Coverage Relief Requests

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U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Disclaimer

This presentation describes information useful to NRC staff members reviewing requests from relief to ASME Code "Essentially 100%" volumetric coverage requirements (generally defined as 90% coverage in ASME Code Case N-460 ""*Alternative Examination Coverage for Class 1 and Class 2 Welds*, *Section XI, Division 1*")

While this presentation gives some suggestions to help in developing relief requests this presentation does not describe any actual requirements for such relief requests

From Relief Request to Safety Evaluation

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When a NRC staff member writes a safety evaluation they use their individual experience, judgment, precedent, and operating experience to determine if the relief is warranted

NRC staff look for inconsistencies and errors in submittals

- Errors in descriptions of inspection procedures
- Incorrect procedures applied to inspection
- Illegible diagrams
- Inspection diagrams that do not match coverage percentages

The safety evaluation must have a sufficient technical basis to show why the missed coverage is not a safety issue based entirely on information that is on the docket understandable to non-experts in the public

- Even common sense items need to be spelled out

Standard Component Information (Likely RAI if not included)

Component Identification

Component Examination Category

Component Examination Item Number

Component Description, including system (e.g. safety injection, reactor water cleanup)

- This gives us an idea of the safety significance of the component

Materials for the Components and welds

- This helps us assess the susceptibility of the component

Component diameter and thickness

Supporting Component Information

Operating experience

- No previous failures is very helpful

Operating temperature and pressure for the component

- Important when nickel alloys are involved

Cumulative Usage Factor

- For challenging cases to determine if fatigue is an issue

Mitigation such as MSIP, Inlays, or Onlays, even if not given formal credit

Inspection Information

Percentage of weld inspected and enough information to understand how this percentage was calculated

Angles and frequencies used for inspections

A clear diagram showing what was inspected and with what angles

Was the inspection procedure and personnel Appendix VIII qualified?

“Best effort” coverage

Inspection Requirements

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ASME Code Section XI and Appendix VIII Edition and Addenda, Interval start and stop dates

Was a surface exam required and/or performed?

Are inspection requirements other than the ASME code requirements?

- e.g. Appendix VIII Examinations for Vessel-to-Flange welds
- Refer to alternatives if the inspection is covered under a previous relief

For Risk Informed Inspections:

- Refer to relief granting RI-ISI
- Were other components examined to make up for the missed volume?
- How many other similar components have been examined?

For Appendix VIII qualified exams the relief request must show that all requirements are met

- e.g. Coverage obtained by two angles

Inspection Reports

Many coverage relief requests include the hand-filled inspection reports in lieu of tables describing the relevant information

It is incumbent on the licensee to provide relevant information for their request in a clear and concise manner

- The relevant information is not always present
- Not all NRC staff are experts in digging through these reports to get the relevant information
- NRC staff evaluations of inspection records are time consuming and may require an RAI

The records may contain information that is not important to the relief request but may raise issues outside of the relief request

Indications?

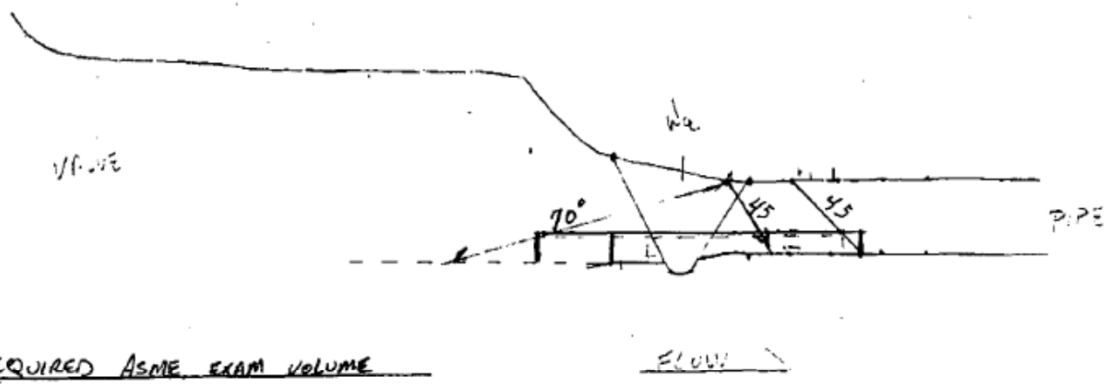
Were any indications found in the inspection?

How were indications and/or flaws dispositioned

Planned subsequent examinations

Inspection Diagrams

Likely to get an RAI asking for a better diagram



REQUIRED ASME EXAM VOLUME

(.2 x .143) ÷ 2 x 1.9 = .326

.326 x 20.8 = 6.78 in³

ACHIEVED ASME EXAM VOLUME

SCAN 3 CRV OBTAINED = 18 %

(.45 x .143) x 20.8 = .06

.06 x 20.8 = 1.248 1.248/6.78 = 18 %

SCAN 4 OBTAINED 100 %

SCAN 5 + 6 OBSTRUCTED

(.5 x .2) x 20.8 ÷ 6.78 = 31 %

SCAN 5 + 6 LRV OBTAINED

100 % - 31 % = 69 %

No idea about 45 degree coverage from pipe side

Unclear circumferential coverage

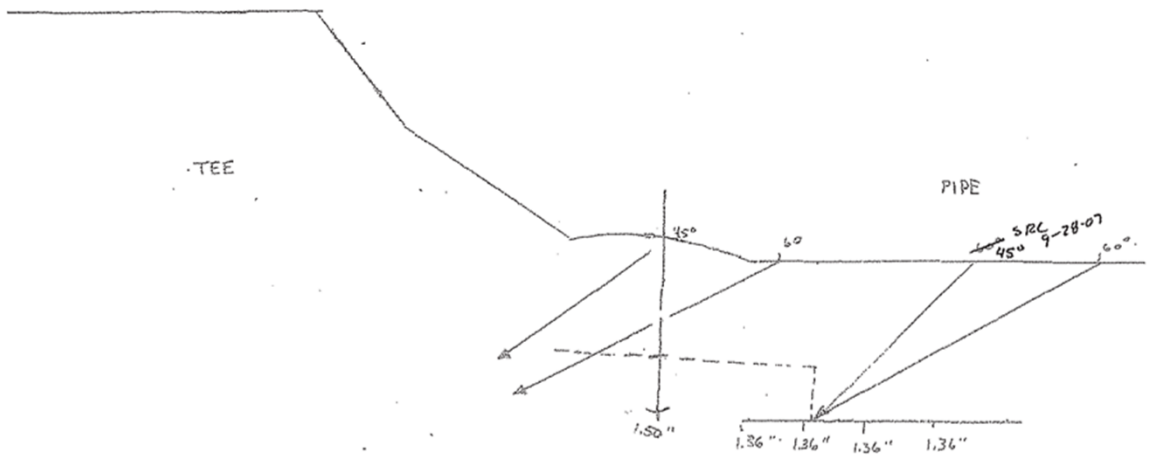
Inspection Diagrams

This figure did not get an RAI for clarification, as the claimed coverage was 50% due to single-sided coverage

This lack of an RAI was not because the figure was sufficient, but because it was clear that the ID was scanned with both angles

Another reviewer may have asked for an RAI

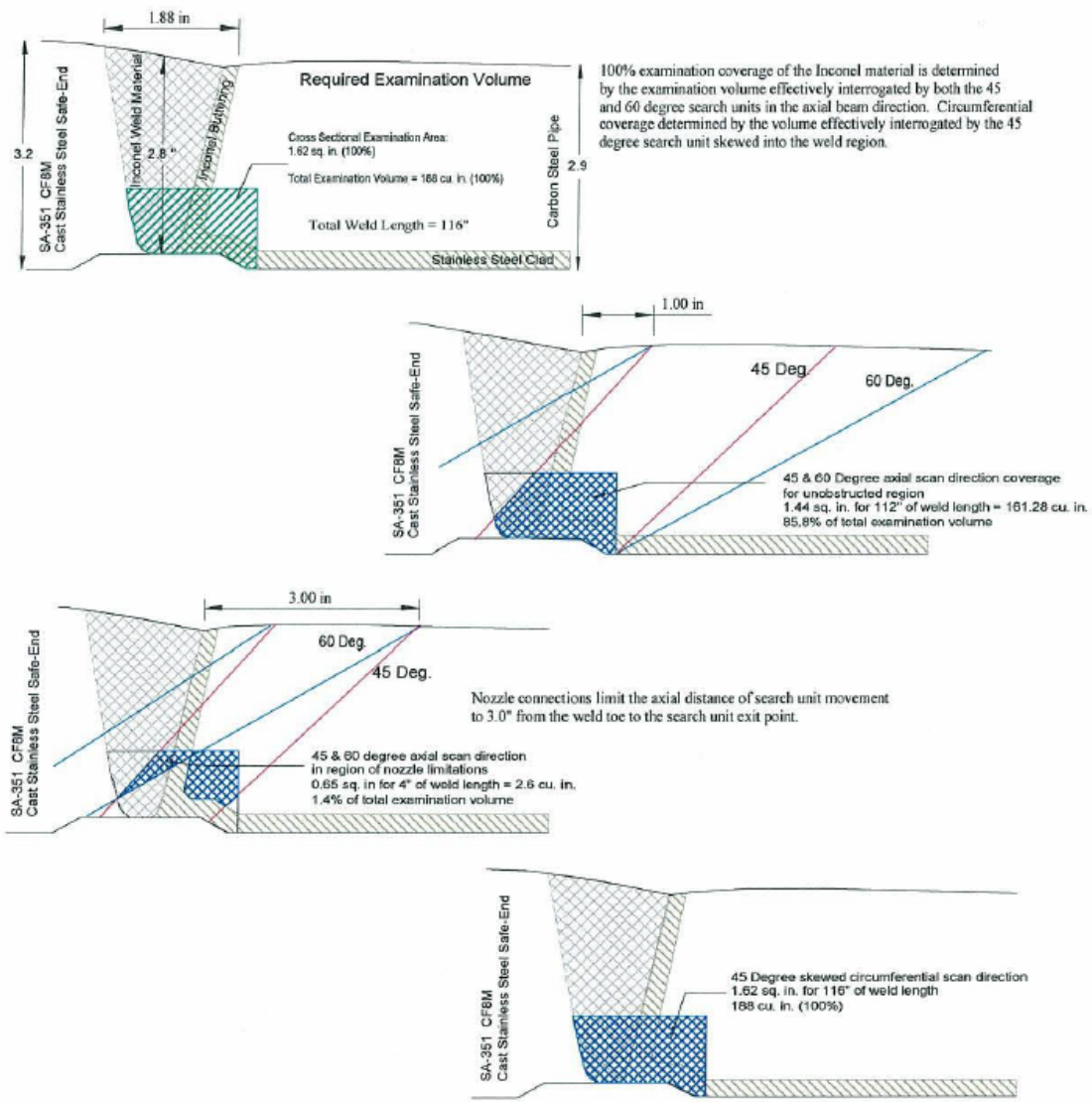
Possible RAI



Inspection Diagrams

Unlikely to get an RAI

Angles, thicknesses, materials, and inspected regions are identified



What Gets Our Attention?

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<u>Inconsistencies or errors</u>

More scrutiny will likely be placed on Class 1 components, thinner components, nickel alloy components, CASS components, or areas with OE

A Class 1 component with CASS or susceptible materials will require a lot of information to support the relief

A Class 1 component with susceptible materials will almost certainly require many items form the “Supporting Component Information” list

Class 2 ferritic components with 88% coverage will likely not need items from the “Supporting Component Information” list

Summary

While each reviewer may have different levels of experience and expectations, licensees can make the process easier by supplying sufficient information for the reviewer to understand:

- What was inspected?
- How it was inspected?
- Why the missed coverage is not a safety issue?

To assist the reviewer all relevant information needs to be on the docket

Path Forward

The current coverage relief request process may not be the optimal way to handle weld inspections with limited coverage

- Repetitive Relief Requests
- "After the fact"
- Consume NRC resources
- Consume industry resources
- Unproven safety return on investment

The NRC staff is considering alternatives to the coverage relief process

The coverage issue is an ASME Code compliance issue, and is likely best fixed in Code, not NRC Rulemaking