

NBIC Sub-Group Repairs & Alterations

Subject:	Exclusive use of VT is prohibited as an alternative to pressure testing
NB-Item number:	PR08-0306 ➔ NB item: NB08-1301
Explanation of assignment needed:	See narrative originally provided by Darryl Peetz. Without some exclusive provisions for VT-examination, escalated repair costs and Inspector involvement may be required without any appreciable gain in safety realized. A VT-examination may provide more meaningful results than instituting an initial service leak test; not prohibited by some codes. A VT-examination during welding may be more meaningful than a surface NDE-examination method.
Assigned to:	Mike Webb, Jim Larson, Bob Wielgoszinski
Background:	The "Exclusive use of VT-examination" was not permitted after being brought before the Committee and passed as item NB04-0203. Through the public review process, PR08-0306 was initiated after several comments were received. After review in Sub-group RA, this new item was initiated to review the premise of accepting repairs and / or alterations using only a VT-examination method.

Existing Text in '08-addenda	<i>Proposed Revision</i>	Rationale	Notes during discussion
<p>Part 3, 4.4.1 TEST OR EXAMINATION METHODS APPLICABLE TO REPAIRS</p> <p>Section 4.4.1-e e) Nondestructive Examination NDE may be conducted. Exclusive use of Visual Examination (VT) shall not be permitted. NDE methods used shall be suitable for providing meaningful results to verify the integrity of the repair.</p>	<p>Part 3, 4.4.1 TEST OR EXAMINATION METHODS APPLICABLE TO REPAIRS</p> <p>Section 4.4.1-e e) Nondestructive Examination NDE may be conducted <u>when pressure testing is not practicable</u>. NDE methods used shall be suitable for providing meaningful results to verify the integrity of the repair. <u>Exclusive use of Visual Examination (VT) is only permitted with the following considerations:</u></p> <ol style="list-style-type: none"> 1. <u>When a pressure test or alternative NDE methods are not practicable, exclusive use of direct Visual Examination (VT) as an NDE method shall be limited to routine repairs, as identified in 3.3.2.</u> 2. <u>For each repair being considered, the exclusive use of direct VT-as an NDE method shall be acceptable to the Inspector, and where required, the Jurisdiction.</u> 3. <u>As a minimum, VT-examination shall be performed after the root weld layer or first-pass is deposited, and</u> 	<p>The proposed revision offers some guidance currently found in ASME B31.1. As proposed (e-3), VT-examination at the 1st layer & final weld surface represents 100% more examination than required by original Code in lieu of the pressure test.</p> <p>Some boiler designs do not lend themselves to pressure tests (e.g. Reheat Superheater). Availability of NDE-contractors enlisting alternative volumetric examination methods is at times uncertain leaving no alternative in complying with the NBIC.</p> <p>Other NDE methods recognized by the NBIC represent enhanced VT using dye penetrant or fluorescent magnetic particle and are surface or slightly subsurface NDE-methods.</p> <p>PT/MT NDE methods may not represent meaningful results due to limited access or other influences negating their use such as flammability of sprays and solvents in a confined space. (Example: Steam drum liner attachment weld to a Superheat outlet tube stub in a CE-designed Controlled Circulation boiler. Very limited room and can not verify tightness with a pressure test)</p> <p>VT-examination by a certified individual (e.g. QC-1-CWI) with established</p>	<p>Repairs in some areas of the country are greatly influenced by quick returns to service in order to protect equipment from freezing. This alternative to pressure testing better protects the owner, equipment, and reduces safety risk by mitigating freezing situations.</p> <p>4.2 - a) identifies the acceptance criteria shall be in accordance with the original code of construction.</p>

NBIC Sub-Group Repairs & Alterations

<p>Also.... Part 3 4.4.2 TEST OR EXAMINATION METHODS APPLICABLE TO ALTERATIONS</p> <p>Section 4.4.2-c c) Nondestructive Examination Nondestructive examination (NDE) may be conducted when contamination of the pressure retaining item by liquids is possible or when pressure testing is not practicable. Concurrence of the owner shall be obtained in addition to the Inspector and jurisdiction, where required. Exclusive use of Visual Examination (VT) shall not be permitted. In all cases NDE methods or combination of methods used shall be suitable for providing meaningful results to verify the integrity of the alteration.</p>	<p><u>the final weld surface. Other weld layers shall be examined as identified by the Inspector and, where required, the jurisdiction.</u></p> <p>4. <u>Personnel completing direct VT-examinations shall be qualified and certified in accordance with paragraph 4.2- b), AWS QC-1, or any nationally recognized standard. Visual acuity shall be demonstrated using as a minimum, standard J-2 letters on standard Jaeger test type charts for near vision.</u></p> <p>5. <u>VT-examination shall be performed in accordance with a written procedure meeting the procedure and reporting requirements listed in the original code of construction or ASME Section V, Article 9.</u></p> <p>Part 3 4.4.2 TEST OR EXAMINATION METHODS APPLICABLE TO ALTERATIONS</p> <p>Section 4.4.2-c c) Nondestructive Examination Nondestructive examination (NDE) may be conducted when contamination of the pressure retaining item by liquids is possible or when pressure testing is not practicable. Concurrence of the owner shall be obtained in addition to the Inspector, <u>and where required, the Jurisdiction.</u> Exclusive use of Visual Examination (VT) shall not be permitted. In all cases NDE methods or combination of methods used shall be suitable for providing meaningful results to verify the integrity of the alteration.</p>	<p>acceptance criteria and a procedure w/reporting requirements represents in-process controls suggested by other NDE-methods while affording an alternative to high cost / limited availability NDE personnel. The QC-1 type person is certified by an in-house program & described in the quality manual.</p> <p>Qualification of NDE-personnel per 4.2 (b) in accordance with requirements of the original code of construction may follow ASME Section V, article 9 that in turn references article I & allows ASNT-TC-1A or ASNT CP-189. VT-examination per Section V @ Article 9 identifies near distance acuity to reading standard J-1 letters on standard Jaeger-test charts for near vision. This exceeds requirements of ASNT TC 1A, CP-189, and AWS QC-1 requirements that identify using J-2 letters on standard Jaeger-test charts for near vision. Identifying “standard J-2 letters” within the paragraph, establishes uniformity between the referenced standards.</p> <p>Reference to “direct” visual examination displaces the use of binoculars, etc. in completing the proposed examinations.</p> <p>Part 3 Section 4.4.2-c <u>“... and where required, the Jurisdiction.”</u> Is proposed only for consistency throughout Part 3 and the other Sections.</p>	<p>@ Proposed 4- The current reference to ASNT-TC-1A & ASNT CP-189 @ 4.2- b) for qualifying NDE-personnel, could be confusing when referenced to an “original code of construction” such as ASME Section V, Article 9 which identifies near distance acuity to standard J-1 letters on standard Jaeger test-type charts.</p> <p>Additionally, the reference @ 4.2-b) to “qualified and certified” personnel does not currently extend to AWS QC-1 or another nationally recognized standard. Therefore the “qualified & certified” -statement is added to 4.4.1 –e) 4. to clarify the requirement.</p> <p>By identifying the standard J-2 letters, the referenced Section V-Code and standards are aligned.</p> <p>@ Proposed 5- The proposed language is to say, the written procedure & reporting is to meet the listed requirements, “like” those identified in ASME Section V, Article 9. ASME Section V, Article 9 would serve as a framework to develop an NDT-procedure with reporting requirements.</p> <p>The reference to, “original code of construction” is already extended to represent as applicable, the construction standard used to fabricate the pressure retaining item @ 3.2.1. To add a reference to construction “standard” would be redundant to this noted understanding.</p>
--	---	--	---