UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD PANEL

In the Matter of	
Luminant Generation Company, LLC	**Docket Nos. 52-034 and 52-035**
Comanche Peak Nuclear Power Plant	
Units 3 and 4	
Combined License Adjudication	

Petitioners' Reply to NRC Staff's Answer to
Petition for Intervention and Request for Hearing

INTRODUCTION

Petitioners offer the following reply for consideration in the *instant* combined operating license adjudication. Petitioners have limited their reply to specific points in selected contentions. The absence of a specific reply does not constitute an agreement by Petitioners with the NRC Staff 's Answer.

Contention One

The Petitioners challenged the propriety of going forward in this COLA adjudication in the absence of a reactor design certification rule both through the subject contention herein and through a separate petition seeking relief in the form of a stay and abeyance. The Petitioners incorporate by reference the arguments made in the aforementioned petition and contention.

Staff has taken the position that the NRC's denial of the Petition for Stay is dispositive of this contention as well. However, because adjudications include contentions that point out how a

COLA is inadequate or incomplete the contention should be admitted. Moreover, 10 CFR 52.55(c) is silent concerning whether a pending reactor design rulemaking *per se* excludes consideration of reactor design issues in the context of a parallel COLA adjudication. And while it may be NRC practice to advance licensing proceedings in a truncated fashion, the Petitioners herein contend that such a process is an artificial and inadequate means to determine whether a license should issue. Resolving reactor design issues prior to the adjudication assures both parts of the process will be afforded adequate attention. In terms of efficiency, an adjudication should not be commenced unless a reactor design rule is in place because absent a reactor design certification rule an adjudication proceeding may be unnecessary. If a reactor design certification rule is finally adopted by the agency NRTC then the COLA adjudication can proceed accordingly. However, allowing an adjudication to run parallel with the rulemaking presumes that a reactor design will be approved. And if the reactor design is not approved the COLA adjudication will have been wasted effort.

The Staff's position implicitly assumes that the reactor design rulemaking will result in an approved design and that such approval will be without material impact on any other aspect of the COLA that would require adjudication in a 10 CFR Pt. 2 proceeding. (Staff Answer, p.10) The Petitioners contend that dividing the reactor certification rulemaking and the COLA adjudication into separate but parallel proceedings assumes that there are no material interrelationships between reactor design and the rest of the proposed nuclear plant. This is contrary to common sense and allows an artificial construct to govern the licensing proceeding. *Druid Hills Civic Association, Inc., v. Federal Highway Administration*, 772 F. 2nd 700, 709 11th Cir. (1985). Further, 10 CFR 52.55(c) could also be interpreted to mean that the risk of submitting a COLA without a certified design rule could cause a delay in the adjudication. Such

an interpretation would be just as commonsensical as that offered by the Staff.

Contention Two

Staff opposes the admission of contention two because it challenges the Waste Confidence Rule at 10 CFR 51.23 and because it addresses issues subject to an ongoing rulemaking. The Staff argues that because of these circumstances proposed contention two is not material to any decision the NRC must make on this license application and that there is therefore no material dispute of law or fact. (Answer p.11) However, the Petitioners are directly addressing the bald assertion in the Comanche Peak Environmental Report that the federal government has recommended Yucca Mountain as the site for disposition of spent fuel and high-level wastes and the implicit assumption that Comanche Peak 3 and 4 spent fuel and high-level wastes will be dispositioned therein.

The "recommendation" of Yucca Mountain as a federal repository is, at best, a mixed message. While there have been extensive proceedings related to Yucca Mountain as a repository, the reality is that it is not in use and, based on the statement of Secretary of Energy cited in the Petitioners' Contention Two, it will not be used. The Staff simply ignores this reality and thereby would allow the Applicant to do likewise. However, 10 CFR 52.79(a)(3) specifically requires the Applicant to describe the kinds and quantities of radioactive materials expected to be generated and how radiation limits under 10 CFR Pt. 20 will be met. The Applicant's approach to this duty is to assume disposition of spent fuel and high-level waste in a geologic repository. Comanche Peak Environmental Report, p. 5.7-8. Petitioners contend this assumption is not based on evidence and is inadequate to meet the requirement of 10 CFR 52.79(a)(3).

Additionally, it is not reasonable for the Applicant to assume that Yucca Mountain will be available when it is clear that its disposal capacity would be reached long before Comanche Peak Units 3 and 4 would have its high-level waste/spent fuel ready for disposition off-site. Staff does not address or contradict this very specific part of the contention. Rather, it relies on the 1990 version of the Waste Confidence Rule that speculates sufficient repository capacity will be available within 30 years of the licensed life of any reactor. 55 Fed. Reg. 38,474 (Sept. 18, 1990), 10 CFR 51.23(a). Given the volume limitations for Yucca Mountain, reliance on the 1990 version of the Waste Confidence Rule must assume a second repository will be available for disposition of Comanche Peak Units 3 and 4 spent fuel and high-level wastes. This is not a reasonable assumption. And rather than have the Applicant do an analysis that assumes a repository will not be available, the Staff would permit continued reliance on the Waste Confidence Rule that posits such capacity will exist notwithstanding the uncontradicted evidence to the contrary. This does not satisfy the requirement of 10 CFR 52.79(a)(3). Ohio River Valley Environmental Coalition,Inc.v. Kempthorne, 473 F.3d 94,102 (4th Cir., 2006) (Administrative Procedure Act directs review of agency action to determine if decision is product of consideration of relevant factors and whether a clear error of judgment has occurred.) Here, relevant factors related to the availability of a geologic repository and the capacity limits of Yucca Mountain have not been addressed and such constitutes a clear misjudgment about a material issue raised in the COLA.

In further reply, Petitioners rely on the analysis of the Waste Confidence Rule by Dr. Arjun Makihijani, attached. Dr. Makhijani's conclusions contradict the Applicant's and Staff's assumptions about disposition of spent nuclear fuel/high-level wastes that would be generated at Comanche Peak Units 3 and 4. This analysis is further support for a finding that the application

is deficient and incomplete because it assumes that spent nuclear fuel/high-level wastes will eventually be dispositioned away from the Comanche Peak site. This deficiency is further compounded because it allows the applicant to forego detailed planning and analysis for the contingency that the spent nuclear fuel/high-level wastes will remain on-site indefinitely.

Contention Three

As pertinent, Petitioners incorporate by reference their Contention Two reply, above.

Staff argues that Petitioners Contention Three should be rejected because, *inter alia*, the argument that on-site dry cask storage of spent nuclear fuel presents a target for terrorists is an impermissible challenge to the regulatory assumption under 10 CFR 51.23(a) that such storage can be done safely for at least 30 years in an independent spent fuel storage installation (ISFSI). (Staff Answer, pp. 15-16)

The Atomic Energy Act, 42 U.S.C. 2133(d) requires licenses be issued if such are not a threat to the public health and safety. Notwithstanding the assumptions implicit in 10 CFR 51.23(a) the realities of a terrorist attack on a nuclear plant is now a regulatory consideration in the context of 10 CFR 50.54(hh) and a similar logic should apply in the context of on-site dry cask storage. It is not reasonable to plan for large losses of a nuclear plant by fires/explosions that implicate containment integrity, reactor cooling and spent fuel pool cooling and assume similar dangers do not exist related to dry cask storage. This is a reasonable expectation considering the requirements of the AEA, 42 U.S.C. 2133(d).

The Staff's Answer also assumes that spent fuel can be stored safely for at least thirty

years on-site in an ISFSI. Arguably, this is an implicit recognition that off-site disposal capacity will be available for Comanche Peak Units 3 and 4 in 40 to 60 years after the units would be licensed and dry cask storage may not be required. (Staff Answer, p.16) On the other hand, to the extent that the recognition by Staff that off-site disposal capacity is unavailable beyond the 40-60 year timeframe, the Applicant should be required to disclose now its plans for on-site storage of spent fuel and high-level wastes.

For example, where on the Comanche Peak site would the ISFSI be located? How will the ISFSI be secured and for how long? What assurance is there that a company like the Applicant will remain viable as a merchant power plant for the duration of time required to move spent fuel/high level waste off-site? In a bankruptcy does a trustee assume responsibility for the ISFSI? What are the financial costs? These are only representative of the questions that the Applicant should be required to address regarding the ISFSI. Moreover the Staff uses the time frame of thirty years for on-site storage and further states categorically that the on-site capacity would not be needed for 30 to 60 years after the operating license is granted. The Staff also states that the Applicant may never need to use dry cask storage as a long-term management method. (Staff Answer p. 16) While the Staff is critical of the Petitioners for speculation about the need for on-site storage, the same criticism can be leveled at the Staff for speculating whether on-site storage will be required. In fact, the Staff's assumption about off-site disposal capacity is even more speculative than the probability that on-site storage will be likely for Units 3 and 4. The Staff's assumption that off-site storage will be available is flatly contradicted by the absence of current off-site storage capacity, the rejection of Yucca Mountain as a disposal repository, and the fact that there is no process in place currently to establish alternatives to Yucca Mountain. Consequently, it is much less speculative to require the Applicant to plan now for on-site storage

of spent fuel and high-level waste on the reasoned premise that off-site capacity will not be available. In fact, to do otherwise raises the issue whether a clear error of judgment has occurred related to prudent planning for management of spent nuclear fuel and high-level waste. Ohio River Valley Environmental Coalition,Inc.v. Kempthorne, 473 F.3d 94,102.

Contention Seven

The Staff agrees that the Applicant has not submitted information to meet the requirements of 10 CFR 52.80(d) and that Contention Seven should be admitted on that basis. (Answer, p. 25, 28) But the Staff opposes the contention to the extent it challenges ongoing generic issues in rulemaking proceedings. (Staff Answer, p. 26) However, the requirements of 10 CFR 50.54(hh) require each COLA to state how compliance with the explosion/fire regulatory requirements will be met. Staff 's position conflicts with the requirements that each COLA submit information to describe how containment integrity, reactor cooling and spent fuel pool cooling will be maintained after the large loss of plant areas caused by explosions/fires. 74 Fed. Reg. 13926, 13944, 13997 (March 27, 2009).

The impact of a large aircraft on a nuclear power plant is regarded as a beyond design-basis event. 74 Fed. Reg. Reg. 13926,14002-14003. The Applicant is now required to anticipate beyond design-basis explosions/fires. *Id.* For example, the new regulation requires Applicants to "include a description and evaluation of design features of functional capabilities to avoid or mitigate, to the extent practical and with reduced reliance upon operator actions, the effects of the aircraft impact. New reactor Applicants would be subject to both the requirements of the aircraft impact rule and the requirements of 50.54(hh). The overall objective of the Commission

with both rulemakings is to enhance a nuclear plant capabilities to withstand the effects of a large fire or explosion, whether caused by an aircraft impact or other event from the standpoint of design and operation." *Id.* These are not generic requirements. Rather, the requirements anticipate that each Applicant will evaluate its unique design and operations to meet the specifications of the explosion/fire rule at 10 CFR 50.54(hh). Applicants "will be expected to include a description and evaluation of design features and functional capabilities to avoid or mitigate, to the extent practical and with reduced reliance upon operator actions, the effects of the aircraft impact." 74 Fed. Reg. 13926, 14002. This is not a one-size-fits-all rule. The unique design attributes of particular reactors and operations related thereto require similarly unique responses for each power plant in question.

The Staff also takes issue with the Petitioners' criticisms of the US-APWR DCD that are deficient to address the regulatory requirements to deal with large-scale explosions and fires. The Staff contends that these criticisms are impermissible because such are, in effect, an attack on the reactor design rulemaking. (Answer, pp. 26-27) The Staff misapprehends the purpose of the Petitioners' criticisms of the DCD. The intent of the Petitioners is to point out that the current documents submitted by the Applicant do not account for beyond design- basis explosions/fires of the magnitude that would result from, for example, the impact of the large commercial airline into the reactor complex. The Petitioners contend that the deficiencies in the DCD are precisely what must be addressed in order to meet the requirements of 10 CFR 50.54(hh). Reference to the DCD is intended to highlight why the Applicant is required to revise its application. The Applicant has conceded that its application will require revisions to address the requirements of 10 CFR 50.54(hh). (Applicant's Answer, p. 33) Accordingly, this contention should be admitted in its entirety so that Petitioners will have a fair opportunity to consider the Applicant's

anticipated revisions and whether such meet the requirements of 10 CFR 50.54(hh).

Contention Eight

The Staff disagrees with the Petitioners' assertion that the Squaw Creek Reservoir is the functional equivalent of a radioactive waste disposal facility. (Staff Answer pp. 28-30) The Staff also contends that the deposition of radioactive particulates is permissible but fails to cite specific legal authority for such. Additionally, the Staff differentiates between liquid effluents and particulates and therefore excuses the discharge of particulates and to Squaw Creek Reservoir because the particulates are carried in liquid effluent. The Staff is also critical because the Petitioners do not challenge the analysis that led to the conclusion that deposition of radioactive particulates into Squaw Creek Reservoir has a "small" environmental consequence. This criticism, of course, presumes that there was an analysis by the Applicant of the environmental impacts of depositing radioactive particulates in the sediment of Squaw Creek Reservoir. There is no such analysis. Instead, there is an assumption that these radioactive particulates have no significant environmental or public health consequences. However there is no support in the Applicant's Environmental Report for such a conclusion. The NRC should not be satisfied with such an unsupported assertion related to the deposition of radioactive particulates into Squaw Creek Reservoir.

The Staff does not challenge the assertion that there are radiological consequences related to the radioactive particulates that will remain indefinitely in the sediment of Squaw Creek Reservoir. Rather, the Staff embraces the unsupported assertion by the Applicant that the consequences of such radioactive particulate depositions are "small." (Staff Answer, p. 29)

Conspicuously missing from the Applicant's Environmental Report is any discussion of the kind or quantity of radioactive particulates that have been and those anticipated to be discharged into Squaw Creek Reservoir. Arguably, this violates 10 CFR 52.79(a)(3) that requires specifications of the kinds and quantities of radioactive materials produced by the plant operations and a showing that the discharges into Squaw Creek Reservoir will not exceed regulatory limits. How can there be a reliable projection of radiation levels caused by the particulates when such are neither described by type, half life/hazardous life or quantity? The Staff's and Applicant's assumption that there are no significant radiological consequences that result from the radioactive particulates is unsupported in the Applicant's documents.

The Staff dismisses discussion of failure of the dam that impounds Squaw Creek Reservoir. (Staff Answer p. 30) The Staff implicitly assumes that the dam will outlast the radioactive particulate that is deposited in the sediment. Evidently, Staff rejects the claim of the Petitioners that, as a man-made structure, the dam has a finite useful life. According to the American Society of Civil Engineers, "Like all man-made structures, dams deteriorate. Deferred maintenance accelerates deterioration and causes dams to be more susceptible to failure. As with other critical infrastructure, a significant investment is essential to maintain the benefits and assure the safety that society demands." (http://www.asce.org/reportcard/2005/page.cfm?id=23) See also: http://www.tshaonline.org/handbook/online/articles/SS/hcs12.html, http://www.npr.org/templates/story/story.php?storyId=91293215. This is an assertion of fact that hardly requires expert testimony to accept and establish. Federal Rule of Evidence 702 anticipates that expert testimony is required only where it will assist the trier of fact to understand a fact in issue or evidence related thereto. Expert testimony assists when it provides information beyond the common knowledge of the trier of fact. *Daubert v. Merrill Dow Pharm.,*

Inc., 509 U.S. 579, 591 (1993). The Staff's argument assumes the Board in this adjudication should reject the common knowledge that man-made structures have limited useful lives.

The recent failure of coal slurry retention structures is an example of this common knowledge. See http://www.enquirer.com/editions/2000/10/16/loc_sludge_closes.html, http://www.enquirer.com/editions/2000/10/20/loc_spill_heads_down.html, http://www.cbsnews.com/stories/2004/04/01/60minutes/main609889.shtml, http://www.jacksonville.com/tu-online/apnews/stories/100902/D7MI4GQ81.html.

Additionally, the 1979 Church Rock, New Mexico uranium tailing dam failed and released 90 million gallons of radioactive water into the Rio Puerco River. This dam failure caused the largest accidental release of radioactive materials in the United States. See: http://serc.carleton.edu/research_education/nativelands/navajo/environmental.html.

The Applicant does not state whether inspections of the dam are conducted and, if so, the results thereof. State agency inspections of dams in Texas are problematic and private dams tend to be inspected less frequently and lack necessary maintenance. See: http://www.news8austin.com/content/news_8_explores/texas_dams/?ArID=195807&SecID=589

Dams and retention structures fail and this Board does not require expertise to establish that fact. Accordingly, the Applicant should be required to do adequate analyses of the structural integrity of the dam in order to ensure that it will outlast the half-life/hazardous life of the radionuclides that are in the sediment behind the dam. Additionally, the Applicant should be required to specify the kinds and quantities of radioactive particulate that are presently deposited in the Squaw Creek Reservoir and specify the same for the anticipated deposition of radioactive particulate from the proposed Units 3 and 4. Adopting the Staff's approach effectively disregards

the reality of radioactive particulate in the sediment. This ignores the requirements of the Atomic Energy Act, 42 U.S.C. 2133 (d).

The Staff is likewise dismissive of projections that global warming and climate change could be severe enough to lead to a dewatering of the SCR. However, water issues have become acute for operating nuclear plants even recently. Nuclear plants in drought prone areas are vulnerable to diminished water flows that jeopardize operations. See: http://www.wral.com/news/state/story/2343605/?print_friendly=1

And a 2007 study published in *Science* projected a possible permanent drought by 2050 throughout the southwest portion of the United States. Richard Seager et.al., "Model Projections of an Imminent Transition to a More Arid Climate in Southwestern North America," *Science* 316 (5828) (2007): 1181-1184. Available at: http://www.sciencemag.org/cgi/content/short/316/5828/1181. Accordingly, assumptions about future availability of water sufficient to maintain the sediment in place and prevent air transport of radioactive particulates should be examined in the light of projections of protracted drought.

The Staff does not contest the Petitioners' assertion that allowable tritium levels in the Squaw Creek Reservoir could be exceeded if all four units at Comanche Peak operate. This statement is taken directly from the Applicant's FSAR as noted by the Staff. (Staff Staff Answer, p.30) The Staff contests this point because it contends that since there is no challenge to the tritium monitoring system the contention is deficient. However, the Staff's Answer misses the point; the point is not about the monitoring system, it is about excessive tritium levels. The Applicant admits that, with all four reactors operating, tritium levels in the Squaw Creek Reservoir could be exceeded. The monitoring program, no matter how effective, will not reduce

the level of tritium discharged into the reservoir. The Petitioners contend that it is the volume of tritium discharged into the SCR that should be carefully analyzed in the environmental report. The Petitioners appreciate that a monitoring system will be in place. However, monitoring systems are not a substitute for determining means by which to prevent excessive amounts of tritium in the reservoir when all four units are operating. Additionally, the excessive tritium levels should trigger more analysis of public health consequences that could result.

The Staff also contests the Petitioners' claim that the Applicant has made an unreasonable assumption that there will always be sufficient inflow to the reservoir to dilute tritium levels to comply with regulatory limits. (Staff Answer, p. 31) Petitioners' reply to this argument incorporates the discussion above concerning global warming and climate change and the projected effects on water availability. At the very least, the Applicant should be required to analyze the contingency that sufficient inflow will be unavailable for dilution purposes and plan for such a contingency.

Contention Nine

The Staff takes issue with the contention that its LADTAP II is obsolete and systematically underestimates radioactive doses. Dr. Makhijani's reply to these assertions is attached hereto. Dr. Makhijani's analysis of the LADTAP II model establishes that it is an unreliable means to measure radiation exposures. His analysis is applicable to Comanche Peak Units 3 and 4 because LADTAP II is obsolete, utilizes improper conversion factors and systematically understates doses, especially for children. The fact that the LADTAP XL was originally developed for the Savannah River facility does not exclude its applicability to other

nuclear facilities. Exposures must be accurately estimated and the LADTAP XL model is much more precise and reliable than its predecessor, LADTAP II. Dr. Makhijani references, *inter alia*, NRC documents that support his findings, some of which are attached. This contention is adequately supported by expert analysis and should be admitted. The failure to accurately estimate radiation doses is a relevant factor for this adjudication and excluding it is a failure to consider relevant factors and/or is an error of judgment. Ohio River Valley Environmental Coalition,Inc.v. Kempthorne, 473 F.3d 94,102.

Contention Eleven

Petitioners incorporate by reference their reply to Staff 's Answer to Contention Eight, above.

CONCLUSION

For the above reasons the Petitioners urge admission of their contentions herein and that hearings be convened to adjudicate the contentions.

Respectfully submitted,

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