

PMComanchePeakPEm Resource

From: Woodlan, Don [Donald.Woodlan@luminant.com]
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Subject: 2011-10-06 Woodlan, Draft Presentations for 10-20-2011 ACRS
Attachments: 2011-10-06 (clean) Draft of 2011-10-20 ACRS_RITS.pptx; 2011-10-06 (clean) R-COLA Chapter 11 (NRC draft).pptx; 2011-10-06 ACRS Presentation R-COLA Chapter 12 Draft C (clean).pptx

See attached. These are drafts for your review to ensure that they interface well with the NRC presentations.

Donald R. Woodlan

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**Risk Informed Technical
Specification Methodology**

October 20, 2011



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Agenda

- Introductions and Opening Remarks**
- Background**
- TS Methodology for RMTS and SFCP**



Background – Conservatism in Plant Operation

- ❑ Luminant uses many tools to ensure safe plant operation**
 - Conservative operations decision-making policies
 - Maintenance work schedule – Train Week concept
 - Maintenance Rule a(4)

- ❑ Risk-Informed TS is an additional tool to manage risk**
 - Promotes situational awareness of Equipment OOS
 - Prevents unnecessary plant shutdowns
 - Reduces likelihood for requesting an NOED



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Background - RITS

- ❑ **Adoption of RITS is an option in the US-APWR GTS**
 - **NEI 06-09, Initiative 4b, RMTS / AOTs**
 - **NEI 04-10, Initiative 5b, SFCP**
- ❑ **Luminant requested RITS in COLA Rev 0 (9/19/08)**
- ❑ **US-APWR DCWG meeting with NRC (4/2/09)**
 - **ISG-8: Technical Specifications must be complete at COL**
 - **Introduced Concept of NRC review of RITS methodology**
 - **Risk Metrics?**
- ❑ **Additional meetings with NRC to discuss methodology**
- ❑ **NRC issued an RAI and Luminant is developing a response**



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Background: US-APWR GTS

- ❑ GTS provides framework for RMTS and SFCP
- ❑ Adoption of risk-informed programs is COL item
- ❑ US-APWR Adopts Initiative 4b as an option

US-APWR GTS example (safety injection system)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required train inoperable.	A.1 Restore three trains to OPERABLE status.	72 hours
	<u>OR</u> A.2 Apply the requirements of Specification 5.5.18.	72 hours]
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours



Luminant US-APWR Technical Specifications



- ❑ US-APWR GTS adopts Initiative 5b as an option

Sample of surveillance requirements for Class 1E Gas Turbine Generators (GTGs)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	[7 days OR In accordance with the Surveillance Frequency Control Program]
SR 3.8.1.2	Verify each Class 1E GTG starts from standby condition and achieves: <ul style="list-style-type: none"> a. In ≤ 100 seconds, voltage ≥ 6762 V and frequency ≥ 59.4 Hz and b. Steady state voltage ≥ 6762 V and ≤ 7038 V, and frequency ≥ 59.4 Hz and ≤ 60.6 Hz. 	[31 days OR In accordance with the Surveillance Frequency Control Program]



5.5.18 Configuration Risk Management Program (CRMP)

This program provides controls for Completion Times. The program shall ensure that the assessment of configuration-specific risk to support the extension of Completion Times, and reassessment of configuration changes, and implementation of compensatory measures and actions at the appropriate risk thresholds are performed sufficient to assure the associated Limiting Conditions for Operation are met.

a. When entering into this specification, the following actions shall be taken in accordance with [NEI 06-09 (Revision y), "Risk Managed Technical Specifications (RMTS) Guidelines" and supplemental documentation]."

1. Within the completion time of the referencing specification determine that the plant configuration is acceptable beyond the completion time,

AND

2. Calculate the Risk-Informed Completion Time (RICT),

AND

3. Restore required subsystems or components to operable status within the RICT or 30 days, whichever is less.

OR

Take the ACTIONS required in the referencing specification for the required action and associated completion time not met.

b. The RICT shall be recalculated whenever plant configuration change occurs, in accordance with NEI 06-09.



5.5.18 Configuration Risk Management Program (CRMP) (continued)

- c. This program shall satisfy all the requirements specified in NEI 06-09 including, but not limited to, the following:
 - 1. Station procedure of the CRMP process with specifying the station functional organizations and personnel responsible for each action of CRMP implementation,
 - 2. Training of responsible personnel,
 - 3. PRA model to meet the technical adequacy requirements of NEI 06-09, [and supplementary documentation on PRA development]
 - 4. Appropriate CRM tool.



5.5.19 Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

- a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.
- b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with [NEI 04-10 (Revision z), "Risk-Informed Method for Control of Surveillance Frequencies" and supplemental documentation].
- c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.



RMTS/SFCP TS Methodology Document Overview

- NEI 06-09 and NEI 04-10 are applicable to new plants**
- TS 5.5.18 IBR NEI 06-09 with minor modifications**
- TS 5.5.19 IBR NEI 04-10 with minor modifications**
- CRMP Description**
- SFCP Description**
- PRA Support**
- Risk Metrics**



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NEI 06-09 Modification



2.3.4 PRA Technical Adequacy

Stations electing to implement RMTS shall have a PRA model with the following attributes:

2. The PRA shall be reviewed ~~against to the guidance of Regulatory Guide 1.200 Rev 0 for a PRA which meets~~ Capability Category 2 for the supporting requirements important to RMTS of NRC-endorsed consensus standards on PRA in effect one year prior to initial fuel load. The review will consider and accept that the plant has not yet have operating experience to be included in the PRA and the plan to add this experience at a later date. ~~of the ASME internal events at power PRA standard. Deviations from these capability categories relative to the RMTS program shall be justified and documented.~~



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NEI 06-09 Modification (cont)

10. PRA modeling (i.e., epistemic) uncertainties shall be considered in application of the PRA base model results to the RMTS program. Key sources of uncertainty and key assumptions of the US-APWR DCD PRA documented in US-Advanced Pressurized Water Reactor (APWR) Design Control Document (DCD) Chapter 19, Table 19.1-38 will be reviewed. Uncertainty associated with the lack of operating experience and lack of reliability data on innovative designs should be considered. This uncertainty assessment is intended to be performed on the PRA base model prior to implementation of the RMTS program and provide insights such that applicable compensatory risk management actions may be developed to limit the potential impact of these uncertainties. This evaluation should include an LCO specific assessment of key assumptions that address key uncertainties in modeling of the specific out of service SSCs. For LCOs in which it is determined that identified uncertainties could significantly impact the calculated RICT, sensitivity studies should be performed for their potential impact on the RICT calculations. (Reference EPRI-1009652 [6] for one method to determine key uncertainties.) Insights obtained from these sensitivity studies should be used to develop appropriate compensatory risk management actions. Such activities may include highlighting risk significant operator actions, confirming availability and operability of important standby equipment, and assessing the presence of severe or unusual environmental conditions. The intent of these risk management actions is to (in a qualitative manner) minimize the potential adverse impact of the uncertainties. This assessment is only intended to be performed prior to initial implementation of the RMTS program and after a substantial update of the PRA.



NEI 06-09 Modification (cont)

3.3.4 Uncertainty Consideration in a RMTS Program

In support of LCO specific risk assessments, the licensee should:

1. Identify the key sources of uncertainty in the PRA consistent with the expectations of RG 1.200. An example process for identifying key assumptions is found in EPRI-1009652 [6]. **Key sources of uncertainty and key assumptions of the US-APWR DCD PRA documented in US-APWR DCD Chapter 19, Table 19.1-38 should be reviewed. Uncertainty associated with the lack of operating experience and lack of reliability data on innovative designs should be considered.**



NEI 06-09 Modification (cont)

4.1 PRA Attributes

~~In general, the quantitative risk assessment (plant PRA for RMTS) should be based on the station Configuration Risk Management Program supported by the PRA calculations.~~ The PRA model attributes and technical adequacy requirements for RMTS applications must be consistent and compatible with the NRC-endorsed consensus standards on PRA and updates to RG 1.200 in effect one year prior to fuel load. At a minimum, the PRA applied in support of a RMTS program shall include a Level 1 PRA with LERF capability. The scope of this PRA shall include credible internal events, including internal flood and internal fires. Other external events should be considered in the development of the RMTS program to the extent these events impact RMTS decisions. It is preferred that these impacts be modeled such that they are explicitly included in the calculation of a RICT. However, where prior evaluation or alternative methods (e.g., bounding analyses) can demonstrate that one or more of the challenges are not significant to the site or the application, quantitative modeling may be omitted.



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4.0 Surveillance Frequency Control Program Change Process

Step 5: RG 1.200 PRA Technical Adequacy

NRC has developed a regulatory guidance for trial use to address PRA technical capability. This is RG 1.200 (Reference 6), which addresses the use of the ASME PRA standard, and the NEI peer review process (NEI 00-02) for evaluating PRA technical capability.

RG 1.200 also provides (or will provide) attributes of importance for risk determinations relative to external events, seismic, internal fires, and shutdown.

Plants implementing TSTF-425 shall evaluate their PRAs in accordance with this regulatory guide. The RG specifically addresses the need to evaluate important assumptions that relate to key modeling uncertainties (such as reactor coolant pump seal models, common cause failure methods, success path determinations, human reliability assumptions, etc). Further, the RG addresses the need to evaluate parameter uncertainties and demonstrate that calculated risk metrics (e.g., CDF and LERF) represent mean values. The identified “Gaps” to Capability Category II requirements from the endorsed PRA standards in the RG **one year prior to initial fuel load, the key sources of uncertainty identified in the US-APWR DCD Chapter 19, Table 19.1-38, and the sources of uncertainty associated with lack of operational experience and lack of reliability data on innovative designs will all** ~~and the identified key sources of uncertainty~~ serve as inputs to identifying appropriate sensitivity cases in Step 14 below.



RMTS/SFCP TS Methodology – Potential Revisions

- Remove Risk Metrics section**
- Additional minor modifications to NEI 06-09 and NEI 04-10**
 - **Clarify status of PRA**
 - **Clarify use of bounding assumptions**
 - **Clarify compliance with 10 CFR 50.71(h1), (h2) and (h3)**
 - **Enhance discussion re common cause considerations**
 - **Text cleanup**
- Revise TS to explicitly incorporate Methodology**



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Summary and Conclusion

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Acronyms

- AOT** **Allowed Outage Time**
- COLA** **Combined License Application**
- CRMP** **Configuration Risk Management Program**
- EOOS** **Equipment Out of Service**
- GTS** **Generic Technical Specifications**
- IBR** **Incorporated by Reference**
- NOED** **Notice of Enforcement Discretion**
- PRA** **Probabilistic Risk Assessment**
- RITS** **Risk-Informed Technical Specifications**
- RMTS** **Risk-Managed Technical Specifications**
- SFCP** **Surveillance Frequency Control Program**
- SRM** **Staff Requirements Memorandum**
- TS** **Technical Specifications**



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ACRS US-APWR Subcommittee



**FSAR Chapter 11 – Radioactive
Waste Management**

October 20, 2011



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Agenda

- Introduction**
- Overview of Chapter**
- SER Open Items**
- Proposed License Conditions**
- Site-specific Aspects**



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Introduction

- ❑ FSAR uses “Incorporated by Reference” methodology**
- ❑ No departures from US-APWR DCD**
- ❑ All COL Items addressed in FSAR**
- ❑ Two SER Open Items**
- ❑ 17 SER Confirmatory Items**
- ❑ Four proposed License Conditions**
- ❑ No contentions pending before ASLB**



Overview of Chapter

Number of RAI Questions and SER Open Items

Section	Title	Questions	SER OIs
11.1	Source Terms	0	
11.2	Liquid WMS	18	11.02-1
11.3	Gaseous WMS	4	
11.4	Solid WMS	4	11.04-1
11.5	PERMS	4	



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SER Open Items

11.02-1

...the staff found that the “detailed design” information regarding the site-specific sampling locations for the evaporation pond was not provided... RAI 5854, Question 11.02-18 is being tracked as Open Item 11.02-1.

Resolution – Luminant will submit a supplemental response



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SER Open Items (cont'd)

11.04-1

...the requested detailed design information for the staff to reach a reasonable assurance of safety conclusion and verify how the interim radwaste storage facility meets compliance with regulatory requirements and the guidance and acceptance criteria in SRP Section 11.4... was not provided...

Resolution – Luminant will submit a supplemental response



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Proposed License Conditions

NRC:

11-1 The licensee shall implement the Process and Effluent Monitoring and Sampling Program, including the Process Control program prior to receipt of radioactive material on-site.

11-2 ... including the RETS/SREC...

11-3 ... including the ODCM...

11-4 ... including the REMP...



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Proposed License Conditions (cont'd)

Luminant:

- ❑ Operational Programs to be implemented as license conditions listed separately in COLA Rev. 1 Part 10**
- ❑ May 2011 (and COLA Rev. 2 Part 10) - Luminant simplified proposed license condition for Operational Programs as follows:**

2D(11) Operational Program Implementation

The licensee shall implement the programs or portions of programs identified in FSAR Table 13.4-201 with the “Implementation” of “License Condition” below on or before the associated milestones in Table 13.4-201.



Proposed License Conditions (cont'd)

Table 13.4-201 (Sheet 5 of 11)

Operational Programs Required by NRC Regulation and Program Implementation

Item	Program Title	Program Source (Required By)	FSAR (SRP) Section	Implementation	
				Milestone	Requirement
9.	Process and Effluent Monitoring and Sampling Program				
	• Radiological Effluent Technical Specifications/ Standard	10 CFR 20.1301 and 20.1302	11.5	Receipt of radioactive material on-site	License Condition
	• Radiological Effluent Controls	10 CFR 50.34a			
		10 CFR 50.36a			
	10 CFR 50, Appendix I, section II and IV				
	• Offsite Dose Calculation manual	Same as above	11.5	Receipt of radioactive material on-site	License Condition
	• Radiological Environmental Monitoring Program	Same as above	11.5	Receipt of radioactive material on-site	License Condition
	• Process Control Program	Same as above	11.4	Receipt of radioactive material on-site	License Condition



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Site-specific Aspects

11.1 Source Terms

Incorporated by reference with no departures or supplements



11.2 Liquid Waste Management System (LWMS)

11.2.1.5 Cost-Benefit Analysis – there are no cost-beneficial LRW augments and no further CBA needed to demonstrate compliance with 10 CFR 50 App I

11.2.1.6 Mobile or Temporary Equipment

- Space allocated in A/B next to truck bay**
 - **Shield walls on three sides**
 - **Short transfer distance**
 - **Floor curbed and sloped away from truck bay**
 - **Drainage collection to WHT**
- Equipment is vendor-supplied and operated**
- Unique connections/fittings prevent rad/non-rad x-conn**



11.2 LWMS (cont'd)

11.2.2 Evaporation Pond

- ❑ Not part of LWMS
- ❑ Allows temporary holdup of treated effluent before discharge to SCR to manage tritium concentration in SCR
- ❑ ~ 1.5 acre; 4' deep with 2' freeboard provided by flood-protection berm
- ❑ Double 60-mil HDPE layers with drainable mesh mat between layers for leak detection
- ❑ Clay with $< E-7$ cm/sec permeability beneath bottom liner
- ❑ RG 4.21 - SWCS in building pipe chases; DWHDPE in pipe tunnels and buried applications
- ❑ Pond discharge RM has same setpoint as WMT discharge RM
- ❑ Pond recirculation prior to sampling and discharge
- ❑ Discharge to common Unit 1 & 2 CWS return to SCR (high flow)



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11.3 Gaseous Waste Management System

11.3.1.5 CBA demonstrates addition of equipment and/or technology is not favorable or cost-beneficial; design complies with 10 CFR 50 App I

**11.3.2 Gaseous release point at top of containment
~230 ft above grade**

**11.3.3.1 GASPAR II dose calcs are well within
10 CFR 50 App I limits**



11.4 Solid Waste Management System (SWMS)

11.4.1.3 Laundry service performed offsite by vendor

11.4.2.3 Radioactive Waste Interim Storage Facility

- Store Class A, B, C waste from all four CPNPP units for up to 10 years**
- Specially shielded above-grade cells**
- Separate control room and equipment room ventilation, radiation monitoring, and FP systems**
- Remotely-operated bridge crane with CCTV and bay lights**

Waste Control Specialists, LLC (Andrews TX) - only commercial facility licensed in U.S. to dispose of Class A, B, and C waste



11.4 SWMS (cont'd)

11.4.3.2 Process Control Program

- Adopts NEI 07-10A**
- Proposed license condition for implementation upon receipt of radioactive material on site**

11.4.4.5 Mobile De-watering System

- Unique connections/fittings prevent inadvertent rad/non-rad cross-connection**
- Piping has backflow inhibitors**
- Liquid effluent goes to LWMS**
- Non-condensables vent to A/B ventilation system**
- Lease/purchase documents include testing, inspection, interfacing requirements, operating procedures, vendor oversight**



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11.4 SWMS (cont'd)

11.4.6 Epoxy Coatings Program

- Controls refurbishment, repair, replacement in accordance with manufacturers' product data sheets and good painting practices**
- Proposed license condition for implementation prior to startup**



11.5 Process Effluent Radiation Monitoring and Sampling Systems (PERMS)

11.5.2.5 Two RM in addition to standard plant

- Startup SGBD HX discharge - total γ ; transfers SGBD to WHT**
- Evaporation pond discharge - total γ ; isolates discharge line; stops pump; alarms in RWCR and MCR**

11.5.2.6 Reliability and Quality Assurance

- Procedures for taking and evaluating samples, inspection, calibration, equipment maintenance meet RGs 1.21 and 4.15**
- Periodic system checks with standard sources**
- Routine calibration and maintenance**
- Daily system channel checks**



11.5 PERMS (cont'd)

11.5.2.9 Offsite Dose Calculation Manual

- ❑ Proposed license condition for implementation upon receipt of radioactive material onsite**
- ❑ Existing ODCM will be re-written to include all 4 units**
- ❑ Describes monitor controls and monitor setpoint calculations**
- ❑ Provides rationale for compliance with RETS**
- ❑ Provides planned effluent discharge flow rates**
- ❑ All 4 units will follow NEI 07-09A, NUREG-1301, NUREG-0133, RG 1.109, RG 1.111, RG 1.113**



11.5 PERMS (cont'd)

11.5.2.10 Radiological Environmental Monitoring Program

- ❑ Proposed license condition for implementation upon receipt of radioactive material onsite**
- ❑ Described in Tech Specs and ODCM**
- ❑ Measures direct radiation with TLDs and by sampling air, water, vegetation, fauna**
- ❑ Follows NEI 07-09A, NUREG-1301, NUREG-0133**



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Acronyms

- A/B** **Auxiliary Building**
- CBA** **Cost-benefit analysis**
- CCTV** **Closed-circuit television**
- CPNPP** **Comanche Peak Nuclear Power Plant**
- CWS** **Circulating Water System**
- DCWG** **Design-Centered Working Group**
- DWHDPE** **Double-walled high-density polyethylene**
- FP** **Fire protection**
- LLRA** **Low-level radioactive waste**
- LRW** **Liquid radioactive waste**
- LWMS** **Liquid waste management system**
- MCR** **Main control room**
- ODCM** **Offsite Dose Calculation Manual**



Acronyms (cont'd)

- ❑ **PERMS** **Process Effluent Radiation Monitoring and Sampling Systems**
- ❑ **RETS** **Radiological Effluent Technical Specifications**
- ❑ **RM** **Radiation monitor**
- ❑ **RWCR** **Radwaste control room**
- ❑ **SCR** **Squaw Creek Reservoir**
- ❑ **SGBD HX** **Steam generator blowdown heat exchanger**
- ❑ **SWCS** **Single-walled carbon steel**
- ❑ **TLDs** **Thermoluminescent dosimeters**
- ❑ **WHT** **Waste holdup tank**
- ❑ **WMS** **Waste management system**
- ❑ **WMT** **Waste monitoring tank**



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ACRS US-APWR Subcommittee



**FSAR Chapter 12 – Radiation
Protection**

October 20, 2011



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Agenda

- Introduction**
- Overview of Chapter**
- SER Open Item**
- Proposed License Conditions**
- Site-specific Aspects**



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Introduction

- ❑ FSAR uses “Incorporated by Reference” methodology**
- ❑ No departures from US-APWR DCD**
- ❑ All COL Items addressed in FSAR**
- ❑ One SER Open Item**
- ❑ 23 SER Confirmatory Items**
- ❑ Five proposed License Conditions**
- ❑ No contentions pending before ASLB**



Overview of Chapter

Number of RAI Questions and SER Open Items

Section	Title	Questions	SER OIs
12.1	Ensuring Occupational Radiation Exposure are ALARA	4	0
12.2	Radiation Sources	2	1
12.3 & 12.4	Radiation Protection Design Features & Dose Assessment	12	0
12.5	Operational Radiation Protection Program	6	0



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SER Open Item

12.02-1 (RAI 198)

License Conditions have been proposed to address byproduct, source and special nuclear material (SNM) being received prior to full implementation of the plant's emergency and security plans in order to meet the requirements of 10 CFR Parts 30, 40, and 70.

Resolution – A response to this question (RAI 198) has been submitted and is under NRC Staff review.



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Proposed License Conditions

- ❑ **12-1 – The licensee shall implement the RP Program prior to initial receipt of by-product, source, or special nuclear materials (excluding exempt quantities as described in 10 CFR 30.18) for those elements of the RP Program necessary to support such receipt.**
- ❑ **12-2 – The licensee shall implement the RP Program prior to fuel receipt for those elements of the RP Program necessary to support receipt and storage of fuel on-site.**
- ❑ **12-3 – The licensee shall implement the RP Program prior to fuel load for those elements of the RP Program necessary to support fuel load and plant operation.**
- ❑ **12-4 – The licensee shall implement the RP Program prior to first shipment of radioactive wastes for those elements of the RP Program necessary to support shipment of radioactive waste.**



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Proposed License Conditions (cont'd)

- ❑ **Ground Water Monitoring Program – The licensee shall implement the Process and Effluent Monitoring and Sampling Program, including the Ground Water Monitoring Program prior to fuel load.**



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Site-specific Aspects

12.1 Ensuring That Occupational Radiation Exposures are As Low As Reasonably Achievable

- ❑ Compliance with RG 1.8, 8.8, and 8.10 by utilizing NEI 07-08A “Generic FSAR Template Guidance for Ensuring that Occupational Radiation Exposures are as Low as is Reasonably Achievable (ALARA)”**
- ❑ NEI 07-03A “Generic FSAR Template Guidance for Radiation Protection Program Description”**
- ❑ Operational procedures for limiting leakage and spread of contamination utilizing the Guidance of RG 4.21 “Minimization of Contamination”**



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12.2 Radiation Sources

- ❑ **Site-specific sources include**
 - **Interim Radwaste Storage Building**
 - **Evaporation Pond**
 - **Calibration, check, and radiography sources**



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12.3 Radiation Protection Design Features

- ❑ **Site-specific design**
 - **Mobile Liquid Waste Processing System**
 - **Ultimate Heat Sink**
 - **Startup Steam Generator Blowdown System**
 - **Evaporation Pond**



12.3 Radiation Protection Design Features (cont'd)

- ❑ **Site-specific design (cont'd)**
 - **Underground piping**
 - Concrete pipe trenches are coated with epoxy and equipped with sealed covers and manholes for inspection and have leak monitoring ports
 - Double-walled HDPE used for buried piping with manholes along routing pathway
 - Trenches and double-walled HDPE piping are sloped towards manholes allowing any leakage to be collected at the manhole
 - Manholes have basins to facilitate leak collection and detection instruments to alarm for operator action



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12.3 Radiation Protection Design Features (cont'd)

- Radiation zones reflect site-specific design**
- Operational / programmatic considerations**
 - Consistent with NEI 08-08A “Generic FSAR Template Guidance for Life Cycle Minimization of Contamination”**
- Availability of portable instruments for emergency use**



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12.4 Dose Assessment

- **Dose to construction workers**
 - **Direct Radiation dose – less than 2.5 mrem/yr**
 - **Gaseous Effluents dose – approximately 0.00418 mrem/yr (TEDE)**
 - **Liquid Effluents dose – approximately 0.03 mrem/yr (TEDE)**



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12.5 Operational Radiation Protection Program

- ❑ In accordance with NEI-07-03A for:
 - Instrument calibrations
 - Radiation surveys
 - RWSAT, PMWT, and Boric Acid Evaporator room monitoring
 - Source term reduction strategy
 - Access to VHRAs
 - NEI 08-08A for contamination minimization
 - Respiratory protection



Luminant



Acronyms

<input type="checkbox"/>	ALARA	As Low As Reasonably Achievable
<input type="checkbox"/>	ASLB	Atomic Safety and Licensing Board
<input type="checkbox"/>	COL	Combined license
<input type="checkbox"/>	CPNPP	Comanche Peak Nuclear Power Plant
<input type="checkbox"/>	DCD	Design Control Document
<input type="checkbox"/>	FSAR	Final Safety Analysis Report
<input type="checkbox"/>	NEI	Nuclear Energy Institute
<input type="checkbox"/>	OI	Open item
<input type="checkbox"/>	PMWT	Primary Makeup Water Tank
<input type="checkbox"/>	RP	Radiation Protection
<input type="checkbox"/>	RWSAT	Refueling Water Storage Auxiliary Tank
<input type="checkbox"/>	SER	Safety Evaluation Report
<input type="checkbox"/>	SNM	Special Nuclear Material
<input type="checkbox"/>	SSC	Structures, Systems, and Components
<input type="checkbox"/>	TEDE	Total Effective Dose Equivalent
<input type="checkbox"/>	VHRA	Very High Radiation Area