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Fred R. Dacimo
Vice President
License Renewal

September 24, 2008
Indian Point Units 2 & 3
Docket Nos. 50-247 & 50-286
NL-08-143

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

SUBJECT: **Additional Information Regarding License Renewal Application – Reactor Vessel Fluence Clarification**

Dear Sir or Madam:

Entergy Nuclear Operations, Inc is providing, in Attachments 1, and 2, a reactor vessel fluence clarification, and revision 6 of the IPEC commitment list, pertaining to the License Renewal Application for Indian Point 2 and Indian Point 3. The additional information provided in this transmittal provides clarifications and additional information to previously submitted information in response to staff and audit questions.

Attachment 2 consists of a revision to the list of regulatory commitments providing one additional commitment associated with the reactor vessel fluence clarification. If you have any questions or require additional information, please contact Mr. R. Walpole, Manager, Licensing at (914) 734-6710.

I declare under penalty of perjury that the foregoing is true and correct. Executed on 9/24/08

Sincerely,

Fred R. Dacimo
Vice President
License Renewal

Attachments: 1. Reactor Vessel Fluence Clarification
2. IPEC Commitment List Revision 6

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
IPEC NRC Senior Resident Inspectors Office
Mr. Robert Callender, Vice President for Programs, NYSERDA
Mr. Paul Eddy, New York State Dept. of Public Service

ATTACHMENT 1 TO NL-08-143

REACTOR VESSEL FLUENCE CLARIFICATION

REGARDING

LICENSE RENEWAL APPLICATION

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

INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3
LICENSE RENEWAL APPLICATION (LRA)
REACTOR VESSEL FLUENCE CLARIFICATION

Reactor Vessel Fluence

In Section II F of 10 CFR 50 Appendix G, the beltline region of the reactor vessel is defined as

> "The region of the reactor vessel (shell material including welds, heat affected zones, and plates or forgings) that directly surrounds the effective height of the active core and adjacent regions of the reactor vessel that are predicted to experience sufficient radiation damage to be considered in the selection of the most limiting material with regard to radiation damage."

Tables 4.2-1 through 4.2-6 of the LRA, provide information on components in the beltline for IP2 and IP3. Additional reactor pressure vessel components are exposed to projected neutron fluences greater than 1.0E17 n/cm^2. At the request of the NRC staff, additional information is provided on these reactor vessel components. Though not limiting materials and thus, not part of the beltline, these components are evaluated for radiation induced material damage.

The maximum neutron fluences at various axial locations for the Indian Point Unit 2 reactor pressure vessel were calculated using an NRC approved methodology (WCAP-15557-R0, "Qualification of the Westinghouse Pressure Vessel Neutron Fluence Evaluation Methodology") that meets the requirements of Regulatory Guide 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence," March 2001.

The IP2 48 EFPY clad/base metal interface fluence at each axial location is as follows.

Table 1

Component	IP2 Maximum Fluence (n/cm^2)
Outlet Nozzles to Nozzle Shell Welds (lowest extent)	< 1.00E17
Inlet Nozzles to Nozzle Shell Welds (lowest extent)	< 1.00E17
Nozzle Shell Plates	2.26E17
Nozzle Shell Longitudinal Welds	1.95E17
Nozzle Shell to Intermediate Shell Circumferential Weld	2.88E17

Each IPEC reactor pressure vessel has the following dimensions relative to the active fuel stack.

Table 2

Component	Axial Location[1] (cm)
Outlet Nozzles to Nozzle Shell Welds (lowest extent)	272.02
Inlet Nozzles to Nozzle Shell Welds (lowest extent)	266.94
Nozzle Shell Plates	237.81 to 485.93
Nozzle Shell Longitudinal Welds	237.81 to 485.93
Nozzle Shell to Intermediate Shell Circumferential Weld	234.47 to 237.81
Intermediate Shell Plates[2]	-38.66 to 234.47

[1] Axial elevation 0.0 is the midplane of the active fuel stack.
[2] Intermediate shell plates are evaluated in LRA Tables 4.2-1 through 4.2-6.

INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3
LICENSE RENEWAL APPLICATION (LRA)
REACTOR VESSEL FLUENCE CLARIFICATION

IP3 has implemented flux reduction measures resulting in lower projected peak fluences at 48 EFPY. Since the IP2 and IP3 vessel geometries are the same, IP3 maximum fluences are estimated using IP2 fluences as follows.

IP2 48 EFPY peak fluence = 1.906E19 (LRA Section 4.2.1)
IP3 48 EFPY peak fluence = 1.560E19 (LRA Section 4.2.1)

% fluence difference for IP3 = (1.906E19 – 1.560E19)/1.906E19*100 = 18.2% less

Reducing each fluence in Table 1 by 18.2% yields IP3 48 EFPY clad/base metal interface fluences at each axial location as shown below in Table 3.

Table 3

Component	IP3 Maximum Fluence (n/cm^2)
Outlet Nozzles to Nozzle Shell Welds (lowest extent)	< 1.00E17
Inlet Nozzles to Nozzle Shell Welds (lowest extent)	< 1.00E17
Nozzle Shell Plates	1.85E17
Nozzle Shell Longitudinal Welds	1.60E17
Nozzle Shell to Intermediate Shell Circumferential Weld	2.36E17

Determination of Charpy upper-shelf energy (C_VUSE) is described in LRA Section 4.2.2. Additional information for IPEC reactor vessel components projected to exceed 1.00E17 n/cm^2 is provided in Tables 4 and 5 below.

Determination of the reference temperature for pressurized thermal shock (RT_{PTS}) is described in LRA Section 4.2.5. Additional information for IPEC reactor vessel components projected to exceed 1.00E17 n/cm^2 is provided in Tables 6 and 7 below.

The projected values for C_VUSE and RT_{PTS} shown in Tables 4 through 7 clearly demonstrate that these components are well within the respective screening criteria established by 10 CFR 50 Appendix G and 10 CFR 50.61.

Should future fuel loading patterns invalidate the basis for the projected values of RTpts or C_VUSE, updated calculations will be provided to the NRC.

INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3
LICENSE RENEWAL APPLICATION (LRA)
REACTOR VESSEL FLUENCE CLARIFICATION
Table 4
IP2 Upper Shelf Energy Data for 48 Effective Full-Power Years (EFPY)

Reactor Vessel Location (Beltline Identification)	Material Ident	Material Type	Heat #	Fluence Vessel Clad/BM 48 EFPY	Fluence 1/4T 48 EFPY	%Cu	Un-irradiated USE	% Drop in USE	48 EFPY USE at 1/4 T	RG 1.99 Position
Nozzle Shell Plates	B2001-1	A302BM	B4679[4]	2.26E17	1.35E17	0.20[1]	69[3]	10.5	61.8	1.2
Nozzle Shell Plates	B2001-2	A302BM	B4701[4]	2.26E17	1.35E17	0.14[1]	63.5[3]	8.3	58.2	1.2
Nozzle Shell Plates	B2001-3	A302BM	B9870[4]	2.26E17	1.35E17	0.19[1]	69[3]	10.1	62.0	1.2
Nozzle Shell Longitudinal Welds	1-042 A/B/C	Linde 1092	W5214[2]	1.95E17	1.16E17	0.213[5]	121[5]	18.5	98.6	2.2
Nozzle Shell to Intermediate Shell Circumferential Weld	8-042	Linde 1092	W5214[2]	2.88E17	1.72E17	0.213[5]	121[5]	20.3	96.4	2.2

[1] UFSAR Table 4.2-7
[2] UFSAR Table 4.2-2
[3] UFSAR Table 4.2-8
[4] UFSAR Table 4.2-6
[5] RVID2 (Heat #W5214, Linde 1092, IP2 intermediate axial welds)

INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3
LICENSE RENEWAL APPLICATION (LRA)
REACTOR VESSEL FLUENCE CLARIFICATION

Table 5
IP3 Upper Shelf Energy Data for 48 Effective Full-Power Years (EFPY)

Reactor Vessel Location (Beltline Identification)	Material Ident	Material Type	Heat #	Fluence Vessel Clad/BM 48 EFPY	Fluence 1/4T 48 EFPY	%Cu	Un-irradiated USE	% Drop in USE	48 EFPY USE at 1/4 T	RG 1.99 Position
Nozzle Shell Plates	B2801-1	A302BM	B5391[1]	1.85E17	1.10E17	0.21[1]	62[1]	10.3	55.6	1.2
Nozzle Shell Plates	B2801-2	A302BM	B5394[1]	1.85E17	1.10E17	0.20[1]	65[1]	10.0	58.5	1.2
Nozzle Shell Plates	B2801-3	A302BM	A0516[1]	1.85E17	1.10E17	0.22[1]	85[1]	10.7	75.9	1.2
Nozzle Shell Longitudinal Welds	1-042 A/B/C	Linde 1092	W5214[1]	1.60E17	9.51E16	0.213[2]	121[2]	17.7	99.6	2.2
Nozzle Shell to Intermediate Shell Circumferential Weld	8-042	Linde 1092	27204[1]	2.36E17	1.40E17	0.203[3]	94[3]	12.5	82.3	1.2

[1] BF0204, Letter from William J Cahill to NRC, Indian Point 3 Reactor Vessel Surveillance Program, March 8, 1978
[2] RVID2 (Heat #W5214, Linde 1092, IP2 intermediate axial welds)
[3] RVID2 (Heat #27204, Linde 1092, Diablo Canyon Unit 1 lower shell axial welds)

INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3
LICENSE RENEWAL APPLICATION (LRA)
REACTOR VESSEL FLUENCE CLARIFICATION

Table 6
IP2 Pressurized Thermal Shock for 48 Effective Full-Power Years (EFPY)

Reactor Vessel Location (Beltline Identification)	Material Ident	Material Type	Heat Number	%Cu	%Ni	Fluence Vessel Clad/BM (10^{19} n/cm^2)	FF	Chemistry Factor	Un-irradiated RT_{NDT} (°F)	ΔRT_{NDT} (°F)	Margin (°F)	48 EFPY RT_{PTS} (°F)	Method RG 1.99
Nozzle Shell Plates	B2001-1	A302BM	B4679	0.20	0.50[1]	0.0226	0.185	137.0	24[2]	25.4	25.4[5]	74.8	1.1
Nozzle Shell Plates	B2001-2	A302BM	B4701	0.14	0.43[1]	0.0226	0.185	92.4	18[2]	17.1	17.1[5]	52.3	1.1
Nozzle Shell Plates	B2001-3	A302BM	B9870	0.19	0.50[1]	0.0226	0.185	131.0	25[2]	24.3	24.3[5]	73.6	1.1
Nozzle Shell Longitudinal Welds	1-042 A/B/C	Linde 1092	W5214	0.213	1.007[3]	0.0195	0.169	251.8[4]	-56[3]	42.6	40.1[6]	26.8	2.1
Nozzle Shell to Intermediate Shell Circumferential Weld	8-042	Linde 1092	W5214	0.213	1.007[3]	0.0288	0.214	251.8[4]	-56[3]	54.0	43.4[6]	41.4	2.1

[1] UFSAR Table 4.2-7
[2] UFSAR Table 4.2-8
[3] RVID2 (Heat #W5214, Linde 1092, IP2 intermediate axial welds)
[4] NL-08-014, ML080250027, Letter from Fred Dacimo to NRC, Clarifications to Reactor Vessel Surveillance Program and Neutron Embrittlement Time-Limited Aging Analyses and Audit Item #105; and Revision to License Renewal Regulatory Commitment List, January 18, 2008
[5] $\sigma_L = 0$, $\sigma_\Delta = \Delta RT_{NDT} / 2$
[6] $\sigma_L = 17$, $\sigma_\Delta = ½ (\Delta RT_{NDT} / 2)$

INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3
LICENSE RENEWAL APPLICATION (LRA)
REACTOR VESSEL FLUENCE CLARIFICATION
Table 7
IP3 Pressurized Thermal Shock for 48 Effective Full-Power Years (EFPY)

Reactor Vessel Location (Beltline Identification)	Material Ident	Material Type	Heat Number	%Cu	%Ni	Fluence Vessel Clad/BM (10^{19} n/cm^2)	FF	Chemistry Factor	Un-irradiated RT_{NDT} (°F)	ΔRT_{NDT} (°F)	Margin (°F)	48 EFPY RT_{PTS} (°F)	Method RG 1.99
Nozzle Shell Plates	B2801-1	A302BM	B5391	0.21	0.48[1]	0.0185	0.164	139.4	34[1]	22.8	22.8[5]	79.7	1.1
Nozzle Shell Plates	B2801-2	A302BM	B5394	0.20	0.50[1]	0.0185	0.164	137.0	44[1]	22.5	22.5[5]	88.9	1.1
Nozzle Shell Plates	B2801-3	A302BM	A0516	0.22	0.54[1]	0.0185	0.164	152.9	3[1]	25.1	25.1[5]	53.1	1.1
Nozzle Shell Longitudinal Welds	1-042 A/B/C	Linde 1092	W5214	0.213	1.01[2]	0.0160	0.149	251.8[3]	-56[2]	37.6	38.8[6]	20.4	2.1
Nozzle Shell to Intermediate Shell Circumferential Weld	8-042	Linde 1092	27204	0.203	1.02[4]	0.0236	0.190	226.8	-56[4]	43.2	54.9[7]	42.1	1.1

[1] BF0204, Letter from William J Cahill to NRC, Indian Point 3 Reactor Vessel Surveillance Program, March 8, 1978
[2] RVID2 (Heat #W5214, Linde 1092, IP2 intermediate axial welds)
[3] NL-08-014, ML080250027, Letter from Fred Dacimo to NRC, Clarifications to Reactor Vessel Surveillance Program and Neutron Embrittlement Time-Limited Aging Analyses and Audit Item #105; and Revision to License Renewal Regulatory Commitment List, January 18, 2008
[4] RVID2 (Heat #27204, Linde 1092, Diablo Canyon Unit 1 lower shell axial welds)
[5] $\sigma_L = 0$, $\sigma_\Delta = \Delta RT_{NDT} / 2$
[6] $\sigma_L = 17$, $\sigma_\Delta = ½ (\Delta RT_{NDT} / 2)$
[7] $\sigma_L = 17$, $\sigma_\Delta = \Delta RT_{NDT} / 2$

ATTACHMENT 2 TO NL-08-143

IPEC COMMITMENT LIST REVISION 6

REGARDING

LICENSE RENEWAL APPLICATION

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

List of Regulatory Commitments

Rev. 6

The following table identifies those actions committed to by Entergy in this document.

Changes are shown as strikethroughs for ~~deletions~~ and underlines for additions.

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
1	Enhance the Aboveground Steel Tanks Program for IP2 and IP3 to perform thickness measurements of the bottom surfaces of the condensate storage tanks, city water tank, and fire water tanks once during the first ten years of the period of extended operation. Enhance the Aboveground Steel Tanks Program for IP2 and IP3 to require trending of thickness measurements when material loss is detected.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039	A.2.1.1 A.3.1.1 B.1.1
2	Enhance the Bolting Integrity Program for IP2 and IP3 to clarify that actual yield strength is used in selecting materials for low susceptibility to SCC and clarify the prohibition on use of lubricants containing MoS_2 for bolting. The Bolting Integrity Program manages loss of preload and loss of material for all external bolting.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153	A.2.1.2 A.3.1.2 B.1.2 Audit Items 201, 241, 270
3	Implement the Buried Piping and Tanks Inspection Program for IP2 and IP3 as described in LRA Section B.1.6. This new program will be implemented consistent with the corresponding program described in NUREG-1801 Section XI.M34, Buried Piping and Tanks Inspection.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153	A.2.1.5 A.3.1.5 B.1.6 Audit Item 173

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
4	Enhance the Diesel Fuel Monitoring Program to include cleaning and inspection of the IP2 GT-1 gas turbine fuel oil storage tanks, IP2 and IP3 EDG fuel oil day tanks, IP2 SBO/Appendix R diesel generator fuel oil day tank, and IP3 Appendix R fuel oil storage tank and day tank once every ten years. Enhance the Diesel Fuel Monitoring Program to include quarterly sampling and analysis of the IP2 SBO/Appendix R diesel generator fuel oil day tank, IP2 security diesel fuel oil storage tank, IP2 security diesel fuel oil day tank, and IP3 Appendix R fuel oil storage tank. Particulates, water and sediment checks will be performed on the samples. Filterable solids acceptance criterion will be less than or equal to 10mg/l. Water and sediment acceptance criterion will be less than or equal to 0.05%. Enhance the Diesel Fuel Monitoring Program to include thickness measurement of the bottom of the following tanks once every ten years. IP2: EDG fuel oil storage tanks, EDG fuel oil day tanks, SBO/Appendix R diesel generator fuel oil day tank, GT-1 gas turbine fuel oil storage tanks, and diesel fire pump fuel oil storage tank; IP3: EDG fuel oil day tanks, EDG fuel oil storage tanks, Appendix R fuel oil storage tank, and diesel fire pump fuel oil storage tank. Enhance the Diesel Fuel Monitoring Program to change the analysis for water and particulates to a quarterly frequency for the following tanks. IP2: GT-1 gas turbine fuel oil storage tanks and diesel fire pump fuel oil storage tank; IP3: Appendix R fuel oil day tank and diesel fire pump fuel oil storage tank. Enhance the Diesel Fuel Monitoring Program to specify acceptance criteria for thickness measurements of the fuel oil storage tanks within the scope of the program. Enhance the Diesel Fuel Monitoring Program to direct samples be taken and include direction to remove water when detected. Revise applicable procedures to direct sampling of the onsite portable fuel oil contents prior to transferring the contents to the storage tanks. Enhance the Diesel Fuel Monitoring Program to direct the addition of chemicals including biocide when the presence of biological activity is confirmed.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153 NL-08-057	A.2.1.8 A.3.1.8 B.1.9 Audit items 128, 129, 132, 491, 492, 510

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
5	Enhance the External Surfaces Monitoring Program for IP2 and IP3 to include periodic inspections of systems in scope and subject to aging management review for license renewal in accordance with 10 CFR 54.4(a)(1) and (a)(3). Inspections shall include areas surrounding the subject systems to identify hazards to those systems. Inspections of nearby systems that could impact the subject systems will include SSCs that are in scope and subject to aging management review for license renewal in accordance with 10 CFR 54.4(a)(2).	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039	A.2.1.10 A.3.1.10 B.1.11
6	Enhance the Fatigue Monitoring Program for IP2 to monitor steady state cycles and feedwater cycles or perform an evaluation to determine monitoring is not required. Review the number of allowed events and resolve discrepancies between reference documents and monitoring procedures. Enhance the Fatigue Monitoring Program for IP3 to include all the transients identified. Assure all fatigue analysis transients are included with the lowest limiting numbers. Update the number of design transients accumulated to date.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153	A.2.1.11 A.3.1.11 B.1.12, Audit Item 164
7	Enhance the Fire Protection Program to inspect external surfaces of the IP3 RCP oil collection systems for loss of material each refueling cycle. Enhance the Fire Protection Program to explicitly state that the IP2 and IP3 diesel fire pump engine sub-systems (including the fuel supply line) shall be observed while the pump is running. Acceptance criteria will be revised to verify that the diesel engine does not exhibit signs of degradation while running; such as fuel oil, lube oil, coolant, or exhaust gas leakage. Enhance the Fire Protection Program to specify that the IP2 and IP3 diesel fire pump engine carbon steel exhaust components are inspected for evidence of corrosion and cracking at least once each operating cycle. Enhance the Fire Protection Program for IP3 to visually inspect the cable spreading room, 480V switchgear room, and EDG room CO_2 fire suppression system for signs of degradation, such as corrosion and mechanical damage at least once every six months.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039	A.2.1.12 A.3.1.12 B.1.13

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
8	Enhance the Fire Water Program to include inspection of IP2 and IP3 hose reels for evidence of corrosion. Acceptance criteria will be revised to verify no unacceptable signs of degradation. Enhance the Fire Water Program to replace all or test a sample of IP2 and IP3 sprinkler heads required for 10 CFR 50.48 using guidance of NFPA 25 (2002 edition), Section 5.3.1.1.1 before the end of the 50-year sprinkler head service life and at 10-year intervals thereafter during the extended period of operation to ensure that signs of degradation, such as corrosion, are detected in a timely manner. Enhance the Fire Water Program to perform wall thickness evaluations of IP2 and IP3 fire protection piping on system components using non-intrusive techniques (e.g., volumetric testing) to identify evidence of loss of material due to corrosion. These inspections will be performed before the end of the current operating term and at intervals thereafter during the period of extended operation. Results of the initial evaluations will be used to determine the appropriate inspection interval to ensure aging effects are identified prior to loss of intended function. Enhance the Fire Water Program to inspect the internal surface of foam based fire suppression tanks. Acceptance criteria will be enhanced to verify no significant corrosion.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153 NL-08-014	A.2.1.13 A.3.1.13 B.1.14 Audit Items 105, 106
9	Enhance the Flux Thimble Tube Inspection Program for IP2 and IP3 to implement comparisons to wear rates identified in WCAP-12866. Include provisions to compare data to the previous performances and perform evaluations regarding change to test frequency and scope. Enhance the Flux Thimble Tube Inspection Program for IP2 and IP3 to specify the acceptance criteria as outlined in WCAP-12866 or other plant-specific values based on evaluation of previous test results. Enhance the Flux Thimble Tube Inspection Program for IP2 and IP3 to direct evaluation and performance of corrective actions based on tubes that exceed or are projected to exceed the acceptance criteria. Also stipulate that flux thimble tubes that cannot be inspected over the tube length and cannot be shown by analysis to be satisfactory for continued service, must be removed from service to ensure the integrity of the reactor coolant system pressure boundary.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039	A.2.1.15 A.3.1.15 B.1.16

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
10	Enhance the Heat Exchanger Monitoring Program for IP2 and IP3 to include the following heat exchangers in the scope of the program. • Safety injection pump lube oil heat exchangers • RHR heat exchangers • RHR pump seal coolers • Non-regenerative heat exchangers • Charging pump seal water heat exchangers • Charging pump fluid drive coolers • Charging pump crankcase oil coolers • Spent fuel pit heat exchangers • Secondary system steam generator sample coolers • Waste gas compressor heat exchangers • SBO/Appendix R diesel jacket water heat exchanger (IP2 only) Enhance the Heat Exchanger Monitoring Program for IP2 and IP3 to perform visual inspection on heat exchangers where non-destructive examination, such as eddy current inspection, is not possible due to heat exchanger design limitations. Enhance the Heat Exchanger Monitoring Program for IP2 and IP3 to include consideration of material-environment combinations when determining sample population of heat exchangers. Enhance the Heat Exchanger Monitoring Program for IP2 and IP3 to establish minimum tube wall thickness for the new heat exchangers identified in the scope of the program. Establish acceptance criteria for heat exchangers visually inspected to include no unacceptable signs of degradation.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153	A.2.1.16 A.3.1.16 B.1.17, Audit Item 52
11	Enhance the ISI Program for IP2 and IP3 to provide periodic visual inspections to confirm the absence of aging effects for lubrite sliding supports used in the steam generator and reactor coolant pump support systems.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153	A.2.1.17 A.3.1.17 B.1.18 Audit item 59

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
12	Enhance the Masonry Wall Program for IP2 and IP3 to specify that the IP1 intake structure is included in the program.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039	A.2.1.18 A.3.1.18 B.1.19
13	Enhance the Metal-Enclosed Bus Inspection Program to add IP2 480V bus associated with substation A to the scope of bus inspected. Enhance the Metal-Enclosed Bus Inspection Program for IP2 and IP3 to visually inspect the external surface of MEB enclosure assemblies for loss of material at least once every 10 years. The first inspection will occur prior to the period of extended operation and the acceptance criterion will be no significant loss of material. Enhance the Metal-Enclosed Bus Inspection Program to add acceptance criteria for MEB internal visual inspections to include the absence of indications of dust accumulation on the bus bar, on the insulators, and in the duct, in addition to the absence of indications of moisture intrusion into the duct. Enhance the Metal-Enclosed Bus Inspection Program for IP2 and IP3 to inspect bolted connections at least once every five years if performed visually or at least once every ten years using quantitative measurements such as thermography or contact resistance measurements. The first inspection will occur prior to the period of extended operation. The plant will process a change to applicable site procedure to remove the reference to "re-torquing" connections for phase bus maintenance and bolted connection maintenance.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153 NL-08-057	A.2.1.19 A.3.1.19 B.1.20 Audit Items 124, 133, 519
14	Implement the Non-EQ Bolted Cable Connections Program for IP2 and IP3 as described in LRA Section B.1.22.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039	A.2.1.21 A.3.1.21 B.1.22

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
15	Implement the Non-EQ Inaccessible Medium-Voltage Cable Program for IP2 and IP3 as described in LRA Section B.1.23. This new program will be implemented consistent with the corresponding program described in NUREG-1801 Section XI.E3, Inaccessible Medium-Voltage Cables Not Subject To 10 CFR 50.49 Environmental Qualification Requirements.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153	A.2.1.22 A.3.1.22 B.1.23 Audit item 173
16	Implement the Non-EQ Instrumentation Circuits Test Review Program for IP2 and IP3 as described in LRA Section B.1.24. This new program will be implemented consistent with the corresponding program described in NUREG-1801 Section XI.E2, Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153	A.2.1.23 A.3.1.23 B.1.24 Audit item 173
17	Implement the Non-EQ Insulated Cables and Connections Program for IP2 and IP3 as described in LRA Section B.1.25. This new program will be implemented consistent with the corresponding program described in NUREG-1801 Section XI.E1, Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153	A.2.1.24 A.3.1.24 B.1.25 Audit item 173
18	Enhance the Oil Analysis Program for IP2 to sample and analyze lubricating oil used in the SBO/Appendix R diesel generator consistent with oil analysis for other site diesel generators. Enhance the Oil Analysis Program for IP2 and IP3 to sample and analyze generator seal oil and turbine hydraulic control oil. Enhance the Oil Analysis Program for IP2 and IP3 to formalize preliminary oil screening for water and particulates and laboratory analyses including defined acceptance criteria for all components included in the scope of this program. The program will specify corrective actions in the event acceptance criteria are not met. Enhance the Oil Analysis Program for IP2 and IP3 to formalize trending of preliminary oil screening results as well as data provided from independent laboratories.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039	A.2.1.25 A.3.1.25 B.1.26

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
19	Implement the One-Time Inspection Program for IP2 and IP3 as described in LRA Section B.1.27. This new program will be implemented consistent with the corresponding program described in NUREG-1801, Section XI.M32, One-Time Inspection.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153	A.2.1.26 A.3.1.26 B.1.27 Audit item 173
20	Implement the One-Time Inspection – Small Bore Piping Program for IP2 and IP3 as described in LRA Section B.1.28. This new program will be implemented consistent with the corresponding program described in NUREG-1801, Section XI.M35, One-Time Inspection of ASME Code Class I Small-Bore Piping.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153	A.2.1.27 A.3.1.27 B.1.28 Audit item 173
21	Enhance the Periodic Surveillance and Preventive Maintenance Program for IP2 and IP3 as necessary to assure that the effects of aging will be managed such that applicable components will continue to perform their intended functions consistent with the current licensing basis through the period of extended operation.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039	A.2.1.28 A.3.1.28 B.1.29
22	Enhance the Reactor Vessel Surveillance Program for IP2 and IP3 revising the specimen capsule withdrawal schedules to draw and test a standby capsule to cover the peak reactor vessel fluence expected through the end of the period of extended operation. Enhance the Reactor Vessel Surveillance Program for IP2 and IP3 to require that tested and untested specimens from all capsules pulled from the reactor vessel are maintained in storage.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039	A.2.1.31 A.3.1.31 B.1.32
23	Implement the Selective Leaching Program for IP2 and IP3 as described in LRA Section B.1.33. This new program will be implemented consistent with the corresponding program described in NUREG-1801, Section XI.M33 Selective Leaching of Materials.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153	A.2.1.32 A.3.1.32 B.1.33 Audit item 173
24	Enhance the Steam Generator Integrity Program for IP2 and IP3 to require that the results of the condition monitoring assessment are compared to the operational assessment performed for the prior operating cycle with differences evaluated.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039	A.2.1.34 A.3.1.34 B.1.35

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
25	Enhance the Structures Monitoring Program to explicitly specify that the following structures are included in the program. • Appendix R diesel generator foundation (IP3) • Appendix R diesel generator fuel oil tank vault (IP3) • Appendix R diesel generator switchgear and enclosure (IP3) • city water storage tank foundation • condensate storage tanks foundation (IP3) • containment access facility and annex (IP3) • discharge canal (IP2/3) • emergency lighting poles and foundations (IP2/3) • fire pumphouse (IP2) • fire protection pumphouse (IP3) • fire water storage tank foundations (IP2/3) • gas turbine 1 fuel storage tank foundation • maintenance and outage building-elevated passageway (IP2) • new station security building (IP2) • nuclear service building (IP1) • primary water storage tank foundation (IP3) • refueling water storage tank foundation (IP3) • security access and office building (IP3) • service water pipe chase (IP2/3) • service water valve pit (IP3) • superheater stack • transformer/switchyard support structures (IP2) • waste holdup tank pits (IP2/3) Enhance the Structures Monitoring Program for IP2 and IP3 to clarify that in addition to structural steel and concrete, the following commodities (including their anchorages) are inspected for each structure as applicable. • cable trays and supports • concrete portion of reactor vessel supports • conduits and supports • cranes, rails and girders • equipment pads and foundations • fire proofing (pyrocrete) • HVAC duct supports • jib cranes • manholes and duct banks • manways, hatches and hatch covers • monorails	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153 NL-08-057	A.2.1.35 A.3.1.35 B.1.36 Audit items 86, 87, 88, 417

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
	• new fuel storage racks • sumps, sump screens, strainers and flow barriers Enhance the Structures Monitoring Program for IP2 and IP3 to inspect inaccessible concrete areas that are exposed by excavation for any reason. IP2 and IP3 will also inspect inaccessible concrete areas in environments where observed conditions in accessible areas exposed to the same environment indicate that significant concrete degradation is occurring. Enhance the Structures Monitoring Program for IP2 and IP3 to perform inspections of elastomers (seals, gaskets, seismic joint filler, and roof elastomers) to identify cracking and change in material properties and for inspection of aluminum vents and louvers to identify loss of material. Enhance the Structures Monitoring Program for IP2 and IP3 to perform an engineering evaluation of groundwater samples to assess aggressiveness of groundwater to concrete on a periodic basis (at least once every five years). IPEC will obtain samples from at least 5 wells that are representative of the ground water surrounding below-grade site structures and perform an engineering evaluation of the results from those samples for sulfates, pH and chlorides. Additionally, to assess potential indications of spent fuel pool leakage, IPEC will sample for tritium in groundwater wells in close proximity to the IP2 spent fuel pool at least once every 3 months. Enhance the Structures Monitoring Program for IP2 and IP3 to perform inspection of normally submerged concrete portions of the intake structures at least once every 5 years. Inspect the baffling/grating partition and support platform of the IP3 intake structure at least once every 5 years. Enhance the Structures Monitoring Program for IP2 and IP3 to perform inspection of the degraded areas of the water control structure once per 3 years rather than the normal frequency of once per 5 years during the PEO.		NL-08-127	Audit Item 360 Audit Item 358

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
26	Implement the Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS) Program for IP2 and IP3 as described in LRA Section B.1.37. This new program will be implemented consistent with the corresponding program described in NUREG-1801, Section XI.M12, Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS) Program.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153	A.2.1.36 A.3.1.36 B.1.37 Audit item 173
27	Implement the Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS) Program for IP2 and IP3 as described in LRA Section B.1.38. This new program will be implemented consistent with the corresponding program described in NUREG-1801 Section XI.M13, Thermal Aging and Neutron Embrittlement of Cast Austenitic Stainless Steel (CASS) Program.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-07-153	A.2.1.37 A.3.1.37 B.1.38 Audit item 173
28	Enhance the Water Chemistry Control – Closed Cooling Water Program to maintain water chemistry of the IP2 SBO/Appendix R diesel generator cooling system per EPRI guidelines. Enhance the Water Chemistry Control – Closed Cooling Water Program to maintain the IP2 and IP3 security generator and fire protection diesel cooling water pH and glycol within limits specified by EPRI guidelines.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039 NL-08-057	A.2.1.39 A.3.1.39 B.1.40 Audit item 509
29	Enhance the Water Chemistry Control – Primary and Secondary Program for IP2 to test sulfates monthly in the RWST with a limit of <150 ppb.	IP2: September 28, 2013	NL-07-039	A.2.1.40 B.1.41
30	For aging management of the reactor vessel internals, IPEC will (1) participate in the industry programs for investigating and managing aging effects on reactor internals; (2) evaluate and implement the results of the industry programs as applicable to the reactor internals; and (3) upon completion of these programs, but not less than 24 months before entering the period of extended operation, submit an inspection plan for reactor internals to the NRC for review and approval.	IP2: September 28, 2011 IP3: December 12, 2013	NL-07-039	A.2.1.41 A.3.1.41
31	Additional P-T curves will be submitted as required per 10 CFR 50, Appendix G prior to the period of extended operation as part of the Reactor Vessel Surveillance Program.	IP2: September 28, 2013 IP3: December 12, 2015	NL-07-039	A.2.2.1.2 A.3.2.1.2 4.2.3

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
32	As required by 10 CFR 50.61(b)(4), IP3 will submit a plant-specific safety analysis for plate B2803-3 to the NRC three years prior to reaching the RT_{PTS} screening criterion. Alternatively, the site may choose to implement the revised PTS rule when approved.	IP3: December 12, 2015	NL-07-039 NL-08-127	A.3.2.1.4 4.2.5
33	At least 2 years prior to entering the period of extended operation, for the locations identified in LRA Table 4.3-13 (IP2) and LRA Table 4.3-14 (IP3), under the Fatigue Monitoring Program, IP2 and IP3 will implement one or more of the following: (1) Consistent with the Fatigue Monitoring Program, Detection of Aging Effects, update the fatigue usage calculations using refined fatigue analyses to determine valid CUFs less than 1.0 when accounting for the effects of reactor water environment. This includes applying the appropriate Fen factors to valid CUFs determined in accordance with one of the following: 1. For locations in LRA Table 4.3-13 (IP2) and LRA Table 4.3-14 (IP3), with existing fatigue analysis valid for the period of extended operation, use the existing CUF. 2. Additional plant-specific locations with a valid CUF may be evaluated. In particular, the pressurizer lower shell will be reviewed to ensure the surge nozzle remains the limiting component. 3. Representative CUF values from other plants, adjusted to or enveloping the IPEC plant specific external loads may be used if demonstrated applicable to IPEC. 4. An analysis using an NRC-approved version of the ASME code or NRC-approved alternative (e.g., NRC-approved code case) may be performed to determine a valid CUF. (2) Consistent with the Fatigue Monitoring Program, Corrective Actions, repair or replace the affected locations before exceeding a CUF of 1.0.	IP2: September 28, 2011 IP3: December 12, 2013	NL-07-039 NL-07-153 NL-08-021	A.2.2.2.3 A.3.2.2.3 4.3.3 Audit item 146
34	IP2 SBO / Appendix R diesel generator will be installed and operational by April 30, 2008. This committed change to the facility meets the requirements of 10 CFR 50.59(c)(1) and, therefore, a license amendment pursuant to 10 CFR 50.90 is not required.	April 30, 2008 Complete	NL-07-078 NL-08-074	2.1.1.3.5

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
35	Perform a one-time inspection of representative sample area of IP2 containment liner affected by the 1973 event behind the insulation, prior to entering the extended period of operation, to assure liner degradation is not occurring in this area. Perform a one-time inspection of representative sample area of the IP3 containment steel liner at the juncture with the concrete floor slab, prior to entering the extended period of operation, to assure liner degradation is not occurring in this area.	IP2: September 28, 2013 IP3: December 12, 2015	NL-08-127	Audit Item 27
36	Perform a one-time Inspection and evaluation of a sample of potentially affected IP2 refueling cavity concrete prior to the period of extended operation. The sample will be obtained by core boring the refueling cavity wall in an area that is susceptible to exposure to borated water leakage. The inspection will include an assessment of embedded reinforcing steel.	IP2: September 28, 2013	NL-08-127	Audit Item 359
37	Enhance the Containment Inservice Inspection (CII-IWL) Program to include inspections of the containment using enhanced characterization of degradation (i.e., quantifying the dimensions of noted indications through the use of optical aids) during the period of extended operation. The enhancement includes obtaining critical dimensional data of degradation where possible through direct measurement or the use of scaling technologies for photographs, and the use of consistent vantage points for visual inspections.	IP2: September 28, 2013 IP3: December 12, 2015	NL-08-127	Audit Item 361
38	For Reactor Vessel Fluence, should future core loading patterns invalidate the basis for the projected values of RTpts or C_VUSE, updated calculations will be provided to the NRC.	IP2: September 28, 2013 IP3: December 12, 2015	NL-08-143	4.2.1