



Report No. 1199

Ultrasonic

Proficiency Testing Program

Round Four

September 2020

ACKNOWLEDGMENTS

PTA wishes to gratefully acknowledge the technical assistance provided for this program by Mr V Mierzwa.

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1. Foreword

This report summarises the results of the fourth round of an interlaboratory comparison on the ultrasonic examination of welded joints.

The exercise was conducted from July 2019 to August 2020 by Proficiency Testing Australia (PTA). The Program Coordinator was Dr M Li and the Technical Adviser was Mr V Mierzwa. This program is accredited to ISO/ISE 17043:2010 "*Conformity assessment - General requirements for proficiency testing*", by International Accreditation New Zealand (IANZ). This report was authorised by Mrs K Cividin, PTA Quality Manager.

The main aim of the program was to assess the ability of laboratory to competently perform the prescribed testing. Interlaboratory comparison provides objective evidence that laboratories are competent and that they can achieve the level of accuracy for which they have nominated. It also provides a means for improving the quality and performance of laboratories.

2. Program Features and Design

- 2.1 Each laboratory was randomly allocated a unique code number for the program to ensure confidentiality of results. Reference to each laboratory in this report is by code number only. Please note that where laboratories reported more than one set of results, the laboratory code number is reported with letters "a" and "b" etc.
- 2.2 Laboratories were provided with the "Instructions to Participants" (refer Appendix C). Participants were provided with one plate specimen.
- 2.3 Ten laboratories from Australia participated in the testing. Eleven reports were submitted.
- 2.4 Results (as reported by participants) are presented in Appendix A for each laboratory.

3. Reporting by Participants

Laboratories were asked to test the relevant test specimen and report their test results in accordance with AS 2207 - 2007.

4. Reference Values

A total of two test specimens were used, consisting of two plates. The test specimens and associated reference values for each of the test specimens were provided by Sonaspection, United Kingdom, and are presented in Appendix B.

5. Summary of Results

A summary of the results returned by participating laboratories for each test appears in Appendix A. Each participating laboratory was provided with a Summary Report detailing its performance. An example of the Summary Report is included in Appendix D.

6. PTA and Technical Adviser's Comments

The majority of participant results are consistent with the reference values, as shown in Appendix A.

A number of the reports issued by participating laboratories did not adequately address the reporting requirements specified by AS2207 - 2007.

The number of reports that were deficient of information indicates that there is room for improvement in this area. Individual laboratories and the non-destructive testing (NDT) industry in general, should consider reporting standardisation and simplification and place greater emphasis and importance on report details and terminology.

It should be noted that most participating laboratories presented reports and work sheets which were of a very high standard. A minority of participants submitted responses which had significant deficiencies and this raises concerns regarding the technical control of those laboratories.

7. References

[1] *Guide to Proficiency Testing Australia (2019)*. (This document is located on the PTA website at www.pta.asn.au under Programs/Documents).

[2] *AS 2207-2007 Non-destructive testing - Ultrasonic testing of fusion welded joints in carbon and low alloy steel*.

APPENDIX A

Summary of Reported Results

LABORATORY RESULTS (TEST PIECE ID: PTA0049-PLATE)

Lab Code	Flaw No.	Type	Length (mm)	Location along the weld (mm)	Comments
1A	1	Root Crack	35	56	PASS
	2	LSWF	24	266	
	3	Inclusion	30	131	
1B	1	Root Crack	36	56	PASS
	2	LSWF	29	131	
	3	Inclusion	23	266	
4	1	Root Crack	25	60	PASS
	2	LSWF	27	130	
	3	Inclusion	18	268	
8	1	Lack of Root Fusion	24	60	PASS
	2	LOSWF	27	134	
	3	Slag/Cavity	23	266	
9	1	Toe Crack	30	58	PASS
	2	LOSWF	30	135	
	3	Slag/Cavity	20	266	
11	1	Lack of Fusion (LF)	25	45	PASS
	2	Incomplete Penetration (IP)	35	155	
	3	Transverse Crack (KT)	20	280	

LABORATORY RESULTS (TEST PIECE ID: PTA0050-PLATE)

Lab Code	Flaw No.	Type	Length (mm)	Location along the weld (mm)	Comments
2	1	Lack of Fusion (LF)	25	45	PASS
	2	Lack of Fusion (LF)	30	160	
	3	Transverse Crack (KT)	20	280	
3	1	Centre Line Crack	28	39	PASS
	2	Lack of Root Fusion (LF)	28	162	
	3	Transverse Crack (KT)	15	273	
5	1	Long Crack	26	61	PASS
	2	LOSWF	30	132	
	3	Inclusion	16	270	
6	1	Slag Inclusion	32	35	PASS
	2	Lack of Root Fusion (LF)	25	164	
	3	Porosity	25	250	
7	1	Lack of Fusion (LF)	25	45	PASS
	2	Incomplete Penetration (IP)	35	155	
	3	Transverse Crack (KT)	20	280	

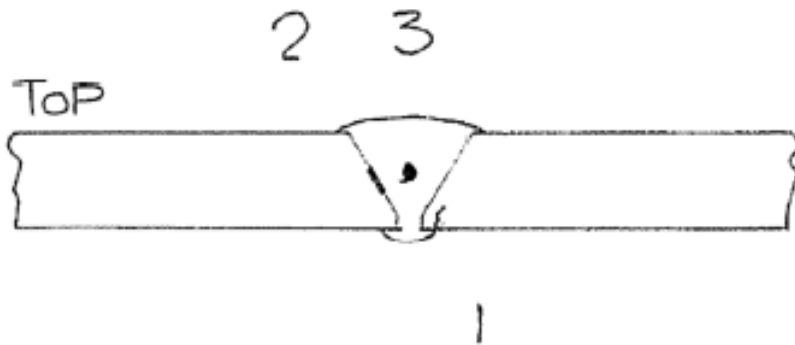
APPENDIX B

Conformance Certificate and Inspection Reports

Test Specimen Report

Specimen ID: PTA0049

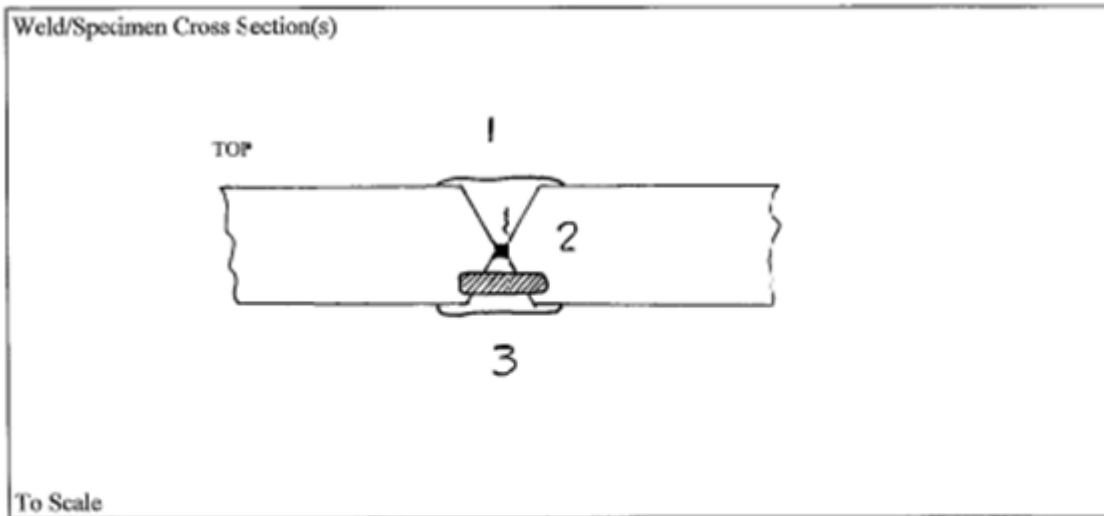
Specimen Cross Section:



No.	Type	Length (mm)	Distance from 0 (mm)	Max Indication Angle	Mandatory Detection
1	Root Crack	30	60	70°	Yes
2	Lack of Side Wall Fusion	25	134	60°	Yes
3	Slag	13	268	60°	Yes

Test Specimen Report

Specimen ID: PTA0050



Flaw No	Flaw Type	Flaw Length mm	Distance from 0 mm	Max UT Indication	
				dB	Angle
1	Centre Line Crack	25	40	+ 6	70
2	Incomplete Root Penetration	28	163	+ 5	60
3	Transverse Crack	15	277	- 3	70

APPENDIX C

Instructions to Participants

PROFICIENCY TESTING AUSTRALIA ULTRASONIC PROFICIENCY TESTING PROGRAM ROUND FOUR

INSTRUCTIONS TO PARTICIPANTS

Participants are requested to carefully note the following **BEFORE** commencing their testing.

1. General

The test specimen is not to be damaged or altered in any way. The use of grinders, files, finishers or sharp objects of any kind is prohibited.

The ultrasonic test should be considered as a routine inspection and, as such, all normal recording and reporting requirements shall apply.

Relevant discontinuities only are to be recorded on an appropriate drawing, which is to be provided as part of the work sheet.

2. Test Method

The test specimen is to be tested using ultrasonic A scan pulse echo technique.

The couplant shall be non-corrosive

Inspection of the test specimen is to be conducted in accordance with AS2207 - 2007.

3. Recording and Reporting

On an appropriate drawing, record non-compliant discontinuities, giving their type, length of defect, cross-section location, and location from datum point (disregard all discontinuities with a length of $\leq 5\text{mm}$).

A **test report** and the laboratory **work sheets** shall be submitted to Proficiency Testing Australia (PTA).

Note:

PTA expects the **test report** and **work sheets** for this proficiency test to meet the same standard required of any other job, for which your laboratory issues a test report. The majority of marks will be awarded for information provided in the work sheets.

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4. Return of Test Specimen and Results

The test specimen is to be thoroughly cleaned on completion of test. The test specimen, and with completed test report and laboratory work sheets are to be returned **within two weeks after receipt** to:

Dr Michael Li

Proficiency Testing Australia

Phone: 61 2 9736 8397

Fax: 61 2 9743 6664

Email: michael.li@pta.asn.au

Post Address for Reports:

P O Box 7507 Silverwater

NSW 2128 Australia

Delivery Address for Test Item:

7 Leeds Street, Rhodes

NSW 2138 Australia

APPENDIX D

Summary Report to Participants

**PROFICIENCY TESTING AUSTRALIA
ULTRASONIC PROFICIENCY TESTING PROGRAM ROUND 4
SUMMARY REPORT**

LAB CODE :
LABORATORY :
ADDRESS :
TEST PIECE ID :
LABORATORY REPORT No. :

PART A DOCUMENTATION ASSESSMENT - Work Sheets

	MAX SCORE	ACHIEVED SCORE
1. Name of laboratory or testing authority	1	
2. Test plate / pipe identification	1	
3. The relevant product specification or application code	1	
4. The reference to Australian Standard number, ie. AS 2207, the specific technique used, and any departures from the requirements of this Standard	1	
5. The method of establishing evaluation sensitivity	1	
6. The area tested, and the sizing method used	1	
7. Surface condition - including type of preparation and whether the surface condition complies with clause 3.3 of AS 2207	1	
8. Serial number or unique identification of equipment and all accessories	1	
9. Couplant used	1	
10. Test results and whether they comply with the acceptance standard	1	
11. Date and place of test	1	
12. Report number and date of test	1	
13. Identification of testing personnel	1	

**PROFICIENCY TESTING AUSTRALIA
ULTRASONIC PROFICIENCY TESTING PROGRAM ROUND 4
SUMMARY REPORT**

LAB CODE :

LABORATORY :

ADDRESS :

TEST PIECE ID :

LABORATORY REPORT No. :

PART B DOCUMENTATION ASSESSMENT - Test Report

	MAX SCORE	ACHIEVED SCORE
1. Name of laboratory or testing authority	1	
2. Test plate / pipe identification	1	
3. The relevant product specification or application code	1	
4. The reference to Australian Standard number, AS 2207, the specific technique used, and any departures from the requirements of this Standard	2	
5. The sizing method used	1	
6. Surface condition - including type of preparation and whether the surface condition complies with clause 3.3 of AS 2207	1	
7. Test results and whether they comply with the applicable code	1	
8. Date and place of test	1	
9. Report number and date of issue	1	
10. Identification of officer responsible for carrying out the test	1	
11. Identification of the officer responsible of the test report	1	

**PROFICIENCY TESTING AUSTRALIA
ULTRASONIC PROFICIENCY TESTING PROGRAM ROUND 4
SUMMARY REPORT**

LAB CODE :
LABORATORY :
ADDRESS :
TEST PIECE ID :
LABORATORY REPORT No. :

PART C PRACTICAL ASSESSMENT

(As per API Recommended Practice 2X, Fourth Edn, APRIL 2004)

Type Test Piece Examined:

ACTUAL

Flaw No.	Type	Length (mm)	Location along the weld (mm)	MAX SCORE
1				
2				
3				

LABORATORY RESULT

Flaw No.	Type	Length (mm)	Location along the weld (mm)	ACHIEVED SCORE
1				
2				
3				

OVERALL RATING	MAX SCORE	ACHIEVED SCORE
Part A - Work Sheets		
Part B - Test Report		
Part C - Practical Assessment		
TOTAL SCORES		

Score	86 - 100	Satisfactory	<input type="checkbox"/>
	71 - 85	Fair	<input type="checkbox"/>
	0 - 70	Unsatisfactory	<input type="checkbox"/>

Date of issue:

End of Report
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