Guidance for the Development of Ultrasonic Examiner Qualification Programs

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Contents

Page

1 Purpose 1
1.1 Scope 1

2 Normative References 1

3 Terms, Definitions, Acronyms, and Abbreviations 2
3.1 Terms and Definitions 2
3.2 Acronyms and Abbreviations 3

4 Specimens for Performance Demonstration Tests 4
4.1 Sample Identification 4
4.2 Detection and Characterization Test Set Specimen Design 4
4.3 Crack Height Sizing Test Set Specimen Design 6
4.4 Alternate Specimen Designs 7
4.5 Test Set Validation 7

5 Exam Security 7
5.1 Exam Monitoring 8
5.2 Pre- and Post-Test 8
5.3 During the Test 8

6 Test Administration 9
6.1 Pre-Test Preparation 9
6.2 During the Test 11
6.3 Post-Test Administration—Grading 12

Annex A (informative) Sample Forms for Use During Performance Demonstration Tests 15

Figures

1 Photograph of Performance Demonstration Test Sets for Detection and Characterization (left) and Crack Sizing (right) 4
2 Cross-sectional View of Detection and Characterization Test Set 5
3 Cross-sectional View of Crack Sizing Test Set 6
A.1 Equipment Inventory Form 16
A.2 Phased Array Equipment Inventory Form 17
A.3 Angle Beam Calibration Form 18
A.4 Phased Array Calibration Form 19
A.5 Single Vee Weld Indication Report Form 20
A.6 Double Vee Weld Indication Report Form 21
A.7 QUSE Crack Height Sizing Report Form 22
A.8 QUSE-PA Crack Height Sizing Report Form 23

Tables

1 Defect Types for QUTE and QUPA Test Specimens 6

Contents

Page

2 Example of the Test Schedule 11
3 Required Fields for Qualification Test Program Forms 12
4 Flaw Characterization Groups 13

Guidance for the Development of Ultrasonic Examiner Qualification Programs

1 Purpose

The purpose of this publication is to provide owner/users with guidelines for developing basic in-house qualification programs to identify industry-qualified ultrasonic testing (UT) angle beam examiners that are equivalent to those possessing an ultrasonic angle beam qualification from API (e.g. API QUTE/QUSE detection and sizing tests) for inspection of pressure equipment and piping as required by API 510 and API 570. The availability of high-quality and accurate UT data is often the cornerstone for weld and base metal discontinuity detection and sizing for equipment integrity assessments. As a result, API has implemented several certification programs to assist in defining the minimum criteria for assessing the performance of UT technicians. Examinations for these programs are administered differently than other Individual Certification Program (ICP) certifications in that they are based on hands-on performance demonstration tests. It should be noted that UT certifications are issued by accredited NDE certification authorities, such as the American Society for Nondestructive Testing (ASNT), and these API UT ICP certifications are considered performance demonstration qualifications by such NDE certification schemes.

1.1 Scope

This publication outlines the general guidelines for the development of owner/user ultrasonic examiner qualification programs that are consistent with API performance demonstration programs for detection, characterization, and crack height sizing of weld discontinuities in weldments. The performance demonstration programs covered in this publication include the following:

1.1.1 Qualification of Ultrasonic Testing Examiners for Detection and Characterization of Flaws Using Manual Angle Beam Testing: QUTE

QUTE exam description: Exam candidates use manual ultrasonic flaw-detection instruments to examine new construction carbon steel pipe and plate welds manufactured to ASME code requirements. Candidate performance measures include flaw detection, characterization, length sizing, and false calls.

1.1.2 Qualification of Ultrasonic Testing Examiners for Detection and Characterization of Flaws Using Manual UT-Phased Array: QUPA

QUPA exam description: Exam candidates use manual ultrasonic phased array instrumentation to examine new construction carbon steel pipe and plate welds manufactured to ASME code requirements. Candidate performance measures include flaw detection, characterization, length sizing, and false calls.

1.1.3 Qualification of Ultrasonic Testing Examiners for Manual UT-Angle Beam Crack Sizing: QUSE

QUSE exam description: Exam candidates use manual ultrasonic flaw detector instrumentation to size opposite side cracking in new construction carbon steel plate welds with and without weld crowns in place.

1.1.4 Qualification of Ultrasonic Testing Examiners for Manual UT-Phased Array Crack Sizing: QUSE-PA

QUSE-PA exam description: Exam candidates use manual ultrasonic phased array instrumentation to size opposite side cracking in new construction carbon steel plate welds with and without weld crowns in place.

1.2 Weld specimens for the QUTE, QUPA, QUSE, and QUSE-PA exams are single- or double-bevel carbon steel plate or pipe welds 0.50 in.–1.00 in. (12.5 mm–25 mm) in thickness. See Section 4 for specimen details.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.