From: Ram Subbaratnam
To: Dellis1@entergy.com
Date: Wed, May 10, 2006 2:25 PM
Subject: Draft questions for the Aging Management Program (AMP) GALL consistency audit - for Pilgrim LRA

Doug:

As promised here are a set of preliminary and draft questions for the proposed Aging Management Program (AMP) GALL consistency audit to be conducted at Pilgrim plant site, during May 22-26, 2006. As you are aware, James Davis is the Project team leader for the Audit, and will coordinate the audit activities. Per current plans, I may be able to join the team on 25-26, 2006, which I will confirm.

Please be advised that these are being provided to you that, you can expedite the answers to the audit team face-to-face and be ready to provide Entergy's response in the appripriate audit data base, by COB second date of commencement of the audit - which is Tuesday May 23, 2006.

Please confirm that you have received the Qs and feel free to contact me - Ram Subbaratnam at (301) 415 1478 or Jim Davis at (301) 415 6987, if you have any questions.

Thanks,

Ram Subbaratnam
Project Manager, Pilgrim LRA
US NRC, 415-1478

CC: James Davis; Kenneth Chang ; Peter Wen

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B.1.1 Boraflex Monitoring - Wen

1. In the Program Description, the applicant states that:

   "The program relies on periodic inspection of the Boraflex, monitoring of silica levels in the spent fuel pool water, and analysis of criticality to assure that the required 5% subcriticality margin is maintained."

   For Boraflex Monitoring Program, the GALL Report identifies parameters to be monitored including: physical conditions of the Boraflex panels, such as gap formation and decreased boron area density, and the concentration of the silica in the spent fuel pool. Does applicant's Boraflex Monitoring Program monitor all of these parameters, especially, the areal density measurement?

2. In the Operating Experience Section, PNPS implies that the required 5% subcritically margin was demonstrated through the gap measurement. Please provide details how the results of gap measurement demonstrated that the 5% subcritically margin is maintained.

3. The applicant states in the LRA that its Boraflex Monitoring Program is consistent with the program described in GALL Report Section XI.M22, Boreflex Monitoring. In the Detection of Aging Effects program element, the GALL Report states that:

   "The amount of boron carbides released from the Boraflex panel is determined through direct measurement of boron areal density and correlated with the levels of silica present with a predictive code. This is supplemented with detection of gaps through blackness testing and periodic verification of boron loss through areal density measurement techniques such as the BADGER device."

   What predictive code is being used at PNPS? Based on the predictive code and trending of the SFP silica level what is the projected useful life of the Boraflex racks?

4. As indicated in Table 3.3.2-13 of the LRA, PNPS identified that this AMP will be used in three line items (page 3.3-131). These three line items include managing neutron absorber aging effects of "loss of material," "change in material properties," and "cracking." All these three line items reference GALL Report item VII.A2-2. However, the aging effect identified by the GALL Report (VII.A2-2) is only "reduction of neutron-absorbing capacity/ Boraflex degradation." Please explain the discrepancies.

B.1.3 BWR CRD Return Line Nozzle Program - Davis

1. A structural weld overlay was applied over a through wall Crack in a 182/82 weld using alloy 52 material without removing the flaw. What regulatory basis was used to install this overlay? How will this be handled during the PEO?

   What is the regulatory basis for reducing the examination volume?

2. Was relief requested to use Code Case N–504-2 to do the weld overlay? What exceptions have you taken to Code Case –504-2? Do you meet the requirements for ASME Section XI non-mandatory Appendix Q? How will this be handled during the period of extended operation (PEO) ?

B.1.4 BWR Feedwater Nozzle Program - Davis

1. For this program what is the regulatory basis for reducing the examination volume?

B.1.5 BWR Penetrations - Jackson

1. LRA Appendix B.1.5 (BWR Penetrations) in the Operating Experience states that in January 2005 three 2.5" piping butt welds in SLC system piping,[shop welds RPV-N14-T1 and RPV-N14-T2 and field weld RPV-14-2, were found to be unidentified on inspection drawings and not included in the ISI weld population totals. It also states that weld RPV-14-2 was included in surface examinations of the N14 nozzle safe end weld and safe end extension piece performed in RFO11. It also states that corrective actions included adding the welds to the ISI weld population totals and performing a nozzle surface examination of weld RPV-N14-2 during RFO15.

   QUESTION:

   When was RFO11?

   Please explain the apparent inconsistency that weld RPV-14-2 was not included in the ISI weld population until RFO15, yet it was included in the N14 surface examinations of N14 nozzle safe end weld and safe end extension piece during RFO11.

2. LRA Appendix B.1.5 (BWR Penetrations) under Exceptions states that "surface examinations are not performed on instrument penetration nozzle welds." It further states that inspections to monitor the effects of cracking on the intended function of instrument penetration nozzles (N15A/B and N16A/B) include enhanced visual (VT-2 with insulation removed) examinations during system pressure testing. It also states that a UT exam of the N16B safe end-to-reducer weld is performed every 10 years.

   However, ASME Section XI, Table IWB-2500-1 and BWRVIP-49 also recommend surface examinations.

   QUESTION:

   A surface examination is capable of finding indications with potential for failure before a through-wall leak can occur. However, a VT-2 examination looks for signs of leakage. Please provide a more detailed discussion and justification of why PNPS's AMP B.1.5, with this exception, is adequate manage the aging of these instrument nozzles during the extended period of operation.

   What is meant by the phrase "enhanced visual ... examinations"? Exactly what is the enhancement

3. LRA Appendix B.1.5 (BWR Penetrations) includes an "Exception Note" stating that PNPS has implemented risk-informed ISI (RI-ISI) in accordance with ASME Section XI, Code Case N-578.

   QUESTIONS:

   Please compare the number, type, frequency and extent of inspections required for instrument penetration nozzles N15A/B and N16A/B before implementation of RI-ISI and after implementation of RI-ISI.

Are N15A/B and N16A/B the only Pilgrim RPV instrument penetrations?

Please make available at the audit a copy of ASME Section XI, Code Case N-587.

4. GALL Program Description XI.M8 (BWR Penetrations) states that an applicant may use the guidelines of BWRVIP-62 for inspection relief for vessel internal components with hydrogen water chemistry, provided that such relief is submitted under the provisions of 10 CFR 50.55a and approved by the staff.

QUESTIONS

:

Has Pilgrim implemented hydrogen water chemistry?

Has Pilgrim requested and/or obtained inspection relief for vessel internal components using the guidelines of BWRVIP-62? If so, please describe the details of the inspection relief requested and/or granted.

5. For PNPS AMP B.1.5 (BWR Penetrations), the description of the exception states that a UT exam of N16B safe end-to-reducer weld is performed every 10 years. For this same AMP, the Operating Experience provides relatively recent (RFO15) examination results for weld RPV-N14-2 (SLC nozzle) and for instrument penetration nozzles. The Operating Experience also states that liquid penetranant examination of instrument penetration nozzle N15A in 1990 resulted in no recordable indications. The Operating Experience does not discuss results of the 10-year UT examinations of N16B safe end-to-reducer weld.

QUESTIONS:

Please discuss results of the 10-year UT examination of N16B safe end-to-reducer weld.

For RPV-N14-2 and for instrument penetration nozzles, please discuss the history of examination results that is earlier than RFO15.

B.1.6 BWR Stress Corrosion Cracking - Jackson

1. The PNPS LRA states that the implementing procedure for ASME Section XI inservice inspection and testing will be enhanced to specify that the guidelines of Generic Letter 88-01 or approved BWRVIP-75 "shall be considered" in determining sample expansions if indications are found in Generic Letter 88-01 welds:

   QUESTIONS:

   What is PNPS's current basis for determining sample expansion if indications are found in GL 88-01 welds?

   In addition the guidelines in Generic Letter 88-01 or approved BWRVIP-75, what other considerations, if any, will PNPS use in determining sample expansion if indications are found in Generic Letter 88-01 welds?

2. Please make available at the audit, in both hard copy and electronic format, the documents that compare the ten elements of PNPS AMP B1.6 (BWR Stress Corrosion Cracking) to the ten elements of GALL AMP XI.M7 (BWR Stress Corrosion Cracking).

3. LRA Appendix B.1.6 (BWR Stress Corrosion Cracking) identifies an Exception to NUREG-1801. The exception is described as PNPS' use of the 1998 edition with 2000 addenda of ASME Section XI, Subsection IWB-3600 for flaw evaluation, while NUREG-1801 specifies the 1986 edition of ASME Section XI, Subsection IWB-3600 for flaw evaluation.

   QUESTIONS:

   Please make available at the audit a copies of ASME Section XI, Subsection IWB-3600, the 1986 edition, and the 1998 edition with 2000 addenda.

   Please identify which specific subsections of IWB-3600 are different between the 1986 edition and 1998 edition with 2000 addenda of ASME Section XI.

4. The Standard Review Plan for License Renewal (NUREG-1800, Rev. 1), Section 3.1.2.4, FSAR Supplement, states that "The [summary] description [of the program in the FSAR supplement] should ... contain any future aging management activities, including enhancements and commitments, to be completed before the period of extended operation."

   PNPS LRA Appendix B.1.6 (BWR Stress Corrosion Cracking) identifies an enhancement to be initiated prior to the period of extended operation. The LRA states that "The implementing procedure for ASME Section XI inservice inspection and testing will be enhanced 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.

   PNPS LRA UFSAR supplement A.2.1.6 (BWR Stress Corrosion Cracking Program) does not include a description of the enhancement to PNPS' implementing procedure for ASME Section XI inservice inspection..

QUESTION:

Please include a description of the enhancement to PNPS' implementing procedure for ASME Section XI inservice inspection in the UFSAR Supplement's description, A.2.1.6 (BWR Stress Corrosion Cracking Program).

B.1.7 BWR Vessel ID Attachment Welds - Jackson

1. For examination category B-N-2 , ASME Section XI, Table IWB 2500-1, specifies VT-1 examinations for interior attachment welds within the beltline region. It specifies VT-3 examinations for interior attachment welds beyond the beltline region and for core support structure welds. The guidelines of BWRVIP-48 recommend more stringent inspections for certain attachments. Specifically, the guidelines recommend enhanced visual VT-1 examination of all safety-related attachments and those nonsafety-related attachments identified as being susceptible to IGSCC.

   QUESTION:

   Please confirm that PNPS performs the more stringent inspections of applicable vessel ID attachment welds as recommended in BWRVIP-48.

   Please provide a descriptive list of the category B-N-2 vessel ID attachment welds that are inspected using the more stringent enhanced VT-1 examination techniques.

2. Please confirm PNPS AMP B.1.7 (BWR Vessel ID Attachment Welds) implements the evaluation guidelines of BWRVIP-14, BWRVIP-59 and BWRVIP-60 for evaluation of crack growth in stainless steel, nickel alloys and low alloy steels, respectively.

B1.8 BWR Vessel Internals - Jackson

1. The PNPS LRA states that top guide fluence is projected to exceed the threshold for IASCC prior to the period of extended period of operation. The LRA states that PNPS AMP B.1.8 (BWR Vessel Internals) will be enhanced to inspect ten (10) percent of the top guide locations using enhanced visual inspection technique, EVT-1, within the the first 12 years of the period of extended operation, with one-half of the inspections (50 percent of the locations) to be completed within the first 6 years of the period of extended operation.

   QUESTIONS:

   Please describe PNPS's plans for inspection of top guide locations during the final 8 years of the twenty-year period of extended operation.

   If no inspections are planned for the final 8 years of operation, please provide a technical basis for not continuing inspection of top guide locations during this part of the period of extended operation.

2. The Standard Review Plan for License Renewal (NUREG-1800, Rev. 1), Section 3.1.2.4, FSAR Supplement, states that "The [summary] description [of the program in the FSAR supplement] should ... contain any future aging management activities, including enhancements and commitments, to be completed before the period of extended operation."

   PNPS LRA Appendix B.1.8 (BWR Vessel Internals Program) identifies an enhancement to be initiated prior to the period of extended operation. PNPS LRA UFSAR supplement A.2.1.8 (BWR Vessel Internals Program) does not describe this enhancement.

   QUESTION:

   Please include a description of the enhancement to PNPS' AMP B.1.8 in the UFSAR Supplement's description of this program.

3. PNPS LRA Appendix B.1.8 (BWR Vessel Internals) identifies the following described exception to Scope of Program and Detection of Aging Effects: "Inspection of the four top guide hold-down assemblies and four top guide aligner assemblies is not performed at PNPS." An Exception Note states, "PNPS has a plant-specific analysis to account for plant-specific dynamic loading of the top guide hold-down and aligner assemblies, which concludes that less than 20% of the weld area on the top guide hold-down and aligner assemblies is needed to resist load. Therefore, in accordance with Table 3.2 of BWRVIP-26, inspection of the four top guide hold-down assemblies and four top guide aligner assemblies is not performed at PNPS.

   Questions:
   Please provide a staff-approved copy of BWRVIP-26, including Table 3.2, stating that inspection of the four top guide hold-down assemblies and four top aligners is not required if 20% or less of the weld area is sufficient to resist vertical loads from the top guide during faulted events.

4. Please provide a status summary of current industry activities to develop a delivery system for ultrasonic testing of the hidden welds in PNPS' core spray system.

5. Please provide a status summary of current industry activities to develop a delivery system for ultrasonic testing of the hidden welds in PNPS' jet pump assemblies.

6. LRA Appendix B.1.8 (BWR Vessel Internals, Operating Experience, states that "Previous visual and enhanced visual examinations of vessel internals revealed indications on core spray piping welds, and steam dryer leveling screw tack welds."

   QUESTIONS:

   When were the earlier indications on core spray piping welds and steam dryer level screw tack welds found?

   What corrective actions were taken?

7. GALL Section XI.M9 (BWR Vessel Internals), Element 4 (Detection of Aging Effects) states: "The applicable and approved BWRVIP guidelines recommend more stringent inspections, such as enhanced VT-1 examinations or ultrasonic methods of volumetric inspection for certain selected components and locations:"

   QUESTION:

   Please confirm that PNPS AMP B.1.8 (BWR Vessel Internals) performs the more stringent inspections recommended in the applicable and approved BWRVIP guidelines, except as documented in PNPS LRA under the discussion of "Exceptions to NUREG-1801."

B.1.9 10CFR 50 Appendix J (XI.S4) - Hoang

1.The applicant is requested to address and discussion the test Option related to this program. What and when was the most significant experience related to this program do you have? What was your corrective and preventive actions did you take? When will be your next "periodic interval"?

B.1.10 Diesel Fuel Monitoring - Pavinich

1. Provide justification for not cleaning and visually inspecting the security diesel generator fuel storage tank on a periodic basis.

2. Provide justification for not using all ASTM specifications.

3. Provide justification of the "≥ 60% of nominal thickness" acceptance criterion.

4. Will all tank bottoms be subjected to 100% UT inspection?

5. If reduction of thickness is discovered during UT, will microbiological activity be monitored and biocide added in the future? If not, provide a justification for not doing so.

6. NUREG-1800, SRP for license renewal, section 3.X.3.4, FSAR Supplement, states the following:

> As noted in Table 3.X-2, an applicant need not incorporate the implementation schedule into its FSAR. However, the reviewer should confirm that the applicant has identified and committed in the license renewal application to any future aging management activities, including enhancements and commitments to be completed before entering the period of extended operation. The staff expects to impose a license condition on any renewed license to ensure that the applicant will complete these activities no later than the committed date.

The enhancements identified in the B.1.10 write-up are not included in the FSAR Supplement Appendix A.2.1.10. They should be in the UFSAR Supplement in order to address these commitments.

B.1.11 Environment Qualification (EQ) of Electrical Components Program - Nguyen

1. The results of the environmental qualification of electrical equipment in LRA Section 4.4. indicate that the aging effects of the EQ of electrical equipment identified in the TLAA will be managed during the extended period of operation under 10 CFR 54.21(c)(1)(iii). However, no information is provided on the attribute of a reanalysis of an aging evaluation to extend the qualification life of electrical equipment identified in the TLAA. The important attributes of a reanalysis are the analytical methods, the data collection and reduction methods, the underlying assumptions, the acceptance criteria, and corrective actions. Provide detail description on the important attributes of reanalysis of an aging evaluation of electrical equipment identified in the TLAA in the LRA or plant's basis document (under program description) to extend the qualification under 10 CFR 50.49(e).

2 PNPS B.1.11 under operating experience, you have stated that the overall effectiveness of the EQ of electric components program is demonstrated by the excellent operating experience for systems, structures, and components in the program. Discuss operating experience of the existing EQ program. Show where an existing program has succeeded and where it has failed in identifying aging degradation in a timely manner.

B.1.12 Fatigue Monitoring - Patel

1. FSAR Supplement section A.2.1.12 references section 4.2.6 for location of the transient cycles that are tracked by this program. However, section 4.2.6 addresses RPV Axial Weld Failure Probability. Should section 4.3.1, Table 4.3-2 be referenced instead?

B.1.13.1 Fire Protection - Patel

1. Provide justification why carbon dioxide fire suppression system is not subject to aging management review.

2. The exception taken for element 4 about the inspection frequency for penetration seals should also apply to element 3 for the same reason that it applies to element 4. Please justify why this exception does not apply to element 3.

3. The two enhancements identified in B.1.13.1 write-up are not included in the FSAR Supplement Appendix A.1.13. NUREG-1800, SRP for license renewal, section 3.X.3.4, FSAR Supplement, states the following:

> As noted in Table 3.X-2, an applicant need not incorporate the implementation schedule into its FSAR. However, the reviewer should confirm that the applicant has identified and committed in the license renewal application to any future aging management activities, including enhancements and commitments to be completed before entering the period of extended operation. The staff expects to impose a license condition on any renewed license to ensure that the applicant will complete these activities no later than the committed date.

The enhancements should be included in the Appendix A write-up.

B.1.13.2 Fire Water System - Patel

1. NUREG-1800, SRP for license renewal, section 3.X.3.4, FSAR Supplement, states the following:

> As noted in Table 3.X-2, an applicant need not incorporate the implementation schedule into its FSAR. However, the reviewer should confirm that the applicant has identified and committed in the license renewal application to any future aging management activities, including enhancements and commitments to be completed before entering the period of extended operation. The staff expects to impose a license condition on any renewed license to ensure that the applicant will complete these activities no later than the committed date.

a) The enhancement for wall thickness evaluation of fire protection piping is identified in the Appendix A write-up in the present tense, meaning the inspections are being performed. However, the enhancement is addressed in the Appendix B write-up is in the future tense, meaning the inspections will be performed in the future (before the end of the current operating term). The Appendix A write-up should be revised to address this future commitment.

b) The enhancement for revising procedures to include inspections of hose reels for corrosion is not addressed in the Appendix A write-up. The Appendix A write-up should be revised to address this future commitment.

B.1.14 FAC - Wen

1. How is the minimum allowable wall thickness defined in PNPS FAC program?

2. The FAC program includes the use of a predictive code. Does PNPS belong to EPRI's CHECWORKS Users Group (CHUG), and CHECWORKS is being used?

3. If degradation is detected such that the measured wall thickness is less than the minimum predicted thickness, explain how the sample size is increased to bound the thinning for the same inspection period.

4. In the Program Description, the applicant states that

> "This program applies to safety-related and nonsafety-related carbon steel components in systems containing high-energy fluids carrying two-phase or single-phase high-energy fluid > 2% of plant operating time."

Which piping systems are excluded from the FAC program scoping as a result of low operating time (i.e., < 2% of plant operating time)? Has any inspection ever been performed to make sure that there is no wear on these lines?

5. Describe the experience of FAC program at PNPS and the ability of the inspection programs to detect wall thinning in a timely manner before the intended function of piping components has been lost:

- Have components been identified that did not meet the minimum allowable wall thickness prior to replacement or loss of pressure retaining capacity?
- What corrective actions have been taken, and to what extent have these measures been effective in eliminating or reducing the wall thinning?
- What changes to the program have occurred to ensure that aging effects due to FAC have been successfully managed?
- Provide evidence that the current aging management program has been effective to successfully mitigate and detect wall thinning during the time period addressed by the LRA.

B.1.15 Heat Exchanger Monitoring - Pavinich

1. What method(s) will be used to detect localized corrosion? Identify areas to be inspected and frequency of inspections for localized corrosion.

2. Provide additional details describing the methods that will be used establish sample size and frequency.

3. Provide details on data collection.

4. Provide details describing the methods to assess remaining component life for loss of material using inspection results such that timely mitigative action can be made.

5. Provide more details on how acceptance criteria will be established.

6. Although this is a new program, provide operating experience with respect to heat exchanger wall thinning and other degradation resulting from adherence to GL 89-13.

B.1.16.1 Containment Inservice Inspection (CII) - Hoang

1. Pilgrim AMP B.1.16.1 identifies that the Containment Inservice Inspection (CII) program is a plant-specific program encompassing the requirements for the inspection of class MC. The applicant is requested to identify the document(s) that includes the evaluation of Pilgrim AMP B.1.16.1 to include additional MC supports. Please provide the following information related to:

(a) Identify the MC supports that are currently included in the existing inspection program.

(b) Identify the MC supports that will be added to the scope of this inspection program for the license renewal period.

(c) Specify the current inspection program and describe the current inspection details for the MC supports that are identified in (b) above.

(d) Confirm that, all MC supports will be included in the scope of this inspection program for the extended period of operation.

2.The applicant is requested to identify and provide the Inspection frequency against the AMP B.1.16.1. What is the cause for "Loose" torus anchor bolt found in 1999? Are there any other "loose and/or degrade" situation were identified?

Are there any Preventive Action for the Torus shell wall (thin wall)? Please, provide an examination details, acceptance criteria, qualifications, and documentation.

3. The applicant is requested to address the results of the CII general walkdown of primary containment during April 2003 (RFO 14) and found some surface corrosion in the CRD penetration areas. What were your corrective and preventive action? Did a Root Cause Analysis was performed? Please provide your acceptance criteria, qualification? And/or any other means to support your conclusion?

4.The applicant is requested to address and discussion the Operating Experience in detail found in 1999, the below-water regions of all 16 torus bays as well as the drywell to torus vent areas. Did your scope expansion was required due to unacceptable found? Do you have any Preventive Actions to prevent it from further damaged and/or recur? If yes, why it's not including into this program?

5."The drywell coolers, including the fans, with their power and control system were tested during the pre-operational tests...". When was the last time this system underwent a functional test? A justification for an additional 20 years is needed for the staff to review.

B.1.16.2 ISI - Jackson

1. The LRA states that PNPS' AMP B.1.16.2 (Inservice Inspection) ISI Program is a plant-specific program encompassing ASME Section XI, Subsections IWA, IWB, IWC, IWD and IWF requirements. The LRA states that the ASME code edition and addenda used for the fourth interval is the 1998 edition with 2000 addenda. The LRA states that PNPS entered its fourth [ten-year] ISI interval on July 1, 2005.

   QUESTIONS:

   Please clarify whether PNPS' AMP B.1.16.2 includes any exceptions or alternatives to the requirements of ASME Section XI, 1998 edition with 2000 addenda, granted or imposed under the provisions of 10 CFR 50.55a.

2. The PNPS LRA, Appendix B.1.16.2 (Inservice Inspection), under Scope of Program, states, "The ISI Program manages cracking, loss of material, and reduction of fracture toughness of reactor coolant system piping, components, and supports.

   LRA Table 3.2.1-3 identifies reactor recirculation pump casings and covers, main steamline flow restrictors and valve bodies (>= 4" NPS and < 4"NPS) made of CASS as subject to the aging effect of reduction of fracture toughness. The aging management program is either Inservice Inspection or One-Time Inspection.

   The SRP-LRA (NUREG-1800, Rev.1), Appendix A.1.2.3.4 (Detection of Aging Effects), states that the applicant should "Provide information that links the parameters to be monitored or inspected to the aging effect being managed."

   QUESTIONS:

   Please discuss how the parameters to be monitored by the ISI Program or One-Time Inspection are linked to the aging effect of reduction in fracture toughness?

   Which valves are subject to the aging effect of reduction in fracture toughness? (Please provide either valve numbers and drawing references or a functional description of the valves.)

3. The SRP-LRA (NUREG-1800, Rev.1), Appendix A.1.2.3.5 (Monitoring and Trending), Paragraph 2, states: ".... The parameter or indicator trended should be described. The methodology for analyzing the inspection or test results against the acceptance criteria should be described.

   PNPS LRA Appendix B.1.16.2 (Inservice Inspection), Section 5 (Monitoring and Trending), does not describe the parameter(s) or indicator(s) being trended nor the methodology for analyzing the inspection or test results, either explicitly or by reference to specific standards tables.

   QUESTONS:

   For PNPS plant-specific AMP B.1.16.2, please provide a description of the parameter(s) or indicator(s) being trended and of the methodology for analyzing the inspection or test

results.

B.1.17 Instrument Air Quality - Pavinich

1. Provide a list of components or systems that are subject to the Instrument Air Quality Program.

2. General questions. What commitments were made as a result of the PNPS response to NRC GL 88-14? What industry standards are used for preventative actions and detection of aging effects?

3. Provide details describing the methods that determine deteriorating air quality.

4. Provide the basis for the acceptance criteria for dew point, oil mist and particulate including any industry standards invoked.

5. NUREG-1800, SRP for license renewal, section 3.X.3.4, FSAR Supplement, states the following:

   As noted in Table 3.X-2, an applicant need not incorporate the implementation schedule into its FSAR. However, the reviewer should confirm that the applicant has identified and committed in the license renewal application to any future aging management activities, including enhancements and commitments to be completed before entering the period of extended operation. The staff expects to impose a license condition on any renewed license to ensure that the applicant will complete these activities no later than the committed date.

The enhancements identified in the B.1.17 write-up are not included in the FSAR Supplement Appendix A.2.1.19. They should be in the UFSAR Supplement in order to address these commitments.

B.1.18 Metal-Enclosed Bus Inspection - Nguyen

1. PNPS AMP B.1.18, under Detection of Aging Affects, you have states that PNPS takes an exception to GALL XI.E4 by visual inspection of metal enclosed bus (MEB) bolted connections every 10 years. GALL XI.E4 under the same element states that as an alternate to thermography or measuring connection resistance of bolted connections, for the accessible bolted connections that are covered with heat shrink tape, sleeving, insulated boots, etc. (emphasis added), the applicant may use visual inspection of insulation material to detect surface anomalies, such as discoloration, cracking, chipping or surface contamination. When this alternate visual inspection is used to check bolted connections, the first inspection will be completed before the period of extended operation and every five years thereafter. NUREG-1833, Table IV, Justification for Changes in Aging Management Programs, states that since the visual inspection is less effective than testing, this inspection (visual) is to be performed once every five years instead of once every 10 years.

    a, Are all bolted connections covered with heat shrink tape, sleeving, or insulated boots? If they are, justify the 10 years frequency vs. the five years as recommended by NUREG-1801.

    b. If they are not, justify the visual inspection vs GALL's recommended thermography and/or resistance connections

2. In LRA, Section B.1.18 you have states that the program attribute of the Metal-Enclosed Bus (MEB) Inspection program at PNPS will be consistent with the program attribute described in NUREG-1801, Section XI.E4, Metal Enclosed Bus Aging Management Program with an exception. The exception is to inspect MEB enclosure assemblies in addition to internal surfaces using the MEB Inspection Program. GALL XI.E4 referred structures monitoring program for inspecting the metal enclosure bus assemblies. In addition to inspecting the enclosure assemblies for loss of material due to general corrosion, GALL's structure monitoring program also requires inspecting the enclosure seals for hardening and loss of strength due elastomers degradation. Are these enclosure seals included in the scope of MEB inspection program? What is the acceptance criteria for inspecting the enclosure assemblies?

3. In LRA, Section B.1.18, under Operating Experience, you have stated that the Metal Enclosed Bus Inspection Program at PNPS is a new program for which there is no operating experience. NUREG-1800, Rev. 1, Appendix A, Branch Technical Position RLSB-1 states that an applicant may have to commit to providing operating experience in the future for new program to confirm their effectiveness. Describe how operating experience will be captured to confirm the program effectiveness or to be used to adjust the program as needed.

B.1.19 Non-EQ Inaccessible Medium-Voltage Cable Program - Nguyen

1. In LRA, Section A.2.1.21, you have stated that inspection for water collection in cable manholes and conduit occur at least once every two years. GALL XI.E3 under Detection of Aging Effects recommends that the inspection for water collection should be performed based on actual plant experience with water accumulation in the manhole. However, the inspection frequency should be at least once every two years. Explain how operating experience is considered in manhole inspection frequency. Revise LRA as appropriate to be consistent with GALL's recommendation.

2. In AMP B1.19 under Operating Experience element, you have stated that the Non-EQ Inaccessible Medium-Voltage Cable Program at PNPS is a new program for which there is no operating experience. NUREG-1800, Rev. 1, Appendix A, Branch Technical Position RLSB-1 states that an applicant may have to commit to provide operating experience in the future for new program to confirm their effectiveness. Describe how operating experience is captured to confirm the program effectiveness or to be used to adjust the program as needed.

B.1.20 Non-EQ Instrumentation Circuits Test Review Program - Nguyen

1. In LRA, Section A.2.1.22, you have stated that for neutron flux monitoring system cables that are disconnected during instrument calibration, testing is performed at least once every 10 years. GALL XI.E2 recommends that the test frequency shall be determined by the applicant based on engineering evaluation, but the test frequency shall be at least once every ten years. Explain how engineering evaluation is considered in the test frequency. Revise LRA as appropriate to be consistent with GALL recommendation.

2. Confirm that the test include both cables and connections.

3. PNPS AMP B1.20 under Operating Experience element states that the Non-EQ Instrumentation Circuit Tests Review Program at PNPS is a new program for which there is no operating experience. Explain how operating experience is captured to confirm the program effectiveness or to be used to adjust the program as needed.

B.1.21 Non-EQ Insulated Cables and Connections Program - Nguyen

1. GALL XI.E1 under program description states that the program described herein is written specifically to address cables and connections at plants whose configuration is such that most (if not all) cables and connections installed in adverse localized environments are accessible. This program, as described, can be thought of as a sampling program. Selected cables and connections from accessible areas (the inspection sample) are inspected and represent, with reasonable assurance, all cables and connections in the adverse localized environment. If an acceptable condition or situation is identified for a cable or connection in the inspection sample, a determination is made as to whether the same condition or situation is applicable to other accessible or inaccessible cables or connections. As such, this program does not apply to plants in which most cables are inaccessible .

    a. Provide a ball part percentage of in-scope cable and connections population installed in adverse localized environments that are accessible.

    b. In LRA, Section B.1.21 you have stated that the a representative sample of accessible insulated cables and connections within the scope of license renewal will be visually inspected for cable and connection jacket surface anomalies such as embrittlement, discoloration, cracking or surface contamination. Explain the technical basis for cable sampling.

2. In LRA, Section B.1.21 under Operating Experience element, you have stated that the Non-EQ Insulated Cables and Connection Program at PNPS is a new program for which there is no operating experience. Describe how operating experience will be captured to confirm the program effectiveness or to be used to adjust the program as needed.

B.1.22 Oil Analysis Program - Pavinich

1. Provide justification for not monitoring the flashpoint of oil that is not regularly changed.

2. Provide acceptance criteria for water and particulate contamination and viscosity and the basis of the limits.

3. NUREG-1800, SRP for license renewal, section 3.X.3.4, FSAR Supplement, states the following:

> As noted in Table 3.X-2, an applicant need not incorporate the implementation schedule into its FSAR. However, the reviewer should confirm that the applicant has identified and committed in the license renewal application to any future aging management activities, including enhancements and commitments to be completed before entering the period of extended operation. The staff expects to impose a license condition on any renewed license to ensure that the applicant will complete these activities no later than the committed date.

The enhancements identified in the B.1.22 write-up are not included in the FSAR Supplement Appendix A.2.1.24. They should be in the UFSAR Supplement in order to address these commitments.

B.1.23 One-Time Inspection - Patel

1. Please provide a list of systems in element of "Scope of Activity", where One-Time Inspection will be performed.

2. Please identify how the sample of small piping welds, 4" and smaller will be picked for performing NDE inspection.

3. How will PNPS handle the aging of socket welds?

4. NUREG-1800, SRP for license renewal, section 3.X.3.4, FSAR Supplement, states the following:

> As noted in Table 3.X-2, an applicant need not incorporate the implementation schedule into its FSAR. However, the reviewer should confirm that the applicant has identified and committed in the license renewal application to any future aging management activities, including enhancements and commitments to be completed before entering the period of extended operation. The staff expects to impose a license condition on any renewed license to ensure that the applicant will complete these activities no later than the committed date.

The One-Time Inspection program is a new program that will be implemented prior to period of extended operation. Please justify why this commitment is not included in the FSAR Supplement write-up in Appendix A.1.25.

B.1.24 Periodic Surveillance and Preventative Maintenance - Pavinich

1. Provide any codes and standards used for detection of aging effects.

2. NUREG-1800, SRP for license renewal, section 3.X.3.4, FSAR Supplement, states the following:

   As noted in Table 3.X-2, an applicant need not incorporate the implementation schedule into its FSAR. However, the reviewer should confirm that the applicant has identified and committed in the license renewal application to any future aging management activities, including enhancements and commitments to be completed before entering the period of extended operation. The staff expects to impose a license condition on any renewed license to ensure that the applicant will complete these activities no later than the committed date.

The enhancements identified in the B.1.24 write-up are not included in the FSAR Supplement Appendix A.2.1.26. They should be in the UFSAR Supplement in order to address these commitments.

3. Provide trending methods.

B.1.25 Reactor Head Closure Studs - Jackson

1. The PNPS AMP B.1.25 (Reactor Head Closure Studs) states gives as examples of preventive measures to mitigate cracking "rust inhibitors, stable lubricants, appropriate materials."

   QUESTIONS:

   At PNPS what rust inhibitors and lubricants are approved for used on the reactor head closure studs, nuts, washers, and bushings?

   What is encompassed by the words "appropriate materials"?:

2. The PNPS LRA, AMP B.1.25 (Reactor Head Closure Studs), Operating Experience states that volumetric examination of 18 reactor head closure studs and visual examination of 18 nuts and 18 washers was performed during RF015 (April, 2005).

   QUESTIONS:

   What is the fraction of total reactor head closure studs represented by the 18 studs examinde during RVO15?

   Are all studs, nuts and washers examined during each 10-year ISI interval?

   Are the studs, nuts and washers examined during RF015 original equipment that has been in use since initial startup of the plant? If not, what is the approximate average length of time that these items have been in used in operation.

3. The PNPS LRA, AMP B.1.25 (Reactor Head Closure Studs), Operating Experience states that no new recordable indications were found for the studs, nuts and washers examined during RFO15.

   QUESTIONS:

   What is the examination history related to earlier refueling outages? Have indications been found in previous examinations?

   If indications were found, what corrective actions were taken?

4. RG 1.65 (Materials and Inspections for Reactor Vessel Closure Studs), which is referenced in and is a basis for GALL Program XI.M3 (Reactor Head Closure Studs), states that "visual and surface examinations may fail to reveal unacceptable defects, especially if the studs are examined in an untensioned condition." It also states that "a [volumetric examination] technique has been developed in which a transducer is lowered into the stud bolt center hole and an ultrasonic radial scan is used for the ultrasonic examination."

   QUESTIONS:

   With regard to reactor head closure studs that are removed for examination, does PNPS

perform the surface examination with the studs in a tensioned or untensioned condition?

Has PNPS performed any radial ultrasonic scans of its reactor vessel closure studs?

B.1.27 Selective Leaching - Wen

1. PNPS states in LRA B.1.27,Selective Leaching Program, that this AMP is a new program, and it will be initiated prior to the period of extended operation. Will the implementation of this AMP be included in the commitment list?

2. Please provide a status of the implementation of this AMP, including scope of work, (planned) implementing procedures, parameters to be inspected and measured, and acceptance criteria.

B.1.28 Service Water Integrity - Pavinich

1. Identify applications where components are not coated or lined and the materials of construction.

B.1 29.1 Masonry Wall - Hoang

1. The program description for AMP B.1.29.1 in the Pilgrim LRA indicates that the scope of this program includes all masonry walls that perform an intended function in accordance with 10 CFR 54.4. The applicant is requested to provide the following information related to the scope of this program:

(1) Identify whether any additional masonry walls have been added to the scope of the current Pilgrim program as a result of the LR scoping and screening process, particularly in light of the requirement to consider regulated events in the LR assessment.

(2) If additional masonry walls have been added to the scope, explain how the requirements of I. E. Bulletin 80-11 have been applied to these walls, and describe any physical modifications that have/will be implemented to establish the evaluation bases.

(3) If additional masonry walls have been added to the scope, explain why this is not considered an enhancement to the current Pilgrim program.

2.The program description for AMP B.1.29.1 in the Pilgrim LRA does not indicates that this program includes all of the guidances provided in I.E. Bulletin 80-11, "Masonry Wall Design", and Information Notice 87-67, "Lessons learned from Regional Inspections of Licensee Actions in Response to I.E. 80-11". Also, what is your Visual examined frequency? The applicant is requested to provide and confirm to the above information related to this program.

B.1 29.2 Structures Monitoring Program - Hoang

1. Since the program coatings are not relied upon to manage the effects of aging for structures included in the Structures Monitoring Program (AMP B.1.29.2). Please provide the following information related to this enhancement:

(a) What is your criteria and How are you going to qualify and monitor it under AMP B.1.29.2.

2. In the discussion of operating experience, four noteworthy incidences of degradation are noted: cracks, gaps, corrosion, and flaking coating.

For each of the first three incidences of degradation, please provide the plant documentation that describes the degradation, the assessment performed, the acceptance criteria applied, future monitoring recommendations, and any corrective action taken. Also describe the monitoring activities that are or will be conducted under the Structures Monitoring Program for each of the three regions.

3. The Dresden/Quad Cities BWR units have a history of problems with containment penetration bellows, and the licensee has a long-term replacement program that will continue into the LR period. The applicant is requested to address this industry operating experience and submit a specific technical basis why the Pilgrim containment penetration bellows are not subject to the aging effects and aging mechanisms observed at Dresden/Quad Cities.

4. More information is needed about aging management of inaccessible concrete areas. The applicant is requested to submit the dates and complete results (at specific locations/not averages or ranges) of all past groundwater monitoring tests. Discuss why the groundwater is non-aggressive, and/or aggressive, if applicable. Confirm that the Pilgrim SMP credited for LR will inspect all inaccessible areas that may be exposed by excavation for any reason, whether the environment is considered aggressive or not, and also will inspect any inaccessible area where observed conditions in accessible areas, which are exposed to the same environment, show that significant concrete degradation is occurring.

5.The applicant is requested to address and discussion of operating experience in detail of pipe supports and cable trays found degradation in November 2004. Did your scope expansion was required due to unacceptable found?

Please provide the following information related to this recent operating experience:

(a) Identify the system(s), ASME Code Class, the initial sample size, and the percentage found to be unacceptable.

(b) Identify whether loss of material due to corrosion, loss of mechanical function, or both aging effects were observed. Did the as-found unacceptable conditions compromise any intended functions?

(c) Identify the final sample size, after scope expansion, and the percentage found to be unacceptable.

(d) Identify the number of supports returned to service based solely on evaluation and the number of supports returned to service after repair.

(e) Describe the root cause evaluation and the corrective actions taken to prevent recurrence.

(f) Identify any additional inspections scheduled for the next inspection period.

6.Considering the relatively short time period remaining before Pilgrim enters the license renewal period, the staff expects that considerable progress has already been made in developing and formally documenting the implementing procedures required for new AMPs, and for significant enhancements to existing AMPs. In light of this, please address each of the following questions regarding the current status of implementing procedures for this AMP:

(a) Please provide the status of the implementing procedures for each enhancement to the existing Structures Monitoring Program.

(b) Please provide the schedule for initiating each of the enhancements to the existing Structures Monitoring Program.

(c) Please provide a sample of an implementing procedure for one enhancement to the existing Structures Monitoring Program.

(d) Please provide the results of any enhanced inspections that have already been completed.

7.Please discuss PNPS use of Level III coatings and identify whether any Service Level III coatings are credited for corrosion protection for license renewal.

8.The scope of the enhancements listed for AMP B.1.29.2 are quite significant, and encompass several elements that would be expected to be part of an existing Structures Monitoring Program. Notable examples are the inclusion of anchors and the addition of loss of material due to corrosion of steel components to the current inspection criteria. Consequently, the applicant is requested to:

(a) describe the scope of AMP B.1.29.2, including the structures and components in the scope of AMP B.1.129.2; the aging effects that are monitored; the inspection methods employed; and the inspection frequency; and

(b) for the structures and components that will be added to the Structures Monitoring Program scope for license renewal, describe the aging management activities that are currently being implemented.

9.The applicant has not addressed aging management of the portion of the drywell shell embedded in the drywell concrete floor. This area is inaccessible for inspection, but is potentially subject to wetting on both the inside and outside surfaces. Are they any inspections planned prior to the extended period of operation for this portion of the drywell shell?

B.1 29.3 Water Control Structures Monitoring Program - Hoang

1. Describe the "aggressive environment" and "water-flowing" environments for Reinforced Concrete Foundation, Slabs, and Reinforced Concrete Walls. What is the plant-specific program to manage potential degradation?

2. Considering the relatively short time period remaining before Pilgrim enters the license renewal period, the staff expects that considerable progress has already been made in developing and formally documenting the implementing procedures required for new AMPs, and for significant enhancements to existing AMPs. In light of this, please address each of the following questions regarding the current status of implementing procedures for this AMP:

(a) Please provide the status of the implementing procedures for each enhancement to the existing RG 1.127, Inspection of Water-Control Structures program.

(b) Please provide the schedule for initiating each of the enhancements to the existing RG 1.127, Inspection of Water-Control Structures program.

(c) Please provide a sample of an implementing procedure for one enhancement to the existing RG 1.127, Inspection of Water-Control Structures program.

(d) Please provide the results of any enhanced inspections that have already been completed.

3. LRA Appendix B, Section B.0.5 identifies AMP B.1.29.3 as an existing program. The Program Description states that this AMP is part of the Structures Monitoring Program, and further states the program will be used to manage aging of water-control structures. The scope of the enhancements listed for AMP B.1.29.3 encompass many of the elements that normally would be part of an existing inspection program for water-control structures. Consequently, the applicant is requested to describe the scope of AMP B.1.29.3, including the structures and components in the scope of AMP B.1.29.3; the aging effects that are monitored; the inspection methods employed; and the inspection frequency.

4. The applicant is requested to identify the document(s) that includes the evaluation of the Pilgrim program against the monitoring of trash racks. Does the Structures Monitoring Program is credited for aging management of trash racks?

5. The applicant is requested to identify and provide the inspection frequency against the GALL AMP XI.S7. If greater than 5 years. Please explain why the inspection frequency is NOT identified as an exception to the GALL AMP. Please also provide the technical basis for concluding that Pilgrim frequency is sufficient for submerged portions of structures.

6. Per the Operating Experience discussion for B.1.29.3, Pilgrim has experienced degradation of the main breakwater Structure had Rock displacement in 2004. Has the corrective action been completed? If not, why? If yes, please provide the plant documentation that describes the degradation, the assessment performed, the acceptance criteria applied, future monitoring recommendations, and any preventive and/or corrective action taken.

7.The applicant is requested to confirm that Pilgrim AMP B.1.29.3 identifies an inspection of underwater supports for loss of material due to corrosion and loss of mechanical function. Please provide the following information related to this request:

(a) Identify the specific underwater supports that will be added to the scope of the inspection program for the license renewal period, including the system name and ASME Code Class.

(b) Specify the current inspection program and describe the current inspection details for the underwater supports that are identified in (a) above.

(c) Confirm that, all ASME Code Class underwater supports will be included in the scope of the inspection program for the license renewal period.

B.1.30 System Walkdown - Wen

1. PNPS states in LRA A.2.1.34 , System Walkdown Program, that "Surfaces are inspected at frequencies to provide reasonable assurance that effect of aging will be managed such that applicable components will perform their intended function during the period of extended operation." However, there is only limited information provided in the LRA B.1.30, "System Walkdown." What is the frequency of inspection, and what are the inspection criteria for the current program?

2. PNPS states in LRA B.1.30 , "System Walkdown," that this AMP is consistent with the program described in GALL Report Section XI.M36, "External Surfaces Monitoring." The GALL Report XI.M36 indicates that this AMP manages aging effects through visual inspection and monitoring of external surfaces for loss of material and leakage. The GALL Report further states in the Detection of Aging Effects program element, that

> "Surfaces that are inaccessible or not readily visible during plant operations and refueling outages are inspected at such intervals that would ensure the components intended function is maintained."

Please discuss how PNPS plans to inspect inaccessible surfaces of components that are within the scope of license renewal.

3. Please provide some examples of actual plant-specific operating experience of how the problems were identified and appropriate actions taken to demonstrate and ensure the effectiveness of the existing System Walkdown Program.

B.1.31 Thermal Aging and Neutron Irradiation Embrittlement of CASS - Wen

1. What are the screening criteria used by PNPS to determine the susceptibility of CASS components to thermal aging and neutron irradiation embrittlement?

2. As indicated in Table 3.1.2-2 of the LRA, PNPS identified three components: CRD Guide Tubes, Fuel Support Pieces and Jet Pump Assemblies are subject to the aging effect of loss of fracture toughness due to thermal aging and neutron irradiation embrittlement. Are any other CASS components in primary pressure boundary and reactor vessel internal subject to this aging effect? Please discuss the recent ISI inspection findings for those components that PNPS has identified to be subject to this aging effect.

3. As indicated in the description of LRA AMP B.1.31, PNPS claims that its B.1.31 AMP will be consistent with the GALL Report Section XI.M13 AMP. The GALL Report states that for each "potentially susceptible" component, an applicant can implement either (a) a supplemental examination of the affected component as part of a 10-year ISI program during the license renewal term, or (b) a component-specific evaluation to determine the component's susceptibility to loss of fracture toughness. Please describe what kind of supplemental inspection will be used in PNPS for detecting the critical flaw size with adequate margin.

4.PNPS states in LRA B.1.31, that this AMP is a new program, and it will be initiated prior to the period of extended operation. Will the implementation of this AMP be included in the commitment list?

B.1.32.1 Water Chemistry Control - Auxiliary Systems - Patel

1. Per SRP Appendix A1, section A1.2.3.4, the frequency of sampling water chemistry should be identified. PNPS Appendix B.1.32-1, element 4 does not identify the frequency. Please identify the frequency.

B.1.13.2 - Fire Water System - Patel

1. NUREG-1800, SRP for license renewal, section 3.X.3.4, FSAR Supplement, states the following:

> As noted in Table 3.X-2, an applicant need not incorporate the implementation schedule into its FSAR. However, the reviewer should confirm that the applicant has identified and committed in the license renewal application to any future aging management activities, including enhancements and commitments to be completed before entering the period of extended operation. The staff expects to impose a license condition on any renewed license to ensure that the applicant will complete these activities no later than the committed date.

a) The enhancement for wall thickness evaluation of fire protection piping is identified in the Appendix A write-up in the present tense, meaning the inspections are being performed. However, the enhancement is addressed in the Appendix B write-up is in the future tense, meaning the inspections will be performed in the future (before the end of the current operating term). The Appendix A write-up should be revised to address this future commitment.

b) The enhancement for revising procedures to include inspections of hose reels for corrosion is not addressed in the Appendix A write-up. The Appendix A write-up should be revised to address this future commitment.

B.1.32.3 Water Chemistry Control - Closed Cycle Cooling Water - Patel

1. The exception taken for element 4 about the performance and functional testing should also apply to element 3 for the same reason that it applies to element 4. Please justify why this exception does not apply to element 3.

Generic - Jackson

1. In the PNPS LRA Operating Experience section for several AMPs (e.g. B.1.5; B.1.6; B.1.7; B.1.8; B.1.25) describes only the results of relatively recent inspection during RFO14 (April 2003) and RFO15 (April 2005). In most cases, inspection results for these refueling outage are negative (no recordable indications). Then the LRA makes a statement such as "Absence of recordable indications on the vessel attachment welds provides evidence that the program is effective for managing aging of the component during the period of extended operation."

   LR-SRP (NUREG-1800, Rev. 1) in Appendix A, Section A.1.2.3.10 (Branch Technical Position RLSB-1, Operating Experience) states that "the operating experience of aging management programs, including past corrective actions resulting in program enhancements or additional programs, should be considered. .... This information can show where an existing program has succeeded and where it has failed (if at all) in intercepting aging degradation in a timely manner."

   QUESTION:

   For those AMPs where only the negative inspection results of RFO14 and RFO15 inspections are presented in the LRA, please provide additional discussion of inspection results from earlier refueling outages (approximately 10-15 years of history). If historical inspection results have found indications at some times in the past, please provide additional discussion of what corrective actions have been taken.

2. The Standard Review Plan for License Renewal (NUREG-1800, Rev. 1), Section 3.0.1, states that "Enhancements are revisions or additions to existing aging management programs that the applicant commits to implement prior to the period of extended operation."

   In describing enhancements, the PNPS LRA typically says, "The following enhancement will be initiated prior to the period of extended operation."

   In describing an enhancement as something to be "initiated", rather than "implemented", prior to the period of extended operation, the LRA wording appears is ambiguous with regard to whether the enhancement will be fully implemented prior to the period of extended operation.

   QUESTION:

   Please clarify or resolve this ambiguity in the LRA description of enhancements.