Vogtle PEmails

From: Gleaves, Bill
Sent: Wednesday, May 22, 2019 1:47 PM
To: Vogtle PEmails
Subject: FW: Slides for 5/23 Public Meeting
Attachments: LAR 19-010 Slides for TEx Mtg 20190523.pdf; LAR 19-009 Slides for TEx Mtg 20190523.pdf

This is for Adams capture.

From: Arafeh, Yasmeen N. <YNARAFEH@southernco.com>
Sent: Thursday, May 16, 2019 2:05 PM
To: Gleaves, Bill <Bill.Gleaves@nrc.gov>; Patel, Chandu <Chandu.Patel@nrc.gov>
Cc: Habib, Donald <Donald.Habib@nrc.gov>
Subject: [External_Sender] Slides for 5/23 Public Meeting

Good Afternoon!

Attached to this email are the presentation slides for LAR-19-009 and LAR-19-010 for the 5/23/19 Public Meeting. We will be sending the draft for LAR-19-003 later this afternoon.

Please let me know if you have any questions.

Best,
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WEC LAR-163 (VEGP LAR-19-010): Heatup of Auxiliary Building Rooms Following Loss of HVAC or Loss of all AC Power

May 23rd, 2019

Purpose & Agenda

Meeting Purpose

- Discuss changes proposed by WEC LAR-163
- Inform Staff of LAR Scope and gain feedback

Agenda

- Background information and context
- Basis for proposed changes
- Proposed changes

Loss of AC Power

Background

- Tier 1 Table 2.2.5-4 provides heat load constraints of the main control room (MCR) and surrounding equipment rooms containing safety-related equipment
  - Used to ensure the MCR remains within limits for reliable human performance for 72 hours after Main Control Room Emergency Habitability System (VES) actuation
  - The rooms surrounding the MCR contain PMS and Class 1E (IDS) equipment
  - Information also included in Tier 2 Table 6.4-3
- VES is designed to passively cool the I&C and DC equipment rooms in an accident to ensure that safety related equipment remains functional
  - This requires maintaining the room temperature below the equipment qualification (EQ) temperature limit of 120°F

Reason for Change

- Heat loads in the CLB were based on information available at certification prior to final placement of equipment and prior to detailed design on electrical component specifications
  - Reconciliation using detailed design inputs requires updates to heat loads specified in the licensing basis

Reconciled heat loads require updates to Tier 1 Table 2.2.5-4 & Tier 2 Table 6.4-3

Proposed Change and Supporting Analysis

- The proposed change is to revise the heat loads in the licensing basis to reflect the heat load summary used in the GOTHIC heat-up analysis of the 8 I&C/DC rooms due to a design basis accident (DBA) loss of AC power event
  - Rooms 12201, 12203, 12205, 12207, 12301, 12302, 12304, and 12305
  - Analyses use a conservative, initial air temperature consistent with Tech Spec Bases 3.7.6 (85°F)
    - WEC LAR-82 (VEGP LAR 17-001) added Tech Spec Bases (3.7.6) maximum operating temperature limit of 85ºF to the 8 rooms credited as passive heat sinks for MCR heatup
  - Finalized heat load inputs based on detailed design values; including confirmation of heat load timing

Termination of Loads at 24 Hours

- The UFSAR currently discusses removal/disconnection of the 24-hour batteries at or before 24 hours is consistent with the CLB
  - Note 3 of Table 3D.5-4 (Abnormal Operating Environments)
    - Note 3 is listed against the 120ºF limit for Aux Building

3. Test environments resulting from rooms with equipment supplied by 24- and 72-hour batteries are shown on Sheet 2 for the dc equipment rooms 12203 and 12207 and for the I&C rooms 12302 and 12304. The 24-hour battery is disconnected at 24 hours. The 72-hour battery is not disconnected. Environments resulting from rooms with equipment supplied by 24-hour batteries only, – that is, dc equipment rooms 12201 and 12205 and I&C rooms 12301 and 12305 – are enveloped by the environments shown on Sheet 2.

  - Section 6.4.3 of the UFSAR, added as part of WEC LAR-82 (VEGP LAR 17-001)

effectiveness of the MCR staff for an unlimited duration (Reference 14). Non-Class 1E MCR heat loads are de-energized by PMS automatic actions, and the 24-hour battery heat loads are terminated or exhausted at 24 hours to maintain the occupied zone of the MCR and the zones containing qualified safety-related equipment within the constraints of the heat loads in Table 6.4-3 (to maintain temperature below the WBGT limit) at 72 hours after VES actuation. The occupied zone is

Analysis models heat load removal at 24 hours

Basis for 24 Hour Heat Load Reduction

- For non-LOCA events, safety-related core cooling is provided by natural circulation through the passive residual heat removal (PRHR) heat exchanger (HX) and core makeup tanks (CMTs)
  - PRHR HX transfers heat from the reactor coolant system (RCS) to the in-containment refueling water storage tank (IRWST)
  - Safe shutdown conditions can be maintained for greater than 14 days with closed loop cooling provided by the PRHR HX
- The plant can be maintained in this condition for more than 72 hours without AC power under DBA conditions
  - If AC power is unavailable, ADS-4 will automatically actuate at 22 hours (PMS timer) to ensure the plant is in a safe condition (open loop cooling) before the 24 hour batteries are exhausted

Basis for 24 Hour Heat Load Reduction

- However, if the plant and RCS conditions are safe and stable (effective decay heat removal and water inventory), the operators are instructed to de-energize the PMS at the Class-1E 24 hour IDS batteries
  - Prevents unnecessary ADS actuation
  - Preserves battery capacity if ADS is required later
- Thus, for a loss of AC scenario, it is expected that ADS-4 actuation will not be required and the 24 hour batteries (and thus PMS cabinets) are disconnected before the 22 hour timer
  - Results in a major reduction in heat loads from the PMS cabinets
- In the event that ADS actuation is allowed to occur, procedures will instruct operators to take actions to reduce/maintain temperature in these compartments, including powering down 24 hour IDS batteries

PMS heat loads will be reduced at or before 24 hours for Loss of AC event

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Licensing Basis Impacts

Table 2.2.5-4

Room Name	Room Numbers	Heat Load 0 to 24 Hours (Btu/s)	Heat Load 24 to 72 Hours (Btu/s)
MCR Envelope	12401		
I&C Rooms ~~I&C Rooms~~	12301~~, 12305~~	~~8.8~~3.5	~~0~~1.1
	12302~~, 12304~~	~~13.0~~3.2	~~4.2~~2.5
	12304	~~13.0~~4.3	~~4.2~~3.2
	12305	~~8.8~~4.2	~~0~~1.5
dc Equipment Rooms ~~dc Equipment Rooms~~	12201~~, 12205~~	~~3.7 (hour 0 through 1) 2.4 (hour 2 through 24)~~1.7	~~0~~1.7
	12203~~, 12207~~	~~5.8 (hour 0 through 1) 4.5 (hour 2 through 24)~~3.0	~~2.0~~3.0
	12205	~~3.7 (hour 0 through 1) 2.4 (hour 2 through 24)~~2.1	~~0~~2.1
	12207	~~5.8 (hour 0 through 1) 4.5 (hour 2 through 24)~~3.2	3.2

Table 6.4-3

LOSS OF AC POWER HEAT LOAD LIMITS

Room Name	Room Numbers	Heat Load 0 to 24 Hours (Btu/sec)	Heat Load 24 to 72 Hours (Btu/sec)
MCR Envelope	12401		
I&C Rooms ~~I&C Rooms~~	12301~~, 12305~~	~~8.854~~3.5	~~0~~1.1
	12302~~, 12304~~	3.2~~13.07~~	~~4.22~~2.5
	12304	4.3~~13.07~~	~~4.22~~3.2
	12305	4.2~~8.854~~	~~0~~1.5
dc Equipment Rooms ~~dc Equipment Rooms~~	12201~~, 12205~~	~~3.792 (Hour 0 through 1) 2.465 (Hour 2 through 24)~~ 1.7	~~0~~1.7
	12203~~, 12207~~	~~5.84 (Hour 0 through 1) 4.51 (Hour 2 through 24)~~ 3.0	~~2.05~~3.0
	12205	~~3.792 (Hour 0 through 1) 2.465 (Hour 2 through 24)~~ 2.1	~~0~~2.1
	12207	3.2~~5.84 (Hour 0 through 1) 4.51 (Hour 2 through 24)~~	~~2.05~~3.2

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Tier 1 Table 2.2.5-4 & Tier 2 Table 6.4-3

Loss of Ventilation without Loss of AC Power

Background

- Loss of Ventilation without loss of AC power is an abnormal condition specified in 3D.5.2.2
  - Section 3.11.3 of the UFSAR notes that loss of ventilation events will not challenge safety related equipment for 72 hours
- Heat load profiles for a loss of ventilation without loss of AC power is more limiting due to non-safety heat loads remaining in service in addition to safety related heat loads
- Licensing basis states that recovery actions occur within 72 hours, but only mentions recovery of HVAC systems and not any compensatory actions (e.g., opening doors, using portable equipment)

Abnormal Events Background

- Abnormal events are an aging mechanism considered in the AP1000 plant for some EQ programs
- No identified regulatory basis for considering abnormal events in an EQ program
  - Intended to add additional margin to the equipment
- These events are not design basis accidents and are not subject to the same conservative methodologies and requirements used in the development of accident environments for EQ
  - UFSAR Section 3D.5.2 “Abnormal Operating Conditions”
    - “…plant service abnormalities that lead to short-term changes in environments.”
    - “Best estimate analyses of AP1000 plant behavior are used to determine abnormal environmental conditions. Plant recovery occurs after each event with varying degrees of time and maintenance efforts.”

Problem and Proposed Solution

- Problem
  - Description of loss of ventilation without loss of AC event is not adequately defined in licensing basis
    - With no actions taken, rooms may exceed EQ limit within 72 hours
    - Abnormal event equipment qualification assumes multiple 8 hour loss of ventilation events over the course of plant life
- Solution
  - Update analysis and CLB to credit opening doors to affected rooms at 8 hours after event initiation
    - Preliminary analyses illustrate this to be sufficient to slow heat-up rate of affected rooms to remain below EQ limit for up to 72 hours
    - Analyses will be completed before LAR submittal

Summary of Proposed Licensing Basis Changes

- Modification to Tier 2 Sections 3.11.3 and 9.4.1.2.3.2 include
  - Clarifications regarding expected abnormal event duration for loss of ventilation consistent with abnormal event definitions in Section 3D.5.2
  - Clarification of additional recovery actions for an unlikely, loss of ventilation event of more than 8 hours in affected rooms
- Corresponding updates to abnormal event temperatures and environmental Zones due to updated analysis results
  - UFSAR Table 3D.5-4, “Abnormal Operating Environments Outside Containment”
  - UFSAR Table 3H.5-1 “Nuclear Island: Design Temperatures for Thermal Gradient”

Applicable General Design Criteria

- **GDC-2** Design basis for protection against natural phenomena
- **GDC-4** Environmental and dynamic effects design bases.
- **GDC-29** Protection against anticipated operational occurrences.

The changes to the I&C and dc Equipment room heat loads and Auxiliary Building rooms' temperatures due to a loss of HVAC/loss of AC power are included in environmental qualification of SSCs and the design of Auxiliary Building.

Schedule

- Pre-Submittal Meeting – Late July/Early August 2019
- Submittal to NRC – Late August 209
- Requested Approval - Submittal + 6 months
  - LAR needed to support ITAAC Closure and UIN Submittal in April 2020

Questions?

WEC LAR-080 (VEGP LAR-19-009): Small Break LOCA Analysis

May 23, 2019

Meeting Purpose and Agenda

Meeting Purpose

- Technical exchange meeting to discuss the proposed changes in WEC LAR-080 (VEGP LAR-19-009), SBLOCA Analysis
- Inform staff of LAR scope and gain feedback

Agenda

- Summary of changes
- Background information
- Discussion of proposed changes
- Applicable General Design Criteria
- Schedule

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Summary of Changes

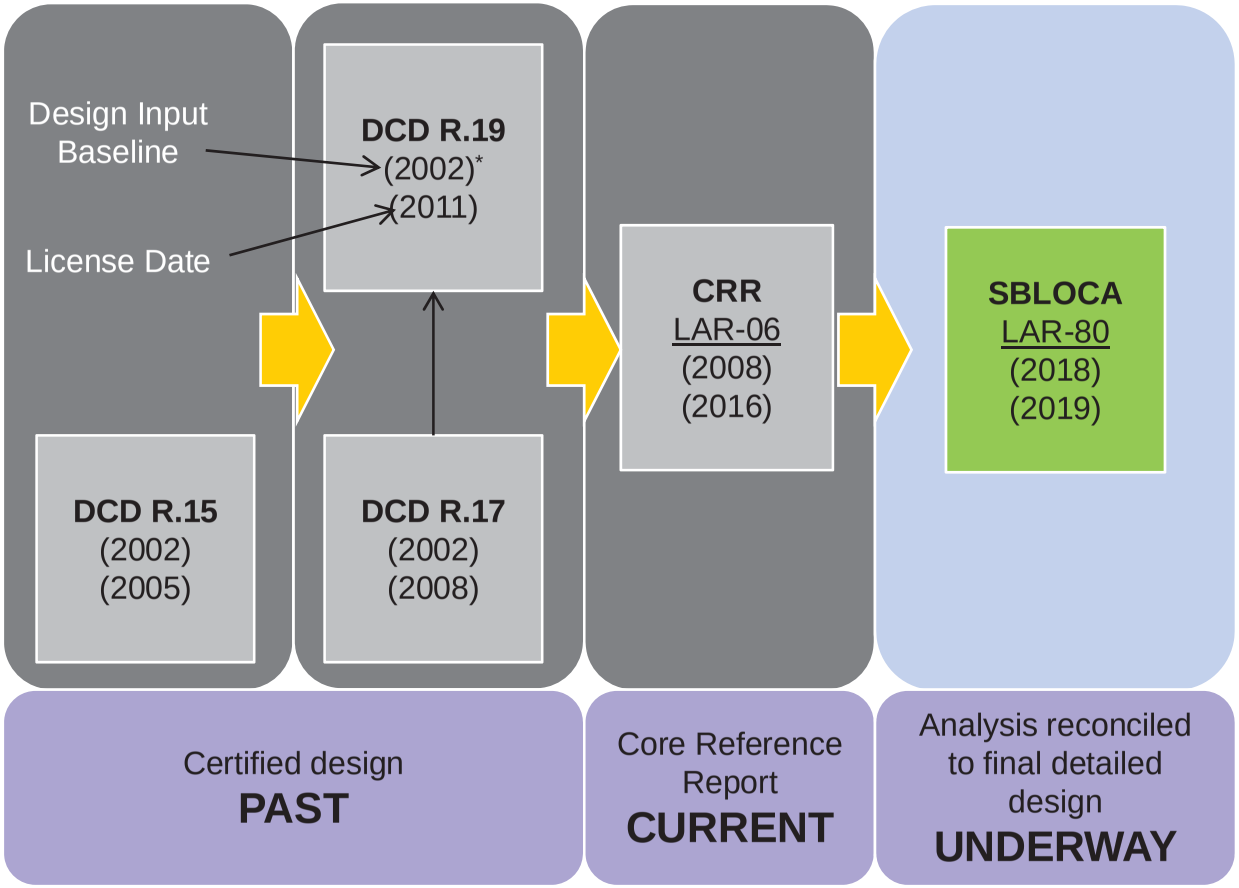
Proposed Changes

1. ADS Stage 1 Max Stroke Time Updates
2. ADS Stages 2&3 Max Stroke Times and Minimum Effective Flow Areas Updates
3. SBLOCA, LTCC, Loss of RNS, and Mode 3 LBLOCA Analyses Updates
4. CMT TS Minimum Volume Updates

Background Information

- The current licensing basis (CLB) UFSAR Chapter 15 accident analyses, as prescribed by NUREG-0800, describe analyses of various design basis accidents and demonstrate compliance of the AP1000 plant design with the acceptance criteria
- The CLB for Chapter 15 accident analyses are reflected in the Core Reference Report (WCAP-17524-P-A) and represent a design input baseline of 2008
- Design debt is incorporated into applicable safety analyses updates from previously approved LARs, including:
  - WEC LAR 114, VEGP LAR 16-012, Amendment 062/062, Dec 29, 2016, ADS Stage 2, 3, 4 Valve Flow Area
  - WEC LAR 133, VEGP LAR 17-009, Amendment 111/110, Feb 28, 2018, Line Resistance
  - WEC LAR 165, VEGP LAR 17-022, Amendment 104/103, Dec 20, 2017, LTOP Relief Valves
  - WEC LAR 166, VEGP LAR 17-027, Amendment 118/117, Mar 29, 2018, Vacuum Fill Operations
  - WEC LAR 202, VEGP LAR 18-009, Amendment 146/145, Oct 12, 2018, MODE 5&6 OPERABILITY

Background Information (cont.)



Change 1 – ADS Stage 1 Max Stroke Time Updates

Change 1 – ADS Stage 1 Max Stroke Time Updates

- It was identified that the safety-related 4-inch ADS Stage 1 control valves (RCS-PL-V001A/B) may not meet design specification requirements at elevated design temperatures
- Update proposed for the maximum stroke time of the ADS Stage 1 control valves to meet valve operability for design basis events – ITAAC Impact
- Propose to change ADS Stage 1 control valves maximum open/close time from 40 seconds to 48 seconds
  - Includes changing the gear ratio with new gear sets
  - Includes changing the limit switch setting
- 48 seconds is consistent with the updated stroke time modeled in the UFSAR Chapter 15 SBLOCA analysis (Change 3)

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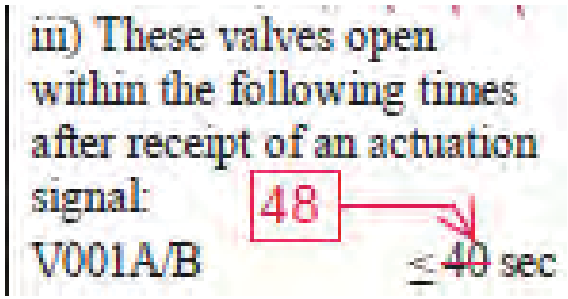
Change 1 – ADS Stage 1 Max Stroke Time Updates (cont.)

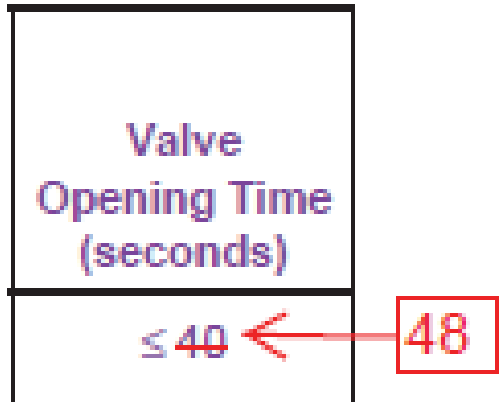
CLB Impact – Tier 1 & TS Bases

- ITAAC Table 2.1.2-4
  - No. 2.1.02.11a.ii
- TS Bases 3.4.11

Licensing Basis Impact – Tier 2

- UFSAR Table 14.3-2
- UFSAR Table 15.6.5-10





Proposed markups of ITAAC Table 2.1.2-4 and UFSAR Table 15.6.5-10 shown

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Change 2 – ADS Stages 2&3 Max Stroke Times and Effective Flow Areas Updates

Change 2 – ADS Stages 2&3 Max Stroke Times and Effective Flow Areas Updates

- Updates proposed for the effective flow areas and max stroke times of the ADS Stages 2&3 globe valves based on the expected operating conditions – ITAAC Impact
- ADS Stages 2&3 valves are important to the UFSAR Chapter 15 safety analysis to allow the RCS to depressurize sufficiently for ADS Stage 4 actuation and subsequent IRWST injection
  - SBLOCA analyses model a minimum ADS flow area along with a maximum stroke time
- LBLOCA and LOCA containment analyses do not model ADS Stages 2&3 valves
  - No impact on these analyses
- Non-LOCA inadvertent ADS/RCS depressurization analysis is limited by a larger effective flow area (max valve area) and a minimum stroke time
  - No impact on non-LOCA analyses

Change 2 – ADS Stages 2&3 Max Stroke Times and Effective Flow Areas Updates (cont.)

- Current effective flow area calculated with equations applicable for liquid service (i.e., incompressible fluid)
  - These valves are to be installed in the steam space of the pressurizer and will see either subcooled liquid (which flashes to a two-phase mixture) or saturated steam (i.e., compressible flow)
- New testing has been performed to determine the effective flow area with compressible flow
  - Testing performed in accordance with ANSI/ISA-75.02.01-2008 for compressible flow

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Change 2 – ADS Stages 2&3 Max Stroke Times and Effective Flow Areas Updates (cont.)

- Test data shows an effective flow area of ~18.5 in^2 at 100% of the valve stroke
  - This is below the current minimum effective flow are of 19 in^2
- Change proposes to reduce the minimum valve effective flow area to 16 in^2
  - 16 in^2 is based on effective flow area at an intermediate stroke length with additional margin as the valves are required to be short-stroked to address the faster opening
- Change proposes to increase the maximum stroke time from 100 seconds to 120 seconds
  - Increase in maximum stroke time allows for a larger effective flow area, which is a benefit for depressurization

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Change 2 – ADS Stages 2&3 Max Stroke Times and Effective Flow Areas Updates (cont.)

35	2.1.02.08d.iv	8.d) The RCS provides automatic depressurization during design basis events.	iv) Type tests and analysis will be performed to determine the effective flow area through each stage 1,2,3 ADS valve.	iv) A report exists and concludes that the effective flow area through each stage 1 ADS valve $\geq$ 4.6 in^2 and each stage 2,3 ADS valve is $\geq$ ~~19~~ in^2.
36	2.1.02.08d.v	8.d) The RCS provides automatic depressurization during design basis events.	v) Inspections of the elevation of the ADS stage 4 valve discharge will be conducted. 16	v) The minimum elevation of the bottom inside surface of the outlet of these valves is greater than plant

Proposed markup of ITAAC Table 2.1.2-4, ITAAC No. 2.1.02.08d.iv shown

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Change 2 – ADS Stages 2&3 Max Stroke Times and Effective Flow Areas Updates (cont.)

Table 2.1.2-4
Inspections, Tests, Analyses, and Acceptance Criteria

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
		11.b) The valves identified in Table 2.1.2-1 as having PMS control perform an active safety function after receiving a signal from the PMS.	ii) Testing will be performed on the other remotely operated valves identified in Table 2.1.2-1 using real or simulated signals into the PMS.	ii) The other remotely operated valves identified in Table 2.1.2-1 as having PMS control perform the active function identified in the table after receiving a signal from PMS.
			iii) Testing will be performed to demonstrate that remotely operated RCS valves RCS-V001A/B, V002A/B, V003A/B, V011A/B, V012A/B, V013A/B open within the required response times.	iii) These valves open within the following times after receipt of an actuation signal: 48 V001A/B ≤ 40 sec V002A/B, V003A/B ≤ 100 sec V011A/B ≤ 30 sec V012A/B, V013A/B ≤ 60 sec
		12.b) After loss of motive power, the remotely operated valves identified in Table 2.1.2-1 assume the indicated loss of motive power position.	Testing of the remotely operated valves will be performed under the conditions of loss of motive power. 120	Upon loss of motive power, each remotely operated valve identified in Table 2.1.2-1 assumes the indicated loss of motive power position.

Proposed markup of ITAAC Table 2.1.2-4, ITAAC No. 2.1.02.11a.ii shown

Change 3 – SBLOCA, LTCC, Loss of RNS, and Mode 3 LBLOCA Analyses Updates

Change 3 – SBLOCA, LTCC, Loss of RNS, and Mode 3 LBLOCA Analyses Updates

- Design debt since 2008 requires update to the safety analyses and the corresponding CLB sections
  - WEC LAR-080 will focus on SBLOCA, LTCC, Loss of RNS, and Mode 3 LBLOCA analyses updates
  - Analysis updates due to input (no methodology changes)
  - 10 CFR 50.46 peak cladding temperature (PCT) summary for SBLOCA will be cleared
  - ADS Stages 1/2/3 max stroke time and ADS Stages 2/3 min effective flow area updates from Change 1 and Change 2 are incorporated
  - Compliance with Tier 2* entrainment study is maintained
    - No impact to Tier 2* material in WEC LAR-080

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Change 3 – SBLOCA, LTCC, Loss of RNS, and Mode 3 LBLOCA Analyses Updates (cont.)

SBLOCA Analysis Update

- Examines the plant response to:
  - Inadvertent automatic depressurization system actuation (INADS)
  - 2-inch and 10-inch cold leg breaks
  - Double-ended direct vessel injection (DEDVI) line breaks
- SBLOCA-specific UFSAR text, tables, and figures are updated (Subsection 15.6.5.4B)
  - No impacts or changes to the Tier 2* information are required
- Updates to the SBLOCA analyses demonstrate ECCS continues to meet the 10 CFR 50.46 acceptance criteria
  - Resultant PCT from limiting INADS transient is 1099°F
  - Increase of +3°F from CLB PCT summary (1096°F) from latest 50.46 30-day report (WEC LAR-079, SNC LAR-17-043, Am. 147/146, approved Nov 07, 2018)

Limiting PCT still shows significant margin to 10 CFR 50.46 PCT limit

Change 3 – SBLOCA, LTCC, Loss of RNS, and Mode 3 LBLOCA Analyses Updates (cont.)

Post-LOCA LTCC Analysis Update

- Examines the plant response to:
  - DEDVI break LTCC continuous calculation from IRWST injection through sump recirculation (Subsection 15.6.5.4C.2)
  - 14-day wall-to-wall floodup case (Subsection 15.6.5.4C.3)
- Analysis updated to incorporate design debt since 2008
  - Requires update to the corresponding CLB sections
- Updates to the LTCC transient cases demonstrates:
  - Continuous post-LOCA decay heat removal, as required by 10 CFR 50.46
  - No fuel rod heatup during the transient

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Change 3 – SBLOCA, LTCC, Loss of RNS, and Mode 3 LBLOCA Analyses Updates (cont.)

Loss of RNS Analysis Update

- Examines plant response to the loss of RNS cooling transient during shutdown conditions (Subsections 19E.4.8.2 and 19E.4.8.3)
- Analysis updated to incorporate design debt since 2008
  - Requires update to the corresponding CLB sections
- Analysis demonstrates that a loss of shutdown cooling does not compromise the integrity of the fuel
  - Active fuel region remains covered by a two-phase mixture for the duration of the event

Change 3 – SBLOCA, LTCC, Loss of RNS, and Mode 3 LBLOCA Analyses Updates (cont.)

Mode 3 LBLOCA Analysis Update

- Examines the plant response to confirm that the ECCS will perform adequately following a LBLOCA during plant shutdown conditions
- Analysis updated to incorporate design debt since 2008
  - Requires update to the corresponding CLB sections (primarily Subsection 19E.4.8.1)
- Updates to the Mode 3 LBLOCA analysis demonstrates:
  - Calculated PCT does not exceed 2200°F
  - Max cladding oxidation remains below 17%
  - Core-wide oxidation remains below 1%

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Change 4 – CMT TS Minimum Volume Updates

Change 4 – CMT TS Minimum Volume Updates

- VEGP Units 3&4 TS SR 3.5.2.2 requires borated water volume in each CMT be at least 2487 ft^3
- Based on as-built CMT dimensions, tank level associated with this volume correlates to approximately 99% of wide range level instrumentation span
- Satisfying TS SR 3.5.2.2 would require instrument uncertainty & error to be less than 1% of span such that indicated level of 100% cannot be less than 99% measured tank level
  - Based on uncertainty calculations, achieving this level of accuracy is not practical
- Change to VEGP Units 3&4 TS proposed to resolve issue

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Change 4 – CMT TS Minimum Volume Updates (cont.)

- Change is to delete performance of TS SR 3.5.2.2 from TS SR 3.5.3.1
  - Proposes addition of two new TS SRs:
    - New SR 3.5.3.3 to verify OPERABLE CMT borated water volume ≥2487 ft^3 (when in Mode 4 with RCS cooling provided by RNS and in Mode 5 with RCS not vented excluding vacuum refill operations)
    - New SR 3.5.3.4 to verify OPERABLE CMT borated water volume ≥2450 ft^3 (Mode 5 with RCS not vented during vacuum refill operations)

Change 4 – CMT TS Minimum Volume Updates (cont.)

- High point gas vent alarm can be used to confirm CMT level from Mode 1 through Mode 4 (or Mode 5 RCS not vented excluding during vacuum refill operations)
  - CMT can be confirmed to be full with the high point vent instrumentation at all times except for when the CMT inlet pipe is voided during Mode 5 vacuum refill operations
- For Mode 5 with RCS not vented during vacuum refill operations, safety analyses (Loss of RNS in Chapter 19E) does not credit CMT injection even though one CMT is required to be operable
  - New TS SR 3.5.3.4 that requires a volume of ≥2450 ft^3 is conservative and measurable with the WR level instrumentation with uncertainty and error

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Change 4 – CMT TS Minimum Volume Updates (cont.)

- Change also updates TS LCO 3.5.2, Condition D to account for when one CMT with borated water volume is not within the required limit
  - The Condition D Completion Time of 24 hours is retained to reduce the urgency for entering containment to vent gas from the top of the CMTs when TS SR 3.5.2.2 is not met
    - Current TS LCO 3.5.2 would require entry into Condition E with an 8 hour Completion Time
  - This is acceptable because completion of Required Action D.1 within 24 hours to restore CMT inlet line noncondensible gas volume to within the limit is also sufficient to resolve the condition when one CMT with borated water volume is not within the limit per SR 3.5.2.2, thus exiting LCO 3.5.2 Condition D

Change 4 – CMT TS Minimum Volume Updates (cont.)

3.5 PASSIVE CORE COOLING SYSTEM (PXS)

3.5.2 Core Makeup Tanks (CMTs) – Operating

LCO 3.5.2 Both CMTs shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.
MODE 4 with the Reactor Coolant System (RCS) not being cooled by the Normal Residual Heat Removal System (RNS).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CMT inoperable due to one CMT outlet isolation valve inoperable.	A.1 Restore outlet isolation valve to OPERABLE status.	72 hours
B. One CMT inoperable due to water temperature or boron concentration not within limits.	B.1 Restore water temperature and boron concentration to within limits.	72 hours
C. Two CMTs inoperable due to water temperature or boron concentration not within limits.	C.1 Restore water temperature and boron concentration to within limits for one CMT.	1 hour from discovery of LCO 3.5.2 Condition C entry concurrent with LCO 3.5.1 Condition B entry AND 8 hours
D. One CMT inlet line with noncondensible gas volume not within limit.	D.1 Restore CMT inlet line noncondensible gas volume to within limit.	24 hours
E. One CMT inoperable for reasons other than Condition A, B, or D. OR One CMT with borated water volume not within limit.	E.1 Restore CMT to OPERABLE status.	1 hour from discovery of LCO 3.5.2 Condition E entry concurrent with LCO 3.5.1 Condition B entry AND 8 hours

Change 4 – CMT TS Minimum Volume Updates (cont.)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	For the CMT required to be OPERABLE, the following SRs are applicable: SR 3.5.2.1 ~~SR 3.5.2.2~~ SR 3.5.2.3 SR 3.5.2.5 SR 3.5.2.6 SR 3.5.2.7 SR 3.5.2.8	In accordance with applicable SRs
SR 3.5.3.2	----------	
SR 3.5.3.3	**-NOTE-** Only required to be met in MODE 4 with RCS cooling provided by the RNS and in MODE 5 with RCS not VENTED excluding vacuum refill operations. ---------- For the CMT required to be OPERABLE, the following SR is applicable: SR 3.5.2.2	In accordance with applicable SR
	SR 3.5.2.4	
SR 3.5.3.4	**-NOTE-** Only required to be met in MODE 5 with the RCS not VENTED during vacuum refill operations. ---------- For the CMT required to be OPERABLE, verify the borated water volume is ≥ 2450 cu. ft.	7 days

Applicable General Design Criteria

- **GDC-10** Reactor Design
- **GDC-27** Combined Reactivity Control Systems Capability
- **GDC-29** Protection Against Anticipated Operational Occurrences
- **GDC-35** Emergency Core Cooling

Schedule

- Pre-Submittal Meeting – June or July
- Submittal to NRC – July or August

Questions?