

March 3, 2015

Kevin Ennis, Director  
Nuclear Codes and Standards  
The American Society of Mechanical Engineers  
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Two Park Avenue  
New York, NY 10016-5902

Subject: NRC Information Notice 2014-07 Regarding Inspection of Containment  
Leak-Chase Channels

Dear Mr. Ennis:

In Volume 62 of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI Interpretations, Interpretation XI-1-13-10 stated that Table IWE-2500-1, Examination Category E-D, Item E5.30 (1992 Edition With the 1992 Addenda Through the 1995 Edition with the 1997 Addenda) and Item E1.30 (1998 Edition Through the 2013 Edition) does not require examination of leak chase channel threaded plugs, caps, seals or covers. On May 5, 2014, the U.S. Nuclear Regulatory Commission (NRC) issued Information Notice (IN) 2014-07, "Degradation of Leak-Chase Channel Systems for Floor Welds of Metal Containment Shell and Concrete Containment Metallic Liner" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14070A114). In IN 2014-07, the NRC stated that Note [3] for Item E1.30 of Table IWE-2500-1 states, in part, "examination shall include moisture barrier materials intended to prevent intrusion of moisture against inaccessible areas of the pressure retaining metal containment shell or liner at concrete-to-metal interfaces and at metal-to-metal interfaces which are not seal-welded." The IN further states that the ASME Note provides the definition of moisture barriers that are required to be examined in terms of intended function, and as such, the leak-chase channel system components, including the cover plates, plugs, and test connections within the access box should be inspected because they prevent intrusion of moisture into inaccessible portions of the metal containment shell or liner plate. The IN also states that in order to comply with 10 CFR 50.55a, licensees have the option of examining accessible leak-chase channel components as moisture barriers subject to general visual inspection, or examining the accessible areas of the containment shell or liner within the channels by VT-1 augmented examination in accordance with IWE-1241, which explicitly mentions leak-chase channels as areas that may be subject to accelerated corrosion.

During a public meeting between NRC and ASME management, held on August 22, 2014 (ADAMS Accession No. ML14245A003), ASME commented that the discussion in the IN related to moisture barriers appeared to be in conflict with ASME Section XI Interpretation XI-1-13-10. During the meeting, the NRC staff agreed to review the IN and the ASME Interpretation and to respond to the comment.

After reviewing the documents, the NRC staff acknowledges that the option in IN 2014-07, to address the degradation issue by inspecting leak-chase components as moisture barriers, may appear to conflict with ASME Interpretation XI-1-13-10. The intent of the IN was not to interpret the ASME Code. The NRC issued IN 2014-07 to bring attention to an issue that has been identified by NRC inspectors at several plants involving degradation of leak-chase channel access boxes and intrusion of moisture into the leak-chase channels, which if left uncorrected could result in significant corrosion of the containment shell or liner. The IN was also intended to make it clear that the NRC position remains that these areas should be examined under the IWE inspection program, as indicated in the inspection report findings referenced in the IN. The IN provided several methods to monitor for possible degradation in these areas and was not intended to interpret the ASME Code. The NRC acknowledges that ASME Code, Section XI, Subsection IWE, Table IWE-2500-1, Examination Category E-A, Item E1.30 does not explicitly require the inspection of leak-chase channel threaded plugs, caps, seals, or covers. However, Note 4 of Table IWE-2500-1 does require the examination of “materials intended to prevent intrusion of moisture against inaccessible areas of the pressure retaining metal containment shell or liner ....” The leak-chase channels and associated access boxes can provide direct paths for moisture intrusion into inaccessible areas of the metal containment shell or liner. Therefore, the staff maintains that whichever components function as the moisture barrier (as identified in Note 4 of Table IWE-2500-1) to the leak-chase channels are required to be examined under the Section XI, Subsection IWE inservice inspection program.

If the access box cover plates have been sealed with a standard moisture barrier material (e.g., caulking, flashing), the NRC staff expects the licensee to examine the moisture barrier, and if evidence of degradation or moisture intrusion is identified further examination or evaluation would be required pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Paragraph 50.55a(b)(2)(ix)(A) (or equivalent code provision). The NRC staff does not expect licensees to open leak-chase channel access boxes that are properly sealed and show no indications of degradation. However, if the boxes are not sealed or degradation is identified, the staff expects the cover plates to be removed and an examination to be conducted on the accessible portions of the containment liner or shell within the leak-chase channels and an evaluation in accordance with 10 CFR 50.55a(b)(2)(ix)(A) (or equivalent code provision) to be completed for the inaccessible portions. The staff maintains that this is in alignment with the ASME Code because the leak-chase channel access boxes typically have a geometry that permits water accumulation, as discussed in IWE-1241, and provides a path for intrusion of moisture into inaccessible areas of the pressure retaining metal containment shell or liner.

K. Ennis

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In summary, the NRC believes that the information in IN 2014-07 is consistent with the requirements in the ASME Code Section XI, Subsection IWE. Nonetheless, the NRC staff believes that this information is best documented in the ASME Code, and hopes that ASME will consider it appropriately. As necessary, the NRC staff may consider adding a condition to 10 CFR 50.55a to clarify the above expectations. The NRC also notes that, where licensees would like to consider alternatives, they may use proposed alternatives approved by the NRC pursuant to 10 CFR 50.55a(z).

Sincerely,

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John W. Lubinski, Director  
Division of Engineering  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission

