











OWNER 	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT							EPC CONTRACTOR:  Chagalash-Enerchimi-Steam Joint Venture BUPC-MEG PLANT PROJECT	
	PQR / WPS for reciprocating compressor								
MC :   شرکت سیمت و سبوی توسعه ایرانیان	Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
Owner Document Number: 17811-25	BU	20	VD	303	QC	WPS	0011	Rev.:	Page
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PQR / WPS for reciprocating compressor

	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT
Document Review	
Issue Purpose:	IFA
Result Code: AP,AN,CM,RE,NC	AP
Next Status : IFC,IFA,IFI,AFC,AB	AFC
Responsible Department	INSPECTION
Commented Date	7/3/2021
Approval or review hereunder shall not be construed to relieve Vendor / Subcontractor of his responsibilities and liability under the contract.	

00	16/11/2020	Issue For Approve	KP	JR	PW		
Rev.	Date	Purpose of Issue	Prepared	Checked	Approved	AC Code	
						Class: 1	Phase: p

OWNER  شرکت پتروشیمی بوشهر	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT						EPC CONTRACTOR: 		
	PQR / WPS for reciprocating compressor								
MC :   شرکت سمنت و سولفور توسعه ایرانیان	Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
Owner Document Number: 17811-25	BU	20	VD	303	QC	WPS	0011	Rev.:	Page
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PQR record number Date	RET 0245029-001-22 13-6-2012	Revision 1	WPS record number Company name Welding standard	S2000 Airpack Netherlands BV AWS D1.1/D1.1M:2010	Revision 0
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BASE METALS

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
Welded to:	Plate	API 2W (50)	U	II	-	-	4	-
	Plate	API 2W (50)	U	II	-	-	4	-
and tested:	Without PWHT, With impacts							
Notes								

JOINTS

Joint design	Single-V-groove	See addition information	See addition information
Backing:	None		
Retainers	None		
Groove angle (deg)	60		
Root opening (mm)	3		
Root face (mm)	0-1		

WELDING PROCESSES

Welding process Type	GMAW Semi-automatic
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FILLER METALS

SFA specification	5.18
AWS classification	E70C-6MH4
Filler metal F-number	6
Weld metal A-number	-
Filler metal nominal composition	N.A.
Filler metal trade name	Lincoln, Outershield MC715-H
Filler metal size (mm)	1,2
Deposited thickness (mm)	4
Maximum pass thickness (mm)	5
Weld deposit chemistry	-
Supplemental filler metal	-
Supplemental filler metal vol. (mm ³)	-

POSITION

Position	3G
Weld progression	Uphill

PREHEAT

Preheat temperature (°C)	10
Maximum interpass temperature (°C)	124

GAS

Shielding gas: Type	AC-20 (A5.32 SG-)
Flow rate (l/min)	15
Trailing gas: Type	None
Flow rate (l/min)	-
Backing gas: Type	None
Flow rate (l/min)	-

ELECTRICAL

Filler metal size (mm)	1,2
Amperes	69 - 83
Volts	14,1 - 15,1
Travel speed (mm/min)	75 - 83
Maximum heat input (kJ/mm)	0,90
Current/polarity	DCEP (reverse polarity)
Wire feed speed (m/min)	0
Arc transfer mode	Short-circuiting

TECHNIQUE

String or weave	Stringer and Weave
Orifice/gas cup size	15
C.T.W.D (mm)	15
Multi/single electrode	Single electrode
Multi/Single pass per side	Multiple passes
Peening	Not used
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None



Airpack Netherlands BV

Groenewegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR) - Test results (as welded)

WeldOffice WPS



PQR record number Date	RET 0245029-001-22 13-6-2012	Revision 1	WPS record number Company name Welding standard	S2000 Airpack Netherlands BV AWS D1.1/D1.1M:2010	Revision 0
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TENSILE TESTS

Specimen number	Width (mm)	Thickness (mm)	Area (mm ²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location
1	20.05	3.69	73,985	-	538 N/mm ²	Ductile-Base Metal
2	20.05	3.58	60,15	-	561 N/mm ²	Ductile-Base Metal

Comments

GUIDED BEND TESTS

Type of test	Acceptance criteria	Result	Comments
Face bend	AWS D1.1	Acceptable	
Face bend	AWS D1.1	Acceptable	
Root bend	AWS D1.1	Acceptable	
Root bend	AWS D1.1	Acceptable	

Comments

TOUGHNESS TESTS

Specimen number	Notch location	Notch type	Specimen size (mm) x (mm)	Test temperature (°C)	Impact values			Drop weight break
					(J)	(% Shear)	(mm)	
1	Weld Metal	Charpy V	10 x 3	-40	31	-	-	-
2	Weld Metal	Charpy V	10 x 3	-40	31	-	-	-
3	Weld Metal	Charpy V	10 x 3	-40	32	-	-	-
4	HAZ + 1 mm	Charpy V	10 x 3	-40	53	-	-	-
5	HAZ + 1 mm	Charpy V	10 x 3	-40	52	-	-	-
6	HAZ + 1 mm	Charpy V	10 x 3	-40	50	-	-	-
7	HAZ + 5 mm	Charpy V	10 x 3	-40	50	-	-	-
8	HAZ + 5 mm	Charpy V	10 x 3	-40	50	-	-	-
9	HAZ + 5 mm	Charpy V	10 x 3	-40	49	-	-	-

Comments

OTHER TESTS

Type of test	Acceptance criteria	Result	Comments
RT examination	AWS D1.1/D1.1M:2010	Acceptable	RT report 1213-2012-31-003

Comments

CERTIFICATION

Welder's name	ID Number	Stamp number	Mechanical testing by	Schielab Breda (NLD)
T. Lajos	ID Card 353992JA	W-104	Laboratory test number	SL 12.6052-1
			Test file number	ARL1559-10
			Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of section 4 of ANSI/AWS D1.1-2010 Structural Welding Code-Steel.

Signature 1

Name
Franky van Toledo
Date
8-6-2012

Signature

Airpack
Netherlands bv

Signature 2

Name
W. Komdeur (Lloyds)
Date
8-6-2012

Signature

Lloyd's Register Nederland B.V.
Wim Komdeur
Lloyd's Register

Airpack Netherlands BV

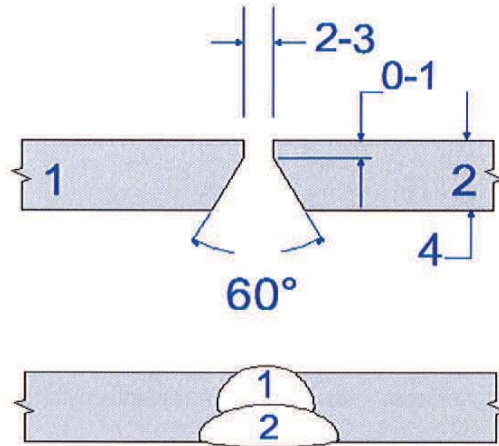
Groenewegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Additional information (PQR)

WeldOffice WPS



PQR record number	RET 0245029-001-22	Revision 1	WPS record number	S2000	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	



PQRD number	ARL1559-10	Revision 2	Date	29-5-2012
PQR number	RET 0245029-001-22	Revision 1	Welding standard	AWS D1.1/D1.1M:2010
WPS number	S2000	Revision 0	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

BASE METALS

		Welded to:		
Product form	Plate	Product form	Plate	
Material control number	293821/3	Material control number	293821/3	
Specification (type or grade)	API 2W (50)	Specification (type or grade)	API 2W (50)	
Nominal composition	C-Mn	Nominal composition	C-Mn	
Trade name	Voestalpine Grobblech	Trade name	Voestalpine Grobblech	
P number	U	P number	U	
G number		G number		
AWS group number	II	AWS group number	II	
Nominal pipe/tube size	-	Nominal pipe/tube size	-	
Schedule	-	Schedule	-	
Length	(mm) 600	Length	(mm) 600	
Width (OD)	(mm) 200	Width (OD)	(mm) 200	
Thickness	(mm) 4	Thickness	(mm) 4	

JOINTS

Joint design	Single-V-groove	See addition information	See addition information
Backing:	None		
Retainers	None		
Groove angle (deg.)	60		
Root opening (mm)	3		
Root face (mm)	0-1		

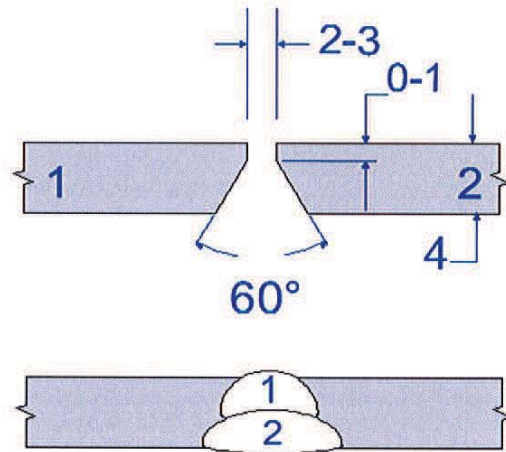
CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None



PQRD number	ARL1559-10	Revision 2	Date	29-5-2012
PASS INFORMATION				
Pass number		1		2
Layer number		1		2
WELDING PROCESSES				
Welding process		GMAW		GMAW
Type		Semi-automatic		Semi-automatic
FILLER METALS				
Material control number		P1FC110214		
SFA specification		5.18		5.18
AWS classification		E70C-6MH4		E70C-6MH4
Filler metal F-number		6		6
Weld metal A-number		-		-
Filler metal nominal composition		N.A.		N.A.
Filler metal trade name		Lincoln, Outershield MC715-H		Lincoln, Outershield MC715-H
Filler metal size (mm)		1,2		1,2
Length of filler metal consumed (mm)		-		-
Deposited thickness (mm)		2		2
Maximum pass thickness (mm)		3		3
Weld deposit chemistry		-		-
Supplemental filler metal		-		-
Supplemental filler metal vol. (mm ³)		-		-
POSITION				
Position		3G		3G
Weld progression		Uphill		Uphill
PREHEAT				
Preheat temperature (°C)		10		10
Maximum interpass temperature (°C)		10		124
GAS				
Shielding gas: Type		AC-20 (A5.32 SG-)		AC-20 (A5.32 SG-)
Flow rate (l/min)		15		15
Trailing gas: Type		None		None
Flow rate (l/min)		-		-
Backing gas: Type		None		None
Flow rate (l/min)		-		-
ELECTRICAL				
Filler metal size (mm)		1,2		1,2
Amperes		69		83
Volts		14,4		15,1
Travel speed (mm/min)		75		83
Maximum heat input (kJ/mm)		0,7949		0,906
Current/polarity		DCEP (reverse polarity)		DCEP (reverse polarity)
Wire feed speed (m/min)		-		-
Arc transfer mode		Short-circuiting		Short-circuiting
TECHNIQUE				
String or weave		Stringer and Weave		Stringer and Weave
Orifice/gas cup size		15		15
C.T.WD (mm)		15		15
Multi/single electrode		Single electrode		Single electrode
Multi/Single pass per side		Multiple passes		Multiple passes
Peening		Not used		Not used
Initial/interpass cleaning		Brushing and Grinding		Brushing and Grinding
Back gouging method		None		None
PASS PERFORMED/WITNESSED BY				
Welders name		T. Lajos		T. Lajos
Recorded/witnessed by		A.J.H. Roza (IWT/IWI)		A.J.H. Roza (IWT/IWI)
Date		29-5-2012		29-5-2012
Data entry by		A.J.H. Roza (IWT/IWI)		A.J.H. Roza (IWT/IWI)

PQRD number	ARL1559-10	Revision 2	Date	29-5-2012
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WELDING PROCEDURE QUALIFICATION RECORD AND WELDERS PERFORMANCE QUALIFICATION TEST RECORD

Testing in accordance with : AWS D1.1:2010
Purchaser : Arjan Roza Lastechniek BV
Purchase order no. : ARL1559-10
Manufacturer : Airpact Nederland BV.
WPS : S2000
Description of sample(s) : Plate with Single-V-groove
Dimension(s) : 600x400x4 mm
Group number : II -II
Material grade : API 2W grade 50 - API 2W grade 50
Welding process(es) : GMAW (metal cored)
Filler : SFA 5.18 : E70C-6MH4, F-number 6
Brand and type : Lincoln Electric Outershield MC715-H
Shielding gas : AC-20 (A5.32 SG-)
Backing gas : N.A.
Welding position : 3G progression up
Preheat / Interpass temp. : 10 °C / 124 °C
Joint type : Single-V-groove
Welder : T. Lajos
Date / place of birth : 11-02-1985 / Hungary
Stamp. No. / ID : W-104 / ID Card 353992JA
Testpiece marked with : ARL1559-10

NON DESTRUCTIVE EXAMINATION

* Visual examination : performed by examiner

CROSS WELD TENSILE TESTS

Dimensions(s) [mm]	Rm [N/mm ²]	Fracture location
20.05 x 3.69	538	Base material
20.05 x 3.58	561	Base material
Requirements;	≥ 448	

TECHNOLOGICAL TESTS

Type	Former / Bending angle	Results
Face bend	4t / 180°	2 x acceptable
root bend	4t / 180°	2 x acceptable



Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning.
Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.



IMPACT TESTS - Type: Charpy KV

Notch location	Size [mm]	Test temp. [°C]	Results [J]	Average value [J]
Midweld	10 x 3.0	-40	31-31-32	31
Fusion line +1mm	10 x 3.0	-40	53-52-50	52
Fusion line +5mm	10 x 3.0	-40	50-50-49	50
Requirements for size 10x10mm;			≥ 19	≥ 27
Requirements for size 10x3mm;			≥ 5.7	≥ 8

Conclusion: The results satisfy the requirements.

All characteristics of the above object(s) have, as far as accessible and relevant, been verified by Schielab b.v. Other information was provided by the purchaser. This information was verified as far as possible and has been copied into this report, unchanged. We hereby certify that the reported test data is correct and that the above object(s) was (were) tested/examined in accordance with purchasers requirements and/or the above procedure(s) and/or code(s)/specification(s). On occasion a destructive test is subcontracted by Schielab b.v. (marked 'U' on the report). Opinions, interpretations and advice expressed in this report are outside the scope of any possible RvA accreditation, but are presented in a true and fair manner based on the best knowledge of the Schielab personnel involved. If, upon reproduction, only part of this report is copied, Schielab will not bear any responsibility for content, purport and conclusions of that reproduction. This report has legal value only when printed on Schielab paper and furnished with an authorised signature. Digital versions of this report have no legal value. Unless explicitly agreed upon otherwise in writing our "General conditions for activities performed by Schielab b.v." deposited at the Chamber of Commerce in Rotterdam, under number 24170257, apply.

Breda, 07-06-2012

Witnessed and approved by; Mr.
Representing: Lloyd's Register Nederland B.V.
[RET 0245029]



A. Karstanje



07 JUNI 2012



Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning.
Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.

Schielab-Breda Voorerf 18-20, 4824 GN Breda, Tel. 076 - 5424 300, Fax 076 - 5424 848
Schielab b.v. Handelsregister/Register of Commerce Rotterdam nr. 24170257



WPS record number	S2000	Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	1-6-2016		Company name	Airpack Netherlands BV
Supporting PQR(s) Reference docs.	RET 0245029-001-22 - Rev 1			

Scope	General instruction welding structural for skids Groove, no PWHT (As-welded), impact testing
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS

Type	Plate	P-no. N/A	Grp-no. II
Welded to	Plate	P-no. N/A	Grp-no. II
Backing:	None	P-no.	Grp-no.
Retainers	None		
Notes			

THICKNESS RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	3,	8,	-	-
Impact tested	3,	8,	-	-
Partial pen.	3,	8,	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Nominal pipe size	610,	no max.	-	-

FILLER METALS

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded		With PWHT	
						Min.	Max.	Min.	Max.
GMAW	5.18	E70C-6MH4	6	-	Lincoln, Outershield MC715-H	3,	8,	-	-
Sup. filler	-	-	-	-	-	- None -			
Suppl. filler metal vol. (mm ³)	-								

WELDING PROCEDURE

Welding process	GMAW
Type	Semi-automatic
Minimum preheat/interpass temperature (°C)	10
Maximum interpass temperature (°C)	180
Filler metal size (mm)	1,2
Layer number	V
Position	3G
Weld progression	Uphill & Downhill
Current/polarity	DCEP (reverse polarity)
Amperes	60 - 100
Volts	13,1 - 16,1
Travel speed (mm/min)	60 - 100
Maximum heat input (kJ/mm)	0,90
Wire feed speed (m/min)	0,
Arc transfer mode	Spray-transfer
Shielding: Gas type	AC-20 (A5.32 SG-)
Flow rate (l/min)	14-16
Trailing: Gas type	None
Flow rate (l/min)	-
Backing: Gas type	None
Flow rate (l/min)	-
String or weave	Stringer and Weave
Orifice/gas cup size	15
C.T.W.D (mm)	15
Multi/Single pass per side	Multiple passes
Multi/single electrode	Single electrode
Maximum pass thickness (mm)	5
Weld deposit chemistry	-
Notes	



WPS record number	S2000	Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	1-6-2016		Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
AWS D1.1 (Category A)	For thickness 3 to 19(mm).Preheat base metal to 10(°C)


TECHNIQUE

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Signature 2

Name	Signature	Name	Signature
F. van Toledo			
Date		Date	
Wednesday, 17 October 2018			

Airpack Netherlands BV

Groenewegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR)

WeldOffice WPS



PQR record number	RET 0245029-001-23	Revision 1	WPS record number	S2100	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

BASE METALS

	Product form	Specification (type or grade)	P no.	Grp.no.	Size	Sch.	Thick. (mm)	Dia. (mm)
Welded to:	Plate	API 2W (50)	U	II	-	-	8	-
	Plate	API 2W (50)	U	II	-	-	8	-
and tested:	Without PWHT, With impacts							
Notes								

JOINTS

Joint design	Single-V-groove	See addition information	See addition information
Backing:	None		
Retainers	None		
Groove angle (deg.)	60		
Root opening (mm)	3		
Root face (mm)	0-1		

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

FILLER METALS

SFA specification	5.18
AWS classification	E70C-6MH4
Filler metal F-number	6
Weld metal A-number	-
Filler metal nominal composition	N.A.
Filler metal trade name	Lincoln, Outershield MC715-H
Filler metal size (mm)	1,2
Deposited thickness (mm)	8
Maximum pass thickness (mm)	5
Weld deposit chemistry	-
Supplemental filler metal	-
Supplemental filler metal vol. (mm ³)	-

POSITION

Position	3G
Weld progression	Uphill

PREHEAT

Preheat temperature (°C)	10
Maximum interpass temperature (°C)	137

GAS

Shielding gas:	Type	AC-20 (A5.32 SG-)
	Flow rate (l/min)	15
Trailing gas:	Type	None
	Flow rate (l/min)	-
Backing gas:	Type	None
	Flow rate (l/min)	-

ELECTRICAL

Filler metal size (mm)	1,2
Amperes	86 - 98
Volts	15,8 - 16
Travel speed (mm/min)	61 - 88
Maximum heat input (kJ/mm)	1,52
Current/polarity	DCEP (reverse polarity)
Wire feed speed (m/min)	0
Arc transfer mode	Short-circuiting

TECHNIQUE

String or weave	Stringer and Weave
Orifice/gas cup size	15
C.T.W.D (mm)	15
Multi/single electrode	Single electrode
Multi/Single pass per side	Multiple passes
Peening	Not used
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR) - Test results (as welded)

WeldOffice WPS



PQR record number Date	RET 0245029-001-23 13-6-2012	Revision 1	WPS record number Company name Welding standard	S2100 Airpack Netherlands BV AWS D1.1/D1.1M:2010	Revision 0
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TENSILE TESTS

Specimen number	Width (mm)	Thickness (mm)	Area (mm ²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location
1	20.02	7.59	151,952	-	543 N/mm ²	Ductile-Base Metal
2	20.06	7.52	150,851	-	540 N/mm ²	Ductile-Base Metal

Reduced section

Comments

GUIDED BEND TESTS

Type of test	Acceptance criteria	Result	Comments
Face bend	AWS D1.1	Acceptable	
Face bend	AWS D1.1	Acceptable	
Root bend	AWS D1.1	Acceptable	
Root bend	AWS D1.1	Acceptable	

Comments

TOUGHNESS TESTS

Specimen number	Notch location	Notch type	Specimen size (mm) x (mm)	Test temperature (°C)	Impact values			Drop weight break
					(J)	(% Shear)	(mm)	
1	Weld Metal	Charpy V	10 x 5	-40	44	-	-	-
2	Weld Metal	Charpy V	10 x 5	-40	46	-	-	-
3	Weld Metal	Charpy V	10 x 5	-40	47	-	-	-
4	HAZ + 1 mm	Charpy V	10 x 5	-40	130	-	-	-
5	HAZ + 1 mm	Charpy V	10 x 5	-40	113	-	-	-
6	HAZ + 1 mm	Charpy V	10 x 5	-40	116	-	-	-
7	HAZ + 5 mm	Charpy V	10 x 5	-40	124	-	-	-
8	HAZ + 5 mm	Charpy V	10 x 5	-40	85	-	-	-
9	HAZ + 5 mm	Charpy V	10 x 5	-40	95	-	-	-

Comments

OTHER TESTS

Type of test	Acceptance criteria	Result	Comments
RT examination	AWS D1.1/D1.1M:2010	Acceptable	RT report 1213-2012-31-003

Comments

CERTIFICATION

Welder's name	ID Number	Stamp number	Mechanical testing by	Schielab Breda (NLD)
T. Lajos	ID Card 353992JA	W-104	Laboratory test number	SLL 12.6053-1
			Test file number	ARL1559-11
			Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of section 4 of ANSI/AWS D1.1-2010 Structural Welding Code-Steel.

Signature 1

Name	Signature
Franky van Toledo	
Date	
8-6-2012	

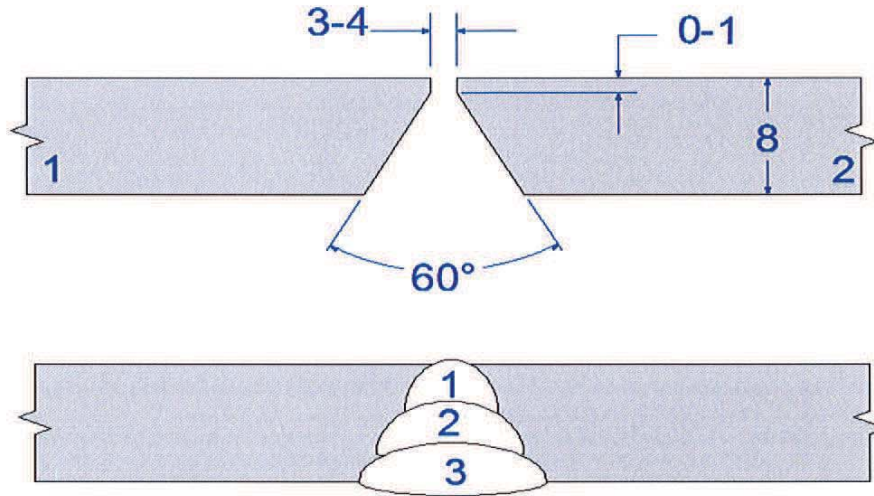


Signature 2

Name	Signature
W. Komdeur (Lloyds)	
Date	
8-6-2012	



PQR record number	RET 0245029-001-23	Revision 1	WPS record number	S2100	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	



PQRD number	ARL1559-11	Revision 2	Date	29-5-2012
PQR number	RET 0245029-001-23	Revision 1	Welding standard	AWS D1.1/D1.1M:2010
WPS number	S2100	Revision 0	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

BASE METALS

Product form	Plate	Welded to:	Product form	Plate
Material control number	293821/3		Material control number	293821/3
Specification (type or grade)	API 2W (50)		Specification (type or grade)	API 2W (50)
Nominal composition	C-Mn		Nominal composition	C-Mn
Trade name	Voestalpine Grobblech		Trade name	Voestalpine Grobblech
P number	U		P number	U
G number			G number	
AWS group number	II		AWS group number	II
Nominal pipe/tube size	-		Nominal pipe/tube size	-
Schedule	-		Schedule	-
Length	(mm) 600	Length	(mm) 600	
Width (OD)	(mm) 200	Width (OD)	(mm) 200	
Thickness	(mm) 8	Thickness	(mm) 8	

JOINTS

Joint design	Single-V-groove	See addition information	See addition information
Backing:	None		
Retainers	None		
Groove angle (deg)	60		
Root opening (mm)	3		
Root face (mm)	0-1		

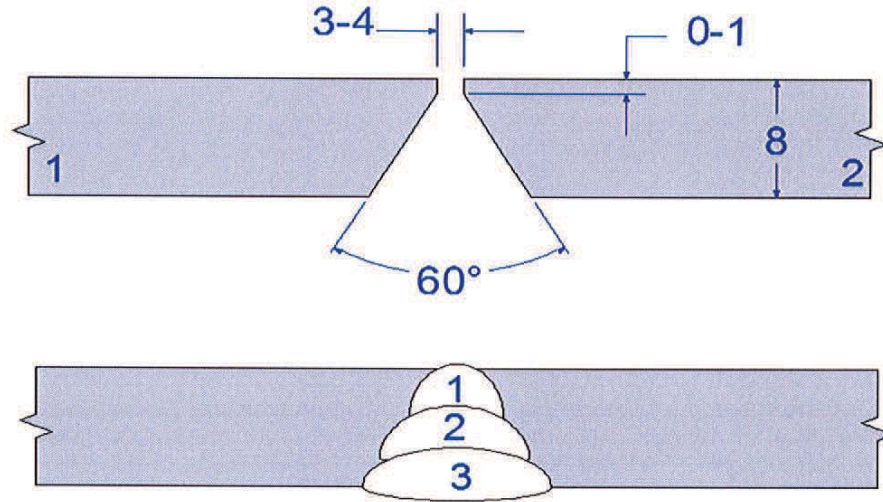
CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None



PQRD number	ARL1559-11	Revision 2	Date	29-5-2012
PASS INFORMATION				
Pass number	1	2	3	
Layer number	1	2	3	
WELDING PROCESSES				
Welding process	GMAW	GMAW	GMAW	
Type	Semi-automatic	Semi-automatic	Semi-automatic	
FILLER METALS				
Material control number	P1FC110214	P1FC110214	P1FC110214	
SFA specification	5.18	5.18	5.18	
AWS classification	E70C-6MH4	E70C-6MH4	E70C-6MH4	
Filler metal F-number	6	6	6	
Weld metal A-number	-	-	-	
Filler metal nominal composition	N.A.	N.A.	N.A.	
Filler metal trade name	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	
Filler metal size (mm)	1,2	1,2	1,2	
Length of filler metal consumed (mm)	-	-	-	
Deposited thickness (mm)	3	2	3	
Maximum pass thickness (mm)	4	4	4	
Weld deposit chemistry	-	-	-	
Supplemental filler metal	-	-	-	
Supplemental filler metal vol. (mm ³)	-	-	-	
POSITION				
Position	3G	3G	3G	
Weld progression	Uphill	Uphill	Uphill	
PREHEAT				
Preheat temperature (°C)	10	10	10	
Maximum interpass temperature (°C)	86	114	137	
GAS				
Shielding gas: Type	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	
Flow rate (l/min)	15	15	15	
Trailing gas: Type	None	None	None	
Flow rate (l/min)	-	-	-	
Backing gas: Type	None	None	None	
Flow rate (l/min)	-	-	-	
ELECTRICAL				
Filler metal size (mm)	1,2	1,2	1,2	
Amperas	89	86	98	
Volts	16	15,8	15,8	
Travel speed (mm/min)	83	88	61	
Maximum heat input (kJ/mm)	1,0294	0,9265	1,523	
Current/polarity	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)	
Wire feed speed (m/min)	-	-	-	
Arc transfer mode	Short-circuiting	Short-circuiting	Short-circuiting	
TECHNIQUE				
String or weave	Stringer and Weave	Stringer and Weave	Stringer and Weave	
Orifice/gas cup size	15	15	15	
C.T.W.D (mm)	15	15	15	
Multi/single electrode	Single electrode	Single electrode	Single electrode	
Multi/Single pass per side	Multiple passes	Multiple passes	Multiple passes	
Peening	Not used	Not used	Not used	
Initial/interpass cleaning	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding	
Back gouging method	None	None	None	
PASS PERFORMED/WITNESSED BY				
Welders name	T. Lajos	T. Lajos	T. Lajos	
Recorded/witnessed by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	
Date	29-5-2012	29-5-2012	29-5-2012	
Data entry by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	

PQRD number	ARL1559-11	Revision 2	Date	29-5-2012
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WELDING PROCEDURE QUALIFICATION RECORD AND WELDERS PERFORMANCE QUALIFICATION TEST RECORD

Testing in accordance with : AWS D1.1:2010
Purchaser : Arjan Roza Lastechiek BV
Purchase order no. : ARL1559-11
Manufacturer : Airpack Nederland BV.
WPS : S210
Description of sample(s) : Plate with Single-V-groove
Dimension(s) : 600x400x8 mm
Group number : II-II
Material grade : API 2W grade 50 - API 2W grade 50
Welding process(es) : GMAW (metal cored)
Filler : SFA 5.18 : E70C-6MH4, F-number 6
Brand and type : Lincoln Electric Outershield MC715-H
Shielding gas : AC-20 (A5.32 SG-)
Backing gas : N.A.
Welding position : 3G progression up
Preheat / Interpass temp. : 10 °C / 137 °C
Joint type : Single-V-groove
Welder : T. Lajos
Date / place of birth : 11-02-1985 / Hungary
Stamp. No. / ID : A3 / ID Card 353992JA
Testpiece marked with : ARL1559-11

NON DESTRUCTIVE EXAMINATION

* Visual examination : performed by examiner

CROSS WELD TENSILE TESTS

Dimensions(s) [mm]	Rm [N/mm ²]	Fracture location
20.02 x 7.59	543	Base material
20.06 x 7.52	540	Base material
Requirements;	≥ 448	

TECHNOLOGICAL TESTS

Type	Former / Bending angle	Results
Face bend	4t / 180°	2 x acceptable
root bend	4t / 180°	2 x acceptable



Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning.
Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.



SL 12.6053-1

Page 2 of 2

IMPACT TESTS - Type: Charpy KV

Notch location	Size [mm]	Test temp. [°C]	Results [J]	Average value [J]
Midweld	10 x 5.0	-40	44-46-47	46
Fusion line +1mm	10 x 5.0	-40	130-113-116	120
Fusion line +5mm	10 x 5.0	-40	124-85-95	101
Requirements for size 10x10mm;			≥ 19	≥ 27
Requirements for size 10x5mm;			≥ 9.5	≥ 13.5

Conclusion: The results satisfy the requirements.

All characteristics of the above object(s) have, as far as accessible and relevant, been verified by Schielab b.v. Other information was provided by the purchaser. This information was verified as far as possible and has been copied into this report, unchanged. We hereby certify that the reported test data is correct and that the above object(s) was (were) tested/examined in accordance with purchasers requirements and/or the above procedure(s) and/or code(s)/specification(s). On occasion a destructive test is subcontracted by Schielab b.v. (marked 'U' on the report). Opinions, interpretations and advice expressed in this report are outside the scope of any possible RvA accreditation, but are presented in a true and fair manner based on the best knowledge of the Schielab personnel involved. If, upon reproduction, only part of this report is copied, Schielab will not bear any responsibility for content, purport and conclusions of that reproduction. This report has legal value only when printed on Schielab paper and furnished with an authorised signature. Digital versions of this report have no legal value. Unless explicitly agreed upon otherwise in writing our "General conditions for activities performed by Schielab b.v.", deposited at the Chamber of Commerce in Rotterdam, under number 24170257, apply.

Breda, 07-06-2012

Witnessed and approved by; Mr.

Representing; Lloyd's Register Nederland B.V.

[RET 0245029]



A. Karstanje



Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning. Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.

Schielab-Breda Voorerf 18-20, 4824 GN Breda, Tel. 076 - 5424 300, Fax 076 - 5424 848
Schielab b.v. Handelsregister/Register of Commerce Rotterdam nr. 24170257



WPS record number	S2100	Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	1-6-2016		Company name	Airpack Netherlands BV
Supporting PQR(s)	RET 0245029-001-23 - Rev 1			
Reference docs.				

Scope	General instruction welding structural for skids Groove, no PWHT (As-welded), impact testing
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS

Type	Plate	P-no.	N/A	Grp-no.	II
Welded to	Plate	P-no.	N/A	Grp-no.	II
Backing:	None	P-no.		Grp-no.	
Retainers	None				
Notes					

THICKNESS RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	-	-	-	-
Impact tested	8,	16,	-	-
Partial pen.	-	-	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Nominal pipe size	610,	no max.	-	-

FILLER METALS

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	THICKNESS RANGE QUALIFIED (mm)			
						As-welded		With PWHT	
						Min.	Max.	Min.	Max.
GMAW	5.18	E70C-6MH4	6	-	Lincoln, Outershield MC715-H	8,	16,	-	-
Sup. filler	-	-	-	-	-	- None -			
Suppl. filler metal vol. (mm ³)	-								

WELDING PROCEDURE

Welding process	GMAW	
Type	Semi-automatic	
Minimum preheat/interpass temperature (°C)	10	
Maximum interpass temperature (°C)	193	
Filler metal size (mm)	1,2	
Layer number	V	
Position	3G	
Weld progression	Uphill & Downhill	
Current/polarity	DCEP (reverse polarity)	
Amperes	78 - 107	
Volts	14,7 - 17,1	
Travel speed (mm/min)	46 - 110	
Maximum heat input (kJ/mm)	1.52	
Wire feed speed (m/min)	0,	
Arc transfer mode	Short only for root pass any other pass Spray	
Shielding: Gas type	AC-20 (A5 32 SG-)	
Flow rate (l/min)	12-22	
Trailing: Gas type	None	
Flow rate (l/min)	-	
Backing: Gas type	None	
Flow rate (l/min)	-	
String or weave	Stringer and Weave	
Orifice/gas cup size	15	
C.T.WD (mm)	15	
Multi/Single pass per side	Multiple passes	
Multi/single electrode	Single electrode	
Maximum pass thickness (mm)	5	
Weld deposit chemistry	-	
Notes		





WPS record number	S2100	Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	Wednesday, 17 October 2018		Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
AWS D1.1 (Category A)	Preheat of 10(°C) shall be applied for all primary & secondary steel work

TECHNIQUE

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

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Signature 1

Name	Signature
F. van Toledo	
Date	
Wednesday, 17 October 2018	



Signature 2

Name	Signature
Date	

PQR record number	RET 0245029-001-25	Revision 1	WPS record number	S2300	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

BASE METALS

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
Welded to:	Plate	API 2W (50)	U	II	-	-	30	-
	Plate	API 2W (50)	U	II	-	-	30	-
and tested:	Without PWHT, Fillet-weld test							
Notes								

JOINTS

Joint design	Fillet weld		
		See addition information	See addition information

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

FILLER METALS

SFA specification	5.18
AWS classification	E70C-6MH4
Filler metal F-number	6
Weld metal A-number	-
Filler metal nominal composition	N.A.
Filler metal trade name	Lincoln, Outershield MC715-H
Filler metal size (mm)	1,2
Deposited thickness (mm)	8,00
Maximum pass thickness (mm)	5
Weld deposit chemistry	-
Supplemental filler metal	-
Supplemental filler metal vol. (mm ³)	-

POSITION

Position	2F
Weld progression	-

PREHEAT

Preheat temperature (°C)	10
Maximum interpass temperature (°C)	112

GAS

Shielding gas: Type	AC-20 (A5.32 SG-)
Flow rate (l/min)	15
Trailing gas: Type	None
Flow rate (l/min)	-
Backing gas: Type	None
Flow rate (l/min)	-

ELECTRICAL

Filler metal size (mm)	1,2
Amperes	237 - 245
Volts	26,4 - 26,6
Travel speed (mm/min)	315 - 391
Maximum heat input (kJ/mm)	1,2421
Current/polarity	DCEP (reverse polarity)
Wire feed speed (m/min)	0
Arc transfer mode	Spray

TECHNIQUE

String or weave	Stringer and Weave
Orifice/gas cup size	15
C.T.W.D (mm)	15
Multi/single electrode	Single electrode
Multi/Single pass per side	Single and Multiple passes
Peening	Not used
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None



Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR) - Test results (as welded)

WeldOffice WPS



PQR record number	RET 0245029-001-25	Revision 1	WPS record number	S2300	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

TENSILE TESTS

Reduced section

Specimen number	Width (mm)	Thickness (mm)	Area (mm ²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location

Comments

GUIDED BEND TESTS

Type of test	Acceptance criteria	Result	Comments

Comments

FILLET WELD TESTS

Type of test	Acceptance criteria	Result	Fillet leg size (mm) x (mm)
3x Macroscopic examination multiple pass	AWS D1.1	Acceptable	a=8 mm
3x Macroscopic examination single pass	AWS D1.1	Acceptable	a=6 mm

Comments

CERTIFICATION

Welder's name	ID Number	Stamp number	Mechanical testing by	Schielab Breda (NLD)
T. Lajos	ID Card 353992JA	W-104	Laboratory test number	SL 12.6055-1
			Test file number	ARL1559-13
			Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of section 4 of ANSI/AWS D1.1-2010 Structural Welding Code-Steel.

Signature 1

Name	Signature
Franky van Toledo	
Date	
8-6-2012	

Signature 2

Name	Signature
W. Komdeur (Lloyds)	
Date	
8-6-2012	

Airpack Netherlands BV

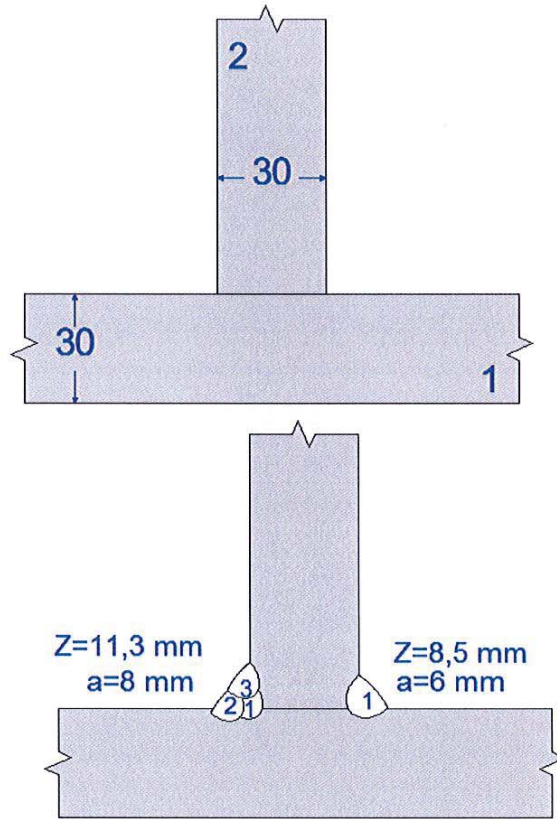
Groenewegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Additional information (PQR)

WeldOffice WPS



PQR record number	RET 0245029-001-25	Revision 1	WPS record number	S2300	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	



Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding conditions - (PQRD Welding Data Record)

WeldOffice WPS



PQRD number	ARL1559-13	Revision 1	Date	29-5-2012
PQR number	RET 0245029-001-25	Revision 1	Welding standard	AWS D1.1/D1.1M:2010
WPS number	S2300	Revision 0	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

BASE METALS

Product form	Plate	Welded to:	Product form	Plate
Material control number	362705		Material control number	362705
Specification (type or grade)	API 2W (50)		Specification (type or grade)	API 2W (50)
Nominal composition	C-Mn		Nominal composition	C-Mn
Trade name	Dillinger Hutte		Trade name	Dillinger Hutte
P number	U		P number	U
G number			G number	
AWS group number	II		AWS group number	II
Nominal pipe/tube size	-		Nominal pipe/tube size	-
Schedule	-		Schedule	-
Length	(mm) 350		Length	(mm) 350
Width (OD)	(mm) 150		Width (OD)	(mm) 150
Thickness	(mm) 30		Thickness	(mm) 30

JOINTS

Joint design	Fillet weld		
		See addition information	See addition information

CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding parameters - (PQRD Welding Data Record)

WeldOffice WPS



PQRD number	ARL1559-13	Revision 1	Date	29-5-2012
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PASS INFORMATION

Pass number	1 single layer	1 Multi layer	1 Multi layer	2 Multi layer
Layer number	1	1	2	2

WELDING PROCESSES

Welding process	GMAW	GMAW	GMAW	GMAW
Type	Semi-automatic	Semi-automatic	Semi-automatic	Semi-automatic

FILLER METALS

Material control number	P1FC110214	P1FC110214	P1FC110214	P1FC110214
SFA specification	5.18	5.18	5.18	5.18
AWS classification	E70C-6MH4	E70C-6MH4	E70C-6MH4	E70C-6MH4
Filler metal F-number	6	6	6	6
Weld metal A-number	-	-	-	-
Filler metal nominal composition	N.A.	N.A.	N.A.	N.A.
Filler metal trade name	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H
Filler metal size (mm)	1,2	1,2	1,2	1,2
Length of filler metal consumed (mm)	-	-	-	-
Deposited thickness (mm)	4	4	4	4
Maximum pass thickness (mm)	5	5	5	5
Weld deposit chemistry	-	-	-	-
Supplemental filler metal	-	-	-	-
Supplemental filler metal vol. (mm ³)	-	-	-	-

POSITION

Position	2F	2F	2F	2F
Weld progression	-	-	-	-

PREHEAT

Preheat temperature (°C)	10	10	10	10
Maximum interpass temperature (°C)	10	10	85	112

GAS

Shielding gas: Type	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
Flow rate (l/min)	15	15	15	15
Trailing gas: Type	None	None	None	None
Flow rate (l/min)	-	-	-	-
Backing gas: Type	None	None	None	None
Flow rate (l/min)	-	-	-	-

ELECTRICAL

Filler metal size (mm)	1,2	1,2	1,2	1,2
Amperes	245	247	237	240
Volts	26,4	26,4	26,6	26,4
Travel speed (mm/min)	315	315	391	382
Maximum heat input (kJ/mm)	1,232	1,2421	0,9674	0,9952
Current/polarity	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Wire feed speed (m/min)	-	-	-	-
Arc transfer mode	Spray	Spray	Spray	Spray

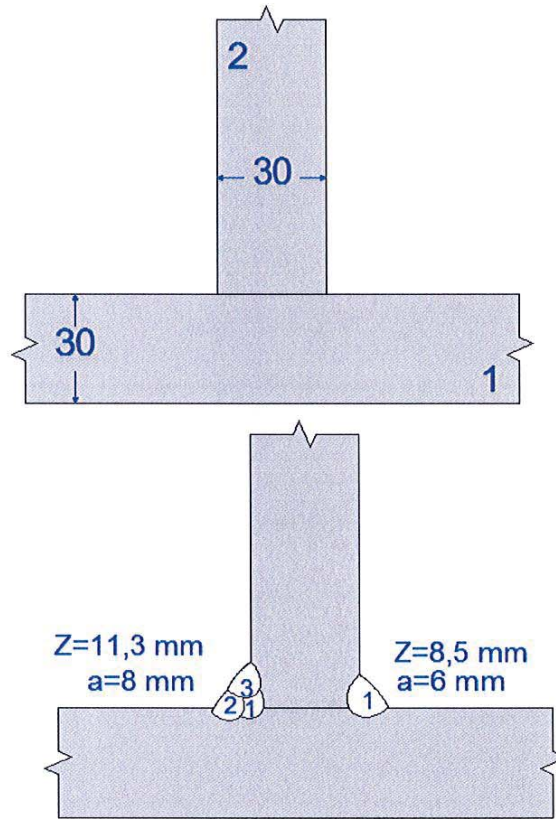
TECHNIQUE

String or weave	Stringer and Weave	Stringer and Weave	Stringer and Weave	Stringer and Weave
Orifice/gas cup size	15	15	15	15
C.T.W.D (mm)	15	15	15	15
Multi/single electrode	Single electrode	Single electrode	Single electrode	Single electrode
Multi/Single pass per side	Multiple passes	Single pass	Multiple passes	Multiple passes
Peening	Not used	Not used	Not used	Not used
Initial/interpass cleaning	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding
Back gouging method	None	None	None	None

PASS PERFORMED/WITNESSED BY

Welders name	T. Lajos	T. Lajos	T. Lajos	T. Lajos
Recorded/witnessed by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)
Date	29-5-2012	29-5-2012	29-5-2012	29-5-2012
Data entry by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)

PQRD number	ARL1559-13	Revision 1	Date	29-5-2012
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SL 12.6055-1

Page 1 of 1

WELDING PROCEDURE QUALIFICATION RECORD AND WELDERS PERFORMANCE QUALIFICATION TEST RECORD

Testing in accordance with : AWS D1.1:2010

Purchaser : Arjan Roza Lastechniek BV

Purchase order no. : ARL1559-13

Manufacturer : Airpack Nederland BV.

WPS : S2300

Description of sample(s) : Plate with fillet welds single-layer and multi-layer

Dimension(s) : 350x150x30 mm

Group number : II -II

Material grade : API 2W grade 50 - API 2W grade 50

Welding process(es) : GMAW (metal cored)

Filler : SFA 5.18 : E70C-6MH4, F-number 6

Brand and type : Lincoln Electric Outershield MC715-H

Shielding gas : AC-20 (A5.32 SG)

Backing gas : N.A.

Welding position : 2F

Preheat / Interpass temp. : 10 °C / 112 °C

Joint type : Fillet welds single-layer and multi-layer

Welder : T. Lajos

Date / place of birth : 11-02-1985 / Hungary

Stamp. No. / ID : W-104 / ID Card 353992JA

Testpiece marked with : ARL1559-13

NON DESTRUCTIVE EXAMINATION

* Visual examination : performed by examiner

MACROSCOPIC EXAMINATION

Amount	Result
3x	During the examination, no weld defects have been observed.

Conclusion: The results satisfy the requirements.

All characteristics of the above object(s) have, as far as accessible and relevant, been verified by Schielab b.v. Other information was provided by the purchaser. This information was verified as far as possible and has been copied into this report, unchanged. We hereby certify that the reported test data is correct and that the above object(s) was (were) tested/examined in accordance with purchasers requirements and/or the above procedure(s) and/or code(s)/specification(s). On occasion a destructive test is subcontracted by Schielab b.v. (marked 'U' on the report). Opinions, interpretations and advice expressed in this report are outside the scope of any possible RvA accreditation, but are presented in a true and fair manner based on the best knowledge of the Schielab personnel involved. If, upon reproduction, only part of this report is copied, Schielab will not bear any responsibility for content, purport and conclusions of that reproduction. This report has legal value only when printed on Schielab paper and furnished with an authorised signature. Digital versions of this report have no legal value. Unless explicitly agreed upon otherwise in writing our "General conditions for activities performed by Schielab b.v.", deposited at the Chamber of Commerce in Rotterdam, under number 24170257, apply

Breda, 07-06-2012



A. Karstanje

Witnessed and approved by; Mr.
Representing: Lloyd's Register Nederland B.V.
[RET 0245029]



Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding Procedure Specification (WPS)

WeldOffice WPS



WPS record number	S2300	Revision	0	Qualified to	AWS D1.1/D1.1M:2010
Date	14-6-2012	Company name	Airpack Netherlands BV		
Supporting PQR(s)	RET 0245029-001-25 - Rev 1				
Reference docs.					

Scope	Filletwelds single layer a <= 6 mm and multi layer filletwelds => 8 mm Fillet, no PWHT (As-welded)
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS

Type	Plate	P-no.	U	Grp-no.	II
Welded to	Plate	P-no.	U	Grp-no.	II
Backing:	None	P-no.		Grp-no.	
Retainers	None				
Notes					

THICKNESS RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	-	-	-	-
Impact tested	-	-	-	-
Partial pen.	-	-	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Nominal pipe size	610,	no max.	-	-

FILLER METALS

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded		With PWHT	
						Min.	Max.	Min.	Max.
GMAW	5.18	E70C-6MH4	6	-	Lincoln, Outershield MC715-H	3,	no max.	-	-
Sup. filler	-	-	-	-	-	- None -			

WELDING PROCEDURE

Welding process	GMAW	
Type	Semi-automatic	
Minimum preheat/interpass temperature (°C)	10	
Maximum interpass temperature (°C)	168	
Filler metal size (mm)	1,2	
Layer number	All	
Position	F,H	
Weld progression	-	
Current/polarity	DCEP (reverse polarity)	
Amperes	213 -269	
Volts	24,5 - 28,4	
Travel speed (mm/min)	265 - 485	
Maximum heat input (kJ/mm)	1,2421	
Wire feed speed (m/min)	0,	
Arc transfer mode	Spray	
Shielding: Gas type	AC-20 (A5.32 SG-)	
Flow rate (l/min)	12 - 22	
Trailing: Gas type	None	
Flow rate (l/min)	-	
Backing: Gas type	None	
Flow rate (l/min)	-	
String or weave	Stringer or Weave	
Orifice/gas cup size	15	
C.T.W.D (mm)	15	
Multi/Single pass per side	Single or multiple passes	
Multi/single electrode	Single electrode	
Maximum pass thickness (mm)	5	
Weld deposit chemistry	-	
Notes		



WPS record number	S2300	Revision 0	Qualified to	AWS D1.1/D1.1M:2010
Date	14-6-2012		Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
AWS D1.1 (Category A)	For thickness 3 to 19(mm): 0(°C). Preheat to 20(°C) if the base metal temperature is below 0(°C). Over 19 thru 38.1(mm): 66(°C). Over 38.1 thru 63.5(mm): 107(°C). Over 63.5(mm): 150(°C).

TECHNIQUE

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Name	Signature
Date	

Signature 2

Name	Signature
Date	

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR)

WeldOffice WPS



PQR record number	RET 0245029-001-27	Revision 1	WPS record number	S2500	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

BASE METALS

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick (mm)	Dia. (mm)
Welded to:	Plate	API 2W (50)	U	II	-	-	30	-
	Plate	API 2W (50)	U	II	-	-	30	-
and tested:	Without PWHT, Fillet-weld test							
Notes								

JOINTS

Joint design	Fillet weld		
		See addition information	See addition information

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

FILLER METALS

SFA specification	5.18
AWS classification	E70C-6MH4
Filler metal F-number	6
Weld metal A-number	-
Filler metal nominal composition	N.A.
Filler metal trade name	Lincoln, Outershield MC715-H
Filler metal size (mm)	1,2
Deposited thickness (mm)	8,00
Maximum pass thickness (mm)	5
Weld deposit chemistry	-
Supplemental filler metal	-
Supplemental filler metal vol. (mm ³)	-

POSITION

Position	4F
Weld progression	-

PREHEAT

Preheat temperature (°C)	10
Maximum interpass temperature (°C)	128

GAS

Shielding gas: Type	AC-20 (A5.32 SG-)
	Flow rate (l/min)
Trailing gas: Type	None
	Flow rate (l/min)
Backing gas: Type	None
	Flow rate (l/min)

ELECTRICAL

Filler metal size (mm)	1,2
Amperes	227 - 233
Volts	25,9 - 26,1
Travel speed (mm/min)	327 - 451
Maximum heat input (kJ/mm)	1,1063
Current/polarity	DCEP (reverse polarity)
Wire feed speed (m/min)	0
Arc transfer mode	Spray

TECHNIQUE

String or weave	Stringer and Weave
Orifice/gas cup size	15
C.T.W.D (mm)	15
Multi/single electrode	Single electrode
Multi/Single pass per side	Multiple passes
Peening	Not used
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

Airpack Netherlands BV

Groenewegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR) - Test results (as welded)

WeldOffice WPS



PQR record number Date	RET 0245029-001-27 13-6-2012	Revision 1	WPS record number Company name Welding standard	S2500 Airpack Netherlands BV AWS D1.1/D1.1M:2010	Revision 0
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TENSILE TESTS

Reduced section

Specimen number	Width (mm)	Thickness (mm)	Area (mm ²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location

Comments

GUIDED BEND TESTS

Type of test	Acceptance criteria	Result	Comments

Comments

FILLET WELD TESTS

Type of test	Acceptance criteria	Result	Fillet leg size (mm) x (mm)
3x Macroscopic examination multiple pass	AWS D1.1	Acceptable	a= 8 mm
3x Macroscopic examination single pass	AWS D1.1	Acceptable	a= 6 mm

Comments

CERTIFICATION

Welder's name	ID Number	Stamp number	Mechanical testing by	Schielab Breda (NLD)
T. Lajos	ID Card 353992.JA	W-104	Laboratory test number	SL 12.6057-1
			Test file number	ARL1559-15
			Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of section 4 of ANSI/AWS D1.1-2010 Structural Welding Code-Steel.

Signature 1

Name	Signature
Franky van Toledo	
Date	
8-6-2012	

Signature 2

Name	Signature
W. Komdeur (Lloyds)	
Date	
8-6-2012	

Airpack Netherlands BV

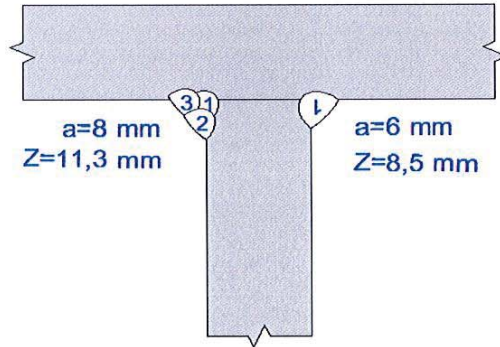
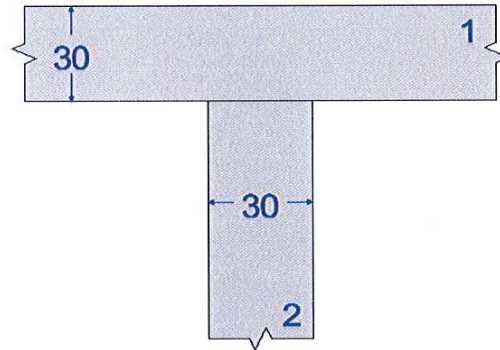
Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Additional information (PQR)

WeldOffice WPS



PQR record number	RET 0245029-001-27	Revision 1	WPS record number	S2500	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	



Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding conditions - (PQRD Welding Data Record)

WeldOffice WPS



PQRD number	ARL1559-15	Revision 1	Date	29-5-2012
PQR number	RET 0245029-001-27	Revision 1	Welding standard	AWS D1.1/D1.1M:2010
WPS number	S2500	Revision 0	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

BASE METALS

		Welded to:		
Product form	Plate		Product form	Plate
Material control number	362705		Material control number	362705
Specification (type or grade)	API 2W (50)		Specification (type or grade)	API 2W (50)
Nominal composition	C-Mn		Nominal composition	C-Mn
Trade name	Dillinger Hutte		Trade name	Dillinger Hutte
P number	U		P number	U
G number			G number	
AWS group number	II		AWS group number	II
Nominal pipe/tube size	-		Nominal pipe/tube size	-
Schedule	-		Schedule	-
Length	(mm) 350		Length	(mm) 350
Width (OD)	(mm) 150		Width (OD)	(mm) 150
Thickness	(mm) 30		Thickness	(mm) 30

JOINTS

Joint design	Fillet weld	See addition information	See addition information

CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

PQRD number	ARL1559-15	Revision	1	Date	29-5-2012
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PASS INFORMATION

Pass number	1 single layer	1 multi layer	1 multi layer	multi layer1
Layer number	1	1	1	1

WELDING PROCESSES

Welding process	GMAW	GMAW	GMAW	GMAW
Type	Semi-automatic	Semi-automatic	Semi-automatic	Semi-automatic

FILLER METALS

Material control number	900401	P1FC110214	P1FC110214	P1FC110214
SFA specification	5.18	5.18	5.18	5.18
AWS classification	E70C-6MH4	E70C-6MH4	E70C-6MH4	E70C-6MH4
Filler metal F-number	6	6	6	6
Weld metal A-number	-	-	-	-
Filler metal nominal composition	N.A.	N.A.	N.A.	N.A.
Filler metal trade name	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H
Filler metal size (mm)	1,2	1,2	1,2	1,2
Length of filler metal consumed (mm)	-	-	-	-
Deposited thickness (mm)	4	4	4	4
Maximum pass thickness (mm)	5	5	5	5
Weld deposit chemistry	-	-	-	-
Supplemental filler metal	-	-	-	-
Supplemental filler metal vol. (mm ³)	-	-	-	-

POSITION

Position	4F	4F	4F	4F
Weld progression	-	-	-	-

PREHEAT

Preheat temperature (°C)	10	10	10	10
Maximum interpass temperature (°C)	10	10	81	128

GAS

Shielding gas: Type	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
Flow rate (l/min)	15	15	15	15
Trailing gas: Type	None	None	None	None
Flow rate (l/min)	-	-	-	-
Backing gas: Type	None	None	None	None
Flow rate (l/min)	-	-	-	-

ELECTRICAL

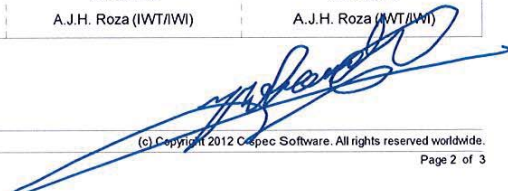
Filler metal size (mm)	1,2	1,2	1,2	1,2
Amperes	231	227	233	229
Volts	26.1	26.1	25.9	26
Travel speed (mm/min)	327	346	451	391
Maximum heat input (kJ/mm)	1,1063	1,0274	0,8028	0,9137
Current/polarity	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Wire feed speed (m/min)	-	-	-	-
Arc transfer mode	Spray	Spray	Spray	Spray

TECHNIQUE

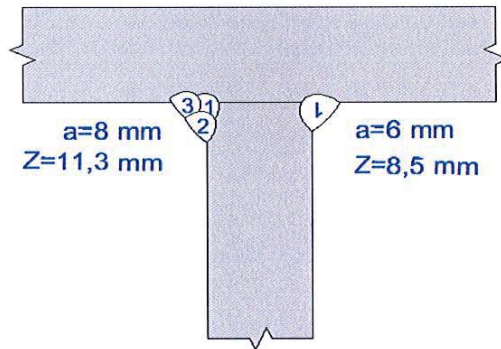
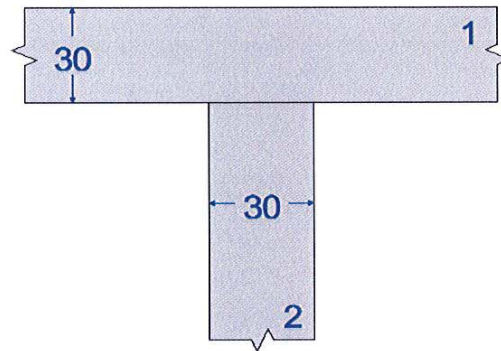
String or weave	Stringer and Weave	Stringer and Weave	Stringer and Weave	Stringer and Weave
Orifice/gas cup size	15	15	15	15
C.T.W.D (mm)	15	15	15	15
Multi/single electrode	Single electrode	Single electrode	Single electrode	Single electrode
Multi/Single pass per side	Multiple passes	Multiple passes	Multiple passes	Multiple passes
Peening	Not used	Not used	Not used	Not used
Initial/interpass cleaning	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding
Back gouging method	None	None	None	None

PASS PERFORMED/WITNESSED BY

Welders name	T. Lajos	T. Lajos	T. Lajos	T. Lajos
Recorded/witnessed by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)
Date	29-5-2012	29-5-2012	29-5-2012	29-5-2012
Data entry by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)



PQRD number	ARL1559-15	Revision 1	Date	29-5-2012
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WELDING PROCEDURE QUALIFICATION RECORD AND WELDERS PERFORMANCE QUALIFICATION TEST RECORD

Testing in accordance with : AWS D1.1:2010
Purchaser : Arjan Roza Lastechniek BV
Purchase order no. : ARL1559-15
Manufacturer : Airpack Nederland BV.
WPS : S2500
Description of sample(s) : Plate with fillet welds single-layer and multi-layer
Dimension(s) : 350x150x30 mm
Group number : II -II
Material grade : API 2W grade 50 - API 2W grade 50
Welding process(es) : GMAW (metal cored)
Filler : SFA 5.18 : E70C-6MH4, F-number 6
Brand and type : Lincoln Electric Outershield MC715-H
Shielding gas : AC-20 (A5.32 SG-)
Backing gas : N.A.
Welding position : 4F
Preheat / Interpass temp. : 10 °C / 128 °C
Joint type : Fillet welds single-layer and multi-layer

Welder : T. Lajos
Date / place of birth : 11-02-1985 / Hungary
Stamp. No. / ID : A3 / ID Card 353992JA
Testpiece marked with : ARL1559-15

NON DESTRUCTIVE EXAMINATION

* Visual examination : performed by examiner

MACROSCOPIC EXAMINATION

Table with 2 columns: Amount, Result. Row 1: 3x, During the examination, no weld defects have been observed.

Conclusion: The results satisfy the requirements.

All characteristics of the above object(s) have, as far as accessible and relevant, been verified by Schielab b.v. Other information was provided by the purchaser. This information was verified as far as possible and has been copied into this report, unchanged. We hereby certify that the reported test data is correct and that the above object(s) was (were) tested/examined in accordance with purchasers requirements and/or the above procedure(s) and/or code(s)/specification(s). On occasion a destructive test is subcontracted by Schielab b.v. (marked 'U' on the report) Opinions, interpretations and advice expressed in this report are outside the scope of any possible RvA accreditation, but are presented in a true and fair manner based on the best knowledge of the Schielab personnel involved. If, upon reproduction, only part of this report is copied, Schielab will not bear any responsibility for content, purpose and conclusions of that reproduction. This report has legal value only when printed on Schielab paper and furnished with an authorised signature. Digital versions of this report have no legal value. Unless explicitly agreed upon otherwise in writing our "General conditions for activities performed by Schielab b.v.", deposited at the Chamber of Commerce in Rotterdam, under number 24170257, apply

Breda, 07-06-2012

Witnessed and approved by; Mr.

Representing: Lloyd's Register Nederland B.V.



Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning. Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.



07 JUNI 2012

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding Procedure Specification (WPS)

WeldOffice WPS



WPS record number	S2500	Revision 0	Qualified to	AWS D1.1/D1.1M:2010
Date	14-6-2012		Company name	Airpack Netherlands BV
Supporting PQR(s)	RET 0245029-001-27 - Rev 1			
Reference docs.				

Scope	Filletwelds single layer a <= 6 mm and multi layer filletwelds => 8 mm Fillet, no PWHT (As-welded)
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS

Type	Plate	P-no. U	Grp-no. II
Welded to	Plate	P-no. U	Grp-no. II
Backing:	None	P-no.	Grp-no.
Retainers	None		
Notes			

THICKNESS RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	-	-	-	-
Impact tested	-	-	-	-
Partial pen.	-	-	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Nominal pipe size	610,	no max.	-	-

FILLER METALS

THICKNESS RANGE QUALIFIED (mm)

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded		With PWHT	
						Min.	Max.	Min.	Max.
GMAW	5.18	E70C-6MH4	6	-	Lincoln, Outershield MC715-H	3,	no max.	-	-
Sup. filler	-	-	-	-	-	- None -			

WELDING PROCEDURE

Welding process	GMAW
Type	Semi-automatic
Minimum preheat/interpass temperature (°C)	10
Maximum interpass temperature (°C)	184
Filler metal size (mm)	1,2
Layer number	All
Position	O
Weld progression	-
Current/polarity	DCEP (reverse polarity)
Amperes	204 -256,
Volts	24,0 - 27,9
Travel speed (mm/min)	245 - 490
Maximum heat input (kJ/mm)	1,1063
Wire feed speed (m/min)	0,
Arc transfer mode	Spray
Shielding: Gas type	AC-20 (A5.32 SG-)
Flow rate (l/min)	12 - 22
Trailing: Gas type	None
Flow rate (l/min)	-
Backing: Gas type	None
Flow rate (l/min)	-
String or weave	Stringer or Weave
Orifice/gas cup size	15
C.T.W.D (mm)	15
Multi/Single pass per side	Multiple passes
Multi/single electrode	Single electrode
Maximum pass thickness (mm)	5
Weld deposit chemistry	-
Notes	

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding Procedure Specification (WPS)

WeldOffice WPS



WPS record number	S2500	Revision 0	Qualified to	AWS D1.1/D1.1M:2010
Date	14-6-2012		Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
AWS D1.1 (Category A)	For thickness 3 to 19(mm): 0(°C). Preheat to 20(°C) if the base metal temperature is below 0(°C). Over 19 thru 38.1(mm): 66(°C). Over 38.1 thru 63.5(mm): 107(°C). Over 63.5(mm): 150(°C).

TECHNIQUE

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Name	Signature
Date	

Signature 2

Name	Signature
Date	

PQR record number Date	RET0278790/TK/001 1-6-2016	Revision 1	WPS record number Company name Welding standard	S2600 Airpack Netherlands BV AWS D1.1/D1.1M:2015	Revision 1
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BASE METALS

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
Welded to:	Plate	API 2W (SOLS)	U	II	-	-	4	-
	Plate	API 2W (SOLS)	U	II	-	-	4	-
and tested: Notes	Without PWHT, With impacts, With hardness							

JOINTS

Joint design	Single-V-groove	See addition information	See addition information
Backing:	None		
Retainers	None		
Groove angle (deg.)	60		
Root opening (mm)	2-3		
Root face (mm)	0-1		

WELDING PROCESSES

Welding process Type	GMAW Semi-automatic
-------------------------	------------------------

FILLER METALS

SFA specification	5.18
AWS classification	E70C-6M44
Filler metal F-number	6
Weld metal A-number	-
Filler metal nominal composition	N.A.
Filler metal trade name	Lincoln, Outershield MC715-H
Filler metal size (mm)	1.2
Deposited thickness (mm)	4,00
Maximum pass thickness (mm)	3
Weld deposit chemistry	-
Supplemental filler metal	-
Supplemental filler metal vol. (mm ³)	-

POSITION

Position Weld progression	2G -
------------------------------	---------

PREHEAT

Preheat temperature (°C)	10
Maximum interpass temperature (°C)	124

GAS

Shielding gas:	Type	AC-20 (A5.32 SG-)	
	Flow rate (l/min)	15	
Trailing gas:	Type	None	
	Flow rate (l/min)	-	
Backing gas:	Type	None	
	Flow rate (l/min)	-	

ELECTRICAL

Filler metal size (mm)	1,2
Waveform control	Not Used
Energy (J)	Not Used
Power (J/s)	Not Used
Arc time (sec)	Not Used
Weld bead length (mm)	Not Used
Amperes	87 - 183
Volts	14,5 - 20,1
Travel speed (mm/min)	117 - 485
Maximum heat input (kJ/mm)	0,45 - 0,64
Current/polarity	DCEP (reverse polarity)
Wire feed speed (m/min)	0
Arc transfer mode	Short-circuiting, Globular

TECHNIQUE

String or weave	Stringer and Weave
Orifice/gas cup size	15
C.T.V.D (mm)	15
Multi/single electrode	Single electrode
Multi/Single pass per side	Multiple passes
Peening	Not used
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None





Airpack Netherlands BV
 Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands
AWS - Procedure Qualification Record (PQR) - Test results (as welded)
 WeldOffice WPS

PQR record number Date	RET0278790/TK/001 1-6-2016	Revision 1	WPS record number Company name Welding standard	S2600 Airpack Netherlands BV AWS D1.1/D1.1M:2015	Revision 1
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TENSILE TESTS						Reduced section
Specimen number	Width (mm)	Thickness (mm)	Area (mm ²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location
1	20.01	3.83	76,638	-	527	Ductile-BM
2	20.02	3.82	76,476	-	502	Ductile-BM
Comments						

GUIDED BEND TESTS			
Type of test	Acceptance criteria	Result	Comments
Root bend	AWS D1.1	Acceptable	
Root bend	AWS D1.1	Acceptable	
Face bend	AWS D1.1	Acceptable	
Face bend	AWS D1.1	Acceptable	
Comments			

TOUGHNESS TESTS								
Specimen number	Notch location	Notch type	Specimen size (mm) x (mm)	Test temperature (°C)	Impact values			Drop weight break
					(J)	(% Shear)	(mm)	
1	Weld Metal	Charpy V	10 x 3	-40	29/34/36	-	-	No
2	HAZ	Charpy V	10 x 3	-40	34/48/38	-	-	No
3	HAZ + 1 mm	Charpy V	10 x 3	-40	55/47/48	-	-	No
4	HAZ + 2 mm	Charpy V	10 x 3	-40	52/52/53	-	-	No
5	HAZ + 5 mm	Charpy V	10 x 3	-40	48/48/51	-	-	No
Comments								

HARDNESS TEST						
Type (Scale)	Distance from surface	API 2W (50LS)	HAZ	Weld	HAZ	API 2W (50LS)
Vickers (HV)	Cap area 1-2 mm	170-172-170	192-208-216-218-214	203-211-211-211-208	209-207-203-208-208	169-167-167
Vickers (HV)	Cap area 1-2 mm	166-167-167	192-204-212-211-206	207-203-207-205-200	216-214-216-211-194	170-170-169
Comments						

OTHER TESTS			
Type of test	Acceptance criteria	Result	Comments
2x Macroscopic examination	AWS D1.1	Acceptable	
RT examination	AWS D1.1	Acceptable	
MT examination	AWS D1.1	Acceptable	
Comments			

CERTIFICATION				
Welder's name	ID Number	Stamp number	Mechanical testing by	Element Breda (NL)
Dorremans M.	ID Card IKP0996J6	W-013	Laboratory test number Test file number Tests conducted by	ARJ001-16-01-18390-1 ARL2064-1 A. Karstjanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of section 4 of ANSI/AWS D1.1 Structural Welding Code-Steel.

Signature 1

Name	Signature
F. van Toledo	
Date	
1-6-2016	

Signature 2

Name	Signature
T. Konings(Lloyds)	
Date	
1-6-2016	





PQRD number	ARL2064-1	Revision 1	Date	11-01-2016
PQR number	RET0278790/TK001	Revision 1	Welding standard	AWS D1.1/D1.1M:2015
WPS number	S2600	Revision 1	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

BASE METALS

		Welded to:		
Product form	Plate	Product form	Plate	
Material control number	816729 293819/1	Material control number	816729 293819/1	
Specification (type or grade)	API 2W (50LS)	Specification (type or grade)	API 2W (50LS)	
Nominal composition	C-Mn	Nominal composition	C-Mn	
Trade name	Voestalpine Grobblech	Trade name	Voestalpine Grobblech	
P number	U	P number	U	
G number		G number		
AWS group number	II	AWS group number	II	
Nominal pipe/tube size	-	Nominal pipe/tube size	-	
Schedule	-	Schedule	-	
Length	(mm) 500	Length	(mm) 500	
Width (OD)	(mm) 200	Width (OD)	(mm) 200	
Thickness	(mm) 4	Thickness	(mm) 4	

JOINTS

Joint design	Single-V-groove	See addition information	See addition information
Backing:	None		
Retainers	None		
Groove angle (deg.)	60		
Root opening (mm)	2-3		
Root face (mm)	0-1		

CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

PQRD number	ARL2064-1	Revision 1	Date	11-01-2016
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PASS INFORMATION

Pass number	1	2	3
Layer number	1	2	2

WELDING PROCESSES

Welding process	GMAW	GMAW	GMAW
Type	Semi-automatic	Semi-automatic	Semi-automatic

FILLER METALS

Material control number	P1FC150311	P1FC150311	P1FC150311
SFA specification	5.18	5.18	5.18
AWS classification	E70C-6MH4	E70C-6MH4	E70C-6MH4
Filler metal F-number	6	6	6
Weld metal A-number	-	-	-
Filler metal nominal composition	N.A.	N.A.	N.A.
Filler metal trade name	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H
Filler metal size (mm)	1,2	1,2	1,2
Length of filler metal consumed (mm)	-	-	-
Deposited thickness (mm)	2	2	2
Maximum pass thickness (mm)	3	3	3
Weld deposit chemistry	-	-	-
Supplemental filler metal	-	-	-
Supplemental filler metal vol. (mm ³)	-	-	-

POSITION

Position	2G	2G	2G
Weld progression	-	-	-

PREHEAT

Preheat temperature (°C)	10	10	10
Maximum interpass temperature (°C)	10	69	124

GAS

Shielding gas:	Type	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
	Flow rate (l/min)	15	15	15
Trailing gas:	Type	None	None	None
	Flow rate (l/min)	-	-	-
Backing gas:	Type	None	None	None
	Flow rate (l/min)	-	-	-

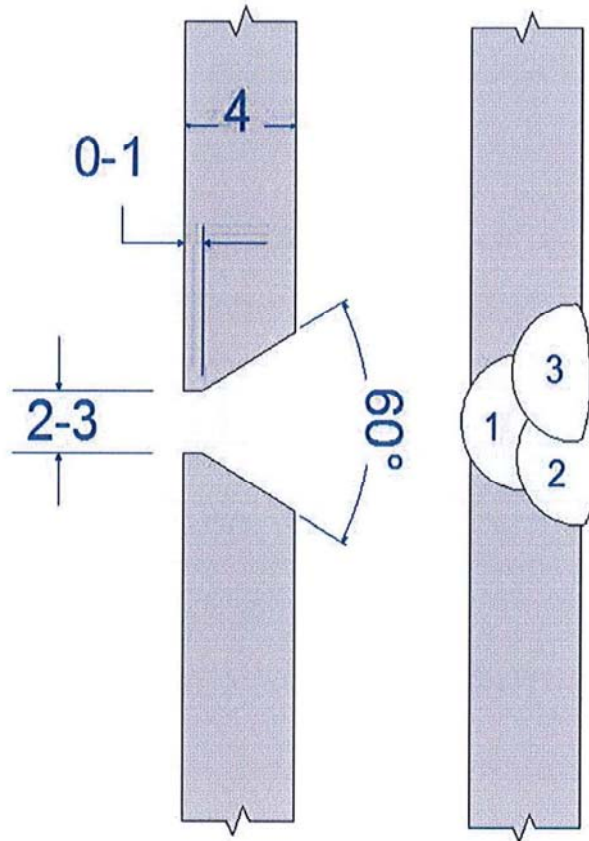
ELECTRICAL

Filler metal size (mm)	1,2	1,2	1,2
Waveform control	Not Used	Not Used	Not Used
Energy (J)	-	-	-
Power (J/s)	-	-	-
Arc time (sec)	-	-	-
Weld bead length (mm)	-	-	-
Amperes	87	182	183
Volts	14.5	20.1	20.1
Travel speed (mm/min)	117	485	450
Maximum heat input (kJ/mm)	0,6469	0,4526	0,4904
Current/polarity	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Wire feed speed (m/min)	-	-	-
Arc transfer mode	Short-circuiting	Globular	Globular

TECHNIQUE

String or weave	Stringer and Weave	Stringer and Weave	Stringer and Weave
Orifice/gas cup size	15	15	15
C.T.W.D (mm)	15	15	15
Multi/single electrode	Single electrode	Single electrode	Single electrode
Multi/Single pass per side	Multiple passes	Multiple passes	Multiple passes
Peening	Not used	Not used	Not used
Initial/interpass cleaning	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding
Back gouging method	None	None	None

PQRD number	ARL2064-1	Revision 1	Date	11-01-2016
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WPS record number	S2600	Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	1-6-2016		Company name	Airpack Netherlands BV
Supporting PQR(s)	RET0278790/TK/001 - Rev 1			
Reference docs.				

Scope	Groove, fillet, no PWHT (As-welded), impact testing
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS

Type	Plate	P-no.	U	Grp-no.	II
Welded to	Plate	P-no.	U	Grp-no.	II
Backing:	None	P-no.		Grp-no.	
Retainers	None				
Notes					

THICKNESS RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	3,	8,	-	-
Impact tested	3,	8,	-	-
Partial pen.	3,	8,	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Nominal pipe size	610,	no max.	-	-

THICKNESS RANGE QUALIFIED (mm)

FILLER METALS

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	THICKNESS RANGE QUALIFIED (mm)			
						As-welded		With PWHT	
						Min.	Max.	Min.	Max.
GMAW	5.18	E70C-6MH4	6	-	Lincoln, Outershield MC715-H	3,	8,	-	-
GMAW						-	-	-	-
GMAW						-	-	-	-
Sup. filler						-	-	-	-
Suppl. filler metal vol. (mm ³)						- Required -			

WELDING PROCEDURE

Welding process	GMAW	GMAW	GMAW
Type	Semi-automatic	Semi-automatic	Semi-automatic
Minimum preheat/interpass temperature (°C)	10	10	10
Maximum interpass temperature (°C)	174	174	174
Filler metal size (mm)	1,2	1,2	1,2
Layer number	Root	Fill	1,2
Position	F,H	F,H	Cap
Weld progression			F,H
Current/polarity	Not applicable	Not applicable	Not applicable
Waveform control	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Energy (J)	Not Used	Not Used	Not Used
Power (J/s)	Not Used	Not Used	Not Used
Amperes	Not Used	Not Used	Not Used
Volts	80 - 100	175 - 185	Not Used
Travel speed (mm/min)	14 - 17	19 - 21	175 - 185
Maximum heat input (kJ/mm)	110 - 120	460 - 500	10 - 21
Wire feed speed (m/min)	0,57 - 0,70	0,40 - 0,49	440 - 470
Arc transfer mode	Not used	Not used	0,44 - 0,53
Shielding:	Short-circuiting	Short-circuiting	Not used
Gas type	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	Short-circuiting
Flow rate (l/min)	14 - 16	14 - 16	AC-20 (A5.32 SG-)
Trailing:	None	None	14 - 16
Gas type	None	None	None
Flow rate (l/min)	-	-	None
Backing:	None	None	None
Gas type	None	None	None
Flow rate (l/min)	-	-	None
String or weave	Stringer or Weave	Stringer or Weave	None
Orifice/gas cup size	15	15	Stringer or Weave
C.T.W.D (mm)	15	15	15
Multi/Single pass per side	Single pass	Multiple passes	15
Multi/single electrode	Single electrode	Single electrode	Multiple passes
Maximum pass thickness (mm)	5	5	Single electrode
Weld deposit chemistry	-	-	5
Notes	-	-	-

WPS record number	S2600	Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	1-6-2016		Company name	Airpack Netherlands BV

PREHEAT TABLE


Applicable standard	
AWS D1.1 (Category B)	For thickness 3 to 19(mm): 0(°C). Preheat to 20(°C) if the base metal temperature is below 0(°C). Over 19 thru 38.1(mm): 10(°C). Over 38.1 thru 63.5(mm): 66(°C). Over 63.5(mm): 107(°C).

TECHNIQUE

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Name	Signature
F. van Toledo	
Date	
1-6-2016	

Signature 2

Name	Signature
Date	

TEST CERTIFICATE

 Date: 21-Jan-16
 Purchase Order Number: ARL2064
 Report No.: ARJ001-16-01-18390-1

**TEST REPORT FOR THE PURPOSE OF:
 WELDING PROCEDURE QUALIFICATION TEST RECORD**

 Testing in accordance with : AWS D1.1/M: 2015
 Purchase order No, Test piece No. : ARL2064-1
 Manufacturer : Airpack Netherlands B.V.
 WPS : S2600
 Plate dimension and thickness : 500x200x4 mm to 500x200x4 mm
 Plate material grade : API 2W-50LS to API 2W-50LS
 Welding process(es) : GMAW
 Joint type : Butt weld single Vee, Multiple passes
 Welding position : 2G
 Filler : Lincoln Electric, Outershield MC715-H
 Shielding gas, SFA A5.32/A5.32M : SG-AC20: 80% Ar - 20% CO₂
 Backing gas, : N.A.
 Preheat / Interpass temp. : ≥ 10 °C / ≤ 196°C
 PWHT : No
 Welder(s) : Dorreman M.
 Date(s) / place of birth(s) : 1994-01-05 / Zierikzee
 Stamp. No.(s) / ID(s) : W-013 / ID Card IKP0996J6
 Remarks: : No remarks

NONDESTRUCTIVE EXAMINATION

 * Visual examination: Performed on site
 * Radiographic examination: Performed on site, see RTD report no.: 148401 (0)
 * Magnetic Particle examination: Performed on site, see RTD report no.: 05056-2016-02-006
Note: The above mentioned data is only for information and is no part of the examination in this test report

CROSS WELD TENSILE TESTS [AWS]

Dimensions(s) [mm]	Rm [N/mm ²]	Fracture location
20.01 x 3.83	527	Base material
20.02 x 3.82	502	Base material
Requirements;	≥ 448	

TECHNOLOGICAL TESTS

Type of test	Former / Bending angle	Result
Face bend	4t / 180°	2 x acceptable
Root bend	4t / 180°	2 x acceptable

MACROSCOPIC EXAMINATION

Amount	Result
2x	No weld defects observed, segregation in plate noted (see page 3&4)

HARDNESS MEASUREMENTS

Method : Vickers HV10kg
Requirements : ≤ 325 HV10kg

Cross section 18390-1.1

Location of indentations	Traverse 1-2mm below outer surface
base material	170-172-170
heat affected zone	192-208-218-218-214
weld metal	203-211-211-211-208
heat affected zone	209-207-203-208-208
base material	169-167-167

Cross section 18390-1.2

Location of indentations	Traverse 1-2mm below outer surface
base material	166-167-167
heat affected zone	192-204-212-211-206
weld metal	207-203-207-205-200
heat affected zone	216-214-216-211-194
base material	170-170-169


IMPACT TESTS [AWS/ASME]

Notch location	Spec. size [mm]	Test temp. [°C]	Test results [J]	Average value [J]
Midweld	10x3	-40	29-34-36	33
Fusion line	10x3	-40	34-48-38	40
Fusion line +1mm	10x3	-40	55-47-48	50
Fusion line +2mm	10x3	-40	52-52-53	52
Fusion line +5mm	10x3	-40	48-48-51	49
Requirements for size 10x10mm;			≥ 34	≥ 41

The above mentioned results satisfy the requirements





For Element Breda



Albert Karstanje

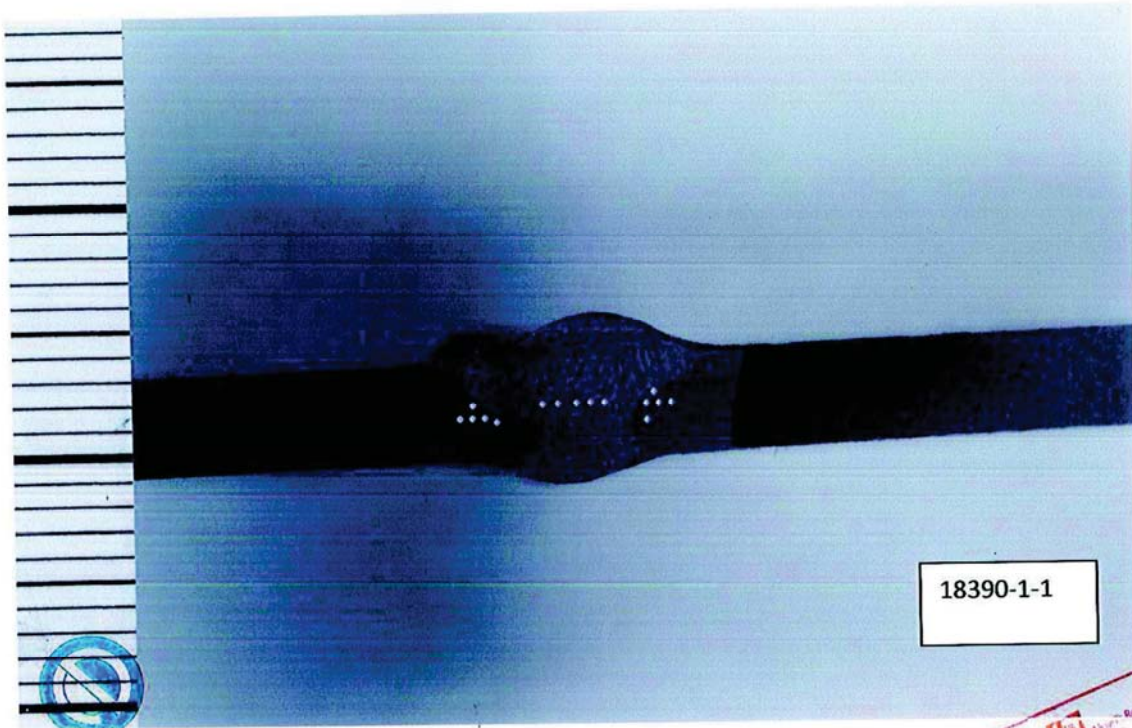
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P. Reintjes
Rotterdam Office
Hoyd's Register Nederland B.V.

26 JAN. 2016

All characteristics of the above object(s) have, as far as accessible and relevant, been verified by Element Materials Technology Rotterdam b.v. (Element). Other information was provided by the purchaser. This information was verified as far as possible and has been copied into this report, unchanged. Element does not bear responsibility for the correctness of this submitted information. We hereby certify that the reported test data is correct and that the above object(s) was (were) tested/examined in accordance with purchaser's requirements and/or the above procedure(s) and/or code(s)/specification(s). On occasion a test is subcontracted by Element, the accreditation number of the subcontracted party is reported. Interpretations, opinions, conclusions and advice are partly based on the examination results and partly on information supplied by the purchaser. This report has legal value only when furnished with an authorized signature. If, upon reproduction, only part of this report is copied, Element will not bear any responsibility for content, purport and conclusions of that reproduction. The items subjected for the examinations will be stored for 2 months, starting from the report date as mentioned on the title page of this report. When no other instructions are received from our client before the end of this standard period of storage, we assume that our client has no objections that the objects concerned will be disposed of by Element at will.

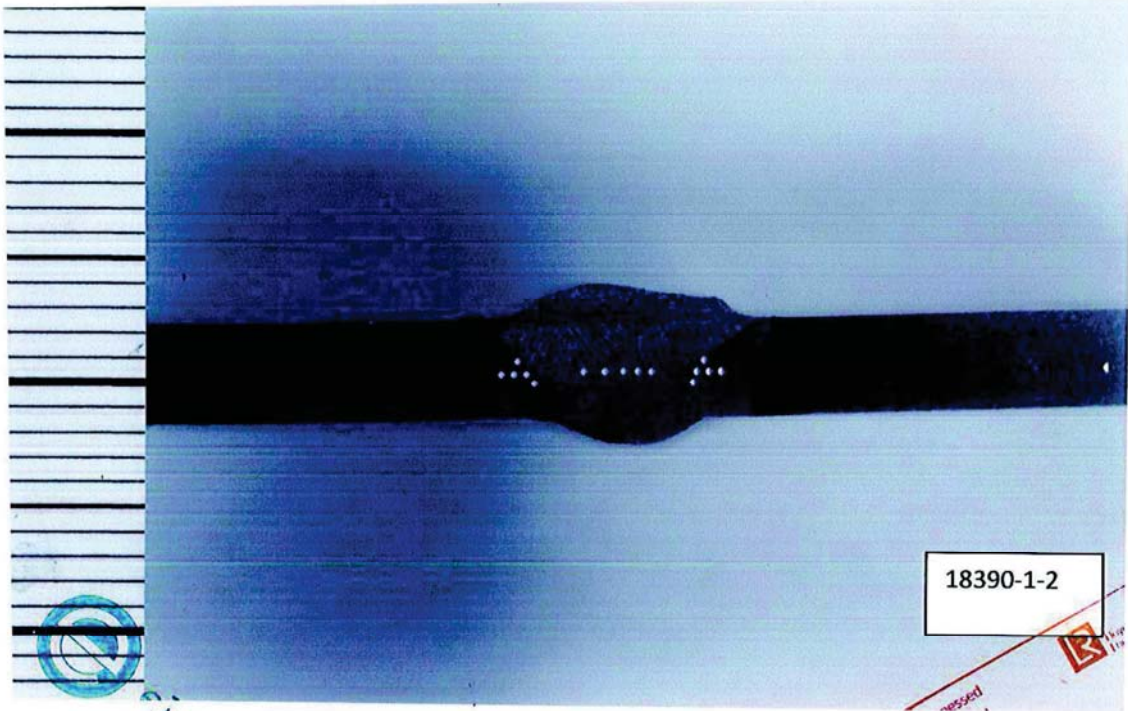
MACRO PHOTO
Cross section no. 18390-1-1



element™
Albert Karstauje 

Witnessed
 Reviewed
P. Kuyper
Bureau voor de Registratie van de
26 JAN 2016

MACRO PHOTO
Cross section no. 18390-1-2




element
Albert Karstanje 


26 JAN. 2016



Airpack Netherlands BV
 Groenewegje 19 - 25, 4301 RN Zierikzee, The Netherlands
AWS - Procedure Qualification Record (PQR)
 WeldOffice WPS

PQR record number Date	RET0278790/TK/002 31-5-2016	Revision 1	WPS record number Company name Welding standard	S2700 Airpack Netherlands BV AWS D1.1/D1.1M.2015	Revision 1
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BASE METALS

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
Welded to:	Plate	API 2W (50LS)	U	II	-	-	8	-
	Plate	API 2W (50LS)	U	II	-	-	8	-
and tested: Notes	Without PWHT, With impacts, With hardness							

JOINTS

Joint design	Single-V-groove	See addition information	See addition information
Backing:	None		
Retainers	None		
Groove angle (deg.)	60		
Root opening (mm)	2-3		
Root face (mm)	0-1		

WELDING PROCESSES

Welding process Type	GMAW Semi-automatic
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FILLER METALS

SFA specification	5.18
AWS classification	E70C-6M14
Filler metal F-number	6
Weld metal A-number	-
Filler metal nominal composition	N.A.
Filler metal trade name	Lincoln, Outershield MC715-H
Filler metal size (mm)	1,2
Deposited thickness (mm)	6,00
Maximum pass thickness (mm)	3
Weld deposit chemistry	-
Supplemental filler metal	-
Supplemental filler metal vol. (mm ³)	-

POSITION

Position	2G
Weld progression	-

PREHEAT

Preheat temperature (°C)	10
Maximum interpass temperature (°C)	178

GAS

Shielding gas:	Type	AC-20 (A5.32 SG-)	
	Flow rate (l/min)	15	
Trailing gas:	Type	None	
	Flow rate (l/min)	-	
Backing gas:	Type	None	
	Flow rate (l/min)	-	

ELECTRICAL

Filler metal size (mm)	1,2
Waveform control	Not Used
Energy (J)	Not Used
Power (J/s)	Not Used
Arc time (sec)	Not Used
Weld bead length (mm)	Not Used
Amperes	130 - 197
Volts	15.9 - 22.2
Travel speed (mm/min)	142 - 383
Maximum heat input (kJ/mm)	0,67 - 0,87
Current/polarity	DCEP (reverse polarity)
Wire feed speed (m/min)	0
Arc transfer mode	Short-circuiting, Globular

TECHNIQUE

String or weave	Stringer and Weave
Orifice/gas cup size	15
C.T.W.D (mm)	15
Multi/single electrode	Single electrode
Multi/Single pass per side	Multiple passes
Peening	Not used
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None



Airpack Netherlands BV
 Groenewegje 19 - 25, 4301 RN Zierikzee, The Netherlands
AWS - Procedure Qualification Record (PQR) - Test results (as welded)
 WeldOffice WPS

PQR record number Date	RET0278790/TK002 31-5-2016	Revision 1	WPS record number Company name Welding standard	S2700 Airpack Netherlands BV AWS D1.1/D1.1M:2015	Revision 1
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TENSILE TESTS						Reduced section
Specimen number	Width (mm)	Thickness (mm)	Area (mm ²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location
1	20.03	7.23	144,817	-	529	Ductile-BM
2	20.03	7.28	145,818	-	530	Ductile-BM

Comments

GUIDED BEND TESTS			
Type of test	Acceptance criteria	Result	Comments
Face bend	AWS D1.1	Acceptable	
Face bend	AWS D1.1	Acceptable	
Root bend	AWS D1.1	Acceptable	
Root bend	AWS D1.1	Acceptable	

Comments

TOUGHNESS TESTS								
Specimen number	Notch location	Notch type	Specimen size (mm) x (mm)	Test temperature (°C)	Impact values			Drop weight break
					(J)	(% Shear)	(mm)	
1	Weld Metal	Charpy V	10 x 5	-40	56/56/60	-	-	No
2	HAZ	Charpy V	10 x 5	-40	51/69/60	-	-	No
3	HAZ + 1 mm	Charpy V	10 x 5	-40	115/104/84	-	-	No
4	HAZ + 2 mm	Charpy V	10 x 5	-40	104/99/100	-	-	No
5	HAZ + 5 mm	Charpy V	10 x 5	-40	119/115/104	-	-	No

Comments

HARDNESS TEST						
Type (Scale)	Distance from surface	API 2W (50LS)	HAZ	Weld	HAZ	API 2W (50LS)
Vickers (HV)	Cap area 1-2 mm	166-164-164	184-193-204-205-204	213-214-217-199-211	205-199-198-196-186	167-170-170
	Root area 1-2 mm	171-169-165	186-198-206-206-188	173-184-188-186-187	187-186-186-188-170	165-166-164
Vickers (HV)	Cap area 1-2 mm	165-168-167	197-206-211-211-211	220-221-207-208-219	209-211-207-209-198	168-165-166
	Root area 1-2 mm	167-170-164	187-199-196-191-207	192-196-188-194-189	178-186-180-175-174	162-163-166

Comments

OTHER TESTS			
Type of test	Acceptance criteria	Result	Comments
2x Macroscopic examination	AWS D1.1	Acceptable	
RT examination	AWS D1.1	Acceptable	
MT examination	AWS D1.1	Acceptable	

Comments

CERTIFICATION				
Welder's name	ID Number	Stamp number	Mechanical testing by	Element Breda (NL)
Dorremans M.	ID Card IKP0996J6	W-013	Laboratory test number Test file number Tests conducted by	ARJ001-16-01-18390-2 ARL2064-2 A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of section 4 of ANSI/AWS D1.1 Structural Welding Code-Steel.

Signature 1

Signature 2

Name F. van Toledo	Signature 	Name T. Konings (Lloyds)	Signature
Date 1-6-2016		Date 1-6-2016	

Witnessed
 Reviewed
 Examined
 Ion Kappings

Energy
Lloyd's Register Netherlands B.V.
10000001

PQRD number	ARL2064-2	Revision 1	Date	11-01-2016
PQR number	RET0278790/TK002	Revision 1	Welding standard	AWS D1.1/D1.1M:2015
WPS number	S2700	Revision 1	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

BASE METALS

Product form		Welded to:	Product form	
Material control number	816729 293819/1		Material control number	816729 293819/1
Specification (type or grade)	API 2W (50LS)		Specification (type or grade)	API 2W (50LS)
Nominal composition	C-Mn		Nominal composition	C-Mn
Trade name	Voestalpine Grobblech		Trade name	Voestalpine Grobblech
P number	U		P number	U
G number			G number	
AWS group number	II		AWS group number	II
Nominal pipe/tube size	-		Nominal pipe/tube size	-
Schedule	-		Schedule	-
Length	(mm) 500		Length	(mm) 500
Width (OD)	(mm) 200		Width (OD)	(mm) 200
Thickness	(mm) 8		Thickness	(mm) 8

JOINTS

Joint design	Single-V-groove	See addition information	See addition information
Backing:	None		
Retainers	None		
Groove angle (deg.)	60		
Root opening (mm)	2-3		
Root face (mm)	0-1		

CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

PQRD number	ARL2064-2	Revision 1	Date	11-01-2016
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PASS INFORMATION				
Pass number	1	2	3	4
Layer number	1	2	3	3

WELDING PROCESSES				
Welding process	GMAW	GMAW	GMAW	GMAW
Type	Semi-automatic	Semi-automatic	Semi-automatic	Semi-automatic

FILLER METALS				
Material control number	P1FC150311	P1FC150311	P1FC150311	P1FC150311
SFA specification	5.18	5.18	5.18	5.18
AWS classification	E70C-6MH4	E70C-6MH4	E70C-6MH4	E70C-6MH4
Filler metal F-number	6	6	6	6
Weld metal A-number	-	-	-	-
Filler metal nominal composition	N.A.	N.A.	N.A.	N.A.
Filler metal trade name	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H
Filler metal size (mm)	1,2	1,2	1,2	1,2
Length of filler metal consumed (mm)	-	-	-	-
Deposited thickness (mm)	2	2	2	2
Maximum pass thickness (mm)	3	3	3	3
Weld deposit chemistry	-	-	-	-
Supplemental filler metal	-	-	-	-
Supplemental filler metal vol. (mm ³)	-	-	-	-

POSITION				
Position	2G	2G	2G	2G
Weld progression	-	-	-	-

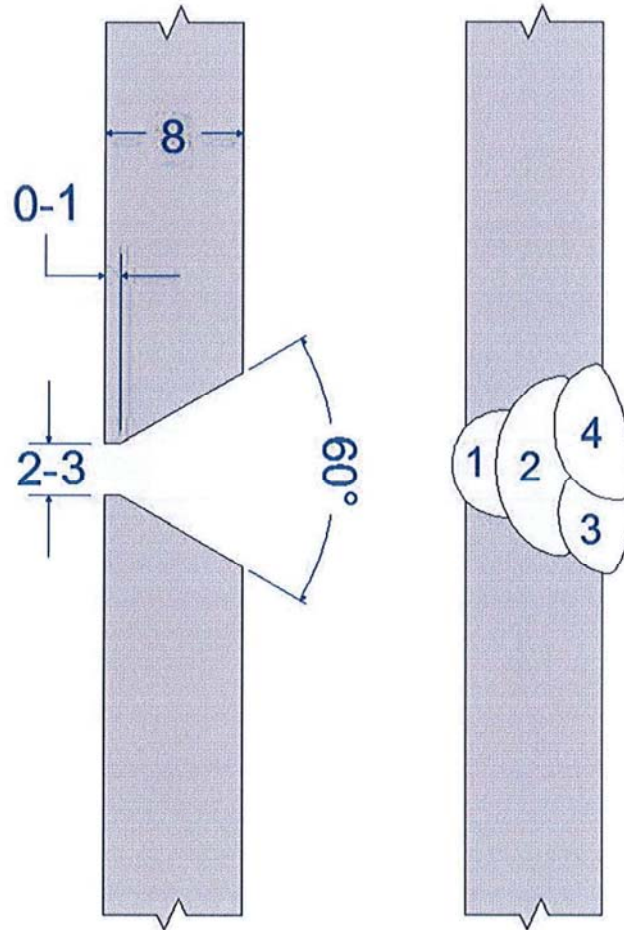
PREHEAT				
Preheat temperature (°C)	10	10	10	10
Maximum interpass temperature (°C)	10	69	129	178

GAS				
Shielding gas: Type	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
Flow rate (l/min)	15	15	15	15
Trailing gas: Type	None	None	None	None
Flow rate (l/min)	-	-	-	-
Backing gas: Type	None	None	None	None
Flow rate (l/min)	-	-	-	-

ELECTRICAL				
Filler metal size (mm)	1,2	1,2	1,2	1,2
Waveform control	Not Used	Not Used	Not Used	
Energy (J)	-	-	-	-
Power (J/s)	-	-	-	-
Arc time (sec)	-	-	-	-
Weld bead length (mm)	-	-	-	-
Amperes	130	196	197	194
Volts	15.9	21.7	22,2	22,2
Travel speed (mm/min)	142	340	383	355
Maximum heat input (kJ/mm)	0,8734	0,7506	0,679	0,7214
Current/polarity	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Wire feed speed (m/min)	-	-	-	-
Arc transfer mode	Short-circuiting	Globular	Globular	Globular

TECHNIQUE				
String or weave	Stringer and Weave	Stringer and Weave	Stringer and Weave	Stringer and Weave
Orifice/gas cup size	15	15	15	15
C.T.W.D (mm)	15	15	15	15
Multi/single electrode	Single electrode	Single electrode	Single electrode	Single electrode
Multi/Single pass per side	Multiple passes	Multiple passes	Multiple passes	Multiple passes
Peening	Not used	Not used	Not used	Not used
Initial/interpass cleaning	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding
Back gouging method	None	None	None	None

PQRD number	ARL2064-2	Revision 1	Date	11-01-2016
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WPS record number	S2700	Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	1-6-2016		Company name	Airpack Netherlands BV
Supporting PQR(s)	RET0278790/TK/002 - Rev 1			
Reference docs.				

Scope	General instruction welding structural for skids Groove, fillet, no PWHT (As-welded), impact testing
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS

Type	Plate	P-no. U	Grp-no. II
Welded to	Plate	P-no. U	Grp-no. II
Backing:	None	P-no.	Grp-no.
Retainers	None		
Notes			

THICKNESS RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	3,	16,	-	-
Impact tested	8,	16,	-	-
Partial pen.	3,	16,	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Nominal pipe size	610,	no max.	-	-

FILLER METALS

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	THICKNESS RANGE QUALIFIED (mm)			
						As-welded		With PWHT	
						Min.	Max.	Min.	Max.
GMAW	5.18	E70C-6MH4	6	-	Lincoln, Oulershield MC715-H	3,	16,	-	-
GMAW						-	-	-	-
GMAW						-	-	-	-
Sup. filler	-	-	-	-	-	- None -			

WELDING PROCEDURE

	GMAW	GMAW	GMAW
	Semi-automatic	Semi-automatic	Semi-automatic
Welding process	GMAW	GMAW	GMAW
Type	Semi-automatic	Semi-automatic	Semi-automatic
Minimum preheat/interpass temperature (°C)	10	10	10
Maximum interpass temperature (°C)	225	225	225
Filler metal size (mm)	1,2	1,2	1,2
Layer number	Root	Filler	Cap
Position	H	H	H
Weld progression	Not applicable	Not applicable	Not applicable
Current/polarity	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Waveform control			
Energy (J)			
Power (J/s)			
Amperes	110 - 140	190 - 210	190 - 210
Volts	15 - 17	21 - 23	22 - 24
Travel speed (mm/min)	135 - 150	320 - 350	350 - 390
Maximum heat input (kJ/mm)	0,8 - 1,0	0,7 - 0,8	0,6 - 0,8
Wire feed speed (m/min)	0,	0	0
Arc transfer mode	Short-circuiting	Spray	Globular
Shielding: Gas type	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
Flow rate (l/min)	12- 22	12 - 22	12 - 2
Trailing: Gas type	None	None	None
Flow rate (l/min)	-	-	-
Backing: Gas type	None	None	None
Flow rate (l/min)	-	-	-
String or weave	Stringer and Weave	Stringer or Weave	Stringer or Weave
Orifice/gas cup size	15	15	15
C.T.W.D (mm)	15	15	15
Multi/Single pass per side	Multiple passes	Multiple passes	Multiple passes
Multi/single electrode	Single electrode	Single electrode	Single electrode
Maximum pass thickness (mm)	5	5	5
Weld deposit chemistry	-	-	-
Notes	-	-	-



WPS record number	S2700	Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	1-6-2016		Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
AWS D1.1 (Category B)	For thickness 3 to 19(mm): 0(°C). Preheat to 20(°C) if the base metal temperature is below 0(°C). Over 19 thru 38.1(mm): 10(°C). Over 38.1 thru 63.5(mm): 66(°C). Over 63.5(mm): 107(°C).

TECHNIQUE

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Name
F. van Toledo
Date
1-6-2016

Signature
F. van Toledo

Nederland bv

Signature 2

Name
Signature
Date

Arjan Roza Lastechiek
 G. Sterkenburgstraat 38
 MEEUWEN, 4268 GS

TEST CERTIFICATE

 Date: 21-Jan-16
 Purchase Order Number: ARL2064
 Report No.: ARJ001-16-01-18390-2

**TEST REPORT FOR THE PURPOSE OF:
 WELDING PROCEDURE QUALIFICATION TEST RECORD**

Testing in accordance with : AWS D1.1/M: 2015

Purchase order No, Test piece No. : ARL2064-2
 Manufacturer : Airpack Netherlands B.V.
 WPS : S2700

Plate dimension and thickness : 500x200x8 mm to 500x200x8 mm
 Plate material grade : API 2W-50LS to API 2W-50LS

Welding process(es) : GMAW
 Joint type : Butt weld single Vee, Multiple passes
 Welding position : 2G
 Filler : Lincoln Electric, Outershield MC715-H
 Shielding gas, SFA A5.32/A5.32M : SG-AC20: 80% Ar - 20% CO₂
 Backing gas, : N.A.

Preheat / Interpass temp. : ≥ 10 °C / ≤ 167°C
 PWHT : No

Welder(s) : Dorreman M.
 Date(s) / place of birth(s) : 1994-01-05 / Zierikzee
 Stamp. No.(s) / ID(s) : W-013 / ID Card IKP0996J6
 Remarks: : No remarks

NONDESTRUCTIVE EXAMINATION

* Visual examination: Performed on site
 * Radiographic examination: Performed on site, see RTD report no.: 148401 (0)
 * Magnetic Particle examination: Performed on site, see RTD report no.: 05056-2016-02-006
Note: The above mentioned data is only for information and is no part of the examination in this test report

CROSS WELD TENSILE TESTS [AWS]

Dimensions(s) [mm]	Rm [N/mm ²]	Fracture location
20.03 x 7.23	529	Base material
20.03 x 7.28	530	Base material
Requirements;	≥ 448	

TECHNOLOGICAL TESTS

Type of test	Former / Bending angle	Result
Face bend	4t / 180°	2 x acceptable
Root bend	4t / 180°	2 x acceptable

MACROSCOPIC EXAMINATION

Amount	Result
2x	No weld defects observed, segregation in plate noted (see page 3&4)

HARDNESS MEASUREMENTS

Method : Vickers HV10kg
Requirements : ≤ 325 HV10kg

Cross section 18390-2.1

Location of indentations	Traverse 1-2mm below outer surface	Traverse 1-2mm above inner surface
base material	166-164-164	171-169-165
heat affected zone	184-193-204-205-204	186-198-206-206-188
weld metal	213-214-217-199-211	173-184-186-186-187
heat affected zone	205-199-198-196-186	187-186-186-188-179
base material	167-170-170	165-166-164

Cross section 18390-2.2

Location of indentations	Traverse 1-2mm below outer surface	Traverse 1-2mm above inner surface
base material	165-168-167	167-170-164
heat affected zone	197-206-211-211-211	187-199-196-191-207
weld metal	220-221-207-208-219	192-196-188-194-189
heat affected zone	209-211-207-209-198	178-186-180-175-174
base material	168-165-166	162-163-166

IMPACT TESTS [KV8]

Notch location	Spec. size [mm]	Test temp. [°C]	Test results [J]	Average value [J]
Midweld	10x5	-40	56-56-60	57
Fusion line	10x	-40	51-69-60	60
Fusion line +1mm	10x5	-40	115-104-84	101
Fusion line +2mm	10x5	-40	104-99-100	101
Fusion line +5mm	10x5	-40	119-115-104	113
Requirements:			≥ 34	≥ 41

The above mentioned results satisfy the requirements

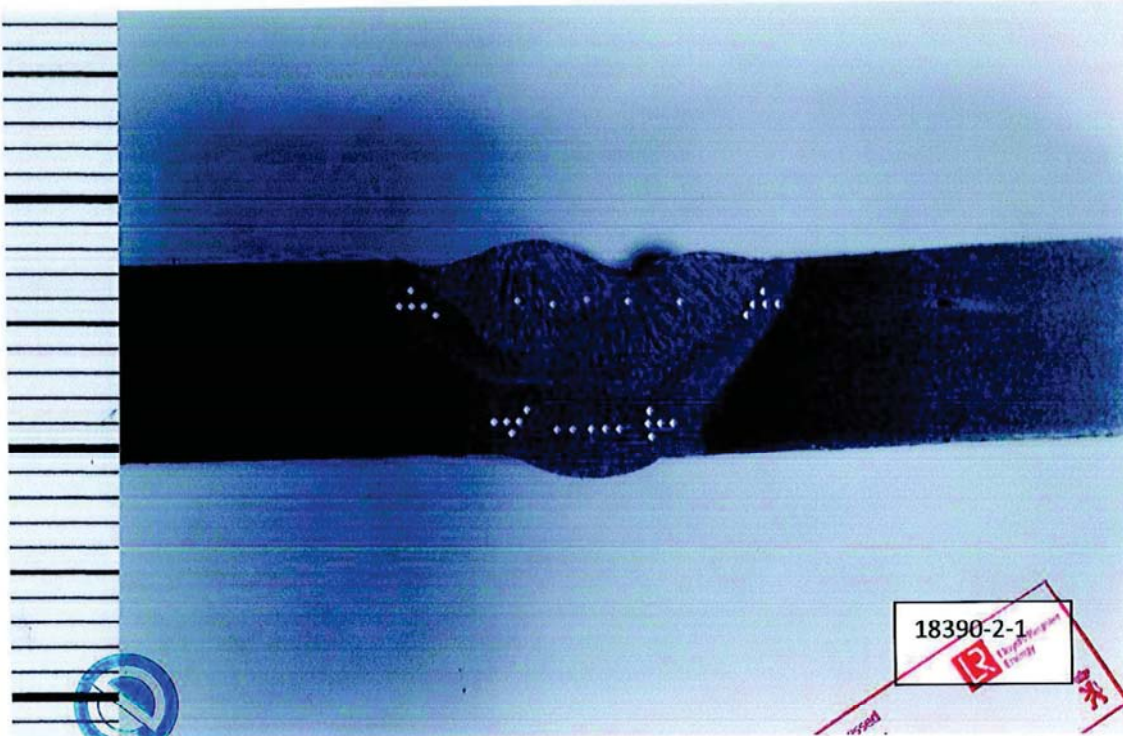


Albert Karstanje

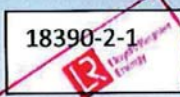
26 JAN 2016

All characteristics of the above object(s) have, as far as accessible and relevant, been verified by Element Materials Technology Rotterdam b.v. (Element). Other information was provided by the purchaser. This information was verified as far as possible and has been copied into this report, unchanged. Element does not bear responsibility for the correctness of this submitted information. We hereby certify that the reported test data is correct and that the above object(s) was (were) tested/examined in accordance with purchaser's requirements and/or the above procedure(s) and/or code(s)/specification(s). On occasion a test is subcontracted by Element, the accreditation number of the subcontracted party is reported. Interpretations, opinions, conclusions and advice are partly based on the examination results and partly on information supplied by the purchaser. This report has legal value only when furnished with an authorized signature. If, upon reproduction, only part of this report is copied, Element will not bear any responsibility for content, purport and conclusions of that reproduction. The items subjected for the examinations will be stored for 2 months, starting from the report date as mentioned on the title page of this report. When no other instructions are received from our client before the end of this standard period of storage, we assume that our client has no objections that the objects concerned will be disposed of by Element at will.

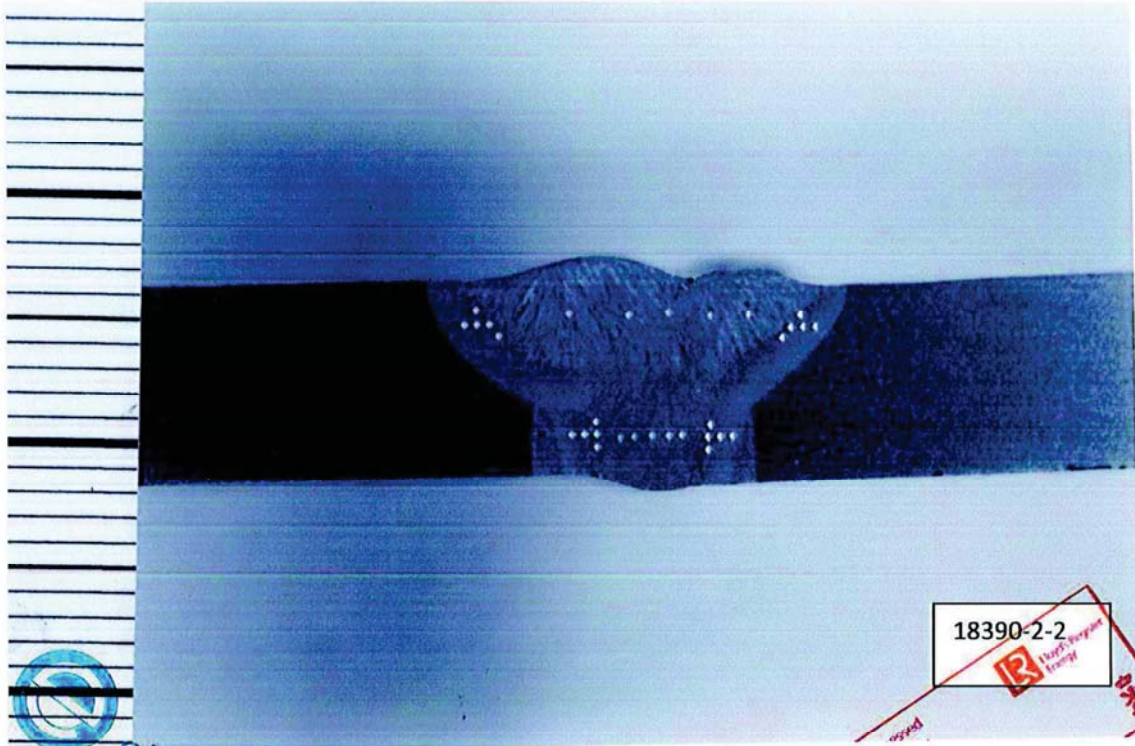
MACRO PHOTO
Cross section no. 18390-2-1




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18390-2-1

26 JAN 2016

MACRO PHOTO
Cross section no. 18390-2-2



element
Albert Karsanje *AK*

18390-2-2

26 JAN 2016
Registered Hydrologist

PQR record number	RET 0245029-001-26	Revision 1	WPS record number	S2400	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

BASE METALS

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick (mm)	Dia. (mm)
Welded to:	Plate	API 2W (50)	U	II	-	-	30	-
	Plate	API 2W (50)	U	II	-	-	30	-
and tested:	Without PWHT, Fillet-weld test							
Notes								

JOINTS

Joint design	Fillet weld		
		See addition information	See addition information

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

FILLER METALS

SFA specification	5.18
AWS classification	E70C-6MH4
Filler metal F-number	6
Weld metal A-number	-
Filler metal nominal composition	N.A.
Filler metal trade name	Lincoln, Outershield MC715-H
Filler metal size (mm)	1,2
Deposited thickness (mm)	8,00
Maximum pass thickness (mm)	5
Weld deposit chemistry	-
Supplemental filler metal	-
Supplemental filler metal vol. (mm ³)	-

POSITION

Position	3F
Weld progression	Uphill

PREHEAT

Preheat temperature (°C)	10
Maximum interpass temperature (°C)	132

GAS

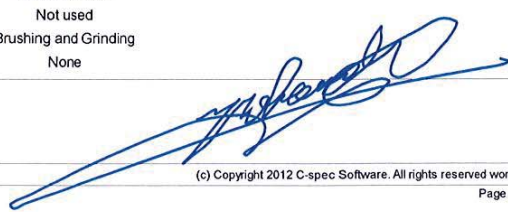
Shielding gas: Type	AC-20 (A5.32 SG-)
	Flow rate (l/min)
Trailing gas: Type	None
	Flow rate (l/min)
Backing gas: Type	None
	Flow rate (l/min)

ELECTRICAL

Filler metal size (mm)	1,2
Amperes	142 - 143
Volts	15,9 - 16
Travel speed (mm/min)	72 - 90
Maximum heat input (kJ/mm)	1,88
Current/polarity	DCEP (reverse polarity)
Wire feed speed (m/min)	0
Arc transfer mode	Short-circuiting

TECHNIQUE

String or weave	Stringer and Weave
Orifice/gas cup size	15
C.T.W.D (mm)	15
Multi/single electrode	Single electrode
Multi/Single pass per side	Multiple passes
Peening	Not used
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None



Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR) - Test results (as welded)

WeldOffice WPS



PQR record number	RET 0245029-001-26	Revision 1	WPS record number	S2400	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

TENSILE TESTS

Specimen number	Width (mm)	Thickness (mm)	Area (mm ²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Reduced section
						Type of failure and location
Comments						

GUIDED BEND TESTS

Type of test	Acceptance criteria	Result	Comments
Comments			

FILLET WELD TESTS

Type of test	Acceptance criteria	Result	Fillet leg size (mm) x (mm)
3x Macroscopic examination multiple pass	AWS D1.1	Acceptable	a=8 mm
3x Macroscopic examination single pass	AWS D1.1	Acceptable	a=6 mm
Comments			

CERTIFICATION

Welder's name	ID Number	Stamp number	Mechanical testing by	Schielab Breda (NLD)
T. Lajos	ID Card 353992JA	W-104	Laboratory test number	SL 12.6056-1
			Test file number	ARL1559-14
			Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of section 4 of ANSI/AWS D1.1-2010 Structural Welding Code-Steel.

Signature 1

Name	Signature
Franky van Toledo	
Date	
8-6-2012	

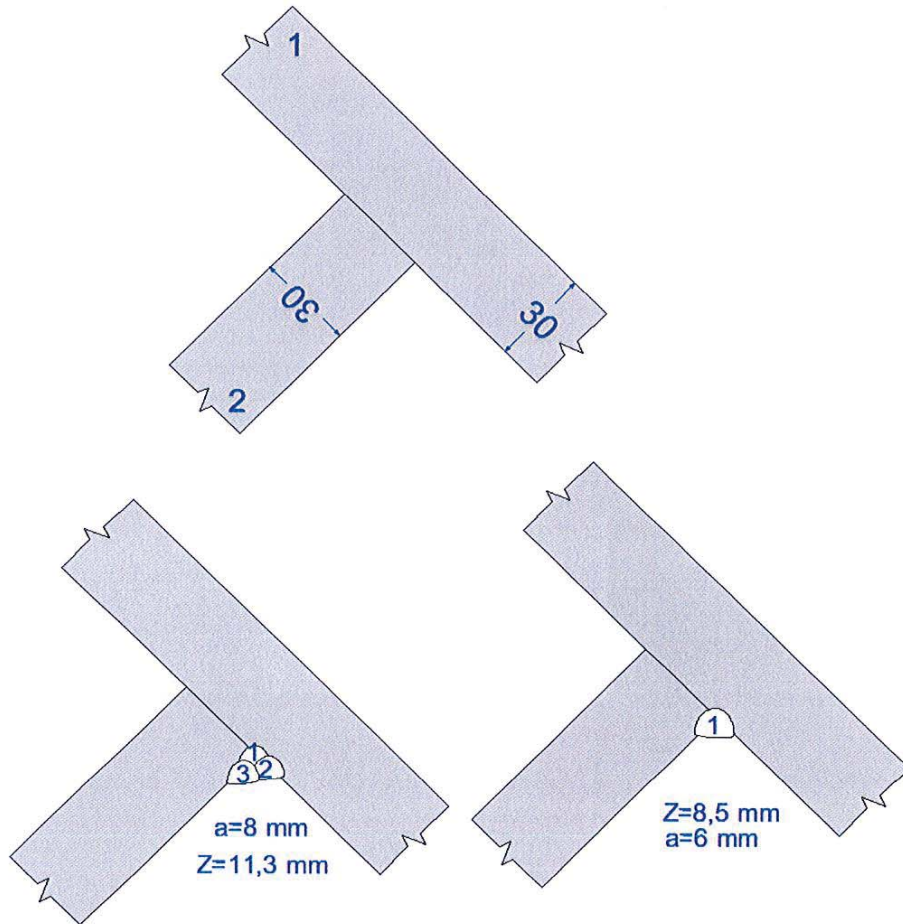


Signature 2

Name	Signature
W. Korndeur (Lloyds)	
Date	
8-6-2012	



PQR record number	RET 0245029-001-26	Revision 1	WPS record number	S2400	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	




Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding conditions - (PQRD Welding Data Record)

WeldOffice WPS



PQRD number	ARL1559-14	Revision 1	Date	29-5-2012
PQR number	RET 0245029-001-26	Revision 1	Welding standard	AWS D1.1/D1.1M:2010
WPS number	S2400	Revision 0	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

BASE METALS

		Welded to:		
Product form	Plate	Product form	Plate	
Material control number	362705	Material control number	362705	
Specification (type or grade)	API 2W (50)	Specification (type or grade)	API 2W (50)	
Nominal composition	C-Mn	Nominal composition	C-Mn	
Trade name	Dillinger Hutte	Trade name	Dillinger Hutte	
P number	U	P number	U	
G number		G number		
AWS group number	II	AWS group number	II	
Nominal pipe/tube size	-	Nominal pipe/tube size	-	
Schedule	-	Schedule	-	
Length	(mm) 350	Length	(mm) 350	
Width (OD)	(mm) 150	Width (OD)	(mm) 150	
Thickness	(mm) 30	Thickness	(mm) 30	

JOINTS

Joint design	Fillet weld	See addition information	See addition information

CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

PQRD number	ARL1559-14	Revision 1	Date	29-5-2012
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PASS INFORMATION

Pass number	1 single layer	1 multi layer	1 multi layer	2 multi layer
Layer number	1	1	2	2

WELDING PROCESSES

Welding process	GMAW	GMAW	GMAW	GMAW
Type	Semi-automatic	Semi-automatic	Semi-automatic	Semi-automatic

FILLER METALS

Material control number	P1FC110214	P1FC110214	P1FC110214	P1FC110214
SFA specification	5.18	5.18	5.18	5.18
AWS classification	E70C-6MH4	E70C-6MH4	E70C-6MH4	E70C-6MH4
Filler metal F-number	6	6	6	6
Weld metal A-number	-	-	-	-
Filler metal nominal composition	N.A.	N.A.	N.A.	N.A.
Filler metal trade name	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H
Filler metal size (mm)	1,2	1,2	1,2	1,2
Length of filler metal consumed (mm)	-	-	-	-
Deposited thickness (mm)	4	4	4	4
Maximum pass thickness (mm)	5	5	5	5
Weld deposit chemistry	-	-	-	-
Supplemental filler metal	-	-	-	-
Supplemental filler metal vol. (mm³)	-	-	-	-

POSITION

Position	3F	3F	3F	3F
Weld progression	Uphill	Uphill	Uphill	Uphill

PREHEAT

Preheat temperature (°C)	10	10	10	10
Maximum interpass temperature (°C)	10	10	87	132

GAS

Shielding gas: Type	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
Flow rate (l/min)	15	15	15	15
Trailing gas: Type	None	None	None	None
Flow rate (l/min)	-	-	-	-
Backing gas: Type	None	None	None	None
Flow rate (l/min)	-	-	-	-

ELECTRICAL

Filler metal size (mm)	1,2	1,2	1,2	1,2
Amperes	142	143	143	142
Volts	15.9	16	16	16
Travel speed (mm/min)	72	73	90	75
Maximum heat input (kJ/mm)	1,8815	1,8805	1,5253	1,8176
Current/polarity	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Wire feed speed (m/min)	-	-	-	-
Arc transfer mode	Short-circuiting	Short-circuiting	Short-circuiting	Short-circuiting

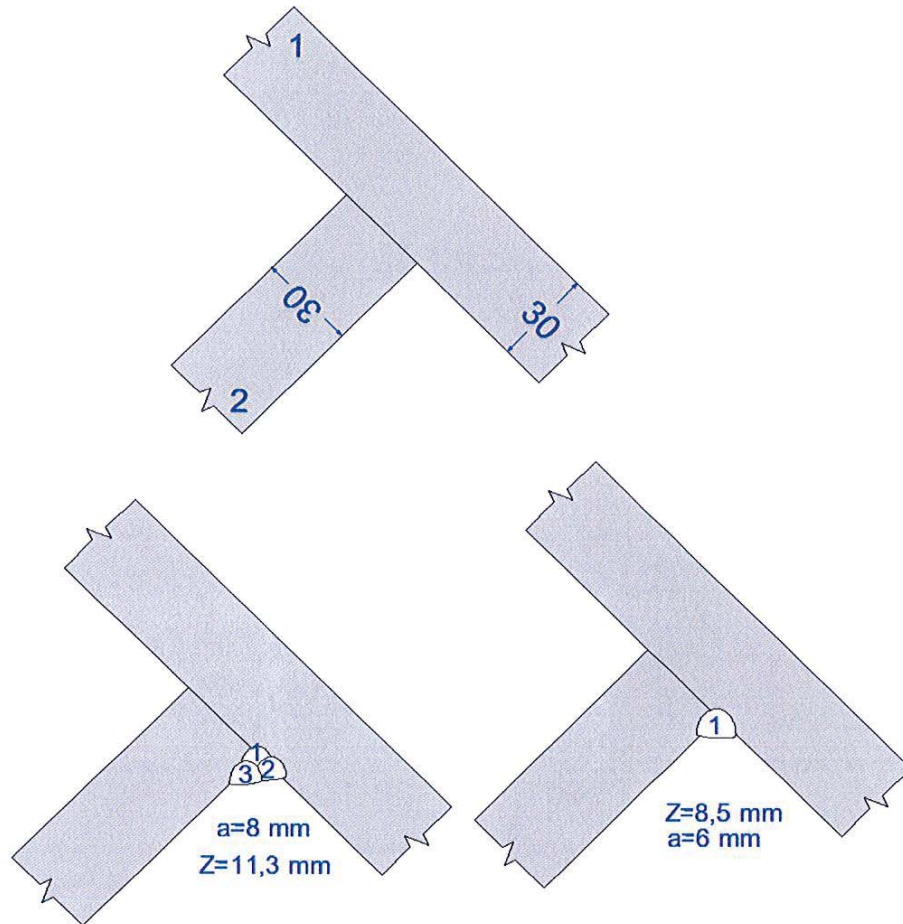
TECHNIQUE

String or weave	Stringer and Weave	Stringer and Weave	Stringer and Weave	Stringer and Weave
Onifice/gas cup size	15	15	15	15
C.T.W.D (mm)	15	15	15	15
Multi/single electrode	Single electrode	Single electrode	Single electrode	Single electrode
Multi/Single pass per side	Multiple passes	Multiple passes	Multiple passes	Multiple passes
Peening	Not used	Not used	Not used	Not used
Initial/interpass cleaning	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding
Back gouging method	None	None	None	None

PASS PERFORMED/WITNESSED BY

Welders name	T. Lajos	T. Lajos	T. Lajos	T. Lajos
Recorded/witnessed by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)
Date	29-5-2012	29-5-2012	29-5-2012	29-5-2012
Data entry by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)

PQRD number	ARL1559-14	Revision 1	Date	29-5-2012
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WELDING PROCEDURE QUALIFICATION RECORD AND WELDERS PERFORMANCE QUALIFICATION TEST RECORD

Testing in accordance with : AWS D1.1:2010
Purchaser : Arjan Roza Lastechniek BV
Purchase order no. : ARL1559-14
Manufacturer : Airpack Nederland BV.
WPS : S2400
Description of sample(s) : Plate with fillet welds single-layer and multi-layer
Dimension(s) : 350x150x30 mm
Group number : II -II
Material grade : API 2W grade 50 - API 2W grade 50
Welding process(es) : GMAW (metal cored)
Filler : SFA 5.18 : E70C-6MH4, F-number 6
Brand and type : Lincoln Electric Outershield MC715-H
Shielding gas : AC-20 (A5.32 SG-)
Backing gas : N.A.
Welding position : 3F progression up
Preheat / Interpass temp. : 10 °C / 132 °C
Joint type : Fillet welds single-layer and multi-layer
Welder : T. Lajos
Date / place of birth : 11-02-1985 / Hungary
Stamp. No. / ID : W-104 / ID Card 353992JA
Testpiece marked with : ARL1559-14

NON DESTRUCTIVE EXAMINATION

* Visual examination : performed by examiner

MACROSCOPIC EXAMINATION

Table with 2 columns: Amount, Result. Row 1: 3x, During the examination, no weld defects have been observed.

Conclusion: The results satisfy the requirements.

All characteristics of the above object(s) have, as far as accessible and relevant, been verified by Schielab b.v. Other information was provided by the purchaser. This information was verified as far as possible and has been copied into this report, unchanged. We hereby certify that the reported test data is correct and that the above object(s) was (were) tested/examined in accordance with purchasers requirements and/or the above procedure(s) and/or code(s)/specification(s). On occasion a destructive test is subcontracted by Schielab b.v. (marked 'U' on the report). Opinions, interpretations and advice expressed in this report are outside the scope of any possible RvA accreditation, but are presented in a true and fair manner based on the best knowledge of the Schielab personnel involved. If, upon reproduction, only part of this report is copied, Schielab will not bear any responsibility for content, purpose and conclusions of that reproduction. This report has legal value only when printed on Schielab paper and furnished with an authorised signature. Digital versions of this report have no legal value. Unless explicitly agreed upon otherwise in writing our "General conditions for activities performed by Schielab b.v.", deposited at the Chamber of Commerce in Rotterdam, under number 24170257, apply

Breda, 07-06-2012

Witnessed and approved by; Mr.

A. Karstanje

Representing: Lloyd's Register Nederland B.V.

[RET 0245029]



Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning. Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.



WPS record number	S2400	Revision 0	Qualified to	AWS D1.1/D1.1M:2010
Date	14-6-2012		Company name	Airpack Netherlands BV
Supporting PQR(s)	RET 0245029-001-26 - Rev 1			
Reference docs.				

Scope	Filletwelds single layer a <= 6 mm and multi layer filletwelds => 8 mm Fillet, no PWHT (As-welded)
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS

Type	Plate	P-no. U	Grp-no. II
Welded to	Plate	P-no. U	Grp-no. II
Backing:	None	P-no.	Grp-no.
Retainers	None		
Notes			

THICKNESS RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	-	-	-	-
Impact tested	-	-	-	-
Partial pen.	-	-	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Nominal pipe size	610,	no max.	-	-

FILLER METALS

THICKNESS RANGE QUALIFIED (mm)

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded		With PWHT	
						Min.	Max.	Min.	Max.
GMAW	5.18	E70C-6MH4	6	-	Lincoln, Outershield MC715-H	3,	no max.	-	-
Sup. filler	-	-	-	-	-	- None -			

WELDING PROCEDURE

Welding process	GMAW
Type	Semi-automatic
Minimum preheat/interpass temperature(°C)	10
Maximum interpass temperature (°C)	188
Filler metal size (mm)	1,2
Layer number	All
Position	V
Weld progression	Uphill
Current/polarity	DCEP (reverse polarity)
Amperes	127 - 157
Volts	14,7- 17,1
Travel speed (mm/min)	54 - 112
Maximum heat input (kJ/mm)	1,88
Wire feed speed (m/min)	0,
Arc transfer mode	Short-circuiting
Shielding: Gas type	AC-20 (A5.32 SG-)
Flow rate (l/min)	12 - 22
Trailing: Gas type	None
Flow rate (l/min)	-
Backing: Gas type	None
Flow rate (l/min)	-
String or weave	Stringer or Weave
Orifice/gas cup size	15
C.T.W.D (mm)	15
Multi/Single pass per side	Multiple passes
Multi/single electrode	Single electrode
Maximum pass thickness (mm)	5
Weld deposit chemistry	-
Notes	



Airpack Netherlands BV

Groenewegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding Procedure Specification (WPS)

WeldOffice WPS



WPS record number	S2400	Revision	0	Qualified to	AWS D1.1/D1.1M:2010
Date	14-6-2012	Company name	Airpack Netherlands BV		


PREHEAT TABLE

Applicable standard	
AWS D1.1 (Category A)	For thickness 3 to 19(mm): 0(°C). Preheat to 20(°C) if the base metal temperature is below 0(°C). Over 19 thru 38.1(mm): 66(°C). Over 38.1 thru 63.5(mm): 107(°C). Over 63.5(mm): 150(°C).

TECHNIQUE

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES**Signature 1**

Name	Signature
Date	

Signature 2

Name	Signature
Date	

PQR record number	RET 0245029-001-17	Revision 0	WPS record number	P2000	Revision 2
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	ASME Section IX:2010 including addenda 2011	

BASE METALS (QW-403)

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
Welded to:	Pipe/Tube	SA-333 (6)	1	1	63,50	Standard	5,16	73,03
	Pipe/Tube	SA-333 (6)	1	1	63,50	Standard	5,16	73,03
and tested:	Without PWHT, With impacts							
Notes								

JOINTS (QW-402)

Joint design	Single-V-groove	See addition information
Backing:	None	
Retainers	None	
Groove angle (deg.)	60	
Root opening (mm)	4	
Root face (mm)	0-1	

WELDING PROCESSES

Welding process	GTAW
Type	Manual

FILLER METALS (QW-404)

SFA specification	5,18
AWS classification	ER70S-3
Filler metal F-number	6
Weld metal A-number	1
Filler metal nominal composition	N.A.
Filler metal trade name	Lincoln Electric, LNT 25
Filler metal size (mm)	2,4
Deposited thickness (mm)	5,16
Maximum pass thickness (mm)	4
Weld deposit chemistry	-

POSITION (QW-405)

Position	6G
Weld progression	Uphill

PREHEAT (QW-406)

Preheat temperature (°C)	10
Maximum interpass temperature (°C)	166

GAS (QW-408)

Shielding gas:	Type	Argon (A5.32 SG-A)	
	Flow rate (l/min)	14	
Trailing gas:	Type	None	
	Flow rate (l/min)	-	
Backing gas:	Type	None	
	Flow rate (l/min)	-	

ELECTRICAL (QW-409)

Filler metal size (mm)	2,4
Amperes	97 - 101
Volts	9,6 - 10,3
Travel speed (mm/min)	33 - 69
Maximum heat input (kJ/mm)	1,8165
Tungsten size (mm)	2,4
Tungsten type	SFA 5.12 EWCe-2
Current/polarity	DCEN (straight polarity)
DC pulsing current	None

TECHNIQUE (QW-410)

String or weave	Stringer and Weave
Orifice/gas cup size	9,5
Multi/Single pass per side	Multiple passes
Peening	Not used
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None



PQR record number	RET 0245029-001-17	Revision 0	WPS record number	P2000	Revision 2
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	ASME Section IX:2010 including addenda 2011	

TENSILE TESTS (QW-150)

Specimen number	Width (mm)	Thickness (mm)	Area (mm²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location
1	19.01	4.53	86,115	-	538 N/mm²	Ductile-Base Metal
2	19.02	4.73	89,965		527 N/mm²	Ductile-Base Metal

Reduced section

Comments

GUIDED BEND TESTS (QW-160)

Type of test	Acceptance criteria	Result	Comments
Face bend	QW 163	Acceptable	
Face bend	QW 163	Acceptable	
Root bend	QW 163	Acceptable	
Root bend	QW 163	Acceptable	

Comments

TOUGHNESS TESTS (QW-170)

Specimen number	Notch location	Notch type	Specimen size (mm) x (mm)	Test temperature (°C)	Impact values			Drop weight break
					(J)	(% Shear)	(mm)	
1	Weld Metal	Charpy V	10 x 4	-55	52	-	-	-
2	Weld Metal	Charpy V	10 x 4	-55	19	-	-	-
3	Weld Metal	Charpy V	10 x 4	-55	55	-	-	-
4	HAZ	Charpy V	10 x 4	-55	74	-	-	-
5	HAZ	Charpy V	10 x 4	-55	61	-	-	-
6	HAZ	Charpy V	10 x 4	-55	58	-	-	-


Comments

CERTIFICATION



Welder's name	ID Number	Stamp number	Mechanical testing by	Schielab BV Breda (NLD)
A. Sumantri	ID Card IXH4P6551	A1	Laboratory test number	SL 12.6043-1A
			Test file number	ARL1559-1
			Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

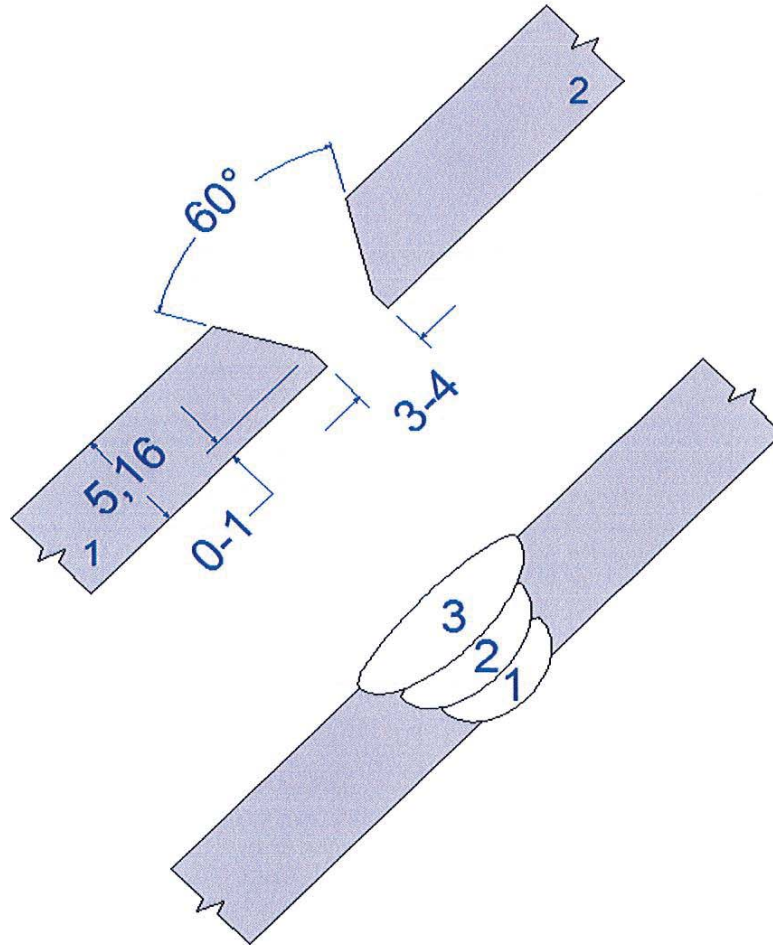
Signature 1

Name	Signature
Franky van Toledo	 Airpack Nederland bv
Date	
8-6-2012	

Signature 2

Name	Signature
W. Komdeur Llyds	 
Date	
8-6-2012	

PQR record number	RET 0245029-001-17	Revision 0	WPS record number	P2000	Revision 2
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	ASME Section IX:2010 including addenda 2011	



Pipe diameter 2½" x STD (73,0,3x5,16 mm)



PQRD number	ARL1559-1	Revision 1	Date	29-5-2012
PQR number	RET 0245029-001-17	Revision 0	Welding standard	ASME Section IX:2010 including addenda 2011
WPS number	P2000	Revision 2	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GTAW
Type	Manual

BASE METALS (QW-403)

		Welded to:		
Product form	Pipe/Tube	Product form	Pipe/Tube	
Material control number	353566	Material control number	353566	
Specification (type or grade)	SA-333 (6)	Specification (type or grade)	SA-333 (6)	
Nominal composition	C-Mn-Si	Nominal composition	C-Mn-Si	
Trade name	Vallourec & Mannesmann	Trade name	Vallourec & Mannesmann	
P number	1	P number	1	
G number	1	G number	1	
AWS group number	U	AWS group number	U	
Nominal pipe/tube size	63,50	Nominal pipe/tube size	63,50	
Schedule	Standard	Schedule	Standard	
Length	(mm) 150	Length	(mm) 150	
Width (OD)	(mm) 73,03	Width (OD)	(mm) 73,03	
Thickness	(mm) 5,16	Thickness	(mm) 5,16	

JOINTS (QW-402)

Joint design	Single-V-groove	See addition information	See addition information
Backing:	None		
Retainers	None		
Groove angle (deg.)	60		
Root opening (mm)	4		
Root face (mm)	0-1		

CLEANING/ROOT TREATMENT

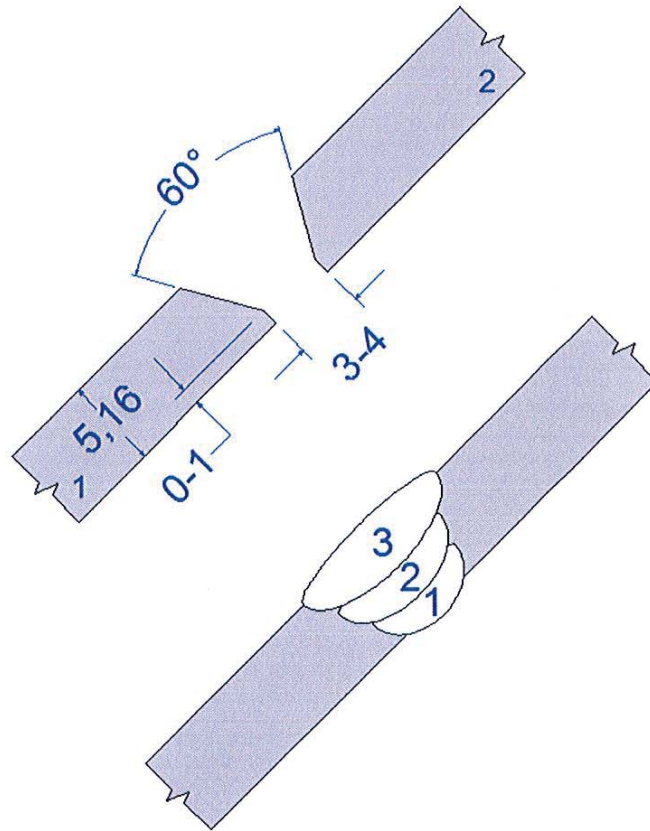
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None



PQRD number	ARL1559-1	Revision 1	Date	29-5-2012
PASS INFORMATION				
Pass number	1	2	3	
Layer number	1	2	3	
WELDING PROCESSES				
Welding process	GTAW	GTAW	GTAW	
Type	Manual	Manual	Manual	
FILLER METALS (QW-404)				
Material control number	334136	334136	334136	
SFA specification	5.18	5.18	5.18	
AWS classification	ER70S-3	ER70S-3	ER70S-3	
Filler metal F-number	6	6	6	
Weld metal A-number	1	1	1	
Filler metal nominal composition	N.A.	N.A.	N.A.	
Filler metal trade name	Lincoln Electric, LNT 25	Lincoln Electric, LNT 25	Lincoln Electric, LNT 25	
Filler metal size (mm)	2,4	2,4	2,4	
Length of filler metal consumed (mm)	-	-	-	
Deposited thickness (mm)	2,1	1,5	1,5	
Maximum pass thickness (mm)	4	4	4	
Weld deposit chemistry	-	-	-	
Flux nominal composition	N.A.	N.A.	N.A.	
Flux trade name	N.A.	N.A.	N.A.	
POSITION (QW-405)				
Position	6G	6G	6G	
Weld progression	Uphill	Uphill	Uphill	
PREHEAT (QW-406)				
Preheat temperature (°C)	10	10	10	
Maximum interpass temperature (°C)	10	112	166	
GAS (QW-408)				
Shielding gas: Type	Argon (A5.32 SG-A)	Argon (A5.32 SG-A)	Argon (A5.32 SG-A)	
Flow rate (l/min)	14	14	14	
Trailing gas: Type	None	None	None	
Flow rate (l/min)	-	-	-	
Backing gas: Type	None	None	None	
Flow rate (l/min)	-	-	-	
ELECTRICAL (QW-409)				
Filler metal size (mm)	2,4	2,4	2,4	
Amperes	97	101	97	
Volts	10.1	9.6	10.3	
Travel speed (mm/min)	64	69	33	
Maximum heat input (kJ/mm)	0,9185	0,8431	1,8165	
Tungsten size (mm)	2,4	2,4	2,4	
Tungsten type	SFA 5.12 EWCe-2	SFA 5.12 EWCe-2	SFA 5.12 EWCe-2	
Current/polarity	DCEN (straight polarity)	DCEN (straight polarity)	DCEN (straight polarity)	
DC pulsing current	None	None	None	
TECHNIQUE (QW-410)				
Stringer or weave	Stringer and Weave	Stringer and Weave	Stringer and Weave	
Orifice/gas cup size	9,5	9,5	9,5	
Multi/Single pass per side	Multiple passes	Multiple passes	Multiple passes	
Peening	Not used	Not used	Not used	
Initial/interpass cleaning	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding	
Back gouging method	None	None	None	
PASS PERFORMED/WITNESSED BY				
Welders name	A. Sumantri	A. Sumantri	A. Sumantri	
Recorded/witnessed by	A. J.H. Roza (IWT/IWI)	A. J.H. Roza (IWT/IWI)	A. J.H. Roza (IWT/IWI)	
Date	29-5-2012	29-5-2012	29-5-2012	
Data entry by	A. J.H. Roza (IWT/IWI)	A. J.H. Roza (IWT/IWI)	A. J.H. Roza (IWT/IWI)	



PQRD number	ARL1559-1	Revision 1	Date	29-5-2012
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Pipe diameter 2½" x STD (73,0,3x5,16 mm)



WELDING PROCEDURE QUALIFICATION RECORD AND WELDERS PERFORMANCE QUALIFICATION TEST RECORD

Testing in accordance with : ASME IX:2010

Purchaser : Arjan Roza Lastechniek BV

Purchase order no. : ARL1559-1

Manufacturer : Airpack Nederland BV.

WPS : P2000

Description of sample(s) : Pipe with Single-V-groove

Dimension(s) : 2,5" Sch 40S (Ø 73,03 x 5,15 mm)

Material grade : P1 Gr.1 – P1 Gr. 1

Material : ASTM SA-333 Gr.6 - ASTM SA-333 Gr.6

Welding process(es) : GTAW

Filler : F-no.6 A-no. 1

Brand and type : Lincoln Electric LNT 25, ER70S-3

Shielding gas : Argon (A5.32 SG-A)

Backing gas : Not used

Welding position : 6G progression up

Preheat / Interpass temp. : 10 °C / 166 °C

Joint type : Single-V-groove

Welder : A. Sumantri

Date / place of birth : 23-02-1962 / Oost- en West-Souburg

Stamp. No. / ID : W-102 / ID Card IXH4P6551

Testpiece marked with : ARL1559-1

NON DESTRUCTIVE EXAMINATION

* Visual examination : performed by examiner

CROSS WELD TENSILE TESTS

Dimensions(s) [mm]	Rm [N/mm ²]	Fracture location
19.01 x 4.53	538	Base material
19.02 x 4.73	527	Base material
Requirements;	≥ 415	

TECHNOLOGICAL TESTS

Type	Former / Bending angle	Results
Face bend	4t / 180°	2 x acceptable
root bend	4t / 180°	2 x acceptable



Ingeschreven in het RVA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning.
Entered in the RVA register for laboratories under number L 063 for the areas outlined in the approval.

Schielab-Breda Voorerf 18-20, 4824 GN Breda, Tel. 076 - 5424 300, Fax 076 - 5424 848
Schielab b.v. Handelsregister/Register of Commerce Rotterdam nr. 24170257



IMPACT TESTS - Type: Charpy KV

Notch location	Size [mm]	Test temp. [°C]	Results [J]	Average value [J]
Midweld	10 x 4	-55	52-19-55	42
Fusion line	10 x 4	-55	74-61-58	64
Requirements for size 10x10mm;			≥ 19	≥ 27
Requirements for size 10x4mm;			≥ 7.5	≥ 11

Conclusion: The results satisfy the requirements.

All characteristics of the above object(s) have, as far as accessible and relevant, been verified by Schielab b.v. Other information was provided by the purchaser. This information was verified as far as possible and has been copied into this report, unchanged. We hereby certify that the reported test data is correct and that the above object(s) was (were) tested/examined in accordance with purchasers requirements and/or the above procedure(s) and/or code(s)/specification(s). On occasion a destructive test is subcontracted by Schielab b.v. (marked 'U' on the report). Opinions, interpretations and advice expressed in this report are outside the scope of any possible RvA accreditation, but are presented in a true and fair manner based on the best knowledge of the Schielab personnel involved. If, upon reproduction, only part of this report is copied, Schielab will not bear any responsibility for content, purport and conclusions of that reproduction. This report has legal value only when printed on Schielab paper and furnished with an authorised signature. Digital versions of this report have no legal value. Unless explicitly agreed upon otherwise in writing our "General conditions for activities performed by Schielab b.v.", deposited at the Chamber of Commerce in Rotterdam, under number 24170257, apply.

Breda, 07-06-2012

Witnessed and approved by; Mr.

Representing: Lloyd's Register Nederland B.V.

[RET 0245029]


A. Karstjanje


Lloyd's Register Nederland B.V.
P.F. Reijntes
Rotterdam Office
Witnessed

07 JUNI 2012



Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning. Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.

Schielab-Breda Voorerf 18-20, 4824 GN Breda, Tel. 076 - 5424 300, Fax 076 - 5424 488
Schielab b.v. Handelsregister/Register of Commerce Rotterdam nr. 24170257



Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands
ASME - Welding Procedure Specification (WPS)
 WeldOffice WPS



WPS record number	P2000	Revision	3	Qualified to	ASME Section IX:2013
Date	14-6-2012	Company name	Airpack Netherlands BV		
Supporting PQR(s)	RET 0245029-001-17 - Rev 0				
Reference docs.					

Scope	Welding instruction piping Groove, no PWHT (As-welded), impact testing
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS (QW-403)

Type	Carbon steel (P1)	P-no.	1	Grp-no.	1
Welded to	Carbon steel (P1)	P-no.	1	Grp-no.	1
Backing:	None	P-no.		Grp-no.	
Retainers	None				
Notes					

THICKNESS RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	1,50	10,32	-	-
Impact tested	2,58	10,32	-	-
Partial pen.	1,50	10,32	-	-
Fillet welds	-	-	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Nominal pipe size	no min.	no max.	-	-

FILLER METALS (QW-404)

THICKNESS RANGE QUALIFIED (mm)

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded		With PWHT	
						Min.	Max.	Min.	Max.
GTAW	5.18	ER70S-3	6	1	Lincoln Electric, LNT 25	no min.	10,32	-	-
Cons. insert	-	-	-	-	-	- None -			
Flux	-	-	-	-	-	- None -			

WELDING PROCEDURE

Welding process	GTAW	
Type	Manual	
Minimum preheat/interpass temperature(°C)	10	
Maximum interpass temperature (°C)	221	
Tungsten size (mm)	2,4	
Tungsten type	SFA 5.12 EWCe-2	
Filler metal size (mm)	2,4	
Layer number	All	
Position	All	
Weld progression	Uphill	
Current/polarity	DCEN (straight polarity)	
Amperes	90 - 120	
Volts	9,0 - 11	
Travel speed (mm/min)	30 - 70	
Maximum heat input (kJ/mm)	1,8165	
DC pulsing current	None	
Shielding: Gas type	Argon (A5.32 SG-A)	
Flow rate (l/min)	12 - 16	
Trailing: Gas type	None	
Flow rate (l/min)	-	
Backing: Gas type	None	
Flow rate (l/min)	-	
String or weave	Stringer and Weave	
Orifice/gas cup size	9,5	
Multi/Single pass per side	Multiple passes	
Weld deposit chemistry	-	
Notes		

WPS record number	P2000	Revision 3	Qualified to	ASME Section IX:2013
Date	14-6-2012		Company name	Airpack Netherlands BV

PREHEAT TABLE


Applicable standard	
ASME B31.1	80 (°C) for thickness over 25 (mm) and specified maximum carbon content over 0.30%. 10 (°C) for all other materials.
ASME B31.3	10 (°C) for thickness less than 25 (mm) and specified minimum tensile strength not over 490 (MPa). 79 (°C) for 25 (mm) and greater thickness, or if specified minimum tensile strength is over 490 (MPa).

TECHNIQUE (QW-410)

Peening	Not used
Surface preparation	Grinding
Initial/Interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Name	Signature
Franky van Toledo	
Date	
8-6-2012	

Signature 2

Name	Signature
Wim Komdeur	
Date	
8-6-2012	



PQR record number	RET 0245029-001-19	Revision 1	WPS record number	P2500	Revision 2
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	ASME Section IX:2010 including addenda 2011	

BASE METALS (QW-403)

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
Welded to:	Pipe/Tube	SA-350 (LF2)	1	2	63,50	Standard	5,16	73,03
	Pipe/Tube	SA-350 (LF2)	1	2	63,50	Standard	5,16	73,03
and tested:	Without PWHT, With impacts							
Notes								

JOINTS (QW-402)

Joint design	Single-V-groove	See addition information	See addition information
Backing:	None		
Retainers	None		
Groove angle (deg.)	30		
Root opening (mm)	4		
Root face (mm)	0-1		

WELDING PROCESSES

Welding process	GTAW
Type	Manual

FILLER METALS (QW-404)

SFA specification	5.18
AWS classification	ER70S-3
Filler metal F-number	6
Weld metal A-number	1
Filler metal nominal composition	N.A.
Filler metal trade name	Lincoln Electric, LNT 25
Filler metal size (mm)	2,4
Deposited thickness (mm)	5,16
Maximum pass thickness (mm)	4
Weld deposit chemistry	-

POSITION (QW-405)

Position	6G
Weld progression	Uphill

PREHEAT (QW-406)

Preheat temperature (°C)	10
Maximum interpass temperature (°C)	167

GAS (QW-408)

Shielding gas: Type	Type	Argon (A5.32 SG-A)
Flow rate (l/min)		14
Trailing gas: Type	Type	None
Flow rate (l/min)		-
Backing gas: Type	Type	None
Flow rate (l/min)		-

ELECTRICAL (QW-409)

Filler metal size (mm)	(mm/min)	2,4
Amperes		93 - 98
Volts		9,6 - 10,6
Travel speed (mm/min)		37 - 58
Maximum heat input (kJ/mm)		1,65
Tungsten size (mm)		2,4
Tungsten type		SFA 5.12 EWCe-2
Current/polarity		DCEN (straight polarity)
DC pulsing current		None

TECHNIQUE (QW-410)

String or weave	Stringer and Weave
Orifice/gas cup size	9,5
Multi/Single pass per side	Multiple passes
Peening	Not used
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None





PQR record number	RET 0245029-001-19	Revision 1	WPS record number	P2500	Revision 2
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	ASME Section IX:2010 including addenda 2011	

TENSILE TESTS (QW-150)

Reduced section

Specimen number	Width (mm)	Thickness (mm)	Area (mm ²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location
1	19.04	4.62	87,965	-	536 N/mm ²	Ductile-Base Metal
2	19.05	4.64	88,392	-	537 N/mm ²	Ductile-Weld

Comments

GUIDED BEND TESTS (QW-160)

Type of test	Acceptance criteria	Result	Comments
Root bend	QW 163	Acceptable	
Root bend	QW 163	Acceptable	
Face bend	QW 163	Acceptable	
Face bend	QW 163	Acceptable	

Comments

TOUGHNESS TESTS (QW-170)

Specimen number	Notch location	Notch type	Specimen size (mm) x (mm)	Test temperature (°C)	Impact values			Drop weight break
					(J)	(% Shear)	(mm)	
1	Weld Metal	Charpy V	10 x 4	-55	20	-	-	-
2	Weld Metal	Charpy V	10 x 4	-55	43	-	-	-
3	Weld Metal	Charpy V	10 x 4	-55	34	-	-	-
4	HAZ	Charpy V	10 x 4	-55	43	-	-	-
5	HAZ	Charpy V	10 x 4	-55	10	-	-	-
6	HAZ	Charpy V	10 x 4	-55	34	-	-	-

Comments

CERTIFICATION

Welder's name	ID Number	Stamp number	Mechanical testing by	Schielab BV Breda (NLD)
A. Sumantri	ID Card IXH4P6551	A1	Laboratory test number	SL 12.6045-1A
			Test file number	ARL1559-3
			Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

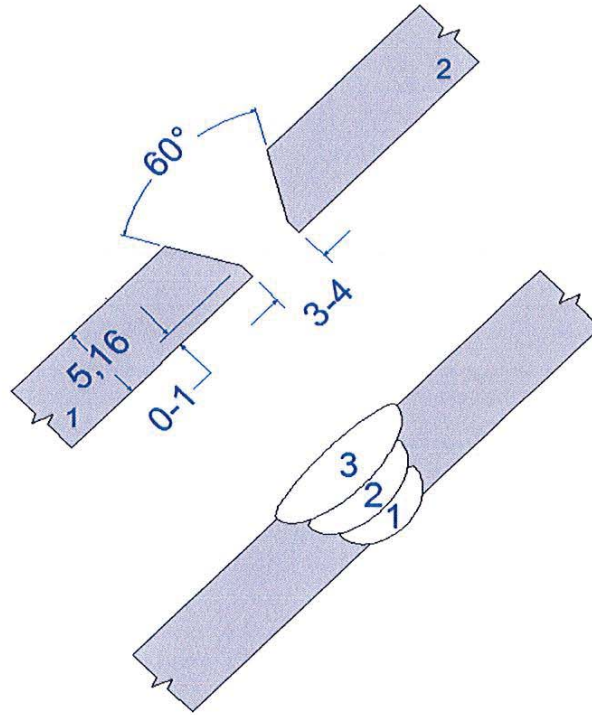
Signature 1

Signature 2

Name	Signature	Name	Signature
Franky van Toledo		W. Komdeur (Lloyds)	
Date		Date	
8-6-2012		8-6-2012	



PQR record number	RET 0245029-001-19	Revision 1	WPS record number	P2500	Revision 2
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	ASME Section IX:2010 including addenda 2011	



Pipe diameter 2½" x STD (73,0,3x5,16 mm)



PQRD number	ARL1559-3	Revision 2	Date	29-5-2012
PQR number	RET 0245029-001-19	Revision 1	Welding standard	ASME Section IX:2010 including addenda 2011
WPS number	P2500	Revision 2	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GTAW
Type	Manual

BASE METALS (QW-403)

Product form		Welded to:	Product form	
Material control number	Pipe/Tube 29685		Material control number	Pipe/Tube 29685
Specification (type or grade)	SA-350 (LF2)		Specification (type or grade)	SA-350 (LF2)
Nominal composition	C-Mn-Si		Nominal composition	C-Mn-Si
Trade name	Sochorvá válcovna S. A.		Trade name	Sochorvá válcovna S. A.
P number	1		P number	1
G number	2		G number	2
AWS group number	U		AWS group number	U
Nominal pipe/tube size	63,50		Nominal pipe/tube size	63,50
Schedule	Standard		Schedule	Standard
Length	(mm) 150		Length	(mm) 150
Width (OD)	(mm) 73,03		Width (OD)	(mm) 73,03
Thickness	(mm) 5,16		Thickness	(mm) 5,16

JOINTS (QW-402)

Joint design	Single-V-groove	See addition information	See addition information
Backing:	None		
Retainers	None		
Groove angle (deg)	60		
Root opening (mm)	4		
Root face (mm)	0-1		

CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None



PQRD number	ARL1559-3	Revision 2	Date	29-5-2012
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PASS INFORMATION

Pass number	1	2	3
Layer number	1	2	3

WELDING PROCESSES

Welding process	GTAW	GTAW	GTAW
Type	Manual	Manual	Manual

FILLER METALS (QW-404)

Material control number	334136	334136	334136
SFA specification	5.18	5.18	5.18
AWS classification	ER70S-3	ER70S-3	ER70S-3
Filler metal F-number	6	6	6
Weld metal A-number	1	1	1
Filler metal nominal composition	N.A.	N.A.	N.A.
Filler metal trade name	Lincoln Electric, LNT 25	Lincoln Electric, LNT 25	Lincoln Electric, LNT 25
Filler metal size (mm)	2,4	2,4	2,4
Length of filler metal consumed (mm)	-	-	-
Deposited thickness (mm)	2,1	1,5	1,5
Maximum pass thickness (mm)	4	4	4
Weld deposit chemistry	-	-	-
Flux nominal composition	N.A.	N.A.	N.A.
Flux trade name	N.A.	N.A.	N.A.

POSITION (QW-405)

Position	6G	6G	6G
Weld progression	-	-	-

PREHEAT (QW-406)

Preheat temperature (°C)	10	10	10
Maximum interpass temperature (°C)	10	154	167

GAS (QW-408)

Shielding gas: Type	Argon (A5.32 SG-A)	Argon (A5.32 SG-A)	Argon (A5.32 SG-A)
Flow rate (l/min)	14	14	14
Trailing gas: Type	None	None	None
Flow rate (l/min)	-	-	-
Backing gas: Type	None	None	None
Flow rate (l/min)	-	-	-

ELECTRICAL (QW-409)

Filler metal size (mm)	2,4	2,4	2,4
Amperes	93	98	96
Volts	9.6	9.9	10.6
Travel speed (mm/min)	58	54	37
Maximum heat input (kJ/mm)	0,9236	1,078	1,6502
Tungsten size (mm)	2,4	2,4	2,4
Tungsten type	SFA 5.12 EWCe-2	SFA 5.12 EWCe-2	SFA 5.12 EWCe-2
Current/polarity	DCEN (straight polarity)	DCEN (straight polarity)	DCEN (straight polarity)
DC pulsing current	None	None	None

TECHNIQUE (QW-410)

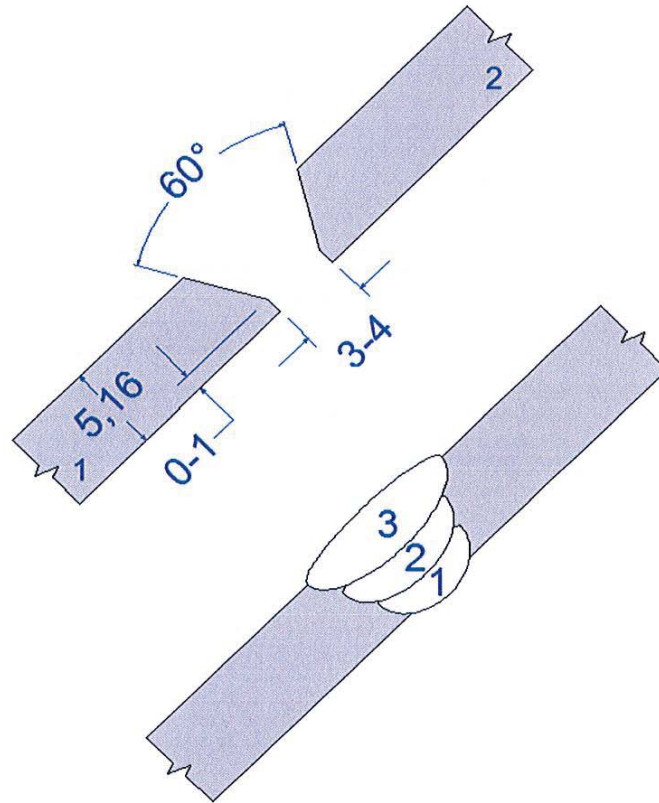
String or weave	Stringer and Weave	Stringer and Weave	Stringer and Weave
Orifice/gas cup size	9,5	9,5	9,5
Multi/Single pass per side	Multiple passes	Multiple passes	Multiple passes
Peening	Not used	Not used	Not used
Initial/interpass cleaning	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding
Back gouging method	None	None	None

PASS PERFORMED/WITNESSED BY

Welders name	A. Sumantri	A. Sumantri	A. Sumantri
Recorded/witnessed by	A. J.H. Roza (IWT/IWI)	A. J.H. Roza (IWT/IWI)	A. J.H. Roza (IWT/IWI)
Date	29-5-2012	29-5-2012	29-5-2012
Data entry by	A. J.H. Roza (IWT/IWI)	A. J.H. Roza (IWT/IWI)	A. J.H. Roza (IWT/IWI)



PQRD number	ARL1559-3	Revision 2	Date	29-5-2012
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Pipe diameter 2 1/2" x STD (73,0,3x5,16 mm)

WELDING PROCEDURE QUALIFICATION RECORD AND WELDERS PERFORMANCE QUALIFICATION TEST RECORD

Testing in accordance with : ASME IX:2010
Purchaser : Arjan Roza Lastechniek BV
Purchase order no. : ARL1559-3
Manufacturer : Airpack Nederland BV.
WPS : P2500
Description of sample(s) : Pipe with Single-V-groove
Dimension(s) : 2,5" Sch 40S (Ø 73,03 x 5,15 mm)
Material grade : P1 Gr.2 – P1 Gr. 2
Material : ASTM SA-350 LF2 - ASTM SA-350 LF2
Welding process(es) : GTAW
Filler : F-no.6 A-no. 1
Brand and type : Lincoln Electric LNT 25, ER70S-3
Shielding gas : Argon (A5.32 SG-A)
Backing gas : Not used
Welding position : 6G progression up
Preheat / Interpass temp. : 10 °C / 167 °C
Joint type : Single-V-groove
Welder : A. Sumantri
Date / place of birth : 23-02-1962 / Oost- en West-Souburg
Stamp. No. / ID : W-102 / ID Card IXH4P6551
Testpiece marked with : ARL1559-3

NON DESTRUCTIVE EXAMINATION

*** Visual examination** : performed by examiner

CROSS WELD TENSILE TESTS

Dimensions(s) [mm]	Rm [N/mm ²]	Fracture location
19.04 x 4.62	536	Base material
19.05 x 4.64	537	Weld metal
Requirements;	≥ 485	

TECHNOLOGICAL TESTS

Type	Former / Bending angle	Results
Face bend	4t / 180°	2 x acceptable
root bend	4t / 180°	2 x acceptable



Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning.
Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.

Schielab-Breda Voorerf 18-20, 4824 GN Breda, Tel. 076 - 5424 300, Fax 076 - 5424 848
Schielab b.v. Handelsregister/Register of Commerce Rotterdam nr. 24170257

07 JUNI 2012



IMPACT TESTS - Type: Charpy KV

Notch location	Size [mm]	Test temp. [°C]	Results [J]	Average value [J]
Midweld	10 x 4	-55	20-43-34	32
Fusion line	10 x 4	-55	43-10-34	29
Requirements for size 10x10mm;			≥ 19	≥ 27
Requirements for size 10x4mm;			≥ 7.5	≥ 11

Conclusion: The results satisfy the requirements.

All characteristics of the above object(s) have, as far as accessible and relevant, been verified by Schielab b.v. Other information was provided by the purchaser. This information was verified as far as possible and has been copied into this report, unchanged. We hereby certify that the reported test data is correct and that the above object(s) was (were) tested/examined in accordance with purchasers requirements and/or the above procedure(s) and/or code(s)/specification(s). On occasion a destructive test is subcontracted by Schielab b.v. (marked 'U' on the report). Opinions, interpretations and advice expressed in this report are outside the scope of any possible RvA accreditation, but are presented in a true and fair manner based on the best knowledge of the Schielab personnel involved. If, upon reproduction, only part of this report is copied, Schielab will not bear any responsibility for content, purport and conclusions of that reproduction. This report has legal value only when printed on Schielab paper and furnished with an authorised signature. Digital versions of this report have no legal value. Unless explicitly agreed upon otherwise in writing our "General conditions for activities performed by Schielab b.v." deposited at the Chamber of Commerce in Rotterdam, under number 24170257, apply.

Breda, 07-06-2012

Witnessed and approved by; Mr.

Representing: Lloyd's Register Nederland B.V.

A. Karstanje
SCHIELAB

[RET 0245029]

Lloyd's Register Nederland B.V.
Rotterdam
07 JUNI 2012



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Schielab b.v. Handelsregister/Register of Commerce Rotterdam nr. 24170257



WPS record number	P2500	Revision 3	Qualified to	ASME Section IX:2013
Date	14-6-2012		Company name	Airpack Netherlands BV
Supporting PQR(s)	RET 0245029-001-19 - Rev 1			
Reference docs.				

Scope	Welding instruction piping Groove, no PWHT (As-welded), impact testing
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS (QW-403)

Type	Carbon steel (P1)	P-no. 1	Grp-no. 2
Welded to	Carbon steel (P1)	P-no. 1	Grp-no. 2
Backing:	None	P-no.	Grp-no.
Retainers	None		
Notes			

THICKNESS RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	1,50	10,32	-	-
Impact tested	2,58	10,32	-	-
Partial pen.	1,50	10,32	-	-
Fillet welds	-	-	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Nominal pipe size	no min.	no max.	-	-

FILLER METALS (QW-404)

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded		With PWHT	
						Min.	Max.	Min.	Max.
GTAW	5.18	ER70S-3	6	1	Lincoln Electric, LNT 25	no min.	10,32	-	-
Cons. insert	-	-	-	-	-	- None -			
Flux	-	-	-	-	-	- None -			

THICKNESS RANGE QUALIFIED (mm)

WELDING PROCEDURE

Welding process	GTAW
Type	Manual
Minimum preheat/interpass temperature@C	10
Maximum interpass temperature (°C)	223
Tungsten size (mm)	2,4
Tungsten type	SFA 5.12 EWcE-2
Filler metal size (mm)	2,4
Layer number	All
Position	All
Weld progression	Uphill
Current/polarity	DCEN (straight polarity)
Amperes	90- 115
Volts	9 - 12
Travel speed (mm/min)	35 - 70
Maximum heat input (kJ/mm)	1,65
DC pulsing current	None
Shielding: Gas type	Argon (A5.32 SG-A)
Flow rate (l/min)	14
Trailing: Gas type	None
Flow rate (l/min)	-
Backing: Gas type	None
Flow rate (l/min)	-
String or weave	Stringer or Weave
Orifice/gas cup size	9,5
Multi/Single pass per side	Multiple passes
Weld deposit chemistry	-
Notes	

WPS record number	P2500	Revision 3	Qualified to	ASME Section IX:2013
Date	14-6-2012		Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
ASME B31.1	80 (°C) for thickness over 25 (mm) and specified maximum carbon content over 0.30%. 10 (°C) for all other materials.
ASME B31.3	10 (°C) for thickness less than 25 (mm) and specified minimum tensile strength not over 490 (MPa). 79 (°C) for 25 (mm) and greater thickness, or if specified minimum tensile strength is over 490 (MPa).


TECHNIQUE (QW-410)

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Signature 2

Name	Signature	Name	Signature
Franky van Toledo		W. Komdeur (Lloyds)	
Date		Date	
8-6-2012		8-6-2012	