Entergy

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Stephen J. Bethay
Director, Nuclear Assessment

January 29, 2007

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

SUBJECT: Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
Docket No. 50-293 License No. DPR-35

License Renewal Application Amendment 13

REFERENCE: Entergy letter, License Renewal Application, dated January 25, 2006 (2.06.003)

LETTER NUMBER: 2.07.010

Dear Sir or Madam:

In the referenced letter, Entergy Nuclear Operations, Inc. applied for renewal of the Pilgrim Station operating license. NRC TAC NO. MC9669 was assigned to the application.

This License Renewal Application (LRA) amendment consists of three attachments stemming from a conference call on January 23, 2007 with the NRC license renewal staff. Attachment A contains the list of revised regulatory commitments. Attachment B contains clarifying information on the Drywell shell and supersedes the information in LRA Amendment 1 and LRA Amendment 2 in their entirety. Attachment C contains changes to the LRA.

Please contact Mr. Bryan Ford, (508) 830-8403, if you have any questions regarding this subject.

I declare under penalty of perjury that the foregoing is true and correct. Executed on January 29, 2007.

Sincerely,

Stephen J. Bethay
Director, Nuclear Safety Assessment

DWE/dl
Attachments: (as stated)
cc: see next page

A119

cc: with Attachments

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ATTACHMENT A to Letter 2.07.010
(9 pages)

Revised List of Regulatory Commitments

Revised List of Regulatory Commitments

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./ Comments
1	Implement the Buried Piping and Tanks Inspection Program as described in LRA Section B.1.2.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.2 / Audit Item 320
2	Enhance the implementing procedure for ASME Section XI inservice inspection and testing to specify that the guidelines in Generic Letter 88-01 or approved BWRVIP-75 shall be considered in determining sample expansion if indications are found in Generic Letter 88-01 welds.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.6 / Audit Item 320
3	Inspect fifteen (15) percent of the top guide locations using enhanced visual inspection technique, EVT-1, within the first 18 years of the period of extended operation, with at least one-third of the inspections to be completed within the first six (6) years and at least two-thirds within the first 12 years of the period of extended operations. Locations selected for examination will be areas that have exceeded the neutron fluence threshold.	As stated in the commitment.	Letters 2.06.003 and 2.06.057 and 2.06.064 and 2.06.081	B.1.8 / Audit Items 155, 320
4	Enhance the Diesel Fuel Monitoring Program to include quarterly sampling of the security diesel generator fuel storage tank. Particulates (filterable solids), water and sediment checks will be performed on the samples. Filterable solids acceptance criteria will be = 10 mg/l. Water and sediment acceptance criteria will be = 0.05%.	June 8, 2012	Letters 2.06.003 and 2.06.057 and 2.06.089	B.1.10 / Audit Items 320, 566
5	Enhance the Diesel Fuel Monitoring Program to install instrumentation to monitor for leakage between the two walls of the security diesel generator fuel storage tank to ensure that significant degradation is not occurring.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.10 / Audit Items 155, 320
6	Enhance the Diesel Fuel Monitoring Program to specify acceptance criterion for UT measurements of emergency diesel generator fuel storage tanks (T-126A&B).	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.10 / Audit Items 165, 320

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./ Comments
7	Enhance Fire Protection Program procedures to state that the diesel engine sub-systems (including the fuel supply line) shall be observed while the pump is running. Acceptance criteria will be enhanced to verify that the diesel engine did not exhibit signs of degradation while it was running; such as fuel oil, lube oil, coolant, or exhaust gas leakage. Also, enhance procedures to clarify that the diesel-driven fire pump engine is inspected for evidence of corrosion in the intake air, turbocharger, and jacket water system components as well as lube oil cooler. The jacket water heat exchanger is inspected for evidence of corrosion or buildup to manage loss of material and fouling on the tubes. Also, the engine exhaust piping and silencer are inspected for evidence of internal corrosion or cracking.	June 8, 2012	Letters 2.06.003 and 2.06.057 and 2.06.064	B.1.13.1 / Audit Items 320, 378
8	Enhance the Fire Protection Program procedure for Halon system functional testing to state that the Halon 1301 flex hoses shall be replaced if leakage occurs during the system functional test.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.13.1 / Audit Item 320
9	Enhance Fire Water System Program procedures to include inspection of hose reels for corrosion. Acceptance criteria will be enhanced to verify no significant corrosion.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.13.2 / Audit Item 320
10	Enhance the Fire Water System Program to state that a sample of sprinkler heads will be inspected using guidance of NFPA 25 (2002 Edition) Section 5.3.1.1.1. NFPA 25 also contains guidance to repeat this sampling every 10 years after initial field service testing.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.13.2 / Audit Item 320
11	Enhance the Fire Water System Program to state that wall thickness evaluations of fire protection piping will be performed 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.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.13.2 / Audit Item 320
12	Implement the Heat Exchanger Monitoring Program as described in LRA Section B.1.15.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.15 / Audit Item 320

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./ Comments
13	Enhance the Instrument Air Quality Program to include a sample point in the standby gas treatment and torus vacuum breaker instrument air subsystem in addition to the instrument air header sample points.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.17 / Audit Item 320
14	Implement the Metal-Enclosed Bus Inspection Program as described in LRA Section B.1.18.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.18 / Audit Item 320
15	Implement the Non-EQ Inaccessible Medium-Voltage Cable Program as described in LRA Section B.1.19. Include developing a formal procedure to inspect manholes for in-scope medium voltage cable.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.19 / Audit items 311, 320
16	Implement the Non-EQ Instrumentation Circuits Test Review Program as described in LRA Section B.1.20.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.20 / Audit Item 320
17	Implement the Non-EQ Insulated Cables and Connections Program as described in LRA Section B.1.21.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.21 / Audit Item 320
18	Enhance the Oil Analysis Program to periodically change CRD pump lubricating oil. A particle count and check for water will be performed on the drained oil to detect evidence of abnormal wear rates, contamination by moisture, or excessive corrosion.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.22 / Audit Item 320
19	Enhance Oil Analysis Program procedures for security diesel and reactor water cleanup pump oil changes to obtain oil samples from the drained oil. Procedures for lubricating oil analysis will be enhanced to specify that a particle count and check for water are performed on oil samples from the fire water pump diesel, security diesel, and reactor water cleanup pumps.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.22 / Audit Item 320
20	Implement the One-Time Inspection Program as described in LRA Section B.1.23. This includes destructive or non-destructive examination of one (1) socket welded connection using techniques proven by past industry experience to be effective for the identification of cracking in small bore socket welds. Should an inspection opportunity not occur (e.g., socket weld failure or socket weld replacement), a susceptible small-bore socket weld will be examined either destructively or non-destructively prior to entering the period of extended operation.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.23 / Audit Items 219, 320

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./ Comments
21	Enhance the Periodic Surveillance and Preventive Maintenance Program as necessary to assure that the effects of aging will be managed as described in LRA Section B.1.24.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.24 / Audit Item 320
22	Enhance the Reactor Vessel Surveillance Program to proceduralize the data analysis, acceptance criteria, and corrective actions described in LRA Section B.1.26.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.26 / Audit Item 320
23	Implement the Selective Leaching Program in accordance with the program as described in LRA Section B.1.27.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.27 / Audit Item 320
24	Enhance the Service Water Integrity Program procedure to clarify that heat transfer test results are trended.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.28 / Audit Item 320
25	Enhance the Structures Monitoring Program procedure to clarify that the discharge structure, security diesel generator building, trenches, valve pits, manholes, duct banks, underground fuel oil tank foundations, manway seals and gaskets, hatch seals and gaskets, underwater concrete in the intake structure, and crane rails and girders are included in the program. In addition, the Structures Monitoring Program will be revised to require opportunistic inspections of inaccessible concrete areas when they become accessible.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.29.2 / Audit Items 238, 320
26	Enhance Structures Monitoring Program guidance for performing structural examinations of elastomers (seals, gaskets, seismic joint filler, and roof elastomers) to identify cracking and change in material properties.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.29.2 / Audit Item 320
27	Enhance the Water Control Structures Monitoring Program scope to include the east breakwater, jetties, and onshore revetments in addition to the main breakwater.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.29.3 / Audit Item 320

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./ Comments
28	Enhance System Walkdown Program guidance documents to perform periodic system engineer 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).	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.30 / Audit Items 320, 327
29	Implement the Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS) Program as described in LRA Section B.1.31.	June 8, 2012	Letters 2.06.003 and 2.06.057	B.1.31 / Audit Items 257, 320
30	Perform a code repair of the CRD return line nozzle to cap weld if the installed weld repair is not approved via accepted code cases, revised codes, or an approved relief request for subsequent inspection intervals.	June 30, 2015	Letter 2.06.057	B.1.3 / Audit Items 141, 320

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./ Comments
31	At least 2 years prior to entering the period of extended operation, for the locations identified in NUREG/CR-6260 for BWRs of the PNPS vintage, PNPS will implement one or more of the following: (1) Refine the fatigue analyses to determine valid CUFs less than 1 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, including NUREG/CR-6260 locations, with existing fatigue analysis valid for the period of extended operation, use the existing CUF to determine the environmentally adjusted CUF. 2. More limiting PNPS-specific locations with a valid CUF may be added in addition to the NUREG/CR-6260 locations. 3. Representative CUF values from other plants, adjusted to or enveloping the PNPS plant specific external loads may be used if demonstrated applicable to PNPS. 4. An analysis using an NRC-approved version of the ASME code of NRC-approved alternative (e.g., NRC-approved code case) may be performed to determine a valid CUF. The determination of Fen will account for operating times with both hydrogen water chemistry and normal water chemistry. (2) Manage the effects of aging due to fatigue at the affected locations by an inspection program that has been reviewed and approved by the NRC (e.g., periodic non-destructive examination of the affected locations at inspection intervals to be determined by a method acceptable to the NRC). (3) Repair or replace the affected locations before exceeding a CUF of 1.0. Should PNPS select the option to manage the aging effects due to environmental-assisted fatigue during the period of extended operation, details of the aging management program such as scope, qualification, method, and frequency will be submitted to the NRC at least 2 years prior to the period of extended operation.	June 8, 2012 June 8, 2010 for submitting the aging management program if PNPS selects the option of managing the affects of aging due to environmentally assisted fatigue.	Letters 2.06.057 and 2.06.064 and 2.06.081 and 2.07.005	4.3.3 / Audit Items 302, 346
32	Implement the enhanced Bolting Integrity Program described in Attachment C of Pilgrim License Renewal Application Amendment 5 (Letter 2.06.064).	June 8, 2012	Letters 2.06.057 and 2.06.064 and 2.06.081	Audit items 364, 373, 389, 390, 432, 443, 470
33	PNPS will inspect the inaccessible jet pump thermal sleeve and core spray thermal sleeve welds if and when the necessary technique and equipment become available and the technique is demonstrated by the vendor, including delivery system.	As stated in the commitment.	Letter 2.06.057	Audit Items 320, 488

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./ Comments
34	Within the first 6 years of the period of extended operation and every 12 years thereafter, PNPS will inspect the access hole covers with UT methods. Alternatively, PNPS will inspect the access hole covers in accordance with BWRVIP guidelines should such guidance become available.	June 8, 2018	Letter 2.06.057 and 2.06.089	Audit Items 320, 461
35	At least 2 years prior to entering the period of extended operation, for reactor vessel components, including the feedwater nozzles, PNPS will implement one or more of the following: (1) Refine the fatigue analyses to determine valid CUFs less than 1. Determine valid CUFs based on numbers of transient cycles projected to be valid for the period of extended operation. Determine CUFs in accordance with an NRC-approved version of the ASME code or NRC-approved alternative (e.g., NRC-approved code case). (2) Manage the effects of aging due to fatigue at the affected locations by an inspection program that has been reviewed and approved by the NRC (e.g., periodic non-destructive examination of the affected locations at inspection intervals to be determined by a method acceptable to the NRC). (3) Repair of replace the affected locations before exceeding a CUF of 1.0. Should PNPS select the option to manage the aging effects due to fatigue during the period of extended operation, details of the aging management program such as scope, qualification, method, and frequency will be submitted to the NRC at least 2 years prior to the period of extended operation.	June 8, 2012 June 8, 2010 for submitting the aging management program if PNPS selects the option of managing the affects of aging.	Letters 2.06.057 and 2.06.064 and 2.06.081	Audit Item 345
36	To ensure that significant degradation on the bottom of the condensate storage tank is not occurring, a one-time ultrasonic thickness examination in accessible areas of the bottom of the condensate storage tank will be performed. Standard examination and sampling techniques will be utilized.	June 8, 2012	Letter 2.06.057	Audit Items 320, 363
37	The BWR Vessel Internals Program includes inspections of the steam dryer. Inspections of the steam dryer will follow the guidelines of BWRVIP-139 and General Electric SIL 644 Rev. 1.	June 8, 2012	Letter 2.06.089	A.2.1.8 / Conference call on September 25, 2006

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./ Comments
38	Enhance the Diesel Fuel Monitoring Program to include periodic ultrasonic thickness measurement of the bottom surface of the diesel fire pump day tank. The first ultrasonic inspection of the bottom surface of the diesel fire pump day tank will occur prior to the period of extended operation, following engineering analysis to determine acceptance criteria and test locations. Subsequent test intervals will be determined based on the first inspection results.	June 8, 2012	Letter 2.06.089	B.1.10 / Audit Item 565
39	Perform a one-time inspection of the Main Stack foundation prior to the period of extended operation.	June 8, 2012	Letter 2.06.094	B.1.23 / Audit Item 581
40	Enhance the Oil Analysis Program by documenting program elements 1 through 7 in controlled documents. The program elements will include enhancements identified in the PNPS license renewal application and subsequent amendments to the application. The program will include periodic sampling for the parameters specified under the Parameters Monitored/Inspected attribute of NUREG-1801 Section XI.M39, Lubricating Oil Analysis. The controlled documents will specify appropriate acceptance criteria and corrective actions in the event acceptance criteria are not met. The basis for acceptance criteria will be defined.	June 8, 2012	Letter 2.06.094	B.1.22 / Audit Items 553 and 589
41	Enhance the Containment Inservice Inspection (CII) Program to require augmented inspection in accordance with ASME Section XI IWE-1240, of the drywell shell adjacent to the sand cushion following indications of water leakage into the annulus air gap.	June 8, 2012	Letter 2.06.094	A.2.1.17 and B.1.16.1
42	Implement the Bolted Cable Connections Program, described in Attachment C of Pilgrim License Renewal Application 11 (Letter 2.07.003), prior to the period of extended operation.	June 8, 2012	Letter 2.07.003	A.2.1.40 and B.1.34
43	Include within the Structures Monitoring Program provisions to ensure groundwater samples are evaluated periodically to assess the aggressiveness of groundwater to concrete, as described in Attachment E of License Renewal Application 12 (Letter 2.07.005), prior to the period of extended operation.	June 8, 2012	Letter 2.07.005	A.2.1.32 and B.1.29.2
44	Perform another set of the UT measurements just above and adjacent to the sand cushion region prior to the period of extended operation and once within the first 10 years of the period of extended operation.	As stated in the commitment.	Letter 2.07.010	A.2.1.17 and B.1.16.1

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./ Comments
45	If groundwater continues to collect on the Torus Room floor, obtain samples and test such water to determine its pH and verify the water is non-aggressive as defined in NUREG-1801 Section III.A1 item III.A.1-4 once prior to the period of extended operation.	June 8, 2012	Letter 2.07.010	A.2.1.32 and B.1.29.2

ATTACHMENT B to Letter 2.07.010

(9 pages)

Clarifying Drywell Shell Information Superseding the Information Provided in LRA Amendment 1 and LRA Amendment 2

Pilgrim Nuclear Power Station Drywell Shell Information

Purpose

For license renewal, the NRC evaluates the potential for corrosion of the Mark I steel containment drywell shell. This issue previously was the subject of generic NRC communications in the 1980s. Specifically, Generic Letter (GL) 87-05 addressed potential degradation of Mark I drywells due to corrosion. The following provides additional information on the Pilgrim Station drywell shell relative to recent industry experience in this area.

Background

In 1980, the Oyster Creek Station observed water coming from lines that drain water from the annulus region between the drywell wall and the surrounding concrete and the sand cushion region. The water source was initially identified in 1983 as coming from the Drywell-Refueling Cavity bellows drain line gasket. After performing ultrasonic thickness measurements in 1986, Oyster Creek Station reported that corrosion and material loss had occurred to the Drywell Shell in the area of the sand-cushion. This finding led to the issuance of NRC Information Notice 86-99, "Degradation of Steel Containments," Generic Letter 87-05, "Request for Additional Information - Assessment of Licensee Measures to Mitigate and/or Identify Potential Degradation of Mark I Drywells," and Information Notice 86-99 Supplement 1.

The purpose of GL 87-05 was "...to initiate the collection of information of the licensee's current and proposed action to assure the degradation of the Drywell Shell plates adjacent to the sand-cushion has not occurred and to determine if augmented inspections above and beyond those planned by the licensee's are necessary."

In 1995, subsequent to the GL responses, the staff approved the use of ASME Section XI, Subsection IWE (Requirements for Class MC and Metallic Liners of Class CC Components of Light-Water Cooled Plants) which exempts, in accordance with Subparagraph IWE-1220(b), "embedded or inaccessible portions of containment vessels, parts, and appurtenances that met the requirements of the original Construction Code..." However, Paragraph IWE-1240 establishes criteria for determining the need for augmented examinations.

PNPS Primary Containment Design

PNPS employs a low-leakage pressure suppression system which houses the reactor vessel, the reactor coolant recirculation loops, and other branch connections of the reactor primary system. The pressure suppression system consists of a drywell, a pressure suppression chamber containing a large volume of water, a connecting vent system between the drywell and the pressure suppression chamber, isolation valves, vacuum relief system, containment cooling systems, and other service equipment.

The drywell is a light bulb-shaped carbon steel primary containment structure with a spherical lower portion, 64 feet in diameter, and a cylindrical upper portion 34 feet 2 inches in diameter. The overall height is approximately 110 feet. The drywell is enclosed in reinforced concrete for shielding purposes and to provide additional resistance to deformation and buckling in areas where the concrete backs up the steel shell. Shielding above the drywell is provided by removable, segmented, reinforced concrete shield plugs

located on the reactor building refuel floor. The reinforced concrete drywell floor contains the drywell floor drain and equipment drain sumps and supports the reactor pedestal.

The design, fabrication, inspection, and testing of the drywell complies with requirements of the ASME Boiler & Pressure Vessel Code, Section III, Subsection B, Requirements for Class B Vessels, which pertain to containment vessels for nuclear power stations.

Drywell Shell Exterior

The sand cushion at the base of the drywell is designed to provide a smooth transition to reduce thermal and mechanical discontinuities. The sand provides lateral support to the drywell in this region. The sand cushion area is drained to protect the exterior surface of the drywell shell at the sand cushion interface from water that might enter the air gap.

The coating specified for the PNPS drywell shell exterior surfaces was an alkyd-base primer (red lead or zinc chromate). No degradation of this coating in the sand cushion area was noted in 1987 when fiberscopes were used to examine the 4 inch annulus air gap drain lines.

To ensure the drywell shell exterior remains dry during refueling evolutions, the drywell to reactor building bellows assembly separates the refueling cavity filled with water from the exterior surface of the drywell shell. Any leakage through the bellows assembly is directed to a drain system (refueling bellows seal trough drains) which is equipped with an alarm for notification of operators.

The drywell exterior surface is essentially inaccessible for inspection. Surfaces that are accessible for examination include the drywell hemispherical head exterior surfaces and some penetrations in the structure.

Drywell Shell Interior

The majority of the upper portion of the drywell shell interior surfaces are accessible for inspection, except the lower portion of the drywell where it is covered by the concrete drywell floor which provides structural support for the reactor pedestal and other equipment.

The PNPS primary containment system is inerted with nitrogen gas during normal power operations so that oxygen levels are maintained at less than 4%. Inerting with nitrogen provides an atmosphere that is not conducive to corrosion of containment interior surfaces.

Operating Experience and Actions Taken to Prevent Drywell Corrosion

There has been no observed leakage causing moisture in the vicinity of the sand cushion at PNPS and no moisture has been detected or is suspected on the inaccessible areas of the drywell shell. Further, as discussed above, any potential leakage through the refueling bellows assembly is directed to a drain system. Therefore, no additional components have been identified that require aging management review as a source of moisture that might affect the drywell shell in the lower region.

As stated in the response to GL 87-05, PNPS performed UT thickness measurements of the drywell shell in January 1987. The UT thickness measurements were taken at twelve

locations directly above the sand cushion region. These measurements detected no loss of wall thickness.

PNPS verified that the annulus air gap drain lines are unobstructed. In 1987, access holes were machined in the drain line elbows on all four drain lines to allow access for remote visual examination using fiberscopes. This inspection determined that the four annulus air gap drains are unobstructed and found no signs of corrosion on visible portions of the drywell surface.

PNPS monitors the annulus air gap drains during every refueling outage.

PNPS performed four additional UT thickness measurements adjacent to the sand cushion region at the 9 foot 1 inch elevation. Three (3) of the measurements were performed in 1999 and one (1) in 2001. The sand cushion region of the drywell shell is inaccessible unless concrete is removed. For the examinations in 1999 and 2001, concrete at the periphery of the 9 foot 2 inch elevation was chipped away to allow UT wall thickness measurements of the drywell shell to be taken at the level of the upper sand cushion. These examinations are destructive in nature and are performed in a high radiation area. The areas were then re-grouted prior to resuming operations. The observed wall thickness readings showed the drywell wall thickness in these areas to be essentially as-built. Based on the following four factors, PNPS removed UT thickness measurements in the sand cushion region from the IWE program after the 2001 outage:

- Satisfactory results from monitoring for leakage from the annulus air gap drains.
- Satisfactory drywell wall thickness at the 9 foot 1 inch elevation sand cushion region (and upper drywell) after 27 years of operation (as of 1999).
- High radiation exists in areas of sand cushion UT exams.
- The potential for damage to the drywell shell from concrete removal tools used to facilitate the examinations.

License renewal commitment 44 has been made to provide added assurance that the actions to prevent water intrusion into the annulus air gap and sand cushion region have been successful in mitigating the potential for corrosion. License renewal commitment 44 is to perform another set of the UT measurements at the previous measurement locations just above and adjacent to the sand cushion region prior to the period of extended operation and once within the first 10 years of the period of extended operation. License renewal commitment 41 addresses actions to take if indications of water leakage into the annulus air gap are identified.

Ongoing Actions to Prevent Drywell Corrosion

The following ongoing actions are being taken to prevent and identify drywell corrosion:

- PNPS monitors the four annulus air gap drains twice every refuel outage, once after floodup and again prior to flooddown at the end of the outage. Leakage has never been detected from the annulus air gap drains at PNPS.

- Functional checks are performed prior to each refueling outage on the flow switch associated with the bellows seal leakage monitoring system.

- Drywell interior surfaces are examined for degradation every refueling outage as required by Technical Specification 4.7.A.2.d. Additionally, drywell interior surfaces are examined every other outage in accordance with the PNPS IWE Program. Drywell structures are examined in accordance with ASME Section XI – 1998 Edition with 2000 Addenda, Subsection IWE, Requirements for Class MC and Metallic Liners of Class CC Components of Light-Water Cooled Plants. Since IWE requirements were mandated in 1996, no areas have been identified that exceeded code acceptance criteria on the drywell interior surfaces during these inspections.

- PNPS inspects the liner drains for the water reservoirs on the refuel floor (e.g., spent fuel pool, dryer/separator pool, and reactor cavity) for leakage. Leakage into the liner drains could be a precursor for water leaks which could wet the drywell shell exterior surface. These drains are examined for leakage after filling the refueling cavity.

- Paragraph IWE-1242 of the ASME XI code states that surface areas likely to experience accelerated degradation and aging require augmented examination. These examinations are included in the PNPS ISI Program along with other containment examinations. The IWE requirements for augmented examination are required by 10 CFR 50.55a.

  The code requires owners to identify locations they believe are suspect or potential problem areas for augmented inspection. After a review of PNPS drywell construction methods, PNPS identified various locations for augmented examination. Construction procedures required the gap forming material (Ethafoam) to be removed after each concrete lift had hardened and narrow polyurethane foam sealing strips to be inserted and left in place at the top of each lift, to prevent foreign material from entering the air gap as work progressed. There is some potential that these sealing strips might trap and hold leakage from the bellows and fuel pool, resulting in corrosion of the drywell shell outer surface. For this reason, augmented UT examinations in the upper drywell at elevation 72 feet (two locations) and elevation 83 feet (four locations) were performed in vertical strips to ensure the region of interest was examined. Three (3) of the examinations were performed in 1999 and three (3) in 2001. These examinations revealed no degradation of the drywell shell thickness in the upper drywell.

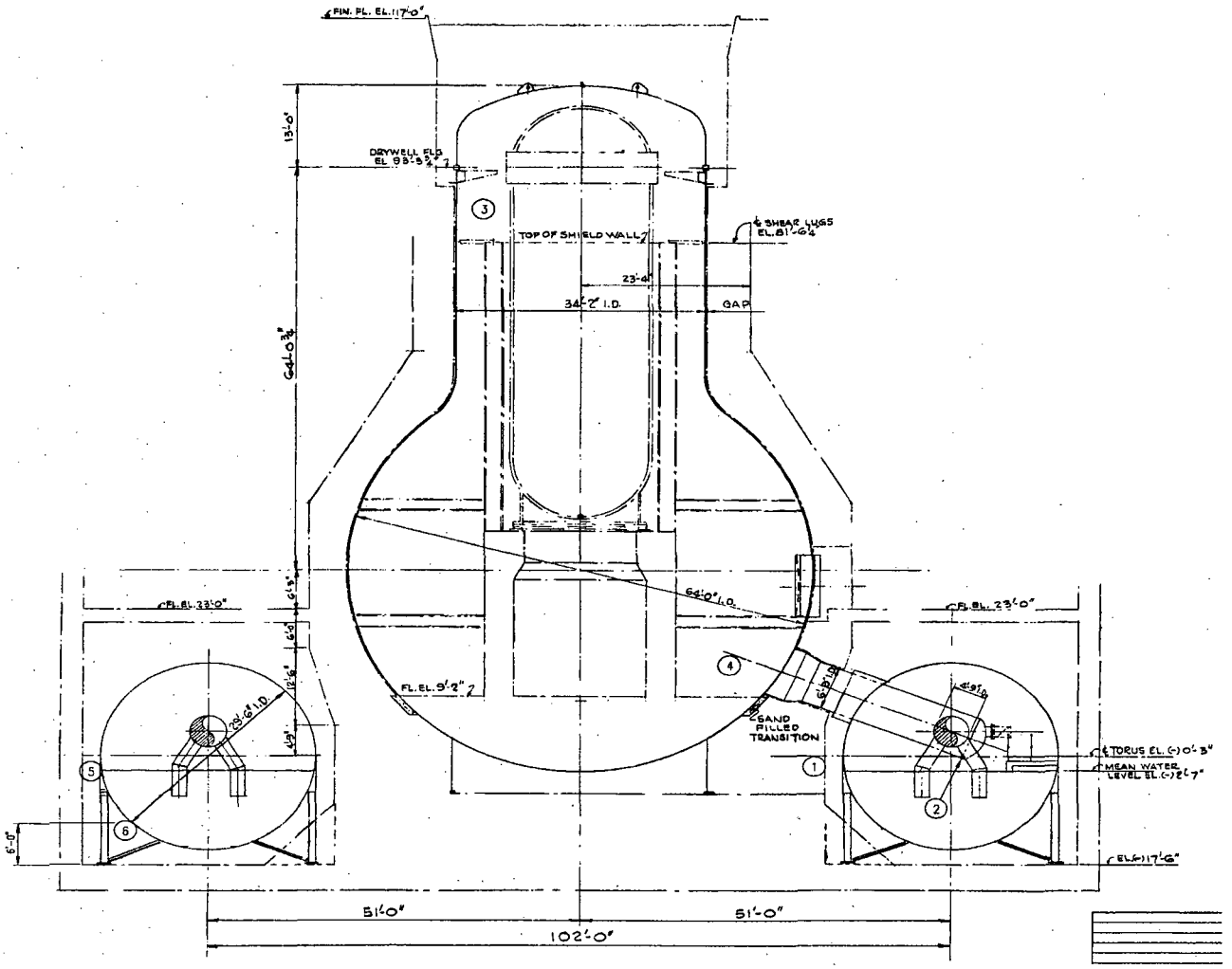
- UT thickness examinations will continue to be performed under the PNPS IWE program at two locations in the upper drywell immediately adjacent to the fuel pool due to the potential for leakage from the fuel pool liner.

- The drywell shell to floor joint is inspected under the PNPS IWE Program.

- To provide added assurance that the actions to prevent water intrusion into the annulus air gap and sand cushion region have been successful and thereby, mitigating the potential for corrosion license renewal commitment 44 is to perform another set of the UT measurements at the previous measurement locations just above and adjacent to the sand cushion region prior to the period of extended operation and once within the first 10 years of the period of extended operation. License renewal commitment 41 addresses actions to take if indications of water leakage into the annulus air gap are identified.

Conclusion

PNPS has effectively addressed the issue of drywell shell corrosion through actions taken in response to GL 87-05 as well as additional actions subsequent to the response to GL 87-05. UT examinations to determine the drywell wall thickness at the sand cushion region and upper drywell indicated no detectable loss of material and hence no discernable corrosion rate. Based on this corrosion rate, no discernable loss of drywell shell thickness is projected through the period of extended operation. The above described ongoing actions to prevent drywell shell degradation provide continuing reasonable assurance of satisfactory drywell shell condition through the period of extended operation.



Taken from ISIIWEAUG1

NOTES:

(X) DENOTES I.Æ INSPECTION POINT NUMBER.

(1) ANNULUS AIR GAP DRAIN LINES.

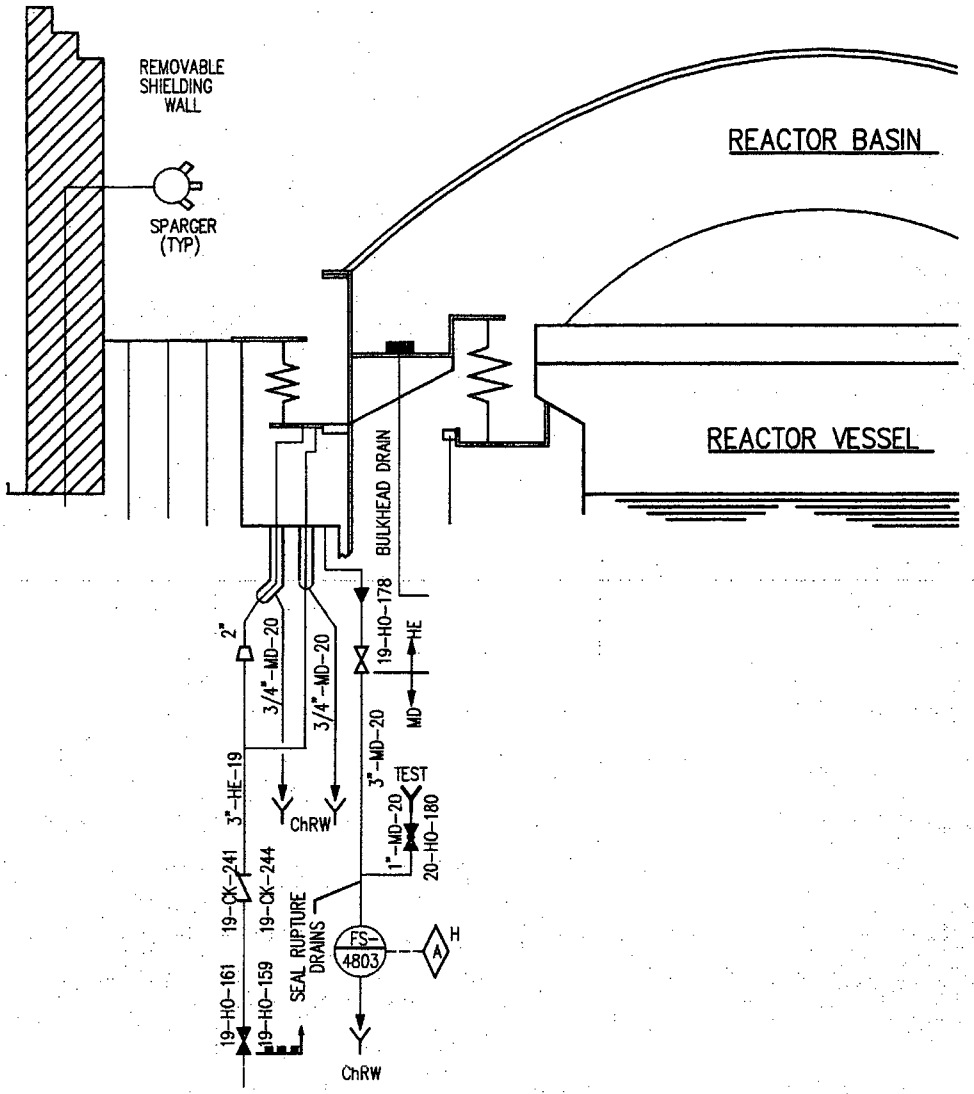
(2) VENT HEADER LOW POINTS (8 PLACES).

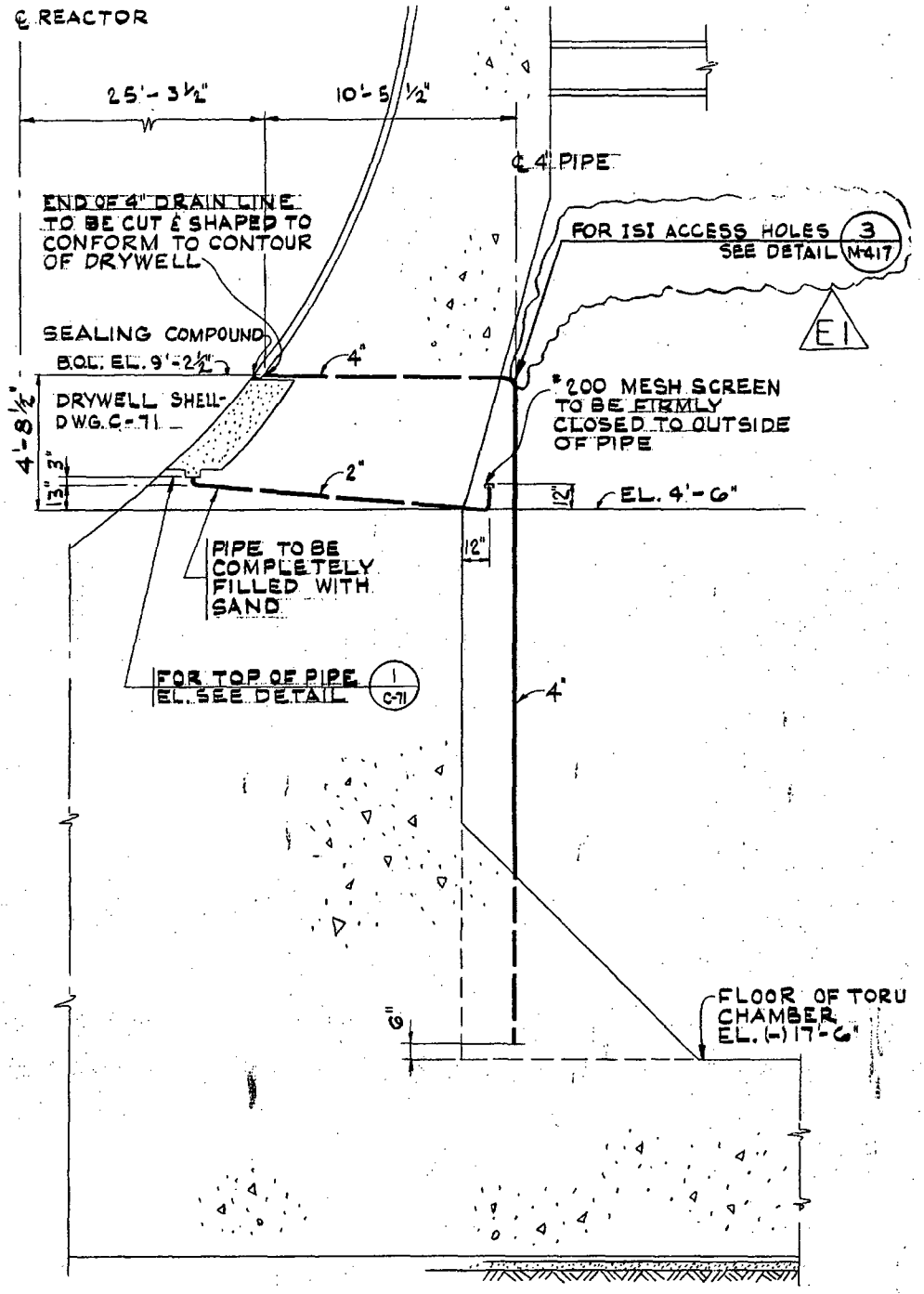
(3) UPPER DRYWELL (EL. 72'-0" & 83'-0") SHELL THICKNESS.

(4) LOWER DRYWELL (EL. 9'-0") SHELL THICKNESS.

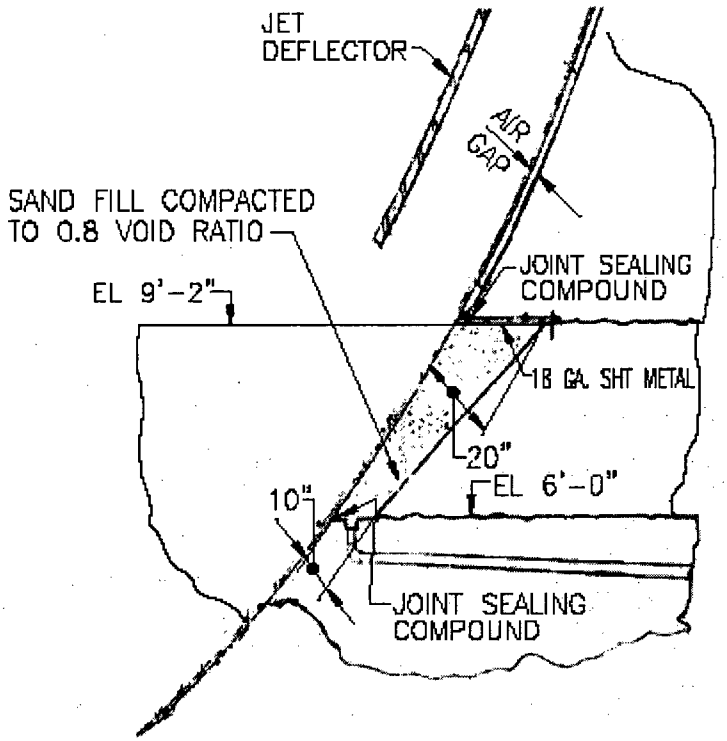
(5) TORUS SHELL THICKNESS AT MEAN WATER LINE EL. (-) 2'-7" (FROM O.D.).

(6) TORUS SHELL THICKNESS AT EL. (-) 11'-6" (FROM O.D.).


REMOVABLE SHIELDING WALL
SPARGER (TYP)
REACTOR BASIN
REACTOR VESSEL
BULKHEAD DRAIN
19-HO-178
HE
MD
2"
3/4"-MD-20
3/4"-MD-20
3"-MD-20
TEST
1"-MD-20
20-HO-180
3"-HE-19
ChRW
19-CK-241
19-CK-244
SEAL RUPTURE DRAINS
FS 4803
A
H
19-HO-161
19-HO-159
ChRW



DRYWELL
AIR GAP & SAND POCKET DETAIL



SAND POCKET

TAKEN FROM PNPS DWG. C-71

ATTACHMENT C to Letter 2.07.010
(1 page)

Changes to the LRA

The following changes to the LRA stem from the conference call on January 23, 2007 with the NRC license renewal staff.

LRA Section A.2.1.17 Inservice Inspection – Containment Inservice Inspection (CII) Program, is revised by adding the following (boldface wording added):

License renewal commitment 44 specifies the performance of another set of UT measurements just above and adjacent to the sand cushion region prior to the period of extended operation and once within the first 10 years of the period of extended operation.

LRA Section A.2.1.32 Structures Monitoring – Structures Monitoring Program, is revised by adding the following (boldface wording added):

If groundwater continues to collect on the Torus Room floor, obtain samples and test such water to determine its pH and verify the water is non-aggressive as defined in NUREG-1800 Section III.A1 item III.A.1-4.

License renewal commitment 45 specifies testing of water on the Torus Room floor if groundwater continues to collect on the floor once prior to the period of extended operation.