

Staff's Response to NEI Comments on the NRC's Proposed License Renewal
Interim Staff Guidance LR-ISG-2006-01: Plant-Specific Aging Management Program for
Inaccessible Areas of Boiling Water Reactor Mark I Steel Containment Drywell Shell

Comment 1a. The first paragraph under Proposed Action appears to assume that a License Renewal Applicant (LRA) is required to have an Aging Management Program (AMP) prior to conducting an Aging Management Review (AMR). NEI believes that a review should be conducted first prior to developing any Aging Management Program.

NEI recommends moving this paragraph to the end of the Proposed Action section.

Response:

The staff agrees with NEI and will move the paragraph to the end to follow the aging management review process.

Comment 1b. It is unclear what is meant by plant-specific AMP in the first paragraph under Proposed Action. Is this a general use of the term plant specific or does an applicant need to develop a new AMP specific to Mark I containment corrosion or can an applicant take credit for existing activities?

NEI recommends re-writing this paragraph to delete the words plant-specific. Our suggested re-write is the following:

In addressing Line Item II.B1.1–2 of NUREG–1801, Volume 2, Revision 1, applicants for license renewal for plants with a Mark I steel containment should address the potential loss of material due to corrosion in the inaccessible areas of the Mark I steel containment drywell shell for the period of extended operation.

Response:

In previously submitted license renewal applications (LRAs), the information provided by the applicants to address the drywell shell was in various sections of the LRAs. Although the information provided was sufficient for the staff to make its determination, it is not the most efficient way for the staff to perform its review.

In an effort to reduce the number of requests for additional information issued to the applicants, this proposed LR-ISG recommends that a plant-specific aging management program be developed to address the potential loss of material due to corrosion in the inaccessible areas of the Mark I steel containment drywell shell for the period of extended operation. However, the applicant can take credit for existing programs where applicable.

Comment 2a. NEI believes the second paragraph under Proposed Actions should include the words “actions based upon plant design and operating experience” after the word “following”.

Response:

The staff agrees with NEI and will incorporate this comment in the final LR-ISG-2006-01.

Comment 2b. Please clarify the intent of the words “should consider” in the second paragraph under Proposed Actions. Does “should consider” mean actions one (1) through six (6) are optional or does the applicant have to perform all six (6)?

NEI recommends re-writing this paragraph. Our suggested re-write is the following:

In conducting the aging management review of the drywell shell, the applicant should consider one or more of the following actions based upon plant design and operating experience.

Response:

In performing its aging management review, the staff recommends that the applicant consider actions one (1) through six (6). If an applicant determines that an action is not applicable, the applicant should clearly state this in its LRA.

Comment 3. For ISG Proposed Action #3, it appears the NRC is recommending that if degradation is identified on the accessible areas of the drywell shell (interior surface), then an evaluation be conducted for the inaccessible areas (exterior surface). The accessible and inaccessible areas are exposed to different environments. Operating experience to date is that degradation of the inner and outer surfaces of Mark 1 containments are unrelated. Therefore, Proposed Action #3 does not appear to be applicable.

NEI recommends deleting proposed action #3.

Response:

The staff recommends that the applicant evaluate the acceptability of inaccessible areas when conditions exist in the adjacent accessible areas that could indicate the presence of or result in degradation to such inaccessible areas.

Comment 4. Mark I designs are very different and not all designs have alarms to monitor leakage; nor do all designs have the metal seals to exclude water accumulation in the sand pocket area. Also, some Mark I plants have an air gap of several inches on the outside of the drywell so that any water leakage that bypasses the leakage collection system will flow downward to drains above the sand pocket, not resulting in a situation causing corrosion.

Because of these design differences, we believe that statement (1) and (2) in proposed action #4 is too specific.

NEI recommends that proposed action #4 be re-written to allow applicants that identify moisture on the outside of its drywell liner to develop a specific action plan based upon plant specific design.

Response:

The purpose of Proposed Action #4 is to request the applicant to provide in its LRA a description of its plant-specific design, including features that can be used to demonstrate that moisture levels associated with accelerated corrosion rates do not exist in the exterior portion of the drywell. The statements in (1) and (2) are examples. The staff will incorporate this in its final LR-ISG-2006-01.

Comment 5.

Again as in comment above for Proposed Action #5, NEI believes that because of the Mark I design differences; parts of this action may not be relevant to the specific applicants' containment.

NEI recommends specifying that if moisture is detected, then the applicant develop a specific action plan in accordance with their Corrective Action Program. The statements in Proposed Action #5 should be considered examples only to be followed as applicable and denoting that there are other methods that can be used as part of any action plan for alleviating moisture detected on the exterior of the drywell shell. For instance, paragraph (5)(a) presupposes that the source of the leakage can be identified. It may be very difficult to determine the source of the leakage, and aging management of the components that could be the source of the leakage may not be practical. Therefore, applicants may opt to manage the aging of the drywell rather than managing the aging of the source of leakage.

Also, the term "suspected", used in the first paragraph of Proposed Action #5, is very open ended. It could be interpreted as meaning that any detected leakage could result in moisture on the outside of the drywell. In light of recent questions by ACRS on presence of humidity in the air gap, this could be interpreted such that this condition is always met; thus an aging management review and aging management program are always required. NEI recommends deleting or clarifying the word "suspected" in the first paragraph of proposed action #5.

Response:

The staff agrees that if moisture is detected, then the applicant should develop a plant specific action plan in accordance with its Corrective Action Program. However, in developing its action plan, the staff recommends that the applicant consider Proposed Action #5 (a) through (d). The applicant can choose to use other methods for alleviating moisture detected on the exterior of the drywell shell. However, the staff will have to evaluate these methods on a case-by-case basis thereby defeating the purpose of this LR-ISG to reduce the number of requests for additional information (RAI) issued to the applicant.

Regarding Proposed Action # 5(a), if the applicant cannot determine the source of the leakage subsequent to root cause analyses, the applicant should provide a description on its specific plan to manage the drywell, including but not limited to, planned periodic inspections, frequency of the inspection and acceptance criteria.

The term “suspected” refers to surface areas likely to experience accelerated degradation and aging as described in IWE-1241(a) of Section XI of the ASME Code. Specifically, typical locations are those areas exposed to standing water, repeated wetting and drying, persistent leakage, and those with geometries that permit water accumulation, condensation, and microbiological attack.

Comment 6. For ISG Proposed Action #6, the words “minimum required thickness” can be interpreted in different ways. What is the minimum required thickness? Is it the individual plant’s acceptance criteria? We believe this sentence is better understood without these words. NEI recommends deleting “(i.e., wall thickness is less than the minimum required thickness)” from proposed action #6.

Response:

The term “minimum required thickness” refers to minimum thickness required to withstand the postulated loading without exceeding the design acceptance criteria.

Comment 7. General Comment: Will this ISG apply to those applicants that are in the later stages (within 6 months of projected renewed license) of the license renewal review process? Please specify who this ISG specifically applies to.

Response:

The final LR-ISG-2006-01 will be issued as a clarification LR-ISG and therefore does not apply to licensees holding a renewed license. The purpose of this LR-ISG is to provide additional guidance to applicants that the staff feel is necessary to reduce unnecessary RAIs.

Comment 8. General Comment: For ISG proposed action #2, the NRC appears to believe that plants performed UT thickness measurements of the drywell in response to GL 87-05. However, most plants did not perform UT thickness measurements, and provided this basis to the NRC in their response to GL 87-05.

Response:

As indicated in the Proposed LR-ISG-2006-01, most of the licensees did perform UT thickness measurement in response to Generic Letter 87-05. For those plants that did not perform UT thickness measurement, the applicant will have to demonstrate that the inaccessible areas of the drywell shell are not suspected areas, or provide the results of the UT examinations at the suspected locations that clearly demonstrate that degradation is not occurring, and have procedures in place to demonstrate and ensure that the water will not go through the

inaccessible areas during the period of extended operation. The procedures should include (1) checking the relevant drain lines periodically; (2) placing any components that are identified as a source of moisture, such as the refueling seal, in scope of license renewal with program to monitor them periodically; and, (3) periodic confirmation that the refueling cavity walls do not have cracks.

Comment 9. General Comment: Since this ISG is focused on the exterior, inaccessible surface of the Mark I steel containment drywell shell; include the words “exterior surface” in the appropriate spots for clarification.

Response:

The staff will review the Proposed LR-ISG-2006-01 and will provide clarification, where applicable.