Entergy

Entergy Nuclear Northeast
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249
Tel 914 788 2055

Fred Dacimo
Vice President
License Renewal

March 12, 2009

Re: Indian Point Units 2 & 3
Docket Nos. 50-247 & 50-286

NL-09-033

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

SUBJECT: **Response to Safety Evaluation Report with Open Items Related To the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3**

Reference:

1. NRC letter dated January 15, 2009, "Safety Evaluation Report with Open Items Related to the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3"

2. Entergy letter dated January 27, 2009, "Reply to Request for Additional Information – Miscellaneous Items"

Dear Sir or Madam:

The NRC issued Safety Evaluation Report (SER) (Reference 1) with open items related to the license renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3 to request a review of the SER, verification of its accuracy, and to provide comments and responses to open items to the staff.

Attachment 1 to this letter provides the Entergy Nuclear Operations, Inc. (ENO) response for Indian Point Unit 2 and 3 to the SER. Responses to open items were previously submitted to the staff for their review in Reference 2 noted above.

There are no new commitments identified in this submittal. If you have any questions or require additional information, please contact Mr. R. Walpole, Manager, Licensing at (914) 734-6710.

A128
NRR

I declare under penalty of perjury that the foregoing is true and correct. Executed on 3/12/09.

Sincerely,

Fred R. Dacimo
Vice President
License Renewal

Attachment 1 – Comments from Indian Point Units 2 and 3 on License Renewal SER

cc: Mr. Bo M. Pham, NRC Environmental Project Manager
Ms. Kimberly Green, NRC Safety Project Manager
Mr. John P. Boska, NRC NRR Senior Project Manager
Mr. Samuel J. Collins, Regional Administrator, NRC Region I
Mr. Sherwin E. Turk, NRC Office of General Counsel, Special Counsel
Mr. Mark Cox, NRC Senior Resident Inspector, IP2
Mr. Paul Cataldo, NRC Senior Resident Inspector, IP3
Mr. Robert Callender, Vice President, NYSERDA
Mr. Paul Eddy, New York State Dept. of Public Service

ATTACHMENT I TO NL-09-033

Comments from Indian Point Units 2 and 3 on License Renewal SER

ENTERGY NUCLEAR OPERATIONS, INC
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 and 3
DOCKETS 50-247 and 50-286

Comments from Indian Point Units 2 and 3 on License Renewal SER

Comment Form

License Renewal Project Report Title: **Indian Point Draft Safety Evaluation Report January 2009**

License Renewal Project Report Number: **LRA SER with Open Items**

Comment No.	Section/Pg.#	Comment	
1	Page ix (table of contents)	Typo in table of contents. There is no section 3.3**A**.2.2 on page 3-328. Remove the '**A**'.	
2	1.1/ Pg 1-1	First paragraph, the Entergy letter submitting the LRA was dated April 23, 2007, not April 30, 2007.	
3	OI 2.3A.4.5-1/ pg 1-9	The last sentence of the OI description that describes the question states "not already in scope for 10 CFR 54.4(a)(2)." The actual question sent out in the December 30, 2008 letter stated "not already in scope for 10 CFR 54.4(a)(1) or (a)(2)".	
4	3.0.3.2.15/ Pg 1-11	Says "the presence of tritium in groundwater would be indicative of a continuing leak..." but that is not accurate. Reword to say that: An increasing trend of tritium in the groundwater could be indicative of a continuing leak from the spent fuel pool.	
5	2.1.3/ Pg 2-2	Last paragraph, "located outside Tarrytown, New York" appears to be in error. Perhaps "located outside Buchanan, New York" would be better.	
6	2.1.3.1.1/ pg 2-3	The list of information sources for the license renewal scoping and screening process should include the IP2 and IP3 UFSARs.	
7	2.1.3.1.2/ pg 2-4	Next to last paragraph (starting, The IP2 and IP3 . . .), seventh line is and IP3 equipment database <u>component</u> and system safety function sheets, the staff concludes The word "component" is out of place here. Unless it is meant to be applied to the equipment database (seems unnecessary), the word should be deleted.	

Comment Form

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License Renewal Project Report Number: **LRA SER with Open Items**

Comment No.	Section/Pg.#	Comment	
8	2.1.4/ pg 2-7	The single paragraph of this section contains the following three sentences: Specifically, the scoping process consisted of developing a list of plant systems and structures, identifying their intended functions, and determining which functions meet one or more of the three criteria pursuant to 10 CFR 54.4(a). The applicant developed the system list using the system functions identified on the IP2 and IP3 safety system function sheets (SSFSs). The applicant obtained additional information on mechanical system functions from the UFSAR, the maintenance rule documents, piping flow diagrams, and DBDs. The first sentence describes three steps of scoping. The underlined sentence then starts to discuss the first step of developing a list of systems and structures, but segues into the step on function identification without finishing the thought on the first step. Suggest replacing the underlined sentence with the following or something similar: The applicant developed the list of systems using the equipment database; the list of plant structures was developed from a review of plant layout drawings, maintenance rule documentation, design basis documents, and the UFSARs. Mechanical system functions were identified from the IP2 and IP3 safety system function sheets (SSFSs).	
9	2.1.4.1.1/ pg 2-7	Add the word "functions" and delete text with strikethrough, so that the second sentence reads as follows: With respect to the safety-related criterion, the applicant stated that ~~the~~ safety-related systems and structures functions are initially identified through a review of the SSFSs and then confirmed by a review of the UFSAR, maintenance rule documents, piping flow diagrams, and DBDs, as applicable.	

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License Renewal Project Report Number: **LRA SER with Open Items**

Comment No.	Section/Pg.#	Comment	
10	2.1.4.1.2/ pg 2-8	The discussion of dose criteria applicable to IP2 and IP3 is presented in LRA Section 2.1.1.1 and its subsections. This multipart discussion has resulted in some confusion in the applicability of the criteria; specifically that 10 CFR 50.67 does not apply to IP2. The third full paragraph on page 2-8 of the draft SER contains the following (middle of paragraph): The dose criteria are set forth in 10 CFR 100.11 for IP2, as reflected in the LRA. The staff determined that the requirements of 10 CFR 50.67(b)(2), which concern the use of an alternate source term in the dose analysis, are not applicable to IP2 but are applicable to IP3, which has been approved for the use of an alternate source term. The definition of safety related in section 2.1.1.1 of the LRA which addresses IP2 and IP3 in general terms, includes 10 CFR 50.67. This is correct in that both IP2 and IP3 credit the alternate source term in their dose analyses (see respective UFSARs), and SSC functions needed to meet the dose limits of 10 CFR 50.67 are considered safety functions for both IP2 and IP3. However, in the plant specific definitions of safety related used for SSC classifications, the IP2 definition included 10 CFR 50.67 but the IP3 definition did not. Since the IP3 definition did not include 10 CFR 50.67, this difference was discussed in Section 2.1.1.1.2 of the LRA as recognized by the SER. Since the IP2 definition (and thus, the determination of safety functions and the classification of SSC as safety-related) matched 10 CFR 54.4(a)(1) in this regard, no further discussion was provided in LRA section 2.1.1.1.1.	
		Suggest changing the text above as follows to correct the characterization of the IP2 dose requirements: The dose criteria are set forth in 10 CFR 50.67(b)(2) and 10 CFR 100.11 for IP2, as reflected in the LRA. Although the IP3 CLB definition of "safety-related" did not explicitly include reference to 10 CFR 50.67(b)(2), the requirements of 10 CFR 50.67(b)(2), which concern the use of an alternate source term in the dose analysis, ~~are not applicable to IP2 but~~ are also applicable to IP3, which has been approved for the use of an alternate source term.	

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License Renewal Project Report Number: **LRA SER with Open Items**

Comment No.	Section/Pg.#	Comment	
11	2.1.4.1.3/ pg 2-10	In the first line, add "of" between the words "basis its."	
12	2.1.4.2.2/ pg 2-15	First full paragraph, third sentence. Delete "Q" from "SER Section 2.3A.3.19Q."	
13	2.3A.2.1.1/ pg 2-46	Paragraph 1, line 10: SER states "high-end safety pumps". LRA states "high-head safety injection pumps"	
14	2.3A.3.3.2/ pg 2-59	In 4th paragraph, the discussion of RAI 2.3A.2.2-1 does not appear to accurately reflect the actual RAI. It says the RAI asks applicant to identify systems not in scope for (a)(2) that had nonsafety-related components that were not identified as in scope for (a)(2). All systems not in for (a)(2) will have components that are not identified as in for (a)(2).	
15	2.3A.3.3.2/ pg 2-60	CCW system, item (d) and (e), Change "four component types" to "five component types" that are identified in the tables referenced.	
16	2.3A.3.11/ pg 2-71	1st paragraph third sentence; change "IP2" to IP1 (...some associated "IP2" (should be IP1) fire protection components such as hydrants...)	
17	2.3A.3.11.2/ pg 2-74	Last paragraph; change LRA-22751-0 to LRA-227551-0.	
18	2.3A.3.11.2/ pg 2-79	1st paragraph; add hydrant (#18) to the list of hydrants that are not highlighted. See response to RAI 2.3A.3.11-1 and previous page 2-78.	
19	2.3A.3.11.2/ pg 2-84	6th paragraph starting with "Lubricating oil collection system (...in LRA Section 2.3.3.12 and Tables 3.3.2-12-IP2 and 3.3.2-12-IP3...), change table reference from "3.3.2-12-IP2 and 3.3.2-12-IP3" to "2.3.3-12-IP2 and 2.3.3-12-IP3".	
20	2.3A.3.11.2/ pg 2-85	Editorial, 3rd paragraph; 3rd sentence starting with (..."Plant Drains" and Tables 2.3.3-18-IP2 and 2.3.3-18-IPE...), change last table reference from IPE to IP3.	

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Comment No.	Section/Pg.#	Comment	
21	2.3A.3.11.2/ pg 2-85	Last paragraph; 1st sentence, remove "strainer housings" and "heater housings" from the list that identifies these component types as "valve body". Strainer housings and heater housings are included as component type "strainer housing" and "heater housing" respectively, in LRA Tables 2.3.3-11-IP2 and 2.3.3-11-IP3. Reference; response to RAI 2.3A.3.11-2.	
22	2.3A.3.11.2/ pg 2-86	2nd paragraph; The paragraph states that heat exchanger (tube) is not a component of the fire protection systems in IP2 and IP3. IP3 FP – CO2 system includes a heat exchanger consisting of a coil (tube) in air, which is addressed in LRA table 2.3.3.12-IP3 as component type "heat exchanger (tube)" with the aging management review results in LRA table 3.3.2-12-IP3. Remove "heat exchanger (tube)" from this paragraph. See response to RAI 2.3A.3.11-2.	
23	2.3A.3.19.2/ pg 2-107	Bullet item: integrated liquid waste handling. Need to clarify that the referenced section "11.1.2.1" is UFSAR (IP2).	
24	2.3A.4.1.1/ Pg 2-109	1st paragraph / 7th line, the flow venturi is to measure flow. Pressure is measured by separate pressure transmitters.	
25	2.3B.3.11.2/ pg 2-162	4th paragraph, third sentence should be revised to state that "the foam suppression systems for various areas in the turbine building meet the scoping criterion of 10 CFR 54.4(a)(3), in addition to 10 CFR 54.4(a)(2)". The last sentence of the paragraph should state that "the aging management review results for components with an internal environment of air summarized in table 3.3.2-11-IP3 are applicable to the portions of the foam suppression systems normally containing air". 5th paragraph; in the discussion of the fluid-containing portions of the foam systems for various areas in the turbine building that have been identified as being within scope of license renewal, the table referenced "3.3.2-19-IP3" is incorrect. Table "3.3.2-19-20-IP3" is the applicable table for this portion of the system.	
26	2.3B.3.17/ pg 2-173 and 2-174	8th paragraph last sentence …LRA Section 2.3.3.17, page 2.3-141… (should be page 2.3-67 not 2.3-141)	

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Comment No.	Section/Pg.#	Comment	
27	2.3B.3.17/ pg 2-174	1st paragraph references pg 2.3-141, (should be page 2.3-67)	
28	2.3B.3.17.2/ pg 2-175	Response item (C); The EDG jacket water expansion tanks are 40-gallon. Change 46-gallon to 40-gallon. See drawing 9321-H-20283	
29	2.3B.3.19/ pg 2-179	Says the ammonia/morpholine system supplies ammonia or morpholine for pH control to the condensate system. While the system's purpose is to supply ammonia or morpholine as stated in the LRA, it may be used to supply alternate water treatment chemicals, such as hydrazine or ethanolamine. Revise SER to reflect LRA description "The purpose of the ammonia/morpholine addition (AMA) system is to provide…"	
30	2.3A.4.1 / Page 2-110 and 2.3B.4.1 / Page 2-187	The SER states: "The applicant stated that an exception to this is the atmospheric dump valves and MSIVs, which close on loss of air but are credited with being re-opened, as necessary, in an accident scenario, using standby nitrogen in bottles or compressed air stored in accumulators." The discussion should be revised to state the exception in more general terms as follows. "The applicant stated that ~~an~~ exceptions to this ~~is~~ are valves ~~the atmospheric dump valves and MSIVs, which~~ that close on loss of air but are credited with being re-opened, as necessary, in an accident scenario, using standby nitrogen in bottles or compressed air stored in accumulators."	
31	2.3B4.1.1/ Pg 2-185	2nd paragraph / 6th line, the flow venture is to measure flow. Pressure is measured by separate pressure transmitters.	
32	2.4/ pg 2-196	In the 4th paragraph change the 5th sentence from, "The staff further confirmed from USFSAR Section 16.12 for IP3 that the liquid waste storage building is a seismic class III…" to "The staff further confirmed from UFSAR Section 16.12 for IP3 that the liquid waste storage building is a seismic Class III…".	

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Comment No.	Section/Pg.#	Comment	
33	2.4/ pg 2-202	In the paragraph at the very top of the page, change the sentence continued from the previous page from "...which is exposed to mild environment..." to "...which is exposed to an air-indoor environment...".	
34	2.4/ pg 2-218	Change the 3rd sentence of the last paragraph from "...pressure boundary intended function for the below-grade spent fuel pit wall." to "...pressure boundary intended function for exterior walls below grade, which includes the spent fuel pit wall."	
35	2.5.1.1 / page 2-226	The last bullet for the list of electrical commodities subject to AMR states, "138 kV and 13.8 kV direct burial insulated transmission cables." This commodity should not include the 13.8 kV cables, because this belongs with the electrical commodity, "inaccessible medium-voltage (2kV to 35kV) cables not subject to 10 CFR 50.49 EQ Requirements."	
36	2.5.1.2 / page 2-227	The reference to UFSAR Section 8.2.1 does not state which unit. This is a quote from IP2 UFSAR, Section 8.2.1. This quote provides the information for how the Buchanan 138kV Substation is further connected to the grid, but this is not information needed for the IP2 or IP3 connection to the 138 kV Buchanan Substation. The recommended change from RAI response 2.5-1 (11/16/07) is: The staff notes that, as discussed in Section 8.1.2.1, "10 CFR 50 Appendix A General Design Criterion 17 - Electric Power Systems," of the IP2 UFSAR. The two physically independent circuits supplying offsite power to IP2 are the Buchanan Substation via the Con Edison 138 kV system feeder and the Buchanan 13.8 kV system feeder. The 138 kV system feeder is the primary offsite power source connected to the 6.9 kV buses through the station auxiliary transformer. The 13.8 kV system feeder is the secondary offsite power source connected to the 6.9 kV buses through the GT autotransformer.	

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Comment No.	Section/Pg.#	Comment	
37	2.5.1.2 / page 2-227	The reference to UFSAR Section 8.2.1.1 does not state which unit. This is a quote from IP2 UFSAR, Section 8.2.1.1. The first sentence of the quote should be, "Three external sources of standby power are available to Indian Point Unit 2." This quote is from the "Reliability Assurance" section, and is misleading, in the fact that it provides the information for how the Buchanan 138kV Substation is further connected to the grid, but this is not information needed for the IP2 or IP3 connection to the 138 kV Buchanan Substation. The recommended change from RAI response 2.5-1 (11/16/07) is: As discussed in Section 8.2.1, "Network Interconnection", and 8.2.3, "Emergency Power – Sources Description," of the IP3 UFSAR. The two physically independent circuits supplying offsite power to IP3 are the Buchanan Substation via the Con Edison 138 kV system feeder and the Buchanan 13.8 kV system feeder. The 138 kV system feeder is the primary offsite power source connected to the 6.9 kV buses through the station auxiliary transformer. The 13.8 kV system feeder is the secondary offsite power source connected to the 6.9 kV buses through the GT autotransformer.	

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License Renewal Project Report Title: **Indian Point Draft Safety Evaluation Report January 2009**

License Renewal Project Report Number: **LRA SER with Open Items**

Comment No.	Section/Pg.#	Comment	
38	2.5.1.2 / page 2-228	The majority of the response to RAI 2.5-1 NL-07-138, (11/16/07) was omitted from the SER description. The RAI response provided UFSAR references for both IP2 and IP3, which were directed at the questions asked. These are better UFSAR references than those cited in the draft SER. IP2 UFSAR Section 8.1.2.1, "10 CFR 50 Appendix A General Design Criterion 17 - Electric Power Systems," IP3 UFSAR Section 8.2.1, "Network Interconnection", and 8.2.3, "Emergency Power – Sources Description," The recommended change from RAI response 2.5-1 (11/16/07) could be added after the UFSAR discussion: Based on the guidance, the definition of the offsite power source is: "The offsite power systems of U.S. nuclear power plants consist of a transmission system (grid) component that provides a source of power and a plant system component that connects that power source to a plant's onsite electrical distribution system which powers safety equipment. The staff has historically relied upon the well-distributed, redundant, and interconnected nature of the grid to provide the necessary level of reliability to support nuclear power plant operations." The Buchanan substation, which includes the 345 kV, the 138 kV, and the 13.8 kV sections, is a key element of the well-distributed, redundant and interconnected grid or transmission system that constitutes the offsite power source for IP2 and IP3. The Buchanan substation provides for the interconnection of multiple sources of power and provides dispatch control for a multiple county transmission network. The multiple power sources are interconnected through switchyard bus, transmission conductors, and breakers within the substation.	

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Comment No.	Section/Pg.#	Comment	
39	2.5.1.2 / page 2-228	The discussion for RAI 2.5-3 is not complete as it fails to address isolated phase bus. The following changes are recommended. In its response, dated November 16, 2007, the applicant stated that ~~these components~~ electrical splices, terminal blocks, and control cables were included in the commodity group "electrical cables and connections not subject to 10 CFR 50.49 EQ requirements." Thus, these components are subject to an aging management review. Isolated-phase bus is not subject to an aging management review, because it does not perform an intended function.	
40	3.0.3.1.7 / page 3-30 through 3-32	The title of the program used throughout this section should match the title of the program given in the section heading. There are numerous slight variations used throughout the section.	
41	3.0.3.1.7/ pg 3-32	Operating Experience Second sentence is: When implementing this new program, the applicant will consider industry operating and plant-specific operating experience when implementing this program. Delete one of the underlined phrases. Also, in first line of following paragraph, "Non-QE" should be "Non-EQ."	
42	3.0.3.1.8 / page 3-33	A correction is needed for the statements in the staff evaluation. "As documented in the report, the staff found that the Non-EQ Insulated Cables and Connections Program ~~Non-EQ Inaccessible Medium-Voltage Cable Program~~ elements (1) through (6) are consistent with the corresponding elements in the GALL Report AMP XI.E1 except for the following area."	

Comment Form

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Comment No.	Section/Pg.#	Comment	
43	3.0.3.1.9/ pg 3-37	UFSAR Supplement Third sentence should be: Additionally, the applicant revised these sections for several one-time inspection activities that used the term "components" to replace the term "components" with the term "tanks, pump casings, piping, piping elements and components" as appropriate. Add underlined words as included in the audit report, since some component types (e.g., tanks and pump casings) are not applicable to all systems.	
44	3.0.3.1.11/ pg 3-42	Third paragraph. Suggest the following changes to the second sentence: The applicant also clarified that the inservice inspection requirements in the 1998 Edition of the ASME Code Section XI, inclusive of the 2000 Addenda~~, and that this edition of the Code~~ requires either a surface examination or volumetric examination of the closure studs when they are removed.~~, t~~ This is the same examination requirement ~~criterion~~ for these studs that is provided in the 2001 Edition of ASME Code Section XI, inclusive of the 2003 Addenda~~, and with the guidance that is provided~~ referenced in GALL AMP XI.M3. Suggest the following change to the fourth sentence to be consistent with ML081760265: The staff also noted that, in the applicant's letter of June 11, 2008 (ML081760265), the applicant clarified that the updated Code of Record for IP2 is the 2001 Edition of the ASME Code Section XI, inclusive of the 2003 Addenda, and that the Code of Record for IP3 is the 1989 Edition of the ASME Code Section XI~~, inclusive of the 2000 Addenda~~. Note that this change may require a change to the sixth sentence.	

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Comment No.	Section/Pg.#	Comment	
45	3.0.3.1.11/ pg 3-43	First full paragraph. Contrary to the discussion starting with the second sentence, the response to audit item 81 is as follows: Results of testing shown on available test reports for the actual reactor head closure stud and nut material showed an average measured tensile strength value for each heat number < 170ksi. Documentation of available test results were provided for on-site review. Although the details presented in the SER were part of the discussion during the audit, this response does not support the SER discussion as written. Suggest attributing discussion to audit and deleting reference to response in letter.	
46	3.0.3.1.12/ pg 3-46	Fourth bulleted item, last line. "IP2" should be "IP3."	
47	3.0.3.1.12/ pg 3-48	Third bulleted item, last line. "IP2" should be "IP3." Fourth bulleted item, second line. "97" should be "78."	
48	3.0.3.2.1/ Pg 3-58	3rd paragraph – Typo should be Aboveground Steel Tank program, instead of "Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel".	
49	3.0.3.2.2 Bolting Integrity Program / page 3-60	"*The applicant agreed to include loss of preload as an aging effect and listed the Bolting Integrity Program as the program used to manage the aging effect. By letter, dated December 18, 2007, the applicant revised its commitment and amended the LRA to manage the aging effect of loss of preload.*" are incorrect statements. The referenced letter of 12/18/2007 actually states "loss of pre-load is a design-driven effect and not an aging effect requiring management. This SER statement should be changed to read "The applicant stated that the Bolting Integrity Program includes provisions to manage loss of preload. By letter, dated December 18, 2007, the applicant revised its commitment for implementing the Bolting Integrity Program to explicitly state that the Bolting Integrity Program manages loss of preload."	

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Comment No.	Section/Pg.#	Comment	
50	3.0.3.2.8 Fire Water System Program / page 3-85	In the third paragraph, the staff refers to audit item 152. The SER discussion is not exactly correct as the audit item requests justification for excluding the jockey pumps from the HP fire water systems and refers to a number of testing documents. These documents are not part of the IP Fire Water System Program proposed for license renewal which is essentially consistent with the NUREG-1801 recommended program. The jockey pumps were never excluded from the Fire Water System Program. The part of the response to audit item 152 that states that "*fire water jockey pumps support standby operation of the fire water system and are conservatively included in the scope of the license renewal and subject to an AMR. The Fire Water System Program manages component aging effects [loss of material from internal surfaces of fire water system components]*" adequately characterizes their treatment in the aging management review. Since the NUREG-1801 program does not specify testing of jockey pumps, the three paragraphs discussing testing of the jockey pumps do not appear relevant to discussion of this program for license renewal.	
51	3.0.3.2.9/ Pg 3-91	3rd paragraph, last word – Could not locate footnote 2. Should this be footnote 6?	
52	3.0.3.2.11 / page 3-98	A correction is needed for the following statement in the staff evaluation. "In LRA Amendment 1, dated December 18, 2007 ~~Amendment 3, dated March 24, 2008~~, the applicant revised LRA Section B.1.20, "Metal Enclosed Bus Inspection," Program Description, second paragraph, and the enhancements as follows:"	

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Comment No.	Section/Pg.#	Comment	
53	3.0.3.2.15 Structures Monitoring Program / Page 3-123	IP2 Spent Fuel Pool Crack/Leak Paths (Audit Item 360) The "presence of tritium in groundwater" is NOT by itself an indicator of a continuing leak. There is tritium remaining in the ground water in the vicinity of the pool as described in the Hydrology Report that Entergy submitted to NRC in January 2008. This tritium is residual contamination which is expected over time to attenuate away. Suggest revising as follows. To provide additional indication of potential spent fuel pool leakage, the applicant has committed to test the groundwater in monitoring wells outside the IP2 spent fuel pool for the concentration of tritium, every 3 months. An increasing trend of tritium in the groundwater could be indicative of a continuing leak from the spent fuel pool (Commitment 25).	
54	3.0.3.3.1/ pg 3-134	Typo. Remove quotes after the word density at the end of the page.	
55	3.0.3.3.2/ pg 3-137	In the third paragraph of the staff evaluation, the staff discusses the response to audit item 26 provided in letter dated December 18, 2007. The comparison requested by the staff in audit item 26 is shown in Attachment 1 to the letter. Consider removing the sentence indicating that the staff "found the response to be unacceptable because it did not answer the question" since the discussion does not clearly identify the applicable question and response or indicate why the response did not answer the question. Based on the discussion of audit item 26 and its response, it appears the staff asked for the comparison and it was provided as requested.	
56	3.0.3.3.2/ pg 3-138	In the 2nd paragraph, change the 2nd sentence from "The IP2 uses…" to "The IP2 program uses…".	
57	3.0.3.3.4/ pg 3-156	In the second and third paragraphs under item 2 near the bottom of the page, two typos were noticed. Add an 's' to "program" in the second paragraph. In the third paragraph, a word appears to be missing "The staff that the applicant…"	

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Comment No.	Section/Pg.#	Comment	
58	3.0.3.3.4/ pg 3-165	Item 10, page 3-165, middle of page paragraph – AMP B.1.35 is the Steam Generator Integrity Program, not Steam Generator TUBE Integrity Program. This should be corrected in three places in the paragraph.	
59	3.0.3.3.7 / page 3-177	(Electrical Review Only) Ensure Open Item 3.0.3.3.7-1 addresses the "U2 offsite power feeder 138 kV underground transmission cable" as committed to in letter NL-08-127 (8/14/08), and discussed in SER section 3.6.2.3, "High Voltage Power Cables".	
60	3.0.3.3.7/ pg 3-178	Item (1) under staff evaluation – typo "IPNG" should be "IP". Should also change in three other locations throughout the SER. In the third paragraph in item (1), the phrase "that the applicant had identified" is repeated.	
61	3.0.3.3.7/ pg 3-177	The list of systems and structures inspected by the PSPM program should also include Main Steam (letter dated December 18, 2007) and offsite power feeder 138 kV underground transmission cable (letter dated April 14, 2008).	
62	3.0.3.3.7/ pg 3-180, 3-181	The issues listed for parameters monitored or inspected are not consistent with Open Item 3.0.3.3.7-1, Part 1 on page 1-13. Also these questions do not match RAI-3.0.3.3.7-1. For example a question about "fouling" was not in the RAI nor is it listed with the open item. At the top of page 3-181, Open Item 3.0.3.3.7-1 Part **2** is referenced rather than Part **1.**	
63	3.0.3.3.7/ pg 3-182	Section (4) contains discussion of Section 5.5.2 of each technical specification. At the bottom of the page, the staff states that "...it is not clear to the staff on whether the requirements in TS 5.5.2 for IP2 and TS 5.5.2 for IP3 were being credited to aging management..." The relationship between the aging management PSPM program and program cited in technical specifications was dropped from open item 3.0.3.3.7-1, Part 1 during discussion with the staff. Technical specification requirements for PSPM are not credited with aging management. Consider removing this discussion and open item link. **Section 3.0.3.3.7 should be revised to reflect the latest RAIs and open item list.**	

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Comment No.	Section/Pg.#	Comment	
64	3.0.3.3.8/ pg 3-190	Section (6). Remove reference to the NaOH shipments and house service boiler systems since the program only applies to stator cooling water. (Reference audit item 90 in Attachment 1 of Entergy letter dated December 18, 2007.)	
65	3.1.2, Table 3.1-1/ pg 3-200	Bottom row, line 3.1.1-30. Entry in AMP in LRA column should include "Water Chemistry Control – Primary and Secondary"	
66	3.1.2, Table 3.1-1/ pg 3-202	Middle row, line 3.1.1-36. Entry in Staff Evaluation column should state "Not applicable" rather than "Consistent with GALL Report."	
67	3.1.2, Table 3.1-1/ pg 3-210	Second row, line 3.1.1-74. The entry in the Staff Evaluation column refers to SER Section 3.1.2.1.4. SER Sections 3.1.2.1.7 and 3.1.2.1.8 should also be referenced since they are also relevant to this table line. Also, in the AMP in LRA column, the reference to the One Time Inspection program should be deleted (or at the very least the parenthetical phrase referring to certain other components) The response to Item 209 applied the Steam Generator Integrity program to these "other components" negating the need to specifically mention One Time Inspection. Although as indicated in the LRA, OTI will be used to verify effectiveness of the water chemistry programs, OTI need not be listed to be consistent with the AMP in GALL Report for this line.	
68	3.1.2, Table 3.1-1/ pg 3-212	First row, line 3.1.1-84. Entry in AMP in LRA column should say "Not applicable for IP2" and include "Water Chemistry Control – Primary and Secondary and One Time Inspection for IP3"	
69	3.1.2.1.2/ pg 3-218	Quoted response in first paragraph. Text with strikethrough shows text deleted from the line 3.1.1-52 of the LRA. To be consistent, the sentence "Nevertheless, the Bolting Integrity Program . . . reactor vessel studs." should be marked as added text (underlined). Also in this paragraph, "7000F" should be "700°F" in two places.	

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Comment No.	Section/Pg.#	Comment	
70	3.1.2.1.2/ pg 3-219	The last part of the top paragraph on the page reads as follows (underlining added): The staff finds this to be an acceptable basis for concluding that cracking due to In the staff's SE on WCAP-14574-NP-A dated October 26, 2000, the staff provided it basis that cracking due to SCC does not need to be managed in SA-193 Grade B7 bolting materials if it was confirmed that the materials for the bolting components were procured to either yield strengths less than 150 ksi (considered high yield strengths) or to hardness values less than or equal to 32 on a Rockwell C Hardness scale. The staff finds that the applicant has provided an acceptable basis for concluding that cracking due to SCC is not an aging effect requiring management for these bolting components because it is consistent with the staff's basis in its SE on WCAP-14574-NPA that cracking of SA-193, Grade B7 would not need to be managed if the materials for the bolting components were procured to either yield strengths less than 150 ksi or to hardness values less than or equal to 32 on a Rockwell C Hardness scale. The first underlined text is not a complete sentence and should be completed or deleted. The text underlined at the end of the paragraph is redundant to the preceding text (assuming first sentence is completed); suggest the preceding text be deleted.	
71	3.1.2.1.3/ pg 3-221	First full paragraph, last line. Both the IP2 and IP3 CASS pressurizer spray heads are addressed in SER Section 3.1.2.2.7. Either add IP3 or delete IP2 from the sentence.	
72	3.1.2.1.3/ Pg 3-225	First paragraph describes reactor vessel bottom head drains. There are no reactor vessel bottom head drains on either IP2 or IP3.	
73	3.1.2.1.5/ Pg 3-228 & 3-229	In this section there is a discussion of Steam Generator Aux. Feedwater nozzles. There are no Aux. Feedwater nozzles in IP2 or IP3 Steam Generators. Aux. Feedwater connects to the main feedwater pipe outside containment.	
74	3.1.2.2.2/ pg 3-237	First full paragraph (beginning LRA Table 3.1-1 ..) Next to last line, add the word "staff" between the words "the finds."	
75	3.1.2.2.13/ pg 3-251	Last paragraph, first line. First phrase of sentence (The staff that in . .) is incomplete.	

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Comment No.	Section/Pg.#	Comment	
76	3.1.2.2.15/ pg 3-255	Second full paragraph (beginning Thus, based on this review . .). This paragraph is part of the evaluation in section 3.1.2.2.12 for management of cracking. It should be revised to address the section 3.1.2.2.15 discussion of void swelling, including the relevant GALL references for void swelling.	
77	3.1.2.2.16/ pg 3-257	Final paragraph of section. Although this will likely be corrected when the open item is resolved, the current reference to "Open Item 3.1.2-1, Part **B**" should be to "Open Item 3.1.2-1, Part **A**."	
78	3.2.2.1.2/ Pg 3-275	Third line from the bottom of the page, "consider potential doe this mechanism." Sentence does not make sense. Should say, "installation that doesn't properly consider the potential for this mechanism."	
79	Table 3.3-1/ pg 3-305	For Item number 3.3.1-26, the LRA states "The Oil Analysis Program manages loss of material in copper alloy components. The One-Time Inspection Program will be used to confirm the effectiveness of the Oil Analysis Program." The SER list the AMP in LRA column as "not applicable". The programs listed should be Oil Analysis and One-Time Inspection consistent with GALL.	
80	Table 3.3-1/ pg 3-314	For item number 3.3.1-80, the AMP in LRA item lists both service water integrity and one-time inspection. The LRA only uses service water integrity for this line item. One-time inspection should be removed.	
81	Section 3.3.2.2.10/ pg 3-342	For Item 5; third paragraph, The One-time Inspection Program should be listed with the Bolting Integrity, External Surfaces, and Periodic Surveillance and Preventive Maintenance Programs.	
82	Section 3.3.2.2.12/ pg 3-345	For Item 2, third paragraph, reference to the "Diesel Fuel Monitoring Program" should be "Oil Analysis Program".	
83	3.3A.2.3.12/ pg 3-362	In paragraph 2 first sentence, the SER refers to flexible bellows being carbon steel but LRA table 3.3.2-15-IP2 specifies stainless steel as the material for flexible bellows for IP2 security generator.	

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Comment No.	Section/Pg.#	Comment	
84	3.3A.2.3.13/ pg 3-363	Paragraph 3 first sentence, the SER states that aging effect fouling for carbon steel heat exchanger housing exposed to an external environment of air-indoor but LRA table 3.3.2-16-IP2 calls out loss of material. Fouling is identified as aging effect for heat exchanger fins. In same paragraph, the reference to GALL item VII.H2-3 applies to heat exchanger shell. These inconsistencies should be resolved.	
85	3.3A.2.3.15/ pg 3-365	Next to last paragraph, 6 lines from the bottom – remove "for inspected". This line should read " to inspect for leakage".	
86	3.3A.2.3.22/ pg 3-370	Paragraph 1 first sentence the SER states that the Water Chemistry Control – Auxiliary Systems Program utilized but it should be Primary and Secondary.	
87	3.3B.2.3.9/ pg 3-384	Paragraph 2 first sentence should be filter rather than nozzle.	
88	3.3B.2.3.21/ pg 3-391	Paragraph 2 first sentence there are no pump casings or strainer housings with copper alloy shown in LRA Table 3.3.2-19-13-IP3. Pump casings and strainer housings should be omitted from this paragraph. In paragraph 3, "managing" should be "manage".	
89	Table 3.4-1 item 3.4.1-3/ pg 3-405 And Section 3.4.2.1.1/pg 3-413	The "Not applicable to IP2 Steam and Power Conversion System" entry in the Staff Evaluation column is not correct and should be deleted. Item 3.4.1-3 is applicable to IP2 Steam and Power Conversion System. See LRA Table 3.3.2-19-1-IP2, Auxiliary Steam System. Additionally; In the associated section 3.4.2.1.1, pg 3-413 second paragraph should be revised to include IP2 steam and power conversion system that references item 3.4.1-3. See reference Table listed above.	

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Comment No.	Section/Pg.#	Comment	
90	Table 3.4-1 Item 3.4.1-8/ pg 3-406 And Section 3.4.2.2.3/ pg 3-424 and 3-425	The "Not applicable to IP3" entry in the Staff Evaluation column is not correct and should be deleted. Item 3.4.1-8 does apply to IP3. See LRA Table 3.3.2-19-12-IP3. Additionally; In the associated section 3.4.2.2.3; pg 3-424 last paragraph should be revised to include IP3 and pg 3-425, of the same section, first paragraph should be revised to include IP3 for Item 3.4.1-8. See Table 3.3.2-19-12-IP3.	
91	Table 3.4-1 Item 3.4.1-30/ pg 3-409 And section 3.4.2.1.6, pg 3-417	LRA Table 3.4.1, Item Number 3.4.1-30, was revised to include carbon steel components, main steam safety valve (MSSV) tailpipes (component type "piping") and the atmospheric dump valve (ADV) silencers with internal surfaces exposed to outdoor air or condensation. Loss of material for the MSSV tailpipes and the ADV silencers will be managed by the Periodic Surveillance and Preventive Maintenance (PSPM) Program. SER Table 3.4-1 item 3.4.1-30 should be revised to include the PSPM program along with the applicable programs already identified. See response to Audit Item 240 in Attachment 1 of Entergy letter dated December 18, 2007. Additionally; In the associated section 3.4.2.1.6, pg 3-417 first paragraph should be revised to include the "main steam safety valve (MSSV) tailpipes and the atmospheric dump valve (ADV) silencers" along with the condensate storage tanks (CSTs), in the discussion of internal surface exposed to outdoor air or condensation.	

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Comment No.	Section/Pg.#	Comment	
92	Table 3.4-1 Item 3.4.1-32/ pg 3-410 And Section 3.4.2.1.8/ pg 3-418	The "External Surfaces Monitoring" entry in the "AMP in LRA" column of table 3.4-1 item 3.4.1-32 should be deleted. Additionally; In the associated section 3.4.2.1.8 (first and second paragraphs) the discussion of the external surface monitoring program for stainless steel tubing exposed to indoor air is not correct. The references to 3.4.1-32 in LRA Table 3.3.2-19-6-IP2 are only for the "internal" surface of components exposed to raw water, with loss of material managed by the Periodic Surveillance and Preventive Maintenance and One Time Inspection programs.	
93	3.4.2.2.5/ pg 3-428	Last paragraph; Table reference "3.3.2-19-IP3" should be "3.3.2-19-23-IP3" for the Main Feedwater and Service System Heat Exchanger (Shell), carbon steel, component exposed to lubricating oil.	
94	3.4.2.2.7/ pg 3-432	First paragraph; Item 3.4.1-15 is not used in Table 3.3.2-19-4-IP3. Table 3.3.2-19-4-IP3 does not contain the material type and aging effect combination discussed in this paragraph. Remove table 3.3.2-19-4-IP3 reference.	
95	3.5/ pg 3-449	For Item No. 3.5.1-1, column "AMP in LRA, Supplements, or Amendments" change from "Containment Inservice Inspection (CII)-IWL" to "Containment Inservice Inspection (CII)-IWL and Structures Monitoring Program". Structures Monitoring Program provides for groundwater monitoring.	
96	3.5/ pg 3-453	For Item No. 3.5.1-24, column "AMP in LRA, Supplements, or Amendments", change from "Structures Monitoring Program" to "CII-IWL supplemented by Structures Monitoring Program".	
97	3.5/ pg 3-454	For Item No. 3.5.1-26 change the column "AMP in LRA, Supplements, or Amendments" column from "Not Applicable" to "CII-IWL supplemented by Structures Monitoring Program. In some cases Fire Protection Program supplements the Structures Monitoring program".	

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Comment No.	Section/Pg.#	Comment	
98	3.5/ pg 3-454	For Item No. 3.5.1-27, column "AMP in LRA, Supplements, or Amendments", change from "Not Applicable" to "CII-IWL supplemented by Structures Monitoring Program. In some cases Fire Protection Program supplements the Structures Monitoring program".	
99	3.5/ pg 3-455	For Item No. 3.5.1-30, column "AMP in LRA, Supplements, or Amendments", change from "CII-IWL" to "ISI-IWF".	
100	3.5/ pg 3-457	For Item No. 3.5.1-40, column "AMP in LRA, Supplements, or Amendments", change from "Structures Monitoring Program and ISI-IWF" to "Structures Monitoring Program".	
101	3.5/ pg 3-458	For Item No. 3.5.1-43, column "AMP in LRA, Supplements, or Amendments", change from "Masonry Wall Program" to "Masonry Wall Program Supplemented by Fire Protection Program in some cases".	
102	3.5/ pg 3-467	For Section 3.5.1.2, change "Tank Liners of Stainless Steel (LRA Table 3.5.1, Item 3.5-38)" to "Tank Liners of Stainless Steel (LRA Table 3.5.1, Item 38)".	
103	3.5/ pg 3-467	For Section 3.5.1.3, change "Vibration Isolation Elements (LRA Table 3.5.1, Items 3.5-41 and 3.5-57)" to "Vibration Isolation Elements (LRA Table 3.5.1, Items 3.5.1-41 and 3.5.1-57)".	
104	3.5/ pg 3-467	For Section 3.5.1.4, change "Earthen Water Control Structures (LRA Table 3.5.1, Item 3.5-48)" to "Earthen Water Control Structures (LRA Table 3.5.1, Item 3.5.1-48)".	
105	3.5/ pg 3-467	For Section 3.5.1.2, change "Group B1.1 High Strength Low-Alloy Bolts (LRA table 3.5.1, Item 3.5-51)" to ""Group B1.1 High Strength Low-Alloy Bolts (LRA Table 3.5.1, Item 51)".	
106	3.5/ pg 3-486	For the sentence following (1), change "The applicant had also made commitments to enhance the Structures Monitoring AMP, for to managing aging of inaccessible areas for all structures groups:" to the following sentence, "The applicant had also made commitments to enhance the Structures Monitoring AMP, for managing aging of inaccessible areas for all structures groups:".	

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Comment No.	Section/Pg.#	Comment	
107	Table 3.6-1 / page 3-496	Component group "Metal-enclosed bus – enclosure assemblies" is listed as not consistent with GALL, yet this line item has a Note E in LRA Table 3.6.2-1. This should be listed as consistent with GALL for the same reason as component group "Cable connections – metallic parts". Also, this item is not discussed in SER Section 3.6.2.3.	
108	3.6.2.3 (High-Voltage Power Cables) / page 3-506	The statement in the 4th bullet on this page should be revised to say 60 hertz consistent with Entergy's response to RAI 3.6.2.3-2. "The cable was tested at the manufacturing plant using 60 ~~65~~-hertz alternating current voltage."	

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Comment No.	Section/Pg.#	Comment	
109	3.6.2.3 (High-Voltage Power Cables) / page 3-508	This section discusses Entergy's response to GL 2007-01 for Indian Point and related industry operating experience. Section 3.6.2.3 states, in part: "The applicant's response to Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients," dated May 7, 2008 (ADAMS Accession number ML071350410), indicates that there were two 600-V cable failures that had lead jackets which were installed in a wet environment. Contributing causes to the degradation of these cables were submergence or wet conditions for an extended period of time and installation issues." Entergy's response to GL 2007-01 states that one 600 VAC lead-sheathed cable failed after 19 years of service. The root cause is described as "Mechanically induced damage resulted in arcing as a result of moisture and accumulation of corrosion product in the damaged area. Damage possibly due to cable installation or installation of a new adjacent duct bank. No cable degradation due to moisture ingress. Analysis of cable failure performed by Lucius Pitkin." Therefore, this failure was from mechanical damage to the lead sheath, but the cable failure analysis stated there was no cable degradation due to moisture ingress [into the cable insulation]. The response to GL 2007-01 states the other 600 VAC lead-sheathed cable was replaced after 30 years of service, because of a degraded condition found during testing. The Root Cause states, "Probable cause was insulation thinning during original installation with subsequent degradation or damage during the duct back collapse repaired in 1994. Degradation contributing cause was submergence of cable for extended period of time."	

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Comment No.	Section/Pg.#	Comment	
109 (cont.)	3.6.2.3 (High-Voltage Power Cables) / page 3-508	This was not a cable failure, because it was replaced after testing found a degraded condition. Also, the cable sheath (lead) was damaged by a duct bank collapse 11 years prior to the degraded condition being unacceptable.	
110	4.1.1/ pg 4-1	In the first paragraph, the listing of CLB documents does not match the listing provided in LRA section 4.1.1. Some of these differences may just be considered more generic descriptions, but other differences such as "engineering work requests" do not appear consistent with LRA section 4.1.1.	
111	4.2.4.4/ Pg 4-14	In conclusion regarding UFSAR supplement, the SER states "...except for the revisions described above...". No revisions appear to be described above. Suggest deleting this phrase. Perhaps it was intended for Section 4.2.5.4.	
112	4.2.5.2; last paragraph on page 4-16	The RTpts value at the end of the period of extended operation for IP3 plate B2803-3 is 279.5°F instead of 279.9°F as amended by letter dated January 17, 2008.	
113	4.3 last paragraph/ pg 4-19	Per audit item 118 (in Amendment 3, NL-08-057), component replacement was also listed as an option to disposition a flaw. The sentence was changed to "When a flaw is detected during in-service inspections, either the component may be replaced, repaired, or evaluated for continued service in accordance with ASME Section XI. Revise the SER to reflect the component replacement option.	
114	4.3.1.8.1/ Pg 4-38	1st complete paragraph / 1st sentence, typo "The staff noted the that applicant" should be "The staff noted that the applicant".	

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Comment No.	Section/Pg.#	Comment	
115	4.3.3.1/ Pg 4-41	Last sentence of the first paragraph states, "The staff concluded that the effects of the reactor coolant environment should be included in the calculated fatigue life of components, and it closed GSI-190." This phrase is not found in the memo that closed out GSI-190. It appears that this sentence should be revised to more accurately reflect the December 26, 1999, Thadani memo that closed out GSI-190. Suggested revision would say, "The staff concluded that licensees should address the effects of the coolant environment on component fatigue life as aging management programs are formulated in support of license renewal, and it closed GSI-190."	
116	4.3.3.2/ Pg 4-42	First full paragraph ends with a sentence referring to meeting the requirements of 54.21(c)(1)(ii). This regulation is one of three options for evaluating TLAAs. As an option, it should not be referred to as a requirement. A more accurate presentation of the approach would be projecting the analysis in accordance with the option provided by 54.21(c)(1)(ii).	
117	4.3.3.2/ Pg 4-43	In second paragraph on this page, the third sentence says, "As stated in Commitment 33, the applicant's Fatigue Monitoring Program now includes the assessment of the impact of the reactor water environment on critical components, as identified in NUREG/CR-6260." The assessment of reactor environmental effects was included in the program as described in the original LRA. This sentence should be replaced with text indicating that the exception noted in the previous sentence regarding the periodic updates of fatigue usage calculations was eliminated. The following sentence appropriately refers to SER Section 3.0.3.2.6 that provides the staff's evaluation of the removal of this exception.	
118	4.3.3.2/ Pg 4-45	First paragraph refers to LRA Tables 4.3-12 and 4.3-13. The correct references are 4.3-13 and 4.3-14.	
119	4.4/ Pg 4-47	First sentence states the EQ Program is a TLAA. Sentence should be clarified to say that the EQ Program is an aging management program to manage the effects of aging for EQ TLAAs in accordance with 10 CFR 54.21(c)(1)(iii). The program itself is not a TLAA according to the definition of TLAA in 10 CFR 54.3.	

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Comment No.	Section/Pg.#	Comment	
120	4.4/ Pg 4-47	Recommend the following change in the first paragraph, fourth sentence: EQ equipment comprises safety-related and ~~Q-list~~ electrical equipment, nonsafety-related equipment whose failure could prevent satisfactory accomplishment of any safety-related function, and ~~necessary~~ certain post-accident monitoring equipment.	
121	4.4.1/ Pg 4-47	First paragraph should be revised to clarify that LRA section 4.4 summarizes the evaluation of TLAAs associated with EQ of electric equipment. The referenced section does not address evaluation of EQ of electric equipment except for that equipment with an associated EQ TLAA.	
122	4.4/ Pg 4-47	Second paragraph misquotes the license renewal rule. The rule does not specify "EQ TLAAs" or discuss "each type of EQ equipment". The rule addresses analyses. Not all EQ equipment has associated analyses that meet the definition of TLAA. The emphasis should be shifted to address analyses rather than equipment. The equipment that is included in the EQ program is irrelevant in a discussion of TLAAs since not all EQ equipment is associated with a TLAA. These changes should ensure consistency with first paragraph of Section 4.4.1.	
123	4.7.1.1 third paragraph/ pg 4-51	Minor typo- should be WCAP-15666-A (two places)	
124	IPEC letter NL-09-018 dated 1/27/2009	Response for RAI-2.3B.4.2-2 (Unit3) has a typo as shown below. "are nonsafety-related valves as indicated by their location inside the Class 1 Boundary" Should say, "are nonsafety-related valves as indicated by their location outside the Class 1 boundary".	