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CP-201000377
Log # TXNB-10020

Ref. # 10 CFR 52

March 9, 2010

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555
ATTN: David B. Matthews, Director
Division of New Reactor Licensing

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 3 AND 4
DOCKET NUMBERS 52-034 AND 52-035
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION NO. 4208

Dear Sir:

Luminant Generation Company LLC (Luminant) submits herein the response to Request for Additional Information (RAI) No. 4208 for the Combined License Application for Comanche Peak Nuclear Power Plant Units 3 and 4. RAI No. 4208 involves respiratory protection program requirements associated with non-radiological hazards and the plant source term.

Should you have any questions regarding these responses, please contact Don Woodlan (254-897-6887, Donald.Woodlan@luminant.com) or me.

There are no commitments in this letter.

I state under penalty of perjury that the foregoing is true and correct.

Executed on March 9, 2010.

Sincerely,

Luminant Generation Company LLC

Donald R. Woodlan for

Rafael Flores

Attachment: Response to Request for Additional Information No. 4208 (CP RAI #136)

D690

NRO

Electronic distribution w/attachment

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RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Comanche Peak, Units 3 and 4

Luminant Generation Company LLC

Docket Nos. 52-034 and 52-035

RAI NO.: 4208 (CP RAI #136)

SRP SECTION: 12.05 - Operational Radiation Protection Program

QUESTIONS for Health Physics Branch (CHPB)

DATE OF RAI ISSUE: 2/2/2010

QUESTION NO.: 12.05-5

10 CFR 20 Subpart H, Regulatory Guide 8.15

This is a supplemental Question to RAI No. 3319 (Comanche Peak RAI #100), Question 12.05-1 issued on September 30, 2009.

Regulatory Guide (RG) 8.15, 'Acceptable Programs for Respiratory Protection,' Revision 1 (October 1999) provides guidance to licensees regarding methods acceptable to the NRC staff for demonstrating compliance with the respiratory protection requirements of 10 CFR 20 Subpart H "Respiratory Protection and Controls to Restrict Internal Exposure in Restricted Areas". RG 8.15 notes that in 1988, the NRC and the Occupational Safety and Health Administration (OSHA) signed a Memorandum of Understanding (MOU) to clarify jurisdictional responsibilities at NRC-licensed facilities. The MOU makes it clear that if an NRC licensee is using respiratory protection to protect workers against non-radiological hazards, the OSHA requirements apply.

The COL applicant's response to the NRC staff's RAI, dated November 11, 2009, noted that COLA FSAR Section 12.5, "Operational Radiation Protection Program" incorporates by reference NEI 07-03, "Generic FSAR Template Guidance for Radiation Protection Program Description". Subsection 3.5.9 of the NRC Safety Evaluation confirms that the approved version of NEI 07-03 is in compliance with RG 8.15 and 10 CFR Part 20. While this statement is true, section 12.5.4.9 of NEI 07-03 states that the respiratory protection program will comply with 10 CFR 20 Subpart H and will be consistent with the guidance in RG 8.15, however, as stated in the original question, NEI 07-03A only addresses the radiological respiratory protection program, as described in RG 8.15. Following the guidance of RG 8.15 is insufficient to ensure compliance with the regulatory requirements for non-radiological hazards. OSHA regulations are not listed as a reference for the development of NEI 07-03A, or as part of the Safety Evaluation for the template.

The Comanche Peak Units 3 and 4 Combined License Application (COLA) Revision 1, Part 5 Emergency Plan Section J.6.a states that self-contained breathing apparatuses (SCBAs) are available for use in areas that are deficient in oxygen or when fighting fires. In COLA Revision 1, FSAR Subsection 9.5.1.6.1.8, the fire brigade usage of SCBAs is in accordance with the relevant National Fire

Protection Association (NFPA) guidance. The US-APWR FSAR Tier 2 Revision 1 Table 9.5.1-2 notes that fire brigade members are to be trained in accordance with NFPA 1500, but it does not discuss other non-fire brigade use of respiratory protection equipment, such as would be needed for fume, dust, oxygen deficient respiratory protection. In addition, neither US-APWR FSAR Tier 2 Revision 1 Chapter 1, nor chapter 9 reference OSHA respiratory protection regulations.

The applicant further notes that the respiratory protection program described in COLA FSAR Section 12.5 is focused primarily on the use of respiratory protection equipment in areas containing airborne radioactivity, although, Comanche Peak Units 3 and 4 will have only one plant-specific respiratory protection program to cover both radiological and non-radiological respirator usage. While the applicant does note that the radiation protection program for CPNPP Units 3 and 4, will be based in part on the procedures in use at CPNPP 1 and 2, since this information is not available for review, the NRC staff is unable to ascertain which aspects of the existing programs at CPNPP 1 & 2 address this concern.

COLA FSAR Section 12.5 states that only respiratory protection equipment that is tested and certified by the National Institute for Occupational - Safety and Health/Mine Safety and Health Administration (NIOSH/MSHA) is used, unless otherwise authorized by the NRC (see NEI07-03A Subsection 12.5.3.3). COLA FSAR Section 12.5 states that if NIOSH/MSHA-certified equipment is not used, the equipment will be in compliance with 10 CFR 20.1703(b) and 20.1705. The applicant's use of these statements implies that some equipment certified for just radiological hazards under 10 CFR 20.1703(b), may be used in the radiologically controlled area, for radiological or non-radiological conditions, without recognition that the NRC certification extends only to the use of the devices for protection from radiological hazards.

For the reasons noted above, the applicant is requested to revise and update the FSAR Section 12.5 to describe those program elements that will be used to satisfy the respiratory protection program requirements associated with non-radiological hazards (i.e. Toxic gases, smoke or immediate danger to life and health (IDLH) atmospheres) that may be encountered in the radiological controlled areas of the plant.

ANSWER:

As described in the response to RAI No. 3319 (CP RAI #100) Question 12.05-1 in Luminant letter TXNB-09064 dated November 11, 2009 (ML093200501), Comanche Peak Units 3 and 4 have one plant-specific respiratory protection program to cover both radiological and non-radiological usage of respiratory protection equipment. At this time, the only details regarding the licensing basis of this program are provided in FSAR Subsection 12.5.4.9, which does not specifically reference the OSHA respiratory protection regulations. FSAR Subsection 12.5.4.9 has been revised to clarify the differences between the requirements for respiratory protection against radiological and non-radiological hazards and to state that the elements of the respiratory program requirements associated radiological and non radiological hazards are derived from RG 8.15.

FSAR Subsection 13.2.1.1.3 currently includes a requirement for initial and annual refresher training for protection from chemical hazards and confined space entry in accordance with 29 CFR 1910.

Impact on R-COLA

See attached marked-up FSAR Revision 1 pages 12.5-3 and 12.5-4.

Impact on S-COLA

None.

Impact on DCD

None.

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Add the following information after the third paragraph in Subsection 12.5.4.4 of NEI 07-03A.

The locations and radiological controls of the radiation zones on plant layout drawings are located in DCD Subsection 12.3.1.2. Administrative controls for restricting access to Very High Radiation Areas are incorporated into plant procedures which require approval provided by the Plant Manager's (or designee) approval for each entry. Entry will be controlled through the Radiation Work Permit (RWP) process. Physical Access controls for Very High Radiation Areas is controlled are provided by physical barriers such as lockable the gates or doors which prevent unauthorized access and entry to these areas is allowed only through the issuance of a Radiation Work Permit. It's not necessary to enter these areas periodically. DCD Subsection 12.3.1.2 includes detailed drawings of the very high radiation areas and indicates the physical access controls. Table 12.5-201 summarizes the plant areas with the potential to become very high radiation areas. Radiation monitor locations for each area are indicated in DCD Subsection 12.3.4.

RCOL2_12.0
3-12.04-2
RCOL2_12.0
3-12.04-2

Add the following information after the sixth paragraph in Subsection 12.5.4.4 of NEI 07-03A.

The gates provide access control of the fuel transfer tube inspection (Very High Radiation Area) and the area near the seismic gap below the transfer tube. Access control for these areas is controlled by the gates and entry to these areas is allowed only the issuance of a Radiation Work Permit.

Add the following information at the end of Subsection 12.5.4.8 of NEI 07-03A.

In addition, NEI Template 08-08A Revision 0, "Generic FSAR Template Guidance for Life-Cycle Minimization of Contamination" is fully adopted. And also, the guidance provided in NEI 08-08A will be used at CPNPP Units 3 and 4 to minimize contamination during construction, operation and decommissioning. This will include the use of photographs and video records during construction to facilitate updating the conceptual site model for groundwater movement and aid in revising the groundwater monitoring plan post-construction. Final layout drawings, photographs, global positioning survey information and video records will be used in assessing the proper location for groundwater monitoring wells, foundations, pipes, conduits and other below grade structures.

RCOL2_12.0
3-12.04-1
RCOL2_12.0
1-4
RCOL2_12.0
3-12.04-7
CTS-01107

Replace the first paragraph of Subsection 12.5.4.9 of NEI 07-03A with the following.

RCOL2_12.0
5-5

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Respiratory protection procedures assure compliance with 10 CFR Part 20, Subpart H, and are consistent with the guidance in Regulatory Guide 8.15 to assure protection against radiological hazards and the relevant portions of 29 CFR 1910.134 to assure protection against non-radiological hazards, such as fumes, dust, smoke, or oxygen deficiency.

RCOL2_12.0
5-5

Replace the first and second paragraph in Subsection 12.5.4.12 of NEI 07-03A with the following.

The radiation protection program and procedures are established, implemented, maintained and reviewed consistent with the 10 CFR 20.1101 and the quality assurance program referenced in Chapter 17.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Comanche Peak, Units 3 and 4

Luminant Generation Company LLC

Docket Nos. 52-034 and 52-035

RAI NO.: 4208 (CP RAI #136)

SRP SECTION: 12.05 - Operational Radiation Protection Program

QUESTIONS for Health Physics Branch (CHPB)

DATE OF RAI ISSUE: 2/2/2010

QUESTION NO.: 12.05-6

In its response, dated November 11, 2009, to the NRC staff's RAI 3319 (RAI 100), Question 12.05-2, the applicant referenced the Design Certification (DC) applicant response to US-APWR Tier 2 DCD RAI 147-1850, dated February 6, 2009, and RAI 428-2910, Question 12.03-12.04-3, dated September 30, 2009. The DC applicant revised section 12.3 to include some design specifications for selection of materials employed for the purpose of implementing the as low as reasonably achievable (ALARA) concept during construction. However, the DC applicant's response did not describe the program elements, that when implemented, will provide an on going understanding of the plant source term, including knowledge of input mechanisms and the process to reduce unnecessary contributions to the plant source term from components.

Since the on going effort to reduce the radiation source term in the plant is an essential element of meeting the requirements of 10 CFR 20.1101(b), the COL applicant is requested to revise and update the combined license (COL) application final safety analysis report (CPNPP FSAR) section 12.5 to describe those program elements related to establishing an understanding of input mechanisms to the plant source term and the program elements that will be used to reduce unnecessary contributions to the plant source term from components. Alternately, the applicant may describe the use of a different approach.

ANSWER:

The response to RAI No. 3319 (CP RAI #100) Question 12.05-2 in Luminant letter TXNB-09064 dated November 11, 2009 (ML093200501) cited the revision of DCD Tier 2 Section 12.3 to include a discussion of the US-APWR cobalt reduction strategy. However, the reviewer felt that this response did not adequately resolve the concern about the overall source term reduction strategy for the US-APWR since cobalt reduction is only one component of an effective source term reduction strategy.

The plant source term is described by the level of radiation, or radioactive material, given off or contained in plant systems, structures, or components that results in occupational radiation exposure from routine operation of the plant, including anticipated operational occurrences. The source term

includes, but is not limited to, activated components in the primary coolant, corrosion and wear products activated in the reactor and distributed in plant systems, or sealed sources maintained to support plant operations.

DCD Revision 2 Tier 2 Subsection 12.1.2.1 describes the general US-APWR design consideration for maintaining personnel exposures ALARA, which correspond to specific methods of reducing the US-APWR plant source term. Several of the bulleted items in this subsection indicate the applicant's understanding of the plant source-term and need for a source-term control strategy to reduce the source term as much as is practical. Specifically, the Subsection points out the existence of

- provisions for draining, flushing, and decontaminating equipment and piping,
- design provisions to minimize crud build-up and adequate ability to flush crud traps to reduce exposures, and
- countermeasures of design and water chemistry control such as the use of low cobalt materials, low corrosive materials, a Zircaloy fuel grid, modified pH control, zinc injection, and increased CVCS (Chemical Volume Control System) purification rate during shutdown operations.

DCD Tier 2 Subsection 12.1.2.2.3 describes equipment design considerations utilized to limit component radiation levels, including informed materials selection and avoiding stellite-containing materials, the use of the primary system cleanup and filtration to remove corrosion products, and the use of seamless piping to reduce accumulation of radioactive materials in pipes.

DCD Tier 2 Subsection 12.3.1.1.1 Item (E) describes the selection of materials for use in the nuclear steam supply system, including limiting use of stellite and nickel-based alloys in the reactor coolant system. DCD Tier 2 Table 12.3-7 provides a tabular summary of the equipment specification limits for cobalt impurities that are related to the US-APWR cobalt reduction strategy.

The CPNPP Units 3 and 4 FSAR incorporates the above subsections of the DCD by reference. Additionally, FSAR Subsection 12.1.1.3.2 commits the CPNPP Units 3 and 4 administrative programs and procedures to comply with RG 8.8, which provides several strategies for reducing personnel exposure, including some options that would limit the overall source term, such as crud control and equipment isolation and decontamination.

However, as the reviewer points out, FSAR Section 12.5 does not specifically provide a summary of these program elements in one place. Therefore, FSAR Subsection 12.5.4.2 has been revised to specifically address the source term reduction strategy.

Impact on R-COLA

See attached marked-up FSAR Revision 1 page 12.5-2.

Impact on S-COLA

None.

Impact on DCD

None.

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qualified vendor is allowed. Calibration is performed using written procedures and radioactive sources traceable to the National Institute of Standards (NIST) or using transfer instruments, such as electrometers, which have been calibrated using NIST traceable sources.

RCOL2_12.0
5-4

Add the following information after the paragraph in the discussion on Radwaste Handling in Subsection 12.5.4.2 of NEI 07-03A.

CPNPP Units 3 and 4 have a plan to store temporarily radioactive wastes/materials in Interim Radwaste Storage/Staging Building outside the plant structures. Entry into the radiologically controlled areas of this building is allowed only through the issuance of a Radiation Work Permit. Non-radiologically controlled areas allow for general access.

Add the following information after the last paragraph in the discussion on Calibration in Subsection 12.5.4.2 of NEI 07-03A.

RCOL2_12.0
5-6

Source Term Reduction Strategy

The plant source term is described by the level of radiation, or radioactive material, given off or contained in plant systems, structures, or components that results in occupational radiation exposure from routine operation of the plant, including anticipated operational occurrences. The source term includes, but is not limited to, activated components in the primary coolant, corrosion and wear products activated in the reactor and distributed in plant systems, or sealed sources maintained to support plant operations. The reduction and control of the plant radiation source term is an essential element of meeting the requirements of 10 CFR 20.1101(b).

FSAR Subsection 12.1.1.3.2 commits the administrative programs and procedures to comply with RG 8.8, which provides several strategies for reducing personnel exposure, including some options that would limit the overall source term, such as crud control and equipment isolation and decontamination. Additionally, the following DCD Subsections, which describe design considerations for the reduction of the overall source term, are already incorporated into the FSAR by reference:

- Subsection 12.1.2.1
- Subsection 12.1.2.2.3
- Subsection 12.3.1.1.1.1 Item (E)
- Table 12.3-7