DiabloCanyonNPEm Resource

From: Ferrer, Nathaniel
Sent: Tuesday, August 17, 2010 3:47 PM
To: Grebel, Terence; Soenen, Philippe R
Cc: DiabloHearingFile Resource
Subject: Draft Telecon Summary 07-29-10 TLAA & AMP
Attachments: Telecon Summary 07-29-10 TLAA & AMP.doc

Terry & Philippe,

Attached is a draft of the Teleconference Call Summary from 7/29/2010. Please review and let me know if there are any corrections/changes needed.

Please let me know if you have any questions.

Nathaniel Ferrer
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LICENSEE: Pacific Gas and Electric Company

FACILITY: Diablo Canyon Nuclear Power Plant, Units 1 and 2

SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON JULY 29, 2010, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND PACIFIC GAS AND ELECTRIC COMPANY CONCERNING DRAFT REQUEST FOR ADDITIONAL INFORMATION RELATED TO THE DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION TIME LIMITED AGING ANALYSES AND AGING MANAGEMENT PROGRAMS REVIEW

The U.S. Nuclear Regulatory Commission (NRC or the staff) and representatives of Pacific Gas and Electric Company (PG&E) held a telephone conference call on July 29, 2010, to obtain clarification on the staff's draft request for additional information (D-RAI) regarding the Diablo Canyon Nuclear Power Plant license renewal application (LRA).

By e-mail dated July 19, 2010, the staff sent D-RAIs to PG&E regarding time limited aging analyses and aging management programs. PG&E reviewed the information contained therein, and requested a telephone conference call. The telephone conference call was useful in clarifying the intent of the staff's D-RAIs. Enclosure 2 provides discussions on D-RAIs for which the applicant requested clarification. No changes to other D-RAIs were necessary as a result of this telephone conference call. Formal RAIs will be issued by a separate letter.

Enclosure 1 provides a listing of the participants.

The applicant had an opportunity to comment on this summary.

Nathaniel Ferrer, Safety Project Manager
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosures:
As stated

cc w/encls: Distribution via Listserv

LICENSEE: Pacific Gas and Electric Company

FACILITY: Diablo Canyon Nuclear Power Plant, Units 1 and 2

SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON JULY 29, 2010, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND PACIFIC GAS AND ELECTRIC COMPANY CONCERNING DRAFT REQUEST FOR ADDITIONAL INFORMATION RELATED TO THE DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION TIME LIMITED AGING ANALYSES AND AGING MANAGEMENT PROGRAMS REVIEW

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TELEPHONE CONFERENCE CALL
DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2
LICENSE RENEWAL APPLICATION

LIST OF PARTICIPANTS
JULY 29, 2010

PARTICIPANTS	AFFILIATIONS
Nate Ferrer	U.S. Nuclear Regulatory Commission (NRC)
John Tsao	NRC
Philippe Soenen	Pacific Gas and Electric Company (PG&E)
Michelle Albright	PG&E
Kevin Braico	PG&E
Dan Hardesty	PG&E
Chalmer Myer	Strategic Teaming And Resource Sharing (STARS)
Dave Kunsemiller	STARS
Brett Lynch	STARS

Enclosure 1

Diablo Canyon Nuclear Power Plant, Units 1 and 2
License Renewal Application
Draft Request for Additional Information
TLAA/Aging Management Programs

D-RAI 4.7.2-2

In LRA section 4.7.2, within the "Pressurizer" section, the applicant states that "[n]o base-metal corrosion analyses exist for the pressurizers, since no half-nozzle or similar repairs have exposed the base metal to reactor coolant." The applicant also states that "[t]he Unit 1 pressurizer and its nozzles and safe ends contain no Alloy 600 or Alloy 82/182 weld material." The above statements are not clear regarding whether the half nozzle method was used in repairing heater sleeves in the pressurizer in both units.

1. For each unit, list all the pressurizer nozzles (e.g., pressurizer safety valve nozzle and heater sleeve nozzle). Identify the materials used to fabricate the nozzles. If a nozzle is welded to a safe end, identify the material of the safe end. If a nozzle is repaired or replaced, identify the repair method. Please provide the information in a table.
2. Discuss in detail the repair method. Discuss the material used in the repaired or replaced nozzle. Discuss whether fatigue crack growth calculation was performed for the remnant Alloy 82/182 welds. If so, discuss how the transient cycles used in the fatigue crack growth calculation are monitored to ensure they bound the actual plant cycles. If no fatigue crack growth calculation was performed, justify the structural integrity of the pressurizer shell.
3. Discuss any flaws that remained in service in the heater sleeves and in the attachment welds in both units. If so, discuss how these flaws are monitored and evaluated for the period of extended operation.

Discussion: Based on discussion with the applicant, the staff confirmed that no repairs to pressurizer nozzles have been made, as described in LRA Section 4.7.2. The staff will revise the question as follows. The revised question will be sent as a formal RAI.

RAI 4.7.2-2

In LRA Section 4.7.2, within the "Pressurizer" section, the applicant states that "[n]o base-metal corrosion analyses exist for the pressurizers, since no half-nozzle or similar repairs have exposed the base metal to reactor coolant." The applicant also states that "[t]he Unit 1 pressurizer and its nozzles and safe ends contain no Alloy 600 or Alloy 82/182 weld material." The above statements are not clear regarding whether the half nozzle method was used in repairing heater sleeves in the pressurizer in both units.

1. For each unit, list all the pressurizer nozzles (e.g., pressurizer safety valve nozzle and heater sleeve nozzle). Identify the materials used to fabricate the nozzles. If a nozzle is welded to a safe end, identify the material of the safe end.

2. Discuss whether fatigue crack growth calculation was performed for the remnant Alloy 82/182 welds. If so, discuss how the transient cycles used in the fatigue

crack growth calculation are monitored to ensure they bound the actual plant cycles. If no fatigue crack growth calculation was performed, justify the structural integrity of the pressurizer shell.

3. Discuss any flaws that remained in service in the heater sleeves and in the attachment welds in both units. If so, discuss how these flaws are monitored and evaluated for the period of extended operation.

D-RAI 4.7.2-5

In LRA section 4.7.2, within the "Alloy 600 Program and Other Locations" section, the applicant states that "DCPP procedural guidance provides a comprehensive Alloy 600 control program for materials in the RCS."

Describe the DCPP procedure guidance in terms of the following items:

1. If and how it relates to the Nickel-Alloy Aging Management Program
2. Scope of the program (identify the components).
3. Describe how the components are monitored to ensure their structural integrity at the end of 60 years.
4. If degradation is detected, describe the corrective actions.

Discussion: Based on discussion with the applicant, the staff determined that the procedural guidance referred to LRA Nickel-Alloy Aging Management Program as mentioned in LRA Section 4.7.2. Therefore this question is withdrawn and will not be sent as a formal RAI.

D-RAI 4.7.2-6

In LRA section 4.7.2, within the "Alloy 600 Program and Other Locations" section, the applicant states that other than the Unit 2 pressurizer none of the Alloy 600 locations have yet been subject to repairs.

1. Identify flaws, indications, or defects that have been detected in the components under the Alloy 600 Program.
2. Discuss the projection of the flaws to the end of 60 years and discuss the TLAA of the flaw evaluations.

Discussion: Based on discussion with the applicant, the staff determined that the question would be addressed in RAI 4.7.2-2. Therefore this question is withdrawn and will not be sent as a formal RAI.

D-RAI 4.7.5-1

In LRA section 4.7.5, within the "Unit 2 RHR Piping Weld RB-119-11" section, the applicant states that "[t]he service life for Weld RB-119-11 is based on operating for 40 years from the date the flaw was identified, i.e. until 2046, during which the flaw would experience 500 startup-shutdown cycles. Thus, the evaluation encompassed a 60-year plant life and the analysis will be valid beyond the 2045 end date of the period of extended operation for Unit 2." The above statements do not provide a clear reasoning as to how the flaw evaluation for 40 years encompasses 60 years of plant life. Clarify how the flaw evaluation encompassed a 60 year plant life in terms of cycle counting (e.g., are the 500 startup and shutdown cycles bound the actual plant cycles at the end of 60 years?).

D-RAI 4.7.5-2

In LRA section 4.7.5, within the "Unit 2 RHR Piping Weld RB-119-11" section, the applicant states that "[t]he DCPP licensing basis assumes 250 heatups and 250 cooldowns for a 50 year plant life."

1. Discuss why 50 years, rather than the conventional 40 years are used for the design basis.
2. Discuss why only heatup and shutdown cycles are discussed but not other transient cycles such as seismic, temperature, and pressure for the flaw evaluation.
3. Discuss how you ensure that transient cycles used in the flaw evaluation for the Unit 2 RHR piping weld RB-119-11 do not exceed the actual operating cycles.

Discussion: Based on discussion, the applicant indicated that D-RAIs 4.7.5-1 and 4.7.5-2 were not clear. Based on the discussion and further review of PG&E Letter DCL-06-069, the staff will combine D-RAI 4.7.5-1, 4.7.5-2, and portions of D-RAI 4.7.5-5 and revise the question as follows. The revised question will be sent as a formal RAI.

RAI 4.7.5-1

In LRA Section 4.7.5, within the "Unit 2 RHR Piping Weld RB-119-11" section, the applicant states that "[t]he DCPP licensing basis assumes 250 heatups and 250 cooldowns for a 50 year plant life."

1. Discuss why only heatup and shutdown cycles are applied for flaw evaluation of weld RB-119-11 in the June 6, 2006 letter but other transient cycles such as seismic, temperature, and pressure were not mentioned in the flaw evaluation for weld RB-119-11.

2. It is not clear in LRA Section 4.7.5 or in the flaw evaluation that the cycles used in the flaw evaluation for weld RB-119-11 bounds the accumulated transient cycles at the end of 60 years. LRA section 4.7.5 states that "[t]he service life for Weld RB-119-11 is based on operating for 40 years from the date the flaw was identified, i.e. until 2046, during which the flaw would experience 500 startup-shutdown cycles. Thus, the evaluation encompassed a 60-year plant life and the analysis will be valid beyond the 2045 end date of the period of extended operation for Unit 2." The above statements do not provide a clear reasoning as to how the flaw evaluation for 40 years encompasses 60 years of plant life. Clarify how the flaw evaluation encompassed a 60 year plant life in terms of cycle counting (e.g., are the 500 startup and shutdown cycles bound the actual plant cycles at the end of 60 years?).

3. Discuss how you ensure that transient cycles used in the flaw evaluation for the Unit 2 RHR piping weld RB-119-11 do not exceed the actual operating cycles at the end of 60 years without the enhanced fatigue management program.

4. (a) Provide the material specification of weld RB-119-11 (e.g., E308L or Alloy 82/182). (b) Discuss whether the indication in weld RB-119-11 is surface-connected or embedded. (c) Discuss the degradation mechanism of the indication. (d) if the weld is fabricated with Alloy 82/182 metal or if the flaw is embedded in the pipe/weld wall thickness, discuss any mitigation measures applied to the flaw in Weld RB-119-11.

5. Discuss whether weld RB-119-11 will be examined in the future ASME 10-year ISI inspection intervals. If not, provide justifications.

D-RAI 4.7.5-3

In LRA section 4.7.5, within the "Validation - Flaw Evaluation of Unit 1 RHR Weld WIC-95" section, the applicant states that "[t]here have been no occurrences of a DE, DDE, or Hosgri seismic event at DCPP during the first 20 plus years of operation. Therefore, the seismic cycles in the Unit 1 RHR Weld WIC-95 fatigue crack growth evaluation for the 50-year design basis number of DE, DDE, and Hosgri events is sufficient to the end of the period of extended operation." Absence of earthquakes in the past 20 years does not imply that the earthquakes will not occur in the future and may not be appropriate to conclude that the seismic cycles in the Unit 1 RHR Weld WIC-95 fatigue crack growth evaluation for the 50-year design basis is sufficient to bound the seismic cycles to the end of the period of extended operation.

1. Provide detailed technical basis to demonstrate why seismic cycles in the Unit 1 RHR Weld WIC-95 fatigue crack growth evaluation bound the end of the period of extended operation.
2. Explain why other transient cycles (such as thermal) are not considered and assessed in this section.
3. Discuss why DE, DDE, or Hosgri seismic cycles were discussed for the flaw evaluation of Unit 1 RHR Weld WIC-95, but they were not discussed for the flaw evaluations of Unit 2 RHR Weld RB-119-11 and Unit 2 auxiliary feedwater line 567.

D-RAI 4.7.5-4

Discuss how you ensure that transient cycles used in the flaw evaluation for the RHR piping weld WIC-95 do not exceed the actual operating cycles.

Discussion: Based on discussion, the applicant indicated that D-RAIs 4.7.5-3 and 4.7.5-4 were not clear. Based on the discussion and a further review of PG&E Letter DCL-97-086, the staff will combine D-RAI 4.7.5-3, 4.7.5-4, and portions of D-RAI 4.7.2-5 and revise the question as follows. The revised question will be sent as a formal RAI.

RAI 4.7.5-2

LRA section 4.7.5 discusses the flaw evaluation of an indication detected in weld WIC-95 of the RHR injection line 985 to hot legs 1 and 2 as shown in PG&E Letter DCL-97-086 dated May 7, 1997. LRA Section 4.7.5 states further that "[t]here have been no occurrences of a DE, DDE, or Hosgri seismic event at DCPP during the first 20 plus years of operation. Therefore, the seismic cycles in the Unit 1 RHR Weld WIC-95 fatigue crack growth evaluation for the 50-year design basis number of DE, DDE, and Hosgri events are sufficient to the end of the period of extended operation."

1. LRA section 4.7.5 states that "…[t]he number of seismic cycles used in the analysis [flaw evaluation] is consistent with the DCPP 50-year design basis described in FSAR Table 5.2-4…" UFSAR Table 5.2-4 specifies one cycle for the Hosgri earthquake, 20 cycles for the Design earthquake, and 1 cycle for the Double design earthquake. In the flaw evaluation for weld WIC-95 in the applicant's letter dated May 7, 1997, none of these seismic cycles were discussed. The applicant's flaw evaluation discussed only "400 cycles of future loading for the governing pipe stress load case". Clarify whether the seismic cycles were included in the flaw evaluation of the indication at weld WIC-95.

2. UFSAR Table 5.2-4 provides several transients that have more occurrences/cycles than 400 cycles used in the flaw evaluation for weld WIC-95. For example, Unit loading and unloading at 5% of full power has 18,300 occurrences (cycles), hot standby operation/feedwater cycling has 18,300 occurrences. (a) Identify the transients that are included in the 400 cycles. (b) Provide basis for those transients shown in Table 5.2-4 but were not included in the flaw evaluation for weld WIC-95.

3. UFSAR Table 5.2-4 specifies 250 occurrences for reactor coolant system heatup and cooldown transients. The total cycles for heatup and shutdown transients would be 500. However, the flaw evaluation used only 400 cycles. The staff notes that 500 cycles were used in the flaw evaluation of the indication in weld RB-119-11. The cycles in UFSAR Table 5.2-4 are for the design life of the plant which presumably is 50 years. It appears that the 400 cycles used in the flaw evaluation for weld WIC-95 are for 50 years, not 60 years, of plant operation. LRA section 4.7.5 states that the seismic cycles in the weld WIC-95 fatigue crack growth evaluation for the 50-year design basis number of DE, DDE, and Hosgri events are sufficient to the end of the period of extended operation. Clarify whether (a) the seismic cycles in the flaw evaluation in the May 7, 1997 letter, are sufficient to cover the seismic cycles at the end of extended operation, (b) the 400 cycles cover all the transient cycles at the end of extended operation, and (c) why a total of 500 cycles for heatup and cooldown were not used.

4. (a) Provide the pipe diameter and wall thickness at weld WIC-95 of the Unit 1 RHR injection line 985 where an indication was detected in refueling outage 9. (b) In the flaw evaluation dated May 7, 1997, the applicant stated that it will re-examine the indication in weld WIC-95 in refueling outage 1R10. Discuss the inspection result of weld WIC-95 during refueling outage 1R10. Confirm that the indication was detected in 1997 and was re-examined in 1999. (c) Provide the

material specification of weld WIC-95 (e.g., Alloy 82/182 weld or E308L). (d) Discuss whether the subject indication is surface-connected or embedded. (e) Discuss the degradation mechanism of the indication. (f) Discuss the orientation of the indication (i.e., a circumferential or an axial indication). (g) Provide operating temperature and pressure of the subject pipe line at weld WIC-95.

5. Discuss whether weld WIC-95 will be examined in the future ASME 10-year ISI inspection intervals. If not, provide justifications.

6. It is not clear to the staff that the applicant has demonstrated that the cycles used in the flaw evaluation for weld WIC-95 bounds the cycles at the end of 60 years. Discuss how you ensure that transient cycles used in the flaw evaluation for the RHR piping weld WIC-95 do not exceed the actual operating cycles.

D-RAI 4.7.5-5

Discuss whether 3 successive examinations of the flaws in Unit 2 RHR piping weld RB-119-11, Unit 2 auxiliary feedwater piping line 567, and Unit 1 RHR piping weld WIC-95 have been conducted per IWA-2000 of the ASME Code, Section XI. If yes, provide inspection result of the 3 successive examinations for each of the flaws. If no, justify why successive examinations were not performed.

Discussion: Based on discussion, the applicant indicated that the question is not clear. Based on the discussion and a further review of PG&E Letter DCL-99-136, the staff revise the portions of the question, not addressed in revised RAI 4.7.5-1 and 4.7.5-2, as follows. The revised question will be sent as a formal RAI.

RAI 4.7.5-3

LRA Section 4.7.5 discussed the indication detected in Unit 2 Auxiliary feedwater piping line 567. The applicant submitted a flaw evaluation in PG&E letter DCL-99-136, dated October 22, 1999.

1. In the flaw evaluation for piping line 567, the applicant stated that it will re-examine the indication during the unit 2 tenth refueling outage (2R10). Discuss the inspection results of the re-examination.

2. The applicant stated in the flaw evaluation that the indication is believed to be a fabrication defect (a lap in the pipe). Confirm that the indication is embedded in the pipe wall. As stated in the flaw evaluation, the flaw was characterized as 0.1 inch deep (approximately 46 percent through wall) and 12 feet in length. Describe in detail how the indication is modeled in the flaw growth calculation.

3. The flaw evaluation dated October 22, 1999 states that the 250 cycles of future seismic and thermal loading corresponding to the remaining plant life. In LRA Section 4.7.5, the applicant stated that the assumed transients are consistent with or bounded by the 50 year design basis described in FSAR

Table 5.2-4. It is not clear to the staff that 250 cycles used in the flaw evaluation bound the cycles in Table 5.2-4 in UFSAR. Identify the transients that are included in the 250 cycles. Discuss in detail how 250 cycles in the flaw evaluation bound the cycles in the licensing basis.

4. Discuss whether the indication in Unit 2 Auxiliary feedwater piping line 567 will be examined in the future ASME 10-year ISI inspection intervals. If not, provide justification.

D-RAI B2.1.39-1

Identify the scope of the Thermal Aging Embrittlement of CASS program by listing all components in the piping systems, including valves and pumps that are fabricated with CASS.

Discussion: Based on discussion with the applicant, the staff confirmed that LRA Table 3.1.2-2 includes the comprehensive list of components within the scope of the Thermal Aging Embrittlement of Cass Program. Therefore this question is withdrawn and will not be sent as a formal RAI.

D-RAI B2.1.39-2

In LRA section B2.1.39, the applicant stated that the CASS aging management of potentially susceptible components is accomplished through an enhanced volumetric examination or a component-specific flaw tolerance evaluation. (1) Specify which of the above two methods will be used to manage CASS during the period of extended operation. (2) If the flaw tolerance evaluation is used, describe the details of the flaw tolerance evaluation.

D-RAI B2.1.39-3

In LRA section B2.1.39, the applicant stated that the Thermal Aging Embrittlement of CASS program will be implemented as part of the ASME Code, Section XI ISI program and will be completed within the 10-year inspection interval before the period of extended operation.

1. Describe in detail the CASS aging management program in terms of examination requirements (e.g., nondestructive examination methods, inspection frequency, and examined components).
2. Discuss exactly how the ASME Section XI ISI program is augmented and enhanced as a result of implementing the CASS AMP (e.g., discuss any changes to the ASME ISI program as a result of the CASS AMP in terms of inspection frequency and inspection methods).
3. The NRC staff notes that ultrasonic testing is not demonstrated via the ASME Code, Section XI, Appendix VIII, and therefore, not acceptable, to examine CASS components. In light of this limitation, discuss how volumetric examination of CASS component will be accomplished.

Discussion: Based on discussion, the applicant indicated that the question is not clear. The staff will combine D-RAI B2.1.39-2, and B2.1.39-3 and revise the question as follows. The revised question will be sent as a formal RAI.

RAI B2.1.39-1

In LRA Section B2.1.39, the applicant states that the Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS) Program will be implemented as part of the ASME Code, Section XI ISI program and will be completed within the 10-year inspection interval before the period of extended operation.

1. The NRC staff notes that ultrasonic testing (UT) has not yet been qualified to examine CASS material via the ASME Code, Section XI, Appendix VIII. Discuss how components fabricated with CASS material are inspected under the current licensing basis. Discuss whether the current inspection practices (methods, frequencies and acceptance criteria) will be applied in the future CASS AMP.

2. In light of the limitation of UT of CASS material, discuss how volumetric examination of CASS component will be accomplished during the period of extended operation. Specifically, clarify whether the qualified UT will only be used in the CASS AMP, if a qualified UT method becomes available.

D-RAI B2.1.39-4

(1) Discuss whether Diablo Canyon units 1 and 2 have implemented the risk-informed ISI program. (2) If yes, discuss how the CASS components will be inspected under the risk-informed ISI program considering the requirements of the CASS aging management program (e.g., whether the CASS AMP will increase the inspection frequency of the CASS components in the risk-informed ISI program and whether thermal aging embrittlement will be a degradation mechanism considered in the risk-informed ISI program).

Discussion: Based previous revisions. The question will be sent as a formal RAI B2.1.39-2.