

July 11, 2000

MEMORANDUM TO: Docket Files

FROM: Sam Lee, Sr. Materials Engineer 
Engineering Section
License Renewal and Standardization Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

SUBJECT: NUCLEAR ENERGY INSTITUTE (NEI) ADDITIONAL COMMENTS ON
GENERIC AGING LESSONS LEARNED (GALL) REPORT-
STRUCTURES

On July 7, 2000, I received an electronic mail from Mr. Charles Sorrell of Virginia Power, on behalf of NEI, providing additional comments on Chapters II and III of the draft GALL report, as a result of the public meetings on June 26 and 27, 2000. (See Enclosure 1) On July 10, 2000, I received another electronic mail from Mr. Sorrell supplementing NEI's July 7, 2000, submittal. (See Enclosure 2) The staff plans on considering these NEI comments in developing the draft GALL report for public comment in August.

Project No. 690

Enclosures: As stated

cc: PUBLIC

Enclosure 1

From: <Charlie_Sorrell@dom.com>
To: OWFN_DO.owf4_po(SSL1)
Date: Fri, Jul 7, 2000 9:47 AM
Subject: Civil/Structural Comments - GALL Report - Action Items

S. S. Lee,

Attached are the industry responses to 13 Action Items (requiring clarification) resulting from the June 26th and 27th meeting with the Staff in NRC Offices - White Flint to discuss the Civil/Structural comments for the GALL Report.

Responses have been provided for all action items except item 2. This is simply due to a logistics concern with one of our responders. We are anticipating getting the response for action item 2 to you early next week.

We hope the responses are helpful in further clarifying our industry comments.

Charlie Sorrell

NEI Civil/Structural Working Group

(See attached file: Mtg. on the Civil - GALL.doc)

CC: "John.Rycyna" <John.Rycyna@nuclearservicesinc.com>...

Meeting on the Civil/Structural Comments for the GALL Report

NRC Offices – White Flint

June 26 and 27, 2000

The following comments are divided into two sections. The first section is action items for the industry to respond to the Staff. *They would like responses by the end of the first week in July (next week).* The second section provides a few general comments from the Staff that require no action. The Staff provided comments on about 30-40 additional items where they intend to modify the wording we have proposed. We will need to wait and see the revised wording to provide comments.

ACTION ITEMS:

NOTE: Items 1, 2 and 10 are still under evaluation by the industry.

1. The Staff would like us to reconsider the industry position on inaccessible areas. They cited NUREG 1611 as identifying 4 specific areas that need to be 'addressed' in the licensee's application. They also indicated that they would accept indirect monitoring of these four areas. For example, for subsurface concrete exposed to groundwater, they would accept groundwater chemistry results as an indicator of concrete and embedded steel condition. They would also accept Appendix J test results as an indicator of penetration bellows conditions. The action is to propose an Industry position related to these four areas. (Ref. Comment 37 Page IIA1-5,7)

Response to Action Item 1- We understand that the NRC has limited the scope of inaccessible areas to the 4 specific areas of concern identified in NUREG 1611. These need to be addressed by the licensees in their applications regarding inaccessible areas issue. The licensee needs to address the management of potential aging effects of structures in inaccessible areas when conditions in accessible areas may not indicate the presence of or result in degradation to such inaccessible areas. The 4 specific areas of concern are:

- (1) Concrete Structure: Aging mechanism: Leaching of calcium hydroxide Aging effects: Increase of porosity & permeability;
- (2) Concrete Structure: Aging mechanism: Aggressive chemical attack Aging effects: Increase of porosity and permeability, cracking, and spalling;
- (3) Struct. Steel & Liner: Aging mechanism: Corrosion Aging effects: Loss of material
- (4) Reinforcing Steel (Rebar): Aging mechanism: Corrosion of embedded steel Aging effects: Loss of bond & loss of material

The NRC has suggested that indirect measurements (groundwater chemistry) may be an acceptable as management of items (2) and (4). For item (1), the NRC states in the NUREG that "the management of potential leaching of calcium hydroxide of inaccessible areas (e.g. below grade portion of concrete structures with presence of flowing water) when conditions in accessible areas may not indicate the presence of or result in degradation to such inaccessible areas, needs to be evaluated on a plant specific basis. The industry position for

item (3) is that IWE is sufficient to manage loss of material due to potential corrosion of the steel liner.

We will continue evaluating the NRC's guidance provided in NUREG-1611.

Note: The statement "They would also accept Appendix J test results as an indicator of penetration bellows conditions." does not belong in this Action Item.

2. We had a breakthrough on the discussion of pH levels as an indicator of embedded steel conditions. The pH of concern is that of the groundwater (<5.5). This pH can be measured and should be identified in the GALL report. It is a good indicator of the indication of the pH at the embedded steel which needs to be <11.5 . The action is to reconfirm the wording of the discussion on page IIA1-10. (Ref. Comment 38 Page IIA1-10)(Also, Ref. Comment 4 Page IIIA2-4, 3-4, 4-4, 5-4, etc.)

Response to Action Item 2 – (Confirmation of wording is expected 07-10-00)

3. The Staff wants to reference ACI-349 in the discussion on settlement. They indicated that NUREG 1611 does not credit IWL. The industry comment was to simply identify IWL with regard to identifying cracking due to settlement. The Staff noted that rotational stresses are also built up due to settlement and that a search for cracking would not identify this effect. During a seismic event these accumulated forces could reduce the effectiveness of the building to withstand its design basis event. The action is to reconsider the use of the ACI reference and to consider how to address the accumulation of these rotational forces caused by settlement. (Ref. Comment 44 Page IIA1-13)

Response to Action Item 3 – Settlement: *Staff wants ACI 349 included on settlement and address rotational forces*---Our point is that IWL provides an adequate program for managing cracking of concrete containments, including cracking from settlement. ACI-349.3 does not include any additional guidance on managing cracking due to settlement. It especially does not contain any guidance on dealing with rotational stresses. Settlement should be handled on a site specific basis unless the structure is founded on bedrock or firm soil. If founded on bedrock or firm soil, then settlement does not require aging management. The use of the reference to ACI 349 does not seem appropriate.

4. The Staff disagrees with deleting the last sentence of monitoring and trending. The industry claims that this is not a requirement. The Staff says that it is. The action item is to confirm whether this is a requirement or not. This comment relates to reexaminations for IWE if flaws are detected in the current inspection. (Ref Comment 68 Page IIA1-17)

Response to Action Item 4 - IWE: Confirm requirement of IWE

Our comment pertained to the fact that the text as originally written was not in the Code. The text did not contain all of the words in the Code. It was missing the words, "to the extent specified in Table IWE-2500-1". Regardless of this fact, the current words include the correct text and also include the exception which is allowed by 10 CFR 50.55a(b)(2)(ix)(D).

Additional comments on IWE:

Attribute 1 – next to last sentence, delete parentheses at start of sentence and add parentheses before ix).

Attribute 3 – Add ** in table after Examination Method. Add * before note following table.

Attribute 6 – Delete space at end of third sentence and delete extra period at end of fourth sentence.

Attribute 7 – Add the following before the second sentence. Except as permitted by 50.55a(b)(2)(ix)(D), components that do.....

5. The Staff disagreed with our assertion that the basemat will not see elevated temperatures. They claim that it is possible in the region of the core. The action is to confirm whether we believe elevated temperatures have been observed in this region. (Ref Comment 324 Page IIA2-10)

Response to Action Item 5 – The conclusions that the NRC took in NUREG 1557 are the NRC's official position. If the Staff wants to change their position, they should do so in a revision to NUREG 1557, not just in the GALL. There was a lot of work done to reach the conclusions in NUREG 1557, and the Staff should only be able to change those conclusions based on new significant operating experience.

We reached agreement with the Staff on the elevated temperature issue by showing them a lot of data on concrete strength and modulus, as a function of temperature (see Figures 4-4, 4-5, and 4-6 from the Class I Structures IR). We used the ASME Code Section III, Division 2, limits as backup. NUREG-1557 captured this agreement, including the requirement that plant-specific concrete strength must be justified if temporary excursions above 200°F are experienced -- or the special provisions in ACI 349-85 are justified. There is no new information to our knowledge that would cause this agreement to be revisited.

6. The Staff indicated that they thought LaSalle was a BWR containment with an unbonded prestressing system. The action is to confirm whether this is true or not. (Ref Comment 277 Page IIB2-12)

Response to Action Item 6 - LaSalle Containment has prestressed "unbonded" greased tendons.

7. The Staff disagrees with the statement that oxygen is required for aggressive chemical attack. The action is to confirm that this phrase can be deleted from the GALL report. (Ref Comment 4 Page IIIA2-4, et.al.)

Response to Action Item 7 - Jim Davis' comment regarding this issue was that he took exception to the statement that oxygen was required. Technically, oxygen is not required for corrosion (e.g., galvanic corrosion and MIC). He was not suggesting that this is a problem (He actually said that at a depth of 12,000 ft was where this was a concern based on Naval

observations). He just wanted the statement to be technically correct. The suggestion is to rewrite the comment as follows:

...and designed in accordance with ACI 318-63 or ACI 349-85. EPRI TR-103842 states that corrosion is potentially significant for intake structures at ocean sites, due to constant exposure to seawater. For other structures, chloride in the groundwater in excess of 500 ppm can make rebar in the groundwater fluctuation zone susceptible to corrosion. Per NUREG-1557, for components....

This rewrite still allows for the use of the EPRI document as a reference without referring to the oxygen being present (the words are straight from the TR).

8. The Staff disagrees that vibration is not an aging effect. They do have an inhouse report that they will be reviewing. There was a good deal of discussion related to GSI-29 and the fact that this is closed out. The industry action is to confirm that this has been explicitly removed from the purview of license renewal. (Ref. Comment 100, 110 and 130 on Page IIIB1-9, 1-19, 2-7,3-7,4-7 and 5-7)

Response to Action Item 8 – GSI-29 “Bolting Degradation or Failure in Nuclear Power Plants (REV.2)” addressed a variety of bolting degradation and failure issues. A report summarizing bolting failure experience was issued by DL/NRR. At the time of the evaluation in 1983, there had been a total of 44 reported bolting incidents most of which were discovered either during refueling outages or scheduled ISI or maintenance/repair outages.

In conclusion of GSI-29, it is stated “The staff concluded that leakage of bolted pressure joints was possible, but catastrophic RCPB joint failure that could lead to significant accident sequences was highly unlikely. This conclusion was based on: (1) operating experience; (2) actions taken through bulletins, generic letters, and information notices; and (3) proposed industry actions. Generic Letter No. 91-17 was issued to licensees to: (1) implement the industry bolting integrity program, as presented in the EPRI report and video tapes; and (2) continue actions in accordance with commitments made in response to NRC generic letters and bulletins. Thus, this issue was RESOLVED and no new requirements were established. However, in order to improve the review of future plants and significant modifications to operating plants, the staff recommended that a new SRP Section be developed to codify existing guidance and industry recommendations. In an RES evaluation, it was concluded that consideration of a 20-year license renewal period did not affect the resolution.”

9. The Staff wanted the industry to confirm that the rearrangement on sentences and the inclusion of the new sentence in the clean version of IWL evaluation is what we want. There was no referenced comment for the changes. The action is to confirm that the wording is correct and to state the basis for the change. (Ref. None)

Response to Action Item 9 - IWL: *Confirm wording of clean version of IWL*

The rearrangement of the sentences and the inclusion of the new sentence are correct. The text was rearranged so that concrete information was together and tendon information was

together. Additional information on prestressing systems was added to ensure that the prestressing systems were adequately addressed. The original text did not address the prestressing system.

Additional comment on IWL:

Attribute 4 – change the last sentence to read as follows: In addition, a single wire or strand of one sample tendon of each type is removed for examination and testing.

10. The Staff wanted to leave in the reference to the ANSI standard in the writeup for Appendix J. They stated that it provides acceptance criteria that are relevant. The action is to confirm the acceptability of leaving this reference in the document. (Ref. None)

Response to Action Item 10 - The reference to the ANSI Standard in the write-up for Appendix J appeared in several locations in the original GALL Report under Attribute (6) "Acceptance Criteria" as follows: "Acceptance criteria are acceptable if they meet the requirements of 10 CFR 50, Appendix J and are in accordance with ANSI / ANS-56.8-1994." --- NEI subsequently relocated the Appendix J discussion to Chapter XI.7 (June 19, 2000 NEI letter), and removed the ANSI Standard reference from Attribute (6).

We have only been able to obtain a copy of ANSI / ANS-56.8-1987, "Containment System Leakage Testing Requirements", which is a very detailed standard on verification, testing and acceptance criteria. We have not had adequate time to do a comparison with Appendix J to determine any differences.

However, when reviewing Appendix J, reference is made to use of ANSI / ANS 56.8-1987 under "Test Methods" for Type A tests for mass point method evaluations. Since no reference is made in Appendix J to this ANSI Standard for Type B tests (which it is believed most plants are now committed to), it would not appear to be appropriate to add this reference generically in GALL.

Therefore, we will need further time to determine acceptability for leaving the ANSI Standard reference in the GALL Report.

11. The 6-8 version of IWF was identified as the correct version to be used. The action is simply to confirm that the merging of the two different writeups was done successfully. (Ref. None)

Response to Action Item 11 – We have reviewed the June 8th version and it is correct as written.

12. The masonry wall program language in the clean version reflects the original text. Action is to confirm whether this clean version is acceptable. (Ref. None)

Response to Action Item 12 - Masonry Wall Program: *Confirm wording of clean version of Masonry Wall Program.* The clean version of the masonry wall program is not correct. Replace with the following:

Since the issuance of the IN and IB, the NRC promulgated 10CFR50.65, the Maintenance Rule. Masonry walls may be inspected as part of the structural monitoring program conducted for the Maintenance Rule. In these cases, the Maintenance Rule evaluation (Chapter XI, Item XI.19) for license renewal applies and no further explanation is required.

For plants with a separate masonry wall program, the following evaluation and technical basis is provided:

Masonry Wall Inspection

- (1) Scope of Program: The scope of the program includes those masonry walls within the scope of license renewal.
- (2) Preventive Actions: The program is a visual inspection and no preventive actions are identified. The staff has found this acceptable.
- (3) Parameters Monitored/Inspected: The visual inspection is performed to identify cracking of masonry walls.
- (4) Detection: A visual inspection performed using the guidance of IE Bulletin 80-11 and IN 87-67 provides reasonable assurance that the aging effect of cracking will be identified prior to loss of the component intended function.
- (5) Monitoring and Trending: There are no monitoring and trending processes associated with this program and the staff has found this acceptable.
- (6) Acceptance Criteria: Acceptance criteria are no unacceptable visual indication of cracking of masonry walls.
- (7) Corrective Actions: The program is conducted under 10 CFR 50 Appendix B (Quality Assurance); therefore, the Corrective Action requirement is satisfied.
- (8) Confirmation Process: The program is conducted under 10 CFR 50 Appendix B (Quality Assurance); therefore, the Confirmation Process requirement is satisfied.
- (9) Administrative Controls: The program is conducted under 10 CFR 50 Appendix B (Quality Assurance); therefore, the Administrative Controls requirement is satisfied.
- (10) Operating Experience: Incorporation of lessons learned from the implementation of IE Bulletin 80-11, USI A-46, and the MR Inspection should assure the structural integrity of all masonry walls important to safety are adequately managed. At this time, it appears that the program will be adequate for assuring the structural integrity of the masonry walls within license renewal scope for the extended period of operation.

- 13.** The Staff wants to add to the existing IIIB.5 heading the steel components for edge supports and bracing for masonry block walls. The action is to confirm our acceptance of including these items in the inspections of block walls. (Ref. None)

Response to Item 13 - The Staff was concerned with structural bracing and edge supports for masonry block walls, and wants to add these items to Section IIIB.5.

We find it acceptable to add these components to Section III B.5, noting applicability only for supports for masonry block walls which are within scope of License Renewal.

COMMENTS:

1. The Staff plans to revise their approach to references. They will only list those documents that are noted somewhere in the text of the evaluation as the reference documents. They also indicated that they may include some of the previously referenced documents in the evaluation section 10 on OE.
2. The Staff plans to revise their approach to indicating a specific year for a code, etc. This may or may not be uniformly applied, because in some cases an evaluation needs to be made against a specific edition of the code. However, where that is not important, the specific year will be dropped from the reference.
3. The Staff plans to delete some of the detail in Code references where it is not relevant. For example, 'Category L-A' represents too much detail.

Enclosure 2

From: <Charlie_Sorrell@dom.com>
To: OWFN_DO.owf4_po(SSL1)
Date: Mon, Jul 10, 2000 3:09 PM
Subject: Civil/Structural Comments - GALL Report - Action Items (IncludingItem 2)

Sam Lee,

Attached are the industry responses to 13 Action Items (requiring clarification) resulting from the June 26th and 27th meeting with the Staff in NRC Offices - White Flint to discuss the Civil/Structural comments for the GALL Report.

This attachment contains the same information as was sent to you last Friday (07-07-00) with the exception that the response to Action Item 2 has now been included. The appropriate place for inclusion of this clarification in the Draft GALL Report is the second item on page II A1-11.

Charlie Sorrell

NEI Civil/Structural Working Group

CC: "John.Rycyna" <John.Rycyna@nuclearservicesinc.com>...

Meeting on the Civil/Structural Comments for the GALL Report

NRC Offices – White Flint

June 26 and 27, 2000

The following comments are divided into two sections. The first section is action items for the industry to respond to the Staff. *They would like responses by the end of the first week in July (next week).* The second section provides a few general comments from the Staff that require no action. The Staff provided comments on about 30-40 additional items where they intend to modify the wording we have proposed. We will need to wait and see the revised wording to provide comments.

ACTION ITEMS:

NOTE: Items 1, 2 and 10 are still under evaluation by the industry.

1. The Staff would like us to reconsider the industry position on inaccessible areas. They cited NUREG 1611 as identifying 4 specific areas that need to be 'addressed' in the licensee's application. They also indicated that they would accept indirect monitoring of these four areas. For example, for subsurface concrete exposed to groundwater, they would accept groundwater chemistry results as an indicator of concrete and embedded steel condition. They would also accept Appendix J test results as an indicator of penetration bellows conditions. The action is to propose an Industry position related to these four areas. (Ref. Comment 37 Page IIA1-5,7)

Response to Action Item 1- We understand that the NRC has limited the scope of inaccessible areas to the 4 specific areas of concern identified in NUREG 1611. These need to be addressed by the licensees in their applications regarding inaccessible areas issue. The licensee needs to address the management of potential aging effects of structures in inaccessible areas when conditions in accessible areas may not indicate the presence of or result in degradation to such inaccessible areas. The 4 specific areas of concern are:

- (1) Concrete Structure: Aging mechanism: Leaching of calcium hydroxide Aging effects: Increase of porosity & permeability;
- (2) Concrete Structure: Aging mechanism: Aggressive chemical attack Aging effects: Increase of porosity and permeability, cracking, and spalling;
- (3) Struct. Steel & Liner: Aging mechanism: Corrosion Aging effects: Loss of material
- (4) Reinforcing Steel (Rebar): Aging mechanism: Corrosion of embedded steel Aging effects: Loss of bond & loss of material

The NRC has suggested that indirect measurements (groundwater chemistry) may be an acceptable as management of items (2) and (4). For item (1), the NRC states in the NUREG that "the management of potential leaching of calcium hydroxide of inaccessible areas (e.g. below grade portion of concrete structures with presence of flowing water) when conditions in accessible areas may not indicate the presence of or result in degradation to such inaccessible areas, needs to be evaluated on a plant specific basis. The industry position for

item (3) is that IWE is sufficient to manage loss of material due to potential corrosion of the steel liner.

We will continue evaluating the NRC's guidance provided in NUREG-1611.

Note: The statement "They would also accept Appendix J test results as an indicator of penetration bellows conditions." does not belong in this Action Item.

2. We had a breakthrough on the discussion of pH levels as an indicator of embedded steel conditions. The pH of concern is that of the groundwater (<5.5). This pH can be measured and should be identified in the GALL report. It is a good indicator of the indication of the pH at the embedded steel which needs to be <11.5. The action is to reconfirm the wording of the discussion on page IIA1-10. (Ref. Comment 38 Page IIA1-10)(Also, Ref. Comment 4 Page IIIA2-4, 3-4, 4-4, 5-4, etc.)

Response to Action Item 2 – (Confirmation of wording is expected 07-10-00)

A review of the applicable references (EPRI TR-103842, Section 4.1.5, NUREG/CP-0100, Page 85, NUREG-1611, Table 1, Items 04 and 013) concluded that the discussions on "Corrosion of Embedded Steel" refers to the environment within the concrete directly surrounding the rebar. In order to manage embedment corrosion, the surrounding environment must be managed. As long as the surrounding environment does not present an "Aggressive Chemical Attack" to the cover concrete, the concrete environment surrounding the embedment is maintained. The acceptance criteria for the Aggressive Chemical Attack by soil or groundwater (or atmospheric conditions) are: pH>5.5, Chlorides <500 ppm, Sulfates < 1,500 ppm (Reference TR-103842, Section 4.1.3.3). NUREG/CP-0100 also recommends Groundwater Tests for pH, chlorides and sulfates.

3. The Staff wants to reference ACI-349 in the discussion on settlement. They indicated that NUREG 1611 does not credit IWL. The industry comment was to simply identify IWL with regard to identifying cracking due to settlement. The Staff noted that rotational stresses are also built up due to settlement and that a search for cracking would not identify this effect. During a seismic event these accumulated forces could reduce the effectiveness of the building to withstand it's design basis event. The action is to reconsider the use of the ACI reference and to consider how to address the accumulation of these rotational forces caused by settlement. (Ref. Comment 44 Page IIA1-13)

Response to Action Item 3 – Settlement: Staff wants ACI 349 included on settlement and address rotational forces---Our point is that IWL provides an adequate program for managing cracking of concrete containments, including cracking from settlement. ACI-349.3 does not include any additional guidance on managing cracking due to settlement. It especially does not contain any guidance on dealing with rotational stresses. Settlement should be handled on a site specific basis unless the structure is founded on bedrock or firm soil. If founded on bedrock or firm soil, then settlement does not require aging management. The use of the reference to ACI 349 does not seem appropriate.

4. The Staff disagrees with deleting the last sentence of monitoring and trending. The industry claims that this is not a requirement. The Staff says that it is. The action item is to confirm whether this is a requirement or not. This comment relates to reexaminations for IWE if flaws are detected in the current inspection. (Ref Comment 68 Page IIA1-17)

Response to Action Item 4 - IWE: *Confirm requirement of IWE*

Our comment pertained to the fact that the text as originally written was not in the Code. The text did not contain all of the words in the Code. It was missing the words, "to the extent specified in Table IWE-2500-1". Regardless of this fact, the current words include the correct text and also include the exception which is allowed by 10 CFR 50.55a(b)(2)(ix)(D).

Additional comments on IWE:

Attribute 1 – next to last sentence, delete parentheses at start of sentence and add parentheses before ix).

Attribute 3 – Add ** in table after Examination Method. Add * before note following table.

Attribute 6 – Delete space at end of third sentence and delete extra period at end of fourth sentence.

Attribute 7 – Add the following before the second sentence. Except as permitted by 50.55a(b)(2)(ix)(D), components that do.....

5. The Staff disagreed with our assertion that the basemat will not see elevated temperatures. They claim that it is possible in the region of the core. The action is to confirm whether we believe elevated temperatures have been observed in this region. (Ref Comment 324 Page IIA2-10)

Response to Action Item 5 – The conclusions that the NRC took in NUREG 1557 are the NRC's official position. If the Staff wants to change their position, they should do so in a revision to NUREG 1557, not just in the GALL. There was a lot of work done to reach the conclusions in NUREG 1557, and the Staff should only be able to change those conclusions based on new significant operating experience.

We reached agreement with the Staff on the elevated temperature issue by showing them a lot of data on concrete strength and modulus, as a function of temperature (see Figures 4-4, 4-5, and 4-6 from the Class I Structures IR). We used the ASME Code Section III, Division 2, limits as backup. NUREG-1557 captured this agreement, including the requirement that plant-specific concrete strength must be justified if temporary excursions above 200°F are experienced -- or the special provisions in ACI 349-85 are justified. There is no new information to our knowledge that would cause this agreement to be revisited.

6. The Staff indicated that they thought LaSalle was a BWR containment with an unbonded prestressing system. The action is to confirm whether this is true or not. (Ref Comment 277 Page IIB2-12)

Response to Action Item 6 - LaSalle Containment has prestressed "unbonded" greased tendons.

7. The Staff disagrees with the statement that oxygen is required for aggressive chemical attack. The action is to confirm that this phrase can be deleted from the GALL report. (Ref Comment 4 Page IIIA2-4, et.al.)

Response to Action Item 7 - Jim Davis' comment regarding this issue was that he took exception to the statement that oxygen was required. Technically, oxygen is not required for corrosion (e.g., galvanic corrosion and MIC). He was not suggesting that this is a problem (He actually said that at a depth of 12,000 ft was where this was a concern based on Naval observations). He just wanted the statement to be technically correct. The suggestion is to rewrite the comment as follows:

...and designed in accordance with ACI 318-63 or ACI 349-85. EPRI TR-103842 states that corrosion is potentially significant for intake structures at ocean sites, due to constant exposure to seawater. For other structures, chloride in the groundwater in excess of 500 ppm can make rebar in the groundwater fluctuation zone susceptible to corrosion. Per NUREG-1557, for components....

This rewrite still allows for the use of the EPRI document as a reference without referring to the oxygen being present (the words are straight from the TR).

8. The Staff disagrees that vibration is not an aging effect. They do have an inhouse report that they will be reviewing. There was a good deal of discussion related to GSI-29 and the fact that this is closed out. The industry action is to confirm that this has been explicitly removed from the purview of license renewal. (Ref. Comment 100, 110 and 130 on Page IIIB1-9, 1-19, 2-7,3-7,4-7 and 5-7)

Response to Action Item 8 – GSI-29 “Bolting Degradation or Failure in Nuclear Power Plants (REV.2)” addressed a variety of bolting degradation and failure issues. A report summarizing bolting failure experience was issued by DL/NRR. At the time of the evaluation in 1983, there had been a total of 44 reported bolting incidents most of which were discovered either during refueling outages or scheduled ISI or maintenance/repair outages.

In conclusion of GSI-29, it is stated “The staff concluded that leakage of bolted pressure joints was possible, but catastrophic RCPB joint failure that could lead to significant accident sequences was highly unlikely. This conclusion was based on: (1) operating experience; (2) actions taken through bulletins, generic letters, and information notices; and (3) proposed industry actions. Generic Letter No. 91-17 was issued to licensees to: (1) implement the industry bolting integrity program, as presented in the EPRI report and video tapes; and (2) continue actions in accordance with commitments made in response to NRC generic letters and bulletins. Thus, this issue was RESOLVED and no new requirements were established. However, in order to improve the review of future plants and significant modifications to operating plants, the staff recommended that a new SRP Section be developed to codify

existing guidance and industry recommendations. In an RES evaluation, it was concluded that consideration of a 20-year license renewal period did not affect the resolution.”

9. The Staff wanted the industry to confirm that the rearrangement on sentences and the inclusion of the new sentence in the clean version of IWL evaluation is what we want. There was no referenced comment for the changes. The action is to confirm that the wording is correct and to state the basis for the change. (Ref. None)

Response to Action Item 9 - IWL: *Confirm wording of clean version of IWL*

The rearrangement of the sentences and the inclusion of the new sentence are correct. The text was rearranged so that concrete information was together and tendon information was together. Additional information on prestressing systems was added to ensure that the prestressing systems were adequately addressed. The original text did not address the prestressing system.

Additional comment on IWL:

Attribute 4 – change the last sentence to read as follows: In addition, a single wire or strand of one sample tendon of each type is removed for examination and testing.

10. The Staff wanted to leave in the reference to the ANSI standard in the writeup for Appendix J. They stated that it provides acceptance criteria that are relevant. The action is to confirm the acceptability of leaving this reference in the document. (Ref. None)

Response to Action Item 10 - The reference to the ANSI Standard in the write-up for Appendix J appeared in several locations in the original GALL Report under Attribute (6) "Acceptance Criteria" as follows: "Acceptance criteria are acceptable if they meet the requirements of 10 CFR 50, Appendix J and are in accordance with ANSI / ANS-56.8-1994." --- NEI subsequently relocated the Appendix J discussion to Chapter XI.7 (June 19, 2000 NEI letter), and removed the ANSI Standard reference from Attribute (6).

We have only been able to obtain a copy of ANSI / ANS-56.8-1987, "Containment System Leakage Testing Requirements", which is a very detailed standard on verification, testing and acceptance criteria. We have not had adequate time to do a comparison with Appendix J to determine any differences.

However, when reviewing Appendix J, reference is made to use of ANSI / ANS 56.8-1987 under "Test Methods" for Type A tests for mass point method evaluations. Since no reference is made in Appendix J to this ANSI Standard for Type B tests (which it is believed most plants are now committed to), it would not appear to be appropriate to add this reference generically in GALL.

Therefore, we will need further time to determine acceptability for leaving the ANSI Standard reference in the GALL Report.

11. The 6-8 version of IWF was identified as the correct version to be used. The action is simply to confirm that the merging of the two different writeups was done successfully. (Ref. None)

Response to Action Item 11 – We have reviewed the June 8th version and it is correct as written.

12. The masonry wall program language in the clean version reflects the original text. Action is to confirm whether this clean version is acceptable. (Ref. None)

Response to Action Item 12 - Masonry Wall Program: *Confirm wording of clean version of Masonry Wall Program.* The clean version of the masonry wall program is not correct. Replace with the following:

Since the issuance of the IN and IB, the NRC promulgated 10CFR50.65, the Maintenance Rule. Masonry walls may be inspected as part of the structural monitoring program conducted for the Maintenance Rule. In these cases, the Maintenance Rule evaluation (Chapter XI, Item XI.19) for license renewal applies and no further explanation is required.

For plants with a separate masonry wall program, the following evaluation and technical basis is provided:

Masonry Wall Inspection

- (1) Scope of Program: The scope of the program includes those masonry walls within the scope of license renewal.
- (2) Preventive Actions: The program is a visual inspection and no preventive actions are identified. The staff has found this acceptable.
- (3) Parameters Monitored/Inspected: The visual inspection is performed to identify cracking of masonry walls.
- (4) Detection: A visual inspection performed using the guidance of IE Bulletin 80-11 and IN 87-67 provides reasonable assurance that the aging effect of cracking will be identified prior to loss of the component intended function.
- (5) Monitoring and Trending: There are no monitoring and trending processes associated with this program and the staff has found this acceptable.
- (6) Acceptance Criteria: Acceptance criteria are no unacceptable visual indication of cracking of masonry walls.
- (7) Corrective Actions: The program is conducted under 10 CFR 50 Appendix B (Quality Assurance); therefore, the Corrective Action requirement is satisfied.
- (8) Confirmation Process: The program is conducted under 10 CFR 50 Appendix B (Quality Assurance); therefore, the Confirmation Process requirement is satisfied.
- (9) Administrative Controls: The program is conducted under 10 CFR 50 Appendix B (Quality Assurance); therefore, the Administrative Controls requirement is satisfied.
- (10) Operating Experience: Incorporation of lessons learned from the implementation of IE Bulletin 80-11, USI A-46, and the MR Inspection should assure the structural integrity of all masonry walls important to safety are adequately managed. At this time, it appears

that the program will be adequate for assuring the structural integrity of the masonry walls within license renewal scope for the extended period of operation.

- 13.** The Staff wants to add to the existing IIIB.5 heading the steel components for edge supports and bracing for masonry block walls. The action is to confirm our acceptance of including these items in the inspections of block walls. (Ref. None)

Response to Item 13 - The Staff was concerned with structural bracing and edge supports for masonry block walls, and wants to add these items to Section IIIB.5.

We find it acceptable to add these components to Section IIIB.5, noting applicability only for supports for masonry block walls which are within scope of License Renewal.

COMMENTS:

1. The Staff plans to revise their approach to references. They will only list those documents that are noted somewhere in the text of the evaluation as the reference documents. They also indicated that they may include some of the previously referenced documents in the evaluation section 10 on OE.
2. The Staff plans to revise their approach to indicating a specific year for a code, etc. This may or may not be uniformly applied, because in some cases an evaluation needs to be made against a specific edition of the code. However, where that is not important, the specific year will be dropped from the reference.
3. The Staff plans to delete some of the detail in Code references where it is not relevant. For example, 'Category L-A' represents too much detail.