

June 1, 2011

**COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 3 AND 4
COMBINED LICENSE APPLICATION
CHAPTER 2 - HYDROLOGY SAFETY REVIEW
PHASE 2 - SAFETY EVALUATION REPORT WITH OPEN ITEMS
AUDIT PLAN**

June 7 - 9, 2011

**COMANCHE PEAK UNITS 3 AND 4 COMBINED LICENSE APPLICATION
DOCKET NOS. 52-034 AND 52-035**

Location: Enercon Services, Inc.
12100 Ford Road, Suite 200
Dallas, TX 75234
Phone: (972) 484-3854

Purpose:

The purpose of this audit is to resolve a number of open items identified during the review of the final safety analysis report (FSAR) and to identify additional information that the applicant needs to supplement its application. These actions are necessary for the U.S. Nuclear Regulatory Commission (NRC) staff to complete its review and to reach a licensing or regulatory decision. Also, the NRC staff will confer with the applicant to establish an understanding of the area where the NRC staff has identified potential concerns in order to enable the NRC staff to issue clear Requests for Additional Information (RAIs) and for the applicant to provide high quality and timely responses. The enclosure contains the list of open items which will be discussed during the audit.

Background:

The NRC staff has reviewed Luminant Generation Company, LLC's (Luminant's) responses to the NRC staff's RAIs and has identified a number of open items that need to be resolved. These open items resulted from the following:

- Preliminary RAIs issued as part of the acceptance review.
- RAIs issued during Phases 1 and 2.
- Supplemental RAIs issued as part of Phase 1.

Luminant has been requested to demonstrate that applicable regulatory requirements are met by addressing these open items through the following activities, as appropriate:

- Revision of the FSAR.
- Provision of the required technical analyses, data and methods.
- Explanation of the technical basis and justifications for assumptions.
- Overall demonstration of a clear understanding of the interaction of the proposed plant with the hydrosphere.

The NRC staff has scheduled a public meeting for Thursday June 9, 2011. The meeting notice, dated May 18, 2011, has been documented in the Agencywide Document Access and Management System (ADAMS) and can be found under accession number ML111370706. In order for the open items to be resolved efficiently, it has been determined that, during this public meeting, the NRC staff and Luminant's subject matter experts will discuss the details of the open items, and proposed actions.

Information and Other Material Necessary for Audit:

Luminant is requested to provide the following information and logistical support for the duration of the audit and to address the open items identified in the enclosure:

- All documents, such as calculation reports, sources of data and methods, and computer codes that are relevant for the discussion.
- Audiovisual equipment that might be necessary for the discussion, including a computer display projector.
- Subject matter experts responsible for the technical analysis and FSAR write-up are requested to be available for the duration of the audit.
- Information regarding the controlling contour (Section 2.4.2).
- Information regarding the location of site drains.

Audit Team:

The NRC staff attending the audit will include the NRC technical reviewers and contractors, in addition to the project management team. The following personnel will participate in the audit:

Hossein Hamzehee, NRC
Richard Raione, NRC
Tarun Roy, NRC
Nebiyu Tiruneh, NRC
Mark McBride, NRC
Kenneth See, NRC
David Watson, Oak Ridge National Lab

Logistics:

The NRC staff expects the audit to last for three days. The audit is scheduled to start on Tuesday June 7, 2011, and end on June 9, 2011. The audit will occur at Enercon Services, Inc., located at 12100 Ford Road, Suite 200, Dallas, Texas. Enercon's phone number is (972) 484-3854.

The NRC staff will conduct an entrance meeting scheduled for Tuesday, June 7, 2011, starting at 8:00 a.m. The audit will conclude with an exit briefing scheduled for Thursday, June 9, 2011.

Special Requests:

The NRC technical reviewers responsible for the groundwater and radionuclide sections has requested to visit the Comanche Peak Nuclear Power Plant site in Glen Rose, Texas. The NRC staff has scheduled this site tour for Monday June 6, 2011, at 3:30 p.m. (CST). Mark McBride, Ken See, and Richard Raione will be attending this site tour. Participants will meet in the parking lot located in front of the Comanche Peak Nuclear Power Plant Engineering Building.

Deliverables:

An audit report will be generated after the completion of the audit. The audit outcome will be used to identify any additional information which may need to be submitted for making regulatory decisions. The audit will assist the NRC staff in the preparation and issuance of further RAIs for the licensing review of the Comanche Peak Nuclear Power Plant Combined License Application.

Docket Nos. 52-034 and 52-035

Enclosure:

As stated

cc w/ encl: See next page

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Open Items and RAIs
Phase 2 - Safety Evaluation Report with Open Items
Comanche Peak Hydrologic Safety Site Audit, June 7 - 9, 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 NRC staff had previously discussed with the applicant. 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 the structure, system and components (SSCs) which are important to the safety, will not be impacted as a result of onsite flooding.</p>	None
<p>OI 2.4.10-1 (Flood Protection) - Flooding protection requirements depend on results of the flooding analysis. The NRC staff's review of the flooding analysis of Section 2.4.2 and Section 2.4.3, which is based on the NRC staff's independent analyses, indicates that flood levels may exceed the plant grade elevation. The potential for flooding and implementation of protective measures for the SSCs which are important to the safety, needs 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 Squaw Creek Reservoir (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

Enclosure

<p>OI 2.4.12-3 (Groundwater) - The NRC 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 United States - Advanced Pressurized Water Reactor (US-APWR) Design Certification Document (DCD) and 2) better identify, understand, and quantify the impact of site modifications regarding 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) - The NRC 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 the 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 Formation to potential groundwater receptors in the Twin Mountains Formation. Site-specific porosity measurements, distances from the tanks to the Twin Mountains Formation, and the tank source terms are different for Units 3 and 4 compared to those used in the evaluation for Units 1 and 2. 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 DCD 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) - The NRC staff had requested that the applicant perform an analysis to determine the impact of the 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. The NRC staff has reason to believe that this approach does not provide a conservative analysis for Units 3 and 4, and the NRC staff has determined that the information provided by the applicant is inadequate to conduct a confirmatory analysis. The NRC 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 the SCR is neither adequately explained nor justified. Additionally, the NRC staff found arithmetic errors in the applicant's calculations of the groundwater travel time from the Unit 4 tank release site to the 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. The NRC staff's independent calculations indicate that, if site-specific modeling is conducted with conservative input parameters, there is potential for effluent concentration limits to be exceeded for the lateral transport scenario through the fill to the SCR with subsequent transport in the 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>

Note: Open Items are general topics that require additional data or analysis before the review of the FSAR (as presented in the Safety Evaluation Report) can be completed.

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(Revised 04/06/2011)

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