since personnel access to certain areas of the reactor containment is limited except during refueling outages due to radiological considerations, there were more Unit 2 components that were inaccessible than Unit 1 components. Additionally, there were several components in the Unit 2 containment that were added to the ESEL after the Unit 2 at-power containment entry was completed.

NRC Request No. 3

The ESEP report does not provide elevations for the ESEL items and their mounting heights above grade level (rather a statement that “All of the equipment in the ESEL for CNP Unit 1 and CNP Unit 2 other than some upper containment hydrogen igniters are at Elevation 651 ft. or below). EPRI NP-6041-SL states that elements shall be mounted less than 40 feet above grade level, otherwise, care shall be exercised in using this guidance. The licensee is requested to identify the ESEL items with the mounting height 40 feet or higher above the grade level, and clarify how these ESEL items were evaluated making specific reference to the guidance and methods followed.

I&M Response to NRC Request No.3

Section 6.4 of the ESEP report includes the following information:

> "Per Reference 2, the ESEP Guidance, screening for equipment below 40 ft. above grade is per the screening lanes contained in Tables 2-3 and 2-4 of EPRI NP-6041-SL [Ref. 7]. Since the peak of the RLGM established for the ESEP walkdowns is < 0.8g as shown in Figure 5-1, the 0.8g screening lane may be used for all equipment at or below about 40 ft. above grade. Grade has been established for CNP at El. 608 ft. per Reference 16. Due to the significant margin between the peak spectral acceleration of the screening lane (0.80g) and the peak of the RLGM (0.62g), equipment up to an elevation of 651 ft. meets the "about" 40 ft. limitation. Therefore, for equipment at elevations 651 ft. and below this screening is applicable.
>
> All of the equipment in the ESEL for CNP Unit 1 and CNP Unit 2 other than some upper containment hydrogen igniters (1 & 2-UDISB components) are at Elevation 651 ft. or below. The limiting hydrogen igniters were addressed in the Reference 10.3 HCLPF calculation. These were the assemblies supported by the CNP Unit 1 and CNP Unit 2 catwalks in upper containment. The limiting HCLPF for these items were shown to be above the defined ISRS for the RLGM."

As described in the first quoted paragraph above, the 0.8g screening lane was used for all equipment at or below elevation 651 ft. Additionally, use of elevation 651ft. was determined to be consistent with the statement to exercise care when using the 40 ft.-above-grade guidance .

As described in the second quoted paragraph above, the upper containment hydrogen igniters are included in the Unit 1 ESEL (line items 212 through 229) and the Unit 2 ESEL (line items 209 through 226). As a result of the upper containment hydrogen igniter mounting configuration, including anchorages at elevation 651 ft. or higher, these upper containment hydrogen igniter assemblies were evaluated by performance of a High Confidence Low Probability of Failure calculation.

The ESEP Reference 10.3 HCLPF calculation is 13Q3208-CAL-006, Rev. 1, "High Confidence Low Probability of Failure (HCLPF) Calculations for Containment Catwalk and Attached Hydrogen Glow Plugs." Note that the term "Hydrogen Glow Plugs" is another name for the hydrogen igniters.

The purpose of calculation 13Q3208-CAL-006 is stated as follows:

> "The purpose of this calculation is to quantify the seismic capacity of the catwalks and the attached hydrogen igniters in Upper Containment to meet the Augmented approach in the Expedited Seismic Evaluation Process (ESEP) for the Resolution of Fukushima Near-Term Task Force (NTTF) requirements. The seismic demand used in this calculation is the review level ground motion (RLGM) seismic demand. The applied RLGM is the site-specific SSE multiplied by the GMRS/SSE factor of 1.933 per 13Q3208-CAL-002 [Ref. 3]. The conservative, deterministic failure margin (CDFM) criteria of EPRI NP-6041-SL [Ref. 5a] were followed for seismic capacity determination."

The evaluation of these upper containment hydrogen igniter assemblies was therefore accomplished by performance of HCLPF analysis utilizing the CDFM criteria of EPRI NP-6041-SL for seismic capacity determination."

In summary, upper containment hydrogen igniter assemblies (Unit 1 ESEL line items 212 through 229 and the Unit 2 ESEL line items 209 through 226) have a mounting height greater than elevation 651 ft. Use of elevation 651 ft. is an appropriate application of the 40 ft.-above-grade guidance in EPRI NP-6041-SL for CNP. The ESEL items with a mounting height greater than elevation 651 ft. were evaluated by performance of HCLPF calculation using conservative, CDFM criteria of EPRI NP-6041-SL for seismic capacity determination