

August 8, 2011

APPLICANT: LUMINANT GENERATION COMPANY, LLC.

FACILITY: UNITED STATES - ADVANCED PRESSURIZED WATER REACTOR DESIGN
CERTIFICATION REVIEW

SUBJECT: SUMMARY OF THE JUNE 9, 2011, PUBLIC MEETING WITH LUMINANT
GENERATION COMPANY, LLC. TO RESOLVE OPEN ITEMS IDENTIFIED
DURING THE REVIEW OF THE FINAL SAFETY ANALYSIS REPORT OF
CHAPTER 2, SECTION 2.4, AND TO IDENTIFY ADDITIONAL INFORMATION
THAT THE APPLICANT NEEDS TO SUPPLEMENT ITS APPLICATION AS
PART OF THE COMANCHE PEAK NUCLEAR POWER PLANT COMBINED
LICENSE APPLICATION.

On June 09, 2011, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and Luminant Generation Company, LLC. (Luminant) to resolve open items for Section 2.4 identified during the review of the final safety analysis report and to identify additional information that Luminant needs to provide in order to supplement its application. The meeting was noticed on May 18, 2011, and was documented in the Agencywide Documents Access and Management System (ADAMS) under accession number ML111370706. The NRC staff had requested this meeting to discuss Luminant's plan for resolving the open items provided in Enclosure 2. This public meeting was conducted during the NRC staff's hydrology audit dated June 7 - 9, 2011. These actions were necessary for the NRC staff to complete its review and to reach a licensing or regulatory decision. Also, the NRC staff conferred with Luminant to establish an understanding of the area where the NRC staff had identified potential concerns in order to enable the NRC staff to issue clear Requests for Additional Information (RAIs) and for Luminant to provide high quality and supplemental responses to the NRC staff's RAI. A list of attendees is provided as Enclosure 1.

The following is a summary of observations and potential issues that the NRC staff communicated to Luminant during the meeting. The identified potential concerns or issues will be appropriately communicated in the form of NRC supplemental RAIs to ensure the appropriate design and licensing bases information is on the docket to support the technical bases for appropriate regulatory findings for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application. The discussions were open and productive, and led to the resolution of certain open items and an agreement regarding action items that will contribute to resolving the remaining open items. The NRC staff and Luminant agreed to revise the calculation for the surface grade plan by the end of June 2011.

Members of the public were not in attendance during the meeting. Please direct any inquiries to me at 301-415-0493, or via email at Tarun.Roy@nrc.gov.

/RA/

Tarun Roy, Project Manager
US-APWR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-034 and 52-035

Enclosures:

1. List of Attendees
2. Open Items and RAIs

cc w/Enclosures: See next page

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NRC-001

OFFICE	DNRL/NMIP:PM	DNRL/NMIP: LA	DNRL/NMIP: PM	DNRL/NMIP: PM (signed)
NAME:	Troy (SMonarque for)	CSmith	SMonarque	TRoy SMonarque for)
DATE	08/05/2011	08/08/2011	08/05/2011	08/08/2011

OFFICIAL RECORD COPY

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(Revised 04/06/2011)

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List of Attendees

US-APWR Hydrology Safety Review for Comanche Peak Nuclear Plant, Unit 3 and 4
Held on Thursday, June 9, 2011

<u>Name</u>	<u>Agency/Affiliation</u>
Robert Schoenewe	Enercon
Stacy Burgess	Enercon
Don Woodlan	Luminant Generation Company, LLC.
Deborah Jenez	Mitsubishi Nuclear Energy Systems
Frostie White	Mitsubishi Nuclear Energy Systems
Joseph Tapia	Mitsubishi Nuclear Energy Systems
David Watson	Oak Ridge National Lab.
Kenneth See	U.S. Nuclear Regulatory Commission
Mark McBride	U.S. Nuclear Regulatory Commission
Nebiyu Tiruneh	U.S. Nuclear Regulatory Commission
Tarun Roy	U.S. Nuclear Regulatory Commission

Open Items and RAIs
Phase 2 - Safety Evaluation Report with Open Items
Comanche Peak Hydrologic Safety Site Audit, June 2011

Open Item - Summary	RAIs / Questions
<p>OI 2.4.2-1 (Flooding) - This open item is related to determination of onsite flooding potential from local intense precipitation, which the Staff had previously discussed with the Applicant. Staff performed an independent analysis using the design grading plan provided in the FSAR, and the results indicate there is a potential for flooding above the critical flooding elevation. The Applicant needs to describe its onsite drainage plan in enough detail to accurately model the effects of local intense precipitation. The Applicant also needs to provide an analysis of the effects of local intense precipitation to demonstrate that SSCs important to safety will not be impacted as a result of onsite flooding. The immediate need is for a high-quality copy (which could be a paper print) of the site drainage plan. This is needed, in particular, for Staff's review of the controlling elevation for drainage near the nuclear island.</p>	None
<p>OI 2.4.10-1 (Flood Protection) - Flooding protection requirements depend on results of the flooding analysis. Staff's review of the flooding analysis of sections 2.4.2 and 2.4.3, which is based on Staff's independent analyses, indicates that flood levels may exceed the plant grade elevation. The potential for flooding and implementation of protective measures for SSCs important to safety need to be demonstrated by the Applicant.</p>	None
<p>OI 2.4.12-1 (Groundwater) - The Applicant needs to present a conceptual model of site hydrogeology that is scientifically sound and based on engineering design specifications, is consistent with the available data, and provides a conservative basis for assessing groundwater levels and potential transport pathways.</p>	3664 / 2.4.12-01 4314 / 2.4.12-08
<p>OI 2.4.12-2 (Groundwater) - The Applicant needs to address outstanding questions related to conservatism and documentation of the selection of an effective porosity and other aquifer parameters used for calculations related to the horizontal transport pathway to the SCR, to the vertical transport pathway through the Glen Rose limestone to the Twin Mountains aquifer, and to calculations of groundwater elevation.</p>	3672 / 2.4.12-06 4314 / 2.4.12-14 4314 / 2.4.12-15 4314 / 2.4.12-16

<p>OI 2.4.12-3 (Groundwater) - Staff has identified the need for the Applicant to provide additional information on current and anticipated future groundwater levels to: 1) complete a conservative quantitative analysis that demonstrates that the estimated maximum operational groundwater level complies with the US-APWR Design Certification Document and 2) better identify, understand, and quantify the impact of site modifications on site hydrologic processes such as infiltration, surface runoff, groundwater levels, hydraulic gradients, permeability, and alternative flow paths needed to complete the accidental release evaluation in Section 2.4.13.</p>	<p>3672 / 2.4.12-02 3672 / 2.4.12-03 3672 / 2.4.12-04 4314 / 2.4.12-09 4314 / 2.4.12-10 4314 / 2.4.12-11 4314 / 2.4.12-12</p>
<p>OI 2.4.12-4 (Groundwater) - Staff's review still identifies omissions of information about assumptions, as well as apparent arithmetic errors, in the travel time calculations. One such example is the apparent error in the calculation of travel times in Table 2.4.211, in which the Applicant uses the less conservative Pathway 1 travel time while assuming that it is the most conservative. The Applicant needs to correct apparent errors in the travel time calculations summarized in FSAR Table 2.4.211 to ensure that all of its assumptions and calculations are documented, and to ensure that the most conservative assumptions regarding travel times are used in subsequent calculations.</p>	<p>3672 / 2.4.12-05 4314 / 2.4.12-13 4314 / 2.4.12-16</p>
<p>OI 2.4.12-5 (Groundwater) - The Applicant has not conducted a site-specific evaluation of the vertical transport pathway through the Glen Rose to potential groundwater receptors in the Twin Mountains Formation. Site-specific porosity measurements, distances from the tanks to the Twin Mountains Formation, and tank source terms are different for Units 3 and 4 compared to those used in the Units 1 and 2 evaluation. The Applicant needs to conduct site-specific conceptualizations and calculations of the vertical transport pathway through the Glen Rose Formation to the Twin Mountains Formation for Units 3 and 4.</p>	<p>None</p>
<p>OI 2.4.12-6 (Groundwater) - The Applicant needs to conduct a conservative quantitative analysis using site-specific engineering design specifications that demonstrates that the estimated maximum operational groundwater level complies with the US-APWR Design Certification Document under all potential site hydrogeologic conditions, including earthquakes. [Note - This OI is essentially the same as part of OI 2.4.12-3.]</p>	<p>3672 / 2.4.12-07 4314 / 2.4.12-09 4314 / 2.4.12-17</p>
<p>OI 2.4.13-1 (Accidental Releases) - The Applicant has made many generalized, simplistic, and unsupported assumptions in the analysis of the vertical migration pathway to the Twin Mountains Formation, and regarding the horizontal flow path to the SCR and the subsequent transport and dilution that would occur in the SCR. The Applicant's calculations, rationale, and assumptions are very difficult to follow. The Applicant needs to present an analysis that considers multiple conceptual models for transport and exposure that are based on site-specific conditions.</p>	<p>3673 / 2.4.13-01 3673 / 2.4.13-03 3673 / 2.4.13-04 4315 / 2.4.13-05 4315 / 2.4.13-06</p>

<p>OI 2.4.13-2 (Accidental Releases) - Staff had requested the Applicant perform an analysis to determine the impact of vertical migration of an accidental effluent release from Units 3 and 4 to the nearest offsite groundwater receptor within the Twin Mountains Formation. This analysis needs to be based on the improved conceptualization described above, and to use conservative estimates or measurements of groundwater levels, hydraulic conductivity, effective porosity, flow directions and other hydraulic parameters. The conclusions in the Applicants' existing responses regarding this pathway still rely on the evaluations conducted for Units 1 and 2. Staff has reason to believe that this approach does not provide a conservative analysis for Units 3 and 4, and Staff has determined that the information provided by the Applicant is inadequate to conduct confirmatory analysis. Staff conducted independent calculations to further assess the viability of the vertical pathway to the Twin Mountains Formation by modeling an accidental release from the Boric Acid Tank, using volumes and concentrations of selected radioisotopes (H-3, Cs-134, Cs-137, Co-60 and Sr-90) provided by the Applicant. Contaminant decay, advection and dispersion were modeled, and the results indicate that the effluent concentration limits could be exceeded for all isotopes considered. Although additional transport of radioisotopes would be required to reach an offsite groundwater receptor, this independent calculation indicates that vertical transport to the Twin Mountains formation represents a viable pathway that the Applicant needs to consider more fully in its analysis.</p>	<p>3673 / 2.4.13-04 4315 / 2.4.13-06</p>
<p>OI 2.4.13-3 (Accidental Releases) - The basis for the Applicant's estimates of the rate of contaminant delivery to SCR is neither adequately explained nor justified. Additionally, the Staff found arithmetic errors in the Applicant's calculations of the groundwater travel time from the Unit 4 tank release site to SCR that would significantly reduce the calculated travel time for pathway 2. The Applicant, however, used the less conservative groundwater travel time calculated for pathway 1 for all of its calculations. Staff's independent calculations indicate that, if site-specific modeling is conducted with conservative input parameters, there is potential for ECLs to be exceeded for the lateral transport scenario through the fill to the SCR with subsequent transport in surface water to the Roto-cone. The Applicant needs to conduct a more rigorous analysis of the lateral transport scenario that is based on site-specific conditions that include alternative, more rapid transport pathways (e.g., Pathway 2, or to the storm water storage basins, or through subsurface drains), and that uses bounding or conservative assumptions and input parameters for groundwater and surface water transport and attenuation.</p>	<p>4315 / 2.4.13-07</p>

Notes:

1. Open Items are general topics that require additional data or analysis before the review of the FSAR (as presented in the SER) can be completed.
2. The Applicant has responded to all RAI questions shown, but the questions have not been completely resolved. Previous questions that have been resolved are not shown.