

QW - 482

COMPANY NAME RJV Gas Field Service Ltd.WELDING PROCEDURE SPEC. No. RJV-109DATE September 20, 1995

WELDING No. _____ DATE _____

SUPPORT PQR No. (S) RJV-109WELDING PROCESS(ES) GTAW/SAWTYPE(S) Manual as-welded

(AUTOMATIC, MANUAL, MACHINE OR OTHER)

JOINTS (QW - 402)

JOINT DESIGN Vee-Groove and all ASME joint designsBACKING (YES) X (NO) XBACKING MATERIAL (TYPE) Weld metal where applicable (no retainers)☐ METAL ☐ NONFUSING METAL☐ NONMETALLIC ☐ OTHER

ALBERTA BOILERS SAFETY ASSOCIATION

PROVINCE OF ALBERTA
SAFETY CODES ACT

WELDING PROCEDURE

Reg. No. WP 1312.2Spec No. RJV-109Weld Process GTAW/SAWMatl. Gr. P No. 8 to P No. 8Elec. Gr. F No. 6+5 A No. 8Th. Qual. For 17mm PWHT NOYr. 95 Mo. 9 Day 25 Signed R. RosebergR. ROSEBERG, P. ENG.
WELDING SPECIALIST

BASE METALS (QW-403)

No. 8

GROUP No. _____

TOP No. 8

GROUP No. _____

OR

SPECIFICATION TYPE AND GRADE _____

SPECIFICATION TYPE AND GRADE _____

OR

CHEM. ANALYSIS AND MECH. PROP. _____

CHEM. ANALYSIS AND MECH. PROP. _____

THICKNESS RANGE:

BASE METAL

GROOVE

WITH IMPACT

FILLET

WITHOUT IMPACT 1.58mm to 17mm

All thickness

PIPE DIA. RANGE

GROOVE

All diameter

FILLET

All thickness

OTHER Maximum thickness per layer for GTAW = 6mm SMAW = 11mm

FILLER METALS (QW-404)

SPECIFICATION No. (SFA)

5.8

5.4

AWS No. (CLASS)

ER3XXL

E3XXL-15/16

No.

F8

F5

A. No. OR CHEMICAL ANALYSIS

8

8

TYPE OF FILLER METALS

1/16", 3/32", 1/8"

5/64", 3/32", 1/8", 5/32"

POSITIONED WELD METAL THICKNESS RANGE

GROOVE

Up to 6mm

Up to 11mm

FILLET

All thickness

All thickness

RODS FLUX (CLASS)

N/A

TRADE NAME

N/A

CONSUMABLE INSERT

N/A

QW - 482 (back)

WPS No. RJV-109

REVISION No.

POSITIONS(QW - 405)

POSITIONS OF GROOVE All positions
 WELDING PROGRESSION UP Up DOWN
 POSITIONS OF FILLET All positions

PREHEAT(QW - 406)

PREHEAT TEMP. 100°F
 INTERPASS TEMP. MAX. 400°F
 PREHEAT MAINTENANCE Continuous with Gas/Electric.
 (CONTINUOUS OR SPECIAL HEATINGS SHOULD BE RECORDED)

POSTWELD HEAT TREATMENT(QW - 407)

TEMPERATURE RANGE N/A
 TIME RANGE

GAS (QW - 408)

	PERCENT COMPOSITION		
	GAS(ES)	MIXTURE	FLOW RATE
SHIELDING	Argon	99.9%	12-15 cfm.
TRAILING	N/A		
BACKING	Argon	99.9%	12-30 cfm.

ELECTRICAL CHARACTERISTICS(QW 409)

CURRENT Direct POLARITY GTAW-SP SMAW-RP AMP. Range 30 - 140 VOLTS Range 9 - 24
 TUNGSTEN ELECTRODE SIZE AND TYPE 3/32" (2.5mm), 1/8" (3.2mm) 2% Thoriated
 (PURE TUNGSTEN 2% THORIATED, ETC.)
 MODE OR METAL TRANSFER FOR GMAW N/A
 (SPRAY ARC, SHORT CIRCUITING ARC, ETC.)
 ELECTRODE WIRE FEEDS SPEED RANGE N/A

TECHNIQUE(QW - 410)

STRING OR WEAVE BEAD String & Weave
 ORIFICE OR GAS CUP SIZE 1/4" (6.3mm) to 1" (25.4mm)
 ITALIAN INTERPASS CLEANING (BRUSHING, GRINDING ETC.) Grind all tie in on stop and start to a feather edge, grind and brush to sound metal between each interpass with stainless steel disc and brush
 METHOD OF BACK GOUGING Grind to sound metal
 SCILLATION 1.5mm past each side of bevel
 CONTACT TUBE TO WORK DISTANCE N/A
 MULTIPLE OR SINGLE PASS (PER SIDE) Multi
 MULTIPLE OR SINGLE ELECTRODES Single
 TRAVEL SPEED (RANGE) As per table below
 TACKENING Not permitted
 OTHER

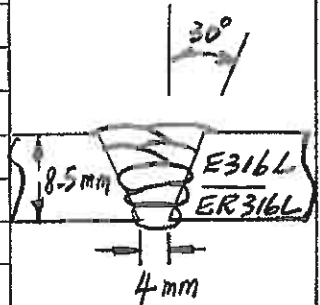
WELD LAYERS	PROCESS	FILLER METAL		CURRENT		VOLT RANGE	TRAVEL SPEED RANGE
		CLASS	DIAMETER	TYPE	AMP. RANGE		
1-2	GTAW	ER3XXL	1/16"	DC Straight	30 - 50	9 - 12	2" - 4" per minute
1-2	GTAW	ER3XXL	3/32"	DC Straight	40 - 100	9 - 12	2" - 5" per minute
# 1-2	GTAW	ER3XXL	1/8"	DC Straight	60 - 135	9 - 12	3" - 6" per minute
2 &	SMAW	E3XXL	5/64"	DC Reverse	30 - 55	18 - 23	2" - 4" per minute
etc.	SMAW	E3XXL	3/32"	DC Reverse	50 - 95	19 - 24	3.5" - 5" per minute
	SMAW	E3XXL	1/8"	DC Reverse	75 - 110	20 - 24	4" - 8" per minute
	SMAW	E3XXL	5/32"	DC Reverse	110 - 140	18 - 24	5.5" - 9" per minute

Maximum of 36 000 Joules is permitted with ER3XXL
 Maximum of 39 085 Joules is permitted with E3XXL

QW - 483

COMPANY NAME	RJV Gas Field Service Ltd.		
PROCEDURE QUALIFICATION RECORD No.	RJV-109	DATE	September 20, 1995
WELDING PROCESS(ES)	GTAW/SMAW		
WELDING TYPES (MANUAL, AUTOMATIC, SEMI-AUTO)	Manual		

JOINTS (QW - 402)		GROOVE DESIGN OF TEST COUPON						
Layer	Process	Filler	Size	Amp.	Volt	mm/Min Travel	Deposit	Joules
1	GTAW	ER316L	3/32"	75 - 85	10 - 12	50mm	1.5mm	30 600
2	GTAW	ER316L	3/32"	75 - 85	10 - 12	76mm	1.5mm	20 400
3	SMAW	E316L	3/32"	80 - 90	19 - 22	89mm	2.5mm	33 942
4	SMAW	E316L	3/32"	80 - 90	19 - 22	89mm	3.0mm	33 942
5	SMAW	E316L	3/32"	80 - 90	12 - 22	101mm	Cap	29 700



BASE METALS (QW - 403)		
MATERIAL SPEC.	SA312	
TYPE OR GRADE	316L	
W. 8	to P - No. 8	
THICKNESS OF TEST COUPON	8.5mm	
DIAMETER OF TEST COUPON	104mm	
OTHER		

FILLER METALS (QW - 404)		
SFA SPECIFICATION	5.9	5.4
AWS CLASSIFICATION	ER316L	E316L
FILLER METAL F - No.	F6	F5
WELD METAL AWS. A - No.	8	8
SIZE OF FILLER METAL	3/32"	3/32"
OTHER		

DEPOSITED WELD METAL	3mm	5.5mm
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POSITION (QW - 405)	
POSITION OF GROOVE	6G
WELD PROGRESSION (UP OR DOWN HILL)	Uphill
OTHER	

PREHEAT (QW - 406)	
PREHEAT TEMP.	100°F
RPS TEMP.	400°F
OTHER	

POSTWELD HEAT TREATMENT (QW - 407)	
TEMPERATURE	N/A
TIME	
OTHER	

GAS (QW - 408)		
GAS	MIXTURE	FLOW RATE
SHIELDING	Argon	99.9%
TRAILING	N/A	12 cfm.
BACKING	Argon	99.9%
		15 cfm.

ELECTRICAL CHARACTERISTICS (QW - 409)	
CURRENT	Direct
POLARITY	GTAW - Straight SMAW - Reverse
AMPS.	75 - 90
VOLTS	10 - 22
TUNGSTEN ELECTRODE SIZE	1/8" (3.2mm)
OTHER	

TECHNIQUE (QW - 410)	
TRAVEL SPEED	2" to 5" per minute
STRING OR WEAVE BEAD	String & Weave
OSCILLATION	1.5mm past each side of bevel
MULTIPASS OR SINGLE PASS (PER SIDE)	Multi
SINGLE OR MULTIPLE ELECTRODES	Single
OTHER	

QW - 483 (back)

PQR No. RJV-109

TENSILE TEST (QW - 150)

SPECIMEN NO.	WIDTH	THICKNESS	AREA	ULTIMATE TOTAL	ULTIMATE UNIT	TYPE OF FAILURE
5	0.740 in.	0.326 in.	0.241 sq.in.	22 500 lb	93 300 psi	Ductile/Parent
6	0.750 in.	0.320 in.	0.240 sq.in.	22 350 lb	93 100 psi	Ductile/Parent

GUIDED BEND TESTS (QW - 160)

TYPE AND FIGURE NO.	RESULT
Face bend # 2	Pass
Face bend # 4	Pass
Root bend # 1	Pass
Root bend # 3	Pass

TOUGHNESS TEST (QW - 170)

TEST TEMPERATURE _____
 NOTCH TYPE _____

SPECIMEN NO.	NOTCH LOCATION	IMPACT TEST	
		JOULES	FOOT/Lb.

FILLET-WELD TEST (QW - 180)

RESULTS SATISFACTORY YES _____ NO _____ PENETRATION INTO PARENT METAL YES _____ NO _____

MACRO RESULTS _____
 OTHER TESTS _____

ELDER'S NAME Mike Hyndman STAMP NO. W-4359

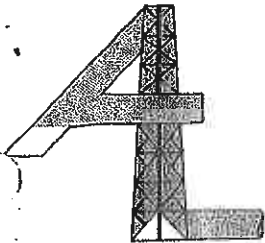
TESTS CONDUCTED BY: Alfor Metallurgical Company Ltd. LAB TEST NO. # 95-516

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

MANUFACTURED BY RJV Gas Field Service Ltd.

DATE September 20, 1995

BY _____



ALFOR METALLURGICAL COMPANY LTD.

CONSULTING ENGINEERS

FILE #95-516

PQR #RJV-109

September 20, 1995

RJV Gas Field Service Ltd.
4901 - 47 Street
Vegreville, Alberta T9C 1C3

METAL TEST REPORT

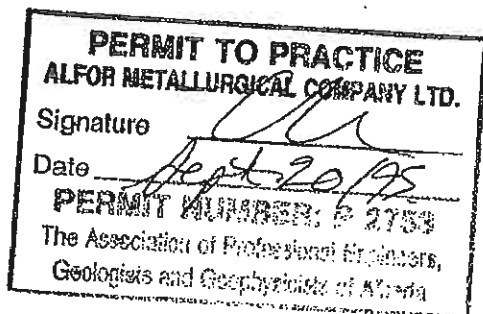
Material Description: ASME SA-312, Grade TP316L; NPS4 X 0.337" W.T. pipe; GTAW Root + SMAW Fill & Cap; as-welded condition.

Specimen Type: Reduced-section tensile, as per Figure QW-462.1(b) of the ASME Code; guided face and root bend, as per Figure QW-462.3(a) of the ASME Code.

Results:	Sample 5	Sample 6
Width:	0.740 in.	0.750 in.
Thickness:	0.326 in.	0.320 in.
Area:	0.241 sq. in.	0.240 sq. in.
Ultimate Load:	22 500 lb	22 350 lb
Ultimate Tensile Strength:	93 300 psi	93 100 psi
Fracture Character:	Ductile	Ductile
Fracture Location:	Parent	Parent

Guided face bend samples 2 and 4: Pass Tests;

Guided root bend samples 1 and 3: Pass Tests.



Yours very truly

ALFOR METALLURGICAL COMPANY LTD.

CHARLES G. MOZESON, P. Eng.

