Appendix D Fuel tank and piping handover package



BAKER LAKE

STS JOB# 21-03

SYSTEM: TANK #8

2021-August

1	Tan	k: Tank #8 6170TNK43		Project:	INSPECTION & TES AEM Baker Lake Fuel Tanks	ST PLAN Document:	TV#8 ITO
(Tan	K. Tank #6 0170111145		Project.	ALIVI DANE! LAKE FUE! TAIKS	Document	TR#OTTF
	В	y: Inukshuk Constructio	n Ltd.	Proj. #:	341	Revision:	Orig
	Item	Component	Activity	ITP Type	Documentation	Acceptance Criteria	Notes
	1	Kick-Off Meeting	Kickoff Meeting	N/A	Meeting Minutes	N/A	
	2	Signature Log	Verify	N/A	Signature Log	N/A	
	3	Welder Qualification	Verify	N/A	Individual Welder Qualifications / Welder Log	API-650 / ASME IX	
	4	Inspector Qualification	Verify	N/A	In house Inspector & 3rd Party Qualifications	API-650	
	5	Weld Procedures	Verify	N/A	Approved Weld Procedures	API-650 / ASME IX, CWB W47.1	
	6	Welding Consumable	Electrode Storage	N/A	N/A	Manufacturer's Instructions	
	7	Foundation	Foundation Survey	DC	Foundation Acceptance Report, Compaction Report & Survey from 3rd Party	API-650 Para 7.5.5	
	8	Floor	Materials	FI	MTR Confirmation to Dwg	Drawing & API-650 Sect. 4	MTR issued prior to shipping
			Fit up	VE, DC	As Built Drawing	W. 25 CO V (2007) 200	per API-650 5.1.5.4 - bottom plates under the shell shall have the outer ends of the joints fitted and lap-welded
			Welding	VE	Weld Map, Visual Report	API-650 Para 7.2 & 8.5 & WPS	
			Vacuum Test	VB	Vacuum Box Test Report	API-650 Para 7.3.3(a) & 8.6	
- 1	9	Shell to Floor Seams	Initial Weld Pass	VE	Weld Map, Visual Report	API-650 Para 8.5, 7.2.4.1	
			Final Weld Pass	VE	Weld Map, Visual Report	API-650 Para 8.5, 7.2.4.1	
		14	LPT	NDT	Diesel Test Report	API-650 Para 7.2.4.1 d	LPT inside of shell to floor seam
Ì	10	Shell	Materials	FI	MTR Confirmation to Dwg	Drawing & API-650 Sect. 4	MTR issued prior to shipping
			Fit up 1st Course	VE, DC	As Built Drawing	Drawing	
			Roundness	DC	Dimension Report	API-650 Para 7.5.3	
			Welding	VE	Weld Map, Visual Report	API-650 Para 7.2, 7.5, 8.5 & WPS	
			Diesel Test	NDT	Diesel Test Report	API-650 Para 7.2.4.1 d	Diesel Test inside of shell butt weld joints
			Tolerance Check – Plumbness & Local Deviations	DC	Dimension Report from 3rd party	API-650 Para 7.5	
			Ultrasonic Testing (ut)	NDT	UT report / Log / Map		Festing by a qualified independent nspection firm
Ī	tem	Component	Activity	ІТР Туре	Documentation	Acceptance Criteria	Notes
	11		Fit up		3	Drawing	
	42		Welding	1		API-650 Para 7.2 & 8.5 & WPS	
	12		Fit up			Drawing	
			Welding		(20)	API-650 Para 7.2 & 8.5 & WPS	
L			Vacuum Test		**************************************	API-650 Para 7.3.8(b) & 8.6	
	13		Fit up			Drawing	311
		L	Column Plumbness		S. N. N. S. C. S.	API-650 Para 7.5.2 b)	
L			Welding			API-650 Para 7.2 & 8.5 & WPS	
	14	L	_ayout		909	Drawing	
		<u> </u>	it up			Drawing	
						API-650 Para 7.2 & 8.5 & WPS API-650 Para 7.2 & 8.5 & WPS	
		1	Folerance Check –	VE	veid Map, Visual Report	API-050 Pala 7.2 & 0.5 & WP5	
			Deviations		A TO THE RESIDENCE OF THE PROPERTY OF THE PROP	API-650 Para 7.5	
		F	Air test			NPI-650 Para 7.3.5	
e (5)	45	107					II welds of Shell Nozzles
1	15	Manways	ayout	VE, DC	as Built Drawing	Drawing	

		Fit up	VE, DC	As Built Drawing	Drawing	
1		Welding	VE	Weld Map, Visual Report	API-650 Para 7.2 & 8.5 & WPS	
15	Manways	Tolerance Check – Plumbness & Local Deviations	DC	Dimension Report	API-650 Para 7.5	
		Shell Manway Repad Air test	AT	Leak Test Report	API-650 Para 7.3.5	
		MPI	NDT	MPI Report	API-650 Para 7.2.3.6	All welds of Shell Manways
16	Internals	Layout	VE, DC	As Built Drawing	Drawing	
		Fit up	VE, DC	As Built Drawing	Drawing	
		Welding	VE	Visual Report	API-650 Para 7.2 & 8.5 & WPS	
17	Externals	Layout	VE, DC	As Built Drawing	Drawing	
		Fit up	VE, DC	As Built Drawing	Drawing	
		Welding	VE	Visual Report	API-650 Para 7.2 & 8.5 & WPS	
18	Stairs & Platforms	Layout	VE, DC	As Built Drawing	Drawing	
		Fit up	VE, DC	As Built Drawing	Drawing	
		Welding	VE	Visual Report	API-650 Para 7.2 & 8.5 & WPS	
19	Bolts & Nuts	Inspection	VE, DC	As Built Drawing	Drawing	Bolt Torque
ltem	Component	Activity	ITP Type	Documentation	Acceptance Criteria	Notes
21	Final	Name Plate Verification	N/A	Scan of Name Plate	Drawings	
		Final Inspection	FI	As Built Drawings, Data Sheet, Manufacturer's Certification (3 rd Party), Punch List	Drawings	

DEFINITIONS:

AT - AIR TEST: Specified component and/or installation to be air tested according to specified documentation and specifications.

DC - DIMENSION CHECK: Physical dimensions of component and/or installation to be verified according to specified documentation and specifications.

FI - FINAL INSPECTION: Specified inspection procedures to be executed prior to release of the component and/or installation and verified according to specified documentation and specifications.

NDT - NON DESTRUCTIVE TESTING: Specified component and/or installation to be inspected using a named non destructive testing method according to specified documentation and specifications.

E - VISUAL Examination: Specified component and/or installation to be examined visually according to specified documentation and specification.

/B - VACUUM-BOX TEST: Specified component and/or installation to be vacuum box tested according to specified documentation and specifications.

SECTION 1.0 Meeting Minutes

This Section is Not Applicable.

SECTION 2.0 Signature Log

STORAGE T				
SOLUTIONS		Signature Log		STS-QF-23 Rev. 1
Name	Signature	Initials	Company	Date
Sebastien Ouellet	**	\$0.	Storage Tank Solutions	August 13, 2021
Lindsay C Bolton	Chair	<i>S</i> 66.	Storage Tank Solutions	August 13, 2021
Иктием Михапи	Alandelley J.	И.И.	STOCKEE THAK SCILLTIONS.	Aucust 13, 2021
Ste Phase Dubois	glien Di	Q	AEH	Sept 8th 2021
2				

SECTION 3.0 Welder Qualifications



Adam Kelly



THIS IS TO CERTIFY THAT ADAM KEITH KELLY HAS COMPLETED AN ALBERTA AMPRENTICES HIP PROGRAM AND HAVING ACHEVED THE STANDARDS ESTABLISHED WORR THE ALBERTA AMPRENTICES HIP AND INDUSTRY TRAINING ACT IS HEREBY AUTHORIZED TO WORK IN THE TRADE AS A JOURNEYMAN AND TO USE THE TITLE CERTIFIED JOURNEYMAN WELDER EFFECTIVE DATE July 2nd 2019 WELDER ISSUE DATE JULY 2ND 2019 AND 2019 ARTH CORRECT EXCEUTIVE BRECTOR CARIA CORRECT EXCEUTIVE BRECTOR CAPPER NICLES HIP A INDUSTRY TRAINING	



Alan Martin



MANPOWER AND LABOUR This is to Certify that Alan Marcus MARTIN of Edmonton holds a Certificate of PROFICIENCY as a Welder First Class DATE February 16th, 1977 No. 6796 Pw-1 File WA 5896ns (over) Director	AFTER EXAMINATION WITH COMPLETION OF APPRENTICESHIP CERTIFICATE P.A.B. # 12207 B
MANPOWER AND LABOUR CERTIFICATE OF COMPLETION OF APPRENTICESHIP THIS IS TO CERTIFY THAT Alan Marcus MARTIN of Edmonton Alberta has served as an Apprentice. Welder And has completed the Practical Training, the prescribed Course of Instruction, and Passed the Examination to Qualify him as a Welder Oated at Edmonton, Alberta. February 16th, 1977 PA.B. No. 12207 B (over) G. Peers Director of Apprenticeship	INCLUDING WELDER FIRST CLASS CERTIFICATE # 6796 Pw-1, ISSUED FEBRUARY 16th, 1977



Christopher Jaques



012-0/962892 102298A	2 8 6 3	STANDARDA,	
THIS IS TO CERTIFY THAT CHRISTOPHER RYAN JAQUES MAS COMPLETED AN ALBERTA APPRENTICESHIP PROGRAM AND HAVING ACHIEVED THE STANDARDS ESTABLISHED UNDER THE ALBERTA APPRENTICESHIP AND INDUSTRY TRANDING ACT. IS HEREBY AUTHORIZED TO WORK IN THE TRADE AS A CURNEYMAN AND TO USE THE TITLE CERTIFIED JOLRNEYMAN WELDER		GANADA J-22-100865	
EFFECTIVE DATE 1600 9th, 2009 HEROSINGEL COUSHONIER AND SIRE OF 1500 TECHNOLOGY OND TECHNOLOGY SIRE OF TECHNOLOGY OND TECHNOLOGY SIRE OF TECHNOLOGY OND TECHNOLOGY SIRE OF TECHNOLO	Au i	PROVINCY	12 No. 2



Corey Pomerleau



A AND HAVING ACHIEVED PPERITORSHIP AND DATE HAD DOKEN THE TRADE AS A JOURNEYMAN SSUE DATE HIGHER TON A PREN TILES HIP AS A HOUSTRY TRANSHIP AS HOUSTRY TRANSHIP AS HOUSTRY TRANSHIP AS HOUSTRY TRANSHIP.	
	-



Darren Genge

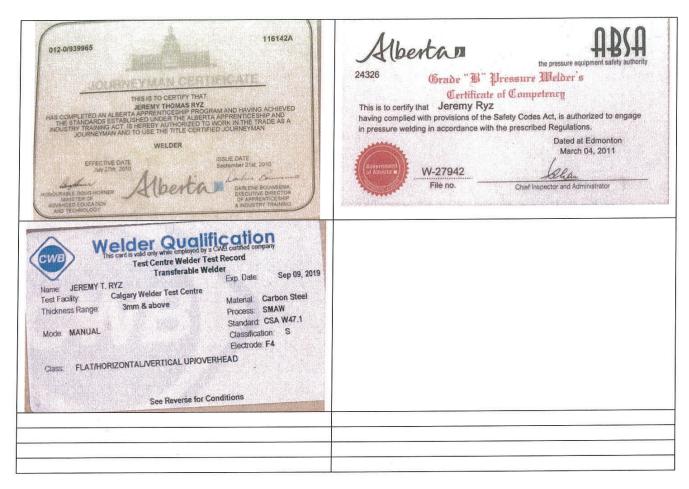


THIS IS TO CERTIFY THAT DARREN GENGE HAS COMPLETED AN ALBERTA APPRENTICESHIP PROGRAM AND HAVING ACHIEVED THE STANDARDS ESTABLISHED UNDER THE ALBERTA APPRENTICESHIP AND INDUSTRY TRAINED ACT IS HEREBY AUTHORIZED TO WORK IN THE TRADE AS A JOURNEYMAN AND TO USE THE TITLE CERTIFIED JOURNEYMAN WELDER EFFECTIVE DATE July 20th, 2017 WELDER SQUE DATE July 20th, 2017 ALBERTA MORNING ACHIEVED CARLA CORRETT EXECUTIVE DIRECTOR OF ADVANCED EDICATION 194290A	CANADA 1-22-164400 Norman
25	



Jeremy Ryz







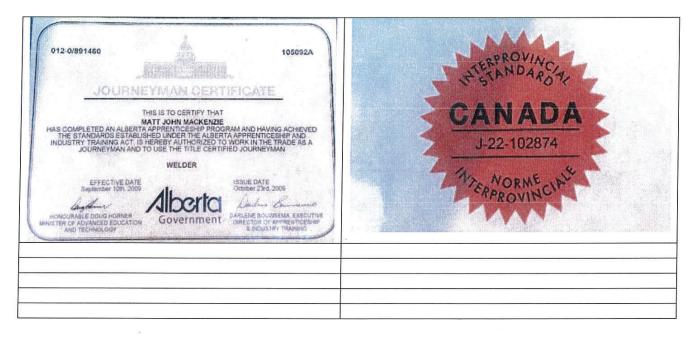
Joseph Nederhoff





Matt Mackenzie







Shane Fossum



MINISTER OF ADVANCED EDUCATION GOVERNMENT DIRECTOR O	VIICESHIP AND	



Tyler Moncrieff



197507A LIMBIA ARRIVA JOURNEYMAN CERTIFICATE	THERPROVINCIA T
THIS IS TO CERTIFY THAT TYLER DONALD MONCRIEFF HAS COMPLETED AN ALBERTA APPRENTICESHIP PROGRAM AND HAVING ACHIEVED THE STANDARDS ESTABLISHED UNDER THE ALBERTA APPRENTICESHIP AND INDUSTRY TRAINING ACT, IS HEREBY AUTHORIZED TO WORK IN THE TRADE AS A JOURNEYMAN AND TO USE THE TITLE CERTIFIED JOURNEYMAN WELDER EFFECTIVE DATE November 30h, 2017 LOSAL CORBETT CARLA CORBETT EXCUTIVE DIRECTOR OF ADVANCED EDUCATION CAPILA CORBETT EXCUTIVE DIRECTOR OF ADVANCED EDUCATION	CANADA J-22-166613 ********************************

SECTION 4.0 Inspector Qualifications





API 653	Certification Number: Original Certification Date: Expiration Date:	83440 August 31, 2018 August 31, 2024		
This is to verify the	hat Sebastien Ouellet		=	
	met the requirements to be cer	ertified under the API 653		
Aboveground	Storage Tank Inconstor Co			
Aboveground	Storage Tank Inspector Ce			
Aboveground :				
177.				

Lindsay C Bolton





is a certified Level 2 welding inspector in accordance with the

requirements of CSA W178.2 "Certification of Welding Inspectors". August 31, 2023 Valid until

This certification includes endorsements for the following code(s) and standard(s):

C5A W47 1-09/W59-03, ASME B31.3-2012, CSA Z662-2011, API 650-11th Edition, API

Six-year Re-certification Expiry

August 31, 2026









This is to certify that

Lindsay Cora

Bolton

has completed the OSSA Basic Safety Orientation (BSO)

17-08-2015 LP+008

Instructor signature & Mumber & IT43

04005

Alberta Construction Safety Association

This is to certify that

LINDSAY BOLTON

met the requirements and has successfully completed the Construction Safety Training System

"さりしょ」 includes Generic WHMIS

11237572

10 / 03 / 2012

ther Ast Riendeau Program Coordinator, ACSA

Lindsay C Bolton





NZSV4-Y73SP-8EHFK-TRLFJ

LINDSAY

FALL PROTECTION

COMPLETED: 16 MAR 2021

EXPIRES: 16 MAN 2024

INSTRUCTOR: Ma

Z7 38916 L2XSS-86N82-WKNIB-NOPN7



Lindsay C. BOLTON

Student ID No:

H2S Alive®

Completed: 12 Dec 2017 Expires: 12 Dec 2020



CANADIAN QUALITY TRAINING (CQT) CERTIFICATE OF TRAINING

AWARDED TO

Lindsay Bolton

HAVING SUCCESSULY COMPLETED A 30 HOUR COURSE IN PRESSURE EQUIPMENT QUALITY CONTROL

ISSUED ON THE ORIS DAY OF NOVEMBER 2019

Expires on: Nov. 05, 2022

Credit Hours 30

Trainer: Gordon Canning SEE REVERSE FOR TRAINING TOPICS

EXAM Code: EE00146002

CARD No. 00511

comme

St. John Ambulance Saint-Jean

St. John Ambulance certifies that LINDSAY C BOLTON has completed Standard First Aid - Level C CPR/AED

Expiry Date: Jan 31, 2021 Reference #: 0016594588 Issued By: Alberta Council

CANADIAN QUALITY TRAINING (CQT)

CERTIFICATE OF TRAINING

AWARDED TO

Lindsay Bolton

HAVING SUCCESSULY COMPLETED A 30 HOUR COURSE IN PRESSURE EQUIPMENT QUALITY CONTROL

ISSUED ON THE 23rd DAY OF OCTOBER 2015

Expires on: October 22, 2022

EXAM Code: EE00145998

Credit Hours 38

Trainer: Gordon Canning SEE REVERSE FOR TRAINING TOPICS

CARD No. 00507

Lindsay C Bolton

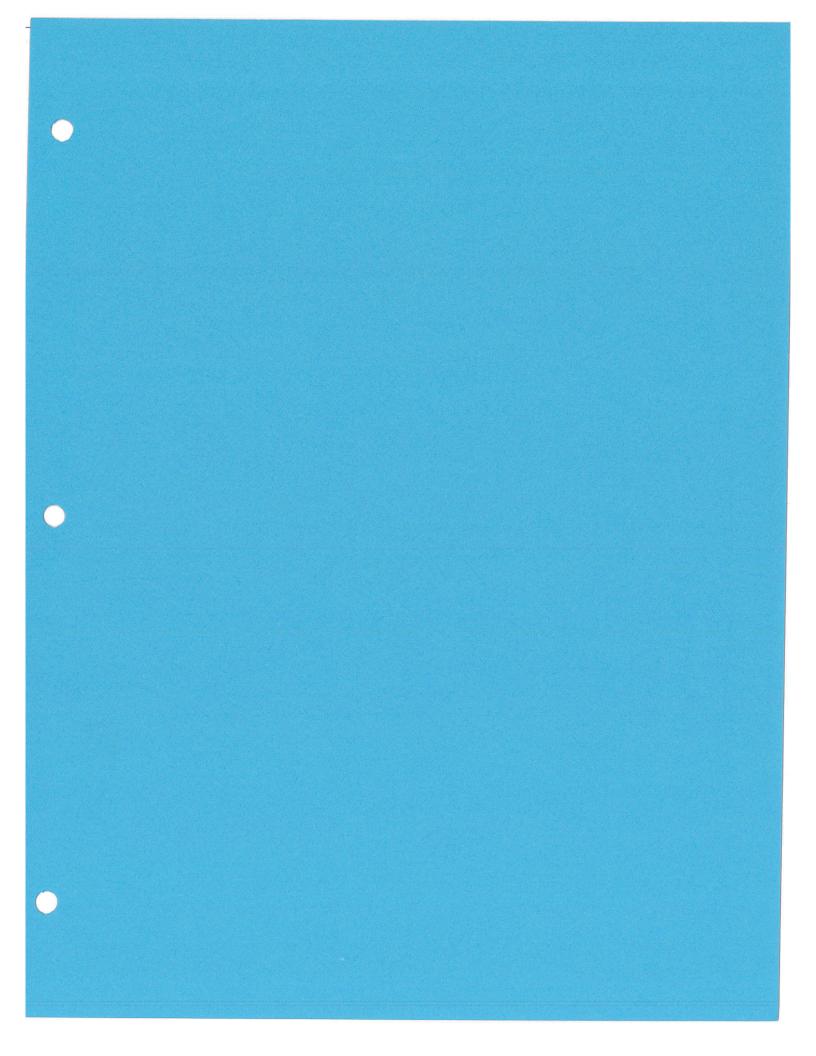


GI•BAL 1	2529012 1682737
Markhat inc	
14/11/10 2045	Whee France
WHMIS 2015 Course	CONTRIBUTE OF TRAINING
17 Table 2	CERTIFICATE OF TRAINING TDG Clear Language Training
Midnight Sun Inspection Services Inc.	The state of the s
Company	Lindsay Bolton
Lindsay Bolton	Has completed training relating to the transfordering for transportation of Dangeros
Name	Has completed training relating to the franching one hing of an appointment of Dangeron dangerous goods, as per reverse, in accordance with the Transportation of Dangeron
	Goods Act and Regulations (1992).
30 May 2019 N/A	
Date Issued Expiration Date	Company:Midnight Sun Inspection Services in Date of Issue 08 Mar 2018
Address: ppz swit doxis	Address: RR2 Sile10 Box13
TO 19 Thereby Aborts	City: Thorsby Employer Signature
Employer Signature nc av	Province: Alberta
(A)	CENTRATE HIUSER
TP# 2134 TP# 21	ic in AAS SAIDS/ACTORLY COMPLETED.
This certifies that: The 2134 This successfully completed a cours Bear Awareness Training Aug 18 2015	THIS CENTIFIES THAT LINDS AND HAS SANDS ACTURED TO TRAINING COURSE 5002967 Mechanics In Methanics In Methanics In Motion TRAINING COURSE
The 2134 This certifies that: Into A Bourner Bear Awareness Training Aug 18 2015 Instructor	SO02967 THIS CERTIFES THAT Lindsay Bolton MAS SAIRS ACTOR LY COMPLETED YOUR BODY - Mechanics in Motion TRAINING COURSE 16-May-06



cwbgroup Welding Inspector Visual Acuity Record

SECTION 1: IDENTIFICATION OF APPLICANT (Please print):
Applicant's Name: Lindsay Bolton Registration #: 9394 Application for Certification Renewal of Certification *Email: Lindsay Bolton Registration #: 9394
*I understand that all official communication moving forward will be sent to me via electronic mail (email) and it is my responsibility to advise the CWB Group of any changes in my email address.
SECTION 2: VISION REQUIREMENTS:
Evidence of satisfactory vision, as determined by a medical professional, must be provided by all new applicants and certified inspectors who are renewing their certification. The vision examination must have been performed no more than 12 months from the date of receipt of this form by the CWB.
Near vision acuity shall permit reading a minimum of Jaeger number 1 or Times Roman N 4.5 or equivalent letters (having a height of 1.6 mm) at not less than 30 cm with one or both eyes, either corrected or uncorrected.
Submission of a prescription for corrective lenses in lieu of this form is not acceptable.
SECTION 3: DECLARATION OF EXAMINER:
This is to certify that I, Dr. J. Chan Tapover administered a test of visual acuity
to
I also certify that the applicant: (check applicable box)
Meets the vision requirements in Section 2 without correction
Meets the vision requirements in Section 2 with correction
Does not meet the vision requirements in Section 2
Check one of the following:
Optometrist Ophthalmologist Medical Doctor Registered Nurse
Address: Wal-Mart Vision Centre 3657
5302 Discovery Way Ledie, AB Telesia
Signature of Examiner: Tel. #: 07 / 14 / 2021
FOR CWB USE ONLY:
Reviewed by: Date:





www.cpsinspection.com info@cpsinspection.com

Ph: 780-986-5066 Fx: 780-986-8520

Adele Kezma - Technical Certification





www.cpsinspection.com info@cpsinspection.com

Ph: 780-986-5066 Fx: 780-986-8520

CPS Inspection SNT-TC-1A Front



CUSTOM PIPE SERVICES INC.

Issue Date:

July 19, 2021

This card certifies that

Adele Kezma

is certified in accordance with Custom Pipe Services Inc. Written Practice WP-SNT Rev 13 and SNT-TC-1A.

Edition 2006 & 2020.

Bay

Balwinder Singh, ASNT NDT Level III# 173719 **CPS Inspection SNT-TC-1A -Back**

Method	Level	Sector	Expiry Date
MT	II	EMC	15/7/2024
PT	II	EMC	15/7/2024
RT	II	EMC	19/7/2024

This certification card is property of Custom Pipe Services Inc. and the certification is only valid while employed at Custom Pipe Services Inc.



www.cpsinspection.com info@cpsinspection.com

Ph: 780-986-5066 Fx: 780-986-8520

Adele Kezma

INITIAL CERTIFICATION DATE:

July 15, 2021

This is to certify that <u>Adele Kezma</u> has successfully met the initial certification requirements of Custom Pipe Services Inc. Written Practice, in accordance with SNT-TC-1A of ASNT.

Details of his training and examination records duly endorsed by NDE Level III were reviewed and are attached with this certificate.

The requirements for certification have been met for the following methods:

Method	NDE Level	Grade	Method Hours	NDE Hours	Certified By	Certification Date	Expiry Date
MT	II	*	3500 +	9500 +	Balwinder Singh	July 15, 2021	July 15, 2024
PT	II	*	3500 +	9500 +	Balwinder Singh	July 15, 2021	July 15, 2024
RT	II	*	2000+	9500 +	Balwinder Singh	July 19, 2021	July 19, 2024

- * CGSB certification is equivalent to an SNT grade level of 80%
- ** ASNT certification is equivalent to an SNT grade level of 80%
- *** PCN certification is equivalent to an SNT grade level of 80%



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Ph: 780-986-5066 Fx: 780-986-8520

NI	Adela Varres				
Name	Adele Kezma				
Employer	Custom Pipe Services Inc.				
NDT Method	Magnetic Particle Testing	Level II- EM			
Qualification	Academic Experience in Method			e in Method	
	High School 3500+ Hours			+ Hours	
Training Imparted		Theory & I			
(NAIT)	Level 1& 2 MT Completed Jan 30, 2020 (80 Hrs)				
Result of	General: ≥ 80%	Specific: Practical: 96% Average: 85%		Average: 85%	
Examination		80%			
	Near Vision	Color Contrast Limitation			
Vision Test	J1-Normal ,	Differentiation None		None	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,	Normal			
Date of	July 15, 2021	Date of Recertification July 15, 20		July 15, 2024	
Certification					
Certification By					
Name	Level/Designation	Signature	Date	Company	
Balwinder Singh	NDT Level III	Bou	July 15, 2021	Custom Pipe	
0.50		Le de la companya della companya della companya de la companya della companya del		Services Inc.	

Acting as the company Senior NDE Level III for Custom Pipe Services Inc., I affirm that the above information is true and accurate to the best of my knowledge and the technician is certified to work at qualifications and levels indicated above.

Balwinder Singh

Buy

July 15, 2021

Verified By

Signature

Date



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Ph: 780-986-5066 Fx: 780-986-8520

Name	Adele Kezma			
Employer	Custom Pipe Services Inc.			
NDT Method	Penetrant Testing Level II- EMC			
Qualification	Academic High School		Experience in Method 3500+ Hours	
Training Imparted (NAIT)	Theory & Practical Level 1& 2 PT Completed Jan 30, 2020 (80 Hrs)			
Result of Examination	General: 82%	Specific: 95% Practical: 96%		Average: 91%
Vision Test	Near Vision J1-Normal ,	Color Contrast Differentiation Normal		Limitation None
Date of Certification	July 15, 2021	Date of Recertification		July 15, 2024
	Cert	tification By		
Name	Level/Designation	Signature	Date	Company
Balwinder Singh	NDT Level III	Bau	July 15, 2021	Custom Pipe Services Inc.

Acting as the company Senior NDE Level III for Custom Pipe Services Inc., I affirm that the above information is true and accurate to the best of my knowledge and the technician is certified to work at qualifications and levels indicated above.

Balwinder Singh

Bang

July 15, 2021

Verified By

Signature

Date



www.cpsinspection.com info@cpsinspection.com

Ph: 780-986-5066 Fx: 780-986-8520

Name	Adele Kezma				
Employer	Custom Pipe Services Inc.				
NDT Method	Radiographic Testing Level II- EMC				
Qualification	Academic Experie		Control Management	nce in Method 0+ Hours	
Training Imparted	Theory & Practical				
(CINDE)	November 14-15, 2019 (12 Hrs)				
Result of Examination	General: ≥ 80%	Specific: 85%	Practical: 90%	Average: 86%	
Vision Test	Near Vision J1-Normal ,	Color Contrast Biller Children		Limitation None	
Date of Certification	July 19, 2021	Date of Recertification		July 19, 2024	
	Cer	tification By			
Name	Level/Designation	Signature	Date	Company	
Balwinder Singh	NDT Level III	Buy	July 19, 2021	Custom Pipe Services Inc.	

Acting as the company Senior NDE Level III for Custom Pipe Services Inc., I affirm that the above information is true and accurate to the best of my knowledge and the technician is certified to work at qualifications and levels indicated above.

Balwinder Singh

Buy

July 19, 2021

Verified By

Signature

Date



www.cpsinspection.com info@cpsinspection.com

Ph: 780-986-5066 Fx: 780-986-8520

Adele Kezma – Annual Vision Examiantion

ANNUAL VISION EXAMINATION

Employee Name:	Adele Kezma	_			
Examination Date:	July 1, 2021	_			
Expiry Date:	July 1, 2022	<u>=</u>			
	NEAR VISIO	ON ACUITY			
Near vision acuity shall ensure natural or corrected near vision acuity in at least one eye such that the employee is capable of reading a minimum of Jaeger Number 1. Times Roman N 4.5, or equivalent type and size of at not less than 30 cm. The ability to perceive an Ortho-Rater minimum of 8 or similar test pattern is also acceptable. This shall be administered annually. I confirm that the employee: Meets the requirement without correction Meets the requirement with correction Does not meet the requirement					
	COLOUR CONTRAST	DIFFERENTIATION			
Colour contrast differentiation shall demonstrate the capability of distinguishing and differentiating contrast among colours or shades of gray used in the method as determined by the employer. This shall be administered upon initial certification and at five year intervals thereafter.					
I confirm that the employee can distinguish contrast between the colours used in the NDT method(s) concerned: Meets the requirement Does not meet the requirement					
The above mention annual vision examination is in accordance with ASNT Document: SNT-TC-1A (2006 and 2020 Editions) and CGSB Standard: CAN/CGSB-48.9712-2014/ISO9712:2012.					
EXAMINER					
Examiner's Name:	Balwinder Singh	Examiner's Signature:	5mj		
Appointment/Title:	Quality Assurance/ASNT NDT Level III	Examination Date:	July 1, 2021		

Form-4.5 Rev.2

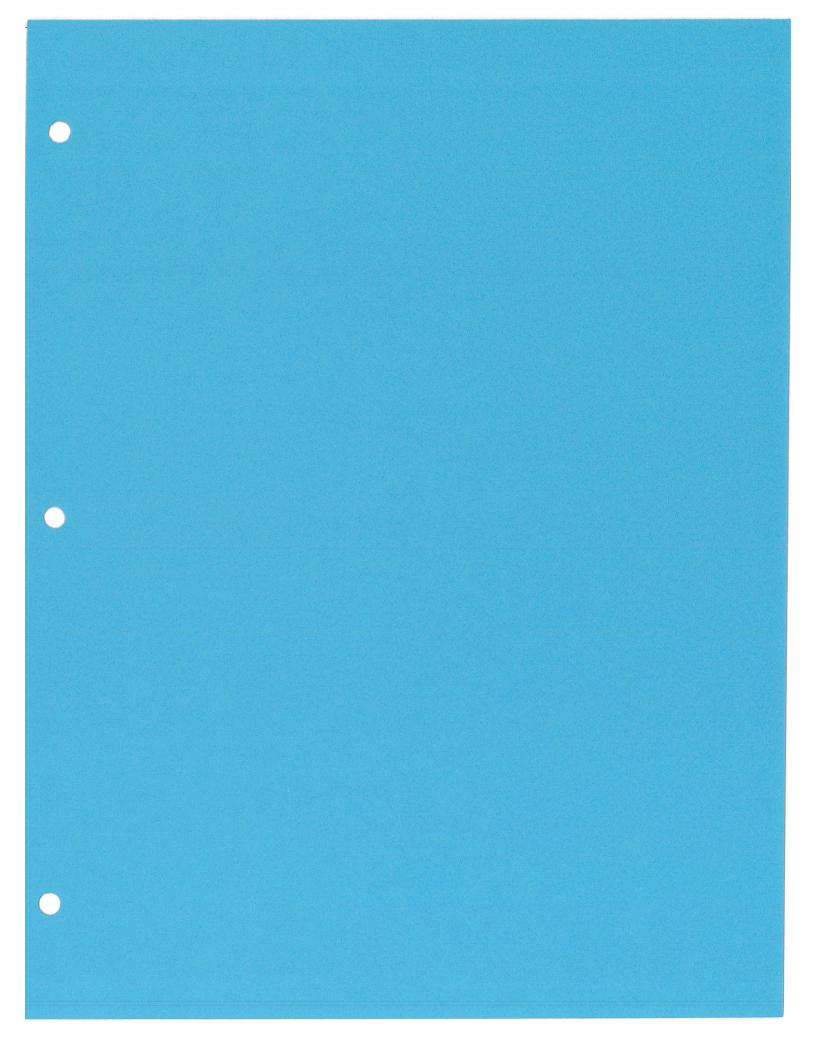


www.cpsinspection.com info@cpsinspection.com

Ph: 780-986-5066 Fx: 780-986-8520

Adele Kezma - Safety Certifications

CSTS	Elevated Working Platform
Alberta Construction Safety Association This is to certify that ADELE KEZAMA met the requirements and has successfully completed the Construction Safety Training System "533-09" includes Generic WHMIS Reg. #	
11748765 Issue 06 / 30 / 2015 Date: University Vess Bress Schweider Program Coordinator, ACSA First Aid	FORK LIFT OPERATOR
rirst Alu	FORK LIFT OPERATOR
St. John Ambulance Alberta Council INTERIM AWARD	
on the successful completion of	
1-Q061Z AUG - 2 2018 8354 Instructor Date Course No: Interim Award valid for two months - Certificate will follow.	

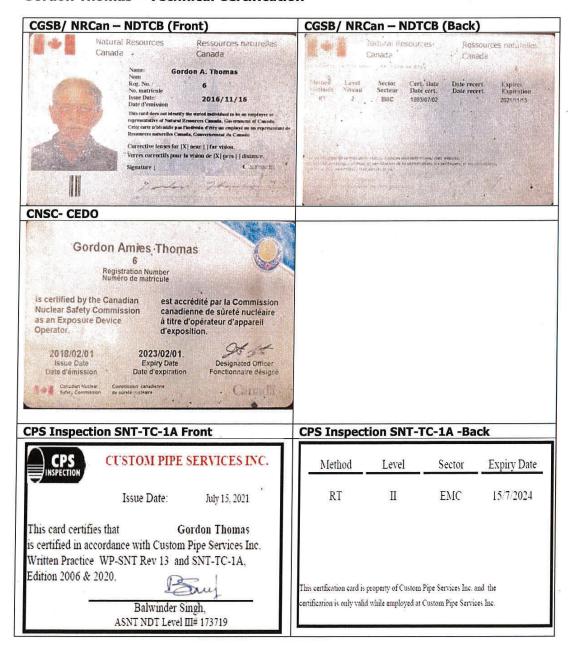




www.cpsinspection.com info@cpsinspection.com

Ph: 780-986-5066 Fx: 780-986-8520

Gordon Thomas - Technical Certification





www.cpsinspection.com info@cpsinspection.com

Ph: 780-986-5066 Fx: 780-986-8520

Gordon Thomas

INITIAL CERTIFICATION DATE:

July 15, 2021

This is to certify that <u>Gordon Thomas</u> has successfully met the initial certification requirements of Custom Pipe Services Inc. Written Practice, in accordance with SNT-TC-1A of ASNT.

Details of his training and examination records duly endorsed by NDE Level III were reviewed and are attached with this certificate.

The requirements for certification have been met for the following methods:

	NDE		Method	NDE		Certification	
Method	Level	Grade	Hours	Hours	Certified By	Date	Expiry Date
RT	II	*	25000+	40000+	Balwinder Singh	July15, 2021	July 15, 2024

- * CGSB certification is equivalent to an SNT grade level of 80%
- ** ASNT certification is equivalent to an SNT grade level of 80%
- *** PCN certification is equivalent to an SNT grade level of 80%



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Ph: 780-986-5066 Fx: 780-986-8520

Name	Gordon Thomas					
Employer	1 March 1 Marc	Custom Pipe Services Inc.				
NDT Method	Radiographic Testing	Level II- EMC				
Qualification	Academic Experience			e in Method)+Hours		
Training Imparted (Rivest Testing) Theory & Pra August 1980 (8						
Result of Examination	General: ≥ 80%	Specific: 95%	Practical: 96%	Average: 90%		
Vision Test	Near Vision J1-Normal ,	Color Contrast Differentiation Normal		Limitation None		
Date of Certification	Date of Receitment		July 15, 2024			
	Cer	tification By				
Name	Level/Designation	Signature	Date	Company		
Balwinder Singh	NDT Level III	Buy	July 15, 2021	Custom Pipe Services Inc.		

Acting as the company Senior NDE Level III for Custom Pipe Services Inc., I affirm that the above information is true and accurate to the best of my knowledge and the technician is certified to work at qualifications and levels indicated above.

Balwinder Singh

Bang

July 15, 2021

Verified By

Signature

Date



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Gordon Thomas– **Annual Vision Examiantion**

ANNUAL VISION EXAMINATION

Employee Name:	Gordon Thomas	_					
Examination Date:	July 15, 2021						
Expiry Date:	July 15, 2022	_					
	NEAR VISI	ON ACUITY					
reading a minimum of Ja	ensure natural or corrected near vision acuity eger Number 1, Times Roman N 4.5, or equ minimum of 8 or similar test pattern is also	ivalent type and size of at not l	ess than 30 cm. The ability to				
I confirm that the employ	ee:						
	ment without correction ment with correction requirement						
	COLOUR CONTRAST	DIFFERENTIATION					
shades of gray used in the year intervals thereafter. I confirm that the employe Meets the requirem	Colour contrast differentiation shall demonstrate the capability of distinguishing and differentiating contrast among colours or shades of gray used in the method as determined by the employer. This shall be administered upon initial certification and at five						
Does not meet the r	Does not meet the requirement						
The above mention annual and CGSB Standard: CAN	vision examination is in accordance with AS/CGSB-48.9712-2014/ISO9712:2012.	SNT Document: SNT-TC-1A (2006 and 2020 Editions)				
	EXAM	INER					
Examiner's Name:	Balwinder Singh	Examiner's Signature:	Buy				
Appointment/Title:	Quality Assurance/ASNT NDT Level III	Examination Date:	July 15, 2021				

Form-4.5 Rev.2



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Gordan Thomas – Safety Certifications

CSTS	Elevated Working Platform
Alberta Construction Safety Association This is to certify that GORDON THOMAS met the requirements and has successfully completed the Construction Safety Training System "CSTS Ver. 3.2" includes Generic WHMIS Reg. # 673155 Issue Delta Sekucider Program Coordinator, ACSA	
First Aid	FORK LIFT OPERATOR

SECTION 5.0 WPS

WELDING PROCEDURE SPECIFICATION	ON NO.: STS-1 (Rev.0)	
WELDING PROCEDURE QUALIFICATION	ON RECORD NO.(S): STS-1-1 (Rev.0 STS-1-2 (Rev.0 STS-1-3 (Rev.0 WFL-1-1),
QUALIFIED IN ACCORDAN	ICE WITH ASME SECTION IX FOR	
Base Metal (Typical): P1 Groups 1 & 2 to (SA 333 Gr. 6, SA 3 Process(es): SMAW Position: ALL POSITIONS Filler Metal: E6010, E7018-1	50 Gr. LF2, SA 420 Gr. WPL6, SA 516 Gr. 70 Weld Types: GROOVE & FIL	LET_
BASE METAL CONDITIONS & GROOVE NOTCH TOUGHNESS APPLICATIONS TO BASE METAL THICKNESS RANGE	50 °F AS WELDED	
COMBINED DEPOSITED WELD METAL TH ASME IX	ICKNESS 1.750 in. maximum 1.750 in. maximum	
	This WPS was prepared to the requirement ASME Section IX 2017 and includes some of additional requirements of the construction of listed. The application of this WPS is outside work scope of SGS Canada Inc.	of the codes
	Prepared By: Sara Van Roestel Signed:April 8, 2019	_
PROVINCIAL REGISTRATION	Reviewed By: Keelan Wolfe, C.E.T. Signed:April 8, 2019 (File E19-00104)	_

QW-482 WELDING PROCEDURE SPECIFICATION (WPS)

Organization Nam	e	Storage Tank Soluti	ons Inc. Date April 8, 2019
Welding Procedur	e Specification No	STS-1 (Rev.0)	Date April 8, 2019
Revision(s) Rev	<u>/. 0: Essential - Addition (</u>	<u>of PQR No.'s STS-1-1</u>	(Rev.0), STS-1-2 (Rev.0),
_ and	STS-1-3 (Rev.0). Updat	ed to current code rec	uirements. WPS No. formerly
_WF	L-1 (Rev.1).	Decision and M. Montale Medical Society	
Supporting PQR N	lo.(s)		ΓS-1-2 (Rev.0),
		STS-1-3 (Rev.0), W	
Welding Process(es)	Shielded Metal Arc	Welding (SMAW)
LOINITE (OW 40	2)		
JOINTS (QW-40)		· · · · · · · · · · · · · · · · · · ·	- C I Z C - I - I - I - I - I - I - I - I -
Joint Design			ection drawing for joint details.
Doot Opening			to figures 1 to 15 attached
			e figures 1 to 15 attached
Backing	vviin or without	Retainers _	With or without
BASE METALS	(OW-403)		
		To D Numb	er P1 Groups 1 & 2
Thickness Range:	Groove	0 116 to 1 750 in inc	clusive
Thickness range.		0.116 to 8.00 in. incl	
Pine Diameter Ran	des: Groove	All diameters	usive
i ipo biamotor itan	Fillet	All diameters	
Deposited Weld Me	etal (Per Pass)	F6010: 0 188 in ma	ximum
Dopositoa Wola IVI		E7018-1: 0.188 in. n	navimum
	-	27010 1. 0.100 III.1	naximam
FILLER METALS	(QW-404) SMAV	V	SMAW
Specification No. (S	SFA) SFA 5	.1	SFA 5.1
AWS No. (Class) _	E6010		E7018-1
	F3		F4
A-No	A1		A1
Diameter	3/32 to	3/16 in. inclusive	3/32 to 1/4 in. inclusive
	etal Thickness Range:		
Groove	0.188 i	in. max. (1)	1.750 in. max. (1)
Fillet	All fille	t sizes (2)	All fillet sizes
(1) Deposited w	eld metal thickness shal		
			ons requiring an MDMT
less than -20			
POSITION (QW-4			
	All positions	Position of F	
Weld Progression _	E6010: Vertic	al up or down	E7018-1: Vertical up
PREHEAT (QW-4		Veges 9000 00 2001 00 00 00	
Preheat Temperatur	re (Minimum)	See attached preheat	sheet prior to welding.
		500 °F	
reheat Maintenand			g. Preheat maintenance is
			er the completion of welding
	unless required by the	e code of construction	٦.

			WPS N	0	STS-1 (Rev.0)
POSTWELD HEAT TRE	Without		9		
Temperature Range	N/A		Time Range		N/A
ELECTRICAL CHARAC				D	-1-(-1
Current	Soc Table 1		Polarity	Reverse	
Maximum Heat Input	See Table 1		VOILS	See Ta	ble 1
Base Metal Thickness	Range	E6010	Electrode	E	7018-1 Electrode
0.116 - 0.499 in.		29,211 J/in.			44,000 J/in.
0.500 - 0.624 in.		45,625 J/in.			58,667 J/in.
0.625 and greater		51,022 J/in.			63,360 J/in.
TECHNIQUE (QW-410)					
Manual or Automatic		Manua			
String or Weave		E6010: String		E7018-1	1: String or weave
Initial & Interpass Cleaning	Brushing, chipping or grinding as required				
Method of Back Gouging _	Air carbon arc, back-grind as required			equired	
Multiple or Single Pass Per Side		Multiple			
Peening		Not per	mitted		
Use of Thermal Process		N/A			

TABLE 1 - WELDING PARAMETERS

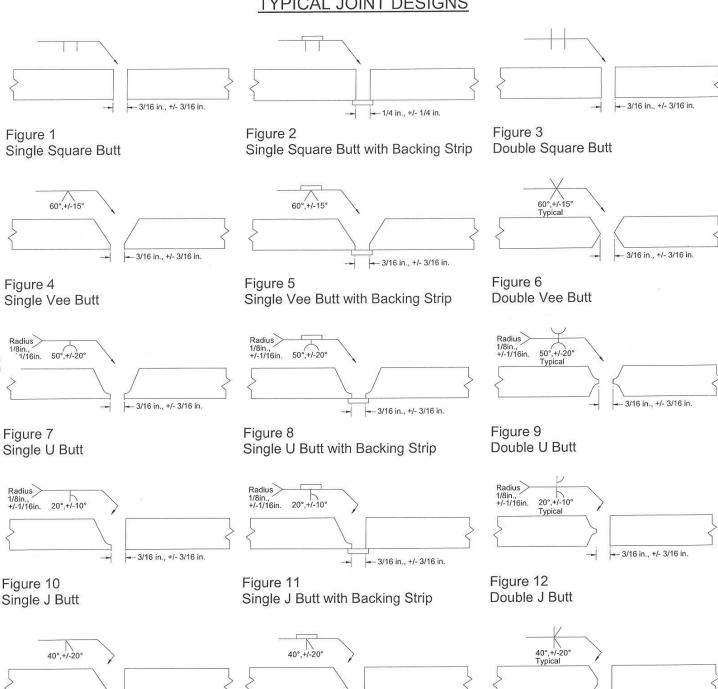
Travel Speed _____ See Table 1

Process	Filler Metal	Diameter in.	Current Type & Polarity	Amperage Range	Voltage Range	Travel Speed i.p.m.
SMAW	E6010	3/32	DCRP	50 - 100	18 - 32	1.1 - 12
SMAW	E6010	1/8	DCRP	60 - 140	19 - 32	1.4 - 14
SMAW	-E6010	5/32	DCRP	115 - 250	21 - 32	2.9 - 16
SMAW	E6010	3/16	DCRP	120 - 300	21 - 32	3.0 - 18
SMAW	E7018-1	3/32	DCRP	60 - 110	18 - 26	1.1 - 12
SMAW	E7018-1	1/8	DCRP	90 - 170	19 - 28	1.7 - 14
SMAW	E7018-1	5/32	DCRP	110 - 220	20 - 30	2.1 - 16
SMAW	E7018-1	3/16	DCRP	160 - 320	20 - 30	3.1 - 20
SMAW	E7018-1	7/32	DCRP	240 - 340	20 - 32	4.6 - 22
SMAW	E7018-1	1/4	DCRP	275 - 360	21 - 32	5.5 - 22

Note: Welding parameters shall be adjusted to ensure that the maximum heat input value specified in QW-409 above is not exceeded.

Heat Input (joules per inch) = (Amperage X Voltage X 60) / Travel Speed (i.p.m.)

TYPICAL JOINT DESIGNS



Additional joint designs and internal misalignment on circumferential welds shall be within the dimensional limits stated on the approved construction drawing and/or the engineering design.

Single Bevel Butt with Backing Strip

Figure 14

- 3/16 in., +/- 3/16 in.

Figure 15

Double Bevel Butt

3/16 in., +/- 3/16 in.

Figure 13

igle Bevel Butt

- 3/16 in., +/- 3/16 in.

WPS NO.	STS-1	(Rev.0))
WIS NO.		(Rev.u	1

PREHEAT P-No. 1

LARGE, WELDED, LOW-PRESSURE STORAGE TANKS IN ACCORDANCE WITH API 620 Twelfth Edition

THICKNESS OF THE THICKER	MINIMUM PREHEAT TEMPERATURE		
PLATE	P1 Group 1	P1 Group 2	
0 to 1.25 in.	32 °F	50 °F	
Greater than 1.25 in to 1.50 in.	200 °F	200 °F	
Greater than 1.50 in.	200 °F	200 °F	

- No welding of any kind shall be performed when the surfaces to be welded are wet with rain snow or ice; when rain or snow is falling on such surfaces; or during periods of high winds unless the welder and the work are properly shielded.
- Preheat shall be applied when the metal temperature is below the temperature required by Table 6-2 (summarized above). In that case the base metal shall be heated to at least the temperature indicated within 3 in. of the place where welding is to be started and maintained 3 in. ahead of the arc. Material P-Number and Group Number shall be as designated in ASME IX or in API 630 6.7.2 for materials not listed in ASME IX.

WELDED TANKS FOR OIL STORAGE IN ACCORDANCE WITH API 650 Twelfth Edition

THICKNESS OF THE THICKER	MINIMUM PREHEAT TEMPERATURE			
PLATE	Material Group I, II,	Material Group IV,		
	III, and IIIA	IVA, V & VI		
0 to 1.25 in.	32 °F	50 °F		
Greater than 1.25 in to 1.50 in.	200 °F	200 °F		
Greater than 1.50 in.	200 °F	200 °F		

- No welding of any kind shall be performed when the surfaces to be welded are wet with rain snow or ice; when rain or snow is falling on such surfaces; or during periods of high winds unless the welder and the work are properly shielded.
- Preheat shall be applied when metal temperature is below the temperature required by table 7-1 (summarized above) for the base metals being joined, and metal shall be heated to at least the temperature indicated within 3 in. of the place where welding is to be started and maintained 3 in. ahead of the arc. Material Groups shall be as designated in Table 4.4

WELDED STORAGE TANKS IN ACCORDANCE WITH API 12D Eleventh Edition and API 12F Twelfth Edition

THICKNESS OF THE THICKER PLATE	MINIMUM PREHEAT TEMPERATURE
0 to 1.25 in.	50 °F
Greater than 1.25 in to 1.50 in.	200 °F
Greater than 1.50 in.	200 °F

- No welding of any kind shall be performed when the surfaces to be welded are wet with rain snow or ice; when rain or snow is falling on such surfaces; or during periods of high winds unless the welder and the work are properly shielded.
- Preheat shall be applied when the metal temperature is below the temperature required by the table above. In that case the base metal shall be heated to at least the temperature indicated within 3 in. of the place where welding is to be started and maintained 3 in. ahead of the arc.

QW-483 PROCEDURE QUALIFICATION RECORD (PQR)

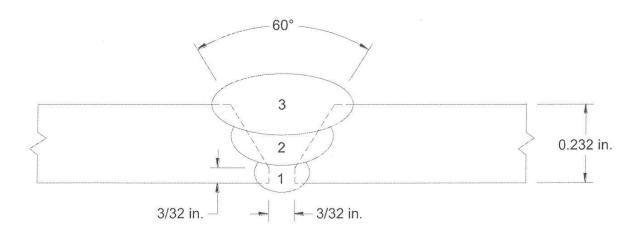
Organization Name _		Storage Tank Solutio		
Procedure Qualificatio	n Record No	STS-1-1 (Rev.0)	_ Date <u>Fe</u>	bruary 21, 2019
Welding Process(es)		Shielded Metal Arc W	<u>/elding (SMA</u>	.W)
JOINTS (QW-402)				
Joint Design	Butt joint, single vee	groove, see next page		
Root Opening	See next page			
Backing	Without	Retainers	With	out
J				
BASE METALS (QV	V-403)			
Material Specification	No. SA 333 to SA	350 Type or Grad	deG	r. 6 to Gr. LF2
Heat Treat Condition (SA 333 Gr. 6:	Quenched/Tempered	SA 350 Gr.	LF2: Normalized
P-No. P1 Group 1	To P-No. P1 Gr	oup 2 Thickness	0.	.232 in.
Heat Number	44391 to A50A8	Carbon Equi	valent (2) 0.	.21 to 0.40 (3)
Diameter	6.625 in. O.D.			
Other	Schedule 40 pipe ma	chined to 0.232 in. wal	I thickness	
Deposited Weld Metal	(Per Pass)	Did not exceed 0.094	in. for E6010	D,
200000000000000000000000000000000000000	(and 0.125 in. for E70	18-1	
(1) Condition of ba				
(2) Per CSA Z662	Carbon Equivalent for	rmula. See chemical c	omposition c	of
heat / ladle ana	lysis on attached ma	terial test reports.		
FILLER METALS (Q	W-404)	SMAW	SMA	W
Specification No. (SFA		SFA 5.1		5.1
AWS No. (Class)		E6010 (3)		18-1 (4)
F-No		F3		
A-No		A1	A1	
Diameter		See attached sketch		
Deposited Weld Metal	Thickness	0.094 in.	0.13	8 in.
(3) The Lincoln Ele	ectric Company: Flee	tweld 5P+		
(4) ESAB: OK 55.0	00110 00111parry: 1 100	tirola of		
(4) <u>LOND</u> . ON 60.0	30			
POSITION (QW-405)	Ĭ			
Position of Groove		Weld Progres	ssion	Vertical up
PREHEAT (QW-406)	1			
Preheat Temperature	M	Interpass Ter	np. (Max.)	400 °F
Preheat Maintenance		wed to cool to ambient	temperature	in still air after
Tronout Maintonarioo _	welding was c			
_	Wording Was 5	on process		
POSTWELD HEAT T	REATMENT (OW-	407)		
With or Without		,		ENVIOLE
Temperature		Time		N/A

ELECTRICAL CHARACTERISTICS (QW-409)

Current	Direct	Polar	ityR	Reverse, electrode positive
Amps	See below	Volts	S	ee below
Heat Input	E6010: 29,211 J/in. maximum	ı	E7018-1	: 44,000 J/in. maximum

TECHNIQUE (QW-410)

Manual or Automatic	Manual
String or Weave	E6010: String E7018-1: Weave
Initial & Interpass Cleaning	Brushing, chipping and grinding as required
Method of Back Gouging	Not conducted
Multiple or Single Pass Per Side _	E6010: Single E7018-1: Multiple
Peening	Not conducted
Use of Thermal Process	N/A
Travel Speed	See below



Pass	Process	Filler Metal	Diameter in.	Current Type & Polarity	Amperage Range	Voltage Range	Travel Speed i.p.m.
1	SMAW	E6010	1/8	DCRP	72 - 76	24 - 26	3.8
2	SMAW	E7018-1	3/32	DCRP	74 - 78	23 - 25	2.6
3	SMAW	E7018-1	3/32	DCRP	76 - 84	21 - 23	2.4

PQR NO. STS-1-1 (Rev.0)

CHARPY V-NOTCH IMPACT TEST

Type of Test	Charpy V-Notch		Orientation	Transverse		
Governing Specification	Notch Location	Specimen Size in.	Test Temperature ° F	Specimen Number	Impact Values ft•lbf	
ASME B31.3 -	Weld metal	0.204 %		D2.1	17	
2016	I Within 1/16 in I	-67	D2.2	30		
2010	of root	0.157		D2.3	27	
ASME B31.3 -		0.004	-67	D3.1	75	
	Gr. 6 - HAZ	0.394 x		D3.2	81	
2010	2016 0.157	0.157		D3.3	53	
ACME DOLO		0.204		D4.1	10	
ASME B31.3 - 2016	Gr. LF2 - HAZ	0.394 x	-67	D4.2	26	
2016		0.157		D4.3	20	

OTHER TESTS

	Vickers Hardness - see attached Laboratory Test Report No.: E19-104.4						
Tests C	's Name Conducted By tory Test No.	Aaron Smed SGS Canada	srud		Certificate File No.		
		nents in this record accordance with the r					
Organiz	zation	Storage Tank	Solution	s Inc.			
Date _	January 21, 20	21	Print	Sebasti	en Ouellet		
_ Signed	-87	Tiels	2				

QW-483 PROCEDURE QUALIFICATION RECORD (PQR)

Organization Name		
Procedure Qualification Record No	STS-1-2 (Rev.0)	Date February 22, 2019
Welding Process(es)		
<u> </u>		
JOINTS (QW-402)		
	voc groove see port page	
Don't Design Butt Joint, Single	e vee groove, see next page	
Root Opening See next page		NA WW
Root Opening See next page Backing Without	Retainers	VVithout
BASE METALS (QW-403)		
Material Specification No.	SA 516 Type or G	rade Gr. 60/70
Heat Treat Condition (1) SA	516 Gr. 60/70: Normalized	
P-No. <u>P1 Groups 1/2</u> To P-No. <u>F</u> Heat Number <u>449291 55060-0</u>	21 Groups 1/2 Thickness	0.500 in
Heat Number 449291 55060-0	Carbon Fo	uivalent (2) 0.36
Diameter N/A	Other	Plate product form
Diameter N/A Deposited Weld Metal (Per Pass)	Did not avessed 0 000	Lin for FC040
Deposited Weld Welai (Per Pass)	Did not exceed 0.092	FIN. TOF EOUTU,
	and 0.188 in. for E70	18-1
(1) Condition of base metal prior to	welding.	
(2) Per CSA Z662 Carbon Equival	ent formula. See chemical	composition of heat
analysis on attached material to	est report	
FILLER METALS (QW-404)	SMAW	SMAW
Specification No. (SFA)		
AWS No. (Class)	E6010 (3)	
E No.	E0010 (5)	Ε/010-1 (4)
F-No	F3	F4
A-No	A1	A1
	See attached sketch	
Deposited Weld Metal Thickness	0.094 in.	0.406 in.
(3) The Lincoln Electric Company:	Fleetweld 5P+	
(4) <u>ESAB</u> : OK 55.00		
3 /8		
POSITION (QW-405)		
Position of Groove3G	Weld Progre	esion Vertical un
000000000	Weld I logic	331011 Vertical up
DDELLEAT (OM 40C)		
PREHEAT (QW-406)		
Preheat Temperature50 °F		mp. (Max.)500 °F
Preheat Temperature <u>50 °F</u> Preheat Maintenance <u>Weld was</u>	allowed to cool to ambient	mp. (Max.) <u>500 °F</u> temperature in still air after
Preheat Temperature <u>50 °F</u> Preheat Maintenance <u>Weld was</u>		
Preheat Temperature <u>50 °F</u> Preheat Maintenance <u>Weld was</u>	allowed to cool to ambient	
Preheat Temperature <u>50 °F</u> Preheat Maintenance <u>Weld was</u>	allowed to cool to ambient	
Preheat Temperature50 °F Preheat MaintenanceWeld was welding v	s allowed to cool to ambient vas completed.	
Preheat Temperature 50 °F Preheat Maintenance Weld was welding v	s allowed to cool to ambient vas completed.	
Preheat Temperature50 °F Preheat MaintenanceWeld was welding v	s allowed to cool to ambient vas completed.	temperature in still air after

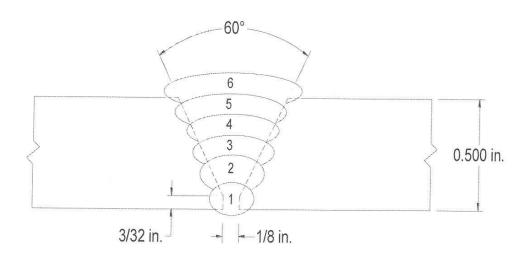
PQR NO. ____STS-1-2 (Rev.0)

ELECTRICAL CHARACTERISTICS (QW-409)

Current	Direct	Polar	ity R	everse, electrode positive
Amps	See below	Volts		ee below
Heat Input	E6010: 45,625 J/in. maximun	n	E7018-1:	58,667 J/in. maximum

TECHNIQUE (QW-410)

Manual or Automatic	Manual
String or Weave	E6010: String E7018-1: Weave
Initial & Interpass Cleaning	Brushing, chipping and grinding as required
Method of Back Gouging	Not conducted
Multiple or Single Pass Per Side	E6010: Single E7018-1: Multiple
Peening	Not conducted
Use of Thermal Process	N/A
Travel Speed	See below



Pass	Process	Filler Metal	Diameter in.	Current Type & Polarity	Amperage Range	Voltage Range	Travel Speed i.p.m.
1	SMAW	E6010	1/8	DCRP	68 - 78	24 - 26	2.4
2	SMAW	E7018-1	3/32	DCRP	76 - 80	22 - 24	4.1
3	SMAW	E7018-1	3/32	DCRP	80 - 84	22 - 24	4.0
4	SMAW	E7018-1	3/32	DCRP	90 - 94	22 - 24	3.2
5	SMAW	E7018-1	1/8	DCRP	118 - 122	21 - 23	3.3
6	SMAW	E7018-1	1/8	DCRP	118 - 122	21 - 23	2.7

PQR NO.	STS-1-2	(Rev.0)	
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CHARPY V-NOTCH IMPACT TEST

Type of Test Charpy V-Notch		Orientation	Transve	erse	
Governing Specification	Notch Location	Specimen Size in.	Test Temperature ° F	Specimen Number	Impact Values ft•lbf
ASME B31.3 -	Weld metal 0.394 x	0.394 x	50	E2.1	51
2016	within 1/16 in. of root	0.394	-50	E2.2 E2.3	42 67
				L2.0	- 07
ASME B31.3 -	ASMF B31.3 -	0.394 x		E3.1	63
2016	HAZ	0.394	-50	E3.2	32
1 Mary 1904 (1907) 190		0.004		E3.3	33

OTHER TESTS

Vickers Hardr	ness - see attached Labora	atory Test Report No.: E19-104.5
Welder's Name Tests Conducted By Laboratory Test No.	Christopher Jaques SGS Canada Inc. E19-104.5	Certificate File No. N/A
We certify the statements welded and tested in acco	s in this record are corre	ct and that the test welds were prepared nts of Section IX of the ASME Code.
Organization	Storage Tank Solutions	s Inc.
DateJanuary 21, 2021	Print _	Sebastien Ouelelt
SignedS That	D	

QW-483 PROCEDURE QUALIFICATION RECORD (PQR)

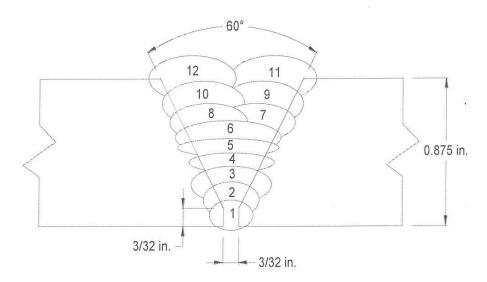
Organization Name			Tank Solutions Inc	
Procedure Qualification	on Record No	STS-1-3	(Rev.0) Dat	e February 22, 2019
Welding Process(es)		Shielded	Metal Arc Welding	g (SMAW)
JOINTS (QW-402)				
Joint Design	Butt joint, single v	ee groove, se	ee next page	
Root Opening	See next page			
Backing	Without		Retainers	Without
BASE METALS (Q)	N-403)			
Material Specification	No. SA	516	Type or Grade	Gr. 60/70
Heat Treat Condition	(1) SA 5	16 Gr. 60/70:	Normalized	0.875 in.
P-No. P1 Groups 1/	2 To P-No. P1	Groups 1/2	Thickness	0.875 in.
Heat Number	449291 55060-03		Carbon Equivaler	nt (2) 0.37
Diameter	N/A		Other	Plate product form
Diameter	(Per Pass)	Did not e	xceed 0 094 in for	F6010
	(and 0.12	5 in. for E7018-1	200,0,
(1) Condition of ba	ase metal prior to v	velding	0 III. 101 E7010 1	*
(2) Per CSA Z662	Carbon Equivalen	t formula Se	e chemical compo	esition of heat
analysis on att	ached material tes	t report	c chemical compo	Sition of fleat
anaryolo on att	aorica material tes	СТСРОТ		
FILLER METALS (C)\/\-404\	SMAW		SMAW
Specification No. (SFA				
AMS No. (Class)	')	5FA 5.1		SFA 5.1
AWS No. (Class)		<u> </u>		E7018-1 (4)
F-No		F3		F4
A-NO		AI		A1
Diameter		See attac	hed sketch	
Deposited Weld Metal	Thickness	0.094 in.		0.781 in.
(3) The Lincoln Ele		leetweld 5P+		
(4) <u>ESAB: OK 55.</u>	00			
POSITION (QW-405)			
Position of Groove	3G	V	Veld Progression _	Vertical up
PREHEAT (QW-406)				
Preheat Temperature	50 °F	Ir	nterpass Temp. (M.	ax.) 500 °F
Preheat Maintenance _	Weld was a	llowed to coo	I to ambient tempe	erature in still air after
-		s completed.		
	<u>, </u>			
POSTWELD HEAT T	REATMENT (Q)	N-407)		
With or Without		AND		
Temperature		Т	ime	N/A
1			100000 and a second	

ELECTRICAL CHARACTERISTICS (QW-409)

Current	Direct	Polar	ity R	everse, electrode positive
Amps	See below	Volts	Se	ee below
Heat Input	E6010: 51,022 J/in. maximun	n	E7018-1:	63,360 J/in. maximum

TECHNIQUE (QW-410)

Manual or Automatic	Manual
String or Weave	E6010: String E7018-1: Weave
Initial & Interpass Cleaning	Brushing, chipping and grinding as required
Method of Back Gouging	Not conducted
Multiple or Single Pass Per Side	E6010: Single E7018-1: Multiple
Peening	Not conducted
Use of Thermal Process	N/A
Travel Speed	See below



Pass	Process	Filler Metal	Diameter in.	Current Type & Polarity	Amperage Range	Voltage Range	Travel Speed i.p.m.
1	SMAW	E6010	1/8	DCRP	80 - 84	27 - 29	2.7
2	SMAW	E7018-1	3/32	DCRP	78 - 82	20 - 22	3.2
3	SMAW	E7018-1	3/32	DCRP	88 - 92	20 - 22	3.7
4	SMAW	E7018-1	1/8	DCRP	120 - 124	21 - 23	3.3
5	SMAW	E7018-1	1/8	DCRP	120 - 124	21 - 23	2.9
6	SMAW	E7018-1	1/8	DCRP	120 - 124	21 - 23	2.7
7	SMAW	E7018-1	1/8	DCRP	116 - 120	22 - 24	5.1
8	SMAW	E7018-1	1/8	DCRP	118 - 122	21 - 23	5.1
9	SMAW	E7018-1	1/8	DCRP	118 - 122	21 - 23	4.6
10	SMAW	E7018-1	1/8	DCRP	118 - 122	21 - 23	3.6
11	SMAW	E7018-1	1/8	DCRP	118 - 122	21 - 23	3.3
12	SMAW	E7018-1	1/8	DCRP	118 - 122	21 - 23	2.5

PQR NO. ____STS-1-3 (Rev.0)

TENSILE TEST (QW-150)

Sample No.	Width in.	Thickness in.	Area sq. in.	Ultimate Load Ibf	Ultimate Stress psi	Fracture Type & Location
T1	0.748	0.799	0.598	46,500	77,800	Partial Cup & Cone Parent Metal
T2	0.748	0.807	0.604	47,300	78,300	Partial Cup & Cone Parent Metal

GUIDED BEND TEST (QW-160)

Type & Figure No.	Result	Type & Figure No.	Result
QW-462.2, TSB - S1	Pass	QW-462.2, TSB - S3	Pass
QW-462.2, TSB - S2	Pass	QW-462.2, TSB - S4	Pass

CHARPY V-NOTCH IMPACT TEST

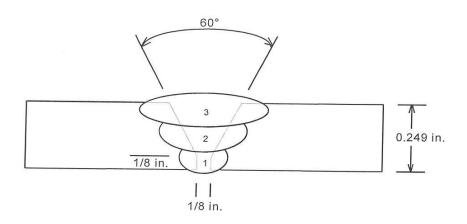
Type of Test Charpy V-Notch			Orientation	Transverse		
Governing Specification	Notch Location	Specimen Size in.	Test Temperature ° F	Specimen Number	Impact Values ft•lbf	
ASME B31.3 -	Weld metal	0.394 x		F2.1	60	
2016	within 1/16 in.	0.394	-50	F2.2	79	
2010	of root	0.004		F2.3	51	
ACME DO4 2		0.204.		F3.1	194	
ASME B31.3 -	HAZ	0.394 x 0.394	-50	F3.2	154	
2016		0.394		F3.3	101	

OTHER TESTS

Vickers Hardness - see attached	Laborato	ry Test F	Report No.: E19-104.6	
Welder's Name <u>Christopher Jaques & Matt</u> Tests Conducted By <u>SGS Canada Ir</u> Laboratory Test No. <u>E19-104.6</u>			Certificate File No	N/A
We certify the statements in this record are welded and tested in accordance with the rec				
Organization Storage Tank S	Solutions I	nc.		
DateJanuary 21, 2021	Print	Sebastie	en Ouellet	
Signed	1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (1/45 (-

QW-483 PROCEDURE QUALIFICATION RECORD (PQR)

Procedure Qualificat	ion Record No.	WFL-	1-1 Date		February 26, 2007
Welding Procedure S	Specification No	WFL-	1		
Welding Process(es))	SMAW	Тур	e(s)	Manual
JOINTS (QW-402)					
Type	Rutt ioi	nt single yee	aroove see n	ovt nago	ř
1 7 90	Datt joi	nt, single vee	groove, see ne	ni page	
DAGE METALO (OM)	400)				
BASE METALS (QW-4		F10	T 0		0 00111 0 7011
Material Spec.	SA 516 to SA	516	_ Type or Gra	de	Gr. 60N to Gr. 70N
P-No. <u>P1 Grp.1</u>	To P-No	P1 Grp.2	_ Thickness _		6.32 mm (0.249 in.)
Diameter	N/A - Plate		_ Heat No		44410-34383
Deposited Weld Meta	al (Per pass)	Did not excee	ed 12.7 mm (0.	500 in.)	
FILLED METALO (O)A	404)				
FILLER METALS (QW		05454		0545	
Specification No. (SF	A)	SFA 5.1		SFA 5	.1
AWS No. (Class)		E6010			-1
Filler Metal F-No.		F3		F4	
Filler Metal A-No.		AI		A1	
Size of Electrode	17111	See attached	sketch		
Deposited Weld Meta	I Thickness	2.39 mm (0.09	94 in.)	3.94 m	ım (0.155 in.)
POSITION (QW-405)					
Position of Groove _		3G			
Weld Progression		Vertical Up			
PREHEAT (QW-406	პ)				
Preheat Temperature	10°C (5	0°F)	Interpass Te	mp. (Ma	x.) <u>232°C (450°F)</u>
POSTWELD HEAT	TREATMENT	(QW-407)			
Temperature	None		Time		N/A
			5		
ELECTRICAL CHAI	RACTERISTIC	S (QW-409)			
				Revers	e, electrode positive
Amps	See nex	t page	Volts	See ne	xt page
Heat Input	F3: 34:3	327 .I/in		F4: 45	,688 J/in.
	10.04,0) (17. 40	,000 0/111.
ECHNIQUE (QW-4	10)				
		1. \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Troval Cara		Coo novi novi
Aultiple or Single Deer	ro. Ouing F	4. vveave	Travel Speed	-	See next page
Autiple of Single Pass	tradas	iviuitiple	9		
Multiple or Single Elec	trodes	Single			-



Pass	Process	Filler Metal	Diameter mm (in.)	Current & Polarity	Amperage Range	Voltage Range	Travel Speed mm/min (ipm.)
1	SMAW	E6010	3.2 (1/8)	DCRP	85 - 90	25 - 26	99 (3.9)
2	SMAW	E7018-1	2.4 (3/32)	DCRP	85 - 95	21 - 23	97 (3.8)
3	SMAW	E7018-1	2.4 (3/32)	DCRP	80 - 90	21 - 22	61 (2.4)

TENSILE TEST (QW-150)

Specimen No.	Width mm (in.)	Thickness mm (in.)	Area Sq. mm (Sq. in.)	Ultimate Load N (lbs.)	Ultimate Stress Mpa (Psi)	Character & Fracture Location
T1	19.1	5.30	101	54 300	536	Partial cup & cone
	(0.752)	(0.209)	(0.157)	(12,200)	(77,800)	Parent metal (Gr. 70N)
T2	19.0	5.62	107	56 300	527	Partial cup & cone
	(0.748)	(0.221)	(0.116)	(12,700)	(76,500)	Parent metal (Gr. 70N)

GUIDED BEND TEST (QW-160)

Type & Figure No.	Result	Type & Figure No.	Result
QW-462.3a, TFB - F1	Pass	QW-462.3a, TRB - R1	Pass
QW-462.3a, TFB - F2	Pass	QW-462.3a, TRB - R2	Pass

CHARPY IMPACT TOUGHNESS

Type of Test	Charpy V-Notch	Orientation	Transverse
Test Temperature	48°C (-55°F)	Specimen Size	10 x 5 mm

Specimen No.	Notch Location	Impact Values J (ft. lbs)
T2.1	Weld Metal	37.3 (27.5)
T2.2	within 1/16"	29.6 (21.8)
T2.3	of root	41.4 (30.5)
ТЗ.1	Gr. 60N - HAZ	17.2 (12.7)
T3.2	Gr. 60N - HAZ	63.7 (47.0)
T3.3	Gr 60N - HAZ	77.3 (57.0)
U3.1	Gr. 70N - HAZ	19.3 (14.2)
U3.2	Gr. 70N - HAZ	31.0 (22.9)
U3.3	Gr. 70N - HAZ	12.9 (9.5)

OTHER TESTS

Welders Name	Keith Breedon	Certificate File No.	W-17343
Tests Conducted By	Ludwig & Associate		
Laboratory Test No.	C07-300.1		***************************************
welded and tested in acco	ordance with the require	prrect and that the test we ments of Section IX of the	elds were prepared ASME Code.
We certify the statement welded and tested in accommon manufacturer	ts in this record are co ordance with the require WOODSIDE FABR	ments of Section IX of the /	elds were prepared ASME Code.



CHARPY V-NOTCH IMPACT TEST

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta

T9G 1Z6

Attention:

Sebastien Ouellet

PQR No.:

STS-1-1 (Rev.0)

Material Heat No.:

44391 to A50A8

Material:

SA 333 Gr. 6 to SA 350 Gr. LF2

Material Size:

168.3 mm (6.625 in.) O.D. x 5.89 (0.232 in.) w.t.

Thermal Condition:

As Welded

Specimen Size: Orientation:

10 x 4 mm (0.394 x 0.157 in.)

Transverse

Test Temperature: Governing Spec .:

-55 °C (-67 °F) ASME B31.3-2016 Machine: Capacity: Satec SI-1K3, S/N: 1503

Verified Range:

407 J (300 ft·lbf) 3.4-325 J (2.5-240 ft·lbf)

Laboratory Test No.: E19-104.4

Date: March 15, 2019

Calibration Date:

March 19, 2018

Specimen	Notch	Impact	Values
Number	Location	Joules	(ft·lbf)
D2.1 D2.2 D2.3	Weld Metal within 1.5mm (1/16") of root	23 41 37	(17) (30) (27)
D3.1 D3.2 D3.3	Gr. 6 - HAZ	102 110 72	(75) (81) (53)
D4.1 D4.2 D4.3	Gr. LF2 - HAZ	13 35 27	(10) (26) (20)

Note: Metric values calculated by direct conversion.

Test Conducted By: Mohamed Botan (Edmonton)

Certified By:

Eric Dacyk, C.E.T.

TESTING LABORATORY Certification # L2057.01-1

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professional opinion be taken into account.



HARDNESS TEST

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta T9G 1Z6

Laboratory Test No.: E19-104.4

Date: March 15, 2019

Attention:

Sebastien Ouellet

PQR No.:

STS-1-1 (Rev.0)

Material Heat No.:

44391 to A50A8

Material:

SA 333 Gr. 6 to SA 350 Gr. LF2

Material Size:

168.3 mm (6.625 in.) O.D. x 5.89 (0.232 in.) w.t.

Thermal Condition:

As Welded

Type of Test:

Vickers 10 kg (HV10)

Instrument:

Buehler 5112

Governing Spec.:

ASTM E92 - 17 & ANSI/NACE MR0175/ISO

Calibration Date:

July 27, 2018

15156:2015

12 3. 5. • 20 • 27 • 21 Midwall - - -1 mm 9. . 26 • 28

SA 350 Gr. LF2			J.A.	Weld Metal		SA 333 Gr. 6			
Par	ent Metal		HAZ	VVE	eid ivietai		HAZ	Pare	nt Metal
1	143	3	164	11	193	19	196	27	137
2	164	4	190	12	195	20	154	28	169
		5	183	13	193	21	184		
		6	170	14	164	22	175		
		7	179	15	165	23	160		
		8	177	16	165	24	176		
		9	173	17	162	25	174		
		10	186	18	157	26	171		

Test Conducted By: Ibrahim Mohamoud (Edmonton)

Certified By:

Eric Dacyk, C.E.T.

TESTING LABORATORY Certification # L2057.01-1

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CHARPY V-NOTCH IMPACT TEST

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta T9G 1Z6

Date: March 15, 2019

Material Heat No.:

Laboratory Test No.: E19-104.5

Attention:

Sebastien Ouellet

PQR No.:

STS-1-2 (Rev.0)

Material:

SA 516 Gr. 60/70 12.7 mm (0.500 in.)

Material Thickness: **Thermal Condition:**

As Welded

Specimen Size:

10 x 10 mm (0.394 x 0.394 in.)

Orientation:

Transverse

Test Temperature: Governing Spec .:

-46 °C (-50 °F) ASME B31.3-2016 Machine:

Satec SI-1K3, S/N: 1503

449291 55060-03

Capacity: Verified Range: 407 J (300 ft·lbf) 3.4-325 J (2.5-240 ft·lbf)

Calibration Date:

March 19, 2018

Specimen	Notch	Impact	Values
Number	Location	Joules	(ft·lbf)
E2.1 E2.2 E2.3	Weld Metal within 1.5mm (1/16") of root	69 57 91	(51) (42) (67)
E3.1 E3.2 E3.3	HAZ	85 43 45	(63) (32) (33)

Note: Metric values calculated by direct conversion.

Test Conducted By: Mohamed Botan (Edmonton)

Certified By:

Eric Dacyk, C.E.T.

Certification # L2057.01-1

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HARDNESS TEST

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta T9G 1Z6 Laboratory Test No.: E19-104.5

Date: March 12, 2019

Attention:

Sebastien Ouellet

PQR No.:

STS-1-2 (Rev.0)

Material:

SA 516 Gr. 60/70

Material Thickness:

12.7 mm (0.500 in.)

Thermal Condition:

As Welded

Type of Test: Governing Spec.: Vickers 10 kg (HV10) ASTM E92 - 17 &

ANSI/NACE MR0175/ISO 15156:2015

Instrument:

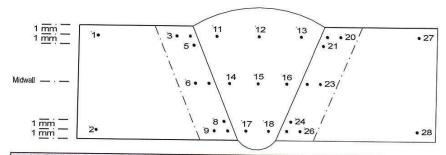
Buehler 5112

449291 55060-03

Calibration Date:

Material Heat No.:

July 27, 2018



			VA/-	Weld Metal					
Pare	ent Metal		HAZ		vveiu Metai		HAZ	Par	ent Metal
1	153	3	152	11	203	19	210	27	166
2	150	4	183	12	205	20	170	28	156
		5	199	13	202	21	211		
		6	157	14	170	22	173		
		7	165	15	168	23	160		
		8	171	16	167	24	166		
		9	164	17	162	25	168		
		10	170	18	162	26	162		

Test Conducted By: Ibrahim Mohamoud (Edmonton)

Certified By:

Eric Dacyk, C.E.T.

ACCREDITED
SOIECTOZS
TESTING LABORATORY
Certification # L2057.01-1

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TENSILE / BEND TEST

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta T9G 1Z6 Laboratory Test No.: E19-104.6

Date: March 15, 2019

Attention:

Sebastien Ouellet

Governing Spec.: ASME Section IX - 2017

PQR No.:

STS-1-3 (Rev.0)

Material:

SA 516 Gr. 60/70

Material Thickness:

22.2 mm (0.875 in.)

Thermal Condition:

WIDTH mm (in.)

As Welded

Instrument:

Tinius Olsen S/N: 133660

454840 27789-02

SAMPLE NO.(QW-150)

T1 19.0

537

(0.748)

19.0 20.5

T2

Material Heat No.:

(0.748) (0.807)

THICKNESS mm (in.)
AREA sq. mm (sq. in.)

20.3 (0.799) 386 (0.598) 206 937 (46,500

390

(0.604) (47,300)

ULTIMATE LOAD N (lbf)
ULTIMATE STRESS MPa (psi)

(46,500) (77,800) 210 305 (4 540 (7

(78,300)

FRACTURE TYPE
FRACTURE LOCATION

Partial Cup & Cone Parent Metal

Partial Cup & Cone Parent Metal

Note: Imperial values calculated by direct conversion.

SAMPLE TYPE(QW-462.2)

SAMPLE NO. RESULTS Side Bend

S1 Pass Side Bend

S2

Pass

Side Bend S3

Pass

Side Bend

S4 Pass

Test Conducted By: Mohamed Botan (Edmonton)

Certified By:

Eric Dacyk, C.E.T.

ARAB
A C C R E D I T E D
ISONEC TOZE

TESTINGLABORATORY
Certification # 12/05/1.01-1

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CHARPY V-NOTCH IMPACT TEST

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta T9G 1Z6

Laboratory Test No.: E19-104.6

Date: March 15, 2019

Material Heat No.:

Attention:

Sebastien Ouellet

PQR No.:

STS-1-3 (Rev.0)

Material:

SA 516 Gr. 60/70

Material Thickness:

22.2 mm (0.875 in.)

Thermal Condition:

As Welded

Specimen Size:

10 x 10 mm (0.394 x 0.394 in.)

Orientation:

Transverse -46 °C (-50 °F)

Test Temperature: Governing Spec .:

ASME B31.3-2016

Machine:

Satec SI-1K3, S/N: 1503

454840 27789-02

Capacity:

407 J (300 ft·lbf)

Verified Range:

3.4-325 J (2.5-240 ft·lbf)

Calibration Date:

March 19, 2018

Specimen	Notch	Impact	Values
Number	Location	Joules	(ft·lbf)
F2.1 F2.2	Weld Metal	81	(60)
F2.3	within 1.5mm (1/16") of root	107 69	(79) (51)
F3.1		263	(194)
F3.2	HAZ	209	(154)
F3.3		137	(101)

Note: Metric values calculated by direct conversion.

Test Conducted By: Mohamed Botan (Edmonton)

Certified By:

Eric Dacyk, C.E.T.

TESTING LABORATORY

Certification # L2057.01-1

This report (or certificate) is issued by the Company under its General Conditions for Inspection and Testing Services (copy available upon request). The issuance of this report (or certificate) does not exonerate buyers or sellers from exercising all their rights and discharging all their liabilities under the Contract of Sale. Stipulations to the contrary are not binding on the Company. The Company's responsibility under this report (or certificate) is limited to proven negligence and will in no case be more than ten times the amount of the fees or commission. Except by special arrangement, sampleage, if drawn, will not be retained by the Company for more than 30 days. The information stated in this report (or certificate) is derived from the results of inspection or testing procedures carried out in accordance with the instructions of our Client, and/or our assessment of such results on the basis of any technical standards, trade custom or practice, or other circumstances which should in our professional opinion be taken into account. professional opinion be taken into account.



HARDNESS TEST

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta

T9G 1Z6

Attention:

Sebastien Ouellet

PQR No.:

STS-1-3 (Rev.0)

Material:

SA 516 Gr. 60/70 22.2 mm (0.875 in.)

Material Thickness: **Thermal Condition:**

As Welded

Type of Test: Governing Spec .:

Vickers 10 kg (HV10) ASTM E92 - 17 &

ANSI/NACE MR0175/ISO 15156:2015

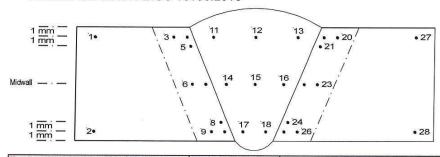
Material Heat No.:

454840 27789-02

Instrument: Calibration Date: Buehler 5112 July 27, 2018

Laboratory Test No.: E19-104.6

Date: March 15, 2019



			We	Weld Metal						
Pare	ent Metal		HAZ		ia inclai	HAZ Pa		Pare	rent Metal	
1	149	3	178	11	206	19	220	27	149	
2	153	4	209	12	196	20	172	28	151	
		5	226	13	206	21	199			
		6	188	14	198	22	195			
		7	199	15	191	23	179			
		8	171	16	199	24	169			
		9	175	17	167	25	174			
		10	171	18	169	26	173			

Test Conducted By: Ibrahim Mohamoud (Edmonton)

Certified By:

Eric Dacyk, C.E.T.

TESTING LABORATORY Certification #12057.01-1

This report (or certificate) is issued by the Company under its General Conditions for Inspection and Testing Services (copy available upon request). The issuance of this report (or certificate) does not exonerate buyers or sellers from exercising all their rights and discharging all their liabilities under the Contract of Sale. Stipulations to the contrary are not binding on the Company. The Company's responsibility under this report (or certificate) is limited to proven negligence and will in no case be more than ten times the amount of the fees or commission. Except by special arrangement, samples, if drawn, will not be retained by the Company for more than 30 days. The information stated in this report (or certificate) is derived from the results of inspection or testing procedures carried out in accordance with the instructions of our Client, and/or our assessment of such results on the basis of any technical standards, trade custom or practice, or other circumstances which should in our professional opinion be taken into account.

Materials and Welding Consulting

LABORATORY TEST REPORT

LABORATORY ACCREDITATION BUREAU ISO/IEC 17025 ACCREDITED Certificate Number L2057

CUSTOMER:

Woodside Fabrications Ltd.

6124 - 39th Avenue

Camrose, Alberta

T4V 3B1

Laboratory Test No.:

C07-300.1

Date: March 7, 2007

Attention:

Douglas French

PQR Number:

WFL-1-1

Process: SMAW

Material:

SA 516 Gr. 60N to SA 516 Gr. 70N (Heat No.: 44410 - 34383)

Thickness:

6.32 mm (0.249 in.)

Thermal Condition:

As Welded

TENSILE TEST QW-150

SAMPLE NUMBER	T1 QW-462.1(a)			62.1(a)	
VIDTH mm (in)	19.1	(0.752)	19.0	(0.748)	
THICKNESS mm (in)	5.30	(0.209)	5.62	(0.221)	
AREA sq mm (sq in)	101	(0.157)	107	(0.116)	
ULT. LOAD N (lbs)	54 300	(12,200)	56 300	(12,700)	
UTS MPa (psi)	536	(77,800)	527	(76,500)	
FRACTURE TYPE	Partial Cup and Cone		Partial Cu	p and Cone	
FRACTURE LOCATION	Parent Me	etal (SA 516 Gr. 70N)	50		

GUIDED-BEND TEST QW-160

SAMPLE WIDTH: 38.1 mm (1.50 in.) SAMPLE THICKNESS: 6.32 mm (0.249 in.) PLUNGER SIZE: 25.1 mm (0.990 in.) YOKE SIZE: 41.1 mm (1.62 in.) QW-462.3(a) Root Bend Root Bend Face Bend Face Bend SAMPLE NUMBER(S) R1 R2 F1 F2

RESULTS Pass Pass Pass Pass

We certify the test results in this report and that the specimen(s) were prepared and tested in accordance with the requirements of ASME Section IX, 2004 edition and latest addenda. The information regarding material identification (i.e. size, thickness, heat number, etc.) has been provided by the customer whose name appears on this report. Samples associated with this report will be discarded in 45 days.

Laboratory Test Conducted By:

Inderjit Rai / Steve Rieberger, C.E.T.

Materials and Welding Consulting

LABORATORY TEST REPORT

ABORATORY
ACCREDITATION
BUREAU
ISO/IEC 17025 ACCREDITED
Certificate Number L2057

C07-300.1

CUSTOMER:

Woodside Fabrications Ltd.

6124 - 39th Avenue Camrose, Alberta

T4V 3B1

Attention:

Douglas French

PQR Number:

WFL-1-1

Process: SMAW

Laboratory Test No.:

Date: March 7, 2007

Material:

SA 516 Gr. 60N to SA 516 Gr. 70N (Heat No.: 44410 - 34383)

Thickness:

6.32 mm (0.249 in.)

Thermal Condition:

As Welded

NOTCH-TOUGHNESS TEST

TYPE OF TEST:

Charpy V-Notch

ORIENTATION:

Transverse

TEST TEMPERATURE:

-48°C (-55°F)

SPECIMEN SIZE:

10 x 5 mm

Specimen Number	Notch Location	Impact Values Joules (ft.lbs)	
T2.1	Weld Metal	37.3 (27.5)	
T2.2	within 1/16 in.	29.6 (21.8)	
T2.3	of root	41.4 (30.5)	
T3.1	Gr. 60N - HAZ	17.2 (12.7)	
T3.2	Gr. 60N - HAZ	63.7 (47.0)	
T3.3	Gr. 60N - HAZ	77.3 (57.0)	
U3.1	Gr. 70N - HAZ	19.3 (14.2)	
U3.2	Gr. 70N - HAZ	31.0 (22.9)	
U3.3	Gr. 70N - HAZ	12.9 (9.5)	

We certify the test results in this report and that the specimen(s) were prepared and tested in accordance with the requirements of ASME Section VIII, Div. 1, UG-84 – 2004 edition and latest addenda. The information regarding material identification (i.e. size, thickness, heat number, etc.) has been provided by the customer whose name appears on this report. Samples associated with this report will be discarded in 45 days.

Laboratory Test Conducted By:

Charles Ugarenko / Steve Rieberger, C.E.T.

Materials and Welding Consulting

LABORATORY TEST REPORT

LABORATORY ACCREDITATION BUREAU ISO/IEC 17025 ACCREDITED Certificate Number L2057

CUSTOMER:

Woodside Fabrications Ltd.

6124 - 39th Avenue Camrose, Alberta

T4V 3B1

Laboratory Test No.:

C07-300.1

Date: March 5, 2007

Attention:

Douglas French

PQR Number:

WFL-1-1

Process: SMAW

Material:

SA 516 Gr. 60N to SA 516 Gr. 70N (Heat No.: 44410 - 34383)

Thickness:

6.32 mm (0.249 in.)

Thermal Condition:

As Welded

HARDNESS TEST

TYPE OF TEST:

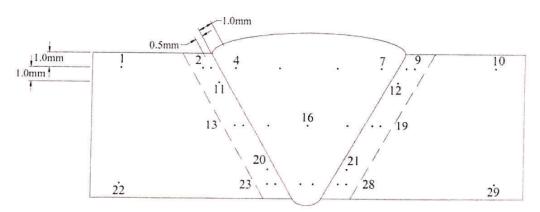
Vickers

LOAD:

10 kg

INSTRUMENT TYPE:

Mitutoyo AVK-C1



SA 516 Gr. 70N

SA 516 Gr. 60N

1)	161 HV	7)	215 HV	13)	187 HV	19)	196 HV	25)	181 HV
2)	195 HV	8)	207 HV	14)	192 HV	20)	187 HV	26)	187 HV
3)	197 HV	9)	196 HV	15)	189 HV	21)	183 HV	27)	184 HV
4)	199 HV	10)	160 HV	16)	189 HV	22)	161 HV	28)	187 HV
5)	191 HV	11)	198 HV	17)	186 HV	23)	184 HV	29)	167 HV
6)	200 HV	12)	202 HV	18)	199 HV	24)	188 HV		

We certify the test results in this report and that the specimen(s) were prepared and tested in accordance with the requirements of ASTM E92 - 82 (Reapproved 2003)^{c2}. The information regarding material identification (i.e. size, thickness, heat number, etc.) has been provided by the customer whose name appears on this report. Samples associated with this report will be discarded in 45 days.

Laboratory Test Conducted By:

Andrew Vessey / Steve Rieberger, C.E.T.

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INSPECTION CERTIFICATE

Page / Página: 1/8 Number / Numero: 853076

Siteros S.A.I.C. Dr. Jorgo A. Simini 250 (B23BitAHA) Campana Buenos Arres, Argentina (54) S48943310) tel

BEVELLED AT 30 DEG. ASTM

Ends / Extremos:

Cominal Weight / Peso Nominal

18.97 LB/FT 28.26 KG/M

27101 KG

962.54 MTS 3157.94 FT

TENSILE TEST / ENSAYO DE TENSIÓN

59747 LB

Quantity / Cantidad: 83 Pcs/pz

Steel Grade / Grado de acero:

1/6/359 CAT II SS

Date / Dia: July 21, 2017 Customer's Order Item / Orden Cliente - Item; (BS EN 10204 3.1: 2004 - ISO 10474 3.1: 2013) ustomer / Cliente: VAN LEEUWEN PIPE & TUBE (CANADA) INC.

(54) 3489 433403 (14) Manufacturer's Works Order Nº / Confirmación de Venta: INT BARE /EXT VARNISHED Surface / Superficie: 51938/08 Customer's Reference / Ref. del Cliente: NA CARBON STEEL FOR LOW TEMPERATURE SERVICE 45001803-00008 Product Type / Figure de Prontoctes standard or Specification / Normas o Especificaciones: fanufacturing Process / Proceso de Manufactura SEAMLESS HOT ROLLED

ASTM/ASME A/SA333-10+CSA Z245.1-14 CATIL-SS+PSF00374+NACE MR0175/103+IPRO LP-006 couply / Longitude 11.0/11.8 m Schedule / Cédula 040

6 5/8 X 0.280 INCH Dimensions / Dimensiones

168.30 X 7.11 MM

SA 333 Gr. 6/ (SA ZZHS. 1 Gr. 3) September 18,3017 Sch 45 けっ opt. Elongation / Alargamiento

Min

9:

Eul 0.50 %

Req. 91

Zin. VI3X.

Min: 52

Sección

Tamano Size

Area

Eul 0.50 %

temp Temp.

Dimensiones de la probeta

Condición de la probeta

Specimen condition

Ö

NIX. Tipo

4

TuboN° Pipe Nº

Lote Nº Lot No

Zana

Muestra N° Sample Nº

Colada Nº

Heat No

ZUR

Specimen dimensions

3

Y.S./U.T.S Red. Max.

6.t. 0E-93 0.38 14341 6.635 00 x Test # 39.1

18693 #od 36.1 38.5

U.T.S. Ultimate tensile strength / Resistencia 38.5 38.9 28.8 16.9 200 28.0 0.80 28.0 28.0 28.0 28.0 28.0 28.0 28.0 28.0 \$0.8 80'8 8.08 50.8 8,03 8,03 8,03 Req. Max: Required maximum / Máximo requerido 50,8 8.05 50.8 50,8 0.82 0.87 0.81 08.0 6.83 0.81 0.81 0.84 70.5 73.6 72.0 75.9 73.3 73.5 73.3 73.4 76.8 58.1 56.7 60.3 609 59.2 64.2 58.2 58.1 RT E E RT 2 RT KT 0.279 0.38 0.280 0.277 0.278 0.780 0.284 0.274 0.264 Ls: Location of sample / Ubicación de la muestra 0.995 x 0.279 0.999 x 0.283 0.995 x 0.279 0.994 x 0.277 0.994 x 0.279 0.999 x 0.279 0.999 x 0,283 0.995 x 0.274 0.993 x 0.265 0.994 x 0.278 0.997 x 0.282 1. x 0.276 - - -Ss × S SS 3 AM AM AM AN AM AM AM AM AM AM AM: As manufactured / Según proceso de fabricación 9 80 52 09 80 71973 71971 71971 71972 71973 71974 71974 71974 \$4612 71971 71975 71972 3 日回 E 2837410 28.36.326 2836329 2836335 2836339 2836343 2836344 2836125 2836327 2837409 2842966 2842967 14391 44391 14391 14391 14391 44391 14351 44391 14391 44391 14391

Ori: Orientation / Orientación Max: Maximum / Máximo Obt: Obtained / Obtenido Min: Minimum / Minimo F1 / E2: Ends of Sampling / Extremos de Muestra to: Initial length / Longitud inicial : Longitudinal / Longitudinal B: Rody / Cuerpo

Sc: Specimen condition / Condition de la probeta RT: Room temperature / Temperatur.cambioute Ss: Strip specimen / Muestra rectangular

Req. Required / Requerido

Y.S. Yield strength / Fluencia

This certificate is issued by a computerzed system and it is valid with electronic signature. On the original certificate the hade-mark green colored. Tenants' is stamped, in case the owner of the original certificate would rebeau a oppy of it, he must sittest its cretionally in the righnal one taking to any unlawful or not allowed use. Any alteration and/or labitication will be subjected in the Ew.

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THE TABLE OF THE SETUBE (CANADA) INC.
ustomer / Cliante: VAI

INSPECTION CERTIFICATE

2/8 Date / Día: July 21, 2017 Number / Númeror 853076

Siderca S.A.I.C Dr.Jorge A. Simini Z.u (UzUdAhilla) Campana Richos Aires, Argentina (64) Aires Astarto Les (64) Aires Astarto Les

Page / Página:

Customer's Reference / Ref. del Cliente;

Manufacturer's Works Order Nº / Confirmación de Venta. Surface / Superficie: 51938/08

N/A

Customer's Order Item / Orden Cliente - Item;

Product Type / Thus de Producto: CARBON STEEL FOR LOW TEMPERATURE SERVICE

45001803-00008

(BS EN 10204 3.1: 2004 - ISO 10474 3.1: 2013)

BEVELLED AT 30 DEG. ASTM INT BARE ÆXT VARNISHED Nominal Weight / Pesc Nominal: Ends / Extremos: 18.97 LB/FT 28.26 KG/M

CHEMICAL COMPOSITION / COMPOSICION OUTMICA

962,54 MTS 3157.94 PT

S9747 LB 27101 KG

Quantity / Cantidad: 83 Pcs/pz.

Length / Longitud:

11.0/11.8 ш

Steel Grade / Grado de acero; 1/6/359 CAT II SS

ASTM/ASME A/SA333-10+CSA Z245.1-14 CATII-SS+PSF00374+NACE MR0175/103+IPRO LP-006

itandard or Specification / Normas o Esperificaciones

Manufacturing Process / Proceso de Manufactura

SEAMLESS HOT ROLLED

schedule / Cédula

Dimensions / Dimensiones: 6 5/8 X 0.280 INCH 168.30 X 7.11 MM

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C+F((MN/G)+(SI/24)+(CU/15)+(NV20)+(CK+AAO+V+NB)/S+ ((2*8)) Ce.1: C+(MIV/6)+(CR+MO+V)/5+(NI+CU)/15

H. Heat / Colada

Max: Maximum / Maximu

Min: Minimum / Minimo R Product / Producto

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VAN LEEUWEN PIPE AND TUBE -CAN 2875-64TH AVENUE EDMONTON - ALBERTA T6P 1R1 CANADA CLIENTE / Customer / Client

CERTIFICADO DE INSPECCION UNE EN 10234/63/5.1 Inspection Certificate - Certificat de Réception ISO 16474/15/8.1

24/05/2018 FECHA: Date:

ZZ

195241

HOJA:

Management Systems certified by LRQAE SGI 1922164

B² Zubillaga, 3 - Abdo, 14 20560 O'ATTI (Cipuzkoz) SPAIN ULMA FORJA, S. 200P Fel.: 34 - 943 780552 Fax: 34 - 943 781606

E-mail: ulma@ Jimepiping.com

Packing 139834

Certified acc. PED 57/23/EC+AD2000-W9 PED 14/68/UE by TÜV Rheinbard N° 01 202 E/O 02 7443

DE oi. - oe 10/01/2018

45001896

SU PEDIDO N.º Your Order No.

FLANGES

PRODUCTO Article - Produit ASME B16.5-17

MATERIAL CORRESPONDIENTE

MODO DE FUSION (*) Steel Making - Elaboration de l'acus Material Correspondent - Qualité

Y - Oxigeno básico

E - Elec.

Requirements - Normes Applicables

NOFIMAS APLICABLES

MARCA SEL FABRICANTE Mark of factory

ANCE

Hardnoss Durete

DUREZA

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HAMEN	30

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SANTE	QUALITY ASSURA
naviera del saemonte Mark of factory Marque do fabricen	DEPARTAMENTO QUALITY ASSURAL Section Department
E ASME SA350LF2CL1-2-17, ASTM A350LF2CL1-2-17 ASME SA105M-17, ASTM A105M-14	NACE MH0775/S015156-02/03-15 & NACE MR0103/ISO17495-15 Clause 7.2.1.4, Annex A.2 and SSC Region 3. CSA-2245.12-17 GR248 CAT II-SS (WN & BLIND FLANGES ONLY)

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	CADYINA	flerr Fosts	48 24738	54 24625 56 22171 56 22171 45 24672	OC ADA No	Heat No		

- Dimension and surface condition were found acceptable Les dimensions et étais de surface sont satisfaisants.

Los materiales cuados cumpien las nomas apinables

Manufacturing requirements are satisfied.

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00,130

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B73A7

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Les normes applicables sont maportées



(') OBSERVACIONES: Observations Remarks

N_NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR.

6.625" O.D. x 0.280 w.t. External PO# 203177 Internal PO# E20170 W/N 150 RF 6 STD HT# A50A8 SA 350 LF2

Recieved By: Jessie Springett 12/09/18

VAN LEEUWEN PIPE AND TUBE -CAN 2875-84TH AVENUE EDMONTON - ALBERTA TEP 1R1 CANADA CLIENTE / Dusto.

CERTIFICADO DE INSPÉCCION UNE EN 10204206 / 3.1 Inspection Certificate - Certificat de Réception ISO 10474-1513.1

15/12/2017 05/02/2018 FECHA: Date:

Rev.01 28

9 HOJA: Page: 192002

OH5A518001

20560 ONATI (Gipuzkoa) SPAIN B° Zubillaga, 3 - Apdc, 14 ULMA FORJA, S.COOP Tel: 34 - 943 780552 Fax: 34 - 943 781808

Packing 136413

E-mail: ulma@u/mapiping.com

ASME B16.5-17 Requirements - Normes Applicables NORMAS APLICABLES Article - Propiul

MATERIAL CORRESPONDIENTE

Material Correspondent - Qualitie MODO DE FUSION (*) Steel Meking - Eleboration de Tacier Y = Oxígeno básico

E = Elec.

CANTIDAD

FARTIDA

Your Order No. Votre Cde, N.º

ASME SA35DLF2CL1-2-17, ASTM A35DLF2CL1-2-17
ASME SA105M-17, ASTM A105M-14
NAGE MR0175/ISO15156-02/03-15 & NACE MR0103/ISO17495-15
Clause 7.2-1.4, Annex A.2 and SSC Region 3.
CSA-2245-12-13 GR248 CAT II-SS (WN & BLIND FLANGES ONLY)

45001856

SU PEDIDO N.º

FLANGES

PRODUCTO

DE of.-0€ 03/11/2017

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Certified acc. PED 97/23/EC+AD2000-IV0 Management Systems certified by LRGAE SGI 6009236 MARCA DEL FABRICANTE Nº 01 202 E/O 02 7443 by TÜV Rheinland PED 14/68/UE 5GI 1922164

Departement

	QUALITY ASSURANC
Marque du fabrican	DEPARTAMENTO
Marque du fabrican	Section

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OBSERVACIONES COLADA M. REISTENCH I INVITETAR. Figurations Heat No T. Strength Y. Strength Observations N. Pooutée Resist Pupil 0.2 %		-%
LOTE	27017 NE 27517 NE 27517 NE 21017 NE 179N17 NE 10017 NE 27517 NE 27517 NE	HIMIQUE
GESCRIPCION Description Description	WN 3 2500LB XXS RTJ A350LF2 WN 3 2500LB XXS RTJ A350LF2 WN 4 150LB XXJ80 RF A350LF2 WN 4 450LB XXJ80 RF A350LF2 WN 4 500LB XXJ80 RF A350LF2 WN 6 150LB STDI40 RF A350LF2 WN 6 150LB STDI40 RF A350LF2 WN 6 150LB STDI40 RF A350LF2 WN 6 150LB XXS RF A350LF2 WN 8 150LB XXS RF A350LF2 WN 8 150LB XXS RF A350LF2 273	COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE
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	7 4 E 2 R 8 R 8 R 8 R	O 11 1

Dimension and surface conducts were found accopiately.

- Les dimensions et étals de surface sont satisfaisants.

- Los materiales citados cumpten las normes aplicables. Manufacturing requirements are satisfied. Les nomes applicables son respectées.

Warks Inspector - L'inspecteur EL INSPECTOR

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Dptc. de Garantia de calidad Quality\23/urance Dept. ULMAY BALLS, COOP. 0

> (*) OBSERVACIONES: Remarks

Observetions

M_NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR.

DILLINGER®

Erläuterungen siehe Rückselle/Explications voir au verso/See reverse for explanations (www.dillinger.de/certificate)

QM-System: Certification as per ISO 9001

A08/ Manufacturer's order/ A03 Certificale No. HEAVY PLATES. 427758-001 B01 Product 611114-07.09.17 A10 Advice of dispatch No./ A07.1 No. ED10715-J1010ER SA20-S5 A07.2 No. EDMONTON STEEL, EDMON EDMONTON STEEL, EDMON A02 INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004 INSPECTION CERTIFICATE 3.1 AS PER ISO 10474:2013 DIL-HUE-1:R34-2016-08-19 MATERIAL TEST REPORT (MTR) Final receiver A06 Purchaser ASME-IIA;2015 B01-899 Description SA516-70 A05 Established Inspecting body B02/ Steel design. requirements B03 Any suppl. DH

		## ***	
0.014	A09 Purchaser article number	EPL-243 SA 516 Gr. 60/70 0.50" HT# 449291 55060 03 PO# 203847 Internal PO# E20207 Recieved: 26/09/2018 Recieved by: Jessie Springett	A
		ITEM001 ITEM001 ITEM001 ITEM001 ITEM001 ITEM001 ITEM001 ITEM001 ITEM001	
	B07.1 Rolled plate No./ Test No.	55053-01- 55053-02 55053-03 55054-01 55056-01 55056-02 55060-03 55060-03	
	B07.2 Heat No.	449291 449291 449291 449291 449291 449291 449291 449291 449291	
	B04 Product delivery condition	****	
	B12 Theoretical mass KG	2979 2979 2979 2979 2979 2979 2979 2979	
	B11 Length	480,000000 480,000000 480,000000 480,000000 480,0000000000	
——————————————————————————————————————	B10 Width INCH	x 00005, 36 x 50000 x 50000 x 50000 x 6, 50000 x 6, 50000 x 6, 50000 x 7 0000 x 96, 50000 x 96, 5000	
899 Description	B09 Thickness	x x x x 00005,0 0 00002,0 0 00002,0 0 00002,0 0 00002,0	10000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1
- 108	B08 Number of pleces		
	B14 Item	* * * * * * * * * * * * * * * * * * * *	

B04 Product delivery condition

ITEM NO.: 01

N: HT: 1670 GR.F +36 -27 GR.F

SOAKING TIME TO ATTAIN THE TARGET TEMPERATURE OVER THE WHOLE SECTION: 1-1,75 MIN/MM (25-45 MIN/INCH)

COOLING IN STILL AIR

Z01/Z02/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.

B. BALDAUF Test House Manager

433

Inspector's stamp

AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department

A01

Date 08.09.17

	INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004 INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004 MATERIAL TEST REPORT (MTR) stablished inspecding body Ang Purchaser EDMONTON STEEL, EDMON A07.1 No. ED10715-J1010ER Final receiver EDMONTON STEEL, EDMON A07.2 No. Steel design. SA516-70 Any suppl. ASME-IIA:2015 requirements DIL-HUE-1:R34-2016-08-19	Vavice of dispatch No./ Date of dispatch	
No. Principle	INSPECTION CERTIFICATE 3.1 AS PER ISO 10474:2013 #ATERIAL TEST REPORT (MTR) stabilished Inspecding body #AGENTIAL TEST REPORT (MTR) Final receiver EDMONTON STEEL, EDMON A07.1 No. ED10715-J1010ER Final receiver EDMONTON STEEL, EDMON A07.2 No. Steel design. #AS16-70 Any suppl. ASME-IIA:2015 requirements DIL-HUE-1:R34-2016-08-19	Advice of dispatch No./ Sale of dispatch	
Color Colo	MATERIAL TEST REPORT (MTR) Established Inspecting body A06 Purchaser EDMONTON STEEL, EDMON A07.1 No. EDL0715-J1010ER DH Final receiver EDMONTON STEEL, EDMON A07.2 No. Steel design. SAST6-70 Any suppl. ASME-IIA:2015 requirements DIL-HUE-1:R34-2016-08-19 BOS Marking of the product BOS Marking of the product	71 80 ZU-71L	
Section Sect	Steel design ASME-IIA:2015 ASME-IIA:2016-08-19 ASME-IIA:20	71 4-07 CO-71	
Figure F	Steel design. SAS16-70 Any suppl. ASME-IIA:2015 requirements DIL-HUE-1:R34-2016-08-19 B06 Marking of the condition	17.00:10 777	
Sheel Read She	Steel design. SA516-70 Any suppl. ASME-IIA:2015 requirements DIL-HUE-1:R34-2016-08-19 BOS Marking of the cool of		B01 Product
SAZO-SS SAZO	Any Suppl. ASME-IIA:2015 requirements DIL-HUE-1:R34-2016-08-19 BOS Marking of the credital		neavi PLAIES
BOK Marking of the product	2		-
### BOOK Marking of the product — ### Product — #### Product — ##	BOS Warking of the product		***
TERL NO.: 01 THE LOSS SERVINGEN SASIS TO WILLY SASIS 60 NTLTY BOY-B99 Further information about the product C10-C29 Tensile test C10-C20 Tensile test C10-C20 Tensile test			
EAT NO. TableNATON SASI6 60 NTLATY SASI6 60 NTLATY	ITEM NO.: 01		
BOY-B99 Further information about the product C	P GOMOGICAL /		
Harden Part	, instanta		
HICKRIESS REDUCTION RATIO >= 3.0 IS FULFILLED - CF. R/SA20 (M) PAR. 5.3 Color of the state of t	ITEM NO.: 01		
149291 55054	>= 3,0 IS FULFILLED - CF. A/SA20(M) pap =		
449291 55054 Fight Fig	.6		
449291 55053 K1 0 RT 50,0 73,8 26 26 26 26 26 26 26 2	B07.2 B07.1 B05 C01 C02/ C03 C10 C11 C12 C13 C12 C13	C14-C15	
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C30-C39 Hardness lest	449291 55060 K1 Q RT 50.2 74.6		
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201/202/203 We hereby certify, that the above mentioned materials have been delivered in accordance Solid Column Colum	449291 55060 KI O RT HBW 10/3000 HB 139		139
201/202/203 we hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order. AG der Dillinger Hüttenwerke	DE 181 0000 /01 0000 0000 0000 0000 0000 0		139
with the terms of order. AH) B. BALDAUF AG der Dillinger Hüttenwerke RG der Dillinger Hüttenwerke B. BALDAUF	Z01/Z02/Z03 We hereby certify, that the above mentioned materials have be		
B. BALDAUF	en delivered in accordance	AG dar D	Dillinger Unite
B. BALDAUF		A)B Postfach	n 1580, D-66748 Dillingen/Saar
	B. BALDAUF		

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QM-System: Certification as per ISO 9001

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NOT INSPE	INSPECTION CERTIFICATE	TICATE	3.1 AS	PER EN	10204:2004	2004					A10	Achier of dir	, -IN depte				1
INSPE	INSPECTION CERTIFICATE 3.1	TICATE	AS	PER ISO		2013						Date of dispatch	lich	A03 Certificate No.	turer's order/ e No.	Sheet	
MATER	MATERIAL TEST REPORT (MTR)	ORT ()				1											-
A05 Established	A05 Established Inspecting body At	A06 Purchaser		EDMONTON	STEET. EDMON	NOMO	A07.1 N	No. ph.	7121		9	611114-07.09.17	7.09.17	427758-001	-001	3/	
<u>.</u>		Final receiver			, rapur				NAULULULULULULULULULULULULULULULULULULUL	NEO TO				B01 Product			-
802/ Steel design.	ign. כאבול בי		1		SIEEL, EDMON	NOMOS								HEAVY PLATES	LATES		
B03 Amy 6.15-								SA20-S5	5					_			
		4:2015															
requirements		-1:R34-	DIL-HUE-1:R34-2016-08-19	-19													
ď	C40-C49 Impact test	est		1													T
B14 B07.2	2 B07.1	B05			Ç	C02/ C0	200	47			0						T
No. Heat No.	No. Rof.plate/ Test No.	Refere	Reference (heat) treatment	tment			Temp. Width of	-94.75	Jo	C44 Testing method	C46 Fueray	C45	C42			C43	
01 449291						Ŭ		lest place tes	æ				AV=FT.LBF	sanne		Mean	
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01 449291	291 55056						י ו	5 8	CHP-V			AV 8	131	189	195	172	
01 449291	291 55060						1 10	5 5	CHP-V				228			188	1000
3	C70-C99 Chemical composition % - Heat analysis	al comp	osition %	- Heat and	alveie			;	•			A V	206	198	223	209	
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1	C34 Heat analysis Carbon equivalent / Alloying restrictions	s Carb	on equiva	lent / Allo	ying re:	trictio	ns.										
B07.2 Heat																	T
449291	F	FO-02=	0,37	F0-51=	0,000		FO-55=	0,09	FO - 78 =	0	0	r					
ŭ	C95 Ladle treatment	ent							2		FOINT	7'					
ITEM NO.: 01	: 01															50	T
HEAT OF 1	OF THE INDICATED ITEM: VACUUM DEGASSED /	D ITEM	: VACUUM	DEGASSE		SULPHIDE	E SHAPE	E CONTROL	ROL								
წ 	C95 Further information about ladle treatment	mation	about fadl	e treatme	nt					6							
ITEM NO.: 01	: 01																Т
CALCIUM TREATED	TREATED																

201/Z02/Z03 we hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.

AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department

A01

Date 08.09.17

B. BALDAUF Test House Manager

Inspector's stamp

Eräuterungen siehe Rückseite/Explications voir au verso/See reverse for explanations (www.dillinger.de/certificate)
A02 INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004

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Sheet 4		т 0,001
s order/	w H	NS 0,000,0
A08/ Manulacturer's order/ A03 Certificate No. 427758 - 001 801 Product	ABAVI PLATES	000'0 000'0
7		
A10 Advice of dispatch No./ Date of dispatch 611114-07.09.17		ск 0,031
A10 Adv Data		MO NI 0,003: 0,027
		MO 0,003.
5-J1010E		0,025
A07.1 No. ED10715-J1010ER A07.2 No.	SA20-S5	s N CU
M A07.1 NG		0,0010
S PER ISO 10474:2013 EDMONTON STEEL, EDMON A07.1 No.	nalysis —	0,010
ER EN 10 ER ISO 10 ONTON STI	Product ar	1,16 1,16 AL-T
TAS PERTY (A) EDMI	016-08-1	C SI MN 0,160 0,354 1,16 1 B CA ALT 0,0000 0.0020 0.029
TFICATE 3. TFICATE 3. EPORT (MTR. A06 Purchaser Final receiver	SA516-70 ASME-IIA:2015 DIL-HUE-1:R34-2016-08-19 9 Chemical composition %-Pr	
		7 8 Z
INSPECTION CERT MATERIAL TEST F A05 Established Inspecting body DH	802/ Steel design. 803 Any suppl. requirements C70-C	449291 55053 807.2 807.1 Heat Test No. 449291 55053
A05 Esta	802/ 8 803 A 803 A	807.2 Heat 449291

C94 Product analysis Carbon equivalent / Alloying restrictions FO-02= K1 55053 BO7.1 Test No. 449291 B07.2 Heat

B CA AL-T 0,0000 0,0020 0,029

0,000 FO-55= C94 Carbon equivalent formula / Alloying restrictions FO~51= 0,36

60'0

 $\approx C+ (MN/6) + (CR+MO+V) / 5 + (NI+CU) / 15$

FO-02 = C+(MN/6)+(CR+ FO-51 = V +NB FO-55 = CU+MO+NI+CR FO-78 = CR+MO FO-91 = MN/C

D01 Marking and identification, surface appearance, shape and dimensional properties

EXAMINATION OF MARKING, SURFACE, SHAPE AND DIMENSIONS: THE RESULTS MEET THE REQUIREMENTS. ITEM NO.: 01

AS PER ASME-SA20 AS PER ASME-SA20 AS PER ASME-SA20

THICKNESS

LENGTH AND WIDTH

AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar

A01

Date 08.09.17 Inspector's stamp

B. BALDAUF Test House Manager

201/202/203 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.

Erläuterungen siehe Rückseite/Explications voir au verso/See reverse for expianations (www.dillinger.de/certificate)

DILLINGER® A08/ Manufacturer's order/ A03 Certificate No. HEAVY PLATES 427758-001 B01 Product 611114-07.09.17 A10 Advice of dispatch No./ Date of dispatch ED10715-J1010ER SA20-S5 A07.1 No. A07.2 No. EDMONTON STEEL, EDMON EDMONTON STEEL, EDMON A02 INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004 INSPECTION CERTIFICATE 3.1 AS PER ISO 10474:2013 DIL-HUE-1:R34-2016-08-19 MATERIAL TEST REPORT (MTR) Final receiver A05 Established Inspecting body A06 Purchaser ASME-IIA:2015 SA516-60 B02/ Steel design. requirements B03 Any suppl.

21071				50000 x 480,0000 2979 N 449291 5 50000 x 480,0000 2979 N 449291 5													
		A09	Test No.		ITEMOOI	ITEMOOI	ITEMOOL	ITEMOOL	ITEMOOL	ITEMOO1	ITEMOOL	ITEMOO1	ITEMOOL	ITEMOO1	ITEMOOL	ITEMOOL	
		B07.1	Test No.		55053-01	55053-02	55053-03	55054-01	55054-02	55054-03	55056-01	55056-02	55056-03	55060-01	55060-02	55060-03	
		B07.2 Heat No			449291	449291	449291	449291	449291	449291	449291	449291	449291	449291	449291	449291	
		B04 Product delivery	condition	;	z	Z ;	4 ;	z		Z ;	z;	2 2	2 2	2 ;	z ;	2	
		B12 Theoretical	mass		N 00 00 00 00 00 00 00 00 00 00 00 00 00	6762	6162	2010	6162	2010	2000	2000	2000	7 7 7 7	V V C	7777	35748
		B11 Length		480 0000	480 00000	480 0000	480 0000	480 0000	480 0000	480 0000	480 0000	480 0000	480 00000	480 00000	480 00000		
B01-B99 Description of the product	פיני מוכי אי סמתכו	Width	INCH	96,50000 x	96,50000 x	96,50000 x	96.50000 x	96,50000 x				96,50000 x	96,50000 x	96,50000 x	96,50000 x		
B99 Description	B09	Thickness		0,5000 x	0,5000 x	0,5000 x	0,5000 x	0,5000 x	0,5000 x	0,5000 x	0,5000 x	0,5000 x	0,5000 x		0,5000 x		
B01-	B08	Number of pieces		Н	Н	н	Н	г	1	ı	н	1	IJ	П	ч	12	12
	B14	Item No.		01	01	01	01	01	01	01	10	01	01	10	10	*	*

B04 Product delivery condition

ITEM NO.: 01

N: HT: 1670 GR.F +36 -27 GR.F SOAKING TIME TO ATTAIN THE TARGET TEMPERATURE OVER THE WHOLE SECTION: 1-1,75 MIN/MM (25-45 MIN/INCH)

201/202/203 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.

B. BALDAUF Test House Manager

A 사

Postfach 1580, D-66748 Dillingen/Saar AG der Dillinger Hüttenwerke Inspection department

Date 08.09.17

Inspector's stamp

Control Cont	CM-System: C	QM-System: Certification as per ISO 9001	er ISO 9001									2500
A	Erläuterungen siehe F	Tückseite/Explications vo	oir au versa/See reverse for explanati	ions (www.di	linger.de/certific	ate)			8		DILLING	
Figure Procession September Procession Processi	INSPECTI INSPECTI MATERIAL	ION CERTIFICA: ION CERTIFICA: TEST REPORT	TE 3.1 AS PER EN 1 TE 3.1 AS PER ISO 1 (MTR)	0204:20 0474:20	13				A10 Advice of disp Date of disp	spatch No./ atch	A08/ Manufacturer's order/ A03 Certificate No.	Sheet
BOS Marking of the product	A05 Established Inspe DH	A06	EDMONTON EDMONTON	FEEL, ED		12000	15-J1010ER		611114-0	7.09.17	427758-001 B01 Product	2/
B06 Marking of the product	802/ Steel design. 803 Any suppl. requirements	SA516-60 ASME-IIA;20: DIL-HUE-1:RE				SA20-S5					neavi FLAIES	
Part No. TRADERARK ROLLED PLATE NoTEST NO. TRADERARK ROLLED PLATE NO. TRADERARK TRADERARK ROLLED PLATE NO. TRADERARK TRADER	B06 N	flarking of the pr	roduct	ĸ						•		
B07-B99 Further information about the product B07-B99 Further information about the product	STEEL DESIG	1 NATION SAS16 TRADEMARK / R	6 70 MTLTV SA516 60 ROLLED PLATE NOTES				TP					
ICKNESS REDUCTION RATIO PART PA	B07-E	399 Further infor	rmation about the produ	C								
C10-C22 Tensile test	ITEM NO.: 0 THICKNESS R	1 EDUCTION RATI	>= 3,0 IS	0	CF. A/SA		5					
Heart No. Religious Reference (heart) treatment Cot Tenno Tenno Cot Tenno		239 Tensile test										
A A B B B B B B B B	B07.2 Heat No.	ate/	C01		C10					C14-C15		
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nn B07.2 Hoat No. Post Individual values B07.1 B05 B07.1 Follow B07.1 Follow C01 C02C01 C03 C30 C30 C32 Mean A49291 C55053 Reference (heat) breatment C01 RT HBM 10/3000 HB 139 HB 13	C30-C	39 Hardness tes	stst							×		
Test No.		B07.1 Rol niste/	B05	C01	C02/C01	5595						
130		Test No.	versiones (user) n samen				tod of test		dual values		C32 Mean	
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Tol/Z02/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance Solizoz/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance Solizoz/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance Solizoz/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance Solizoz/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance Solizoz/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance Solizoz/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance Solizoz/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance Solizoz/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance Solizoz/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance Solizoz/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance Solizoz/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance Solizoz/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance AG der Dillinger Hüttenweiten AG der Dillinger Hütten AG der Dillinger Hütten AG der Dillinger Hütten AG der Dillinger Hütten AG der Dillinger AG		90000		Z	0				139	139	D 00 00 00 00 00 00 00 00 00 00 00 00 00	
201/202/203 We hereby certify, that the above mentioned materials have been delivered in accordance With the terms of order. AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department B. BALDAUF Test House Manager		09055		Ŋ	0				139	139	139	
AG der Dillinger Hüttenwerke with the terms of order. B. BALDAUF B. BALDAUF Institution department AG der Dillinger Hüttenwerke AG der Dillinger Hüttenwerke Rostfach 1580, D-66748 Dillingen/Saar Inspection department B. BALDAUF Institution department AG der Dillinger Hüttenwerke Fostfach 1580, D-66748 Dillingen/Saar Inspection department	700											
B. BALDAUF Test Nouse Manager A H B. Construction department B. BALDAUF Test Nouse Manager A H B. BALDAUF Test Nouse Manager Test Nouse Manager A H B. BALDAUF Test Nouse Manager Test Nouse Manage	AU4	Z01/Z02/Z03 We here!	eby certify, that the above mentioned	materials ha	e been delivere	1 in accordance						
B. BALDAUF Test Mouse Manager	X Y	}					N N	K	A PB	Postfach	nllinger Huttenwerke 1580, D-66748 Dillingen/ epartment	
	mark						B. BALDA	UF Section				

DILLINGER® A01 3/ Postfach 1580, D-66748 Dillingen/Saar 1, 0,002 C43 Mean value 184 172 188 209 AG der Dillinger Hüttenwerke 0,0009 A08/ Manufacturer's order/ A03 Certificate No. HEAVY PLATES 427758-001 195 203 B01 Product 000,0 Inspection department 189 198 C42 Individual values AV=FT.LBF 0000'0 611114-07.09.17 A10 Advice of dispatch No./ Date of dispatch 212 228 206 131 AV 8 AV 8 AV 8 CR 0,033 7,2 C45 AFB A C46 Energy FO-91= 0,027 Z C44 Testing method R KAN 0,005 0,04 ED10715-J1010ER FO-78= cu 0,026 test piece CHP-V C40 Type of CHP-V CHP-V CHP-V HEAT OF THE INDICATED ITEM: VACUUM DEGASSED / SULPHIDE SHAPE CONTROL SA20-S5 201/2021/203 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order. s N 0,0013 0,0066 0,09 test piece C41 Width of A07.1 No. Erläuterungen siehe Rücksette/Explications voir au verso/See reverse for explanations (www.dillinger.de/certificate) A07.2 No. FO-55= -51 -51 CO3 Temp. GR.F C94 Heat analysis Carbon equivalent / Alloying restrictions EDMONTON STEEL, EDMON EDMONTON STEEL, EDMON INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004 INSPECTION CERTIFICATE 3.1 AS PER ISO 10474:2013 C02/ P 0,010 000'0 C70-C99 Chemical composition % - Heat analysis Ç 机拉拉拉 - C95 Further information about ladie treatment FO-51= MN 1,160 B CA ALT 0,0001 0,0021 0,029 B05 Reference (heat) treatment DIL-HUE-1:R34-2016-08-19 sl 0,358 0,37 MATERIAL TEST REPORT (MTR) Final receiver A06 Purchaser ASME-IIA:2015 FO-02= c 0,161 C40-C49 Impact test C95 Ladle treatment SA516-60 B07.1 Rol.plate/ Test No. 55060 55054 55056 55053 A05 Established Inspecting body CALCIUM TREATED C70 H C70 × ITEM NO.: 01 ITEM NO.: 01 449291 449291 449291 449291 Heat No. B02/ Steel design. requirements B07.2 Any suppl. 449291 449291 449291 B07.2 Heat B07.2 Heat BD7.2 Heat A02 B14 Iftern No. 01 01 B03 A04

PP

Date 08, 09, 17

Inspector's stamp

B. BALDAUF Test House Manager

3	ULINGER (A10 Advice of dispatch No./ A08/ Manufacturer's order? Sheet A03 Certificate No.	A07.1 No. ED10715-J1010ER 611114-07.09.17 427758-001 4 A07.2 No. HEAVY PLATES	SA20-S5	
1000	Edauterungen siehe Rücksette/Expircations volr au verso/See reverse for explanations (www.dillinger.de/certificate)	INSPECTION CERTIFICATE 3.1 AS PER EN 10204;2004 INSPECTION CERTIFICATE 3.1 AS PER ISO 10474;2013 MATERIAL TEST REPORT (MTR)	EDMONTON STEEL, EDMON	1-2016-08-19	C70-C99 Chemical composition % - Product analysis
1000 Dollar on 1000 1000 1000 1000 1000 1000 1000 1	Enfauterungen siehe Rückseite/Explications voir a	INSPECTION CERTIFICATE 3.1 MATERIAL TEST REPORT (MTR)	A05 Established Inspecting body A06 Purchaser DH Final receiver	BO3 Sheel design. SA516-60 BO3 Any suppl. ASME-IIA:2015 requirements DIL-HUE-1:R34-2016-08-19	E07.2 B07.1 C01

0,025 N 0,0057 0,0010 0,010 AL-T 0,029 MN 1,16 0,0020 SI 0,354 0,0000 0,160 KI 5 걲 55053 B07.1 Test No. 55053 Test No. 449291 449291 B07.2 Heat

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60'0 C94 Product analysis Carbon equivalent / Alloying restrictions FO-51= 0,36 K1 F0-02= Test No. 55053 B07.1 449291 Bo7.2 Heat

FO-55= 000'0 C94 Carbon equivalent formula / Alloying restrictions

FO-02 = C+(MN/6) + (CR+MO+V) / 5+ (NI+CU) / 15 FO-51 = V + NB

FO-55 = CU+MO+NI+CR

FO-78 = CR+MOFO-91 = MN/C

D01 Marking and identification, surface appearance, shape and dimensional properties

ITEM NO.: 01

SURFACE

EXAMINATION OF MARKING, SURFACE, SHAPE AND DIMENSIONS: THE RESULTS MEET THE REQUIREMENTS. AS PER ASME-SA20 AS PER ASME-SA20

AS PER ASME-SA20 LENGTH AND WIDTH THICKNESS

Postfach 1580, D-66748 Dillingen/Saar AG der Dillinger Hüttenwerke Inspection department

A01

Test House Manager B. BALDAUF

Inspector's stamp

Date 08,09,17

Z01/202/203 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.

DILLINGER

QM-System: Certification as per ISO 9001

12/.. Sheet A08/ Manufacturer's order/ A03 Certificate No. BO1 Product HEAVY PLATES 431792-001 626272-10.02.18 A10 Advice of dispatch No./ Date of dispatch A07.1 No. ED10722-J1010ER SA20-S5 A07.2 No. Etläuterungen siehe Rückseite/Explications voir au verso/See raverse for explanations (www.dillinger.de/certificate) EDMONTON STEEL, EDMON EDMONTON STEEL, EDMON INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004 INSPECTION CERTIFICATE 3.1 AS PER ISO 10474:2013 DIL-HUE-1:R34-2016-08-19 MATERIAL TEST REPORT (MTR) Final receiver A06 Purchaser ASME-IIA:2015 SA516-70 A05 Established Inspecting body requirements Steel design. Any suppl. B02/ B03

	C70-C99 Chemical composition % - Product analysis	hemical	composi	tion % - Pr	oduct an	alveie		
B07.2	B07.1	C01			200	113313		
Heat	Test No.		U	Ū,	28	٥	6	
454461		K1	0,167	0,366	1.16	10.0	7000	2 0
454836		KI	0,170	0,368	1,16	0.00	0,000	5 0
454836	27706	Ŋ	0,177	0,369	1,16	010	0000	
454837	27740	K1	0,166	0,369	91.1	0000		5
454837	27783	KI	0,179	0.373	21.	000,0	5000,0	5 0
454840	27789	K1	0,167	0.369	71 1	0000	0,000	5 6
454840	27796	K	0,164	0.371	1 17		40004	2 0
454840		K1	0,165	0,365	1,1	000	0,000	2 6
454843	27952	ΚŢ	0,145	0,358	1.14	600,0	0000	2 0
				•		0000	100000	,
B07.2	B07.1	C01						
Heat	Test No.		œ	CA	AL-T			
454461	64437	₽	0,0001	0,0013	0.034			
454836	27699	⅓	1000,0	0,0018	0,031			
454836	27706	₫	0,0001	0,0019	0.032			
454837	27740	¥	0,0000	0,0015	0.030			
454837	27783	⅓	0,0000	0,0014	0.029			
454840	27789	Κ1	0,0001	0,0011	0.031			
454840	27796	K1	0,0000	0,0011	0.031			
454840	27809	K1	0,000,0	0,0012	0,035			
454843	27952	K	0,0000	0,0011	0,038			

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AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar

A01

Inspection department

Date 12.02.18

Inspector's stamp

Test House Manager B. BALDAUF

PP

Z01/Z02/203 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.

A04

Erläuterungen siehe Rückseite/Explications voir au verso/See reverse for explanations (www.dillinger.de/certritcate)	Rückseite/Explica	tions voir au vers	so/See reverse	for explanations	www.dillinger.	de/certificate)								ファー	
	INSPECTION CERTIFICATE 3.1 INSPECTION CERTIFICATE 3.1	FICATE 3.1 FICATE 3.1	1 AS PER 1 AS PER	EN	10204:2004					A10 Advic Date	Advice of dispatch No./ Date of dispatch		A08/ Manufacturer's order/ A03 Certificate No.	order/	Sheet
MATERIA	MATERIAL TEST REPORT (MTR)	PORT (MTR	88	1	CTOT:					-					
A05 Established Inspecting body DH		A06 Purchaser	EDMONTON		STEEL, EDMON	A07.1 No.	ED10722	ED10722-J1010ER		7979	626272-10.02.18	8	431792-001		12/
		Final receiver	EDMONTON		STEEL, EDMON	A07.2 No.						HE	HEAVY PLATES	ιχ	
B02/ Steel design.	SA516-60	0				3	SB 20 - GE								
B03 Any suppl.	ASME-IIA:2015	A:2015				Ď	25-025								
requirements	DIL-HUE	DIL-HUE-1:R34-2016-08-19	16-08-19												
C70-	C70-C99 Chemical composition % - Dead-ord	al composi	ition % D	100	1										
	Co	der composit	7 - 0/ 110131	rounct and	anysis —										
		O	ß	MIN	0.	u	2	į	1						
	37 K1	0,167	0,366	1,16	0,011	0.0007	0.0076	CO C	0 0	Z C		>	NB NB	SN	F
		0,170	0,368	1,16	0,010	0,0007	L900.0	0,00	0,000	0,050	0,029	0,001	0,002	0,001	0,002
		0,177	0,369	1,16	0,010	0,0006	0.0059	0,00	, 00, 0	720.0	0,038	000'0	100'0	0,001	0,003
		0,166	0,369	1,16	600'0	0,0005		0.026	200,0	770,0	0,038	0,001	0,001	100'0	0,003
		0,179	0,373	1,17	0,008	0,0005	0,0060	0.024	400	0,000	0,028	0,001	0,001	100'0	0,002
		0,167	0,369	1,17	600'0	0,0004		0 003	1000	220.0	0,024	0,001	0,001	0,001	0,001
		0,164	0,371	1,17	600'0	0,0005		0,023	700,00	0,022	0,023	0,001	0,001	000'0	0,002
		0,165	0,365	1,15	600'0	0.0005		0,023	400,0	0,022	0,023	100'0	0,001	000'0	0,002
454843 27952	52 K1	0,145	0,358	1,14	600'0	0,0004	ò	0,023	0,014	0,025	0,038	100,00	0,001	0,000	0,002
B07.2 B07.1	C01	-										-	-	000.	0,002
Heat Test No.		¢t.	ర	AL-T											
	37 K1	0,0001	0,0013	0,034											
	99 K1	0,0001	0,0018	0,031											
	06 K1	0,0001	0,0019	0,032											
	40 K1	0,0000	0,0015	0,030											
454837 27783	83 K1	0,0000	0,0014	0,029											
	89 K1	0,0001	0,0011	0,031											
454840 27796	96 K1	0,0000	0,0011	0,031											
454840 27809	09 K1	0000'0		0,035											
454843 27952	52 K1	0,0000		0,038											
A04	701/202/703	701/202/203 We hereby rediffu that the	or sorte out tout			8									
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Z01/Z02/Z03 We hareby certify, that the above montioned materials have been delivered in accordance with the terms of order,

B. BALDAUF Test House Manager

AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department

A01

Date 12.02,18

Inspector's stamp

WELDING PROCEDU	JRE SPECIFICAT	ION	NO.:	STS-2 (Rev.0)
WELDING PROCEDU	JRE QUALIFICAT	TION	RECORD NO.(S): _ _ _ _	STS-2-1 (Rev.0), STS-2-3 (Rev.0), STS-2-4 (Rev.0), WFL-2-1 (Rev.1)
QUALIF	FIED IN ACCORDA	NCE	WITH ASME SECTION	I IX FOR
Base Metal (Typical): _ Process(es): Position: Filler Metal:	P1 Groups 1 & 2 to (SA 333 Gr. 6, SA SAW FLAT & HORIZON F7A6-EM12K	350 C	Gr. LF2, SA 420 Gr. WF Weld Types: _	PL6, SA 516 Gr. 70 etc.) GROOVE & FILLET ALL DIAMETERS
BASE METAL CONDI NOTCH TOUGHNESS A BASE METAL THICKNE	PPLICATIONS TO	-50°	F AS WELDED	
COMBINED DEPOSITEI ASME IX API 650, 620, 12I		HICKN	NESS 1.750 in. maximum 1.750 in. maximum	
			ASME Section IX 2017 additional requirements of	d to the requirements of and includes some of the of the construction codes of this WPS is outside the da Inc.
			Prepared By: Sara Van R Signed:	ALAN
			Reviewed By: Keelan Wol Signed: July 8, 20	hide
PROVINCIAL REG	ISTRATION		(File E19-285)	2

QW-482 WELDING PROCEDURE SPECIFICATION (WPS)

Organization Name _		Storage Tank Solution	ns Inc.
Welding Procedure Sp	pecification No	STS-2 (Rev.0)	Date July 8, 2019
Supporting PQR No.(s	s) <u>STS-2-1 (Rev.0)</u>	, STS-2-3 (Rev.0), STS-	2-4 (Rev.0), WFL-2-1 (Rev.1)
Welding Process(es)		Submerged Arc Weld	ling (SAW)
IOINTO (OW 400)			
JOINTS (QW-402)			
Joint Design	All ASME groove &	fillet, reference construc	tion drawing for joint details.
Doot Opening	Where joint details a	are not specified, refer to	figures 1 to 15 attached
Root Opening	As per attached typ	ical groove designs, see	figures 1 to 15 attached
Backing	vvitn	Retainers _	With or without
BASE METALS (QV	/-403)		
P-Number	21 Groups 1 & 2	To P. Numbo	r D1 Groups 1 8 2
Thickness Range	Groove	0 125 to 1 750 in incl	FIGIOUPS I & Z
mentious range.	Fillet	0.125 to 8.00 in inclu	sive
Pipe Diameter Ranges	: Groove	All diameters	r P1 Groups 1 & 2 usive (1) sive
Deposited Weld Metal	(Per Pass)	0.250 in maximum	
(1) Reference thick	ness limitations for	tests on welds in fabrica	tion or assembly in
ASME B31.3 Ta	able 323.3.1 - Impac	ct Testina Requirements	for metals.
			TOT THOUSE.
FILLER METALS (Q	W-404)	SAW	
Specification No. (SFA)	-	SFA 5.17	
Flux / Wire Classificatio	n	F7A6-EM12K	
F-No		F6	
		AI	
Jiameter		5/64 to 3/16 in. inclusiv	/e
Supplemental Filler Met	al	Without	
lux Type		Neutral	
lux Designation		Lincolnweld 882 (2)	
Alloy Elements		Without	
Alloy Flux		vvitnout	
Recrushed Slag			
Deposited Weld Metal T		w ===== o	
Proove		1.750 in. max. (3)	
er		All fillet sizes	
Other flux trade	names may be used	provided they meet an	F7A6 classification
B) Deposited weld r	metal thickness sha	Il not exceed 1.750 in.	
OSITION (QW-405)			
osition of Groove	Elat 9 I laui	tol Desires Com	
Veld Progression		tal Position of Fille	Flat & Horizontal
	IN/ <i>P</i> A		

WPS NO.	STS-2 (Rev.0)
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PREHEAT (QW-406)

Preheat Temperature (Minimum) See attached preheat sheet prior to welding.

Interpass Temperature (Maximum) 500 °F

Preheat Maintenance See attached preheat sheet prior to welding. Preheat maintenance is not required if welding is interrupted or after the completion of welding unless required by the code of construction.

POSTWELD HEAT TREATMENT (QW-407)

With or Without	Without	75.00		
Temperature Range	N/A	Time Range	N/A	

ELECTRICAL CHARACTERISTICS (QW-409)

Current	Direct	Polarity	Reverse, electrode positive
Amps	See Table 1	Volts	See Table 1
Maximum Heat In	put		
Base M	etal Thickness Range		SAW
0.1	125 to 0.499 in.	28,174 J/in.	
0.5	0.500 to 0.624 in.		53,438 J/in.
0.62	5 in. and greater		59,492 J/in.

TECHNIQUE (QW-410)

Manual or Automatic	Machine
String or Weave	String
Initial & Interpass Cleaning	Brushing, chipping or grinding as required
Method of Back Gouging	Air carbon arc, back-grind as required
Oscillation	N/A
Contact Tube to Work Distance	0.500 in 1.75 in.
Multiple or Single Pass Per Side	Multiple
Single or Multiple Electrodes	Single
Electrode Spacing	N/A
Peening	Not permitted
Use of Thermal Process	N/A
Travel Speed	See Table 1

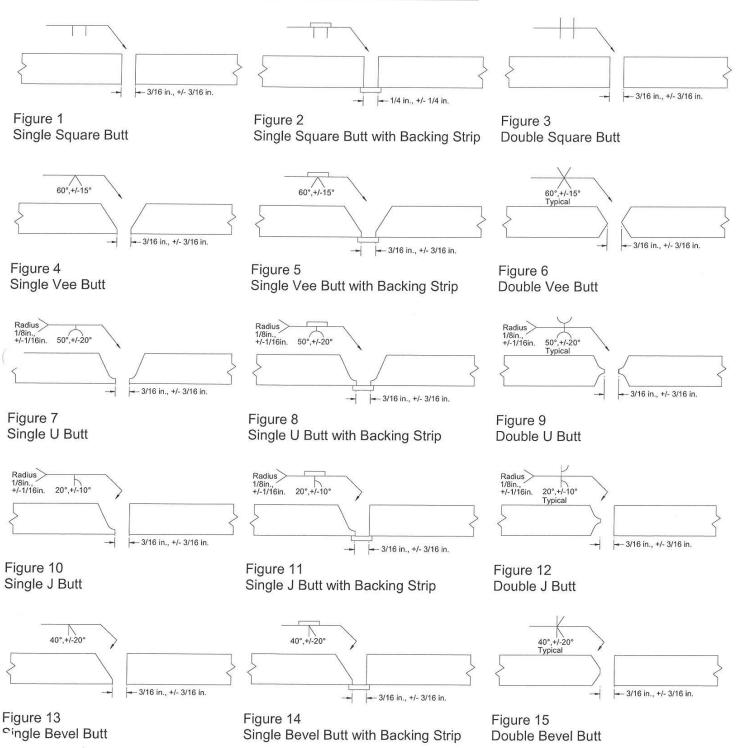
TABLE 1 - WELDING PARAMETERS

Process	Filler Metal	Diameter in.	Current Type& Polarity	Amperage Range	Voltage Range	Travel Speed i.p.m.	Wire Feed Speed i.p.m.
SAW	F7A6-EM12K	5/64	DCRP	200 - 500	25 - 34	5.1 - 30	60 - 245
SAW	F7A6-EM12K	3/32	DCRP	250 - 600	25 - 35	6.4 - 32	60 - 245
SAW	F7A6-EM12K	1/8	DCRP	250 - 700	26 - 35	6.6 - 35	45 - 180
SAW	F7A6-EM12K	5/32	DCRP	370 - 800	26 - 36	9.8 - 40	45 - 180
SAW	F7A6-EM12K	3/16	DCRP	500 - 1000	28 - 38	14.2 - 50	30 - 100

Note: Welding parameters shall be adjusted to ensure that the maximum heat input value specified in QW-409 above is not exceeded.

Heat Input (joules per inch) = (Amperage X Voltage X 60) / Travel Speed (i.p.m.)

TYPICAL JOINT DESIGNS



Additional joint designs and internal misalignment on circumferential welds shall be within the dimensional limits stated on the approved construction drawing and/or the engineering design.

PREHEAT P-No. 1

LARGE, WELDED, LOW-PRESSURE STORAGE TANKS IN ACCORDANCE WITH API 620 Twelfth Edition, Addendum 1

THICKNESS OF THICKER PLATE	MINIMUM PREHE	AT TEMPERATURE
THICKNESS OF THICKER PLATE	P1 Group 1	P1 Group 2
Less than or equal to 1.25 in.	32 °F	50 °F
Greater than 1.25 in to 1.50 in.	50 °F	100 °F
Greater than 1.50 in.	200 °F	200 °F

- No welding of any kind shall be performed when the surfaces to be welded are wet with rain snow or ice; when rain or snow is falling on such surfaces; or during periods of high winds unless the welder and the work are properly shielded.

WELDED TANKS FOR OIL STORAGE IN ACCORDANCE WITH API 650 Twelfth Edition, Addendum 2

	MINIMUM PREHEAT TEMPERATURE		
THICKNESS OF THICKER PLATE	Material Group I, II, III, and IIIA	Material Group IV, IVA, V & VI	
Less than or equal to 1.25 in.	32 °F	50 °F	
Greater than 1.25 in to 1.50 in.	50 °F	100 °F	
Greater than 1.50 in.	200 °F	200 °F	

- No welding of any kind shall be performed when the surfaces to be welded are wet with rain, snow or ice; when rain or snow is falling on such surfaces; or during periods of high winds unless the welder and the work are properly shielded.

⁻ Preheat shall be applied when the metal temperature is below the temperature required by Table 6-2 (summarized above). In that case the base metal shall be heated to at least the temperature indicated within 3.0 in. of the place where welding is to be started and maintained 3.0 in. ahead of the arc. Material P-Number and Group Number shall be as designated in ASME IX or in API 630 6.7.2 for materials not listed in ASME IX.

⁻ Preheat shall be applied when metal temperature is below the temperature required by table 7-1 (summarized above) for the base metals being joined, and metal shall be heated to at least the temperature indicated within 3.0 in. of the place where welding is to be started and maintained 3.0 in. ahead of the arc. Material Groups shall be as designated in Table 4.4

QW-483 PROCEDURE QUALIFICATION RECORD (PQR)

Organization Name		Storag	ge Tank Solutions Inc).
Procedure Qualificat	ion Record No	oSTS-2	?-1 (Rev.0) Dat	e February 22, 2019
Welding Process(es)	Subm	erged Arc Welding (S	SAW)
JOINTS (QW-402)				
Joint Design	Butt joint, sq	uare groove, se	e page 2	
Root Opening	See page 2			
Root Opening Backing	Without		Retainers	Without
BASE METALS (Q	W-403)			
Material Specification	1 No	SA 516	Type or Grade	Gr. 60/70
Heat Treat Condition	(1)	SA 516 Gr. 60/7	0: Normalized	
P-No. P1 Groups 1	/2 To P-No.	P1 Groups 1/2	Thickness	0.250 in.
Material Specification Heat Treat Condition P-No. P1 Groups 1 Heat Number Diameter	429693 2924	9-03	Carbon Equivaler	nt (2) 0.37
Diameter	N/A		Other Plate produ	uct form m/c to 0.250 in.
Deposited Weld Meta	I (Per Pass)	Did no	exceed 0.125 in.	uct form m/c to 0.250 in.
(1) Condition of b	ase metal price	or to welding.		
(2) Per CSA Z662	2 Carbon Equi	valent formula.	See chemical compo	sition of heat
analysis on at	tached materia	al test report		eerr er meat
		18		
FILLER METALS (QW-404)	SAW		
Specification No. (SF)	A)	SFA 5.	17	
Flux / Wire Classificat	ion	F7A6-E	M12K (3)	
F-No	STATE OF THE PARTY	F6		
A-No.		A1 (4)		
Diameter		See att	ached sketch	
Supplemental Filler M	etal	Without	acrica citatori	
Flux Type		Neutral		
Flux Designation		F7A6		
Flux Trade Name		Lincolny	veld 882	
Alloy Elements		Without	1010 002	
Alloy Flux		Without		
Recrushed Slag		Without		
Deposited Weld Metal	Thickness	0.250 in		
3) The Lincoln Flec	tric Company:	Lincolnweld 88	2M Flux / L-61 Floots	ode Lot No. 15135168
4) F7A6-EM12K A-I	No establishe	d from chemical	analysis of SAW wel	Id can deposit
See attached Lal	oratory Test I	Report No : E10	1010	d cap deposit.
_ coo attaorica Lai	bolatory rest i	Report No L13	-104.9	
POSITION (QW-405	1			
Position of Groove			Wold Programion	NI/A
	20		Weld Progression _	IN/A
REHEAT (QW-406)				
reheat Temperature			Internoce Town /M-	··· \ 400 °E
reheat Maintenance		vae allowed to a	Interpass Temp. (Ma	(X.) 400 F
Torreat Maintenance _		as allowed to co	ol to ambient temper	ature in still air after
-	welaing	was completed		

PQR	NO.	STS-2-1 (Rev.0)	
. 0411	140.	010-2-11160.01	

POSTWELD HEAT TREATMENT (QW-407)

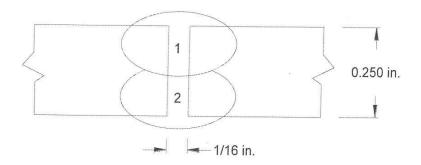
With or Without	Without	•	
Temperature	N/A	Time	N/A

ELECTRICAL CHARACTERISTICS (QW-409)

Current	Direct	Polarity	Reverse, electrode positive
Amps	See below	Volts	See below
Heat Input	28,174 J/in. maximum		

TECHNIQUE (QW-410)

()	
Manual or Automatic	Machine
String or Weave	String
Initial & Interpass Cleaning	Brushing, chipping and grinding as required
Method of Back Gouging	Ground to sound metal with an abrasive grinding disc
Oscillation	N/A
Contact Tube to Work Distance	0.750 in 1.00 in.
Multiple or Single Pass Per Side	Single
Single or Multiple Electrodes	Single
Electrode Spacing	N/A
Peening	Not conducted
Use of Thermal Process	N/A
Travel Speed	See below



Pass	Process	Filler Metal	Diameter in.	Current Type & Polarity	Amperage Range	Voltage Range	Travel Speed i.p.m.
1	SAW	F7A6-EM12K	3/32	DCRP	350 - 370	29 - 31	23.0
2	SAW	F7A6-EM12K	3/32	DCRP	300 - 320	27 - 29	23.5

PQR NO.	STS-2-1	(Rev.0)	

CHARPY V-NOTCH IMPACT TEST

Type of Test	Charpy V-No	otch	Orientatio	nTr	ansverse												
Governing Specification	Notch Location	Specimen Size in.	Test Temperature ° F	Specimen Number	Impact Values ft•lbf												
ASME VIII Div.1 -	Weld metal	0.204 v		G2.1	11												
2017 &	within 1/16 in.	0.394 x 0.197	3.74.6397.675.03.03.03.03.0	17-16-16-16-16-16-16-16-16-16-16-16-16-16-	374 C 377 S T C 20 3 C 20 C	3.74.6397.375.33.34.55.50	0.70.707 0.70.00.00.00.00	0.70.707 0.70.00.00.00.00	37 C S S S S S S S S S S S S S S S S S S	10000000000000000000000000000000000000	0.00 C (0.00 C	0.75 (2.07 (0.75) (0.15) (0.75)	17 CONT. (T.) (10 CO.)	3.75 (A)	-60	G2.2	24
ASME B31.3 - 2016	of root			G2.3	11												
ASME VIII Div.1 -	UA7@	0.204 v		G3.1	32												
2017 &	HAZ @ 0.394 x		1/ 6 1 - 1 - 1 - 10	-60	G3.2	15											
ASME B31.3 - 2016	Wildule 1/2t	0.197		G3.3	19												

OTHER TESTS

Vickers Hardnes	s - see attached Laboratory Test Report No.: E19-104.7
	W Cap) - see attached Laboratory Test Report No.: E19-104.9
Welder's Name	Matthew MacKenzie & Christopher Jaques
Certificate File No.	N/A
Tests Conducted By	SGS Canada Inc.
Laboratory Test No.	E19-104.7
	in this record are correct and that the test welds were prepared, dance with the requirements of Section IX of the ASME Code.
Organization	Storage Tank Solutions Inc.
DateJanuary 21, 2021	Print Sebastien Ouellet
Signed Strell	

QW-483 PROCEDURE QUALIFICATION RECORD (PQR)

Organization Name		e Tank Solutions Inc.	
Procedure Qualification Reco	ord No. STS-2-	3 (Rev.0) Date _	February 22, 2019
Welding Process(es)	Subme	rged Arc Welding (SAW)
1011170 (011) 400)			
JOINTS (QW-402)		na deconates and attaches A	
Joint Design Butt jo	int, double bevel groove	e, see page 2	
Root Opening See pa	age 2	D (-')	P.H4
Backing Withou	<u>it</u>	Retainers	/ithout
BASE METALS (QW-403)	Į.		
Material Specification No.		Type or Grade	Gr 60/70
Heat Treat Condition (1)	SA 516 Gr 60/70		01.00/10
Heat Treat Condition (1) P-No. P1 Groups 1/2 To I Heat Number	2-No P1 Groups 1/2	Thickness	0.875 in
Heat Number	454840 27789-01	Carbon Equivalent	0.37
Diameter N/A	+0+0+0 Z1103-02	Other P	late product form
Diameter N/A Deposited Weld Metal (Per P	ass) Did not	exceed 0 188 in	ato product form
Condition of base met	ral prior to walding	exceed 0. 100 iii.	
(1) Condition of base met (2) Per CSA Z662 Carbon	n Equivalent formula	See chemical composition	n of heat
analysis on attached r	naterial test report	dec chemical composition	ni oi noat
analysis on attached i	naterial test report		
FILLER METALS (QW-404	4) SAW		
Specification No. (SFA)		7	
Flux / Wire Classification	F746-F	M12K (3)	
	F6	1011210(0)	
F-No	A1 (4)		
A-No		ached sketch	
Supplemental Filler Metal	Without	action enoteri	
	Neutral		
Flux TypeFlux Designation	F7A6		
Flux Trade Name	Lincolny	veld 882	-1
Alloy Elements	Without	VOIG OUZ	
Alloy Flux	Without		
Alloy FluxRecrushed Slag	Without		
Deposited Weld Metal Thickness	0 875 in		
(3) The Lincoln Electric Con			2 Lot No. 15135168
(4) F7A6-EM12K A-No. esta			
See attached Laboratory			ар асрози.
See attached Laboratory	rest Report No.: L13	-104.9	
POSITION (QW-405)			
	2G	Weld Progression	N/A
1 osition of Groove		Weld Fregression	1071
PREHEAT (QW-406)			
Preheat Temperature	50 °F	Interpass Temp. (Max.)	500 °F
		ool to ambient temperatu	
	welding was completed		
	rolaling was completed	•	

PQR NO. S	TS-2-3 (Rev.0)
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POSTWELD HEAT TREATMENT (QW-407)

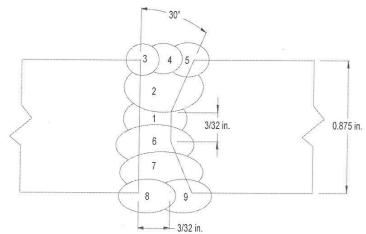
With or Without	Without	•		
Temperature	N/A	Time	N/A	

ELECTRICAL CHARACTERISTICS (QW-409)

Current	Direct	Polarity	Reverse, electrode positive
Amps	See below	Volts	See below
Heat Input	59,492 J/in. maximum		

TECHNIQUE (QW-410)

and the state of the state of	
Manual or Automatic	Machine
String or Weave	String
Initial & Interpass Cleaning	Brushing, chipping and grinding as required
Method of Back Gouging	Ground to sound metal with an abrasive grinding disc
Oscillation	N/A
Contact Tube to Work Distance	0.50 in 0.750 in.
Multiple or Single Pass Per Side	Multiple
Single or Multiple Electrodes	Single
Electrode Spacing	N/A
Peening	Not conducted
Use of Thermal Process	N/A
Travel Speed	See below



Pass	Process	Filler Metal	Diameter in.	Current Type & Polarity	Amperage Range	Voltage Range	Travel Speed i.p.m.
1	SAW	F7A6-EM12K	3/32	DCRP	340 - 350	30 - 32	12.2
2	SAW	F7A6-EM12K	3/32	DCRP	380 - 390	29 - 31	13.6
3	SAW	F7A6-EM12K	3/32	DCRP	390 - 410	30 - 32	16.7
4	SAW	F7A6-EM12K	3/32	DCRP	380 - 390	30 - 32	17.1
5	SAW	F7A6-EM12K	3/32	DCRP	380 - 390	30 - 32	18.0
6	SAW	F7A6-EM12K	3/32	DCRP	300 - 320	28 - 30	11.8
7	SAW	F7A6-EM12K	3/32	DCRP	390 - 420	29 - 31	12.6
8	SAW	F7A6-EM12K	3/32	DCRP	380 - 400	29 - 31	11.8
9	SAW	F7A6-EM12K	3/32	DCRP	360 - 370	28 - 30	14.1

PQR NO. STS-2-3 (Rev.0)

TENSILE TEST (QW-150)

Sample No.	Width in.	Thickness in.	Area sq. in.	Ultimate Load Ibf	Ultimate Stress psi	Fracture Type & Location
T1	0.750	0.833	0.625	47,800	76,500	Partial Cup & Cone Parent Metal
T2	0.749	0.833	0.624	47,900	76,800	Partial Cup & Cone Parent Metal

GUIDED BEND TEST (QW-160)

Type & Figure No.	Result	Type & Figure No.	Result
QW-462.2, TSB - S1	Pass	QW-462.2, TSB - S3	Pass
QW-462.2, TSB - S2	Pass	QW-462.2, TSB - S4	Pass

CHARPY V-NOTCH IMPACT TEST

Type of Test	otch	Orientation Transverse			
Governing Specification	Notch Location	Specimen Size in.	Test Temperature ° F	Specimen Number	Impact Values ft•lbf
ASME B31.3 - 2016	Weld metal within 1/16 in. of root	0.394 x 0.394	-50	I2.1	117
				12.2	92
				12.3	96
<u> </u>					
	6 HAZ	0.204		I3.1	156
ASME B31.3 - 2016		0.394 x 0.394	0.394 x -50	13.2	191
		0.394		13.3	152

OTHER TESTS

Vickers Hardness	- see attached L	aboratory	Test Report No.: E19-104.9
Chemical Analysis (SAW	/ Cap) - see atta	ched Labo	oratory Test Report No.: E19-104.9
Welder's Name	Matthew MacK	enzie & Ch	nristopher Jaques
Certificate File No.	N/A		
Tests Conducted By	SGS Canada Ir	nc.	
Laboratory Test No.	E19-104.9		
			and that the test welds were prepared, of Section IX of the ASME Code.
Organization	Storage Tank S	Solutions In	nc.
Date January 21, 2021		Print	Sebastien Ouellet
Signed			

QW-483 PROCEDURE QUALIFICATION RECORD (PQR)

Organization Name	Storage Tank Solutions Inc.
Procedure Qualification Record No	STS-2-4 (Rev.0) Date June 11, 2019
Welding Process(es)	Submerged Arc Welding (SAW)
JOINTS (QW-402)	
Joint DesignButt joint, single beve	I groove, see page 2
Root Opening See page 2	
Backing Without	RetainersWithout
	0 0000000000000000000000000000000000000
BASE METALS (QW-403)	
Material Specification No. SA 516	Type or Grade Gr. 60/70 Gr. 60/70: Normalized
Heat Treat Condition (1) SA 516 G	3r. 60/70: Normalized
P-No. P1 Groups 1/2 To P-No. P1 Gro	uns 1/2 Thickness 0.500 in
Heat Number 459852 56930-01	ups 1/2 Thickness 0.500 in. Carbon Equivalent (2) 0.38
Diameter N/A	Other Plate product form
Denosited Weld Motal (Por Pass)	Other Plate product form Did not exceed 0.188 in.
(1) Condition of home motal prior to world	Did flot exceed 0.100 iff.
(1) Condition of base metal prior to weld	ing.
	mula. See chemical composition of heat
analysis on attached material test rep	noort
FILLED METALC (OM 404)	0.4147
	SAW
Specification No. (SFA)	SFA 5.17
Flux / Wire Classification	F7A6-EM12K (3)
F-NO	F6
A-No	A1 (4)
Diameter	See attached sketch
Supplemental Filler Metal	Without
riux Type	Neutral
Flux Designation	F7A6
Flux Trade Name	incolnweld 882
Alloy Elements	Vithout
Alloy Flux	Without
Recrushed Slag	Vithout
Deposited Weld Metal Thickness) 500 in
(3) The Lincoln Electric Company: Lincoln	weld 882M Flux / L-61 Electrode Lot No. 15135168
(4) F7A6-EM12K A-No. established from ch	nemical analysis of SAW weld cap deposit.
See attached Laboratory Test Report No.	o : F10_10/4 0
	J L19-104.9
POSITION (QW-405)	
	AM-1-I Daniel Communication
Position of Groove2G	Weld ProgressionN/A
DDEHEAT (OW 406)	
PREHEAT (QW-406)	
Preheat Temperature 50 °F	Interpass Temp. (Max.)500 °F
	ed to cool to ambient temperature in still air after
welding was cor	npleted.

FUND. 513-2-4 (Nev.U)	PQR NO	STS-2-4	(Rev.0)	
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POSTWELD HEAT TREATMENT (QW-407)

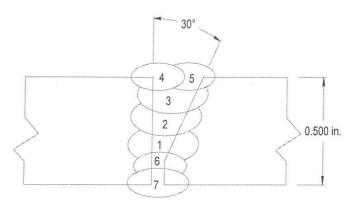
With or Without	Without	,	
Temperature	N/A	Time	N/A

ELECTRICAL CHARACTERISTICS (QW-409)

Current	Direct	Polarity	Reverse, electrode positive		
Amps	See below	Volts	See below		
Heat Input	53,438 J/in. maximum				

TECHNIQUE (QW-410)

Manual or Automatic	Machine
String or Weave	String
Initial & Interpass Cleaning	Brushing, chipping and grinding as required
Method of Back Gouging	Ground to sound metal with an abrasive grinding disc
Oscillation	N/A
Contact Tube to Work Distance	0.50 to 0.750 in.
Multiple or Single Pass Per Side	Single
Single or Multiple Electrodes	Single
Electrode Spacing	N/A
Peening	Not conducted
Use of Thermal Process	N/A
Travel Speed	See below



Pass	Process	Filler Metal	Diameter in.	Current Type & Polarity	Amperage Range	Voltage Range	Travel Speed i.p.m.
1	SAW	F7A6-EM12K	3/32	DCRP	360 - 390	27 - 30	12.0
2	SAW	F7A6-EM12K	3/32	DCRP	390 - 410	27 - 30	15.0
3	SAW	F7A6-EM12K	3/32	DCRP	390 - 410	27 - 30	15.0
4	SAW	F7A6-EM12K	3/32	DCRP	370 - 390	27 - 30	15.9
5	SAW	F7A6-EM12K	3/32	DCRP	370 - 390	27 - 30	15.9
6	SAW	F7A6-EM12K	3/32	DCRP	375 - 400	27 - 30	15.9
7	SAW	F7A6-EM12K	3/32	DCRP	380 - 405	27 - 30	15.9

Note: Monitored parameters provided by Storage Tank Solutions Inc.

PQR NO.	STS-2-4	(Rev.0)

CHARPY V-NOTCH IMPACT TEST

Type of Test	Charpy V-No	otch	Orientation Transverse			
Governing Specification	Notch Location	Specimen Size in.	Test Temperature ° F	Specimen Number	Impact Values ft•lbf	
ASME VIII Div.1 - 2017 &	Weld metal within 1/16 in.	0.394 x	-50	C2.1 C2.2	28 72	
ASME B31.3 - 2016	of root	0.394	7250-4569	C2.3	69	
ASME VIII Div.1 -	HAZ @	0.394 x		C3.1	72	
2017 &	Middle 1/2t	0.394 x 0.394	-50	C3.2	46	
ASME B31.3 - 2016	16 Wilddle 1/2t 0.394			C3.3	88	

OTHER TESTS

Vickers Hardness	see attached Laboratory Test Report No.: E19-285.3
	Cap) - see attached Laboratory Test Report No.: E19-104.9
Welder's Name Tests Conducted By	
Laboratory Test No	E19-285.3
welded and tested in accorda	this record are correct and that the test welds were prepared, nce with the requirements of Section IX of the ASME Code.
Organization	Storage Tank Solutions Inc.
DateJanuary 21, 2021	Print Sebastien Ouellet
Signed	

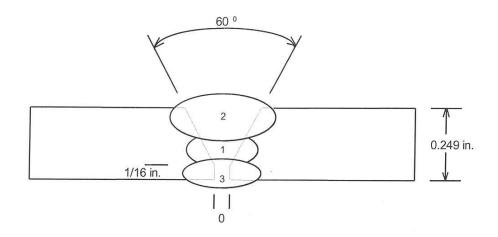
QW-483 PROCEDURE QUALIFICATION RECORD (PQR)

Company Nar	ne		Wood	lside Fabr	icators Ltd	i	
Procedure Qu	alification Re	ecord No	WFL-	2-1 (Rev.	1) D	ate Ma	y 10, 2006
Revision(s)	Rev. 1 - Ec	litorial - Additio	n of alloy	elements	, alloy flux	, flux des	ignation, contact
***	tube to work	distance, pee	ning and	oscillation	n. Corpora	te name o	change, formerly
	Woodside F	abricators Ltd.	Update t	o manufa	cturer's ce	ertifying st	atement. PQR,
400000	No. formerly	WFL-2-1, revi	sion date	July 8, 2	019.		
Welding Proce	ess(es)		SAW		Τ\	/pe(s)	Machine
-							
JOINTS (QW	/ ₋ 402)						
		ngle vee groove	o woldoc	from hot	haida aa	o novt nov	
туре	Dutt Joint, Si	igie vee groove	e, welded	וסט וווסוו ג	n side, see	e next pag	je
BASE META	LS (QW-40	3)					
Material Spec.	SA 5	16 to SA 516		_ Type o	r Grade _	Gr. 60	ON to Gr. 70N
P-No. <u>P1 G</u>	rp.1 To	P-No. <u>P1 (</u>	Grp.2	_ Thickne	ess	6.32 r	ON to Gr. 70N mm (0.249 in.)
Diameter	N/A -	· Plate		Heat N	0.	44410	0-34383
Deposited Wel	d Metal (Per	pass)	Did no	t exceed	12.7 mm (0.500 in.)	
FILLER META	ALS (QW-4	.04)	SAW				
Specification N	o (SEA)	• .,		17			
Flux / Wire Cla	ssification						
F-No			F6	_101121(3)			Mark College C
F-No A-No			A1				
Diameter			Soo at		otch		
Supplemental F	-iller Metal		Withou	it	etcii		
Flux Type	mer wetar _		Moutro	I.			
Flux Designation			EZAG				
Flux Designation	711		Lincoln	wold 000			
Flux Trade Nan	ne		LINCOIN	weid 882			
Alloy Elements	-		VVILLIOU	<u> </u>			
Postushed Slag	~		VVIIIIOU	<u> </u>			
Recrushed Slag	Motal Thial	· · · · · · · · · · · · · · · · · · ·	O 240 :				
Deposited Weld	i Metai Tilicr	ampany Lines	U.249 I	n.	/		
3) The Linco	in Electric C	ompany: Linco	inweia 8	BZIVI FIUX	/ L-61 Ele	ctrode	
POSITION (Q	W-405)						
Position of Groo	ove		1G				
Weld Progression	on		N/A				
PREHEAT (Q)	N-406)						
Preheat Temper	rature	10°C (50°F)		Internas	s Temn (1	May) 2	32°C (450°F)
Torroat Torripor		10 0 (00 1)		interpas	o remp. (i	viax.)	02 0 (400 1)
OOTWELD !							
POSTWELD H							
emperature _		None		Time		N/A	
LECTRICAL	CHARACT	ERISTICS (O	W-409)				
Current				Polarity	Reverse	electrod	e positive
mps		See next page	9	Volts	See	next nage	1
laximum Heat I	Input	43,400 J/in.			000	.on page	
	Francisco (State Property)						

PQR NO. WFL-2-1 (Rev.1)

String or Weave	String
Initial & Interpass Cleaning	Not recorded
Method of Back Gouging	Not recorded
Oscillation	N/A
Contact Tube to Work Distance	Not recorded
Multiple or Single Pass Per Side	Multiple
Single or Multiple Electrodes	Single
Electrode Spacing	N/A
Peening	Not conducted
Use of Thermal Process	N/A
Travel Speed	See below

Machine



Note: Back gouged to sound metal prior depositing pass No. 3

TECHNIQUE (QW-410) Manual or Automatic _____

Pass	Process	Filler Metal	Diameter mm (in.)	Current & Polarity	Amperage Range	Voltage Range	Travel Speed mm/min (ipm.)
1	SAW	F7A6-EM12K	2.4 (3/32)	DCRP	300	30	533 (21)
2	SAW	F7A6-EM12K	2.4 (3/32)	DCRP	350	30 - 32	381 (15)
3	SAW	F7A6-EM12K	2.4 (3/32)	DCRP	300	30	533 (21)

PQR NO.	WFL-2-1	(Rev.1)	

TENSILE TEST (QW-150)

Specimen No.	Width mm (in.)	Thickness mm (in.)	Area Sg. mm	Ultimate Load	Ultimate Stress	Character & Fracture Location
	, ,	()	(Sq. in.)	N (lbs.)	MPa (psi)	
T1	19.0	5.62	107	59 200	554	Partial cup & cone
	(0.748)	(0.221)	(0.166)	(13,300)	(80,400)	Parent metal (SA 516 Gr. 70N)
T2	19.2	5.80	114	60 200	540	Partial cup & cone
	(0.756)	(0.228)	(0.173)	(13,500)	(78,400)	Parent metal (SA 516 Gr. 70N)

GUIDED BEND TEST (QW-160)

Type & Figure No. Result		Type & Figure No.	Result	
QW-462.3a, TFB - F1	Pass	QW-462.3a, TRB - R1	Pass	
QW-462.3a, TFB - F2	Pass	QW-462.3a, TRB - R2	Pass	

CHARPY IMPACT TOUGHNESS

Type of Test	Charpy V-Notch	Orientation	Transverse
Test Temperature _	-48°C (-55°F)	Specimen Size	10 X 5 mm
	TO SERVICE AND ADDRESS OF THE PARTY OF THE P		
Specimen N	lo.	Notch Location	Impact Values J (ft. lbs)
V2.1		Weld Metal	30.1 (22.2)
V2.2		within 1/16"	35.1 (25.9)
V2.3		of root	33.9 (25.0)
V3.1		Gr. 60N - HAZ	32.5 (24.0)
V3.2		Gr. 60N - HAZ	30.1 (22.2)
V3.3		Gr. 60N - HAZ	14.2 (10.5)
W3.1		Gr. 70N - HAZ	28.5 (21.0)
W3.2		Gr. 70N - HAZ	9.5 (7.0)
W3.3		Gr. 70N - HAZ	25.8 (19.0)

Vickers Ha		ed labora	itory test report # C07	-300.2
Welders Name Tests Conducted By Laboratory Test No.			Certificate File No	W-17343
We hereby recertify that Paragraph QW-200.2 and with the requirements of S	d that the test welds	were p	repared, welded and	
Organization	Storage Tank Sc	olutions		=
DateJanuary 21, 202	21	Print	Sebastien Ouellet	
Signed Street	P			



CHARPY V-NOTCH IMPACT TEST

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta T9G 1Z6

Laboratory Test No.: E19-104.7

Date: March 15, 2019

Material Heat No.:

Weld Type:

Attention:

Sebastien Ouellet

PQR No.:

STS-2-1 (Rev.0)

Material:

SA 516 Gr. 60/70

Material Thickness:

6.35 mm (0.250 in.)

Welding Process:

SAW 6.35 mm (0.250 in.)

Weld Thickness: **Thermal Condition:**

As Welded

Specimen Size:

10 x 5 mm (0.394 x 0.197 in.)

Orientation:

Transverse

Test Temperature: Governing Spec .:

ASME Section VIII, Div. I, UG-84 - 2017 &

-51 °C (-60 °F) ASME B31.3-2016 Machine: Capacity: Satec SI-1K3, S/N: 1503

42963 29249-03

Double Sided

407 J (300 ft·lbf)

Verified Range: Calibration Date: 3.4-325J (2.5-240 ft·lbf)

March 19, 2018

Specimen	Notch	Impact V	/alues
Number	Location	Joules	(ft·lbf)
G2.1 G2.2 G2.3	Weld Metal within 1.5mm (1/16") of root	15 33 15	(11) (24) (11)
G3.1 G3.2 G3.3	HAZ @ Middle 1/2t	43 20 26	(32) (15) (19)

Note: Metric values calculated by direct conversion.

Test Conducted By: Tong Zhao (Edmonton)

Certified By:

Eric Dacyk, C.E.T.

Certification # L2057.01-1

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Page 1 of 1

SGS Canada Inc. 4027 - 14 Street S.E. Calgary, AB T2G 3K6 t +1 (403) 262-7072 f +1 (403) 266-3169 7925 Davies Road Edmonton, AB T6E 4N1 t +1 (780) 468-3030 f +1 (780) 468-3032

www.sgs.com



HARDNESS TEST

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta

T9G 1Z6

Attention:

Sebastien Ouellet

PQR No.:

STS-2-1 (Rev.0)

Material:

SA 516 Gr. 60/70

Material Thickness:

6.35 mm (0.250 in.)

Welding Process:

SAW

Weld Thickness:

6.35 mm (0.250 in.)

Thermal Condition:

As Welded

Type of Test: Governing Spec.: Vickers 1 0kg (HV10)

ASTM E92 - 17 &

ANSI/NACE MR0175/ISO 15156:2015

Laboratory Test No.: E19-104.7

Date: March 15, 2019

Material Heat No.:

42963 29249-03

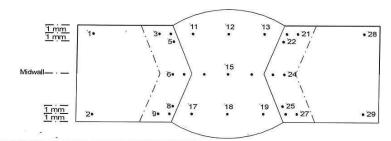
Weld Type:

Double Sided

Buehler 5112

Instrument: Calibration Date:

July 27, 2018



					alal Markal				
Par	ent Metal		HAZ	VV	eld Metal	HAZ		Parent Meta	
1	156	3	162	11	181	20	179	28	159
2	151	4	178	12	173	21	159	29	149
		5	187	13	182	22	183		
		6	177	14	183	23	195		
		7	184	15	180	24	173		
		8	182	16	189	25	199		
		9	157	17	184	26	183		
		10	189	18	183	27	159		
				19	188				

Test Conducted By: Ibrahim Mohamoud (Edmonton)

Certified By:

Eric Dacyk, C.E.T.

ANAB
ACCREDITED
ISONEO 17025
TESTING LABORATORY

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Page 1 of 1



TENSILE / BEND TEST

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta T9G 1Z6

Laboratory Test No.: E19-104.9

Date: March 15, 2019

Attention:

Sebastien Ouellet

PQR No.:

STS-2-3 (Rev.0)

Material:

SA 516 Gr.60/70 22.2 mm (0.875 in.)

Material Thickness: Welding Process:

SAW

Weld Thickness:

22.2 mm (0.875 in.)

Thermal Condition:

As Welded

Governing Spec.: ASME Section IX - 2017

Instrument:

T2

529

Material Heat No.:

Tinius Olsen S/N: 133660

454840 27789-02

SAMPLE NO.(QW-150) WIDTH mm (in.) THICKNESS mm (in.)

T1 19.0 (0.750)21.2 (0.833)403

Parent Metal

19.0 21.2

(0.749)(0.833)

AREA sq. mm (sq. in.) ULTIMATE LOAD N (lbf) ULTIMATE STRESS MPa (psi)

(0.625)212 694 (47,800)528 (76,500)

402 213 054

(0.624)(47,900)(76,800)

FRACTURE TYPE FRACTURE LOCATION Partial Cup & Cone

Partial Cup & Cone Parent Metal

Note: Imperial values calculated by direct conversion.

SAMPLE TYPE(QW-462.2)

Side Bend

Side Bend

Side Bend

Side Bend

SAMPLE NO. RESULTS

S₁ - Pass S2 Pass

S3 **Pass** **S4** Pass

Test Conducted By: Mohamed Botan (Edmonton)

Certified By:

Eric Dacyk, C.E.T.

TESTING LABORATORY Certification # L2057.01-1

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Page 1 of 1



CHARPY V-NOTCH IMPACT TEST

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta

Date: March 15, 2019

Material Heat No.:

Laboratory Test No.: E19-104.9

Attention:

Sebastien Ouellet

T9G 1Z6

PQR No.:

STS-2-3 (Rev.0)

Material:

SA 516 Gr.60/70

Material Thickness:

22.2 mm (0.875 in.)

Welding Process:

SAW

Weld Thickness:

22.2 mm (0.875 in.)

Thermal Condition:

As Welded

Specimen Size:

10 x 10 mm (0.394 x 0.394 in.)

Orientation:

Transverse -46 °C (-50 °F)

Test Temperature: Governing Spec .:

ASME B31.3-2016

Machine:

Satec SI-1K3, S/N: 1503

454840 27789-02

Capacity:

407 J (300 ft·lbf)

Verified Range: Calibration Date:

3.4-325J (2.5-240 ft·lbf) March 19, 2018

Specimen	Notch	Impact Values		
Number	Location	Joules	(ft·lbf)	
12.1		159	(117)	
12.2	Weld Metal	125	(92)	
12.3	within 1.5mm (1/16") of root	130	(96)	
I3.1	1147	212	(156)	
13.2	HAZ	259	(191)	
13.3		206	(152)	

Note: Metric values calculated by direct conversion.

Test Conducted By: Tong Zhao (Edmonton)

Certified By:

Eric Dacyk, C.E.T.

TESTING LABORATORY Certification # L2057.01-1

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Page 1 of 1

SGS Canada Inc. | 4027 - 14 Street S.E. Calgary, AB T2G 3K6 | t +1 (403) 262-7072 | f +1 (403) 266-3169 | 7925 Davies Road | Edmonton, AB T6E 4N1 | t +1 (780) 468-3030 | f +1 (780) 468-3032

www.sgs.com



HARDNESS TEST

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta

T9G 1Z6

Attention:

Sebastien Ouellet

PQR No.: Material:

STS-2-3 (Rev.0)

SA 516 Gr.60/70 22.2 mm (0.875 in.)

Material Thickness: Welding Process:

SAW

Weld Thickness:

22.2 mm (0.875 in.)

Thermal Condition:

As Welded

Type of Test: Governing Spec .:

Vickers 10 kg (HV10) ASTM E92 - 17 &

ANSI/NACE MR0175/ISO 15156:2015

Instrument:

Leco S/N1594

454840 27789-02

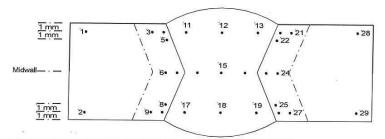
Calibration Date:

July 27, 2018

Laboratory Test No.: E19-104.9

Date: March 15, 2019

Material Heat No.:



and the St				\AZ	eld Metal					
Pare	ent Metal		HAZ	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	eiù Metai		HAZ		Parent Metal	
1	153	3	184	11	176	20	206	28	147	
2	156	4	221	12	153	21	178	29	150	
		5	225	13	184	22	215			
		6	172	14	175	23	198			
		7	183	15	187	24	173			
		8	223	16	184	25	195			
		9	186	17	171	26	199			
		10	219	18	178	27	178			
				19	155					

Test Conducted By: Tong Zhao (Edmonton)

Certified By:

Eric Dacyk, C.E.T.

TESTING LABORATORY Certification # L2057.01-1

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Page 1 of 1



CHEMICAL ANALYSIS

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta T9G 1Z6

Laboratory Test No.: E19-104.9

Date: March 15, 2019

Attention:

Sebastien Ouellet

PQR No.:

STS-2-3 (Rev.0)

Material:

SA 516 Gr.60/70

Material Thickness:

22.2 mm (0.875 in.)

Welding Process:

SAW

Weld Thickness:

22.2 mm (0.875 in.)

Thermal Condition:

As Welded

Location:

Material Heat No.:

Weld Cap

454840 27789-02

Instrument:

Shimadzu PDA-7000 Optical Emission Spectrometer

Governing Spec .:

ASTM E415-17

% by Weight

Carbon	0.08
Manganese	1.12
Sulphur	0.006
Phosphorus	0.009
Silicon	0.40
Chromium	0.04
Nickel	0.02
Molybdenum	0.01
Copper	0.05
Niobium	<0.01
Vanadium	0.01
Aluminum	0.02
Titanium	< 0.01
Boron	< 0.0004

Test Conducted By: Kamaldeep Brar (Calgary)

Certified By:

Eric Dacyk, C.E.T.

Certification # L2057-1

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Page 1 of 1



CHARPY V-NOTCH IMPACT TEST

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta T9G 1Z6

Laboratory Test No.: E19-00285.3

Date: June 26, 2019

Attention:

Sebastien Ouellet

PQR No.:

STS-2-4 (Rev. 0)

Material:

SA 516 Gr. 60/70 12.7 mm (0.500 in.)

Material Thickness:

SAW

Welding Process: Weld Thickness:

12.7 mm (0.500 in.)

Thermal Condition:

As Welded

Specimen Size:

10 x 10 mm (0.394 x 0.394 in.)

Orientation: Test Temperature:

Transverse -46 °C (-50 °F)

Governing Spec .:

ASME B31.3 - 2016 &

ASME Section VIII, Div. I, UG-84 - 2017

Material Heat No.:

459852 56930-01

Weld Type:

Double Sided

Machine: Satec SI-1K3, S/N: 1503

Capacity: Verified Range:

407 J (300 ft·lbf) 3.4-325 J (2.5-240 ft·lbf)

Calibration Date: March 19, 2019

Specimen	Notch	Impact Values		
Number	Location	Joules	(ft·lbf)	
C2.1 C2.2 C2.3	Weld Metal within 1.5mm (1/16") of root	38 98 94	(28) (72) (69)	
C3.1 C3.2 C3.3	HAZ @ Middle 1/2t	98 62 119	(72) (46) (88)	

Note: Metric values calculated by direct conversion.

Test Conducted By: Mohamed Botan (Edmonton)

Certified By:

Eric Dacyk, C.E.T.

TESTING LABORATORY Certification # L2057.01-1

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HARDNESS TEST

Customer:

Storage Tank Solutions Inc.

9 Well Head Street Devon, Alberta

T9G 1Z6

Attention:

Sebastien Ouellet

PQR No.:

STS-2-4 (Rev. 0)

Material:

SA 516 Gr. 60/70 12.7 mm (0.500 in.)

Material Thickness: **Welding Process:**

Weld Thickness:

12.7 mm (0.500 in.)

Thermal Condition:

As Welded

Type of Test:

Vickers 10 kg (HV10)

Governing Spec .:

ASTM E92 - 17 & ANSI/NACE MR0175/ISO 15156:2015

Material Heat No.:

Weld Type:

Instrument:

Date: June 27, 2019

Buehler 5112 July 27, 2018

459852 56930-01

Double Sided

Calibration Date:

Laboratory Test No.: E19-00285.3

3. • 28 . 21 . 22 15 6 25 18 9. • 29

Continue of the Continue of th			Weld Metal							
Parent Metal		HAZ		Weid Metai		HAZ		Parent Metal		
1	154	3	180	11	197	20	220	28	163	
2	161	4	217	12	187	21	177	29	163	
		5	215	13	200	22	226			
		6	178	14	176	23	172			
		7	188	15	170	24	166		9	
			8	199	16	163	25	218		
	8	9	186	17	163	26	229			
		10	207	18	184	27	185			
				19	172					

Test Conducted By: Ibrahim Mohamoud (Edmonton)

Certified By:

Eric Daeyk, C.E.T.

CREDIT

Certification # L2057.01-1

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LABORATORY TEST REPORT

LABORATORY
ACCREDITATION
BUREAU
ISO/IEC 17025 ACCREDITED
Certificate Number L2057

CUSTOMER:

Woodside Fabrications Ltd.

6124 - 39th Avenue Camrose, Alberta

T4V 3B1

Laboratory Test No.:

C07-300.2

Date: March 7, 2007

Attention:

Douglas French

PQR Number:

WFL-2-1

Process: SAW

Material:

SA 516 Gr. 60N to SA 516 Gr. 70N (Heat No.: 44410 - 34383)

Thickness:

6.32 mm (0.249 in.)

Thermal Condition:

As Welded

TENSILE TEST QW-150

SAMPLE NUMBER	T1 QW-462.1(a)		T2 QW-462.1(a)		
WIDTH mm (in)	19.0	(0.748)	19.2	(0.756)	
THICKNESS mm (in)	5.62	(0.221)	5.80	((0.228)	
AREA sq mm (sq in)	107	(0.166)	114	(0.173)	
ULT. LOAD N (lbs)	59 200	(13,300)	60 200	(13,500)	
UTS MPa (psi)	554	(80,400)	540	(78,400)	
FRACTURE TYPE	Partial Cup and Cone		Partial Cup and Cone		
FRACTURE LOCATION	Parent Metal (SA 516 Gr. 70N)			Parent Metal (SA 516 Gr. 70N)	

GUIDED-BEND TEST QW-160

SAMPLE WIDTH:

38.1 mm (1.50 in.)

SAMPLE THICKNESS:

6.32 mm (0.249 in.)

PLUNGER SIZE:

25.1 mm (0.990 in.)

YOKE SIZE:

41.1 mm (1.62 in.)

QW-462.3(a)

Root Bend

Root Bend Face Bend

Face Bend

SAMPLE NUMBER(S)

R1

R2

F1

F2

RESULTS

Pass

Pass

Pass

Pass

We certify the test results in this report and that the specimen(s) were prepared and tested in accordance with the requirements of ASME Section IX, 2004 edition and latest addenda. The information regarding material identification (i.e. size, thickness, heat number, etc.) has been provided by the customer whose name appears on this report. Samples associated with this report will be discarded in 45 days.

Laboratory Test Conducted By:

Stephanie Liu / Steve Rieberger, C.E.T.