

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of	)	
	)	
PROGRESS ENERGY CAROLINAS, INC.	)	Docket Nos. 52-022 COL
	)	52-023 COL
(Shearon Harris Nuclear Power Plant,	)	
Units 2 and 3)	)	
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NC WARN'S REPLY TO STAFF AND PROGRESS ENERGY ANSWERS TO  
PETITION FOR INTERVENTION AND REQUEST FOR HEARING

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PURSUANT TO 10 C.F.R. § 2.309(h)(2), now comes the North Carolina Waste Awareness and Reduction Network, Inc. ("NC WARN"), by and through the undersigned counsel, with a reply to the Answers filed on August 29, 2008, by the NRC Staff ("Staff") and Progress Energy to NC WARN's Petition for Leave to Intervene and Request for a Hearing ("Petition") in the above-captioned matter. This reply adopts by reference the legal considerations, contentions and support for contentions contained in the Petition.

BACKGROUND

This proceeding is a challenge to the combined operating license application ("COLA") for the proposed Shearon Harris Nuclear Power Plant, Units 2 and 3 ("Harris") filed pursuant to 10 C.F.R. Part 52 Subpart C by Progress Energy on February 18, 2008. A qualified acceptance of the application for docketing by the Staff was sent to

Progress Energy on April 17, 2008.<sup>1</sup> Notice of hearing and opportunity to petition for leave to intervene was published in 73 F.R. 31899 on June 4, 2008. The COLA incorporates by reference 10 C.F.R. § 52 Appendix D which includes the Westinghouse AP1000 pressurized water reactor Design Control Document (“DCD”) Revision 16.<sup>2</sup>

On August 4, 2008, NC WARN filed its Petition, demonstrating its standing and presenting eleven contentions. Both the Staff and Progress Energy filed Answers on August 29, 2008. The Staff did not oppose NC WARN’s standing to intervene or its admission as a party to the proceeding, stating that “NC WARN had demonstrated representational standing and has submitted one admissible contention.”<sup>3</sup> Progress Energy did not contest standing but maintains the Petition should be denied because NC WARN has no admissible contentions.

In this reply, NC WARN will address the arguments of the other parties generally and then specifically. It will then briefly address the selection of hearing procedures pursuant to 10 C.F.R. § 2.310.

## OVERVIEW

One of the principal reviews of the Harris COLA is under the Atomic Energy Act (“AEA”), which prohibits the Commission from issuing a license to operate a nuclear

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<sup>1</sup> ADAMS Accession No. ML081070226.

<sup>2</sup> The AP1000 DCD Revision 16 reference documents are available at [www.nrc.gov/reactors/new-licensing/col/harris.html#refDocuments](http://www.nrc.gov/reactors/new-licensing/col/harris.html#refDocuments)

<sup>3</sup> It should be noted that the Staff arbitrarily renumbers NC WARN’s contentions rather than use the designations provided in the Petition.

power plant if it would be “inimical to the common defense and security or to the health and safety of the public.”<sup>4</sup> Public safety is “the first, last, and a permanent consideration in any decision on the issuance of a construction permit or a license to operate a nuclear facility.”<sup>5</sup> The other principal review is under the National Environmental Policy Act (“NEPA”), which requires the COLA to contain information and analysis adequate to address the environmental impacts of construction, operation and closure of the proposed Harris reactors.<sup>6</sup> Without adequate information and analysis, the Staff is unable to determine the risk of accidents and release of radioactivity associated with the proposed activities.

For each contention, NC WARN complies with the requirements in 10 C.F.R. § 2.309(f) and demonstrates that the issues raised are within the scope of the proceeding, that the issues are material to the Commission’s licensing responsibilities, and that there exists a genuine dispute between NC WARN and the other parties. In its proffered contentions, NC WARN presents the specific issues of law or fact to be raised, the bases for the contentions and statements of fact or expert opinion in support of the contentions. Each contention explains in detail why the COLA is deficient and flawed.

For several of the contentions, the allegation is that the COLA or Environmental Report (“ER”) is deficient as it does not contain the required information or analysis. 10

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<sup>4</sup> 42 U.S.C. §2133(d).

<sup>5</sup> Petition for Emergency and Remedial Action, 7 NRC at 404, citing *Power Reactor Development Corp. v. International Union of Electrical Radio and Machine Workers*, 367 U.S. 396, 402 (1961).

<sup>6</sup> 42 U.S.C. § 4321 *et seq.*; 40 C.F.R. Parts 1500 - 1508.

C.F.R. § 2.309(f)(1)(vi) states that “if the petitioner believes that the application fails to contain information on a relevant matter as required by law, the identification of each failure and the supporting reasons for the petitioner's belief” should be included in the contention and support for the position. The regulatory requirements for the COLA and ER are clearly presented, along with the supporting description of the information and analysis that is missing, and why that information and analysis is important under the AEA or NEPA.

In its introduction and section on the scope of review in its Answer, Progress Energy provides a long list of generic inaccuracies and deficiencies it claims are in the contentions. However, the Answers by both the Staff and Progress Energy to the majority of the proffered contentions do not include any additional information, analysis or legal argument to refute the contentions on a substantive or factual basis. Rather than address public health and safety or environmental impacts, the principal arguments made by the Staff (other than the one contention it found admissible in part) and Progress Energy are primarily procedural in nature in that the adverse parties allege the contentions are not admissible because:

1. The contentions are outside the scope of the proceeding.
2. The contentions may not challenge NRC rules or issues in rulemaking.
3. The contentions must be specific and supported by a basis, with factual information or expert opinion sufficient to demonstrate a genuine, material dispute.

In large part, the adverse parties either misrepresent the clear statement of the contention or simply ignore the portions that are admissible. For each contention, the

adverse parties take one or more of these arguments and then take the contention and bend and twist it beyond recognition to fit their argument. These “bed of Procrustes” arguments are difficult to respond to beyond replying to a statement that says, “this is what the contention really means, and as such, it is inadmissible” with “that is not what the contention says on its face, and it is admissible.”

NC WARN of course realizes that some of the contentions it submitted in its Petition may not be admissible in part, but no limited review of the thousands of pages of COLA and reference documents distilled into short contentions can ever expect to be completely accurate. NC WARN also recognizes that the rules have changed over the last few years to make it much more difficult for contentions to be admitted and heard. Regardless, NC WARN maintains that each contention has been set forth with particularity, providing both factual, legal and policy grounds for admission.

NC WARN therefore would urge the members of the Atomic Safety and Licensing Board (“ASLB”) to read each contention and determine its admissibility on its own merit, rather than review it through the often-time intentional misconstruction offered by the adverse parties.

### SPECIFIC CONTENTIONS

NC WARN replies below to the principal arguments made by the adverse parties as they address each specific contention:

Contention TC-1 (AP1000 Certification). The COLA is incomplete because many of the major safety components and procedures at proposed Harris reactors are only conditional at this time. The COLA adopts by reference a design and operational procedures that have not been certified by the NRC or accepted by the applicant. Modifications to the design or operational procedures

for the AP1000 Revision 16 would require changes in Progress Energy's application, the final design and operational procedures. Regardless whether the components are certified or not, the COLA cannot be reviewed without the full disclosure of all designs and operational procedures.

There is an obvious and genuine dispute between the parties on whether the COLA is required to have all of the design of the proposed Harris reactor at this point in time.

The Answers by the adverse parties to the proffered contention do not include any additional data, analysis or legal argument that refute the allegations in the contention.

Staff would dismiss this contention with the statement on p. 13 of its Answer that "NC WARN appears to believe that all portions of the design must be included in the COL application." That is exactly NC WARN's position; the most significant elements of the proposed reactors, i.e., the design and operational practices, are lacking in the COLA. Directly relevant are the provisions of 10 C.F.R. § 50.34(a)(4) that a construction permit application for a nuclear power plant must include:

a preliminary analysis and evaluation of the design and performance of structures, systems, and components of the facility with the objective of assessing the risk to public health and safety resulting from operation of the facility and including determination of the margins of safety during normal operations and transient conditions anticipated during the life of the facility, and the adequacy of structures, systems, and components provided for the prevention of accidents and the mitigation of the consequences of accidents.

Without having the current configuration, design and operating procedures in the application, the risk assessment and severe accident mitigation design alternatives ("SAMDA") cannot be determined. Until major components are incorporated into the COLA for a full review, much of the interaction between the various components cannot be resolved.

If there are significant deficiencies in the COLA, it does not satisfy the

requirement for completeness under 10 C.F.R. § 2.101. Both the Staff and Progress Energy argue that since the AP1000 Revision 16 design and operational procedures are being reviewed in a different docket, Docket No. 52-006, the Harris COLA does not need to meet this basic requirement of completeness, and the resulting determinations of protective of public health and safety.

The NRC does not require any applicant to adopt any of the current reactor designs but has placed that risk squarely on the applicant when the decision is made to go ahead with an incomplete design. This position is expressed in the recent Commission Memorandum and Order (CLI-08-15) in this docket which denied NC WARN's procedural motion to indefinitely postpone the notice of hearing in this docket. In that decision, the Commission stated that

although the Commission **anticipated** that applicants would first seek to have designs certified before submitting COLs which reference those designs, the NRC's regulations, nonetheless, allow an applicant – **at its own risk** – to submit a COL application that does not reference a certified design.

(emphasis added). Because the Commission's "anticipated" certification process has not been accomplished in actuality, the risk of submitting a COLA that is deficient is on the applicant. When it submitted its COLA and adopted the incomplete AP1000 Revision 16 design in this case, Progress Energy assumed the risk that its COLA would be deemed insufficient and incomplete.

In Memorandum and Order (CLI-08-15), the Commission further states that

If the Petitioners believe the Application is incomplete in some way, they may file a contention to that effect. Indeed, the very purpose of NRC adjudicatory hearings is to consider claims of deficiencies in a license application; such contentions are commonplace at the outset of NRC adjudications.

That is exactly what NC WARN is claiming herein; in Contention TC-1, NC WARN lists eleven specific deficiencies in the COLA that have a significant impact on safety. The validity of this contention does not depend on whether the ultimate design is certified or not at some point in the future; today, the COLA is incomplete.

At pages 14 -16 of its Answer, the Staff attempts to distinguish between the Tier 1 components that were certified under earlier revisions of the AP1000 reactors, and the Tier 2 components in the Revision 16 that are not. This misses the essential point that even the certified components cannot be adequately determined until the Tier 2 components are finalized because the Tier 1 design descriptions, interface requirements and site parameters are derived from the Tier 2 information.<sup>7</sup> In other words, not even the so-called “certified” components have been fully approved as they depend on the interaction with the many non-certified components.

At page 16 of its Answer, the Staff maintains that contentions cannot be based on projected changes or future rulemaking and calls the proffered contention speculative. *Duke Energy Corp.*, (McGuire Nuclear Station, Units 1 & 2 and Catawba Nuclear Station, Units 1 & 2) CLI-02-14, 55 NRC 278, 294 (2002). The Staff’s position pointedly ignores NC WARN’s argument that at this moment, the application is incomplete and the only basis that the Staff and Progress Energy have in determining the final design and operational procedures are in themselves highly speculative. Safety and risk assessments cannot be made without the final designs and procedures; the SAMDA analysis in the Section 7.3 of the ER is based solely on speculation. It is an

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<sup>7</sup> AP1000 DCD Revision 16, Introduction, paragraph 1.3.

unreasonable position to limit the speculation of intervenors, even if that speculation is well-founded in fact as it is in this contention, while at the same time allowing the Staff and the applicant to speculate about future safety-related design components and procedures.

Progress Energy raises three arguments against this contention; each misconstrues the contention to suit the argument. The first is that the Memorandum and Order (CLI-08-15) is a broad endorsement of 10 C.F.R. § 52.55 allowing parallel review rather than a procedural order denying a motion to suspend. Progress Energy then ignores the plain language in CLI-08-15 encouraging NC WARN to file a contention if it believes the application is complete. Lastly, Progress Energy misrepresents the contention as saying that the contention is really that NC WARN complains that AP1000 design is somehow not available, although the contention on its face acknowledges that the DCD is part of the COLA reference documents. These three arguments do not provide grounds for the dismissal of this contention; the COLA is deficient without the required descriptions and analysis of significant design components and procedures.

Contention TC-2 (Track record of fire violations). The event of a significant fire can lead to the loss of the operators' ability to achieve and maintain hot standby/shutdown conditions further resulting in significant accidental release of radiation and posing a severe threat to public health and safety. Given its track record of noncompliance of fire regulations at the existing Harris Unit 1, Progress Energy should not be granted a COL for the two proposed reactors. The existing Harris reactor has been out of compliance since at least 1992 with requirements to maintain the post-fire safe shutdown systems of the reactor that minimize the probability and effects of fires and explosions. Given Progress Energy's history of noncompliance at the existing Harris reactor, NC WARN anticipates similar noncompliance at the proposed Harris reactors.

There is a genuine issue between the parties on whether the COLA addresses the

potential of fire at the proposed Harris reactors. It is clear that fire is the most significant risk factor at a nuclear reactor and that based on its track record of noncompliance, Progress Energy cannot demonstrate that its proposed design and procedures will comply with the relevant regulations. A fire at the existing Harris reactor would surely impact the operations at the proposed Harris reactors. The Answers by the adverse parties to the proffered contention do not include any additional data, analysis or legal argument that refute the allegations in the contention.

Contrary to the assertion by the Staff on page 16 of its Answer, the track record of the applicant has been the basis for past contentions in licensing hearings. Specifically, in the original licensing hearings on Harris Unit 1, the past actions of noncompliance at the applicant's Brunswick reactor and noncompliance during the construction (up to the date of the hearing on the contention) of Harris Unit 1 were admitted in a contention that went to hearing.<sup>8</sup>

On page 20 of its Answer, Progress Energy argues that this contention "is little more than an effort to re-litigate settled issues raised by NC WARN" in the relicensing proceeding and an emergency petition under § 2.206. The fact that an issue has been resolved in a relicensing procedure or § 2.206 petition does not mean that it is inadmissible in the context of a licensing hearing. There are different standards for the admissibility of contentions in a licensing hearing than in relicensing and the § 2.206

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<sup>8</sup> Counsel's memory of Joint Contention 1 in the Harris initial licensing hearings is better than his ability to find the records of that proceeding to be able to quote the contention in full. Progress Energy's counsel in the present docket, John H. O'Neill represented the applicant, doing business as Carolina Power & Light, in that proceeding.

petition.

New information and analysis is also relevant to formulating a contention and providing support for it. Subsequent to the relicensing proceeding and § 2.206 petition, there has been an investigation by the NRC Office of Inspector General on this issue.<sup>9</sup> The lack of compliance with fire regulations was also the subject of a 2008 study by the Government Accountability Office (“GAO”).<sup>10</sup> The specific fire-related deficiencies at the existing Harris reactor have not been resolved to date and remain grounds for this contention. Earlier this year, the NRC staff issued a technical assessment of Progress Energy’s study to transition to the risk-based NFPA 805 standard and a pre-submittal audit.<sup>11</sup> On page 27 of its Answer, Progress Energy quotes from the audit but concludes that the audit does not support NC WARN’s contention that Progress Energy has continued to delay the resolution of the fire issue. This position ignores the conclusion in the audit that

However, it appeared to the NRC review team that a great deal of work will be required in order to achieve a usable fire PRA model. For these reasons, the NRC staff review of the Harris baseline fire PRA cannot be regarded as sufficient for determination of technical adequacy to support

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<sup>9</sup> OIG, “NRC’s Oversight of HEMYC Fire Barriers,” Case 05-46, January 22, 2008. Available at [www.nrc.gov/reading-rm/doc-collections/insp-gen/2008/el-05-46.pdf](http://www.nrc.gov/reading-rm/doc-collections/insp-gen/2008/el-05-46.pdf)

<sup>10</sup> GAO, “Nuclear Safety: NRC’s Oversight of Fire Protection at U.S. Commercial Nuclear Reactor Units Could Be Strengthened,” GAO-08-747, June 2008. Available at [www.gao.gov/htext/d08747.html](http://www.gao.gov/htext/d08747.html)

<sup>11</sup> Shearon Harris Nuclear Power Plant, Unit 1 - Preliminary Results of the NRC Staff Review of the Fire Probabilistic Risk Assessment Model to Support Implementation of National Fire Protection Association Standards NFPA-805, “Performance-Based Standard for the Protection for Light Water Reactor Electric Generating Plants,” March 10, 2008. Harris Nuclear Plant Fire Probabilistic Risk Assessment Pre-Submittal Audit, May 2008, ADAMS No. ML080650420.

risk-informed applications.

This fully supports NC WARN's contention that Harris Unit 1 will remain out of compliance for a considerable time in the future.

The Staff at page 20 of its Answer and Progress Energy at page 23 of its Answer rely on what they characterize as the "one fire assumption" in 10 C.F.R. § 52 App.

D.VI.B. to criticize the contention's allegations about "multiple spurious actuations" and multiple fires. In its documents supporting the AP1000 revision 16, Westinghouse postulates that only one fire is assumed to occur within the plant at any given time.<sup>12</sup>

This assumption is better termed the "one fire event assumption," as it does not require the analysis of two independently caused fires, isolated from each other except for time.

The assumption does not preclude concerns about one fire event in which multiple fires start from the same cause, such as a power surge causing fires at several points along a cable. A single fire event could also have additional fires starting from multiple spurious actuations directly caused by the original fire. These are issues that were addressed in the 2008 GAO study cited in the Petition for support for this contention.

At page 22 of its Answer, Progress Energy attempts to maintain that a fire at Harris Unit 1 would not have any impact on the proposed Harris reactors and cites to the Final Safety Analysis Report ("FSAR"), Table 9.5-2-1, that even a fire at Unit 2 would not impact Unit 3 and vice versa. NC WARN simply has not alleged that a fire at any one of the reactors would cause fires at any of the other reactors, rather that the accidental release of radioactivity from a fire at one reactor would impact not only the

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<sup>12</sup> Westinghouse AP1000 DCD Rev. 16, Document 172, Section 9A.2.7.1 and Appendix 9A (Fire Protection Analysis).

other reactors and workers at those plants, but members of the public.

Contention TC-3 (Aircraft attacks). Progress Energy's ER fails to satisfy NEPA because it does not address the environmental impacts of a successful attack by the deliberate and malicious crash of a fuel-laden and/or explosive-laden aircraft and resulting severe accidents of the aircraft's impact and penetration on the facility. It is unreasonable for the NRC to dismiss the possibility of an aviation attack on the existing and proposed Harris reactors in light of the studies by the NRC that this is a real possibility that could have devastating results.

There is a genuine matter of disagreement between the parties on whether the current design of the proposed Harris reactors will sustain an attack by aircraft. The Answers by the adverse parties to the proffered contention do not include any additional data, analysis or legal arguments that refute the allegations in the contention.

On a factual level, as NC WARN maintained in its Petition, the NRC's position that "nuclear power plants are inherently robust structures that our studies show provide adequate protection in a hypothetical attack by an airplane" is not based on any studies.<sup>13</sup> On page 45 of its Answer, Progress Energy would have NC WARN "discuss, or challenge, specific input data for the Harris SAMA analysis," but in setting this as the standard for admissibility of a SAMDA contention, it ignores the fact that there simply is no input data on this in the COLA. As a result, there has been no SAMDA analysis on aviation attacks.

NC WARN acknowledges the Commission's position that it is not bound by the decision in the 9<sup>th</sup> Circuit Court of Appeals that NEPA requires it to investigate aviation

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<sup>13</sup> Lochbaum, "The NRC's Revised Security Regulations," February 1, 2007. Available at [www.ucsusa.org-20070201-ucs-aircraft-fire-hazards.pdf](http://www.ucsusa.org-20070201-ucs-aircraft-fire-hazards.pdf)

threats.<sup>14</sup> *Amergen Energy Co. (Oyster Creek Generating Station)*, CLI-07-08, 65 NRC at 126, 128-129. NC WARN fully contemplates that the ASLB may find that this contention is inadmissible on this point, but the only way that NC WARN can bring this issue to the Commission and preserve its ability to seek judicial review is to raise it herein. NC WARN further acknowledges that there currently is a rulemaking procedure taking comments on aircraft attacks and in fact, NC WARN submitted comments in that rulemaking on December 17, 2007, using most of the same analysis contained in this contention. The Commission is also revising its Draft Statement of Policy for the regulation of advanced nuclear power plants and is directly seeking advice on how to make the next generation of reactors safe from aircraft attacks.<sup>15</sup> These two processes are a clear sign that the Commission has not resolved the issue of aircraft attacks regardless of any of its previous positions.

CONTENTION TC-4 (Aviation attacks and fires) The ER for the COL for the proposed Harris reactors fails to satisfy NEPA because it does not address a significant fire involving noncompliant fire protection features for both primary and redundant safe shutdown electrical circuits caused by a deliberate malicious action using a fuel-laden and/or explosive-laden aircraft on the facility.

There is a genuine issue between the parties on whether the COLA addresses the potential of fire cause by aviation attacks. Similarly to Contentions TC-2 and TC-3 above, it is clear that fire is the most significant risk factor at a reactor and that fires caused by aviation attacks are not addressed in the COLA. The Answers by the

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<sup>14</sup> *San Luis Obispo Mothers for Peace v. NRC*, 449 F.3d 1016 (9<sup>th</sup> Cir. 2006), cert. den. 549 US \_\_\_ (06-466, January 16, 2007).

<sup>15</sup> 73 FR 26349; NRC-2008-0237

adverse parties to the proffered contention do not include any additional data, analysis or legal argument that refute the allegations in the contention; they merely repeat their arguments against Contention TC-3. NC WARN adopts its arguments above to reply to the Answers of the adverse parties regarding this contention.

Contention TC-5 (High density spent fuel pools). The ER for the proposed Harris reactors fails to satisfy NEPA because it does not consider the potential impacts of a radiation release caused by high-density storage of highly-radioactive “spent” fuel in its spent fuel pools. The COLA indicates that spent fuel rods would be stored in two newly constructed cooling pools in buildings designed to withstand only weather-related impacts. The proposed high-density storage heightens the risk of catastrophic radiation releases due to accident or terrorism.

While the adverse parties may disagree on the merits of the technical facts and expert opinion about the safety of the proposed high-density spent fuel storage, this contention is admissible because there is a genuine issue between the parties. The Answers by the adverse parties to the proffered contention do not include any additional data, analysis or legal argument that refute the allegations in the contention.

The 2005 study by the United States National Academy of Sciences (“NAS”) warned of “enormous potential consequences” associated with high density, water-filled cooling pools due to the likelihood of a self-propagating fire if cooling water is lost and spent fuel assemblies are exposed to air.<sup>16</sup> The storage pools for the proposed Harris reactors would pack spent fuel assemblies so close together that “neutron absorbing

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<sup>16</sup> NAS, “Safety and Security of Commercial Spent Nuclear Fuel,” April 6, 2005. Available at [www.nap.edu/catalog.php?record\\_id=11263#toc](http://www.nap.edu/catalog.php?record_id=11263#toc)

material” is required to prevent nuclear reactions.<sup>17</sup> But as confirmed by NAS, these shields increase the likelihood of fire if the pools are drained of cooling water, because they would inhibit the flow of air around the assemblies.

Spent fuel storage in low-density with open racks is consistent with original designs at all operating United States nuclear plants.<sup>18</sup> Low-density racking requires approximately twice the amount of pool space as does high-density racking for the same inventory of spent fuel.<sup>19</sup> On page 30 of its Answer, the Staff maintains that raising issues on the proposed spent fuel pools are improperly attacking the AP1000 Revision 15 design although the Staff acknowledges that there are differences with that design and the proposed design in AP1000 Revision 16. Further, the Revision 15 design was certified in 2005, prior to the NAS study, and as a result, the Westinghouse-designed spent fuel pools will need to be reviewed again by the Staff as part of the overall certification process.

On page 55 of its Answer, Progress Energy makes the claim that the design of AP1000 reactors will “provide reasonable assurance of public health and safety even in the event of a design basis accident,” but does not refute the claims of the NAS and the Alvarez reports relied upon by NC WARN in its contention. It simply attempts to

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<sup>17</sup> Westinghouse AP1000 DCD Rev. 16, Document 166, Section 9.1.2.2.1 (Spent Fuel Rack Design) and Document 37.

<sup>18</sup> NUREG CR-0649, described in [www.nrc.gov/waste/spent-fuel-storage.html](http://www.nrc.gov/waste/spent-fuel-storage.html). “Neutron absorbing material” is referenced on page 31 of the Staff’s Answer as opposed to “boron shield” referenced by NC WARN in its Petition.

<sup>19</sup> Alvarez et al., “Reducing the Hazards from Stored Spent Power-Reactor Fuel in the United States,” *Science & Global Security*, Spring 2003. Available at [www.princeton.edu/~globsec/people/fvhippel\\_spentfuel.html](http://www.princeton.edu/~globsec/people/fvhippel_spentfuel.html)

discount the serious safety concerns about the high-density spent fuel pools as “NC WARN’s preference for low-density spent fuel storage.”

Contention TC-6 (Reliability of uranium fuel). The assumption that uranium fuel is a reliable source of fuel for the projected operating life of the proposed Harris reactors is not supported in the COLA submitted by Progress Energy.

There is a genuine matter of disagreement between the parties on whether uranium fuel is a reliable source of fuel for the proposed reactors. The Answers by the adverse parties to the proffered contention do not include any additional data, analysis or legal arguments that refute the allegations in the contention, only that NC WARN’s interpretations of the studies it cited are incorrect.

It is incumbent upon Progress Energy to address issues related to a reliable fuel source and to support the bald assertion in its COLA which imply that uranium availability will be sufficient to service the proposed Harris nuclear reactors as part of the existing and proposed worldwide fleet of nuclear power reactors over the current periods of license. There is a single statement with a reference to the World Nuclear Association (“WNA”) study at Section 10.2.2.3 of the COLA that concludes that Progress expects a ten-fold (!) increase in actual supply; this is not adequate analysis to refute this contention. On page 34 of its Answer, the Staff attempts to provide evidence that the WNA study referenced in the COLA, and cited to by NC WARN in its Petition, proves that there is an adequate supply to last “more than 80 years.” These assertions confound the measured resources of uranium in the ground located throughout the world with refined fuel available for the proposed Harris reactors.

Contention EC-1 (Underestimation of costs). In its COLA, Progress Energy grossly underestimates the costs and risks of the proposed Harris reactors and grossly overestimates the costs of their alternatives. The lack of a reasonable cost basis means that there can be no reasonable analysis of comparative sources of energy generation, energy efficiency or other energy management strategies.

There is a genuine issue between the parties on whether the COLA underestimates the cost of the proposed reactors. The Answers by the adverse parties to the proffered contention do not include any additional data, analysis or legal argument that refute the allegations in the contention. Contrarily, the Answers of the adverse parties largely support NC WARN's claims in this contention.

At page 37 of its Answer, the Staff has agreed that this contention is admissible to the extent that there is a significant difference in the estimated costs as presented in the COLA and similar Progress Energy reactors proposed in Levy County, Florida. NC WARN agrees with the Staff that it needs to know the total cost of the proposed reactors so that it can compare their cost and benefits with the costs and benefits of alternatives. On page 65 of its Answer, Progress Energy challenges this contention in that alleges that "it fails to demonstrate that the issue raised is material to the findings the NRC must make to support the action involved in the proceeding." As agreed to by the Staff, the proffered contention is fully supported; the ER cannot be used in the cost-benefit analysis and alternative studies required by NEPA.

On page 65 of its Answer, Progress Energy defends the use of the COLA's \$2.2 billion per unit construction cost estimate that it was "believed to be the most authoritative publically available documents on the subject because of the breadth and depth of their analyses" at the time the application was filed. Yet, as of the time the

NRC accepted the application, that “high-end” estimate was already one-fifth of the cost estimate of Progress Energy’s own proposed reactors in Florida filed around the same time period.

The Staff maintains that the rest of the contention is “inadmissible for failure to demonstrate materiality under 10 C.F.R. § 2.309(f)(1)(iv).” In response, NC WARN contends that the Staff may not fully understand the economics of nuclear plant financing in that the risks associated with the plants lead to a higher cost of capital. In essence, the riskier a plant is seen to be, the higher its total cost will be. These risks can be reduced through the subsidies described on page 40 in the Petition, although those costs should be included in the total cost estimate.

Even if, as Progress Energy asserts on pages 71 - 76 of its Answer that it assessed the environmental impacts of the project, the environmental costs can also be quantified and should be included as part of the total costs of the reactor. As such, the contention should not be limited to the extent suggested by the Staff but should look at the total costs of the proposed Harris reactors.

Contention EC-2 (Carbon Footprint). Progress Energy fails to present evidence or analysis of the “carbon footprint,” i.e., the atmospheric carbon generated by mining and fuel processing, the construction and operation, the long-term waste storage, associated with the proposed Harris reactors in its ER.

There is a genuine issue between the parties on whether the COLA adequately addresses the carbon footprint over the life cycle of the proposed Harris reactors. The Answers by the adverse parties to the proffered contention do not include any additional data, analysis or legal arguments that refute the allegations in the contention. The

Answers by the other parties focus on matters of fact and interpretation that should be resolved at a hearing on the merits.

Progress Energy arbitrarily breaks down the proffered contention into four “sub-contentions” and then argues against each sub-part. On page 78 of its Answer and repeated for each of the sub-parts, Progress Energy states that “the detailed carbon footprint analysis sought by NC WARN is not required by NEPA, NRC regulations or NRC guidance.” This position blatantly ignores NEPA requirements to investigate the environmental impacts of the preferred action and compare those impacts to those of the alternatives. As discussed in the proffered contention and in the section on legal considerations in the Petition, NEPA requires the review of environmental impacts of the proposed Harris reactors and this cannot be completed without an analysis of the greenhouse gas emissions associated with the mining, processing, transportation, construction, operation, closure and waste disposal that would be a direct impact of the proposed Harris reactors.

On page 41 of its Answer, the Staff would disregard the carbon emissions from the life cycle of the proposed Harris reactors because of statements in Chapter 9 of the ER that coal-fired and gas-fired power plants may have far greater carbon emissions. On page 91 of its Answer, Progress Energy dismisses the carbon emissions from the operation of the proposed nuclear reactors as *de minimus*, but reasonable comparison between alternate power plants and alternative energy sources cannot be made without a full investigation of the carbon emissions from all phases of the life cycle, not just in operation alone. The NEPA analysis looks at the total costs and benefits and the environmental impacts of the various alternatives; it does not choose an alternative

based on any one criterion alone.

On page 40 of its Answer, the Staff questions NC WARN's reliance on a 2008 study and yet confirms that Progress Energy relies on an earlier study about nuclear reactors in the United Kingdom to quantify the carbon emissions from the reactors. The Staff criticizes NC WARN for summarizing a lengthy study in a few sentences, yet picks out one paragraph that study to criticize the entire study, and NC WARN's reliance upon it. In its Answer, Progress Energy criticizes the proffered contention for both having no support for NC WARN's conclusions and in relying on the more recent study, having too much support. These are matter of evidence and the credibility of the studies that would be better resolved at hearing on the merits.

Contention EC -3 (Water requirements). The COLA does not identify the plans for meeting the water requirements for the proposed Harris reactors with sufficient detail to determine if there will be adequate water during adverse weather conditions, such as droughts, and the environmental impacts for water withdrawals during both normal and adverse conditions.

There is a genuine issue between the parties on whether the ER and COLA sufficiently address the environmental impacts of water-related matters. The Answers by the adverse parties to the proffered contention do not include any additional data, analysis or legal arguments that refute these allegations in the contention.

The adverse parties argue that the contention is inadmissible because NC WARN does not cite to specific sections of the ER that are deficient. As required by 10 C.F.R. § 2.309(f)(1)(vi), the contention specifies what information and analysis is lacking in the ER; specific sections cannot be referenced if there are no specifics.

In its initial review of the COLA for the proposed Harris reactors, the Staff

recognized the deficiencies in the COL regarding the impacts of water withdrawal.<sup>20</sup> As shown in the letter accepting the application, there are two significant areas in which the Staff declared the application to be incomplete – the environmental impacts caused by changing water levels at the Harris Lake and the intake on the Cape Fear River. At page 45 of its Answer, the Staff now attempts to recharacterize this letter, disregarding what it actually states, claiming that it is similar to a request for additional information.

At page 44 of its Answer, the Staff criticizes the contention because it does not explain how the “concerns about warming water relate to the ability of the reactor to obtain water.” This mischaracterizes the contention; the expressed concern in the contention is that the environmental impacts of the warmer water are not contained in the ER.

At pages 44 and 45 of its Answer, the Staff citation to a vague reference in the COLA ER, § 5.3.1.2, about the water supply model Progress Energy intends to use does not provide adequate grounding of the proposed water use so that a reviewer can assess the impacts the water intake and discharge systems. Similar to issues in the proffered contention, the lack of detailed information about the impacts of water usage and temperature increases renders the COLA incomplete.

Contention EC-4 (Deficiencies in emergency planning). The area around the Harris site has changed considerably since the first reactor was constructed from dramatically increased populations and changing land uses. The ER does not provide an adequate analysis of the current populations and land use, and does not address the forecasted growth in the area. As a result, emergency planning that adequately protects the health and safety of the residents, students and

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<sup>20</sup> ADAMS Accession No. ML081070226.

workers around the proposed Harris reactors cannot be adequately accomplished.

There is a genuine issue between the parties on whether the COLA forecasts the expected increases in population and changing land uses in the area around the proposed Harris reactors. The Answers by the adverse parties to the proffered contention do not include any additional data, analysis or legal arguments that refute the allegations in the contention.

Before a nuclear plant is licensed to operate, the NRC must have “reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.”<sup>21</sup> Given the projected increases in population, and the resulting impacts of those people in the 10-mile emergency planning zone (“EPZ”), along with the changing land uses in the EPZ, the health and safety of those people cannot be protected during an accident. The COLA for the proposed Harris reactors cannot be approved without a full study of the current and forecasted populations, including susceptible populations, and the ability of the evacuation plan to provide “reasonable assurance” that all of these people will be provided adequate care in case of an accident.

The contention provides sufficient factual data and expert opinion about the adequacy of the analysis provided in the ER to be admissible. The adequacy of what is in the COLA and whether it sufficiently addresses the concerns raised in the proffered contention are matters for hearing.

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<sup>21</sup> 10 C.F.R. Part 50, Appendix E and NUREG-0654, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” March 2002.

Contention EC-5 (Waste disposal). The COLA fails to evaluate whether and in what time frame the irradiated “spent” fuel generated by the proposed Harris nuclear reactors can be safely disposed. The ER does not contain any discussion of the environmental implications of the lack of options for permanent disposal of the irradiated fuel to be generated by the Harris site.

There is a genuine issue between the parties on whether there is adequate disposal for the spent fuel generated at the proposed Harris reactors. The Answers by the adverse parties to the proffered contention do not include any additional data, analysis or legal argument that refute the allegations in the contention.

As a matter of law, the ER is deficient because it fails to discuss the environmental implications of the lack of options for permanent disposal of the spent fuel that will be generated by the proposed reactors if built and operated.<sup>22</sup> While Progress Energy may have intended to rely in the COLA on the NRC’s Waste Confidence Decision issued in 1984, amended in 1990 and 2007, and reviewed in 1999,<sup>23</sup> that decision is inapplicable because it applies only to plants which are currently operating, not new plants. In its proffered contention, NC WARN squarely lays out the limits of the “waste confidence rule” in that neither the currently proposed repository at Yucca Mountain, Nevada, nor some speculative second repository is adequate to permanently dispose of the irradiated fuel from the proposed Harris reactors. Not only is this contention admissible, it is grounds for a summary finding that the COLA is inadequate. Progress Energy simply does not have any place to safely dispose of the spent fuel that would be generated by the proposed Harris reactors.

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<sup>22</sup> *State of Minnesota v. NRC*, 602 F.2d 412, 416-417 (D.C. Cir. 1979).

<sup>23</sup> Waste Confidence Decision Review: Status, 64 F.R. 68,005 (December 6, 1999).

At page 51 of its Answer, the Staff opposes this contention claiming that it is “an impermissible attack on the Commission’s regulations,” citing the waste confidence decision at 10 C.F.R. § 51.23. The Staff maintains that what it characterizes as “plain language” in the 1990 amendments to § 51.23 extended the waste confidence decision to a new generation of reactors not yet even conceived at the time of the rules. Progress Energy makes this same argument at page 123 of its Answer. Neither of the adverse parties refer to any language in the rule that extends the Commission’s assumption that a second repository was expected; the “plain language” is that only that reactors existing in 1990 are covered by this rule. These arguments simply ignore the entire discussion and changes in the 1999 review, and the current state of the proposed Yucca Mountain repository with no second repository on the horizon.

On page 122 of its Answer, Progress Energy complains that this contention is similar to contentions in other licensing proceeding. NC WARN acknowledges that it is, and maintains that the waste confidence decision cannot be relied upon for the new proposed Harris reactors and others around the United States.

### HEARING PROCEDURES

It is premature for Progress Energy to assert which of the hearing procedures it prefers pursuant to 10 C.F.R. § 2.3109 without knowing which, if any, contentions will be admitted. NC WARN’s preliminary recommendation is that most of the contentions above would require a full hearing pursuant to Subpart G, with discovery and expert witnesses, although some could be resolved in a manner similar to how motions for summary judgment in trial courts, upon briefs and affidavits. However, NC WARN

would urge the ASLB to request comments on procedures from the parties after contentions are admitted.

CONCLUSION

NC WARN prays that its Petition for Intervention and Request for Hearing is granted. The contentions proffered by NC WARN in its Petition should be admitted because they clearly satisfy all of the Commission's requirements in 10 C.F.R. § 2.309. Pursuant to 10 C.F.R. § 52.103, the license application should be denied.

Respectfully submitted this the 5<sup>th</sup> day of September 2008.

\_\_\_\_\_/s/jr\_\_\_\_\_  
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CERTIFICATE OF SERVICE

I hereby certify that copies of this NC WARN'S REPLY TO STAFF AND PROGRESS ENERGY ANSWERS TO PETITION FOR INTERVENTION AND REQUEST FOR HEARING was served on the following via the EIE system with copies sent by email:

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This is the 5<sup>th</sup> day of September 2008.

\_\_\_\_\_/s/jr\_\_\_\_\_  
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