Public Meeting with NEI on Operational Leakage Guidelines

U.S.NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

Operational Leakage
NRC Position on NEI Comments

Evaluation of NEI Comments C.11 Flaw Evaluation

- Comment 1: When evaluating flaws, "Code conformance" is a different concept from "operability." Code nonconformance does not necessarily equal inoperability. The inability to satisfy a Code requirement requires an operability determination, but by itself may not constitute inoperability.
- NRC Response: Agree. Code nonconformance does not necessarily equal inoperability.

C.11 Flaw Evaluation

- Article IWA 3000 contains the criteria for standards and examination evaluation for flaws found in welds
- Comment 2: Add, "for conditions detected during preservice and inservice inspection activities.
- NRC Response: Context was in regard to having flaws in components other than welds. Use of ASME Section XI acceptance standards for discoveries outside ISI and PSI to be discussed later.

C.11 Flaw Evaluation

- ASME Section XI is generally written for weld examinations and flaws in welds.

- Comment 3: Sentence should read, "ASME Section XI is specifically written for examination of the items identified in IWX-2500."
- NRC Response: Context was in regard to having flaws in components other than welds. Deleted this sentence in latest revision.

C.11 Flaw Evaluation

- When outside this area, the construction code is to be used to establish acceptance criteria

- Comment 4: Delete sentence.
- NRC Response: Context was in regard to having flaws in components other than welds. Deleted this sentence from the latest revision.

C.11 Flaw Evaluation

- In addition, the NRC issued Generic Letter (GL) 90-05, "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping," which permits licensees to consider either the "through-wall flaw" or the "wall thinning" flaw evaluation approach when assessing the structural integrity of moderate-energy piping with identified through-wall flaws. *If the flaw is found acceptable by the "through-wall flaw" approach, a temporary non-code repair may be made following NRC staff review and approval of the evaluation.* If the flaw is found acceptable by the "wall thinning" approach, immediate repair of the flaw is not required; but the licensee should comply with the guideline for flaw repair and monitoring.

- Comment 5: Past practice has not required prior NRC review.
- NRC Response: These words were paraphrased from Generic Letter 90-05. Actual words are:
  - Temporary non-code repairs are not permitted on ASME Code piping without prior relief from the NRC.
  - If the flaw satisfies the criteria of this evaluation approach ["Through-Wall Flaw"], a temporary non-code repair of the code Class 3 piping may be proposed.

C.11 Flaw Evaluation

- Comment 6:
  - (a) Limited to flaws found during ISI.
  - (b) A licensee may know it has a Code noncompliance, but can show sufficient margin to permit continued operation. Relates to our comment that Code compliance and Operability are different concepts.
    - ASME Code Cases which describe methods, criteria, or requirements different from the ASME Code referenced in 10 CFR 50.55a cannot be used to evaluate the acceptability of a flaw without prior NRC review and approval unless the ASME Code Cases are endorsed in Regulatory Guide (RG) 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1."

C.11 Flaw Evaluation

- NRC Response:
  - (a) Disagree
    - The NRC disagrees that Code acceptance criteria are only applicable when a flaw is discovered during ISI/PSI related activities.
    - To be discussed at greater detail later in the agenda
  - (b) Agree
    - However, the methods used to evaluate flaws need to be acceptable to the NRC.
    - Additional agenda item to discuss this in more detail.

C.11 Flaw Evaluation

- Comment 7:
  - (a) Delete the first two sentences, because Code noncompliance does not necessarily result in inoperability.
  - (b) 3rd sentence should include Class 1.
  - (c) 4th sentence: Inconsistent with previous guidance because it excludes Class 2 ME components.
  - (d) 4th sentence: Industry believes that an immediate determination (ID) for Class 2 ME and Class 2&3 HE may be feasible in many cases.
  - (e) Detailed NDE is not essential for an ID.

C.11 Flaw Evaluation

- NRC Response:
  - (a) In general agree, but not for Class 1 Components. Disagree with regard to Class 1 Systems due to increased emphasis place on the reactor coolant pressure boundary by 10 CFR 50 Appendix A General Design Criteria 14, 15, 30, and 31
  - (b) disagree. Believe that the identification of flaws in Class 1 components outside of an outage is very remote. *Most likely occurrence would be the discovery that acceptance criteria was not met after a unit is returned to service.* Believe RCPB should be held to the highest quality standards practical.
  - (c) Agree – with understanding of comment to mean excludes Class 2 HE. Changed to include all of Class 2 and Class 3.
  - (d) Agree – based on examples provided at last meeting.
  - (e) Don't understand what is meant by "essential for ID", but changed to state NDE may be needed. In some cases a visual examination may be adequate. In other cases, UT thickness measurements may be needed. In yet other cases, flaw length and depth measurements may be needed.

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- GDC 14 which states the reactor coolant pressure boundary shall be designed, fabricated, erected, and tested so as to have an extremely low probability of abnormal leakage, of rapidly propagating failure, and gross rupture.
- GDC 15 state the reactor coolant system…shall be designed with sufficient margin to assure that the design conditions of the reactor coolant pressure boundary are not exceeded during any condition of normal operation, including anticipated operational occurrences.
- GDC 30 which states that components which are part of the reactor coolant pressure boundary shall be designed, fabricated, erected, and tested to the highest quality standards practical.
- GDC 31 which states the reactor coolant pressure boundary shall be designed with sufficient margin to assure that when stressed under operating, maintenance, testing, and postulated accident conditions the probability of rapidly propagating fracture is minimized. The design shall reflect consideration of service temperatures and other conditions of the boundary material under operating, maintenance, testing, and postulated accident conditions and the uncertainties in determining… size of flaws.

C.11 Flaw Evaluation

- Comment 8:
  - (a) Inconsistent with 6/22/07 NRC Interim Guidance.
  - (b) Inconsistent with previous understanding of NRC positions expressed in February 2007.
  - (c) Industry believes it has sufficient engineering experience and expertise to determine with reasonable expectation of an item's operability for flawed Class 2&3 components in both moderate energy (ME) and high energy (HE) systems.
  - (d) The process for evaluating HE and ME situations is the same.
  - (e) Refer to Section 4.4 of NEI White Paper ("Treatment of Operational Leakage from ASME Class 2 and 3 Components," May 2007).

C.11 Flaw Evaluation

- NRC Response:
  - (a) Agree – changed to include all Class 2 and 3
  - (b) Agree – changed to include all Class 2 and 3
  - (c) Agree. There are some instances where it may be possible to make an operable determination, given the proper circumstances. Removed not feasible.
  - (d) Agree – Resolved by removing comments of not feasible
  - (e) Generally agree. However, the point was that there may be more experience with degradation mechanisms in one class of systems verses another, which will make it more or less challenging to perform a successful operability determination.

C.12 Flaw Evaluation

- To evaluate the structural integrity of the leaking component, the licensee may use the criteria in Section XI of the ASME Code or any applicable ASME Code Case approved in NRC RG 1.147. The licensee may evaluate the structural integrity of Class 3 piping by evaluating the flaw using the **criteria** of paragraph C.3.a of Enclosure 1 to GL 90-05. If the flaw meets the **criteria**, the piping is degraded but operable until relief from the applicable ASME Code requirement or requirements is obtained from the NRC and a temporary non-Code repair is made.

- Comment 9:
  - (a) Please clarify - what does the word "criteria" mean in this sentence: Code or GL 90-05?
  - (b) If an evaluation is done per Code rules approved by NRC and the results are satisfactory, then the item is no longer non-conforming.
- NRC Response:
  - (a) criteria refers to the criteria of GL 90-05.
  - (b) If a component leaks through wall, it is non-conforming. It may be degraded but operable. If a non-through-wall flaw is evaluated and meets Code rules approved by the NRC, the component is no longer non-conforming

C.12 Flaw Evaluation

- If the flaw in the leaking component satisfies the applicable structural integrity criteria, the piping can be deemed degraded but operable and continued temporary service of the degraded piping components is permitted.

- Comment 10: What is meant by "structural integrity criteria" in this sentence?
- NRC Response: Structural Integrity criteria as used here refers to the acceptance criteria contained Section 4.0 of Code Case N-513-1. Will refer to acceptance criteria in final version of C12.