

II. PETITIONERS SATISFY NRC REGULATIONS FOR CONTENTION ADMISSIBILITY.

A. Contention 1 is Admissible.

Duke and the NRC Staff rely on the Commission's decisions in *Florida Power and Light Co.* (Turkey Point Nuclear Generating Plant Units 3 and 4), CLI-20-03, 91 N.R.C. 33 (2020) and *Exelon Generation Co., L.L.C.* (Peach Bottom Atomic Power Station, Units 2 and 3), CLI-20-11, 92 N.R.C. _ (slip op., Nov. 12, 2020) to argue that Contention 1 is inadmissible. As discussed in Petitioners' Hearing Request, Petitioners recognize that the Commission's *Turkey Point* and *Peach Bottom* decisions are binding on the ASLB in this proceeding. Nevertheless, Petitioners have raised Contention 1 in this proceeding for purposes of preserving their right to seek judicial review of the issues raised by Contention 1.

B. Contention 2 is Admissible.

Contention 2 states:

Even assuming for purposes of argument that Duke's SLR application is governed by 10 C.F.R. § 51.53(c)(3) and the categorical exclusions of 10 C.F.R. Part 51, Part A, Appendix B, Duke has violated NEPA and 10 C.F.R. § 51.53(c)(3)(iv) by failing to address "new and significant information regarding the environmental impacts of license renewal of which [Duke] is aware." The Commission should waive 10 C.F.R. § 51.53(c)(3) and the categorical exclusions of 10 C.F.R. Part 51, Part A, Appendix B, and require Duke to address those impacts in a complete environmental impact analysis, as set forth in 10 C.F.R. § 51.45.

The new and significant information of which Duke is aware, and that is not addressed in the Environmental Report, consists of the following:

- Duke's own risk analyses show that the likelihood of a core melt accident and containment failure caused by a random failure of the Jocassee Dam is significantly higher than presented in Duke's Environmental Report. And even this higher estimate of Jocassee Dam failure frequency is too low, given Duke's failure to consider the additional credible contributors to Jocassee dam failure frequency of seismic events and dam overtopping.
- Duke fails to address the environmental significance of a 2011 Safety Evaluation, in which the NRC Staff determined that the potential for a random (*i.e.*, "sunny day") Jocassee Dam failure constitutes an "adequate protection" issue requiring

Duke to implement additional measures to protect against flooding of essential safety equipment and thereby prevent a reactor meltdown. By establishing the risk of a core melt accident with an associated containment failure due to failure of the Jocassee Dam as an adequate protection issue, the NRC effectively established it as a significant environmental issue as well.

1. Petitioners have presented new and significant environmental information showing that the likelihood of a core melt accident and containment failure caused by a random failure of the Jocassee Dam is significantly higher than presented in Duke's Environmental Report.

Duke and the Staff make three arguments that Petitioners have failed to demonstrate that the information they present is new and significant: that the information is not new, it is not significant, and it is not related to environmental impacts but rather to safety issues.

a. The information provided by Petitioners is new.

Duke argues that the information provided by Petitioners in Contention 2 is not “new” because the 2011 Safety Evaluation was issued before the 2013 Revised License Renewal GEIS. Duke Answer at 35 (citing Virginia Electric Power Co. (*North Anna Nuclear Power Station, Units 1 and 2*), LBP-21-4, 93 NRC ___, slip op. at 32 (Mar. 29, 2021)). At the outset, Petitioners note that they were required by NRC regulation 10 C.F.R. § 2.309(f)(2) to base their contentions on *Duke's Environmental Report*, not the License Renewal GEIS. Petitioners therefore presented new information that had not been considered by Duke in the Environmental Report.

In any event, there is no indication in the 2013 Revised License Renewal GEIS that the NRC looked specifically at Oconee flood risks. In the 2013 License Renewal GEIS, Oconee is included, as a general matter, in the NRC's finding that the environmental impacts of accidents are small. This, in fact, is why Petitioners sought a waiver of NRC regulations applying the License Renewal GEIS' generic environmental impact findings to Oconee. Finally, the 2013 Revised License Renewal GEIS states that “[p]rior to the Fukushima events” (which took place

in March of 2011), the GEIS “examined more recent and up-to-date information regarding external events and conclude that the analysis in the 1996 GEIS remains valid.” 2013 Revised License Renewal GEIS at 1-34. This statement demonstrates that the NRC finished its review of potentially new and significant information about external events *before* the issuance of the 2011 Safety Evaluation. Thus, the 2011 Safety Evaluation was not considered in the 2013 Revised License Renewal GEIS.¹

b. The information provided by Petitioners is significant.

Duke argues that the Petitioners “fail to engage with the regulatory definition” of new and significant information. Duke Answer at 32 and n. 158 (citing Regulatory Guide 4.2, Supplement 1, “Preparation of Environmental Reports for Nuclear Power Plant License Renewal Applications” at 7-8 (June 2013) (ML13067A354)). But a regulatory guide is not a regulation, and thus Petitioners were not required to address Reg. Guide 4.2 explicitly.

In any event, Petitioners do show that an evaluation of the impact-related information presented by Petitioners would lead to a seriously different picture of the environmental consequences of re-licensing Oconee for a third license term, by demonstrating that “the likelihood of a core melt accident and containment failure caused by a random failure of the Jocassee Dam is significantly higher than presented in Duke’s Environmental Report.” Hearing Request at 14. Petitioners also assert that even this significantly higher estimate is “too low.” *Id.*

¹ Petitioners also note that despite the fact that the Fukushima accident included severe flooding, its occurrence did not prompt the NRC to take a new look at the environmental impacts of flooding. *Id.* at 34. The NRC gave two reasons for this decision: first, because the agency decided to address the accident in the context of safety regulation, not NEPA analysis; and second, because the post-Fukushima review was still “ongoing” at the time the 2013 Revised License Renewal GEIS was published. *Id.* Thus, to the extent the NRC’s post-Fukushima review might have caused the NRC to re-evaluate the environmental impacts of accidents caused by external events, it chose not to do so.

These assertions are further supported by the Mitman Report, which provides and documents quantitative core damage frequency (“CDF”) and large early release frequency (“LERF”) estimates by Duke and the NRC Staff that are significantly in excess of the values provided in the Environmental Report. Mitman Report at 18-25. And Mr. Mitman states his expert conclusion that “[t]hese significantly higher CDFs and LERFs would lead to significantly higher risks to the public and the environment.” *Id.* at 24. Thus, Petitioners have presented new and significant information that was not considered in Duke’s Environmental Report.

c. The information provided by Petitioners relates to the environmental impacts of operating Oconee for a second license renewal term.

Duke argues that Contention 2 is not admissible because it is based on a “*safety* evaluation (and Petitioners’ flawed understanding thereof).” Duke Answer at 33 (emphasis in original). Duke is correct that Contention 2 is based in part on the NRC’s 2011 Safety Evaluation of Oconee flood risks, Safety Evaluation on Confirmatory Action Letter to Address External Flooding Concerns” (January 28, 2011) (ML110280153) (“2011 NRC Safety Evaluation”). While the 2011 Safety Evaluation clearly addresses issues related to a finding of reasonable assurance of adequate protection under the Atomic Energy Act and NRC implementing regulations, this does not mean the Safety Evaluation has no environmental significance. As recognized in the License Renewal GEIS, “[s]afety issues become important to the environmental review when they could result in environmental impacts.” 2013 Revised GEIS at 1-8. While the NRC may have many safety-based processes for minimizing environmental impacts, neither NEPA nor the Atomic Energy Act contains any provisions exempting Atomic Energy Act-based safety decisions from NEPA. Thus, to the extent safety issues have environmental significance that has not been resolved through the Atomic Energy Act-based regulatory process, NEPA requires that the NRC must address them. *Calvert Cliffs’ Coordinating*

Committee, Inc. v. United States Atomic Energy Com., 449 F.2d 1109, 1115 (D.C. Cir. 1971) (agencies must comply with NEPA “to the fullest extent possible.”).² In fact, findings of compliance with rigorous NRC safety requirements lie at the heart of any NEPA findings that a reactor will operate without significant adverse environmental impacts. The fact that the NRC does not repeat all of its safety findings in an EIS does not mean that they are irrelevant to the NEPA analysis; indeed, they are a central component of the analysis. *See* 1996 License Renewal GEIS at 5-12 (“The staff believes that current regulatory practices ensure that the basic statutory requirement, adequate protection of the public, is met. (51 FR 28044). These risk estimates are representative of the magnitude of risk associated with current regulatory practices.”). When “current regulatory practices” are not fulfilled or addressed and a safety issue thereby goes unresolved -- as is the flooding issue raised in the 2011 Safety Evaluation -- the NRC can no longer rely on its safety findings to limit the “magnitude of risk” and must address the issue in the context of NEPA environmental impacts. *See Limerick Ecology Action v. NRC*, 869 F.2d 719,729-30 (3rd Cir. 1989) (holding that the AEA does not preclude NEPA).

Here, Petitioners have demonstrated that the NRC’s failure to resolve outstanding “adequate protection” safety issues raised in the 2011 Safety Evaluation will result in significant adverse environmental impacts. In the 2011 Safety Evaluation, the NRC Staff established that the “Case 2” flooding analysis that Duke had submitted “will bound the inundation at ONS, therefore providing reasonable assurance for the overall flooding scenario from the site.” Mitman Report at 13 (quoting 2011 Safety Evaluation at 13). The Staff also required Duke to protect the Oconee

² Accordingly, the Staff’s arguments that Contention 2 raises “operational” issues that need not be addressed under NEPA (such as whether environmental impacts of shutdown must be considered) is without merit. *See* NRC Staff Answer at 49. Because those impacts are potentially significant contributors to an already-significant impact, NEPA requires their consideration.

site from sunny day failures of the Jocassee Dam to a flood depth of 19.5 feet in order to ensure adequate protection. Mitman Report (citing 2011 Safety Evaluation at 13). Ten years later, the 2011 Safety Evaluation and its requirements “remain in effect,” and have not been challenged by Duke or retracted by the Staff; and yet, “there is no record that Duke has completed the required modifications to protect the plant to a flood depth of 19 feet.” Mitman Report at 15. By failing to implement measures to satisfy the NRC’s 2011 Safety Evaluation with respect to the safe operation of Oconee, Duke has now created an environmental risk that must be addressed in the NEPA review for subsequent license renewal (“SLR”) at Oconee, starting with the Environmental Report.

d. In attempting to negate the environmental significance of the 2011 Safety Evaluation, Duke misstates the law and distorts the record.

Duke does not dispute Mr. Mitman’s statement that “[t]he NRC’s Safety Evaluation required Duke to protect the Oconee site from random sunny day failures of the Jocassee Dam to a flood depth of 19.5 feet in order to ensure adequate protection.” Duke also fails to dispute Mr. Mitman’s assertion that ten years later, Duke has never appealed the 2011 Safety Evaluation or its requirements; nor does Duke dispute Mr. Mitman’s assertion that the NRC has never retracted or repudiated the 2011 Safety Evaluation. But Duke does dispute the legal effect of the 2011 Safety Evaluation, and also argues it has been “supersed[ed].” Duke Answer at 15. Duke also contends that Mr. Mitman’s report “contains multiple and significant factual errors, omissions and mischaracterizations” of the record of NRC’s and Duke’s actions on Oconee flood control. Duke Answer at 13.³ In fact, as discussed below, it is Duke who has seriously distorted the

³ Duke makes multiple references to the “Mitman Declaration” that obviously are meant to be citations to Mr. Mitman’s expert report. Thus, where appropriate, Petitioners will reply with reference to Mr. Mitman’s report.

record and relevant NRC guidance, and omitted a significant document from the record: its updated PRA.⁴

i. The 2011 Safety Evaluation conditioned an adequate protection finding on the completion of measures that would protect Oconee from a 19.5 foot flood.

As a “legal matter,” Duke disputes Mr. Mitman’s assertion that the Safety Evaluation contained “requirements.” According to Duke, “an NRC safety evaluation, standing alone, lacks the capacity to ‘require’ anything.” Duke Answer at 14. In support of its position, Duke quotes language from NUREG-1409, Backfitting Guidelines, Revision 1, Draft Report for Comment (March 31, 2020), which states that “[s]taff positions in safety evaluations are not requirements,” and that a safety evaluation is “not part of the licensing basis unless specifically incorporated by the licensee or required as a condition of approval by the staff.” Duke Answer at 14 (quoting NUREG-1409 at 1-5).

While Duke is correct that NUREG-1409 has not yet received final approval (Duke Answer at 14), it provides an accurate description of the NRC’s Atomic Energy Act-based legal framework for decisions to “backfit” or retrofit reactors as needed to comply with Atomic Energy Act requirements for providing a reasonable assurance of adequate protection of public health and safety. As NUREG-1409 makes clear, safety evaluations are significant regulatory documents because they establish what NRC requires of licensees in order to meet the statutory “adequate protection” standard of the Atomic Energy Act:

The AEA requires the NRC to approve, among other things, the possession and use of radioactive materials only when the NRC has reasonable assurance that such possession and use will provide adequate protection of the public health and safety and the common defense and security (i.e., no undue risk). Thus, when an issue exists such that the NRC no longer has reasonable assurance of adequate protection, the AEA requires the NRC to

⁴ See Section II.B.4 below.

act as necessary to provide reasonable assurance of adequate protection of the public health and safety and the common defense and security.

Id. at 1-7. In other words, the Atomic Energy Act *precludes* the NRC from permitting a reactor to operate *unless* it has “reasonable assurance of adequate protection.” While a Safety Evaluation does not explicitly require particular measures, it constitutes formal documentation of what measures are necessary to provide a reasonable assurance of adequate protection of public health and safety. If the measures are not taken by a licensee, the agency lacks a legal basis to allow the licensee’s facility to operate.

Consistent with NUREG-1409, prior to the issuance of the 2011 Safety Evaluation, the Staff had made a determination that it lacked a basis for an adequate protection finding for Oconee, because Duke had “incorrectly calculated the Jocassee Dam failure frequency and had not adequately addressed the potential consequences of flood heights predicted at the ONS site, based on the information provided by the 1992 inundation study.” 2011 Safety Evaluation at 1. The Staff then asked Duke for additional information necessary “to demonstrate, for the entire Jocassee earthen works, that the ONS site will be adequately protected from external flooding events.” *Id.* at 2. The Staff also requested Duke to maintain certain compensatory measures it had previously implemented “until final resolution has been agreed upon between the licensee and the NRC staff.” *Id.*

Also consistent with NUREG-1409, the stated purpose of the 2011 Safety Evaluation was to: “verify that the licensee has provided adequate justification that the parameters chosen and the analysis performed bound the inundation of the ONS site resulting from a postulated random sunny-day failure of the Jocassee Dam.” Safety Evaluation at 2. Based on this “verified” information, the Staff stated it had confirmed “that the licensee’s parameters, used in the unmitigated Case 2 analysis . . . are conservative and provide reasonable assurance that the

inundation of the ONS site from a random sunny-day failure of the Jocassee Dam will not exceed the levels predicted by the licensee.” *Id.* The 2011 Safety Evaluation also stipulated that Duke’s “Case 2 scenario “will be the new flooding basis for the site.” Safety Evaluation at 2. As a further condition for its adequate protection finding, the Staff stipulated that Duke would maintain “in place” certain “compensatory” mitigation measures it had installed in response to a 2010 confirmatory action letter (“CAL”) “until final resolution has been agreed upon by the licensee and the NRC staff.” *Id.* at 13 (citing Confirmatory Action Letter – Oconee Nuclear Station, Units 1, 2, and 3 Commitments to Address External Flooding Concerns (TAC Nos. ME3065, ME3066, and ME3067) (June 22, 2010) ML12363A086)).

As provided in NUREG-1409 (in language quoted by Duke at page 14), the Safety Evaluation “provide[d] the staff position on why [Duke’s] proposed means of implementing or complying with a government requirement [*i.e.*, the requirement to adequately protect Oconee from external flooding events] is acceptable and results in compliance with the requirement.” NUREG-1409 at 1-5. While the 2011 Safety Evaluation did not explicitly require Duke to take certain measures to ensure adequate protection of public health and safety, it constituted a formal determination by the agency that adequate protection of public health and safety could be adequately protected *only because* Duke had provided a more competent inundation study and had made certain commitments to mitigate a flood of the proportions set out in its analysis.

ii. The 2011 Safety Evaluation has not been superseded by any subsequent NRC finding regarding the adequacy of Duke’s measures to provide reasonable assurance of adequate protection of the public against flooding at Oconee.

Duke does not deny that in 2010, it committed to protect Oconee from a flood level of 19.5 feet, and it does not point to any dispute or appeal it raised with the adequate protection findings and requirements of the 2011 Safety Evaluation. Instead, Duke asserts that any

obligation it undertook was later nullified by an “important superseding NRC conclusion,” *i.e.*, the NRC Staff’s conclusion in the Staff Assessment of Response to Request for Information Pursuant to 10 CFR 50.54(f) Flood-Causing Mechanisms Reevaluation etc. (April 14, 2016 (“2016 Staff Assessment”)) that weaker commitments made by Duke in the FHRR process constituted an “acceptable alternative” to those previous commitments. Duke Answer at 15 (citing 2016 Staff Assessment, cover letter at 2).

But nothing in the 2016 Staff Assessment repudiates, reconsiders, or retracts the adequate protection findings of the 2011 Safety Evaluation. The very fact that is titled a “Staff Assessment” rather than a “Safety Evaluation” is the first sign that this document does not make formal determinations about safety.⁵ And in the text of the 2016 Staff Assessment, the phrase “acceptable alternative” used in the 2016 Staff Assessment does not even come close to substituting for the statutory language used in the Safety Evaluation, *i.e.*, “reasonable assurance of adequate protection.” The 2016 NRC Staff Assessment of Duke’s FHRR submittal can only be described as a completely different kind of NRC evaluation, that bears no relation to the Atomic Energy Act-based process for assuring continued compliance by nuclear reactor licensees with the Act’s “adequate protection” requirements.

In the 2016 Staff Assessment, for example, the Staff did not correct or retract its 2011 adequate protection determination, nor did it make a new one. Instead, the Staff found that Duke’s post-Fukushima measures were “reasonable.” By itself, in the absence of any of the statutory language prescribed by NUREG-1409 for adequate protection findings, the use of the

⁵ While the NRC has guidance describing the meaning and regulatory role of a “Safety Evaluation,” *see* NUREG-1409 and LIC-100, Control of Licensing Bases for Operating Reactors (Jan. 7, 2004) (ML033530349) (cited in Duke Answer at 15 and n.72), Petitioners are unaware of any comparable guidance for what constitutes an “Assessment” or what is its regulatory role.

word “reasonable” cannot be inferred to have any superseding effect on the staff’s previous findings regarding what measures were needed to provide a reasonable assurance of adequate protection to public health and safety.

Duke also tries to fill the gap between the 2011 Safety Evaluation and 2016 Staff Assessment by asserting that it has gone “even further” and “demonstrated the availability of physical margin above the [2015 FHRR] reevaluation dam failure flood-causing mechanism, which provides *additional assurance*.” Duke Answer at 13 and n. 64 (quoting Staff Assessment by the Office of Nuclear Reactor Regulation Related to the Focused Evaluation for Oconee Nuclear Station, Units 1, 2, And 3 as a Result of the Reevaluated Flooding Hazard Near-Term Task Force Recommendation 2.1 - Flooding (CAC NOS. MG0265, MG0266, MG0267, AND EPID L-2017-JLD-0029) (“2018 Staff Assessment”) (emphasis in original)).⁶ But the 2018 Staff Assessment does not avail Duke either, because it lacks any statutory Atomic Energy Act-based language relating to “safety” or “reasonable assurance of adequate protection” in evaluating Duke’s post-Fukushima flood mitigation measures. As with the 2016 Assessment, the Staff’s avoidance of safety-related language starts with the title of the document: it is called a “Safety Assessment,” not a “Safety Evaluation.” And throughout the text, the 2018 Safety Assessment conspicuously avoids using the word “safety” or the phrases “adequate protection” and “reasonable assurance.” Instead, it uses undefined and conditional terms. For instance, the statement quoted by Duke is found in the following paragraph of the 2018 Staff Assessment, entitled “Conclusion for the Dam Failure Event”:

Based on the information provided by the licensee, the NRC staff concludes that the licensee has demonstrated to have *effective* flood protection for the dam failure flood-

⁶ The 2018 Staff Assessment is enclosed in a letter from J. Uribe, NRC, to E. Burchfield, Duke, re: Oconee Nuclear Station, Units 1, 2 and 3 – Staff Assessment of Flooding Focused Evaluation, etc. (June 18, 2018) (ML18141A755).

causing mechanism. This determination is based on the continuous dam monitoring that allows time for advanced site preparations, should a dam failure event occur. In addition, the reliance of passive flood protection features that meet the definition of being *reliable*, as discussed in Appendix B of NEI 16-05, Revision 1, due to their inclusion in appropriate inspection and maintenance programs. Finally, the licensee has also demonstrated the availability of physical margin above the reevaluated dam failure flood-causing mechanism, which provides *additional assurance* that the equipment installed in the SSF *should be available*.

Id. at 10 (emphasis added). Instead of saying that Duke’s flood protection measures provide a reasonable assurance of adequate protection of public health and safety, the Staff Assessment says those measures are “effective.” Notably, the Staff qualifies this statement, by saying that its finding is “based on the continuous dam monitoring that allows time for advanced site preparations, should a dam failure event occur,” not necessarily to the characteristics of the flood protection measures themselves.

Similarly, the 2018 Staff Assessment found that “passive flood protection features” met “the definition of being reliable” -- but this was “due to” the fact that they are included “in appropriate inspection and maintenance programs,” not necessarily to the passive flood protection features themselves. “Finally,” Duke touts the NRC Staff’s statement that Duke had provided “additional assurance” that equipment in the SSF “should be available,” based on demonstration of “physical margin above the reevaluated dam failure flood-causing mechanism.” But the Staff Assessment failed to characterize this “additional” assurance as “adequate” or “reasonable” for purposes of protecting public health and safety.⁷ Thus, the Staff Assessment amounts only to an opinion that Duke has provided more of a physical margin than in the past,

⁷ In addition, as discussed in more detail below in Section II.B.4, the strength of the NRC Staff’s claim that Duke had provided “additional assurance” that SSF equipment “should be available” in the event of flooding from the Jocassee Dam is directly contradicted by a document that Duke claims to constitute an updated probabilistic risk assessment (“PRA”) for Oconee. [INSERT CITE]. According to this document, “All [Jocassee] Main Dam failure cases are estimated to result in overtopping of the SSF wall ...” See 2012 FOIA ML15156A702 at page 304 of 308.

and that if all of the conditions for this margin are met, it “should be available.” Such a relativistic expression of opinion is in no way comparable to or a substitute for a safety finding.⁸

iii. Duke has failed to show that it has implemented the flood control measures stipulated in the 2011 Safety Evaluation.

Duke does not deny that the 2011 Safety Evaluation concluded that Oconee must be protected from a flood depth of 19 feet. Nor does Duke deny that it has failed to implement measures to protect Oconee from a 19-foot flood. Instead, Duke claims that it took “certain actions” arising from “regulatory commitments” it had made based on the 2015 FHRR. Duke Answer at 15 and n. 74 (citing letter from S. Batson, Duke, to NRC Document Control Desk, re: Establish the Fukushima Flood Response as the Basis to Govern Flood Mitigation Modifications from Postulated Upstream Dam Failure (Aug. 8, 2014) (ML14225A540)). As Duke acknowledges, these commitments were based on entirely different estimates of flood levels than presented in the 2010 Licensee Evaluation on which the NRC Staff based the 2011 Safety Evaluation. Duke Answer at 15 (noting that Duke’s actions were based on “realistic inundation levels” rather than the “extraordinarily conservative inundation levels” estimated by Duke in its 2010 evaluation). Notably, Duke does not assert, nor does it appear, that the commitments made by Duke in relation to the 2015 FHRR are the same or even equivalent to the commitments made by Duke to support the Staff’s reasonable assurance finding in the 2011 Safety Evaluation.⁹

⁸ The vague and conditional qualitative language of the Safety Assessment, by itself, is sufficient to demonstrate that NRC did not consider Duke’s post-Fukushima measures to be equivalent to the measures required by the 2011 Safety Evaluation in order to provide a reasonable assurance of adequate protection of public health and safety. Petitioners note that a significant portion of the quantitative input and resulting flood heights at Oconee in Duke’s FHRR and the NRC’s review documents has been redacted, and thus it is not possible to quantitatively articulate the resulting flood heights or to evaluate those flood heights’ impacts in Petitioners’ submissions to the ASLB.

⁹ By stating that the flood control measures required by the 2011 Safety Evaluation were “extraordinarily conservative,” Duke implicitly suggests that the outstanding safety findings and

Duke also states that in 2016, “Duke agreed to permanently maintain certain ICMs [interim compensatory measures], and completed the CAL-required permanent flooding modifications at the site consistent with the 2015 FHRR.” Duke Answer at 12 (citing 2016 NRC Evaluation Letter (cover letter at 2). But the interim compensatory measures to which Duke refers were just that: interim measures. As made clear in the 2011 Safety Evaluation, the Staff expected Duke to take whatever measures were needed to protect against a 19-foot flood.

2. Petitioners specifically identify the risk analyses challenged in Contention 2.

According to Duke, Petitioners’ contention is insufficiently specific because Petitioners do not identify the “risk analyses” they challenge. Duke Answer at 33. This argument is absurd, because (a) the subject of the contention is the Environmental Report (Hearing Request at 14), and (b) the basis statement explicitly cites Section 3 of Mr. Mitman’s expert report (“Analysis”) and compares Mr. Mitman’s “reasonable best estimate for core damage frequency of a Jocassee Dam failure” of $2.8E-4$ per year with the estimate of $5.9E-06$ “in Duke’s SAMA analysis” (Hearing Request at 15, citing Mitman Report at 21 and 1998 SAMA Analysis, page 10). Furthermore, in Section 3 of his expert report, Mr. Mitman explicitly states that he has “evaluated the adequacy of Duke’s SAMA Analysis to consider all relevant data” (Mitman Report at 18) and provides specific footnote citations to all data on which he relies, whether it be from the Environmental Report or other documents. Duke’s complaint therefore is baseless.

requirements of the 2011 Safety Evaluation can be ignored here because they were more stringent than NEPA would require. This implicit suggestion is misleading and wrong. As discussed above in Section II.B.1.b, the subject matter of NEPA includes reactor safety.

3. Duke mischaracterizes Petitioners' demonstrated "reasonable best estimate for core damage frequency from a Jocassee Dam failure as "bounding" or "worst case."

Duke erroneously claims that Petitioners' Contention 2 relies exclusively on the bounding external flood analysis discussed in the 2011 Safety Evaluation and the 2010 Licensee Evaluation on which it is based. Duke Answer at 14. This is a gross mischaracterization which ignores the content of Petitioners' contention. The first part of Contention 2 asserts that "Duke's own risks analyses show that the likelihood of a core melt accident and containment failure caused by a random failure of the Jocassee Dam is significantly higher than presented in Duke's Environmental Report; and that "even this higher estimate of Jocassee Dam failure frequency is too low, given Duke's failure to consider the additional credible contributors to Jocassee Dam failure of seismic events and dam overtopping." Hearing Request at 14. In the basis statement, Petitioners clearly state that "*a reasonable best estimate for core damage frequency from a Jocassee Dam failure is 2.8E-4 per year, which is significantly larger than the probability of 5.9E-06, as presented in Duke's SAMA Analysis.*" Hearing Request at 15 (emphasis added). A "reasonable best estimate" is not "worst case," nor is it "bounding." And Duke does not identify a single numerical value used by Mr. Mitman whose source characterized it as "worst-case" or "bounding." In the supporting analysis provided in Mr. Mitman's expert report, he makes clear that his estimate is based on probabilistic risk assessment techniques. Mitman Report at 18. In Section 3, Mr. Mitman documents each step of his own risk analysis and the sources of his data, which consist entirely of probabilistic estimates.¹⁰ The ASLB should disregard Duke's baseless

¹⁰ These sources include the Draft Oconee Nuclear Site Adequate Protection Backfit Documented Evaluation at 6 (April 14, 2010) (providing the equation that core damage frequency ("CDF") is the product of the initiating event frequency ("IEF") and the conditional core damage probability ("CCDP") (note 81); FOIA Response 2021-0352 at page 17 (providing a single value for a Jocassee Dam failure rate of 1.3E-5 per year) (note 83 and note 86); NRC's

assertions and admit the contention. *See Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant), LBP-00-19, 52 N.R.C. 85, 98 (2000) (concluding that a methodical and documented accident risk scenario submitted by the petitioner was sufficient to “establish a genuine material dispute of fact or law adequate to warrant further inquiry relative to the . . . accident sequence.”)

4. Duke violated basic NEPA requirements for documentation and transparency by failing to document or even identify a purported PRA update.

Duke faults Mr. Mitman for failing to consider an updated PRA that provides a “best estimate” of dam failure probability that is two orders of magnitude lower than Mr. Mitman’s estimate. Duke Answer at 17 and n. 85 (citing D. Bowles, et al., RAC Engineers & Economists, “Initial Hazard Curve for Flooding at the Safe Shutdown Facility at Oconee Nuclear Station Resulting from a Random Failure of Jocassee Dam” (Feb. 28, 2010), PDF pages 284 to 308 of FOIA/PA No. 2012-0325 (ML15156A702) (“Bowles Document”)).

In fact, Mr. Mitman did note that Duke had claimed to update its PRA, but observed that the Environmental Report was devoid of any quantitative information, or even a reference number for a document. Mitman Report at 17. Given that the Environmental Report serves as a draft of the Supplemental GEIS that the NRC ultimately will prepare for its subsequent license renewal decision, it is essential for the Environmental Report to disclose the information on which it relies. The provision of a reference list in any environmental document is standard practice, and indeed is a hallmark of the public disclosure requirements of NEPA. It is also consistent with the Freedom of Information Act (“FOIA”). *Pacific Gas and Electric Co.* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-08-1, 67 N.R.C. 1, 15 (2008) (noting the

Generic Failure Rate Evaluation for Jocassee Dam (note 84); Duke’s 1998 SAMA analysis (notes 87 and 91); and Duke’s 2021 SAMA Analysis (notes 90).

link between NEPA and the FOIA). Thus, it is absurd for Duke to suggest that Mr. Mitman should have reviewed information that was not identified or provided with the publication of the Environmental Report.

Moreover, it is not clear that Duke has submitted its PRA update to the NRC, because Duke provides no citation to a docketed version of an updated PRA. Given that the NRC ultimately will be responsible for any assertions in the Supplemental GEIS that are based on representations by Duke, it is all the more concerning that Duke is insisting that Petitioners discuss a document that Duke claims is highly relevant to the Environmental Report but that may not even be in the hands of the NRC.

Moreover, the Bowles document identified by Duke in note 85 is not a PRA at all, but a relatively brief “summary” (25 pages long). And the document does not appear to be final, because most of the pages have a watermark that says “DRAFT.” Finally, there is no cover letter to indicate how or when this draft summary document was submitted to the NRC. Only by virtue of the FOIA has this summary draft document been identified by NRC or released to the public.

Finally, to the questionable extent such a document could be relied on, it contains an astounding statement that directly contradicts the 2018 Staff Assessment discussed above in Section II.B.1.d.ii. According to the Staff Assessment, Duke has “demonstrated the availability of physical margin above the reevaluated dam failure flood-causing mechanism, which provides additional assurance that the equipment installed in the SSF should be available.” Yet, according to the Draft Summary, however, [a]ll [Jocassee] Main Dam failures cases are estimated to result in overtopping of the SSF wall ...” FOIA/PA No. 2012-0325, page 304 of 308 (ML15156A702). If all Jocassee Main Dam failure cases are estimated to overtop the SSF wall, then the NRC Staff’s use of the survival of the SSF from a Jocassee Dam failure as an important analytical

input to the 2018 Staff Assessment is erroneous, and the Staff Assessment's conclusion is invalid.

C. Contention 3 is Admissible.

Contention 3 states:

Even assuming for purposes of argument that Duke's SLR application is governed by 10 C.F.R. § 51.53(c)(ii)(L) and therefore need not conduct a new SAMA analysis for its second license renewal application, Duke does not comply with § 51.53(c)(3)(iv) because it has failed to consider new and significant information that would affect the outcome of its SAMA analysis.

The new and significant information of which Duke is aware and that is not addressed in the Environmental Report consists of the following:

- As discussed above in Contention 2, Duke's own risk analyses show that the likelihood of a core melt accident caused by a random failure of the Jocassee Dam is significantly higher than presented in Duke's Environmental Report. And even this higher estimate of Jocassee Dam failure frequency is too low, given Duke's failure to consider the additional credible contributors to Jocassee dam failure frequency of seismic events and dam overtopping. Contention 2 is hereby adopted and incorporated by reference.
- The NRC's 2011 Safety Evaluation, discussed above in Contention 2, required Duke to implement certain measures for protection against a random (*i.e.*, "sunny day") Jocassee Dam failure as a matter of providing "adequate protection" to public health and safety. By deeming these measures necessary, the NRC established them as SAMAs worthy of consideration. Indeed, in order to exclude a necessary safety measure, Duke would have a very high burden of justification. Yet, these measures are not discussed or implemented in the Environmental Report.
- The Environmental Report fails to consider additional mitigative measures that may well be cost-effective at Oconee, given the increased likelihood of a core melt accident. These measures include preemptively shutting down the reactors when reservoir water levels get too high, lowering the water levels in the lake behind the Jocassee and Keowee Dams, or lowering the crest elevation of some of the surround earthworks such that they overtop before the Jocassee Dam, thus lowering the flood impacts at ONS.¹¹

¹¹ Mitman Report at 24.

As Duke recognizes (Duke Answer at 37-38), most of the issues raised in opposition to Contention 2 are applicable to Contention 3, and therefore need not be repeated. But Duke makes an argument that potential SAMAs suggested by Mr. Mitman in his report do not have sufficient specificity or support. Duke Answer at 39. But Petitioners have satisfied their burden of showing that Duke's SAMA analysis is not adequate because it does not adequately account for the likelihood of a core melt accident caused by a failure of the Jocassee Dam. Petitioners do not bear a burden of identifying SAMAs that now may be cost-effective if Duke changes its underlying risk analysis. Mr. Mitman went further than legally required by suggesting some measures that could be considered.

III. PETITIONERS SATISFY NRC REGULATIONS FOR ISSUANCE OF A WAIVER.

Duke and the Staff effectively repeat the same meritless arguments against issuance of a waiver petition that they made in opposition to the admission of Petitioners' contentions. And for the same reasons discussed above, those arguments are without merit. The environmental impacts described in Petitioners' contentions, arising from the construction of three nuclear reactors below a large dam, without adequate prior consideration of the risk that a breach of the dam could cause a core melt accident, more than merits the "hard look" required by NEPA. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989).

IV. CONCLUSION

For the foregoing reasons, the ASLB should grant Petitioners' Waiver Petition and admit their contentions.

Petition should be granted.

Respectfully submitted,

/signed electronically by/

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