PilgrimRenewal NPEmails

From: Regner, Lisa
Sent: Tuesday, February 15, 2011 7:41 AM
To: Mogolesko, Fred; Lynch, Joseph R
Cc: Regner, Lisa; PilgrimRenewal NPEmails
Subject: Pilgrim: DRAFT RAIs
Attachments: Pilgrim-RAIs 2 10 2011.docx

Fred, Joe,

Please see attached DRAFT RAI associated with inaccessible cables and two questions on the 2010 Annual Update.

The technical reviewer for inaccessible cables is at Davis Besse this week, but the Annual Update reviewer is available most of Wednesday and Thursday, if you need a conference call. I may be able to answer cable questions or I can liaise with the reviewer to keep things moving this week.

Thanks,
Lisa

Hearing Identifier: PilgrimRenewalNonPublic_EX
Email Number: 548

Mail Envelope Properties (28C67094311E124FBAF1AA3E42B88191208822618A)

Subject: Pilgrim: DRAFT RAIs
Sent Date: 2/15/2011 7:40:57 AM
Received Date: 2/15/2011 7:41:03 AM
From: Regner, Lisa

Created By: Lisa.Regner@nrc.gov

Recipients:
"Regner, Lisa" <Lisa.Regner@nrc.gov>
Tracking Status: None
"PilgrimRenewal NPEmails" <PilgrimRenewal.NPEmails@nrc.gov>
Tracking Status: None
"Mogolesko, Fred" <fmogole@entergy.com>
Tracking Status: None
"Lynch, Joseph R" <jlynch4@entergy.com>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	464	2/15/2011 7:41:03 AM
Pilgrim-RAIs 2 10 2011.docx	34237	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Pilgrim Nuclear Power Station
DRAFT RAIs
February 11, 2011

Inaccessible Cables
DRAFT RAI

Backgound
NUREG-1801, Rev. 1, "Generic Aging Lessons Learned," (the GALL Report) addresses inaccessible medium voltage cables in Aging Management Program (AMP) XI.E3, "Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements" (Inaccessible Cables Program). The purpose of this program is to provide reasonable assurance that the intended functions of inaccessible medium voltage cables (2 kV to 35 kV), that are not subject to environmental qualification requirements of 10 CFR 50.49 and are exposed to adverse localized environments caused by moisture while energized, will be maintained consistent with the current licensing basis. The scope of the program applies to inaccessible (in conduits, cable trenches, cable troughs, duct banks, underground vaults or direct buried installations) medium-voltage cables within the scope of license renewal that are subject to significant moisture simultaneously with significant voltage (energized 25% of the time).

The application of the Inaccessible Cables Program to medium voltage cables was based on the operating experience available at the time revision 1 of the GALL Report was developed. However, industry operating experience subsequent to GALL Report, revision 1, (i.e., during the time period from 2004 to 2009) indicates that the presence of water or moisture can be a contributing factor in inaccessible power cables failures at lower service voltages (400 V to 2 kV). Applicable operating experience was identified in licensee responses to Generic Letter (GL) 2007-01, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients," which included failures of power cable operating at service voltages of less than 2 kV where water was considered a contributing factor. The staff also noted that the *significant voltage* screening criterion (cables subject to system voltage for more than 25 percent of the time) was not applicable for all the inaccessible power cable failures noted.

Industry operating experience provided by NRC licensees in response to GL 2007-01 has shown that there is an increasing trend of cable failures with length in service and that the presence of water/moisture or submerged conditions appears to be the predominant factor contributing to cable failure. The staff has determined, based on the review of the cable failure data, that an annual inspection of manholes and a cable test frequency of at least every 6 years (with evaluation of inspection results to determine the need for an increased inspection frequency) is a conservative approach to ensuring the operability of power cables and, therefore, should be considered.

In addition, the industry operating experience referred to above has shown that some NRC licensees may experience cable manhole water intrusion events, such as flooding or heavy rain, that subject cables within the scope of the Inaccessible Cables Program to significant moisture. The staff has determined that event driven inspections of cable manholes, in addition to a 1 year periodic inspection frequency, is a conservative approach and, therefore, should be considered.

Issue

The staff has concluded, based on industry operating experience concerning the failure of inaccessible low voltage power cables (400 V to 2 kV) in the presence of significant moisture, that these cables can potentially experience age related degradation. In addition, more frequent cable test and cable manhole inspection frequencies (e.g., from ten and two years to six and one year, respectively) should be evaluated to ensure that the Inaccessible Cable Program test and inspection frequencies reflect industry and plant-specific operating experience. Further, cable test and manhole or vault inspection frequencies may be increased based on future industry and plant-specific operating experience. Further, the staff has concluded that the removal of the *significant voltage* criterion is also a conservative approach and therefore should also be considered.

By letter dated January 7, 2011, the applicant submitted supplemental information to the LRA to address aging management of low voltage cables. The staff has reviewed the LRA supplement and has noted that the LRA supplement does not address the staff's concerns regarding inaccessible power cables or is incomplete in the areas identified below.

Request

1. The "operating experience" section discussion (Attachment 1, page 8) states that the applicant reported no failures of medium voltage or low voltage inaccessible cables during the GL 2007-01 review. The LRA supplement also states that since the applicant's response to GL 2007-01, PNPS operating experience was researched through the corrective action program and no failures were found for inaccessible 400 to 2kV cables. Provide additional discussion on plant specific operating experience of inaccessible medium voltage cables subsequent to your response to GL 2007-01. Explain why the operating experience discussion shown in Attachment 1, page 8 are not included in the LRA, Section B.1.19 "operating experience" discussion (Attachment 1, page 10).

2. The "discussion" section (Attachment 1, page 8) does not include a discussion on adding event driven inspections (rain or flood) or the elimination of the *significant voltage* criterion. Explain why event driven inspections and the elimination of the *significant voltage* criterion are not included in the "discussion" section of Attachment 1, page 8.

3. The LRA, Section A.2.1.21, "Non-EQ Inaccessible Medium-Voltage Cable Program," (Attachment 1, page 8) does not include a discussion of event driven inspections (rain or flood) or a discussion of the evaluation of test results used to determine the need for increased cable test frequencies. Explain why event driven inspections or the use of cable test results to determine the need for increased test frequencies are not discussed in LRA Section A.2.1.21.

4. The LRA, Section B.1.19, "Non-EQ Inaccessible Medium Voltage Cable," (Attachment 1, page 9) states that the Non-EQ Inaccessible Medium-Voltage Cable Program will be based on and consistent with NUREG-1801, Revision 2, Section XI.E3. However, the LRA, Section B.1.19 does not describe inaccessible medium voltage cables or the addition of low voltage inaccessible power cables (400V to 2kV). Explain why medium voltage and low voltage inaccessible power cables are not described (i.e., 400V to 35kV) in LRA Section B.1.19.

5. LRA Section B.1.19, "Non-EQ Inaccessible Medium Voltage Cable," (Attachment 1, page 9) states that additional operational inspections will be performed to verify drainage

systems are functional prior to predicted heavy rains or flooding events such as hurricanes.

Although operational inspections are stated to be performed prior to predicted heavy rains or flooding events it is not clear to the staff that all in-scope manholes are equipped with dewatering/drainage systems such as sump pumps. Confirm that all in-scope manholes are equipped with dewatering/systems such as sump pumps.

If in-scope manholes are not equipped with dewatering/drainage systems, explain how these manholes are inspected for event driven occurrences (heavy rain or floods, etc.). In addition, for in-scope manholes equipped with dewatering/drainage systems, explain how these manholes are inspected subsequent to event driven occurrences to ensure that inaccessible power cables are not exposed to significant moisture.

For manholes equipped with dewatering/drainage systems such as sump pumps, provide information on surveillance and functional testing performed on these systems that ensures proin-scope inaccessible power cable

6. LRA Section B.1.19, "Non-EQ Inaccessible Medium Voltage Cable," (Attachment 1, page 9) states that in-scope medium and low-voltage cables exposed to significant moisture will be tested once every 6 years. LRA Section B.1.19 also states that all in-scope medium-voltage cables will be tested prior to entering the period of extended operation (PEO) and that low-voltage cables will be tested within six years of entering the PEO.

   Explain how the testing frequency for medium and low-voltage inaccessible power cable is consistent with the GALL Report, since the GALL Report states that the *first tests for license renewal are to be completed prior to PEO* with subsequent tests performed at least every 6 years thereafter.

7. LRA Section B.1.19, "Non-EQ Inaccessible Medium Voltage Cable," (Attachment 1, page 9) does not indicate that inaccessible power cable test results may be used to adjust test frequencies based on test results.

   GALL Report Revision 2, AMP XI.E3 states that for power cables exposed to significant moisture, test frequencies are adjusted based on test results. Explain why the provision to include cable test results used to determine the need for increased test frequencies are not part of LRA Section B.1.19.

8. LRA Section B.1.19, "Non-EQ Inaccessible Medium Voltage Cable," (Attachment 1, page 9) does not include a definition for "significant moisture." LRA Section A.2.1.21 includes the definition. Explain why LRA Section B.1.19 does not include a definition for significant moisture.

9. Commitment No.15 (Attachment 2, page 2) states that inaccessible cables will be tested for cable insulation degradation at least once every 6 years after entering the period of extended operation.

   Explain how the testing frequency for medium and low-voltage inaccessible cable is consistent with GALL Report Revision 2, AMP XI.E3 that states the first tests for license

renewal are to be completed prior to PEO with subsequent tests performed at least every 6 years thereafter.

Annual Update 2010
DRAFT RAI 3.3.2-14-1-1

Background

By letter dated December 22, 2010, the applicant updated LRA Table 3.3.2-14-1 to add copper alloy with greater than 15 percent zinc thermowells exposed externally to condensation which is being managed for loss of material by the System Walkdown Program.

LRA Table 3.0-1 states that "[f]or exterior surfaces, condensation is considered untreated water due to potential for surface contamination." The GALL Report recommends that copper alloy with greater than 15 percent zinc components that are exposed to treated, raw, or closed cycle cooling water water be managed for loss of material due to selective leaching using GALL AMP XI.M33, "Selective Leaching of Materials."

Issue

There are no items in LRA Table 3.3.2-14-1 to manage loss of material due to selective leaching for copper alloy with greater than 15 percent zinc thermowells exposed externally to condensation.

Request

Clarify how copper alloy with greater than 15 percent zinc thermowells exposed externally to condensation are being managed for loss of material due to selective leaching.

DRAFT RAI 3.3.2-14-15-1

Background

By letter dated December 22, 2010, the applicant updated LRA Table 3.3.2-14-15 to add plastic filter housings exposed externally to indoor air and internally to treated water. The applicant stated that this material and environment combination has no aging effects requiring management and no aging management program is required.

Issue

Some types of plastic can experience aging effects when exposed to air or water. It is unclear to the staff whether the filter housings can experience aging effects because the applicant did not state what type of plastic was used to construct the filter housings.

Request

Clarify what type of plastic was used to construct the filter housings exposed to indoor air and treated water.