

WELDING PROCEDURE SPECIFICATION

WPS NO	5-1-1-007			Rev No	0			From WPQR	5-1-1-007		2nd WPQR				
Client				JobNo				Project							
Applicable Code Specifications	AS/NZS 1554 Part 1 2014						Material 1	C-Mn Steel - Table 4.6.1 (B)		Steel Type 1					
Welding Process	MMAW						Material 2	C-Mn Steel - Table 4.6.1 (B)		Steel Type 1					
Joint Type	Single or Double Vee Butt Welds						Thickness	Min: 4.28mm	Max: 17.12mm						
Position	All - VU						Diameter	All							
Joint Preparation						Welding Sequence									
<p>Single Sided Weld A = 2.0 to 4.0mm B = 1.0 to 2.0mm C = 60° to 70°</p>						<p>Welded Both Sides Appendix E / Table E1 B/C-C2a</p>						<p>Welded one side</p>		<p>Welded both sides</p>	
<p>Welded Both Sides Appendix E / Table E1 B-C2d</p>						<p>Welded Both Sides Appendix E / Table E1 B-C3</p>						<p>Welded both sides</p>		<p>Preheat shall consider T2 (X = unlimited thickness) for corner joints Weld transitions as per construction drawings</p>	
Thermal Condition						Welding Technique / Preparation									
Min Preheat Method	Figure 5.3.4 (B) - See Note 3						Preparation Method	Machined / thermal cut &/or grind							
Temp. Check	LPG / Air torch / Heating Pads						Gouge Method	Arc/air gouge &/or grind							
Max Interpass	Calibrated Thermometer / Thermal Crayon						Interpass Cleaning	Chip, grind & wire brush							
PWHT	250°C						Max Bead Width	12.0mm							
	None						Electrical Stickout	N/A							
							Shielding Gas Flow	N/A							
							Purge Gas Flow	N/A							
Ref	Consumable Brand			Consumable Classification			Consumable Treatment								
A	Kobelco LB-52U or approved equivalent			AWS A5.1 E7016 (F4/A1) ISO 2560-A E46 4 B 21 H5			As per manufacturer recommendations								
B	Lincoln CONARC 49C or approved equivalent			AWS A5.1 E7018-1 H4R (F4/A1) ISO 2560-A E46 4 B 32 H5			As per manufacturer recommendations								
Weld Details					Electrode / Filler		Flux	Welding Parameters			Travel Spd	Heat Input			
Pass	Process	Side	Pos	Dir	Ref	Size	or Gas	Pol	Amps	Volts	(mm/min)	(kJ/mm)			
Root	MMAW	1	All	VU	A	2.6mm	N/A	DCEP	60 - 75	17 - 23	45 - 80	0.75 - 2.30			
Pass 2	MMAW	1	All	VU	A	2.6mm	N/A	DCEP	65 - 85	21 - 25	75 - 125	0.65 - 1.70			
Fill/Cap	MMAW	1/2	All	VU	B	2.5mm	N/A	DCEP	70 - 90	21 - 25	100 - 175	0.50 - 1.35			
			All	VU	B	3.2mm	N/A	DCEP	105 - 120	22 - 26	100 - 175	0.80 - 1.90			
Notes															
Refer to "AS/NZS 1554 WPS conditions of use" attached to this WPS before production welding.															
1. Prior to assembly and tack welding, remove all oxide, paint, oils, debris from weld zone and 10.0mm at adjacent surfaces.															
2. Tack weld at locations that facilitate progressive removal using above electrode and parameters.															
3. Preheat is based on Weldability Group within Table 5.3.4 (A) and Combined Joint Thickness (CJT = T1+T2)															
Weldability Group ≤3: No preheat is necessary - Recommend if <10°C Preheat to 50°C.															
Weldability Group 4: CJT <30mm: If <10°C Preheat to 50°C / CJT 30mm to 40mm: If <25°C Preheat to 50°C / CJT >40mm Preheat to 50°C															
Weldability Group 5: CJT <20mm: If <10°C Preheat to 50°C / CJT 20mm to 30mm: If <25°C Preheat to 50°C															
CJT >30mm to 40mm Preheat to 50°C / CJT >40mm to 60mm Preheat to 75°C / CJT >60mm Preheat to 100°C															
4. All production welds shall be 100% visually examined to Part 1 Table 6.2.2 or Part 5 Table 6.1.2 where applicable.															
5. Upon visual acceptance, conduct NDE as per design code and / or client specifications.															
Approved weldspeconline.com AS 1554				Approved Client				Release Stamp							

Conditions for Use of AS/NZS 1554 Welding Procedures

SCOPE

This welding procedure is intended to be utilised for the welding of steelwork in structures complying with AS 3990, AS 4100, AS/NZS 4600, NSZ 3404.1, as well as for the welding of cranes and hoists, road and pedestrian bridges, and welding of steelwork in applications other than structural where agreed with the Principle / Client. See WTIA Technical Note 11 for further guidance.

This welding procedure is suitable for GP (general purpose) and SP (structural purpose) weld categories as well as for steel structures subject to high levels of fatigue loading in accordance with AS/NZS 1554 Part 5.

Welding procedures may require client / project approval prior to use.

USE OF THIS WELDING PROCEDURE

The manufacturer or contractor shall be responsible for application of this welding procedure and comply with AS/NZS 1554 Clause 4.4 and the following requirements prior to use in production:

- a) Enter name of the manufacturer or contractor on the welding procedure.
- b) An employee of that manufacturer or contractor shall sign and date the welding procedure.
- c) The manufacturer or contractor shall demonstrate successful welding of a welder qualification test using the procedure.

LIMITATIONS OF WELDING PROCEDURES

- a) Any change outside of the essential variables stated on the welding procedure shall require qualification of a new welding procedure in accordance with AS/NZS 1554 Section 4.2.
- b) Only the steel types stated on the welding procedure may be welded. Steel type designations for specific material grades are listed in AS/NZS 1554 Table 4.6.1(B). Unlisted materials may be used if they are tested and/or confirmed to be compliant with any of the grade types in Table 4.6.1(B) as per Clause 2.1, to the satisfaction of the Principal / Client.

OTHER WELDING PROCEDURE RESTRICTIONS

- a) The manufacturer or contractor may not deviate from the welding conditions specified on the welding procedure.
- b) This welding procedure may not be supplemented with PQRs or revised in any manner (apart from the inclusion of non-technical information, such as company logo, signature, etc).
- c) The Workmanship requirements of AS/NZS 1554 Section 5 shall be adhered to.
- d) As per Clause 4.12, all welding shall be carried out under the supervision of a suitably qualified and experienced welding supervisor employed by or contracted to the fabricator.

CONSUMABLES

- a) Consumables may require special conditioning, storage, and handling prior to and during production to ensure hydrogen status classification is maintained.
- b) See ASME II Part C Annex A Table A3 for guides on consumable treatments.
- c) Use manufacturer recommendations for consumable conditioning if those recommendations differ from that detailed in ASME II Part C Annex A Table A3.

GUIDELINES

- a) The user shall consider all AS/NZS 1554 design requirements where restrictions may apply in particular to joint design and WPS application for welding of steel structures subject to high levels of fatigue loading to AS/NZS 1554 Part 5.
- b) The user needs a significant knowledge of welding and accepts full responsibility for the performance of the weld and for providing the engineering capability, qualified personnel, and proper equipment to implement this welding procedure.
- c) The user shall consider applicability or relevance of health and safety regulatory limitations / precautions prior to use.

PROCEDURE QUALIFICATION RECORD

PQR Record		5-1-1-007	Rev 0	Date of test	27/03/2017
Applicable Code	AS/NZS 1554 Part 1 2014	Material Grade		API 5L Grade B /ASTM A106B (equivalent to AS 1163 C250)	
Welding Process	MMAW	Group Number		Steel Type 1 – Table 4.6.1 (B)	
Joint Geometry	Single V Butt Weld	Carbon Equivalent		0.28	
Welding Position	6G / HL-045	Heat Number		Z21103056	
Progression	Vertical Up	Diameter / Thickness		OD 114.3mm x 8.56mm	
Joint Preparation			Welding Sequence		
Thermal Conditions			Welding Technique / Preparation		
Preheat	Ambient (25°C)		Preparation Method	Machined	
Preheat Method	N/A		Tack Welding	4 x 10.0mm root tack welds	
Min Inter-run fill	43°C		Tack Removal	Progressively removed	
Min Inter-run cap	42°C		Back Gouging	N/A – Single sided weld	
Maximum Inter-pass Temperature Check	Fill: 195°C / Cap 170°C		Interpass Cleaning	Chip, grind and wire brush	
Cooling Conditions	Still air		Bead Width	Maximum 10.0mm	
PWHT	No PWHT applied		Electrode Stick Out	N/A	
			Shield Gas Flow Rate	N/A	
Ref	Diameter	Consumable Brand	Batch / Lot #	Classification	
A	2.6mm	Kobelco LB-52U	182	ISO 2560-A E46 4 B 21 H5 (AWS A5.1 E7016)	
B	2.5mm	Lincoln Conarc 49C	O2MS164669	ISO 2560-A E46 4 B 32 H5 (AWS A5.1 E7018-1)	
C	3.2mm	Lincoln Conarc 49C	O2MS165054	ISO 2560-A E46 4 B 32 H5 (AWS A5.1 E7018-1)	
D	N/A	-	-	-	
Approvals (The user's representative shall review, approve, and sign off this record to validate it for their use)					
Qualification Record Originator Representative			User Representative		
Name	Chris Cobain		Name		
Qualifications	CEng IWE/EWE MWeldEng		Position		
Company	The WeldNet Pty Ltd		Company		
Approval Date	11/04/2017		Approval Date		
			Signature		

PROCEDURE QUALIFICATION RECORD

PQR Record	5-1-1-007	Rev 0	Date of test	27/03/2017
Coupon Details			Welding and Monitoring Equipment	
Coupon Identification	PQR 5-1-1-007 Rev 0		Welding Source	Miller 250 Inverter
Welder Name	Lawson Fresher		Wire Feeder	N/A
Third Party Witness	Chris Cobain		Earth Lead Length	10.0m
Welding Date	13/03/2017		Monitor Equipment	ALXII RS Set 171
Mechanical Testing			Non-Destructive Examination	
Report Number	MT17-00360 / 6		Visual Inspection	Complies with Table 6.1.2
Transverse Tensile	Not required		Radiography	Not required
Transverse Bend	1 x face bend – Comply		Ultrasonic Test	Not required
	1 x root bend – Comply		Magnetic Particle	Not required
Macro Sample	3 x macro samples – Comply		Liquid Penetrant	Not required
Hardness Survey	Not required		Other	N/A
Charpy Vee Notch	Not required			
Other	N/A			

Coupon Photograph



MATERIAL TEST REPORT



ABN 90 706 021 096

ACN 079 834 058

MARINE INSPECTION SERVICE Pty Ltd

Job No: **MT17-00360 / 6**
Issued: 27 March 2017 Order No: TWN-1012-001
Client: **WELDSPECONLINE.COM**
NEDLANDS, Western Australia
Attention: Chris Cobain
Description: The machining and mechanical testing of one only butt welded Welder / Procedure Qualification test plate.
Identification: PQR 5-1-1-007 Rev 0 MMAW 6G Vertical Up (HL-045)
Welder: L. Fresher
Material Specification: API 5L Grade B (ASTM A106 Grade B 100DIA x 8.56WT
Heat No: Z21103056
Test Specification: AS/NZS1554.1-2014, Category SP
Samples received: 27/03/2017

8 Egmont Road,
Henderson WA 6166

Phone: 08 9437 6155
Fax: 08 9437 6022

1. Face Bend:

Equipment Type: Transverse Guided Bend, Roller Support, Angle 180°.

Specimen	Dimensions (mm)	Former Diameter (mm)	Result	Compliance
FB 1	30 x 8.5	26	No Defects Apparent	Complies

2. Root Bend:

Equipment Type: Transverse Guided Bend, Roller Support, Angle 180°.

Specimen	Dimensions (mm)	Former Diameter (mm)	Result	Compliance
RB 1	30 x 8.5	26	No Defects Apparent	Complies

3. Macro Examination:

Specimen Examined at X20 Magnification.

Specimen	Etchant	Result	Compliance
MACRO 1 - 12 o'clock	10% Nital	No Defects Apparent	Complies
MACRO 2 - 3 o'clock	10% Nital	No Defects Apparent	Complies
MACRO 3 - 6 o'clock	10% Nital	No Defects Apparent	Complies

MATERIAL TEST REPORT

Job No: MT17-00360 / 6

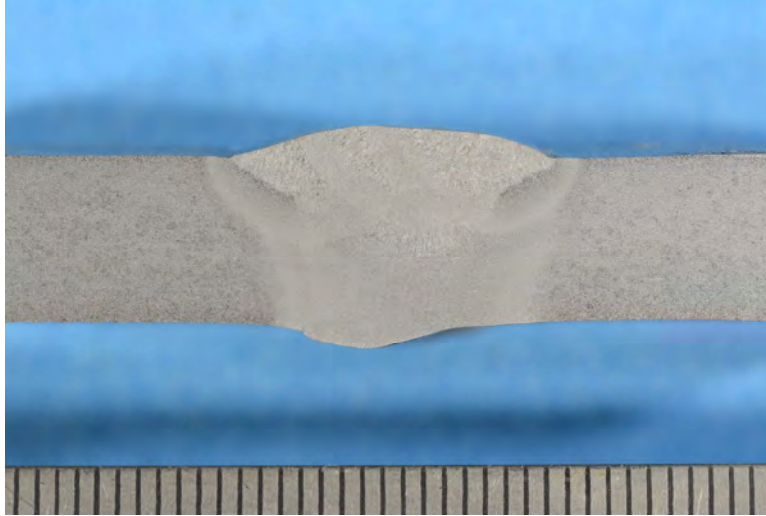


ABN 90 706 021 096

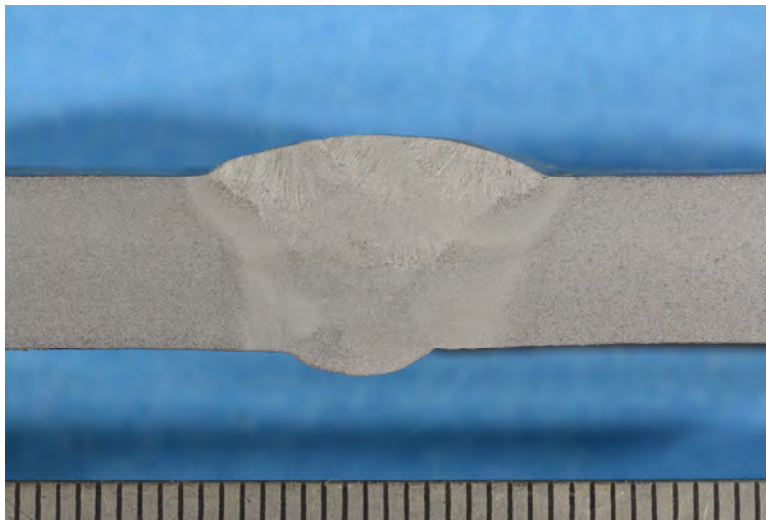
ACN 079 834 058

4. Photo Macro:

NOTE: Graticule Scale = 1mm per Division



MACRO 1



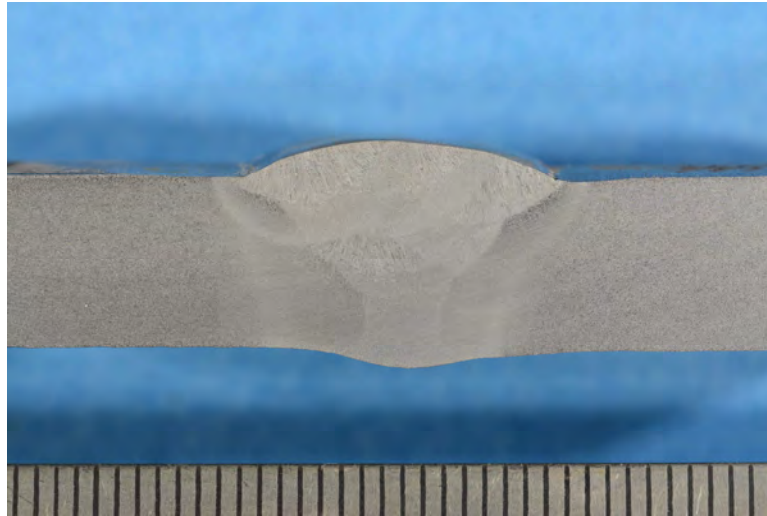
MACRO 2

MATERIAL TEST REPORT

Job No: MT17-00360 / 6



ABN 90 706 021 096
ACN 079 834 058



MACRO 3

A handwritten signature in blue ink, appearing to read 'Jeff Cook'.

Jeff Cook
Materials Testing Manager



This document is issued in accordance with NATA's accreditation requirements. Accredited for compliance with ISO/IEC 17025.

NATA Accredited Laboratory 12425.



Jiangsu Valin-Xigang Special Steel Co., Ltd.

TEST CERTIFICATE

QRD/HLXG-132-9

located at: No.1, Kaogao Road, Xingang Industrial Park, Jiangzhen
County-level City Economic Development Zone, Taizhou
Jiangsu Province, PRC TEL:86-523-80709166 FAX:86-523-80705113

ORIGINAL

ACC.TO EN 10204 3.1B

CUSTOMER :		HUPSTEEL LIMITED						DATE: 2011-10-18														
Product		SEAMLESS CARBON STEEL PIPE						Spec. No.	API 5L-2007 ASTM A53-2007/A106-2010 ASME SA53-2010/SA106-2010		Contract NO.:	E1108T02	Sheet No.	2010100387-14								
Steel Grade		B PSL-1						Making Method	Hot Rolled	Delivery State	Hot Rolled (≥850 °C)	ORIGIN	MADE IN CHINA	Hardness Test Norms	NACE MR 0175-2009							
NO.	Size	LENGTH (m)	Heat No.	Lot No.	PCS	WT (t)	BOL	Tensile Test				Impact Test f (L)		Hardness Test		ILP.T (PSI)	Duration of Time (S)					
								Sample Type/Orientation/Dimension/QL (mm)	T.S PSI (Rm)	Y.S PSI (0.01)	E.L % (A)	P.R.2% (Z)	Impact Sample Dimension	Akv Impact Value (J) °C	Hardness Value (HRB)							
1	4"×SCH80	6	Z21103058	2111091901	133	17.789	14	S/L25.4/50	89600	49300	42.5			70.6	2760	≥5						
2	4"×SCH80	6	Z21103058	2111091902	122	16.299	13	S/L25.4/50	70325	50025	41.5			69.4	2760	≥5						
3	4"×SCH80	6	Z21103056	2411091812	54	7.214	8	S/L25.4/50	67425	49300	40.0			68	2760	≥5						
4	4"×SCH80	8	Z21103057	2111091903	180	24.048	18	S/L25.4/50	75400	59100	43.5			71.6	2760	≥5						
5																						
NO.	Metallographic Analysis														Flatten	Flaring	Flange	Bond				
	Micro structure B	Grain Size (Grade)	Decarburized depth mm		Intergranular corrosion	Non-metallic Inclusion (Grade)																
			Outside	Inside		AT	AH	BT	BH	CT	CH	DT	DI	Ds								
1																		conformity				
2																			conformity			
3																			conformity			
4																			conformity			
5																			conformity			
序号 NO.	成分类型 Composition Type	化学成分 % Chemical Composition %																				
		C	Si	Mn	P	S	Cr	Ni	Cu	Al	Mo	V	Ti	B	Nb	N	As	Sb	Pb	Bi		
1	H	0.180	0.220	0.450	0.015	0.017	0.080	0.030	0.060	0.006	0.005	0.002	0.001		0.002							
	P	0.185	0.235	0.454	0.014	0.012	0.069	0.030	0.061	0.003	0.007	0.001	0.001		0.001							
2	H	0.180	0.220	0.450	0.015	0.017	0.080	0.030	0.060	0.006	0.005	0.002	0.001		0.002							
	P	0.190	0.249	0.444	0.017	0.009	0.094	0.092	0.083	0.005	0.025	0.001	0.001		0.001							
3	H	0.180	0.220	0.450	0.015	0.017	0.080	0.030	0.060	0.006	0.005	0.002	0.001		0.002							
	P	0.189	0.247	0.451	0.016	0.011	0.059	0.025	0.050	0.003	0.006	0.001	0.001		0.001							
4	H	0.190	0.220	0.450	0.019	0.012	0.080	0.030	0.060	0.006	0.005	0.002	0.001		0.002							
	P	0.191	0.538	0.712	0.011	0.008	0.095	0.036	0.066	0.006	0.015	0.001	0.004		0.001							
5	H																					
	P																					
Total Bundles	Total Pieces	TOTAL LENGTH(m)	Total Weight (t)	Order Quantity	Thread Test	Drift Test	Coating	U.T	E.T	E.M.I	Collapse Resistance (MPa)		Nonmetallic Inclusion (Grade)									
			65.330				conformity						PSL(PSL1, PSL2, PSL3)									
Surface & Dimension		Pipe End (PE, BE)		SSCC	HIC	resistance to CO2	Grain Size	Thread Type (STC, LC, BT, NU, EU)		PSL(PSL1, PSL2, PSL3)												
conformity		BE								PSL1												
Notes	1-Sample Orientation: T=trans, L=length direction, 2-Tensile Sample Type: S=Strip, F=Full-section, B=Bar-shaped, 3-Yield Strength Selection: C1=Rt0.5, C2=Rt0.6, C3=Rt0.65, C4=Rt0.7, 4-Impact Sample Dimension: D1=10X10X55mm, D2=10X7.5X55mm, D3=10X6.7X55mm, D4=10X5X55mm, 5-Composition Type: H-Rolling Composition, P-Product Composition, GL- Gauge Length.																					
Remarks	1, WE HERE CERTIFY THAT THE PRODUCTS HEREIN DESCRIBED HAS BEEN MANUFACTURE, SAMPLED TESTED AND INSPECTED IN ACCORDANCE WITH THE REQUIREMENT AND PURCHASE ORDER, AND MEET THE REQUIREMENT. TO BE RELEASED. 2, ALL PIPES BE MADE FREE OF RADIATION CONTAMINATION. 3, The Mtes Are Issued In Duplicate, Original For Customer Use Only, Duplicate On File Only.																					

PREPARED
CERTIFIED
TRUE COPY



Quality Manager Signature:

INSPECTION CERTIFICATE

COVERED ELECTRODE

CERTIFICATE NO: 202466

DATE OF ISSUE: 15-Oct-15

PURCHASER:

TRADE DESIGNATION	DIMENSION (mm)	MFG.NO.	APPLICABLE SPECIFICATION AND CLASSIFICATION
LB-52U	2.6	182	AWS A5.1 E7016

CHEMICAL COMPOSITION

ACCORDING TO EN10204 TYPE 3.1

ELEMENTS	C	Si	Mn	P	S	Ni	Cr	Mo	V
WELD METAL	0.06	0.42	0.94	0.015	0.006	0.01	0.04	0.00	0.01

TENSILE TEST OF WELD METAL ACCORDING TO EN10204 TYPE 3.1				IMPACT TEST OF WELD METAL ACCORDING TO EN10204 TYPE 3.1			HARDNESS TEST	
YIELD STRENGTH AT 0.2% OFFSET	TENSILE STRENGTH	ELONGATION		TEST TEMP.	ABSORBED ENERGY		VICKERS HARDNESS (AVG)	
					AVG	J		
454 N/mm ²	563 N/mm ²	31	%	-40 deg(C)	52	J	-	

WELDING CONDITION			POST WELD HEAT TREATMENT	REMARKS
TYPE OF CURRENT			- deg.C X - h	
AMPERAGE	80	(A)		
ARC VOLTAGE	20	(V)		

KOBELCO WELDING ASIA PACIFIC PTE. LTD.

WE HEREBY CERTIFY THAT THE TEST RESULTS OF THE ABOVE WELDING MATERIAL ARE AS DESCRIBED HEREIN AND SATISFY THE REQUIREMENTS OF THE APPLICABLE SPECIFICATION.

QC MANAGER

Masehiro Kanda

Inspection Certificate 3.1



Product	CONARC 49C	Customer ref.	8565736
Size(s) mm	2,5 X 350	Our reference:	SDQA3780
Item No.	511420	Quantity	480,0 PK
Lot/batch	O2MS164669	Customer	The Lincoln Electric Company (Australia) Pty Ltd. 35 Bryant Street PADSTOW NSW 2211 AUSTRALIA
Product Line	Electrodes		
Classification	AWS A5.1 : E7018-1 H4R ISO 2560-A : E 46 4 B 32 H5		

Chemical analysis (%)											According to EN10204:2004	3.1
C	Si	Mn	P	S	Cr	Ni	Mo	Nb	Cu	V		
0,07	0,39	1,15	0,011	0,007	0,05	0,06	0,0	0,00	0,0	0,01		

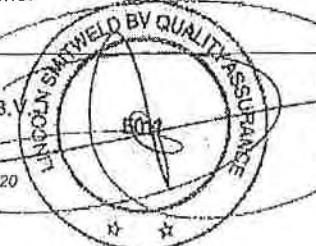
Mechanical tests, all weld metal								According to EN10204:2004	3.1
Tensile testing					Impact testing				
Cond.	Temp. °C	Rp0.2 N/mm2	Rm N/mm2	A4 %	Cond.	Temp.1 °C	Av1 J		
AW	RT	487	580	28	AW	-45	89		

Additional information		According to EN10204:2004	3.1
Other tests			
Diffusible Hydrogen		HDM	
1		ml/100g	

Remarks
HDM (Individual values) in ml/100g : 0,9 - 0,8 - 1,7.
Determination of Diffusible Hydrogen acc. ISO 3690:2012.
All tests performed at Lincoln Smitweld B.V.
Moisture 1000°C = 0,05%.
Impact testing (individual values) : 74J - 59J - 133J.
Material packed in Sahara Ready Pack

The product identified above has been manufactured, tested and supplied in compliance with a certified ISO 9001 Quality Assurance Programme.

Company	Printed by	Function	Date	Cert. No.
Lincoln Smitweld B.V.	T. Adriaans	Product Administrator	04/04/2016	98744947
Registered office: P.O. Box 283, 6500 XG Nieuwe Dukenburgsaweg 20 6534 AD NIJMEGEN NETHERLANDS	Telephone: +31 24 3522911	Fax: +31 24 3522200		



Inspection Certificate 3.1



Product	CONARC 49C	Customer ref.	8614114
Size(s) mm	3,2 X 350	Our reference:	SDQA3854
Item No.	511437	Quantity	1.536,0 PK
Lot/batch	O2MS165054	Customer	The Lincoln Electric Company (Australia) Pty Ltd. 35 Bryant Street PADSTOW NSW 2211 AUSTRALIA
Product Line	Electrodes		
Classification	AWS A5.1 : E7018-1 H4R ISO 2560-A : E 46 4 B 32 H5		

Chemical analysis (%)										According to EN10204:2004 3.1	
C	Si	Mn	P	S	Cr	Ni	Mo	Nb	Cu	V	
0,07	0,39	1,35	0,015	0,006	0,05	0,06	0,0	0,00	0,0	0,01	

Mechanical tests, all weld metal					Impact testing			According to EN10204:2004 3.1	
Tensile testing					Cond.			Temp.1	
Cond.	Temp. °C	Rp0.2 N/mm2	Rm N/mm2	A4 %	Cond.	Temp.1 °C	Av1 J		
AW	RT	497	579	29	AW	-45	138		

Additional information		According to EN10204:2004 3.1	
Other tests			
Diffusible Hydrogen		HDM	
2		ml/100g	

Remarks
HDM (individual values) in ml/100g : 1,6 - 1,3 - 1,9.
Determination of Diffusible Hydrogen acc. ISO 3690:2012.
All tests performed at Lincoln Smitweld B.V.
Moisture 1000°C = 0,05%.
Impact testing (individual values) : 134J - 153J - 127J.
Material packed in Sahara Ready Pack

The product identified above has been manufactured, tested and supplied in compliance with a certified ISO 9001 Quality Assurance Programme.

Company Lincoln Smitweld B.V. Registered office: P.O. Box 253, 6500 AG Nieuwe Dukomburgseweg 20 6534 AD NIJMEGEN NETHERLANDS		Printed by T. Adriaans Telephone: +31 24 3522911	Function Product Administrator Date 25/05/2016 Fax: +31 24 3522200	Cert. No. 98752085
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certificate V10.2

ORION PIPELINE SERVICES

6 Sepia Close, Henderson WA 6166
Tel: (+61)8 9437 6277 Fax: (+61)8 9437 6377

CERTIFICATE OF CALIBRATION

The measurements reported in this certificate were carried out using equipment whose measured values are traceable to National Standards.

All procedures employed and results reported are in conformance to the requirements of ISO10012:2003.


The performance of the instrument was determined by comparison with the manufacturers specification as found in the instrument handbook or other technical publications.

INSTRUMENT:	Arc Logger	SERIAL NO: 0171
MANUFACTURER:	The Validation Centre (TVC) Limited	
MODEL:	ALXIIRS	
DATE OF ISSUE:	23 rd June 2016	
CALIBRATION DUE:	23 rd June 2017	
CERTIFICATION NO:	0375.16	JOB NO: 360
CLIENT:	Weldnet Unit 3/52 Weld Street Nedlands WA, 6009	

CALIBRATED BY: Z.RAIC

SIGNED: 

APPROVED SIGNATORY:



Orion Pipeline Services

6 Sepia Close Henderson WA 6166
Tel: (+61)8 9437 6277 Fax: (+61)8 9437 6377

ALXIIRS CALIBRATION REPORT

Report N°: 0375.16

Work Instruction: WI 058

Calibration Conditions

Ambient Temperature: 22°C ± 1°C
Relative Humidity: 51% ± 10%

Instruments Used:

All instruments calibrated by:

1. ASG Exical
2. Orion Pipeline Services

<u>Description</u>	<u>Serial N°</u>	<u>Certificate N°</u>
Thurlby 1705 DMM	344051	M5830-3
Thurlby 1906 DMM	344053	M5830-2
Thurlby 1906 DMM	344052	M5830-1
Fluke 714	1392053	M4611-1
Gas Flow Calibrator	GFC29111	5538-2
Wirefeed/Traverse Calibrator	TC028011	5538-3
Temp/Humidity Indicator	090603240	M5830-4
250 Turn Coil M614	TVC IC28311	0366.16

Client Name: The Weldnet
Address: Unit 3/52 Weld Street
Nedlands

Country: Western Australia

Post Code: 6009

Orion Pipeline Services

6 Sepia Close Henderson WA 6166
Tel: (+61)8 9437 6277 Fax: (+61)8 9437 6377

ALXIIRS CALIBRATION REPORT

Voltage Channel

Before Offset	-1.791992	After Offset	-1.791992
Before Gain	1.312886	After Gain	1.312886

Voltage Readings

Input (V)	Before Cal	After Cal
100	100.5	100.5
75	75.0	75.0
50	50.1	50.1
25	25.1	25.1
5	5.0	5.0

Printout

Input (V)	Before Cal	After Cal
100	100.5	100.5
75	75.0	75.0
50	50.1	50.1
25	25.0	25.0
5	5.0	5.0

Energy Channel

Display Input	Before Cal	After Cal
60V, 150A, for 50 Sec	456	455
20V, 150A, for 50 Sec	152	151
40V, 150A, for 50 Sec	307	304
80V, 150A, for 50 Sec	607	605
25V, 50A, for 50 Sec	64	64

Wire Speed Channel (Tacho Meter)

Before Offset	0	After Offset	0
Before Gain	0.00122	After Gain	0.00122

Meter Reading

Input (m/min)	Before Cal	After Cal
20.0	20.8	20.8
15.0	15.7	15.7
10.0	10.5	10.5
5.0	5.2	5.2
2.5	2.5	2.5

Printout

Input m/min)	Before Cal	After Cal
20.0	20.8	20.8
15.0	15.7	15.7
10.0	10.5	10.5
5.0	5.2	5.2
2.5	2.5	2.5

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ALXIIRS CALIBRATION REPORT

Gas Flow Channel (TVC)

Before Offset	0	After Offset	0
Before Gain	0.005	After Gain	0.005

Meter Reading

Input (Lt/min)	Before Cal	After Cal
5	5	5
25	25	25
30	30	30
40	40	40
60	60	60

Printout

Input (Lt/min)	Before Cal	After Cal
5	5	5
25	25	25
30	30	30
40	40	40
60	60	60

Gas Consumed

25 litres/min for 60 secs

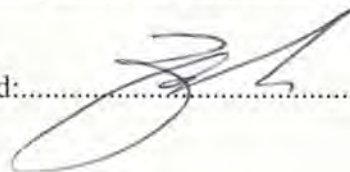
Before calibration
25 L

After calibration
25 L

Calibration Status

Unit has passed the calibration specifications as published by the manufacturer.

Signed:.....



Dated: 23/06/2016