

Pl-AT-Lh-f

Power & Industrial Division

BECHTEL CORPORATION

Metallurgy & Welding Section Date: 2/23/65

By Manager of Engineering

WELDING STANDARD Procedure Specification Pl-AT-Lh-f

Revision 3

Prepared by

Checked by

Approved

Authorized for use only when signed by the Manager of Engineering of the Division.

1.0 SCOPE

- 1.1 This procedure specification is to be used for welding Carbon Steel piping materials in thicknesses up to and including 4 inches without consumable insert rings.
- 1.2 This procedure has been qualified under Section IX of the ASME Code and the ASA Code for Pressure Piping, B31, 1 and B31, 3.

2.0 **PROCESS**

2.1 Welding under this procedure specification shall be done with the combination Gas Tungsten-Arc and Shielded Metal-Arc process using a flux protective backing for the root pass.

3.0 BASE MATERIAL

3.1 This procedure specification shall be used only in welding the carbon steel materials shown in Table 1, Drawing Pl-AT-Lh-f-1.

4.0 WELD MATERIAL

4.1 The filler metal shall conform to the A-1 weld metal analysis number and F4 and F6 grouping numbers shown in Section IX of the ASME Code.

8606300254 860416







- 4.2 Coated electrodes and bare filler rod shall conform to ASTM A233, Mild Steel Arc-Welding Electrodes, Classification EXX16, or EXX18; and ASTM A251 Iron and Steel Gas-Welding Rods, Classification GAXX, respectively.
 - 4.2.1 Carbon steel materials with a specified minimum tensile strength greater than 60,000 psi shall be welded with E7016 or E7018 coated electrodes and GA65 bare filler rod, Drawing No. Pl-AT-Lh-f-1.
 - 4.2.2 Carbon steel materials with a specified minimum tensile strength equal to or less than 60,000 psi, or not specified, shall be welded with E6016 or E6018 coated electrodes, and GA60 or GA65 bare filler rod, Drawing No. Pl-AT-Lh-f-1.
- 4.3 Electrodes that have wet or damaged coatings shall not be used.
- 4.4 All coated low hydrogen electrodes shall be purchased in sealed containers. Low hydrogen electrodes removed from sealed containers shall be used within four hours. Electrodes not used within four hours shall be stored in electrode storage ovens at 250-300°F or as otherwise recommended by the electrode manufacturer.

5.0 WELDING

5.1 Position

This procedure specification covers welding that may be done in any position.

- 5.2 Preparation of Base Material
 - 5.2.1 Field beveling for butt welds shall be done by machining, grinding, or flame cutting and grinding.
 - 5.2.2 The method of base metal preparation used shall leave the welding groove with reasonably smooth surfaces free from notches or other harmful irregularities.



- 5.2.3 The angle of bevel, spacing, and other details shall be in accordance with weld end preparation drawings included in the job specifications. If not included with job specifications, the angle of bevel, spacing, and other details shall be essentially in accordance with Drawing No. Pl-AT-Lh-f-2.
- 5.2.4 Prior to fit-up and welding, the beveled edges, root land and back side of each weld end shall be cleaned of all grease, oil, rust scale or other foreign material to bright, clean metal by filing, power brushing or power grinding. Approved proprietary protective coatings such as "Deoxaluminite" need not be removed prior to welding.

5.3 Electrical Characteristics

- 5.3.1 Gas tungsten-are welding shall be done using a one or two percent thoriated tungsten electrode with direct current, electrode negative (straight polarity)
- 5.3.2 Metal-arc welding shall be done using direct current electrode positive (reverse polarity).
- 5.3.3 Recommended values for amps and volts are shown on Drawing No Pl-AT-Lh-f-2.

5.4 Gas Shielding and Flux Backing

- 5.4.1 The shielding gas shall be argon at 12-15 ofh through the welding torch.
- After cleaning, and before fit-up, the back side of each weld bevel shall be given a coat of "Solar Flux". Type B for a distance of one-half inch from the end. No flux shall be applied to the face of the land or to the outside surface of the weld groove.
- 5.4.3 The "Solar Flux" must be thoroughly mixed with methyl alcohol to a thin paste consistency, in accordance with the manufacturer's instructions, and be allowed to stand five minutes before use. The flux shall be applied so as

5.4.3 to accomplish an even and smooth coat. Only quantities
(Cont.) to coat four to six welds should be mixed at any one time and this should be kept in a small sealed jar or container.
Flux once mixed and allowed to dry shall not be used.
Keep container tightly closed on unmixed flux. As a precaution, always weld in a ventilated space.

5.5 Technique

- 5.5.1 No welding shall be done when surfaces to be welded are wet or covered with ice, when rain or snow is falling, or during periods of high wind; unless the work is properly protected.
- Alignment and fit-up of the weld joint shall be made without a consumable insert ring. The abutting edges of the land of each weld joint shall be brought together so that the gap at any location does not exceed 1/32 inch.
- 5.5.3 Clamps, welded clips, tack welds or other appropriate means shall be used to properly align the joint for welding. Tack welds shall be welded in full compliance with this procedure specification and if not removed shall be inspected visually for defects prior to starting the continuous weld.
- 5.5.4 Following the fit-up and alignment, three 1/8-inch diameter holes shall be drilled through the center of the root at the twelve, four and eight o'clock positions. These holes are provided for observation during deposition of the gas rung sten-arc root pass.
- 5.5.5 The job welding technician or a qualified welder designated by the technician shall observe the deposition of the gas tungsten-arc root pass to inform the welder performing the work that the proper fusion and presentation is taking place. During gas tungsten-arc welding 1/16-inch diameter carbon steel bare rod shall be used, as necessary, for filler material.

- 5.5.6 Upon completion of the first gas tungsten-arc root pass and prior to any shielded metal-arc welding, closure of the observation holes shall be carefully performed by gas tungsten-arc welding. The holes at the four and eight o'clock positions shall be closed first, observing from the twelve o'clock hole. The twelve o'clock hole may then be closed. Care must be exercised in making the first shielded metal-arc pass using 3/32-inch diameter electrodes to avoid burning through. For the second shielded metal-arc pass, 1/8-inch diameter electrodes shall be used. Subsequent welding may be completed using 1/8 or 5/32-inch diameter electrodes.
- 5.5.7 Each bead of welding shall be cleaned free of slag, flux or other foreign material before depositing the next successive bead. Each layer of welding shall be free of irregularities of deposit such as high spots, deep crevices, undercuts and porosity.
- 5.5.8 The progress of welding shall be upward for vertical welding. For horizontal welding the weld metal shall be deposited in multiple passes of beads. Each layer of welding shall be completed around the entire circumference of the weld groove before the succeeding weld passes are deposited.
- 5.5.9 Welding shall not be interrupted until at least one-third of the weld thickness is completed.

5.6 Appearance of Weld

- 5.6.1 The appearance of welding layers shall be essentially as shown on Drawing No. Pl-AT-Lh-f-2.
- 5.6.2 The width of the welding pass in vertical, flat and over-head positions should not exceed the width of four diameters of the electrode being used and the thickness of the layer should not exceed one-eighth inch.

5.6.3 The cover pass shall be slightly convex and shall fuse into the surface of the base metal in such a manner as to tie in the edge of the groove on each side of the weld a minimum of 1/16 inch and a maximum of 1/8 inch.

5.7 Repair of Defects

- 5.7.1 Cracks that occur during welding shall be removed by grinding, chipping, arc or flame gouging. Before welding is resumed, dye penetrant or magnetic particle inspection shall be used to determine that the cracks have been totally removed.
- 5.7.2 After welding has been completed, defects in excess of the applicable standards of acceptance detected by the inspection techniques required in the job specifications shall be removed by grinding, chipping, arc or flame gouging and rewelded in full compliance with this procedure specification.

6.0 PREHEAT AND INTERPASS TEMPERATURE

- 6.1 A preheat and interpass temperature of 200°F minimum shall be maintained when any one of the following conditions exists:
 - 6.1.1 When the ambient temperature is 32°F or lower.
 - 6.1.2 When the wall thickness exceeds one inch.
 - 6.1.3 For materials in Table I with a specified minimum tensile strength of 65,000 psi or greater, refer to Drawing No. P1-AT-Lh-f-1.
 - 6.1.4 For materials in Table I with a specified carbon content in excess of 0.30 percent, refer to Drawing No. Pl-AT-Lh-f-1.
- 6.2 The specified preheat and interpass temperature shall be maintained during all welding. If the welding operation is interrupted, the joint shall be brought up to the required preheat temperature before welding is resumed.

- 6.3 The width of the preheat area on each side of the weld shall be at least three times the pipe or plate thickness, or two inches, whichever is greater.
- 6.4 Preheating may be done using electrical resistance or induction units, liquid petroleum gas (LPG) heating torches, or other torches which will provide uniform heating over the entire preheat area.
- 6.5 Preheat temperatures shall be checked with temperature-indicating crayons.

7.0 POSTWELD HEAT TREATMENT

The requirements for postweld heat treatment (stress relieving) shall be as specified in Bechtel Engineering Standard PHT-500 for P-1 materials or as otherwise required by the applicable job specifications and drawings. When required, the postweld heat treatment shall be performed in accordance with the applicable code requirements, as follows:

7.1 ASME Code Section I and ASA Code for Pressure Piping B31.1 and B31.3

- 7.1.2 The weldment shall be heated slowly and uniformly to the specified postweld heat treatment temperature, helf at that temperature for the specified time, and then slowly cooled under insulation to a temperature of expectations of the weldment may allowed cool in still air without insulation.
- 7.1.3 The minimum width of the heated circumfer for welding joints in pipes, these, and header shall be the larger of:
 - 7.1.3.1 Three times the warr of the widest par welding groove.
 - 7.1.3.2 The ways of the weld reinforcement inches.

- 7.1.4 Branches or other welded attachments shall be postweld heat treated by heating a circumferential band around the pipe or header on which the branch or attachment is welded with the branch or attachment at the middle of the heated band. The width of the band shall be the larger of:
 - 7.1.4.1 Three times the nominal wall thickness of the header plus the diameter of the weld joining the branch or other attachment to the header.
 - 7.1.4.2 Two inches greater than the diameter of the weld joining the branch or other attachment to the header.

7.2 ASME Code Section VIII

- 7.2.1 Heating of vessels or parts of vessels to the postweld heat treatment temperature shall be accomplished in such a manner that above 600°F the rate of heating shall be not more than 400°F per hour divided by the maximum metal thickness of the shell or head plate in inches, but in no case more than 400°F per hour.
- 7.2.2 Cooling of vessels or parts of vessels from the postweld heat treatment temperature shall be accomplished in such a manner that above 600°F cooling shall be at a rate not greater than 500°F per hour divided by the maximum metal thickness of the shell or head plate in inches, but in no case more than 500°F per hour. From 600°F, cooling may be done in still air.
- 7.2.3 The width on each side of the center line of circumferential joints in pipe or tubing to be heated to the postweld heat treatment temperature shall be at least three times the greatest width of the finished weld.
- 7.2.4 In addition to the foregoing, postweld heat treatment of vessels or parts of vessels shall be in accordance with the requirements of paragraphs UW 40 and UCS 56 of Section VIII of the ASME Beiler and Pressure Vessel Code.

7.3 Heat Treatment Temperature and Time

- 7.3.1 The postweld heat treatment for piping and vessels fabricated under Sections I and VIII of the ASME Code shall be 1100° 1200° F for one hour per inch of thickness
- 7.3.2 When it is impractical to postweld heat treat at the temperature specified in 7.3.1 above, it is permissible, under Sections I and VIII of the ASME Code, to postweld heat treat at lower temperatures for longer periods of time in accordance with the following tabulation:

Minimum Holding Temperature, ^O F	Minimum Holding Time, Hours/Inch of Thickness
1050	2
1000	3
950 900	5 10 10 10 10 10 10 10 10 10 10 10 10 10

7.3.3 The postweld heat treatment for piping fabricated under the ASA Code for Pressure Piping, B31.1 and B31.3, shall be 11000 - 12000F for one hour per inch of thickness, but not less than one hour.

7.4 Equipment

- 7.4.1 Postweld heat treatment may be done using one of the following methods or a combination thereof:
 - 7.4.1.1 Shop or field-erected heat treating furnace.
 - 7.4.1.2 Localized heating using electrical resistance or induction coils.
 - 7.4.1.3 Liquid petroleum gas (LPG), fuel oil or other heating torch units which will provide uniform heating over the entire area to be postweld heat treated.

- 7.4.2 Under the ASA Code for Petroleum Refinery Piping, B31.3, an annealing heat treatment using exothermic chemical reaction may be substituted for the above described equipment. When the exothermic annealing heat treatment is used, the instructions furnished with the exothermic materials shall be carefully followed to insure the proper exothermic charge and insulation are used.
- 7.4.3 Postweld heat treatment temperatures attained by use of the equipment described in 7.4.1.1 and 7.4.1.2 shall be checked by the use of thermocouples and recording potentiometers. At least two thermocouples (one a spare) shall be attached to the pipe or vessel being heat treated. The number and location of thermocouples shall be such as to indicate accurately the temperature of the area being heat treated.
- 7.4.4 Postweld heat treatment temperatures attained by use of the equipment described in 7.4.1.3 shall be checked by the use of temperature-indicating crayons.

8.0 WELDER PERFORMANCE QUALIFICATION

Welders who are required to use this procedure shall be qualified in accordance with Bechtel Corporation's WELDING STANDARD WQ-F-1, Performance Specification.

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<u></u>			
3	2/23/65	Revised Title Page, 2.1, 4.1, 4.2, 4.2.1, 4.2.2,	KR9
		5.2.3., 7.3.3 and Table I	
2	7/19/63	Completely revised format	DRJ
0	6/9/62	Issued for field construction as P-1B-S	BMM
No.	Date		Ву

TABLE I CARBON STEEL P-1 GROUPING

	ASTM signation	Tensile Strength Psi-Min	Type of Material
A 53	Open Hearth	45,000	Furnace welded pipe
	Grade A	48,000	Seamless or welded pipe
	Grade B	60,000	Seamless or welded pipe
A 53	Acid Bessemer	50,000	Furnace welded pipe
A 83	Grade A	Not specified	Seamless tubes
	Grade B	Not specified	Seamless tubes
	Alternate, B	Not specified	Seamless tubes
A 105	Grade I*	60,000	Flanges and fittings
	Grade II*	70,000	Flanges and fittings
A 106	Grade A	48,000	Seamless pipe
	Grade B	60,000	Seamless pipe
	Grade C*	70,000	Seamless pipe
A120		Not specified	Seamless or welded pipe
A 135	Grade A	4 8,000	Resistance welded pipe
	Grade B	60,000	Resistance welded pipe
139	Grade A	48,000	Welded pipe
	Grade B	60,000	Welded pipe
A 155	Grade C 45	45,000	Welded pipe
	Grade C 50	50,000	Welded pipe
	Grade C 55	55,000	Welded pipe
	Grade KC 55	55,000	Welded pipe
	Grade KC 60	60,000	Welded pipe
	Grade KC 65*	65,000	Welded pipe
	Grade KC 70*	70,000	Welded pipe
A161	Carbon Steel	47,000	Seamless tubes
A 178	Grades A, B, C*	Not specified	Resistance welded tubes
A 179		Not specified	Seamless tubes
A 181	Grade I*	60,000	Flanges and fittings
	Grade II*	70,000	Flanges and fittings
A 192		Not specified	Seamless tubes
A 210		60,000	Seamless tubes

^{*} Specified carbon content exceeds 0.30 per cent.

WELDING STANDARD	Drawing No.	Rev.
P-1 Base Materials	P1-AT-Lh-f-1	1
1 -1 Dase Materials	Page 1 of	2.

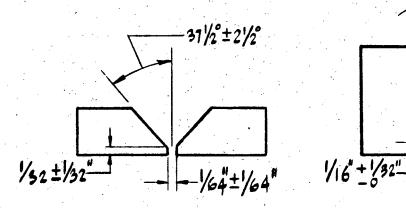
		•	•
A	ASTM	Tensile Strength	
Des	ignation	Psi-Min	Type of Material
A 211		Not specified	Spiral welded pipe
A 214	•	Not specified	Welded tubes
A 216	Grade WCA	60,000	Castings
	Grade WCB	70,000	Castings
A 226		47,000	Welded tubes
A 234	Grade WPA	48,000	Seamless and welded fittings
	Grade WPB	60,000	Seamless and welded fittings
	Grade WPC*	70,000	Seamless and welded fittings
A 266	Class I*	60,000	Seamless drum forgings
	Class II*	70,000	Seamless drum forgings
A 333	Grade C	55,000	Seamless and welded pipe
A 334	Grade C	55,000	Seamless and welded pipe
A 350	Grade LF1	60,000	Seamless fittings
A 352	Grade LCB	65,000	Castings
420	Grade WPLC	55,000	Seamless and welded fittings

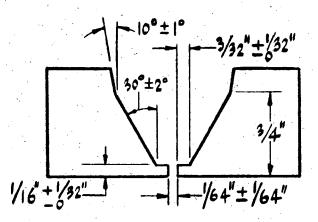
API Designation

API			
5 L	Grade A	48,000	Seamless and welded pipe
	Grade B	60,000	Seamless and welded pipe
	OH Iron	 42,000	Seamless and welded pipe
,	Electric Furnace	45,000	Butt welded pipe
	Class I	45,000	Butt welded pipe
	Class II	48,000	Butt welded pipe
	Bessemer	50,000	Butt welded pipe

Drawing No. P1-AT-Lh-f-1 Rev. 1 Page 2 of 2

^{*} Specified carbon content exceeds 0.30 per cent.





LAYER DETAILS (Illustrative only)



Weld - Flat, vertical, and overhead

Weld - Horizontal

	TUNGSTEN		E	XX 16			EXX 1	8
Electrode Diameter	Filler Rod Diameter	Amps	Diam.	Amps	Volts	Diam	Amps	Volts
1/16 3/32 1/8	1/16 1/16 1/16	60-150 150-250 250-350	1/8	70-100 80-120 150-190	20-22 22-24 22-24	1/8	80-100 100-160 160-220	22-24

NOTE:

(1) The first pass shall be made by the gas tungsten-arc process. The second and successive passes shall be made by the shielded metal-arc process.

	_	WEI DING CHANDAD	ND.		JOS No.	STA	NDAR	D
NO.	DATE	REVISIONS		DR.	SUPVR.			CLIENT
		Issued for field construction	·		AMC	14 -11		
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WELDING STANDARD

DRAWING No.

Weld Bevel and Layer Details for Welding Pipe

Pl-AT-Lh-f-2

Enclosure 4

BPC Welding Procedure Qualification Records

PQR TEST VS. BASE METAL TENSILE STRENGTH

TENSILE STRENGTH (PSI)

WELD PROCEDURE	PQR TEST	BASE METAL
P1-A-c	62,700	60,000 (A-106, Gr B)
P1-A-c-d	67,500	60,000 (A-106, Gr B)
P-1A	58,700	48,000 (API-5L, Gr A)
P1-A-c	72,500	60,000 (SA-53, Gr B)
P1-A-c	62,700	60,000 (SA-106, Gr B)
P1-A-c	69,700	60,000 (SA-333)
P1-A-Lh	69,250	60,000 (SA-106, Gr B)
P1-A-Lh	65,300	60,000 (SA-106, Gr B)
P1-AT-Lh	64,795	60,000 (SA-106, Gr B)
P1-AT-Lh	63,450	60,000 (SA-106, Gr B)
P8-A	89,800	75,000 (A-182, Gr F304)
P8-AT-Ag	79,900	75,000 (A-376, Type 316)
P8-T-Ag	83,350	75,000 (SA-312, Type 304)
P8, P1-A	65,980	60,000 (SA-53, GR B)
P8-AT-Ag	86,900	75,000 (SA-358, GR 347)
P1-A-c-d	67,500	60,000 (SA-106, GR B)
P1-A-c-Lh	74,300	60,000 (SA-106, GR B)

ENCLOSURE (*)

Form WR-2A, Rev. 4 (6/15/70)



BECHTEL CORPORATION San Francisco, California

WFLDING PROCEDURE QUALIFICATION RECORD PQR No. 2

PROCEDURE SE	PECIFICATION NO. Pl	-A-c	D.	ate <u>Februa:</u>	ry 23, 1955
WELDING PROC	CESS Shielded Metal-	Arc	L	ocation Unio	on Oil Co.
				San	ta Maria, Ca.
	RIAL QUALIFIED ON:				
ASTM SpecA	106 Grade B		ASME	P-No	_1
Chemical	Carbon Steel			Pipe	
Thickness Range	e Qualified 3/16-inch thr	u 0.874-ir	<u>ich</u> Thickn	ess <u>0.437</u> '	!
ELECTRODE OF	R FILLER METAL:				
	1 AWS Classific	ation E	1010 F-	No a	4 - No 1
11.110 Opec. A 5.	Awo olassiite	<u> </u>	2010	1403	1-No
Filler Metal Che	emistry (if not included i	n Table Ql	1. 2)		
Manufacturer, 7	Trade Name and Wire Siz	e Lincoln	Fleetweld	5	
Flux or Shieldin	g Gas N. A.		Flow Rate		
JOINT DESIGN:	•••	-37½° ± 2°	_		
	10°±1°	71/2 - 2			
•		\searrow			
		/ 1	Weld Direc	tion 5G U	lphill
	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1	Backing Str	rips None	
	4 /	T &	Consumabl	e Insert	
	X6 = X2 - \ / 3	4"	Internal Pu		
		1	Flow Rate		
			Welding Co	irrent Do	
•	ENT:	+16	Multiple pa	ss per side	ves
HEAT TREATM	ENT:	-0"			
Preheat Temp.	Min. None	Postweld 1	Heat Treatm	nent Temp.	None
Interpass Temp.	Max	P. H. T.	Time	· <u> </u>	
TEST RESU	JLTS	2G PC	SITION 2G	5C POSI	TION 5C
Reduced	Tensile Strength, psi	64,300			
Section					
Tensile					
Bend	Root	180°0K	180°OK	180°OK	180°0K
Bend	Face	180°OK	180°0K	180°0K	180°0K
Other					
Mechanical Test	ing by Pittsburgh To	esting Lah	S FLah N	0	
Welders Name	* -		ymbol S	~· <u></u>	<u> </u>
	y J. N. Taylor		,		
	/				

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

BECHTEL CORPORATION

Recorded on New form 3/23/71

ammourell

PQR No. 4



BECHTEL CORPORATION

WELDING PROCEDURE QUALIFICATION RECORD

San Francisco, California

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PROCEDURE SI	PECIFICATION NO	Pl-A-c-d I	Date April 19, 1962
WELDING PRO	CESS Manual Shielded N		ocation San Francisco
			California
PARENT MATE	RIAL QUALIFIED ON:		-
ASTM Spec.	A 106 Grade B	ASME	P-No. 1
Chemical			12-inch XS pipe
	e Qualified 3/16-inch t		ness 0.500 inch
ELECTRODE O	R FILLER METAL:		
AWS Spec. A	5.1 AWS Classific	ation E 6010 F.	No. 3 A-No. 1
	5.5 AWS Classific		No. 3 A-No. 2
	emistry (if not included i		
	Trade Name and Wire Siz		
		Lincoln Fleetw	
Flux or Shieldin	g Gas		
JOINT DESIGN:			
HEAT TREATM Preheat Temp. Interpass Temp	Min. 60°F . Max	Backing St Consumab Internal P Flow Rate Welding C Multiple p Postweld Heat Treatr P. H. T. Time	urrent <u>DCRP</u> ass per side <u>yes</u> nent Temp. None
TEST RES		5G POSITION	5G POSITION
Reduced Section	Tensile Strength, psi	67,500	68, 950
Tensile			·
Bend	Side	180 ₀ OK	180°0K
Bend	Side	180°0K	180°OK
Other			
Mechanical Test	ing by Bechtel Lab	Tak N	io
Welders Name	Gene Blalock		
Test Conducted	by A. M. Croswell	Symbol	<u> </u>
	A. M. Croswell		
787 a a a m418 A	haa aha-aaaaaa	•	

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

Recorded on new form 3/30/71.

4/14/53

BECHTEL CORPORATION San Francisco, California

Form No. WR-2A

2/8

PROCEDURE QUALIFICATION RECORD

Walden B	· · · · · · · · · · · · · · · · · · ·	allic-Arc	Location	6- 8	ICO Cali	
MATONIE .	rocess Manual Meta			San Francis	CO, Call.	
Nome 5	uu 1 Cada				_	
Name F			· · · · · · · · · · · · · · · · · · ·	_a\upoi	· C	·····
Test Cond	ucted by R.G.	Rhoades				
Parent Ma	terial Qualified On:	,		•		
	Carbon-Steel		Spec.	API 5aL Grad	da 11411	
P-No.	_l		Shape	0" Pipe	<u> </u>	
		** **	Thickness	13/16" Wall		
			,555555555			
Electrode	or Filler Material U	Jsed:				
AWS Class	E-6010		ASTM Spec	. A2	33	
•					!	
F-No	3		A-No.	1		·
Manufactu	er and Trade Name	Lincoln F	leet-Weld 5	. :		
Heat Treat	e 37½°				. •	
Bevel Angi Heat Treat Preheat Radiograpi	ment None Str	ress Relieve	Temp. No	ne Strass r	elieve Ti	me None
Bevel Angi Heat Treat Preheat Radiograpi	ment None Str	ress Relieve	Temp. No	ne Strass r	elieve Ti	me None
Bevel Angi Heat Treat Preheat Radiograpi	ment None Str	ress Relieve	Temp. No	ne Strass r	elieve Ti	me None
Bevel Angi Heat Treat Preheat	ment None Str nic Results Sat esting Pittsbur	isfactory gh Testing L	Temp. No: aboratory, Sa N: Axis Verti	ne Stress r	elieve Ti Calif.	me None
Bevel Angi Heat Treat Preheat	ment None Str nic Results Sat esting Pittsbur	isfactory gh Testing L	Temp. No: aboratory, Sa N: Axis Verti	ne Stress r	elieve Ti Calif. TON: Axi RESU	me None Horisont
Bevel Angle Heat Treat Preheat Radiograph Physical T SPECIMI	ment None Str ic Results Sat esting Pittsbur N Pipe Yield Strength psi	ress Relieve disfactory gh Testing L POSITIO	Temp. No. aboratory, Sa N: Axis Verti ESULTS 35,640	ne Stress r	Calif. TON: Axi RESU	Me None Horisont LTS 34,898
Bevel Angle Heat Treat Preheat Radiograph Physical T SPECIMI	ment None Str nic Results Sat esting Pittsbur	POSITIO R 36,750	Temp. No. aboratory, Sa N: Axis Verti ESULTS 35,640	ne Stress r	elieve Ti Calif. TON: Axi RESU	Me None S Horizont LTS 34,898
Bevel Angle Heat Treat Preheat Radiograph Physical T SPECIMI Reduced Section	ment None Str nic Results Sat esting Pittsbur N Pipe Yield Strength psi Tensile Strength psi Elongation, % in 2' Free %	POSITIO R 36,750	Temp. No. aboratory, Sa N: Axis Verti ESULTS 0 35,640 0 59,200	ne Stress r	Calif. TON: Axi RESU: ,551 ,459	Me None Horisont LTS 34,898
Bevel Angle Heat Treat Preheat Radiograph Physical Tele Reduced Section Tensile	ment None Str ic Results Sat esting Pittsbur N Pipe Yield Strength psi Tensile Strength psi Llongation, % in 2	POSITIO R 36,750	Temp. No. aboratory, Sa N: Axis Verti ESULTS 0 35,640 0 59,200	ne Stress r	Calif. TON: Axi RESU: ,551 ,459	Me None Horizont LTS 34,898

BECHTEL CORPORATION

By G. Mr. Browell

BECHTEL POWER CORPORATION WELDING PROCEDURE QUALIFICATION RECORD

ENCLOSURE (4)
Shoet 4 of 17
POR NO. 1

cedur	e Specification	วถ	Pl-A-c			Date	Decemi	ber 19, 1	969
ding	Process(es)		Shielded Metal	Arc		Location		cancisco.	707
						_	Califo	ornia	
			SA-53, Grade B			to	Itself		
ASME P-N	0. 1	to P-No.	1 0.D.	12 it	nches (O.D. Range	Qualif	led All	
Thicknes	s <u> 1/4 inch</u>		Thick	ness R	inge Qua	lified 1/1	6 throu	igh 1/2 1	nch
Filler M	etal Specifica	ations:				\ <u>\</u>			
ASME	SFA-5.1	AWS C	lassification lassification	E601)1	F-No3	1	A-No. 1	
ASME		AWS C	lassification			F-No		1-No	
Filler M	etal Chemistry	/							
Electrod	e Dia.		1/8 inch	W:	re Dia.				
Consuma b	le Insert	· · · · · ·		T:	rade Name	s Line	coln Fl	leetweld	5P
Tungsten	Туре								
Shieldin	g Gas:	····		F	low Rate				
rurge Ga	8:			F	low Rate				
Tux Cla	ssification	· · · · · · · · · · · · · · · · · · ·		F	lux Name				
rosition	of Groove		2G & 5G				JOINT I	DESIGN	
velding	Direction		5G uphill						
	Strip	· · · · · · · · · · · · · · · · · · ·	None						
	and Polarity		DCRP						
mperage			115				ارا	י גע זו	-
oltage_		· · · · · · · · · · · · · · · · · · ·			L			7	
ingle o	r Multiple Arc	-	Single			\			1
ravel 5	peed / ip	om. Uscillat		cpm.	7	1/16	\		7
ultiple	Pass Per Side	}	Yes				→		
neat	Temperature Mi	ln1mum	50F		ï	7	4 - 1	/8	•
Lmum	interpass lemp	erature	Not recorded and dwell				• •		
			None		Time				
	Specimen No.		Thick. or Dia.					osi] Rema	rks
	2G A		0.246 in.						м.
	2G B		0.252 in.).188	13,705			.M.
lests .			0.240 in.		0.180	13,392			.м.
	[5G B	0.747 in.	0.244 in.](182	13,195	72,	500 B	.м.
				 ,	·····				
uided		Position	Result		<u></u>	pe & Posit		Resu	
Send Send		ot - 2G	180 degrees		<u> </u>	2 Root - 50		80 degree	
ests	2 F80	e - 2G] 180 degrees	- UK		2 Face - 20	<i>i</i>]]	80 degree	es - (
lelder's	Name	Anamet an H. J. Mar L. A. Osc	nd Bechtel Laboratle and K. Fost	ratorie ter	28	Lab. No.		251 35, 6280	
relded a	nd tested in a	ecordance v	this record and the require	ements	of Secti	BECHTEL	POWER	CORPORATI	
	on New Form	Ma To	rch 19, 1979	Ke /	rewed by	John	me	nu.	
	Designation signations			A	Tound P.	~ 2 1. 1		Earl	
triiet ne	or Rus r TOUR			wbb		3.m.)		1400 5000	1600
						Materials &			
						Department.	. Keses	iron and l	ruktue

Page 1 of 1

BECHTEL POWER CORPORATION WELDING PROCEDURE QUALIFICATION RECORD

e cedur	e Specificatio	n	P1-A-c			Date	February	23, 1955
ding	Process(es)	1	Shielded M	etal Ar	С	Location		Company.
	ارة <u>ال</u> استر الاستر				•	•	Santa Mar	ia, Calif.
Material	Specification		SA-106 Gra	de B		to	Itself	
ASME P-N	lo. <u>1</u>	to P-No.	l	0.D.	6 inches	O.D. Range	Qualified	A11
Thicknes	s 0.437 inch		T	hicknes	s Range Qu	alified 3/1	6 through	0.874 inch
Filler M	etal Specifica	tions:						
ASME	SFA-5.1	AWS Cla	assificati	onE	6010	F-No. 3 F-No	A-No	1
ASME		AWS Cla		on		_F-No	A-No	,
Filler M	etal Chemistry							
Electrod	e Diale Insert	No	recorded		_ Wire Dis			
Consuma	Te Insert		-		_ Trade Na	mesLine	coln Fleet	weld 5
Lungsten	Туре							
Surer Co	g Gas:		<u>-</u>		Flow Rat			
Flux Cla	ssification				Flow Rat			
Position	e of Groove	20	& 5G		_ Flux Nam		JOINT DESI	CN
Welding	of Groove Direction	26	nill for 5	<u></u>	-	•	DOTAL DESI	.GN
Racking	Strin	No	ILLI TOP 3	<u> </u>	_			
Current	Stripand Polarity	חכו	ne RP	·	-	m 11-	├ ─37 1/2"	- 1
		Not	recorded		· ·	+\'	F37 1/2	r -
Voltage_			recorded			1		1/
Single	r Multiple Arc	Sti	ngle	·	_			
Travel S	peed Not recor	ded inm. Os	dilation		-	<i>ا</i>		5
Multiple	Pass Per Side	Yes	8	срш	•	1 \		3/4
Preheat	Temperature Mi	nimum 50	F		- ·	1/16		
	Interpass Temp			··· · · · · · · · · · · · · · · · · ·	-		⇒∟	
	ion width				-	'	H-1/16	1
			_				11 /10	
HEAT TRE	ATMENT: Temp	•No	ne		Time			
		· · · · · · · · · · · · · · · · · · ·						
	[Specimen No.]					.]Load, Lbs.		
Section		N.R. in.]			N.R.) N.R.	64,300	
Tensile	•	N.R. in.]		in.]	N.R.] N.R.	63,669	
Tests	[5G]	N.R. in.]			N.R.] N.R.	62,700	
	[5G]	N.R. in.]	N.R.	in.]	N.R.] N.R.	64,100] N.R.
C., 4 d a d	The second	D101	,	9.4				
Guided Bend		Position		esult		Type & Posit:		Result
		- 20	1 100 1		AV 1			
		t - 2G	180 deg			2 Face - 2	G]180	
Tests	2 Roo	t - 5G	180 deg 180 deg			2 Face - 20 2 Face - 50	G]180 G]180	
		t - 5G				2 Face - 20 2 Face - 50	G]180 G]180	
Tests	2 Roo	t - 5G				2 Face - 20 2 Face - 50	G]180 G]180	
Tests Other	N.R. = not r	t - 5G ecorded] 180 deg	rees -	OK]	2 Face - 50	G]180	degrees - OK
Tests Other Mechanic	N.R. = not r	t - 5G ecorded Pi] 180 deg	rees -		2 Face - 50	G]180 G]180 Not recor	degrees - OK
Tests Other Mechanic Welder's	N.R. = not r al Testing By Name	t - 5G ecorded Pin] 180 deg	rees - esting senant	OK]	2 Face - 50	G]180	degrees - OK
Tests Other Mechanic Welder's	N.R. = not r	t - 5G ecorded Pin] 180 deg	rees - esting senant	OK]	2 Face - 50	G]180	degrees - OK
Tests Other Mechanic Welder's Test Con	N.R. = not r al Testing By Name ducted By	t - 5G ecorded Pic Har J.	180 deg	esting	OK]	2 Face - 50 Lab. No.	Not recor	degrees - OK
Tests Other Mechanic Welder's Test Con	N.R. = not r al Testing By Name ducted By fy that the st	t - 5G ecorded Pin Han J. atements in	ttsburgh Try C. Whi	esting senant	OK] Lab. S.F.	Lab. No.	Not recor	degrees - OK
Tests Other Mechanic Welder's Test Con	N.R. = not r al Testing By Name ducted By	t - 5G ecorded Pin Han J. atements in	ttsburgh Try C. Whi	esting senant	OK] Lab. S.F.	Lab. No.	Not recor	degrees - OK
Tests Other Mechanic Welder's Test Con	N.R. = not r al Testing By Name ducted By fy that the st	t - 5G ecorded Pin Han J. atements in	ttsburgh Try C. Whi	esting senant	OK] Lab. S.F.	Lab. No.	Not recor	degrees - OK
Tests Other Mechanic Welder's Test Con We certi welded a	N.R. = not r al Testing By Name ducted By fy that the st nd tested in a	t - 5G ecorded Pic Han J. atements in ccordance with	ttsburgh Try C. Whi N. Taylor this reco	esting senant rd are quireme	Lab. S.F. correct annts of Sec	Lab. No. d that the totion IX of the totion IX of the total BECHTEL	Not recor	degrees - OK ded were prepared
Tests Other Mechanic Welder's Test Con We certi welded a	N.R. = not r al Testing By Name ducted By fy that the st nd tested in a	t - 5G ecorded Pic Har J. atements in ccordance w:	ttsburgh Try C. Whi N. Taylor this reco	esting senant rd are quireme	Lab. S.F. correct annts of Sec	Lab. No.	Not recor	degrees - OK
Tests Other Mechanic Welder's Test Con We certi welded a	N.R. = not r al Testing By Name ducted By fy that the st nd tested in a on New Form Designation	t - 5G ecorded Pic Han J. atements in ccordance with	ttsburgh Try C. Whi N. Taylor this reco	esting senant rd are quireme	Lab. S.F. correct annts of Sec	Lab. No. d that the tetion IX of the te	Not recor	degrees - OK
Tests Other Mechanic Welder's Test Con We certi welded a	N.R. = not r al Testing By Name ducted By fy that the st nd tested in a	t - 5G ecorded Pin Han J. atements in ccordance with	ttsburgh Try C. Whi N. Taylor this reco	esting senant rd are quireme	Lab. S.F. correct annts of Sec	Lab. No. d that the totion IX of the totion IX of the total BECHTEL	Not recor	were prepared de

MQS-WPS-014-1 Rev. 1 7/28/78

Research and Engineering

BECHTEL WELDING PROCEDURE QUALIFICATION RECORD

dur	e Specification	a 1	21-A-c			D	ate <u>A</u>	ugust	8, 1	963	
Wassing	e Specification Process(es)		hielded M	etal-Ar	С	L	ocation_S	an Fr	ancis	co,	
· .		egi at						STITE	IIII a		
Material	Specification		SA-333				_toI				
ASME P-N	lo. <u>1</u>	to P-No.	<u> </u>	0.D. 6-	5/8 inche	28 0.	D. Range C	ualif	ied	A11	
Thicknes	s 0.864 incl	h	T	hicknes	s Range (Quali	fied $3/16$	thru	1.728	inches	
			-								
Filler M	letal Specificat	tions:				_			4	•	
ASME	SFA-5.1	AWS Cla	assificati	on <u>E6</u>	010	F_	No3	<u> </u>	W-NO	<u>l</u>	
ASME		AWS Cla	assificati	on		F-	No		A-NO.		
Filler M	letal Chemistry				111 0				`	·	
Electrod	le Dia		N.R.		_ wire D	18	F	210000	14 5		
Consumad	ole Insert				Irade i	иашев		TEEL	veru J		
Tungsten	Type				- Flow Ra						
Snieldin	ig Gas				- Flow R						
					- Flux Na						
Linx Cia	ssification		2G & 5G	<u> </u>	_ FIGN N	BMC .		TOINT	DESIG	N	
Position	of Groove Direction				_					••	
Racking	Strip		None								
Current	and Polarity		DCRP	·····	_			-			
	e		N.R.		-		-41-		17 1/2*	_/	
			N.R.		_	F	','	1		71	
	or Multiple Arc		Single				· ·				
	Speed		N.R.	iτ	<u> </u>	لے				$T \geq 1$	
iple	Pass Per Side	•	Yes			ィ		1		リオ	
eat	Temperature Mi	nimum	50F			1	1/			3/4	
Maximum	Interpass Temp	erature	N.R.		_		1/16—	$_{1}\backslash \bigvee$	/		
Oscillat	ion Width	inch(es)	, Dwell -	sec	-	<u> </u>		===		1	
Oscillat	ion Frequency			срт	D •			' - -	1/16	,	
HEAT TRE	EATMENT: Temp	•	1150F		Tim	e		l hou	<u> </u>		
						- 1-		******		D = = = -1:	,
	[Specimen No.]						oad Lbs.				
Section	[2G - 1]	0.750 in.j	0.747	in.	0.560		39,350		,300]		
Tensile	[2G - 2]	0.743 in.j	0.755	in.]	0.561	- 1	39,100	1 <u>77</u>	,700]		
Tests	5G - 1				0.548	1	39,700	72	,500]	Weld	{
	[5G - 2]	0.732 in.]	0.746	in.]	0.346		39,700	1 /2	, 500)	WEIG	ı
Guided	f Tripo f	Panition	1 -	lesult		Tur	e & Posit:	l on	1	Result	
Bend		Position e - 2G] 180 Degr		ok 1		Side - 50) 1180 I	egrees :	OK 1
Tests	1 7 510	<u> </u>	1 100 Degi		1				1		i
Other		· · · · · · · · · · · · · · · · · · ·	<u> </u>		<u> </u>				-		'
Other			7.								
			- · · · · · · · · · · · · · · · · · · ·								
Mechanic	cal Testing By	Testing E	ngineers l	inc. & l	Bechtel		Lab. No.	N.R	•		
Welder's		Burl Blal					-		-2276		
	nducted By	E. H. Bel					-				
1001 00.							· - · · · · ·				
Certi	ify that the st	atements in	this reco	ord are	correct	and t	hat the to	est w	elds v	ere pre	pared
ed a	and tested in a	ccordance w	ith the re	equirem	ents of S	ectio	on IX of the	he AS	ME Cod	le	
							10				
Recorded	d on New Form	October 1	5, 1979		Reviewe	d By	To Buis	ull	eter		
	l Designation	P1-A-c				~	-	^	,		
_	esignations				Approve	d By	<i>JeBui</i> . 3.m.m	acle	rd		
]	Materials	and Q	uality	Servic	28

BECHTEL INCORPORATED WELDING PROCEDURE QUALIFICATION RECORD

PQR NO. 9

		- D1 .	_A_7 b		Date	Anoust R	1963
	e Specification Process(es)		lelded Metal Arc		Location		isco,
ergruß 1	LEOCESS (49)	- 	TAINAN LAFET WEL			Californi	
*****	Specification	g _A	-106 Grade B		to —	Itself	
CME D-N'	o. 1	to Palin. 1	0.D. 10	-3/4 inches			1 A11
SME F-M	0.365 inch	<u> </u>		a Range Qual	ified 1/1	6 through	0.730 inch
	etal Specifica			n			
			assification E	7018 F	-No. 4	A-No	. 1
SME		AWS C1	essification	7018 F	-No	A-No),
	etal Chemistry						
lectrod	e Dia.	No	t recorded	Wire Dia.			
onsumab	le Insert			Trade Name	s P&	H 170LA	
ungsten	Туре			_	•		
hieldin	g Gas:			Flow Rate			
	s:			_ Flow Rate			
lux Cla	ssification _			Flux Name			
osition	of Groove	2G	& 5G	_	•	JOINT DES	IGN
elding	Direction	5G	uphill	_			
	Strip		ne			_	•
	and Polarity		RP	-			n•
mperage			t recorded	_		C C C C C C C C C C	" ~
oltage_			t recorded				
ingle o	r Multiple Ar	51	ngle		\$ 1/16	$\mathcal{N} = \mathcal{N}$	ځ
			cillation cpm	1.]	77 /	7
	Pass Per Side	<u> </u>	8	_		1 - 1/8	
At	Temperature M	Inimum 30)	-		7 [/*	•
MX1000	Interpass Tem	perature	nd dwell se	_			
ACTITE!	TOR WIRCH	- Inches, a	TIG GAETT				
EAT TRE	ATMENT: Tem	o. No	ne	Tine			
						1 1990	1 Parada
	Specimen No.		Thick. or Dia. A	cea, Sq. In.	Load, LDS.		
ection	<u> </u>	0.747 in.					B.M.
ensile		0.747 in.		0.226 0.252	15,650 17,530] B.M.
ests	$\begin{bmatrix} 5G - 1 \\ \hline \end{bmatrix}$] 0.750 in.]	0.336 in.] 0.313 in.]	0.234	16,250	69,440	
	[5G - 2	J 0.749 1B.	0.313 18.1	0.234	10,230	1 05,440	, , , , , , , , , , , , , , , , , , , ,
		Postatos	Result	1 1	ype & Posit	100	Result
Juided Jend		Position ot - 2G	180 degrees -		2 Root - 5		degrees - Ol
ena Sests		ce - 2G	180 degrees -		2 Face - 5		degrees - O
ther	2 76	CE - 20	1 200 0001000			4= 4-4	
rnei							
	<u></u>						
	:	Testino	Engineers and Beck	htel Lab.	Lab. No.	OL5-2276	
lechanic	al Testine By						
			:k				
lelder's	Name	B. Blaloc					
elder's Test Con	Name	B. Blaloc E. H. Bel	lter				
Welder's West Con We certi	Name ducted By	B. Blalog E. H. Bel	this record are	correct and	that the t	est welds	were prepar
Welder's Test Con We certi	Name ducted By	B. Blalog E. H. Bel	this record are	correct and	that the t	est welds	were prepar
Welder's West Con We certi	Name ducted By	B. Blalog E. H. Bel	lter	correct and	ion IX of t	he ASME C	ode
Welder's West Con We certi	Name ducted By	B. Blalog E. H. Bel	this record are	ents of Sect	ion IX of t	the ASME C	ode
Welder's	Name ducted By	B. Blalog E. H. Bel tatements is	this record are with the requirement	ents of Sect	ion IX of t	the ASME C	Gode
Test Con Test Con Te certi	Name iducted By ify that the s and tested in	B. Blalog E. H. Bel tatements is accordance w	this record are with the requirement	Reviewed B	BECHTEL IN	CORPORATE Boots	D
Welder's Test Con We certified a Recorded Original	inducted By	B. Blalog E. H. Bel tatements in accordance v March 19 Pl-A-Lh	this record are with the requirement	Reviewed B	BECHTEL IN y W.H y B.h.	icorporate Boate	code
Welder's Test Con We certified a Recorded Original	Name iducted By ify that the s and tested in	B. Blalog E. H. Bel tatements in accordance v March 19 Pl-A-Lh	this record are with the requirement	Reviewed B	BECHTEL IN y W. H y B.h.	icorporate . Boats macler and Quali	D

BECHTEL POWER CORPORATION WELDING PROCEDURE QUALIFICATION RECORD

SHEET 8 of 17 PQR NO. 10

	re Specificatio	ona	Pl-A-Lh			Date	March 3,	1965
ng	Process(es)		Shielded Metal	Arc		Location	San Franc	isco,
	· · · · · · · · ·	*					Californi	
	l Specification		SA-106 Grade B			to	Itself	
ASME P-R	No. 1	to P-No.		10-3/4 11	nches	O.D. Range	Qualified	All
Inicknes	ss 2.00 inche	24	Thick	ness Range	e Qual	.ified <u>3/1</u>	6 through	4.0 inches
	Metal Specifica							
NOME	SFA-5.1	AWS CI	assification	E7016		'-No4	A-No	
ASME		AWS C1	assification_	E7018	F	-No. 4	A-No)• <u> </u>
litter F	Metal Chemistry	7					·	
Tection	ie Dia.	No	t recorded		Dia.			
OHSGER	ole Insert			Trade	e Name	s Arc		
pielei	Type				_		m Arc 7018	
mrerati	ng Gas:				Rate			
Jum Cla	assification				Rate			
veitive TAY CTS	set Cacano			Flux	Name			
014422 001610 <u>0</u>	of Groove	2G	& 5G				JOINT DESI	IGN
erarua	Direction		uphill					
	Strip	No	ne			= 11		
	and Polarity _		RP			F/1	-37 1/2	(- / +
mperage oltage		NO.	trecorded			1	ļ	
		NO	t recorded					1/-
rugie o	or Multiple Arc	511	ngle			<i>5</i> \		/ 1 5
gaver 2	Speed Not recor					1	\	3/4
	Pass Per Side		8	·		1/16		3/-
renear	Temperature Mi	nimum 200	UF				77/	1
D.M.	Interpass Temp	erature No	t recorded					
TRE	lon Width					•		•
		_ inches, a	nd dwell	sec.		•	' /1 ₁₆	•
		11:			lme	2 hours	'- - 1/ ₁₆	'
EAT TRE	ATMENT: Temp	• 11:	50F Thick. or Dia.	Ti			UTS psi	l Remarks l
EAT TRE	EATMENT: Temp [Specimen No.] [2G]	11	50F Thick. or Dia.	Ti]Area, Sq.	In.]	Load, Lbs.		
EAT TRE	EATMENT: Temp [Specimen No.] [2G]	• 11:	Thick. or Dia.	Ti]Area, Sq.] N.R.	In.]	Load, Lbs.	65,300] None]
EAT TRE	[Specimen No.] [2G] [2G] [5G]	Width]	Thick. or Dia. N.R. in. N.R. in.	Ti]Area, Sq.] N.R.] N.R.	In.]	Load, Lbs. N.R. N.R.	65,300 68,400	None] None]
EAT TRE	[Specimen No.] [2G] [2G]	Width]: N.R. in.] N.R. in.]	Thick. or Dia. N.R. in. N.R. in. N.R. in.	Ti Area, Sq. N.R. N.R.	In.]	Load, Lbs. N.R. N.R. N.R.	65,300 68,400 68,300	None None None
EAT TRE	[Specimen No.] [2G] [2G] [5G]	Width]' N.R. in.] N.R. in.]	Thick. or Dia. N.R. in. N.R. in. N.R. in.	Ti Area, Sq. N.R. N.R.	In.]	Load, Lbs. N.R. N.R.	65,300 68,400	None None None
educed ection ensile ests	[Specimen No.] [2G] [2G] [5G] [5G]	Width]' N.R. in.] N.R. in.]	Thick. or Dia. N.R. in. N.R. in. N.R. in.	Ti]Area, Sq.] N.R.] N.R.] N.R.	In.]	Load, Lbs. N.R. N.R. N.R.	65,300 68,400 68,300 65,300	None None None None
educed ection ensile ests	[Specimen No.] [2G] [2G] [5G] [5G]	Width]' N.R. in.] N.R. in.] N.R. in.]	Thick. or Dia. N.R. in. N.R. in. N.R. in. N.R. in.	Ti]Area, Sq.] N.R.] N.R.] N.R.	In.]	Load, Lbs. N.R. N.R. N.R. N.R.] 65,300] 68,400] 68,300] 65,300 Lon]	None None None None Result
educed ection ensile ests	[Specimen No.] [2G] [2G] [5G] [5G]	Width]: N.R. in.] N.R. in.] N.R. in.] N.R. in.]	Thick. or Dia. N.R. in. N.R. in. N.R. in. N.R. in.	Ti]Area, Sq.] N.R.] N.R.] N.R.	In.]	Load, Lbs. N.R. N.R. N.R.] 65,300] 68,400] 68,300] 65,300 Lon]	None None None None
educed ection ensile ests	[Specimen No.] [2G] [2G] [5G] [5G]	Width]: N.R. in.] N.R. in.] N.R. in.] Position e - 2G	Thick. or Dia. N.R. in. N.R. in. N.R. in. N.R. in.	Ti]Area, Sq.] N.R.] N.R.] N.R.	In.]	Load, Lbs. N.R. N.R. N.R. N.R.] 65,300] 68,400] 68,300] 65,300 Lon]	None None None None Result
educed ection ensile ests uided end ests	[Specimen No.] [2G] [2G] [5G] [5G] [5G] [4 side]	Width]: N.R. in.] N.R. in.] N.R. in.] Position e - 2G	Thick. or Dia. N.R. in. N.R. in. N.R. in. N.R. in.	Ti]Area, Sq.] N.R.] N.R.] N.R.	In.]	Load, Lbs. N.R. N.R. N.R. N.R.] 65,300] 68,400] 68,300] 65,300 Lon]	None None None None Result
educed ection ensile ests	[Specimen No.] [2G] [2G] [5G] [5G] [5G] [N.R. = not	Width]: N.R. in.] N.R. in.] N.R. in.] Position e - 2G	Thick. or Dia. N.R. in. N.R. in. N.R. in. N.R. in.	Ti]Area, Sq.] N.R.] N.R.] N.R.	In.]	Load, Lbs. N.R. N.R. N.R. N.R.] 65,300] 68,400] 68,300] 65,300 Lon]	None None None None Result
educed ection ensile ests	[Specimen No.] [2G] [2G] [5G] [5G] [5G] [M.R. = not	Width]' N.R. in.] N.R. in.] N.R. in.] Position Position Position	Thick. or Dia. N.R. in. N.R. in. N.R. in. 1 Result 180 degrees	Ti]Area, Sq.] N.R.] N.R.] N.R.] N.R.	In.]	Load, Lbs. N.R. N.R. N.R. N.R. 4 Posit:] 65,300] 68,400] 68,300] 65,300 Lon] 5G]180	None None None None Result degrees - OK
educed ection ensile ests	[Specimen No.] [2G] [2G] [5G] [5G] [5G] [N.R. = not	Width]: N.R. in.] N.R. in.] N.R. in.] Position e - 2G recorded Pittsburgh	Thick. or Dia. N.R. in. N.R. in. N.R. in. 1 Result 180 degrees	Ti]Area, Sq.] N.R.] N.R.] N.R.] N.R.	In.]	Load, Lbs. N.R. N.R. N.R. N.R. 4 Posit:] 65,300] 68,400] 68,300] 65,300 Lon]	None None None None Result degrees - OK
educed ection ensile ests	[Specimen No.] [2G] [2G] [5G] [5G] [5G] [N.R. = not	Width]: N.R. in.] N.R. in.] N.R. in.] Position e - 2G recorded Pittsburgh W. B. Keys	Thick. or Dia. N.R. in. N.R. in. N.R. in. 180 degrees	Ti]Area, Sq.] N.R.] N.R.] N.R.] N.R.	In.]	Load, Lbs. N.R. N.R. N.R. N.R. 4 Posit:] 65,300] 68,400] 68,300] 65,300 Lon] 5G]180	None None None None Result degrees - OK
educed ection ensile ests	[Specimen No.] [2G] [2G] [5G] [5G] [5G] [M.R. = not	Width]: N.R. in.] N.R. in.] N.R. in.] Position e - 2G recorded Pittsburgh	Thick. or Dia. N.R. in. N.R. in. N.R. in. 180 degrees	Ti]Area, Sq.] N.R.] N.R.] N.R.] N.R.	In.]	Load, Lbs. N.R. N.R. N.R. N.R. 4 Posit:] 65,300] 68,400] 68,300] 65,300 Lon] 5G]180	None None None None Result degrees - OK
educed ection ensile ests	[Specimen No.] [2G] [2G] [5G] [5G] [5G] [Manage of the streng by th	Width]: N.R. in.] N.R. in.] N.R. in.] Position e - 2G recorded Pittsburgh W. B. Keys W. B. Keys	Thick. or Dia. N.R. in. N.R. in. N.R. in. 180 degrees	Ti]Area, Sq.] N.R.] N.R.] N.R.] N.R.] OK]	In.]	Load, Lbs. N.R. N.R. N.R. N.R. 4 Posit 4 side -] 65,300] 68,400] 68,300] 65,300 Lon] 5G]180]	None None
educed ection ensile ests uided end ests chanicelder's est Cone certi	[Specimen No.] [2G] [2G] [5G] [5G] [Manage of the state of the sta	Width]' N.R. in.] N.R. in.] N.R. in.] N.R. in.] Position e - 2G recorded Pittsburgh W. B. Keys W. B. Keys atements in	Thick. or Dia. N.R. in. N.R. in. N.R. in. 180 degrees Testing Lab & Ser Ser this record ar	Ti Area, Sq. N.R. N.R. N.R. N.R. Bechtel	In.] Ty Lab.	Load, Lbs. N.R. N.R. N.R. N.R. Pe & Posit: 4 side -	65,300 68,400 68,300 65,300 65,300 SG 180 	None None None None None None Result degrees - OK
educed ection ensile ests uided end ests ther echanic elder's est Cone certi	[Specimen No.] [2G] [2G] [5G] [5G] [5G] [Manage of the streng by th	Width]' N.R. in.] N.R. in.] N.R. in.] N.R. in.] Position e - 2G recorded Pittsburgh W. B. Keys W. B. Keys atements in	Thick. or Dia. N.R. in. N.R. in. N.R. in. 180 degrees Testing Lab & Ser Ser this record ar	Ti Area, Sq. N.R. N.R. N.R. N.R. Bechtel	In.] Ty Lab.	Load, Lbs. N.R. N.R. N.R. N.R. Pe & Posit: 4 side -	65,300 68,400 68,300 65,300 65,300 SG 180 	None None None None None None Result degrees - OK
educed ection ensile ests uided end ests ther echanic elder's est Cone certi	[Specimen No.] [2G] [2G] [5G] [5G] [Manage of the state of the sta	Width]' N.R. in.] N.R. in.] N.R. in.] N.R. in.] Position e - 2G recorded Pittsburgh W. B. Keys W. B. Keys atements in	Thick. or Dia. N.R. in. N.R. in. N.R. in. 180 degrees Testing Lab & Ser Ser this record ar	Ti Area, Sq. N.R. N.R. N.R. N.R. Bechtel	In.] Ty Lab.	Load, Lbs. N.R. N.R. N.R. N.R. Lab. No. Lab. No.	65,300 68,400 68,300 65,300 65,300 180 180 180 180 180 180	None None None None None Mesult degrees - OK ded were prepared
educed ection ensile ests uided end ests ther echanic elder's est Cone certicelded as	[Specimen No.] [2G] [2G] [5G] [5G] [5G] [M.R. = not [N.R. = not [2] [N.R. = not [3] [4] [5] [5] [5] [5] [6] [7] [6] [7] [6] [7] [7] [8] [8] [8] [9] [9] [9] [9] [9] [9] [9] [9] [9] [9	Width]: N.R. in.] N.R. in.] N.R. in.] N.R. in.] Position e - 2G recorded Pittsburgh W. B. Keys W. B. Keys atements in ccordance wi	Thick. or Dia. N.R. in. N.R. in. N.R. in. Result 180 degrees	Area, Sq. N.R. N.R. N.R. N.R. Bechtel ce correctements of	In.] Ty Lab. Section	Load, Lbs. N.R. N.R. N.R. N.R. Lab. No. Lab. No.	65,300 68,400 68,300 65,300 65,300 180 180 1 1 1 1 1 1 1 1 1 1	None None None None None None Mesult degrees - OK ded were prepared de_ PORATION
educed ection ensile ests uided end ests ther echanic elder's est Contect Cont	[Specimen No.] [2G] [2G] [5G] [5G] [5G] [4 sid [N.R. = not sal Testing By Name ducted By fy that the stand tested in ad	Width]: N.R. in.] N.R. in.] N.R. in.] N.R. in.] Position e - 2G recorded Pittsburgh W. B. Keys W. B. Keys atements in ccordance wi	Thick. or Dia. N.R. in. N.R. in. N.R. in. 180 degrees Testing Lab & Ser Ser this record ar th the require	Ti Area, Sq. N.R. N.R. N.R. N.R. Bechtel	In.] Ty Lab. Section	Load, Lbs. N.R. N.R. N.R. N.R. Lab. No. Lab. No.	65,300 68,400 68,300 65,300 65,300 180 180 180 180 180 180	None None None None None None Mesult degrees - OK ded were prepared de
educed ection ensile ests uided end ests cher echanic elder's est Con elded and elded and elded and elded and elded and elded and elded end elded and elded elled elded elled elled elled elled elled elled elled elled elled elleded elled elle	[Specimen No.] [2G] [2G] [5G] [5G] [5G] [M.R. = not al Testing By Name ducted By fy that the stand tested in accordance on New Form Designation	Width]: N.R. in.] N.R. in.] N.R. in.] N.R. in.] Position e - 2G recorded Pittsburgh W. B. Keys W. B. Keys atements in ccordance wi	Thick. or Dia. N.R. in. N.R. in. N.R. in. N.R. in. 180 degrees Testing Lab & Ser Ser this record and the requires ch 19, 1979 A-Lh	Area, Sq. N.R. N.R. N.R. N.R. Constants Rechtel	In.] Ty Lab. Section	Load, Lbs. N.R. N.R. N.R. N.R. Pe & Posit: 4 side - Lab. No. that the tean IX of the BECHTEL	65,300 68,400 68,300 65,300 65,300 1	None None None None None None Mesult degrees - OK ded were prepared de
educed ection ensile ests uided end ests ther echanic elder's est Con e certi elded a led	[Specimen No.] [2G] [2G] [5G] [5G] [5G] [4 sid [N.R. = not sal Testing By Name ducted By fy that the stand tested in ad	Width]: N.R. in.] N.R. in.] N.R. in.] N.R. in.] Position e - 2G recorded Pittsburgh W. B. Keys W. B. Keys atements in ccordance wi	Thick. or Dia. N.R. in. N.R. in. N.R. in. N.R. in. 180 degrees Testing Lab & Ser Ser this record and the requires ch 19, 1979 A-Lh	Area, Sq. N.R. N.R. N.R. N.R. Bechtel ce correctements of	In.] Ty Lab. Section	Load, Lbs. N.R. N.R. N.R. N.R. Pe & Posit: 4 side - Lab. No. that the tean IX of the BECHTEL Japane	65,300 68,400 68,300 65,300 65,300 100 1	None None None None None None Mesult degrees - OK ded were prepared de PORATION
educed ection ensile ests uided end ests ther echanic elder's est Con ectieded and est elded and est elded and est elded and est elded end elded end elded end elded est elded elleded elled	[Specimen No.] [2G] [2G] [5G] [5G] [5G] [M.R. = not al Testing By Name ducted By fy that the stand tested in accordance on New Form Designation	Width]: N.R. in.] N.R. in.] N.R. in.] N.R. in.] Position e - 2G recorded Pittsburgh W. B. Keys W. B. Keys atements in ccordance wi	Thick. or Dia. N.R. in. N.R. in. N.R. in. N.R. in. 180 degrees Testing Lab & Ser Ser this record and the requires ch 19, 1979 A-Lh	Area, Sq. N.R. N.R. N.R. N.R. Constants Rechtel	Lab. and sections are sections as a section and section are sections as a section are sections as a section and section are sections as a section are sections.	Load, Lbs. N.R. N.R. N.R. N.R. Pe & Posit: 4 side - Lab. No. that the ten IX of the BECHTEL Saterials a	65,300 68,400 68,300 65,300 65,300 180 1	None None None None None None Mesult degrees - OK ded were prepared de

BECHTEL POWER CORPORATION WELDING PROCEDURE QUALIFICATION RECORD PQR NO. 17

Procedure	Specification	n Pl-AT-	-Lh	1	Date Marc	h 3, 1965
Welding I	Process(es)	Gas Tu	ingsten Arc and			Francisco,
		Shield	led Metal Arc		Cali	fornia
	Specification	SA-106	Grade B		to Itse	elf.
ASME P-No	2.0 in.	to P-No.	1 0.D. 1	0-3/4 in. 0.	D. Range Quali	fied All
			Thicknes	s Range Quali	fied 3/16	thru 4.0 in.
Filler Me	etal Specifica	tions:				
ASME	SFA-5.18	AWS Cla	ssification E	70S-2 F-	-No. 6	A-No. 1
ASME	SFA-5.1	AWS Cla	ssification E701	6 & E7018 F-	-No. 4	A-No1 A-No1
Filler Me	etal Chemistry					
Electrode	e Dia.	7016 3/32 i	in;7018 1/8&5/32i	n.Wire Dia.	1/8	in.
Consumab 1	le Insert	None		Trade Names		reld 65
Tungsten	Type	Not re	corded	-	Arcos 701	6, Atom Arc 7018
Shielding	Gas:	Argon		Flow Rate	20	c fh
Purge Gas		None		Flow Rate		» «
	sification			Flux Name		
Position	of Groove	2G & 5	=	_	JOIN	r Design
Welding I	Direction	5G Uph				•
Backing S		None			M:1, -	M:5.
	and Polarity _		CSP/SMAW-DCRP	<u> </u>		[/
	_		corded		. ``	/_
Voltage_			corded	<u> </u>	3/32:1/12	I, /T &
	r Multiple Arc			_ 1	\ \-	
yel S	peed	Not re	corded		1/16:032	3/4
	Pass Per Side				"P-0 }	
	Temperature Mi		200F	_		
Maximum 1	Interpass Temp	erature	None	41		1/8 ± 1/32
				_ ·	~~~~	
DEAT TOP	ATMENT. TARR	1125 4	1175F	m:	, <u> </u>	
HEAT TREA	ATMENT: Temp	1125 t	to 1175F	Time	Two Ho	ours
Reduced	<u>.</u>		Remarks	TimePosition		
	Position]				UTS psi]	Remarks
Reduced	Position]	UTS psi]	Remarks	Position	UTS psi] 68,877]	Remarks] None]
Reduced Section	Position]	UTS psi] 64,796]	Remarks None	Position 5G	UTS psi]	Remarks
Reduced Section Tensile	Position]	UTS psi] 64,796]	Remarks None	Position 5G	UTS psi] 68,877]	Remarks] None]
Reduced Section Tensile	Position]	UTS psi] 64,796]	Remarks None	Position 5G	UTS psi] 68,877]	Remarks] None]
Reduced Section Tensile	Position 2G 2G	UTS psi] 64,796] 68,877] Position	Remarks None	Position 5G 5G	UTS psi] 68,877] 64,795]	Remarks] None]
Reduced Section Tensile Tests	Position 2G 2G	UTS psi] 64,796] 68,877] Position	Remarks None None	Position 5G 5G Typ	UTS psi] 68,877]	Remarks] None] None] Result]
Reduced Section Tensile Tests Guided Bend Tests	Position 2G 2G	UTS psi] 64,796] 68,877] Position	Remarks None None Result	Position 5G 5G Typ	UTS psi] 68,877] 64,795]	Remarks] None]
Reduced Section Tensile Tests Guided Bend	Position 2G 2G	UTS psi] 64,796] 68,877] Position	Remarks None None Result	Position 5G 5G Typ	UTS psi] 68,877] 64,795]	Remarks] None] None] Result]
Reduced Section Tensile Tests Guided Bend Tests	Position 2G 2G	UTS psi] 64,796] 68,877] Position	Remarks None None Result	Position 5G 5G Typ	UTS psi] 68,877] 64,795]	Remarks] None] None] Result]
Reduced Section Tensile Tests Guided Bend Tests Other	Position 2G 2G 2G	UTS psi] 64,796] 68,877] Position - 2G	Remarks None None Result 180 degs. OK	Position 5G 5G Typ	UTS psi] 68,877] 64,795]	Remarks] None] None] Result]
Reduced Section Tensile Tests Guided Bend Tests Other	Position 2G 2G Type & 4 Side	UTS psi] 64,796] 68,877] Position - 2G	Remarks None None Result 180 degs. OK	Position 5G 5G Typ	UTS psi] 68,877] 64,795]	Remarks] None] None] Result]
Reduced Section Tensile Tests Guided Bend Tests Other Mechanica Welder's	Position 2G 2G Type & 4 Side 1 Testing By Name	UTS psi] 64,796] 68,877] Position - 2G PTL at W. B.	Remarks None None Result 180 degs. OK	Position 5G 5G Typ	UTS psi] 68,877] 64,795] De & Position Side - 5G	Remarks None None Result 180 degs. 0K
Reduced Section Tensile Tests Guided Bend Tests Other Mechanica	Position 2G 2G Type & 4 Side	UTS psi] 64,796] 68,877] Position - 2G	Remarks None None Result 180 degs. OK	Position 5G 5G Typ	UTS psi] 68,877] 64,795] De & Position Side - 5G	Remarks None None Result 180 degs. 0K
Reduced Section Tensile Tests Guided Bend Tests Other Mechanica Welder's Test Cond	Position 2G 2G Type & 4 Side 1 Testing By Name ducted By	UTS psi] 64,796] 68,877] Position - 2G PTL ar W. B. W. B.	Remarks None None Result 180 degs. OK d Bechtel Labs Keyser Keyser	Position 5G 5G 1 Typ 1 4	UTS psi] 68,877] 64,795] De & Position Side - 5G Lab. No.	Remarks None Not recorded
Reduced Section Tensile Tests Guided Bend Tests Other Mechanica Welder's Test Cond	Position 2G 2G Type & 4 Side 1 Testing By Name ducted By fy that the st	UTS psi] 64,796] 68,877] Position - 2G PTL ar W. B. W. B.	Remarks None None Result 180 degs. OK d Bechtel Labs Keyser Keyser this record are	Position 5G 5G 1 Typ 4 1	UTS psi] 68,877] 64,795] De & Position Side - 5G Lab. No	Remarks None
Reduced Section Tensile Tests Guided Bend Tests Other Mechanica Welder's Test Cond	Position 2G 2G Type & 4 Side 1 Testing By Name ducted By fy that the st	UTS psi] 64,796] 68,877] Position - 2G PTL ar W. B. W. B.	Remarks None None Result 180 degs. OK d Bechtel Labs Keyser Keyser	Position 5G 5G 1 Typ 4 1	UTS psi] 68,877] 64,795] De & Position Side - 5G Lab. No	Remarks None
Reduced Section Tensile Tests Guided Bend Tests Other Mechanica Welder's Test Cond	Position 2G 2G Type & 4 Side 1 Testing By Name ducted By fy that the st	UTS psi] 64,796] 68,877] Position - 2G PTL ar W. B. W. B.	Remarks None None Result 180 degs. OK d Bechtel Labs Keyser Keyser this record are	Position 5G 5G 1 Typ 4 1	UTS psi] 68,877] 64,795] De & Position Side - 5G Lab. No	Remarks None Not recorded N
Reduced Section Tensile Tensile Tests Guided Bend Tests Other Mechanica Welder's Test Cond We certified	Position 2G 2G Type & 4 Side 1 Testing By Name ducted By fy that the stand tested in a	UTS psi] 64,796] 68,877] Position - 2G PTL an W. B. W. B.	Remarks None None Result 180 degs. OK Ad Bechtel Labs Keyser Keyser this record are ith the requirement	Position 5G 5G 5G Typ 4	UTS psi] 68,877] 64,795] De & Position Side - 5G Lab. No that the test won IX of the AS	Remarks None
Reduced Section Tensile Tests Guided Bend Tests Other Mechanica Welder's Test Cond We certified ded and Recorded	Position 2G 2G 2G Type & 4 Side A Side Name ducted By fy that the stand tested in a	UTS psi] 64,796] 68,877] Position - 2G PTL ar W. B. W. B. satements in accordance wi	Remarks None None Result 180 degs. OK Ad Bechtel Labs Keyser Keyser this record are ith the requirement	Position 5G 5G 5G Typ 4	UTS psi] 68,877] 64,795] De & Position Side - 5G Lab. No that the test won IX of the AS	Remarks None
Reduced Section Tensile Tests Guided Bend Tests Other Mechanica Welder's Test Cond We certified ded and Recorded Original	Position 2G 2G Type & 4 Side 4 Side Name ducted By fy that the stand tested in a on New Form Designation	UTS psi] 64,796] 68,877] Position - 2G PTL ar W. B. W. B. stements in accordance wi	Remarks None None Result 180 degs. OK Ad Bechtel Labs Keyser Keyser this record are ith the requirement	Position 5G 5G 5G Correct and tents of Section	UTS psi 68,877 64,795 De & Position Side - 5G Lab. No. that the test won IX of the AS	Remarks None Not recorded N
Reduced Section Tensile Tests Guided Bend Tests Other Mechanica Welder's Test Cond We certified ded and Recorded Original	Position 2G 2G 2G Type & 4 Side A Side Name ducted By fy that the stand tested in a	UTS psi] 64,796] 68,877] Position - 2G PTL ar W. B. W. B. satements in accordance wi	Remarks None None Result 180 degs. OK Ad Bechtel Labs Keyser Keyser this record are ith the requirement	Position 5G 5G 5G Correct and tents of Section Reviewed Ry	UTS psi 68,877 64,795 De & Position Side - 5G Lab. No that the test won IX of the AS BECHTEL POW CARLOS B. Macel	Remarks None Not recorded N
Reduced Section Tensile Tests Guided Bend Tests Other Mechanica Welder's Test Cond We certified ded and Recorded Original	Position 2G 2G Type & 4 Side 4 Side Name ducted By fy that the stand tested in a on New Form Designation	UTS psi] 64,796] 68,877] Position - 2G PTL ar W. B. W. B. stements in accordance wi	Remarks None None Result 180 degs. OK Ad Bechtel Labs Keyser Keyser this record are ith the requirement	Position 5G 5G 5G Correct and tents of Section Reviewed Ry	UTS psi 68,877 64,795 De & Position Side - 5G Lab. No that the test won IX of the AS BECHTEL POW CARLOS B. Macel	Remarks None Not recorded N

BECHTEL POWER CORPORATION WELDING PROCEDURE QUALIFICATION RECORD PQR NO. 18

* TOCEGULE	Specificatio		Pl-AT-Lh	D	ate May	6, 1965
Welding P	rocess(es)		Gas Tungsten Ar	c and L	ocation San	Francisco,
			Shielded Metal	Arc	Cali	fornia
	Specification		SA-106 Grade B		to Itse	
ASME P-No	1	to P-No.	1 0.D.	8-5/8 in. O.	D. Range Quali	fied All
Thickness	0.375 i	α.	Thicknes	s Range Quali	fied 1/16	thru 0.750 in.
Filler Me	tal Specifica	tions:		_		
ASME	SFA-5.18	AWS Cla		70S-2 F-	No. 6	A-No. 1
	SFA-5.1		ssification E	7018 F-	No. 4	A-No. 1
	tal Chemistry					
Electrode		7018 1/8	in. & 5/32 in.		1/8	
Consumabl		None		Trade Names		Oxweld 65
	Туре		corded	- -	Arcos	
Shielding		Argon		Flow Rate	20 с	
Purge Gas	•	none		Flow Rate		
	sification _			Flux Name		
	of Groove	2G and		_	JOINT	DESIGN
Melding D	irection	5G Uph	111	_		
Backing S		None				
	nd Polarity _		CSP/SMAW-DCRP	-		
Amperage			corded	_		37 1/2" = 2 1/2"
Voltage_	. W. 1 & ! = 1 = . A = .		corded	_		7
	Multiple Arc			_	1/16:1/32	/
vel Sp	Peca Pea Cida		corded	_ 1	/10:1/32	1
	Pass Per Side		W	-		1,
	emperature Mi		None	-	-	-1/8:1/32
Maximum I	nterpass Temp	perature	None	-		
HEAT TREA	TWENT. To-	_	None	Time		
DEAT IKEA	TMENT: Temp	·				
					UTS pei	Pomorka
Reduced	Position	UTS psi]	Remarks]	Position	UTS psi]	Remarks
Reduced Section	Position 2G	UTS psi] 63,900]	Remarks] None]	Position]	63,800]	None
Reduced Section Tensile	Position 2G	UTS psi]	Remarks]	Position		
Reduced Section	Position 2G	UTS psi] 63,900]	Remarks] None]	Position]	63,800]	None
Reduced Section Tensile	Position 2G	UTS psi] 63,900]	Remarks] None]	Position]	63,800]	None
Reduced Section Tensile Tests	Position 2G 2G	UTS psi] 63,900] 63,700]	Remarks] None] None]	Position] 5G 5G	63,800] 63,450]	None] None]
Reduced Section Tensile	Position 2G 2G Type &	UTS psi] 63,900]	Remarks] None] None] Result	Position] 5G] 5G]	63,800] 63,450]]	None] None] Result]
Reduced Section Tensile Tests	Position 2G 2G Type &	UTS psi] 63,900] 63,700] Position]	Remarks] None] None] Result 180 degs. OK	Position] 5G] 5G] 1 Typ 2	63,800] 63,450] De & Position Root - 5G	None] None] Result] 180 degs. OK]
Reduced Section Tensile Tests Guided Bend	Position 2G 2G Type &	UTS psi] 63,900] 63,700] Position] - 2G]	Remarks] None] None] Result	Position] 5G] 5G] 1 Typ 2	63,800] 63,450]]	None] None] Result]
Reduced Section Tensile Tests Guided Bend Tests	Position 2G 2G Type &	UTS psi] 63,900] 63,700] Position] - 2G]	Remarks] None] None] Result 180 degs. OK	Position] 5G] 5G] 1 Typ 2	63,800] 63,450] De & Position Root - 5G	None] None] Result] 180 degs. OK]
Reduced Section Tensile Tests Guided Bend Tests	Position 2G 2G Type &	UTS psi] 63,900] 63,700] Position] - 2G]	Remarks] None] None] Result 180 degs. OK	Position] 5G] 5G] 1 Typ 2	63,800] 63,450] De & Position Root - 5G	None] None] Result] 180 degs. OK]
Reduced Section Tensile Tests Guided Bend Tests Other	Position 2G 2G Type & 2 Root 2 Face	UTS psi] 63,900] 63,700] Position] - 2G] - 2G]	Remarks] None] None] Result 180 degs. OK	Position] 5G] 5G] 1 Typ 2	63,800] 63,450] De & Position Root - 5G	None] None] Result] 180 degs. OK]
Reduced Section Tensile Tests Guided Bend Tests Other Mechanica	Position 2G 2G Type & 2 Root 2 Face	UTS psi] 63,900] 63,700] Position] - 2G] - 2G] Bechte B. Bla	Remarks] None] None] Result 180 degs. OK 180 degs. OK	Position] 5G] 5G] 1 Typ 2	63,800] 63,450] e & Position Root - 5G Face - 5G	None
Reduced Section Tensile Tests Guided Bend Tests Other Mechanica	Position 2G 2G Type & 2 Root 2 Face	UTS psi] 63,900] 63,700] Position] - 2G] - 2G] Bechte B. Bla	Remarks] None] None] Result 180 degs. OK 180 degs. OK	Position] 5G] 5G] 1 Typ 2	63,800] 63,450] e & Position Root - 5G Face - 5G	None
Reduced Section Tensile Tests Guided Bend Tests Other Mechanica Welder's Test Conditions Test Cond	Position 2G 2G 2G Type & 2 Root 2 Face	UTS psi] 63,900] 63,700] Position] t - 2G] e - 2G] Bechte B. Bla W. B.	Remarks] None] None] Result 180 degs. OK 180 degs. OK	Position 5G 5G 1 1 1 1 1 1 1 1 1	63,800] 63,450] e & Position Root - 5G Face - 5G	None None None Result 180 degs. OK 180 degs. OK
Reduced Section Tensile Tests Guided Bend Tests Other Mechanics Welder's Test Cond	Position 2G 2G 2G Type & 2 Root 2 Face 1 Testing By Name lucted By	UTS psi	Remarks] None] None] None] Result 180 degs. OK 180 degs. OK	Position 5G 5G 7 7 7 7 7 7 7 7 7	63,800] 63,450] De & Position Root - 5G Face - 5G Lab. No.	None None
Reduced Section Tensile Tests Guided Bend Tests Other Mechanics Welder's Test Cond	Position 2G 2G 2G Type & 2 Root 2 Face 1 Testing By Name lucted By	UTS psi	Remarks] None] None] Result 180 degs. OK 180 degs. OK	Position 5G 5G 7 7 7 7 7 7 7 7 7	63,800] 63,450] De & Position Root - 5G Face - 5G Lab. No.	None None
Reduced Section Tensile Tests Guided Bend Tests Other Mechanics Welder's Test Cond	Position 2G 2G 2G Type & 2 Root 2 Face 1 Testing By Name lucted By	UTS psi	Remarks] None] None] None] Result 180 degs. OK 180 degs. OK	Position 5G 5G 7 7 7 7 7 7 7 7 7	63,800] 63,450] De & Position Root - 5G Face - 5G Lab. No.	None None
Reduced Section Tensile Tensile Tests Condition Section Tests Condition Tests Condition Tests Condition Test Condition	Position 2G 2G 2G Type & 2 Root 2 Face 1 Testing By Name lucted By Type & 1 Testing By Name lucted by	UTS psi] 63,900] 63,700] Position] t - 2G] e - 2G] Bechte B. Bla W. B.	Remarks None None Result 180 degs. OK 180 degs. OK this record are the requireme	Position 5G 5G 7 7 7 7 7 7 7 7 7	63,800] 63,450] e & Position Root - 5G Face - 5G Lab. No.	None None
Reduced Section Tensile Tensile Tests Other Mechanics Welder's Test Condition Condit	Position 2G 2G 2G Type & 2 Root 2 Face 1 Testing By Name lucted By Type & 1 Testing By Name lucted by Type & 1 Testing By Name Type & 1 Testing By Type	UTS psi	Remarks None None Result 180 degs. OK 180 degs. OK this record are the requireme	Position 5G 5G 7 7 7 7 7 7 7 7 7	63,800] 63,450] e & Position Root - 5G Face - 5G Lab. No.	None None
Reduced Section Tensile Tests Guided Bend Tests Other Mechanics Welder's Test Cond We certified Recorded Original	Position 2G 2G Type & 2 Root 2 Face 1 Testing By Name lucted By Y that the stand tested in a connection On New Form Designation	UTS psi] 63,900] 63,700] Position] t - 2G] e - 2G] Bechte B. Bla W. B.	Remarks None None Result 180 degs. OK 180 degs. OK this record are the requireme	Position 5G 5G 7 7 7 2 2 2 2 2 2 2	63,800 63,450 ce & Position Root - 5G Face - 5G Lab. No. that the test we are IX of the AS PECHTEL POWE	None None None Result 180 degs. OK 180 degs. OK None Recode Recorrection
Reduced Section Tensile Tests Guided Bend Tests Other Mechanics Welder's Test Cond We certified Recorded Original	Position 2G 2G 2G Type & 2 Root 2 Face 1 Testing By Name lucted By Type & 1 Testing By Name lucted by Type & 1 Testing By Name Type & 1 Testing By Type	Position The statements in accordance wi	Remarks None None Result 180 degs. OK 180 degs. OK this record are the requireme	Position 5G 5G 7 7 7 2 2 2 2 2 2 2	63,800] 63,450] e & Position Root - 5G Face - 5G Lab. No.	None None None Result 180 degs. OK 180 degs. OK None Recode Recorrection
Reduced Section Tensile Tests Guided Bend Tests Other Mechanics Welder's Test Cond We certified Recorded Original	Position 2G 2G Type & 2 Root 2 Face 1 Testing By Name lucted By Y that the stand tested in a connection On New Form Designation	Position Position	Remarks None None Result 180 degs. OK 180 degs. OK this record are the requireme	Position 5G 5G 75G 75G	63,800] 63,450] e & Position Root - 5G Face - 5G Lab. No. that the test was IX of the AS PECHTEL POWE 3. M. Macle	None None Result

BECHTEL WELDING PROCEDURE QUALIFICATION RECORD

ng Process(es) Shielded Metal Arc Location	April 24, 1970 on San Francisco,
	California
terial Specification A182 Grade F304 to	Itself
ME P-No. 8 to P-No. 8 0.D. 12-3/4 incheso.D. Ra	nge Qualified All
	3/10 thru 2-1/2 Thenes
ller Metal Specifications:	5 A-No. 8
	A-No
ME AWS ClassificationF-NO	
ller Metal Chemistry 2/22 1/8 4-ch Wire Die	
ectrode Dia. 3/32 and 1/8 inch Wire Dia. nsumable Insert Trade Names	McKay E308-16
Elen Pete	
Tier Pate	
Flow Ness	
ux Classification Flux Name sition of Groove 2G & 5G	JOINT DESIGN
lding Direction 5G Uphill	
cking Strip None	1.1
rrent and Polarity DCRP	The hard
85-110	- · · · · · · · · · · · · · · · · · · ·
22-24	
Ingle or Multiple Arc Single	\ / 5
ravel Speed 2-8 1pm.	1/3/1
oltiple Pass Per Side Yes	1/16
eat Temperature Minimum 50F	77/
mum Interpass Temperature 350F	1-1-1/6
scillation Width inch(es), Dwell sec. scillation Frequency cpm.	71-716
educed [Specimen No.] Width]Thick. or Dis.]Area, Sq. In.]Load,	Lbs.] UTS psi] Remarks
$\frac{2C-1}{2C-1}$ in- 0.506 in- 0.201 18	,592 92,500 Weld
$\frac{1}{2}$ $\frac{1}$,592] 92,500] Weld
Tests [5G - 1] in.] 0.506 in.] 0.201] 18	,049] 89,800] Weld
5C - 2] in.] 0.506 in.] 0.201] 18	,291] 91,000] Weld
	Position Result
ulded 1 Type & Tobleton ;	Position Result
Send [4 Side - 2G] 180 Degrees - OK]	
Tests [4 Side - 5G] 180 Degrees - OK }	<u> </u>
ther	
dechanical Testing By Anamet Laboratories Lai	. No. N.R.
Mechanical Testing By Anamet Laboratories Law L. A. Oscarson	LAO-031 470.434
Test Conducted By H. J. Mantle	
Test Conducted 27	
We certify that the statements in this record are correct and that	the test welds were prepared
We certify that the statements in this record are correct and succeed the succeed and tested in accordance with the requirements of Section II	K of the ASME Code
	AVR. J.
Recorded on New Form July 3, 1980 Reviewed By	a KBordine
Original WPS Reva. Entity P8-A/N.K./N.K.	m maclorel
Approved by B	rials and Quality Service
	arch and Engineering
Kese	aren and anderes
MQS-WPS-014-1.	Page 1 of 1

Page 1 of 1

BECHTEL WELDING PROCEDURE QUALIFICATION RECORD

rocedur	e Specification	on	P8-AT-Ag		D	ate	August 22	, 1968
	Process(es)		Gas Tungsten	Arc and	L	ocation	San Franc	isco,
			Gas Tungsten Shielded Meta	1 Arc		_	Californi	8
1a+a=1a7	Cmarfffratini	16.	A3/D 1VDE 310	l .		to	Itself	
CME D-N	n. 8	to P-No.	8 0.D	. 34 inch	es 0.1	D. Range	Qualified_	A11
hickness	2 inches: G	FAW 3/32.	SMAW 1-29/32 Th	ickness Ra	nge Qua.	1111ed <i>3/</i>	10 thru 4	inches
Miller M	etal Specific	ations:		GTAV	1/16 th	hru 3/16;	SMAW 3/16	thru 3-13/16
CME	SRA-5.9	AWS	Classification			No. 6	A-No	. 8
SME	SPA-5.4	AWS	Classification	E316-15 &	16 F-	No. 5	A-No	. 8
	etal Chemistr							
	e Dia.		1/8 and 5/32 in	ch Wire	Dia.	1/8	inch	
Concumen	le Insert		None		e Names		Cay ER316	
'unceten	Туре		N.R.			Mcl	(ay E316-15	, E316-16
ihieldin	g Gas:		Argon	Flow	Rate	20	cfh	
hiree Ca	8:		Argon		Rate '	20	cfh	
lux Cla	ssification				r Name		-	
	of Groove		2G & 5G		•		JOINT DESI	GN
	Direction		5G Uphill					
tacking !	Strip		None					
Current	and Polarity	GTAW	DCSP; SMAW DCRE			w	- 10	
			N.R.		}	·		<i>!/</i> 1
/oltage			N.R.			,	[<u>/_</u>
	r Multiple Ar	c	Single		Į	. \	3/32	/T }
	peed		N.R.	ipm.	7	,	\ \H-	/
4ultinle	Pass Per Sid	e	Yes			. 4	\ \ \ /	3/4
	Temperature M	inimum	50F			1/16-	$\neg \setminus \neg \mid V$	
	Interpass Tem	perature	N.R.		-			
1	ion Width N	.R. inch	(es), Dwell	- sec.	•		┴┤├ ⅓	•
leci let	ion Frequency			cpm.		\mathbf{Q}	25° s 1/22 minute	
,0011101	zom zrogeone,			- •				•
TEAT TRE	ATMENT: Tem	p	None	•	Time			
		-						
leduced	Specimen No.]	Width	Thick. or Dia.	Area Sq.	In.]Los	d Lbs.]UTS psi	Remarks]
section[in.		N.R.		N.R.] 81,300	
ensile!		in.] N.R.] N.R.]	N.R.	79,900	
Cests [5G 1	in.		N.R.	1	N.R.	3 82,900	
1		in.] N.R.]	N.R.] 83,800	N.R]
Guided	[Type &	Position] Res	ult]	Тур	e & Posi	tion]	Result]
3end	4 Side -] 180 Degree	s - OK]]]]
[ests	4 Side -] 180 Degree]
)ther								
,								
		`				`		
lechanic	al Testing By	, ·	Anamet Laborat	ories		Lab. No	. BLN 568-	1
Welder's			W. B. Keyser a		pson			
	nducted By		B. M. Macleod					
rear our								
Jo certi	ify that the	tatements	in this record	are corre	ct and t	that the	test welds	were prepared
rolded a	and tested in	oceprose.	e with the requ	frements o	f Section	on IX of	the ASME C	ode
ACTUER 9	and repred III	#CCAL GGHC	e aren ene reda			 78		
-	,							
, ,	1 aa Waa 9		vember 7, 1980	David	ewed Ru	JeBu		
	d on New Form			- VEAT	حر المحدد	some	- musu	
JT1g1ma	ı wro, kev., i	ntity Po	-AT-Ag/NR./N.R.		oved By	3 /2	machon	H
				- wher			and Ougld	ty Services
)ther De	esignations			_			and Engine	•
						7595 01 (1)	end puRrue	
QS-WPS-	-014-1							

Rev. 4 05/05/80

SHEET 13 of 17: PQR NO. 54

BECHTEL POWER CORPORATION WELDING PROCEDURE QUALIFICATION RECORD

lure	Specificati	on	P8-T-Ag	•	Da	ate :	March 24,	1958
hg P	rocess(es)		P8-T-Ag Gas Tungsten	Arc	Lo	cation	Morris.	1770
						-	Illinois	
fa terial	Specification	a	SA-312 Type 3 8 O.I Thio	304		_to	Itself	
ASME P-No	. 8	to P-No.	8 0.I	6 inch	es 0.I). Range Q	ualified_	A11 ·
Thickness	0.432 inc	h	Thic	kness Ran	ge Qualif	1ed <u>3/16</u>	through 0	.864 inch
filler Me	tal Specific	ations:						
NSME	SFA-5.9	AWS	Classification Classification	ER308	F- <u>}</u>	No6	A-No.	8
ASME	tal Chandata	AWS	Classification			10·_ 	A-No.	
llastrode	tal Chemistr	y		W4	- 24-	N-A		
Junenway] Stectione	Dia.		Not recorded	Wir	e Dia.	NOL	recorded	aw alloy 308
Cunesten	e InsertType		None Not recorded		ne vemes	ALIO	y Kods, Dr	aw alloy 308
Shielding	Gas:		Argon	Flo	w Rate -	20 c	fh	
urge Gas	:		Not recorded	Flo	w Rate			
lux Clas	sification _			Flu	x Name			
osition	of Groove		2G & 5G		-		OINT DESIG	N
<i>l</i> elding D	irection		5G uphill					
lacking S	trip		None					
Current a	nd Polarity		DCSP		1	- 1	├ -37 1/2°	~
mperage_			Not recorded	······	Ī			!
oltage		-	Not recorded				l	<i>j</i>
	Multiple Ar		Single		5			1 3
ersker ob	Page Par Sid	raea ipm.	Oscillation	cpm.	1	\		3/4
ortiple	'amperature M		Yes 50F			1/16	$\mathbf{X} \mathbf{I} \mathbf{Z}$	3/4
n I	nterpass Tem	perature	Not recorded				771	
Scrilati	on width	inches	and dwell	sec.	Г		1-1-1/8	
							7 1/8	•
HEAT TREA	TMENT: Tem	P•	None		Time			
Reduced [S	pecimen No.]	Width	Thick. or Dia.	Area, Sq.	In. load	l, Lbs.	UTS psi]	Remarks]
Section[in.	Not recorded	Not reco	rded Not	recorded]	87,600]N	ot recorded]
[ensile[Not recorded					
Tests [_	5G] 5G]		Not recorded					
L	<u> </u>	in.	Not recorded	NOT TECO	rdedjnot	recorded]	86,34UJN	ot recorded]
Guided [Type &	Position] Resu	11+ 1	Tyne	& Positi	on I	Result]
Bend	2 Face		1 180 degrees			Root - 2G		egrees - OK]
Cests [2 Face] 180 degrees			Root - 5G		egrees - OK)
ther								<u> </u>
	•							
	l Testing By	\	W. H. Flood Lat	oratories	·	Lab. No	Not record	ed
elder's			H. Belt	···				
Cest Cond	lucted By	·	J. Matsko					
ve certii	y that the s	catements	in this record	are corre	ct and th	at the te	st welds w	ere prepared,
ASTOGG WI	id tested in	eccordance	with the requi	rements o	I Section	I IX of the	e ASME Cod	e
					, , , , , , , , , , , , , , , , , , , 	BECUMPI '	DOLLER CORP	ODATION .
had.	on New Form		March 20, 1979	Dand	owed Po		POWER CORP	
	Designation		P-8C .	- VEAT	ewed by	former.	meis ten	
	ignations		P-8T, P8-T-g	- Appr	oved Bv	3.m.h	naclem	d d
							nd Ouality	Services

MQS-WPS-014-1 Rev. 1 7/28/78 Department, Research and Engineering

Research and Engineering

BECHTEL WELDING PROCEDURE QUALIFICATION RECORD

Sant	e specificati	OBP0,1	I-V			Date	July 16,	1958
ng	Process(es)	Shie	elded Meta	1 Arc		Location	Dresden	
							Illinois	
aterial	Specificatio	n <u>SA-</u> :	312 Grade	TP304		to	SA-53 Gr	ade 4
SME P-N	lo•8	to P-No.	_ 1	0.D. 6	-5/8 inches	s O.D. Range (ualified	A11
hicknes	6. <u>8</u>	7/8 inch	T	hickne	ss Range Qi	ualified 3/10	thru 1-3	/4 inches
			_					
	etal Specific							
SME	SFA-5.4	AWS Cla	assificati	on	E312-16		A-No	8
SME		AWS Cla	assificati	on		F-No	A-No	
iller M	etal Chemistr	y						
lectrod	e Dia.	N.R.			Wire Dia	a		
onsumab	le Insert	None			Trade Na	ames Arcallo	7 312 (A11	oy Rods Co
ingsten	Туре							
nieldin	g Gas				Flow Rat		•	
rge Ga	8				Flow Rat		-	
lux Cla	ssification _				Flux Nat		•	
sition	of Groove	2G a	and 5G			Š	OINT DESI	GN
erging	Direction		Jphill					
cking	Strip	None				- 16		
	and Polarity	DCRI					- זיי ינין	
perage	· 	N.R.						
ltage_		N.R.			 •			
rugie o	r Multiple Ar					5		1 5
avel 2	peed	N.R.		1	pm.	1 \		3/4
	Pass Per Sid					1/16-	$\Delta I I$	
at	Temperature M Interpass Tem	inimum 2001	<u> </u>				37\	
	ion Width ion Frequency		DMEIT				'H-1/6	
SCIIIAL	Ton Frequency			ср	ш•			
TAT TRE	ATMENT: Tem	p. None			Time		_	
J I.U.	niidanii icu	p. <u>None</u>		·				
educed	[Specimen No.] Width]7	hick, or	Dia.lA	rea Sa. Tr	.]Load Lbs.]	UTS psi	Remarks
ection	·	N.R. in.	N.R.	in.]	N.R.	1 N.R.	66,140	N.R.
ensile] N.R. in.]	N.R.	in.]	N.R.] N.R.] N.R.
ests	5G-1	N.R. in.	N.R.	in.	N.R.	N.R.	65,980	N.R.
	5G-2] N.R. in.]	N.R.	in.]	N.R.] N.R.	67,850] N.R.
· · · · · · · · · · · · · · · · · · ·		1					07,030	H.K.
ided	Type &	Position]	R	esult	1	Type & Positi	OR 1	Result
end	4 Side		180 Degr		OK 1	2770 0 100101	1	NC3G2C
sts	4 Side	- 5G	180 Degr				<u>†</u>	
	Radiography r							
								
· .								
chanic	al Testing By	Pitt	sburgh Te	sting 1	Lab.	Lab. No.	·N.R.	
	Name		elt (Symb			_		
st Con	ducted By		latsko		· · · · · · · · · · · · · · · · · · ·			
								
certi	fy that the s	tatements in	this reco	rd are	correct an	nd that the te	st welds	were prepa
elded a	nd tested in	sccordance wi	th the re	guirem	ents of Sec	tion IX of th	e ASMF Co	de .
				7		an vi ti	.c ADIE CO	~~ <u></u>
						 		
hebite	on New Form	. Весея	ber 4, 19	80	Reviewed	By LoB.		
	WPS, Rev., E				TC ATEMER	- Jetykes	men-	
	iv, 2-30-55	TOPI	, REV 12-	<u> </u>	Approved	By 7 ha L	a a los	<i>{</i>
		RA DIA and B	9 D1-4		Approved		nd Outline	· Sarviaca
ner ve	signations P	DA, FIA and P	0, F1-A			Materials a	ina Quality	y Services

MQS-WPS-014-1

BECHTEL POWER CORPORATION WELDING PROCEDURE QUALIFICATION RECORD

PQR NO. 90

					•	· · · · · · · · · · · · · · · · · · ·
edure	Specific ati	on <u>P8-AT</u> -	Ag			June 27, 1965
welding I	Process(es)	Gas Tu	ngsten Arc and		Location	Richmond,
			ed Metal Arc			California
			Grade 347			Itself
ASME P-No	8	to P-No.	8 O.D. 8-	<u>-5/8 inches</u> 0	.D. Range Q	ualified All
Thickness	0.908 inch	;GTAW 3/16;	SMAW 0.721 Thickne	ess Range Qua	lified <u>3/16</u>	through 1.816 inches
	tal Specific			6 through 3/	8;SMAW 3/16	through 1.442 inches
ASME	SFA-5.9	AWS C	lassification ER	347	F-No6	A-No. 8
ASME	SFA-5.4	AWS C	lassification E347	7-15,E308-15	F-No5	A-No. 8
Filler Me	tal Chemistr	y				
Electrode	Dia. GTA No	t recorded;	3/32 inch E347;	_ Wire Dia		1/16 inch ER347
		d 5/32 E308				,
	e Insert		/	Trade Name:		nar 19/9 Cb
Tungsten		Not re				nd 19/9 Cb and 19/9
Shielding		Argon		Flow Rate	12-15	
Purge Gas	sification	Argon	 	Flow Rate		- 10 cfh
				Flux Name		
	of Groove		5G		J	OINT DESIGN
_	irection	5G Uph	111	-		
Backing S		None	205 0000	_		L. 1/1/2-
Current &	nd Polarity	GTAW D	CSP; SMAW DCRP	_		\[\text{''} \]
Amperage_	GTAW 70-2	50; SMAW /	0-130	_		
Voltage	GTAW 16-2	U; SMAW 2	3-26	_	5 \	1/5
Single of	Multiple Ar			_	1	\ / 1
Travel Sp			corded	-		ΔZ
	Pass Per Sid		^ P	_	ſ]] 34-
	Cemperature M		0 F	_		3/32
Maximum 1	interpass Tem	peracure	30 F	-		
HEAT TREA	TMENT. Tom	p. 1	575 F	Time	1-3	// house
IMAI INDA	THENT. TEM	P	313 E	_ ,,,,,,,,	1-3	74 Hours
Reduced	Position] UTS psi	Remarks	Position	UTS psi	Remarks
Section		89,800	Failed in BM	5G	86,900	Failed in BM
Tensile]89,000	Failed in BM	5G	88,300	Failed in BM
Tests		1			1	1
[
		*				
Guided	Type &	Position	Result	Ty	pe & Positi	on Result
Bend	4 Side - 2		180 degrees-OK			İ
Tests [4 Side - 5		180 degrees-OK	i		
Other			satisfactory. Ca	lculated fer	rite 5 - 7	percent. For impact
_			kness range qualit			
						
Mechanica	l Testing By	Anamet	Laboratories		Lab. No.	Not recorded
Welder's		W. Mou				665.309, 665.309A
Test Cond	ucted By		Setterlund			
						
We certif	v that the s	tatements i	n this record are	correct and	that the te	st welds were prepare
			with the requireme			
			aren ene iederiem	.neb or beet.	on in oi cil	E ADME COGE
					RECUTET	POWER CORPORATION
KUCATAAA	on New Form	70	w 28 1077	Reviewed By		
			y 28, 1977	ventemed pa	Allie	mii tu
	Designation_	P8-AT-		Anneaued B	3 1. 1.	mal
orner bes	ignations	ro-Al-	g (347)	Approved By		accepa
						nd Quality Services
					Department	

BECHTEL POWER CORPORATION WELDING PROCEDURE QUALIFICATION RECORD

ENCLOSURE (4) SHEET 16 0+ 17 POR NO. 4

Procedure Specification P1-A-c-d	Date April 19, 1962
ing Process(es) Shielded Metal-Arc	Location San Francisco
	California
Material Specification SA-106 Grade B	to Itself
ASME P-No. 1 to P-No. 1 0.D. 12-3/4 in	ches O.D. Range Qualified All
ASME P-No. 1 to P-No. 1 0.D. 12-3/4 in Thickness 1/2 inch Thickness Range	Qualified 3/16 thru l inch
Filler Metal Specifications: ASMF SPA-5.1 AWS Classification E6010	F-No. 3 A-No. 1
ASME SFA-5.1 AWS Classification E6010 ASME SFA-5.5 AWS Classification E7010-A1	
ASME SPACE Chamistry	
Filler Metal Chemistry Wire Electrode Dia Wire	Dia
Consumable Insert None Trade	Names Fleetweld 5
Tungsten Type	Shield-Arc 85
Chieldine Cas:	Rate
Purce Cas: Flow	Rate
Flux Classification Flux	
Position of Groove 5G	JOINT DESIGN
Welding Direction 5G Downhill	· .
Backing StripNone	•
Current and Polarity DCRP	37 1/2
Amperage N.R.	
Voltage N.R.	\$ 1/16 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Single or Multiple Arc Single	
Travel Speed N.R. ipm.	-1/8
Multiple Pass Per Side Yes Perheat Temperature Minimum 70F	7 - 10
num Interpass Temperature	
N. B. Joulan Anch	^
Man Maat Inniit N.K. JUULES/IIICII	•
N.R. Joules/inch Oscilla Width inch(es). Dwell sec., Frequency	
Oscill. Width inch(es), Dwell sec., Frequency	у срш.
Oscill. Width inch(es), Dwell sec., Frequency	
Oscill. Width inch(es), Dwell sec., Frequency HEAT TREATMENT: Temp Tr	ime
Oscill. Width inch(es), Dwell sec., Frequency HEAT TREATMENT: Temp Treatment Reduced [Specimen No.] Width]Thick. or Dis.]Area Sq.	imecpm. In.]Load Lbs.] UTS psi] Remarks]
Oscill. Width inch(es), Dwell sec., Frequency HEAT TREATMENT: Temp Treatment Reduced [Specimen No.] Width]Thick. or Dia.]Area Sq. Section [5G-1] N.R. in.] N.R. in.] N.R.	imecpm. ime In.]Load Lbs.] UTS psi] Remarks] N.R. 67,500 N.R.
Oscill. Width inch(es), Dwell sec., Frequency HEAT TREATMENT: Temp Treatment Reduced [Specimen No.] Width]Thick. or Dia.]Area Sq. Section [5G-1] N.R. in.] N.R. in.] N.R. Tensile [5G-2] N.R. in.] N.R. in.] N.R.	imecpm. In.]Load Lbs.] UTS psi] Remarks]
NEAT TREATMENT: Temp Treatment	imecpm. ime In.]Load Lbs.] UTS psi] Remarks] N.R. 67,500 N.R.
Oscill. Width inch(es), Dwell sec., Frequency HEAT TREATMENT: Temp Treatment Reduced [Specimen No.] Width]Thick. or Dia.]Area Sq. Section [5G-1] N.R. in.] N.R. in.] N.R. Tensile [5G-2] N.R. in.] N.R. in.] N.R.	imecpm. ime In.]Load Lbs.] UTS psi] Remarks] N.R.] 67,500] N.R.]
Oscill. Width inch(es), Dwell sec., Frequency HEAT TREATMENT: Temp Treatment Reduced [Specimen No.] Width]Thick. or Dia.]Area Sq. Section [5G-1] N.R. in.] N.R. in.] N.R. in.] N.R. Tensile [5G-2] N.R. in.] N.R. in.] N.R. Tensile [5G-2] N.R. in.] N.R. in.] N.R. in.] in.] in.]	In.]Load Lbs.] UTS psi Remarks N.R. 67,500 N.R. N.R. 68,950 N.R.
Reduced [Specimen No.] Width Thick. or Dia.] Area Sq. Section [5G-1] N.R. in.] N.R. in.] N.R. Tensile [5G-2] N.R. in.] N.R. in.] N.R. Tests [] in.] in.] Guided [Type & Position] Result]	In.]Load Lbs.] UTS psi] Remarks] N.R. 67,500 N.R. N.R. 68,950 N.R.
Oscill. Width inch(es), Dwell sec., Frequency HEAT TREATMENT: Temp Treatment Reduced [Specimen No.] Width] Thick. or Dia.] Area Sq. Section [5G-1] N.R. in.] N.R. in.] N.R. Tensile [5G-2] N.R. in.] N.R. in.] N.R. Tests [] in.] in.] [] in.] in.] Guided [Type & Position] Result] Bend [4 Side - 5G Down] 180 Degrees - OK]	Imecpm. In.]Load Lbs.] UTS psi] Remarks] N.R. 67,500 N.R. N.R. 68,950 N.R. 1 Type & Position Result
Oscill. Width inch(es), Dwell sec., Frequency HEAT TREATMENT: Temp Treatment Reduced [Specimen No.] Width]Thick. or Dia.]Area Sq. Section [5G-1] N.R. in.] N.R. in.] N.R. in.] N.R. Tensile [5G-2] N.R. in.] N.R. in.] N.R. in.] N.R. [in.] in.] Tests [] in.] in.] in.] Guided [Type & Position] Result] Bend [4 Side - 5G Down] 180 Degrees - OK] Tests []]	In.]Load Lbs.] UTS psi] Remarks] N.R. 67,500 N.R. N.R. 68,950 N.R. Type & Position Result
Oscill. Width inch(es), Dwell sec., Frequency HEAT TREATMENT: Temp Treatment Reduced [Specimen No.] Width] Thick. or Dia.] Area Sq. Section [5G-1] N.R. in.] N.R. in.] N.R. Tensile [5G-2] N.R. in.] N.R. in.] N.R. Tests [] in.] in.] [] in.] in.] Guided [Type & Position] Result] Bend [4 Side - 5G Down] 180 Degrees - OK]	In.]Load Lbs.] UTS psi] Remarks] N.R. 67,500 N.R. N.R. 68,950 N.R. Type & Position Result
Oscill. Width inch(es), Dwell sec., Frequency HEAT TREATMENT: Temp Treatment Reduced [Specimen No.] Width]Thick. or Dia.]Area Sq. Section [5G-1] N.R. in.] N.R. in.] N.R. in.] N.R. Tensile [5G-2] N.R. in.] N.R. in.] N.R. in.] N.R. [] in.] Tests [] in.] in.] Guided [Type & Position] Result] Bend [4 Side - 5G Down] 180 Degrees - OK] Tests []] Other	Ime
MEAT TREATMENT: Temp Trequency Reduced [Specimen No.] Width]Thick. or Dia.]Area Sq. Section [5G-1] N.R. in.] N.R. in.] N.R. Tensile [5G-2] N.R. in.] N.R. in.] N.R. Tests [] in.] in.] Guided [Type & Position] Result] Bend [4 Side - 5G Down] 180 Degrees - OK] Tests []] Other Mechanical Testing By PTL and Bechtel Labs.	In.]Load Lbs.] UTS psi] Remarks] N.R. 67,500 N.R. N.R. 68,950 N.R. Type & Position Result
NEAT TREATMENT: Temp Trequency Reduced [Specimen No.] Width]Thick. or Dia.]Area Sq. Section [5G-1] N.R. in.] N.R. in.] N.R. Tensile [5G-2] N.R. in.] N.R. in.] N.R. Tests [] in.] in.] Guided [Type & Position] Result] Bend [4 Side - 5G Down] 180 Degrees - OK] Tests []] Other Mechanical Testing By PTL and Bechtel Labs. Welder's Name G. Blalock	Ime
NEAT TREATMENT: Temp Trequency Reduced [Specimen No.] Width]Thick. or Dia.]Area Sq. Section [5G-1] N.R. in.] N.R. in.] N.R. Tensile [5G-2] N.R. in.] N.R. in.] N.R. Tests [] in.] in.] Guided [Type & Position] Result] Bend [4 Side - 5G Down] 180 Degrees - OK] Tests []] Other	Ime
HEAT TREATMENT: Temp Trequency Reduced [Specimen No.] Width]Thick. or Dia.]Area Sq. Section [5G-1] N.R. in.] N.R. in.] N.R. Tensile [5G-2] N.R. in.] N.R. in.] N.R. Tests [] in.] in.] Guided [Type & Position] Result] Bend [4 Side - 5G Down] 180 Degrees - OK] Tests []] Other Mechanical Testing By PTL and Bechtel Labs. Welder's Name G. Blalock Test Conducted By A. M. Croswell	Imecpm. In.]Load Lbs.] UTS psi Remarks N.R. 67,500 N.R. N.R. 68,950 N.R. Type & Position Result Lab. No. N.R.
HEAT TREATMENT: Temp Trequency Reduced [Specimen No.] Width Thick. or Dia.] Area Sq. Section [5G-1 N.R. in.] N.R. in.] N.R. Tensile [5G-2 N.R. in.] N.R. in.] N.R. Tests [in.] in.] in.] Guided [Type & Position Result Bend [4 Side - 5G Down 180 Degrees - OK Tests []] Other Mechanical Testing By PTL and Bechtel Labs. Welder's Name G. Blalock Test Conducted By A. M. Croswell	In.]Load Lbs.] UTS psi] Remarks] N.R. 67,500 N.R. N.R. 68,950 N.R. Type & Position Result Lab. No. N.R. t and that the test welds were prepared
HEAT TREATMENT: Temp Trequency Reduced [Specimen No.] Width]Thick. or Dia.]Area Sq. Section [5G-1] N.R. in.] N.R. in.] N.R. Tensile [5G-2] N.R. in.] N.R. in.] N.R. Tests [] in.] in.] Guided [Type & Position] Result] Bend [4 Side - 5G Down] 180 Degrees - OK] Tests []] Other Mechanical Testing By PTL and Bechtel Labs. Welder's Name G. Blalock Test Conducted By A. M. Croswell	In.]Load Lbs.] UTS psi] Remarks] N.R. 67,500 N.R. N.R. 68,950 N.R. Type & Position Result Lab. No. N.R. t and that the test welds were prepared
HEAT TREATMENT: Temp Trequency Reduced [Specimen No.] Width Thick. or Dia.] Area Sq. Section [5G-1 N.R. in.] N.R. in.] N.R. Tensile [5G-2 N.R. in.] N.R. in.] N.R. Tests [in.] in.] in.] Guided [Type & Position Result Bend [4 Side - 5G Down 180 Degrees - OK Tests []] Other Mechanical Testing By PTL and Bechtel Labs. Welder's Name G. Blalock Test Conducted By A. M. Croswell	In.]Load Lbs.] UTS psi] Remarks] N.R.
HEAT TREATMENT: Temp Trequency Reduced [Specimen No.] Width Thick. or Dia. Area Sq. Section [5G-1 N.R. in.] N.R. in.] N.R. Tensile [5G-2 N.R. in.] N.R. in.] N.R. Tests [[Ime
Reduced [Specimen No.] Width Thick. or Dia. Area Sq. Section [5G-1 N.R. in.] N.R. in.] N.R. Tensile [5G-2 N.R. in.] N.R. in.] N.R. Tests [in.] in.] Guided [Type & Position Result Bend [4 Side - 5G Down 180 Degrees - OK] Tests []] Mechanical Testing By PTL and Bechtel Labs. Welder's Name G. Blalock Test Conducted By A. M. Croswell We certify that the statements in this record are correct welded and tested in accordance with the requirements of Recorded on New Form May 9, 1979 Review	Ime
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BECHTEL WELDING PROCEDURE QUALIFICATION RECORD

PQR 10. 6

Procedure	e Specificatio	on F	Pl-A-c-Lh			Date	March	31. 19	169
	Process(es)		Shielded Metal	-Arc		Location			
						_	Califo	rnia	
Material	Specification	1 . S	A-106 Grade B			to	Itself		
ASME P-No	o. 1	to P-No. 1	0.D.	12-3/4 :	inches	O.D. Rang	ge Quali	fied_	All
Thickness	s 1.0 inch	-	Thick	ness Rai	ige Qua	lified3	3/16 thr	u 2.0	inches
		_							
	etal Specifica			7/010			,	A 37 -	•
ASME	SFA-5.1	AWS Cla	ssification	E6010 E7018		F-No.	3	_A-No. A-No.	
ASME			ssification	FAOTS		F-No	<u> </u>	_A-NO.	
Flantad	etal Chemistry	/ 	I.R.	W4:	e Dia.				
Concumati	e Dia. le Insert	<u> </u>	1 • A •		ide Nam		ı.R.		
Tungsten	Tabe				ide Nam				
Shieldin	Type			F1/	w Rate				
Bures Co.	g Gas				w Rate				
Flux Class	s ssification				x Name				
Position	of Groove		2G	**			JOINT	DESIG	SN SN
Welding	Direction								
	Strip		ione						
	and Polarity		CRP			w . 41			
	· · · · · · · · · · · · · · · · · · ·		i.R.			\	ľ	-37 1/2*	ć =>
Voltage			i.R.			i			1/
	r Multiple Arc		Single			\		,	/_
Travel S	_		V.R.	ipm.	•	5			1 5
	Pass Per Side		?es						3/4
	Temperature Mi		OF			1/1	6		-i
	Interpass Temp		N.R.				 \	<u> </u>	
	ion Width			sec.		i	*	- 1/16	
	ion Frequency		·	cpm.			[1]	/16	
V				•					
HEAT TREA	ATMENT: Tem;	p. 1	L150-1200F		Time		l hour		
HEAT TREA	ATMENT: Temp								
	[Specimen No.]	Width]1	Thick. or Dia.		Sq. In.	Load L	os.] UTS	psi]	
	[Specimen No.] [2G-1	Width]7	Thick. or Dia. N.R. in.] N	Sq. In.]Load Ll	os.] UTS	,300	N.R.
Reduced	[Specimen No.]	Width]1 N.R. in.] N.R. in.]	Thick. or Dia. N.R. in. N.R. in.] N] N	Sq. In.	Load L	os.] UTS		
Reduced Section	[Specimen No.]	Width]1 N.R. in.] N.R. in.]	Thick. or Dia. N.R. in. N.R. in.] N] N	Sq. In.	Load Ll N.R.	os.] UTS	,300	N.R.
Reduced Section Tensile	[Specimen No.]	Width]1 N.R. in.] N.R. in.]	Thick. or Dia. N.R. in. N.R. in.] N] N	Sq. In.]Load Ll	os.] UTS	,300	N.R.
Reduced Section Tensile Tests	Specimen No.	Width]1 N.R. in.] N.R. in.] in.]	Thick. or Dia. N.R. in. N.R. in. in.] N] N]	Sq. In.]Load Ll] N.R.] N.R.	os.] UTS	,300	N.R. N.R.
Reduced Section Tensile Tests	Specimen No.	Width]7 N.R. in.] N.R. in.] in.] Position	Thick. or Dia. N.R. in. N.R. in. in.] N] N]]	Sq. In.	Load Ll N.R.	os.] UTS	,300	N.R.
Reduced Section Tensile Tests Guided Bend	Specimen No.	Width]7 N.R. in.] N.R. in.] in.] Position	Thick. or Dia. N.R. in. N.R. in. in.] N] N]]	Sq. In.]Load Ll] N.R.] N.R.	os.] UTS	,300	N.R. N.R.
Reduced Section Tensile Tests Guided Bend Tests	Specimen No.	Width]7 N.R. in.] N.R. in.] in.] Position	Thick. or Dia. N.R. in. N.R. in. in.] N] N]]	Sq. In.]Load Ll] N.R.] N.R.	os.] UTS	,300	N.R. N.R.
Reduced Section Tensile Tests Guided Bend	Specimen No.	Width]7 N.R. in.] N.R. in.] in.] Position	Thick. or Dia. N.R. in. N.R. in. in.] N] N]]	Sq. In.]Load Ll] N.R.] N.R.	os.] UTS	,300	N.R. N.R.
Reduced Section Tensile Tests Guided Bend Tests	Specimen No.	Width]7 N.R. in.] N.R. in.] in.] Position	Thick. or Dia. N.R. in. N.R. in. in.] N] N]]	Sq. In.]Load Ll] N.R.] N.R.	os.] UTS	,300	N.R. N.R.
Reduced Section Tensile Tests Guided Bend Tests Other	[Specimen No.] [2G-1] [2G-2] [[Type & 4 Side]	Width [7] N.R. in.] N.R. in.] in.] Position - 2G	Thick. or Dis. N.R. in. N.R. in. in. Resul] N] N]]	Sq. In.	Load Ll N.R. N.R. N.R. ype & Pos	os.] UTS	,300] ,000]	N.R. N.R.
Reduced Section Tensile Tests Guided Bend Tests Other	[Specimen No.] [2G-1 [2G-2 [Width]7 N.R. in.] N.R. in.] in.] in.] Position 2G	Thick. or Dis. N.R. in. N.R. in. in. Resul] N] N]]	Sq. In.	Load Ll N.R. N.R. N.R. ype & Pos	os.] UTS	,300] ,000]	N.R. N.R.
Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's	[Specimen No.] [2G-1 [2G-2 [Width [7] N.R. in.] N.R. in.] in.] in.] Position 2G Anamet Lagrange J. Miller	Thick. or Dis. N.R. in. N.R. in. in. Resul] N] N] - OK]	6q. In. .R.	Load Ll N.R. N.R. N.R. ype & Pos	os.] UTS	,300] ,000]	N.R. N.R.
Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's	[Specimen No.] [2G-1 [2G-2 [Width [7] N.R. in.] N.R. in.] in.] in.] Position 2G Anamet Lagrange J. Miller	Thick. or Dis. N.R. in. N.R. in. in. Resul] N] N] - OK]	6q. In. .R.	Load Ll N.R. N.R. N.R. ype & Pos	os.] UTS	,300] ,000]	N.R. N.R.
Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's	[Specimen No.] [2G-1 [2G-2 [Width [7] N.R. in.] N.R. in.] in.] Position - 2G Anamet La J. Miller J. D. Ber	Thick. or Dia. N.R. in. N.R. in. in. Resul 180 Degrees] N] N] - OK]	Sq. In.	Lab.	os.] UTS .] 74 .] 75 .] .] . Sition	,300] ,000]	N.R. N.R.
Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con	[Specimen No.] [2G-1 [2G-2 [Width [7] N.R. in.] N.R. in.] in.] Position - 2G Anamet La J. Miller J. D. Ber	Thick. or Dia. N.R. in. N.R. in. in. Resul 180 Degrees ab rt and L. A. 0] N] N] t] - OK] scarson	Sq. In.	Lab. I	os.] UTS 1 74 1 75 1 1 sition No. N.	,300] ,000]]] R.	N.R. N.R. Result
Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con	[Specimen No.] [2G-1 [2G-2 [Width [7] N.R. in.] N.R. in.] in.] Position - 2G Anamet La J. Miller J. D. Ber	Thick. or Dia. N.R. in. N.R. in. in. Resul 180 Degrees] N] N] t] - OK] scarson	Sq. In.	Lab. I	os.] UTS 1 74 1 75 1 1 sition No. N.	,300] ,000]]] R.	N.R. N.R. Result
Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con	[Specimen No.] [2G-1 [2G-2 [Width [7] N.R. in.] N.R. in.] in.] Position - 2G Anamet La J. Miller J. D. Ber	Thick. or Dia. N.R. in. N.R. in. in. Resul 180 Degrees ab rt and L. A. 0] N] N] t] - OK] scarson	Sq. In.	Lab. I	os.] UTS 1 74 1 75 1 1 sition No. N.	,300] ,000]]] R.	N.R. N.R. Result
Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con We certi welded a	[Specimen No.] [2G-1] [2G-2] [[Type & 4 Side] [A Side] al Testing By Name ducted By fy that the sind tested in a side in a side]	Width [7] N.R. in.] N.R. in.] in.] Position - 2G Anamet La J. Miller J. D. Ber tatements in accordance with	Thick. or Dia. N.R. in. N.R. in. in. Resul 180 Degrees ab rt and L. A. 0 this record a ith the requir] N] N] N] N] Scarson re correments	ect and	l Lab. I	os.] UTS] 74] 75] sition No. N. e test w	,300] ,000]]] R. Relds W	N.R. N.R. Result
Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con We certi welded a	[Specimen No.] [2G-1] [2G-2] [[Type & 4 Side [A Side	Width [7] N.R. in.] N.R. in.] in.] in.] Position - 2G Anamet La J. Miller J. D. Ber tatements in accordance with	Thick. or Dia. N.R. in. N.R. in. in. Resul 180 Degrees this record a ith the requir] N] N] N] N] Scarson re correments	ect and	Lab. I	os.] UTS] 74] 75] sition No. N. e test w	,300] ,000]]] R. Relds W	N.R. N.R. Result
Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con We certi welded a	[Specimen No.] [2G-1] [2G-2] [[Type & 4 Side [Width [7] N.R. in.] N.R. in.] in.] Position - 2G Anamet La J. Miller J. D. Ber tatements in accordance with	Thick. or Dia. N.R. in. N.R. in. in. Resul 180 Degrees this record a ith the requir] N] N] N] N] Scarson re correments	ect and of Sect	Lab. I	sition No. N. test we the AS	,300] ,000]]] R. Relds W	N.R. N.R. Result
Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con We certi welded a	[Specimen No.] [2G-1] [2G-2] [[Type & 4 Side [A Side	Width [7] N.R. in.] N.R. in.] in.] in.] Position - 2G Anamet La J. Miller J. D. Ber tatements in accordance with	Thick. or Dia. N.R. in. N.R. in. in. Resul 180 Degrees this record a ith the requir] N] N] N] N] Scarson re correments	ect and of Sect	Lab. I that the ion IX of	sition No. N. test w the AS	R. relds v ME Cod	N.R. N.R. Result
Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con We certi welded a	[Specimen No.] [2G-1] [2G-2] [[Type & 4 Side [Width [7] N.R. in.] N.R. in.] in.] in.] Position - 2G Anamet La J. Miller J. D. Ber tatements in accordance with	Thick. or Dia. N.R. in. N.R. in. in. Resul 180 Degrees this record a ith the requir] N] N] N] N] Scarson re correments	ect and of Sect	Lab. I that the form IX of Materia	sition No. N. test we feet was the AS	R. Pelds we ME Cook Quality	N.R. N.R. Result
Reduced Section Tensile Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con We certi welded a ecorded Original Other De	Specimen No. 2G-1 2G-2 [Type & 4 Side 4 Side Name ducted By fy that the sind tested in on New Form Designation signations	Width [7] N.R. in.] N.R. in.] in.] in.] Position - 2G Anamet La J. Miller J. D. Ber tatements in accordance with	Thick. or Dia. N.R. in. N.R. in. in. Resul 180 Degrees this record a ith the requir] N] N] N] N] Scarson re correments	ect and of Sect	Lab. I that the form IX of Materia	sition No. N. test w the AS	R. Pelds we ME Cook Quality	N.R. N.R. Result
Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con We certi welded a	[Specimen No.] [2G-1] [2G-2] [Type & 4 Side [4 Side [5] al Testing By Name ducted By fy that the sind tested in signation signations 014-1	Width [7] N.R. in.] N.R. in.] in.] in.] Position - 2G Anamet La J. Miller J. D. Ber tatements in accordance with	Thick. or Dia. N.R. in. N.R. in. in. Resul 180 Degrees this record a ith the requir] N] N] N] N] Scarson re correments	ect and of Sect	Lab. I that the form IX of Materia	No.	R. Pelds we ME Cook Quality	N.R. N.R. Result vere prepare

Enclosure 5

BPC Welding Procedure Qualification Record

SMAW and GTAW Processes

BECHTEL WELDING PROCEDURE QUALIFICATION RECORD

PQR NO. 50

roce	dure Specifica	tion	P8-AT-Ag	- I		Data			
Weldi	ng Process(es)		Gas Tune	sten Arc	and	Date_	Augu	st 19, 19	965
			Shielded	Metal Ar	C	LOCAT	10n San	Onofre,	
r	lal Specificat: -No. 8 ness 1-3/4 inc SMAW 1-9/	lon	SA-430 G	rade FP30	4		Cali	fornia	
AGRE 1	P-No. 8	to P-No.	8	O.D. 1	4 inches		9371	11	
Thickr	less 1-3/4 inc	hes; GTAW 3	3/16;	Thicknes	s Range	O.D. R	ange Qua	lified	A11
20/22	SMAW 1-9,	16		GTAW 1/1	6 thru 3	/8; SMAW	3/16 En	ru 3-1/2	inches,
riffei	Metal Specifi	cations:				O, BILAW	o/10 thr	u 3-1/8 1	nches
ASME	SFA-5.9	AWS	Classificat	ion_ E	R308L	F-No.	6	4-27-	•
POLIE	5ra-).4	AWS	Classificat		308L	F-No.	5		
Finer	Metal Chemist	ry						A-No.	8
Concur	ode Dia.	GTAW N.R.,	SMAW 1/8 in	ch	Wire Di	a.	3/32 in	ach	
Tunest	able Insert	ies, Type	& Size N.R	•	Trade N	ames	Linde E	RSORT	
	cu type		א ס						a Arc E3081
Purce (ing Gas		Argon		Flow Ra	te	20 cfh	tous, ALUI	A ALC ESUBI
Flux C	Gas Lassification	·	Argon		Flow Ra	te	N.R.		
Positio	on of Groove		200 0 50		Flux Na	me			
	Direction		2G & 5G		•		JOIN	T DESIGN	
Backing	Strip	·	5G Uph111		•			- 220101	
Current	and Polarity	CTAIL DO	None						
Amperag	e	GIAW, DO	SP; SMAW, I	OCRP		1 10	41-	L_10	-/ .
Voltage			N.R.				بّ	r	/
Single	or Multiple Ar		N.R.			1	1	1 1/	l
Travel	Speed		Single				3/32	1 /7	- [
Multipl	e Pass Per Sid	<u> </u>	N.R.	1pm	•	5	//**	┨┝╴╱╶╿	5
Preheat	Temperature M	inimim	168 508			1.	. \	/ 3/	4
Maximum	Interpass Tem	Dereture	N.R.			, ,	16-	11/ -1	
at	ion Width	- inch(ec)	No.Ke					j <i>y</i>	_ .
at	ion Frequency	Inclines	PMETT			. —	1	-1/ ₁₆	
	, , , , , , , , , , , , , , , , , , , ,			cpm.		٠.	•	1 /10	
HEAT TRE	ATMENT: Temp)•_	None		Time				
Reduced	(Coordens N.)				. —			<u> </u>	
Section	[Specimen No.] [2G-1]		Thick. or l	Dia.]Area	Sq. In	Load L	bs. I IITS	net 1 Pa	marks
Tensile			21010	Trie l	N.R.] N.R	1 83		N.R.
Tests	[2G-2] [5G-1]	N.R. in.)		in.]	N.R.] N.R			N.R.
	[5G-2]	N.R. in.]	2102(0	in.]	N.R.] N.R.			N.R.
	1 30-2]	N.R. in.]	N.R.	in.]	N.R.] N.R.			N.R.
Guided	Type	Position	•					, ,	
Bend	4 Side			sult] 7	ype & Pos	ition	Res	11t
Tests	- + DIUE	26	180 Degre	es - OK	}	4 Side -		180 Degr	
Other			J]				
<u> </u>			·	•					J
lechanica	1 Testing By	Advance Te	ets and Inc	enactions		• •	•		
CTGCT D	name	.E. Estis		эресетонь		Lab. N			
est Cond	ucted By	B. Boyd				•	N.R		
•	•								
e certify	that the sta i tested in ac	tements in	this record	are cor	Toot and	48-4-4			
elded and	i tested in ac	cordance wi	th the requ	iremente	of Coat	that the	test we	lds were	prepared,
				TTCMEHER	or secti	ron TY 01	the ASM	E Code	
						·	· · · · · · · · · · · · · · · · · · ·		
	n New Form	December 13	3. 1979	D	viewed By	ni	R	,	
D	esignation	P8-AT-g			remed RA	y W	Borlen	<u> </u>	
mer Desi	gnations	P8-AT-Ag-I		An-	roved P-	3.m	ha - 1	had	
		——————————————————————————————————————		_ ռիկ	roved BA	<u> </u>	iviacu	10 Q	
						Materials	and Qua	lity Serv	vices
S-WPS-01	4-1				•	Research	and Engi	neering	4

S-WPS-014-1 7/19/79 Enclosure 6

AWS D1.0-63

Welding in Building Construction

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R.F. Dudley San Ono fre 1 Project Manager

June 26, 1986

Enclosure 7 BPC Welding Procedure Qualification Records Structural

ENCLOSURE (7) SHEET 1016

BECHTEL

WELDING PROCEDURE QUALIFICATION RECORD

PQR NO. D9

rocedure	Specification	n P1-	-A-Lh (Structura			August 8,	
	rocess(es)		elded Metal-Arc			San Franci	
						California	
lal	Specification	SA-	-106 Grade B		to	Itself	
SME P-No	. 1	to P-No. 1	0.D. 1 Thickne	0-3/4 inches	O.D. Range	Qualified	10 and ove
hickness	0.365 inch		Thickne	ss Range Qual	ified <u>0.182</u>	5 thru 0.	730 inch
TITEL WE	TOT DECTIFICAT	CIOND.					
ASME	SFA-5.1	AWS Cla	ssification	E7018 F	-No4	A-No	• 1
SME		AWS Cla	ssification	F	-No	A-No	
iller Me	tal Chemistry						<u></u>
	Dia.		₹.	Wire Dia			
onsumabl	e Insert			Trade Name	s P&	H 170LA	
ungsten	Type		-				
Shielding	Gas:			Flow Rate	and the second s		
Purge Gas	s:			Flow Rate	<u> </u>		
lux Clas	sification			Flux Name	-	<u> </u>	011
	of Groove	- 2G	& 5G	<u> </u>	. .	OINT DESI	GN
	Direction	5 G	uphill				•
_	Strip	Not	ne				
	and Polarity	DCI	RP	·			,
		N• 1	R.	<u> </u>		L 37 1/2°	
Voltage -		N.		· L		7	
Single of	r Multiple Arc	Sin	ngle		· . \		<u> </u>
Travel S	peed N.R.	ipm. Os	cillation c	pm• . \$	1/16		7
fultiple	Pass Per Side	Ye	e '	1	9	_) /	·
			<u> </u>	<u> </u>			
Preheat '	Temperature Mi	nimum 50	F		T	- 1/8	
Preheat !	Temperature Mi Interpass Temp	nimum 50 erature N.	F		1	— 1/8	1
Preheat daximum lat:	Temperature Mi Interpass Temp ion width ATMENT: Temp	nimum 50 erature No inches, as	F R. nd dwell :	Time	I and The	1 1	1 Remarks
Preheat Maximum Date lat:	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.]	nimum 50 erature No inches, an No Width	F R. nd dwell one Thick. or Dia.]	TimeArea, Sq. In.]Load, Lbs.	UTS psi	
Preheat Maximum Olation International Intern	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1]	nimum 50 erature No inches, an No Width] 0.747 in.]	F R. nd dwell ne Thick. or Dia.] 0.323 in.]	TimeArea, Sq. In. 0.241	16,960	UTS psi 70,370] B.M.
Preheat Maximum lat: HEAT TRE Reduced Section Tensile	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2]	No.	F. R. nd dwell n ne Thick. or Dia.] 0.323 in.] 0.302 in.]	TimeArea, Sq. In. 0.241 0.226	16,960 15,650	UTS psi 70,370 69,250] B.M.
Preheat Maximum lating TRE. Reduced Section Tensile	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1]	No. No.	F. R. nd dwell ne Thick. or Dia.] 0.323 in.] 0.302 in.] 0.336 in.]	TimeArea, Sq. In. 0.241 0.226 0.252	16,960 15,650 17,530	UTS psi 70,370 69,250 69,560] B.M.] B.M.
Preheat diaximum lating	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1]	No.	F. R. nd dwell ne Thick. or Dia.] 0.323 in.] 0.302 in.] 0.336 in.]	TimeArea, Sq. In. 0.241 0.226 0.252	16,960 15,650	UTS psi 70,370 69,250] B.M.] B.M.
Preheat Maximum lat: HEAT TRE	Temperature Milnterpass Tempion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1] [5G - 2]	No.	F R. nd dwell ne Thick. or Dia.] 0.323 in.] 0.302 in.] 0.336 in.] 0.313 in.]	TimeArea, Sq. In. 0.241 0.226 0.252 0.234	16,960 15,650 17,530 16,250	UTS psi 70,370 69,250 69,560 69,440] B.M.] B.M.] B.M.
Preheat Maximum Lat: HEAT TRE Reduced Section Tensile Tests Guided	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1] [5G - 2]	No. No.	F R. nd dwell ne ne Thick. or Dia.] 0.323 in.] 0.302 in.] 0.336 in.] 0.313 in.]	TimeArea, Sq. In. 0.241 0.226 0.252 0.234	16,960 15,650 17,530 16,250 ype & Posit:	UTS psi 70,370 69,250 69,560 69,440] B.M.] B.M.] B.M. Result
Preheat Maximum lating	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1] [5G - 2] [Type & [2 Roo	No. No.	F. R. nd dwell ne Thick. or Dia.] 0.323 in.] 0.302 in.] 0.336 in.] 0.313 in.]	TimeArea, Sq. In. 0.241 0.226 0.252 0.234] T OK]	16,960 15,650 17,530 16,250 ype & Posit: 2 Root - 50	UTS psi 70,370 69,250 69,560 69,440	B.M. B.M. B.M. B.M. Result Degrees - (
Preheat faximum lating	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1] [5G - 2] [Type & [2 Roo	No. No.	F R. nd dwell ne ne Thick. or Dia.] 0.323 in.] 0.302 in.] 0.336 in.] 0.313 in.]	TimeArea, Sq. In. 0.241 0.226 0.252 0.234] T OK]	16,960 15,650 17,530 16,250 ype & Posit:	UTS psi 70,370 69,250 69,560 69,440] B.M.] B.M.] B.M. Result
Preheat Maximum lating	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1] [5G - 2] [Type & [2 Roo	No. No.	F. R. nd dwell ne Thick. or Dia.] 0.323 in.] 0.302 in.] 0.336 in.] 0.313 in.]	TimeArea, Sq. In. 0.241 0.226 0.252 0.234] T OK]	16,960 15,650 17,530 16,250 ype & Posit: 2 Root - 50	UTS psi 70,370 69,250 69,560 69,440	B.M. B.M. B.M. B.M. Result Degrees - (
Preheat Maximum Olati Maximum Olati HEAT TRE Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1] [5G - 2] [Type & [2 Roo [2 Fac	No. No.	F. R. nd dwell ne Thick. or Dia.]	TimeArea, Sq. In. 0.241 0.226 0.252 0.234] T OK] OK]	16,960 15,650 17,530 16,250 ype & Posit: 2 Root - 50 2 Face - 50	UTS psi 70,370 69,250 69,560 69,440	B.M. B.M. B.M. B.M. Result Degrees - (
Preheat Maximum Olati Maximum Olati HEAT TRE Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1] [5G - 2] [Type & [2 Roo [2 Face] al Testing By_	No.	F. R. nd dwell ne Thick. or Dia.]	TimeArea, Sq. In. 0.241 0.226 0.252 0.234] T OK] OK]	16,960 15,650 17,530 16,250 ype & Posit: 2 Root - 50 2 Face - 50	UTS psi 70,370 69,250 69,560 69,440 Lon]	B.M. B.M. B.M. B.M. Result Degrees - (
Preheat Maximum Collate Maximum Collate Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1] [5G - 2] [Type & [2 Roo [2 Fac al Testing By_ Name_ ducted By	No. No.	F R. nd dwell ne ne Thick. or Dia.] O.323 in.] O.302 in.] O.336 in.] O.313 in.] Result] 180 Degrees Ingineers and Be k ter	TimeArea, Sq. In.	16,960 15,650 17,530 16,250 ype & Position 2 Root - 50 2 Face - 50 Lab. No.	UTS psi 70,370 69,250 69,560 69,440 Lon] 3]180 G]180] B.M.] B.M.] B.M. Result Degrees - (
Preheat Maximum Datimum Datimu	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1] [5G - 2] [Type & [2 Roo [2 Fac] al Testing By Name ducted By fy that the st	mimum 50 erature N. inches, as inches, as No. Width] 0.747 in.] 0.747 in.] 0.750 in.] 0.750 in.] Position ot - 2G ee - 2G Testing E B. Blaloc E. H. Bel	F R. nd dwell ne ne	TimeArea, Sq. In.	16,960 15,650 17,530 16,250 ype & Posit: 2 Root - 50 2 Face - 50 Lab. No.	UTS psi 70,370 69,250 69,560 69,440 Lon] G]180 OL5-2276] B.M.] B.M.] B.M. Result Degrees - (Degrees - (
Preheat Maximum Latinum Latinu	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1] [5G - 2] [Type & [2 Roo [2 Fac al Testing By_ Name_ ducted By_ fy that the st nd tested in a	mimum 50 erature N. inches, as inches, as No. Width] 0.747 in.] 0.747 in.] 0.750 in.] 0.750 in.] Position ot - 2G ee - 2G Testing E B. Blaloc E. H. Bel	F R. nd dwell ne ne Thick. or Dia.] O.323 in.] O.302 in.] O.336 in.] O.313 in.] Result] 180 Degrees Ingineers and Be k ter	TimeArea, Sq. In.	16,960 15,650 17,530 16,250 ype & Posit: 2 Root - 50 2 Face - 50 Lab. No.	UTS psi 70,370 69,250 69,560 69,440 Lon] G]180 OL5-2276] B.M.] B.M.] B.M. Result Degrees - (Degrees - (
Preheat Maximum Lati Maximum Lati Meduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con We certi welded a	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1] [5G - 2] [Type & [2 Roo [2 Fac al Testing By_ Name_ ducted By_ fy that the st nd tested in a	mimum 50 erature N. inches, as inches, as No. Width] 0.747 in.] 0.747 in.] 0.750 in.] 0.750 in.] Position ot - 2G ee - 2G Testing E B. Blaloc E. H. Bel	F R. nd dwell ne ne	TimeArea, Sq. In.	16,960 15,650 17,530 16,250 ype & Posit: 2 Root - 50 2 Face - 50 Lab. No.	UTS psi 70,370 69,250 69,560 69,440 Lon] G]180 OL5-2276] B.M.] B.M.] B.M. Result Degrees - (Degrees - (
Preheat Maximum Collation Interpretation Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con We certi welded a AWS D1.1	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1] [5G - 2] [Type & [2 Roo [2 Fac] al Testing By Name ducted By fy that the st and tested in a	mimum 50 erature N. inches, and inches, an	Thick. or Dia.] O.323 in.] O.302 in.] O.336 in.] O.313 in.] Result 180 Degrees - Ingineers and Be k ter this record are with the require	TimeArea, Sq. In. 0.241 0.226 0.252 0.234] T OK] OK] chtel Lab. e correct and ments of Sect	16,960 15,650 17,530 16,250 ype & Positi 2 Root - 50 2 Face - 50 Lab. No.	UTS psi 70,370 69,250 69,560 69,440 Lon] G]180 OL5-2276 est welds he ASME Co] B.M.] B.M.] B.M. Result Degrees - (Degrees - (
Preheat Maximum Olati Maximum Olati Maximum Olati Maximum Olati Meduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con We certi welded a AWS Dl.1 Recorded	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1] [5G - 2] [Type & [2 Roo [2 Fac al Testing By_ Name ducted By_ fy that the st nd tested in a	mimum 50 merature N. inches, and No. Width] 0.747 in.] 0.747 in.] 0.750 in.] 0.749 in.] Position of a 2G te - 2G Testing E B. Blaloc E. H. Bel tatements in accordance we september	F R. nd dwell ne ne	TimeArea, Sq. In. 0.241 0.226 0.252 0.234] T OK] OK] chtel Lab. e correct and ments of Sect	16,960 15,650 17,530 16,250 ype & Positi 2 Root - 50 2 Face - 50 Lab. No.	UTS psi 70,370 69,250 69,560 69,440 Lon] G]180 OL5-2276 est welds he ASME Co] B.M.] B.M.] B.M. Result Degrees - (Degrees - (
Preheat Maximum Olatima HEAT TRE Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con We certivelded a AWS D1.1 Recorded nal	Temperature Militerpass Tempion width ATMENT: Temp [Specimen No.] [nimum 50 erature N. inches, and inches, an	Thick. or Dia.] O.323 in.] O.302 in.] O.336 in.] O.313 in.] Result 180 Degrees - Ingineers and Be k ter this record are with the require	TimeArea, Sq. In. 0.241 0.226 0.252 0.234] T OK] OK] Chtel Lab. e correct and ments of Sect Reviewed B	16,960 15,650 17,530 16,250 ype & Position 2 Root - 50 2 Face - 50 Lab. No. that the total for IX of the second	UTS psi 70,370 69,250 69,560 69,440 Lon] G]180 OL5-2276 est welds he ASME Co] B.M.] B.M.] B.M. Result Degrees - (Degrees - (
Preheat Maximum Olatima HEAT TRE Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con We certivelded a AWS D1.1 Recorded nal	Temperature Mi Interpass Temp ion width ATMENT: Temp [Specimen No.] [2G - 1] [2G - 2] [5G - 1] [5G - 2] [Type & [2 Roo [2 Fac al Testing By_ Name ducted By_ fy that the st nd tested in a	mimum 50 merature N. inches, and Midth] 0.747 in.] 0.747 in.] 0.750 in.] 0.750 in.] Position t = 2G Testing E B. Blaloc E. H. Bel tatements in accordance we	Thick. or Dia.] O.323 in.] O.302 in.] O.336 in.] O.313 in.] Result 180 Degrees - Ingineers and Be k ter this record are with the require	TimeArea, Sq. In. 0.241 0.226 0.252 0.234] T OK] OK] chtel Lab. e correct and ments of Sect	16,960 15,650 17,530 16,250 ype & Position 2 Root - 50 2 Face - 50 Lab. No. that the total for IX of the second	UTS psi 70,370 69,250 69,560 69,440 Ion] G]180 OL5-2276 est welds he ASME Co] B.M.] B.M.] B.M. Result Degrees - (Degrees - (

MQS-WPS-014-1 Rev. 1 7/28/78

BECHTEL

WELDING PROCEDURE QUALIFICATION RECORD PQR NO. D2

Page 1 of 1

	e Specification		P1-A-c (S	tructu	ral)		Date	February	23, 1955
Welding	Process(es)		Shielded	Metal-	Arc		Location		1 Company,
							_		ria, Calif.
Mal	Specification		SA-106 Gr				to	Itself	
ASME P-N	0.1		1	0.D	6 inc		O.D. Range	Qualified	4 and over
	s 0.437 inch		· · · · · · · · · · · · · · · · · · ·	Thickn	ess Ran	ge Qua	lified $3/1$	6 through	any
ASME	letal Specifica					•		•	
ASME	5FA-3•1	AWS C1			E6010		F-No. 3		
	letal Chemistry	AWS CI	assificat	lon			F-No	A-N	lo•
Electrod	le Dia	N.			173	- D.			
Consumah	le Insert		<u>. </u>			Dia. le Nam			
	Type	•			IIA	e Nam	es <u>Lin</u>	coln Flee	tweld 5
Shieldin	g Gas:					Rate			
Purge Ga					-	Rate			
_	ssification		_			Name		·	· · · · · · · · · · · · · · · · · · ·
	of Groove	2G	& 5G	.		. Name		JOINT DES	TCN
	Direction		hill for	5G	 .		• .	COLMI DES	- LOM
Backing			ne .		•			·	•
	and Polarity	DC			 '		w 41-	⊢ 37 1/2*	
Amperage		N.					h1'	5, 1,7	1
Voltage		N.	R.				\		'/
Single o	r Multiple Arc	Si	ngle		-		1		
Travel S	peed N.R.	ipm. Os	cillation	с	pm.		7		~
	Pass Per Side	Ye	6		•				3/4
	Temperature Mi	nimum 50	F			•	1/16	$\langle \cdot \rangle / \langle \cdot \rangle$	1 1
Maximum	Interpass Temp	erature N.	R•			*		\rightarrow \sim	
Osocilat	ion width	inches, an	nd dwell		sec.			1-1-1/16	·. '.
	• .							11 710	
HD. TRE	ATMENT: Temp	• <u>No</u>	ne			ime			
Reduced	[Specimen No.]	Width]	Thick, or	Dia. l	Area Sc	. In.	Load, Lbs.] UTS psi] Remarks]
Section	[2G]	N.R. in.]	N.R.	in.]	N. I		N.R.	64,300	
Tensile	[2G]	N.R. in.]	N.R.	in.]	N. I		N.R.	63,669	
Tests	[5G]	N.R. in.]	N.R.	in.]	N.I] N.R.	62,700	
	[5G]	N.R. in.]	N.R.	in.]	N. I		N.R.	64,100	
						-		, 04,100	1 101/0
Guided	[Type & :	Position) F	esult		T	ype & Posit:	lon 1	Result]
Bend		t – 2G	180 Deg	rees	- OK]		2 Face - 20		Degrees - OK]
Tests		t - 5G	180 Deg	rees	- OK]	······	2 Face - 50		Degrees - OK]
Other	N.R. = not re	ecorded							
•		· · · · · · · · · · · · · · · · · · ·							
Machania	ni Tooti D	.			·· = = =				
Welder's	al Testing By		tsburgh I			•F•	Lab. No.	N.R.	
	ducted By		ry C. Whi		<u> </u>		_		
TCDL OOM	dered by	J.	N. Taylor	 -			·		
We certii	fy that the et	stemente in	this zooo	-4					_
welded at	nd tested in a	cordence in	th the me	ra are	correc	Cand	that the te	est welds	were prepared,
AWS D1.1	nd tested in ac	coldance wi	en the le	darrer	ments or	Secti	on ty of fi	e ASME Co	ode and
1					+			,	•
Recorded	on New Form	September	26 1970		Da	d D-	10 -	• 1	
	Designation	P-1A	20, 19/9		vente	wed by	JeBreis B.m. V	muste	
	ignations	- I IA			A =====	- OF 10-1	. Z L.)		_l
					Appro	vea B	Matarial -	nacceo	M Samura
	* **								y Services
MQS-WPS-	014-1					•	repartment,	kesearch	and Engineering

Rev. 1 7/28/78

ENCLOSURE (4)

BECHTEL

sheet 3 of 6

WELDING PROCEDURE QUALIFICATION RECORD

PQR NO. 184

Procedur	e Specification	n	P1-A-c-d	(Struct	ural)			April 9,	
	Process(es)		Shielded	Metal A	rc	Loca	tion	San Franci	
								California	
	Specification		SA-285 Gr			t	٥	Itself	
ASTE P-N	lo. <u> </u>	to P-No	1	0.D				ualified	
hicknes	s 1/4 inch			Thickne	ss Range	Qualifie	d 1/16	thru 1/2	inch
iller M	letal Specifica	tions:							
	SFA-5.1				E6010				
ASME		AWS C1	assificat	ion		F-No.		A-No	,
	ietal Chemistry							·	<u> </u>
lectrod	le Dia		5/32 inch	1	Wire D				·
	le Insert				Trade	Names	Flee	tweld 5	
	Type			 					
	ig Gas			 	_ Flow R				
urge Ga					Flow R				
	ssification				Flux N	ame		OINT DESIG	ZMI
	of Groove		2G and 3G 3G Downhi					CIMI DESI	
	Direction		None	11					
Backing	and Polarity		DCRP		_			•	
			120-140	 					
umperage Voltage			N.R.						
	or Multiple Arc		Single			·			
	Speed		N.R.	i	pm.	· [
fultiple	Pass Per Side	Sin	gle pass	each si	đe			- 1/8	
	Temperature Mi		60F					. '	
	remberature mi	птшиш	001						
			N.R.	_	 ·				
ia <u>xi</u> mum	Interpass Temp	erature	N.R.	se		. •			
laximum lat	Interpass Temp	erature - inch(es)	N.R.				· .		
laximum lat	Interpass Temp	erature - inch(es)	N.R.		C.		· · ·		
laximum lat lat	Interpass Tempion Width	erature - inch(es)	N.R.			e	-		
laximum lat lat	Interpass Tempion Width	erature - inch(es)	N.R. , Dwell None	cp	m. Tin				
Maximum lat lat lat TRE	Interpass Tempion Width ion Frequency ATMENT: Temp [Specimen No.]	erature - inch(es) - Width	N.R. , Dwell None Thick. or	cp Dia.]A	m. Tim rea Sq.	In.]Load			Remarks
Maximum lat lat lat HEAT TRE	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1]	width N.R. in.]	N.R. , Dwell None Thick. or N.R.	Dia.]A	m. Tim rea Sq. N.R.	In.]Load	N.R.	63,800	N.R.
laximum lat lat lat Reduced Section	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2]	width N.R. in.]	N.R. , Dwell None Thick. or N.R. N.R.	Dia.]A	Timrea Sq. N.R. N.R.	In.]Load	N.R.]	63,800 61,800	N.R. N.R.
daximum lat lat lat HEAT TRE Reduced Section Tensile	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1]	width N.R. in. N.R. in. N.R. in.	N.R. , Dwell None Thick. or N.R. N.R.	Dia.]A in.] in.]	rea Sq. N.R. N.R.	In.]Load	N.R.] N.R.] N.R.]	63,800 61,800 67,000	N.R. N.R. N.R.
daximum lat lat lat HEAT TRE Reduced Section Tensile	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2]	width N.R. in.]	N.R. , Dwell None Thick. or N.R. N.R.	Dia.]A in.]	Timrea Sq. N.R. N.R.	In.]Load	N.R.]	63,800 61,800	N.R. N.R.
laximum lat lat lat REAT TRE	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2]	width N.R. in.] N.R. in.] N.R. in.]	N.R. , Dwell None Thick. or N.R. N.R.	Dia.]A in.] in.] in.]	rea Sq. N.R. N.R.	In.]Load	N.R.] N.R.] N.R.]	63,800 61,800 67,000 65,000	N.R. N.R. N.R. N.R.
daximum lat lat lat Reduced Section Tensile Tests Guided	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type &	width N.R. in.] N.R. in.] N.R. in.] Position	N.R. , Dwell None Thick. or N.R. N.R. N.R.]	Dia.]A in.] in.] in.]	m. Tim rea Sq. N.R. N.R. N.R. N.R.	In.]Load	N.R.] N.R.] N.R.] N.R.] Positi	63,800 61,800 67,000 65,000	N.R. N.R. N.R. N.R.
Haximum lat lat lat lat IEAT TRE Reduced Section Tensile Tests	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type & 2 Fac	width N.R. in. N.R. in. N.R. in. Position e - 2G	N.R. , Dwell None Thick. or N.R. N.R. N.R.]] 180 Deg	Dia.]A in.] in.] in.] kesult rees -	Times Sq. N.R. N.R. N.R. N.R.	In.]Load]]]] Type & 2 Fa	N.R.] N.R.] N.R.]	63,800 61,800 67,000 65,000 on]	N.R. N.R. N.R. N.R.
Maximum lat lat HEAT TRE Reduced Section Tensile Tests Guided Bend Tests	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type & 2 Fac	width N.R. in.] N.R. in.] N.R. in.] Position	N.R. , Dwell None Thick. or N.R. N.R. N.R.]] 180 Deg	Dia.]A in.] in.] in.]	Times Sq. N.R. N.R. N.R. N.R.	In.]Load]]]] Type & 2 Fa	N.R.] N.R.] N.R.] N.R.] Positi ce - 30	63,800 61,800 67,000 65,000 on]	N.R. N.R. N.R. N.R. Result Degrees - O
Maximum lat lat lat HEAT TRE	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type & 2 Fac	width N.R. in. N.R. in. N.R. in. Position e - 2G	N.R. , Dwell None Thick. or N.R. N.R. N.R.]] 180 Deg	Dia.]A in.] in.] in.] kesult rees -	Times Sq. N.R. N.R. N.R. N.R.	In.]Load]]]] Type & 2 Fa	N.R.] N.R.] N.R.] N.R.] Positi ce - 30	63,800 61,800 67,000 65,000 on]	N.R. N.R. N.R. N.R. Result Degrees - O
HEAT TRE Reduced Section Tensile Tests Guided Bend Tests Other	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type & [2 Fac [2 Roo	width N.R. in. N.R. in. N.R. in. Position e - 2G t - 2G	N.R. , Dwell None Thick. or	Dia.]A in.] in.] in.] kesult rees -	Times Sq. N.R. N.R. N.R. N.R.	In.]Load]]] Type & 2 Fa 2 Ro	N.R.] N.R.] N.R.] N.R.] Positi ce - 30 ot - 30	63,800 61,800 67,000 65,000	N.R. N.R. N.R. N.R. Result Degrees - O
HEAT TRE Reduced Section Tensile Tests Guided Bend Tests Other	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type & [2 Fac [2 Roo	width N.R. in. N.R. in. N.R. in. Position e - 2G t - 2G Bechtel L	N.R. , Dwell None Thick. or	Dia.]A in.] in.] in.] kesult rees -	Times Sq. N.R. N.R. N.R. N.R.	In.]Load]]] Type & 2 Fa 2 Ro	N.R.] N.R.] N.R.] N.R.] Positi ce - 30	63,800 61,800 67,000 65,000	N.R. N.R. N.R. N.R. Result Degrees - O
Maximum lat lat lat HEAT TRE Reduced Section Tensile Tests Guided Bend Tests Other Mechanic	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type & [2 Fac [2 Roo] at Testing By_ Name	width N.R. in.] N.R. in.] N.R. in.] N.R. in.] Position e - 2G t - 2G Bechtel L W. Drumm	N.R. , Dwell None Thick. or N.R. N.R. N.R.]] 180 Deg] 180 Deg	Dia.]A in.] in.] in.] kesult rees -	Times Sq. N.R. N.R. N.R. N.R.	In.]Load]]] Type & 2 Fa 2 Ro	N.R.] N.R.] N.R.] N.R.] Positi ce - 30 ot - 30	63,800 61,800 67,000 65,000	N.R. N.R. N.R. N.R. Result Degrees - O
Maximum lat lat lat HEAT TRE Reduced Section Tensile Tests Guided Bend Tests Other Mechanic	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type & [2 Fac [2 Roo	width N.R. in. N.R. in. N.R. in. Position e - 2G t - 2G Bechtel L	N.R. , Dwell None Thick. or N.R. N.R. N.R.]] 180 Deg] 180 Deg	Dia.]A in.] in.] in.] kesult rees -	Times Sq. N.R. N.R. N.R. N.R.	In.]Load]]] Type & 2 Fa 2 Ro	N.R.] N.R.] N.R.] N.R.] Positi ce - 30 ot - 30	63,800 61,800 67,000 65,000	N.R. N.R. N.R. N.R. Result Degrees - O
HEAT TRE Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type & [2 Face [2 Roo	Width N.R. in. N.R. in. N.R. in. N.R. in. N.R. in. N.R. in. Desition E - 2G Bechtel L W. Drumm B. M. Mac	N.R. , Dwell None Thick. or N.R. N.R. N.R.]] 180 Deg] 180 Deg ab	Dia.]A in.] in.] in.] Result rees -	m. Tim rea Sq. N.R. N.R. N.R. OK]	In.]Load]]] Type & 2 Fa 2 Ro	N.R.] N.R.] N.R.] Positi ce - 30 ot - 30	63,800 61,800 67,000 65,000 on] S]180 I	N.R. N.R. N.R. N.R. Result Degrees - Ol
HEAT TRE Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type & [2 Fac [2 Roo] at Testing By_ Name	Width J.R. in.] N.R. in.] N.R. in.] N.R. in.] Position e - 2G t - 2G Bechtel L W. Drumm B. M. Mac	N.R. , Dwell None Thick. or N.R. N.R. N.R.]] 180 Deg] 180 Deg ab	Dia.]A in.] in.] in.] Result rees -	rea Sq. N.R. N.R. N.R. OK] OK] Correct	In.]Load]]] Type & 2 Fa 2 Ro La	N.R.] N.R.] N.R.] Positi ce - 30 b. No the te	63,800 61,800 67,000 65,000 on] S]180 1	N.R. N.R. N.R. N.R. Result Degrees - Of
HEAT TRE Reduced Section Tensile Tests Guided Bend Tests Other Mechanic Welder's Test Con	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type & 2 Fac [2 Roo at Testing By_ Mame_ ducted By_ fy that the st	Width J.R. in.] N.R. in.] N.R. in.] N.R. in.] Position e - 2G t - 2G Bechtel L W. Drumm B. M. Mac	N.R. , Dwell None Thick. or N.R. N.R. N.R.]] 180 Deg] 180 Deg ab	Dia.]A in.] in.] in.] Result rees -	rea Sq. N.R. N.R. N.R. OK] OK] Correct	In.]Load]] Type & 2 Fa 2 Ro La and that	N.R. N.R. N.R. N.R. N.R. N.R. N.R. N.R.	63,800 61,800 67,000 65,000 on] S]180 1 N.R.	N.R. N.R. N.R. N.R. Result Degrees - Of
daximum lat	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type & [2 Fac [2 Roo	Width N.R. in. N.R. in. N.R. in. N.R. in. N.R. in. N.R. in. Width N.R. in. N.R. i	N.R. , Dwell None Thick. or N.R. N.R. N.R.]] 180 Deg] 180 Deg ab leod this recaith the recaith the recairs	Dia.]A in.] in.] in.] Result rees -	rea Sq. N.R. N.R. N.R. OK] OK] correct	In.]Load]] Type & 2 Fa 2 Ro La and that	N.R. N.R. N.R. N.R. N.R. N.R. N.R. N.R.	63,800 61,800 67,000 65,000 on] S]180 1 N.R.	N.R. N.R. N.R. N.R. Result Degrees - Of
daximum lat	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type &	Width N.R. in.] N.R. in.] N.R. in.] N.R. in.] N.R. in.] N.R. in.] Position e - 2G t - 2G Bechtel L W. Drumm B. M. Mac atements in ccordance w November	N.R. , Dwell None Thick. or N.R. N.R. N.R.]] 180 Deg] 180 Deg ab leod this receith the received and rece	Dia.]A in.] in.] in.] Result rees - rees -	rea Sq. N.R. N.R. N.R. OK] OK] Correct	In.]Load]] Type & 2 Fa 2 Ro La and that	N.R. N.R. N.R. N.R. N.R. N.R. N.R. N.R.	63,800 61,800 67,000 65,000 on] S]180 1	N.R. N.R. N.R. N.R. Result Degrees - Of
daximum lat	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type & 2 Fac [2 Roo al Testing By_ shame_ ducted By_ fy that the stand tested in an	Width N.R. in.] N.R. in.] N.R. in.] N.R. in.] Position e - 2G t - 2G Bechtel L W. Drumm B. M. Mac atements in ccordance w	N.R. , Dwell None Thick. or N.R. N.R. N.R.]] 180 Deg] 180 Deg ab leod this receith the received and rece	Dia.]A in.] in.] in.] Result rees - rees -	rea Sq. N.R. N.R. N.R. OK] OK] Correct ents of S	In.]Load]]] Type & 2 Fa 2 Ro La and that ection I	N.R. N.R. N.R. N.R. N.R. N.R. N.R. N.R.	63,800 61,800 67,000 65,000 on] S]180 1 N.R.	N.R. N.R. N.R. N.R. Result Degrees - Of
daximum lat lat lat HEAT TRE Reduced Section Tensile Tests Guided Bend Tests Other Techanic Welder's Test Con We certified a Original	Interpass Temp ion Width ion Frequency ATMENT: Temp [Specimen No.] [2G-1] [2G-2] [3G-1] [3G-2] [Type &	Width N.R. in.] N.R. in.] N.R. in.] N.R. in.] N.R. in.] N.R. in.] Position e - 2G t - 2G Bechtel L W. Drumm B. M. Mac atements in ccordance w November	N.R. , Dwell None Thick. or N.R. N.R. N.R.]] 180 Deg] 180 Deg ab leod this receith the received and rece	Dia.]A in.] in.] in.] Result rees -	rea Sq. N.R. N.R. N.R. OK] OK] Correct ents of S	In.]Load]] Type & 2 Fa 2 Ro La and that ection 1 d By 3.	N.R.] N.R.] N.R.] Positi ce - 30 ot - 30 b. No the te X of th	63,800 61,800 67,000 65,000 con] G]180 I S]180 I	N.R. N.R. N.R. N.R. Result Degrees - Of

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BECHTEL

WELDING PROCEDURE QUALIFICATION RECORD

PQR NO. 254

'rocedure			011 D1	4-1h (St	ructural) D	ate	June 1	L2, 196	00
. 1 1 / To	Specification		Shielded !	Metal Ar	c	L	ocation			
elding P	rocess(es)		Shielded .					Califo		
	C		A514 (T-1	Steel)			to	A441		
SWE D No.	Specification_t		1*	O.D. P	late	0.	D. Range	Quali	fied	All
			<u> </u>	Thicknes	s Range	Ouali	fied $3/16$	thru	2 incl	nes ASME,
nickness	1.0 inch			unlimite		,	· · · · · · · · · · · · · · · · · · ·			
iller Me	tal Specificat	ions:	· · · · ·						•	
CWL TITEL WE	SFA-5.1	ANS C1	assificat	ion E	7018	F-	No •	4	_A-No.	1
SME		AWS C1	assificat	ion		F-	No.		A-No.	
	tal Chemistry_									
	Dia.		N.R.		Wire D	ia			<u>.</u>	
	e Insert				Trade	Names		N.R.		
	Type				<u> </u>			<u> </u>		
	Gas				Flow F	late	•.			
urge Gas					Flow F	late			<u> </u>	
	sification -				_ Flux N	lame -				
	of Groove		3G					JOINT	DESIG	I (
	Direction		Uphill						! !	-
	Strip		None					45°-	-1/	8
_	and Polarity		DC RP			/		45 .*	-1/	
			N.R.		· · ·	L	\			ク
oltage			N.R.		<u>-</u>		,			4
	r Multiple Arc		Single		<u> </u>	7			ـــا اد	
ravel Sp			N.R.	ip	m.					
	Pass Per Side		Yes	•						m Bead
	Temperature Min		200F		<u> </u>	Ele	ct. Dia.		-	h per
	Interpass Tempe		400F		<u> </u>		Inch			lectrode
llati	ion Width	inch(es)	, Dwell	sec	<u>.</u>		1/8			inches ·
			· -							
/llati	ion Frequency		'	cpr	5 •		5/32			inches
llat	ion Frequency _			cpr	ũ •		5/32 3/16			inches inches
			None	срг	Tir		•			
		•			Tir	ne	3/16		6	inches
EAT TREA	ATMENT: Temp	•	Thick. or	Dia.]A	Tin	ne	3/16 Load Lbs	 .] UTS	psi]	inches Remarks
EAT TREA		•	Thick. or	r Dia.]Ai	Tin	In.][3/16 coad Lbs 81,800	.] UTS	psi] 800]	Remarks BM (N.R.)
EAT TREA	ATMENT: Temp	Width]	Thick. or	Dia.]Ai 56 in.]	Tin	In.][3/16 Load Lbs	.] UTS	psi]	inches Remarks
educed ection ensile	ATMENT: Temporal [Specimen No.] [3G-1]	Width] 0.997 in.]	Thick. or 0.95	r Dia.]Ai	Tin	In.][3/16 coad Lbs 81,800	.] UTS	psi] 800]	Remarks BM (N.R.)
EAT TREA	ATMENT: Temporal [Specimen No.] [3G-1]	Width] 0.997 in.] 0'.998 in.]	Thick. or 0.95	Dia.]Ai 56 in.]	Tin	In.][3/16 coad Lbs 81,800	.] UTS	psi] 800]	Remarks BM (N.R.)
educed ection ensile	Specimen No.	Width] 0.997 in.] 0'.998 in.] in.]	Thick. or 0.95	Dia.]And 56 in.] 35 in.] in.]	Tin	In.]I	3/16 Load Lbs 81,800 79,400	.] UTS] 85,] 85,]	psi] 800]	Remarks BM (N.R.) BM (N.R.)
educed ection ensile ests	Specimen No.	Width] 0.997 in.] 0'.998 in.] in.]	Thick. or 0.95	Dia.]And 56 in.] 35 in.] in.]	Tirea Sq. 0.953 0.933	In.]I	3/16 coad Lbs 81,800	.] UTS] 85,] 85,]	psi] 800]	Remarks BM (N.R.)
educed ection ensile ests	Specimen No.	Width] 0.997 in.] 0'.998 in.] in.]	Thick. or 0.95	Dia.]And 56 in.] 35 in.] in.]	Tirea Sq. 0.953 0.933	In.]I	3/16 Load Lbs 81,800 79,400	.] UTS] 85,] 85,]	psi] 800]	Remarks BM (N.R.) BM (N.R.)
educed ection ensile ests	Specimen No.	Width] 0.997 in.] 0'.998 in.] in.] e - 3G	Thick. or 0.95 0.93	Dia.]And Dia.]And Dia.] Dia.]And Dia.] Dia.] Dia.] Dia.] Dia.] Dia.] Dia.] Result Dia.]	Tingea Sq. 0.953 0.933 0.933 OK]	In.]I	3/16 Load Lbs 81,800 79,400 De & Posi	.] UTS] 85,] 85,]	psi] 800] 100]]	Remarks BM (N.R.) BM (N.R.)
educed ection ensile ests	[Specimen No.] [3G-1] [3G-2] [] [] [4 Side	Width 0.997 in.] 0'.998 in.] in.] in.	Thick. or 0.95 0.93	r Dia.]Ar 56 in.] 35 in.] in.] in.] Result	Tirea Sq. 0.953 0.933	In.]I	3/16 Load Lbs 81,800 79,400 De & Posi	.] UTS] 85,] 85,]	psi] 800] 100]]	Remarks BM (N.R.) BM (N.R.)
educed ection ensile ests Guided Send	Specimen No.	Width 0.997 in.] 0'.998 in.] in.] in.	Thick. or 0.95 0.93	r Dia.]Ar 56 in.] 35 in.] in.] in.] Result	Tirea Sq. 0.953 0.933	In.]I	3/16 Load Lbs 81,800 79,400 De & Posi	.] UTS] 85,] 85,]	psi] 800] 100]]	Remarks BM (N.R.) BM (N.R.)
educed ection ensile ests	[Specimen No.] [3G-1] [3G-2] [] [] [4 Side [2 free bend *Similar to	Width 0.997 in.] 0'.998 in.] in.] in.] Position e - 3G tests 3G-1 ASME P nur	Thick. or 0.95 0.93	r Dia.]Ar 56 in.] 35 in.] in.] in.] Result	Tirea Sq. 0.953 0.933	In.]I	3/16 Load Lbs 81,800 79,400 De & Posi elongat	.] UTS] 85,] 85,] tion	psi] 800] 100]]]] Both s	Remarks BM (N.R.) BM (N.R.)
educed ection ensile ests	[Specimen No.] [3G-1] [3G-2] [] [] [4 Side	Width 0.997 in.] 0'.998 in.] in.] in. Position e - 3G tests 3G-1 ASME P nur	Thick. or 0.95 0.93	r Dia.]Ar 56 in.] 35 in.] in.] in.] Result	Tirea Sq. 0.953 0.933	In.]I	3/16 Load Lbs 81,800 79,400 De & Posi	.] UTS] 85,] 85,] tion	psi] 800] 100]]]] Both s	Remarks BM (N.R.) BM (N.R.)
educed ection ensile ests	[Specimen No.] [3G-1] [3G-2] [] [] [4 Side [2 free bend	Width 0.997 in.] 0'.998 in.] in.] in. Position e - 3G tests 3G-1 ASME P nur N.R. W. B. Key	Thick. or 0.95 0.93	r Dia.]Ar 56 in.] 35 in.] in.] in.] Result	Tirea Sq. 0.953 0.933	In.]I	3/16 Load Lbs 81,800 79,400 De & Posi elongat	.] UTS] 85,] 85,] tion	psi] 800] 100]]]] Both s	Remarks BM (N.R.) BM (N.R.)
Reduced Section Sensile Sests Guided Bend Sests Other	[Specimen No.] [3G-1] [3G-2] [] [] [4 Side [2 free bend	Width 0.997 in.] 0'.998 in.] in.] in. Position e - 3G tests 3G-1 ASME P nur	Thick. or 0.95 0.93	r Dia.]Ar 56 in.] 35 in.] in.] in.] Result	Tirea Sq. 0.953 0.933	In.]I	3/16 Load Lbs 81,800 79,400 De & Posi elongat	.] UTS] 85,] 85,] tion	psi] 800] 100]]]] Both s	Remarks BM (N.R.) BM (N.R.)
educed section sensile sests Suided send sests Sther section s	Specimen No.] [Specimen No.] [3G-1] [3G-2] [] [4 Side 2 free bend *Similar to al Testing By Name ducted By	Width 0.997 in.] 0'.998 in.] in.] in.] Position e - 3G tests 3G-1 ASME P nur N.R. W. B. Key W. B. Key	Thick. or 0.95 0.93] 180 De] 1, 27 percenters 11B	Dia.]And Dia.]And Dia.] So in.] in.] Result agrees — cent; 3G and 1.	Tingea Sq. 0.953 0.933 0.933 0.933	In.]I	3/16 Load Lbs 81,800 79,400 De & Posi elongat Lab. No	.] UTS] 85,] 85,] tion	psi] 800] 100]]] Both s	Remarks BM (N.R.) BM (N.R.) Result
educed ection ensile ests Guided end ests Other	Specimen No.] [Specimen No.] [3G-1] [3G-2] [] [4 Side [2 free bend *Similar to al Testing By Name ducted By fy that the st	Width 0.997 in.] 0'.998 in.] in.] in. Position e - 3G tests 3G-1 ASME P nur N.R. W. B. Key W. B. Key	Thick. or 0.95 0.95 1 180 De 1 27 percenters 11B yser yser	Result egrees - cent; 36 and 1.	Tingea Sq. 0.953 0.933 0	In.]I	3/16 Load Lbs 81,800 79,400 De & Posi Lab. No	.] UTS] 85,] 85,] tion N.F	psi] 800] 100]]] Both s	Remarks BM (N.R.) BM (N.R.) Result
Reduced Section Sensile Sests Guided Bend Sests Other Section	Specimen No.] [Specimen No.] [3G-1] [3G-2] [] [4 Side [2 free bend *Similar to al Testing By Name ducted By fy that the st	Width 0.997 in.] 0'.998 in.] in.] in. Position e - 3G tests 3G-1 ASME P nur N.R. W. B. Key W. B. Key	Thick. or 0.95 0.95 1 180 De 1 27 percenters 11B yser yser	Result egrees - cent; 36 and 1.	Tingea Sq. 0.953 0.933 0	In.]I	3/16 Load Lbs 81,800 79,400 De & Posi Lab. No	.] UTS] 85,] 85,] tion N.F	psi] 800] 100]]] Both s	Remarks BM (N.R.) BM (N.R.) Result
deduced dection densile dests dend dechanicated decreased decrease	Specimen No.] [Specimen No.] [3G-1] [3G-2] [] [Type &] [4 Side 2 free bend *Similar to al Testing By Name ducted By fy that the stand tested in according to the standard tested te	Width 0.997 in.] 0'.998 in.] in.] in. Position e - 3G tests 3G-1 ASME P nur N.R. W. B. Key W. B. Key	Thick. or 0.95 0.95 1 180 De 1 27 percenters 11B yser yser	Result egrees - cent; 36 and 1.	Tingea Sq. 0.953 0.933 0	In.]I	3/16 Load Lbs 81,800 79,400 De & Posi Lab. No	.] UTS] 85,] 85,] tion N.F	psi] 800] 100]]] Both s	Remarks BM (N.R.) BM (N.R.) Result
educed ection ensile ests Guided end ests Other MechanicaleIder's Mest Conductive ensile	Specimen No.] [Specimen No.] [3G-1] [3G-2] [] [Type &] [4 Side 2 free bend *Similar to al Testing By Name ducted By fy that the stand tested in according to the standard tested te	Width 0.997 in.] 0'.998 in.] in.] in. Position e - 3G tests 3G-1 ASME P nur N.R. W. B. Key W. B. Key	Thick. or 0.95 0.95 1 180 De 1 27 percenters 11B yser yser	Result egrees - cent; 36 and 1.	Tingea Sq. 0.953 0.933 0	In.]I	Joad Lbs 81,800 79,400 De & Posi elongat Lab. No	.] UTS] 85,] 85,] tion ion. test w	psi] 800] 100]]] Both s selds w	Remarks BM (N.R.) BM (N.R.) Result
Geduced Section Sensile Sests Guided Send Sests Other Sest Condition Ses Condition	[Specimen No.] [3G-1] [3G-2] [3] [4 Side [4 Side [4 Similar to al Testing By_Name_ducted By_ fy that the stand tested in ac-68	Width 0.997 in.] 0'.998 in.] in.] in. Position e - 3G tests 3G-1 ASME P nur N.R. W. B. Key W. B. Key	Thick. or 0.95 0.95 1 180 De 1 27 percenters 11B yser yser yser with the	Result egrees - cent; 36 and 1.	Tingea Sq. 0.953 0.933 0	In.]I	3/16 Load Lbs 81,800 79,400 De & Posi Lab. No	.] UTS] 85,] 85,] tion ion. test w	psi] 800] 100]]] Both s selds w	Remarks BM (N.R.) BM (N.R.) Result
Reduced Section Sensile Sests Guided Bend Sests Other Selder's Sest Conductor Ses	[Specimen No.] [3G-1] [3G-2] [] [] [Yype &] [4 Side [2 free bend *Similar to al Testing By_Name_ducted By_ fy that the stand tested in ac-68 on New Form_	Width 0.997 in.] 0.998 in.] in.] in. Position e - 3G tests 3G-1 ASME P nur N.R. W. B. Key W. B. Key atements in	Thick. or 0.95 0.95 1 180 De 1 27 percenters 11B year year this recail the second the s	Result egrees - cent; 3G and 1.	correctents of	In.]I	and Lbs 81,800 79,400 De & Posi Elongat Lab. No	.] UTS] 85,] 85,] tion ion. test w	psi] 800] 100]]] Both s selds w	Remarks BM (N.R.) BM (N.R.) Result
Reduced Section Sensile Sests Guided Bend Sests Other Mechanica Welder's Sest Conductor Sest Con	[Specimen No.] [3G-1] [3G-2] [3] [4 Side [4 Side [4 Similar to al Testing By_Name_ducted By_ fy that the stand tested in ac-68	Width 0.997 in.] 0.998 in.] in.] in. Position e - 3G tests 3G-1 ASME P nur N.R. W. B. Key W. B. Key atements in ccordance were	Thick. or 0.95 0.95 1 180 De 1 27 percenters 11B year year this recail the second the s	Result egrees - cent; 3G and 1.	Tingea Sq. 0.953 0.933 0	In.]I	and Lbs 81,800 79,400 De & Posi E elongat Lab. No	ion. N.F. test with AS	psi] 800] 100]]] Both s welds weld welds w	Remarks BM (N.R.) BM (N.R.) Result

BECHTEL WELDING PROCEDURE QUALIFICATION RECORD

	P1-F (CO2) (Str	uctural)	bate	Decemi	er 19,	19/3
Velding Process(es)			Locati	on Midlar	nd,	
				Michig	gan	
a 1 Specification	SA-36			Itself		
SML -No. 1 to P-1	No. 1 0.D.	Plate				
hickness 3/8 inch	Thickr	ness Range Q	ualified	1/16 t	hru 3/4	inch
iller Metal Specifications	:					
SMESFA-5.20	AWS Classification	E-70T-1	F-No	6	A-No	1
SME	AWS Classification		F-No.		A-No	
iller Metal Chemistry		100		·	<u> </u>	
lectrode Dia.		Wire Di	a •			
onsumable Insert	 -	Trade N	ames	Airco	Super C	Cor
ungsten Type				_		
hielding Gas	C02	Flow Ra	te	40 cfl	ו	
urge Gas	None	Flow Ra				
lux Classification		Flux Na				
osition of Groove	1G			JOIN'	T DESIGN	٧.
elding Direction						
	Yes, Carbon Ste	<u> </u>				
acking Strip			•		:,	
urrent and Polarity	210-250	 	*		300	* *
mperage	25-28			3,	_ 7	
oltage		. `		716	/	
ingle or Multiple Arc	Single		1		/-	į
ravel Speed	6-10	_ipm.	/32	- \	17	1
	37		1	1 \	<i>V</i> .	i
ultiple Pass Per Side	Yes		.,	+	<u> </u>	
ultiple Pass Per Side reheat Temperature Minimum	Yes 60F			1	<u>Y</u> .	
ultiple Pass Per Side reheat Temperature Minimum aximum Interpass Temperatu	Yes 60F re N.R.				<u>Y</u>	
ultiple Pass Per Side	Yes 60F re N.R. ch(es), Dwell s	sec.			<u>Y</u>	
ultiple Pass Per Side	Yes 60F re N.R. ch(es), Dwell s	sec.			<u> </u>	
reheat Temperature Minimum aximum Interpass Temperature strong Width in ation Frequency	Yes 60F re N.R. ch(es), Dwell	cpm•			<u> </u>	
reheat Temperature Minimum aximum Interpass Temperaturs ation Width instantion Frequency	Yes 60F re N.R. ch(es), Dwell s				<u> </u>	
reheat Temperature Minimum aximum Interpass Temperature strain Width in ation Frequency	Yes 60F re N.R. ch(es), Dwell &	cpm. Time		1	y S per 1	Pemarks
reheat Temperature Minimum aximum Interpass Temperaturs ation Width in station Frequency	Yes 60F re N.R. ch(es), Dwell s None th] Thick. or Dia.	Time	n.]Load	Lbs.] UT:		Remarks
reheat Temperature Minimum aximum Interpass Temperature strain width in ation Frequency	Yes 60F re N.R. ch(es), Dwell s None th]Thick. or Dia. 9 in.] 0.324 in.	Time Area Sq. I 0.486	n.]Load	Lbs.] UT:	,100]	BM
reheat Temperature Minimum aximum Interpass Temperaturs stion Width instantion Frequency EAT TREATMENT: Temp. educed [Specimen No.] Widection [1G - 1] 1.49 ensile [1G - 2] 1.50	Yes 60F re N.R. ch(es), Dwell (A) None th]Thick. or Dia. 9 in.] 0.324 in. 4 in.] 0.305 in.	Time Area Sq. I 0.486 0.459	n.]Load	Lbs.] UT:	,100]	·····
reheat Temperature Minimum aximum Interpass Temperaturs attion Width instantion Frequency EAT TREATMENT: Temp. educed [Specimen No.] Widection [1G - 1] 1.49 ensile [1G - 2] 1.50	Yes 60F re N.R. ch(es), Dwell s None th]Thick. or Dia. 9 in.] 0.324 in. 4 in.] 0.305 in. in.] in.	Time Area Sq. I 0.486 0.459	n.]Load	Lbs.] UT:	,100]	BM
reheat Temperature Minimum aximum Interpass Temperaturs stion Width instantion Frequency EAT TREATMENT: Temp. educed [Specimen No.] Widection [1G - 1] 1.49 ensile [1G - 2] 1.50	Yes 60F re N.R. ch(es), Dwell s None th]Thick. or Dia. 9 in.] 0.324 in. 4 in.] 0.305 in.	Time Area Sq. I 0.486 0.459	n.]Load	Lbs.] UT:	,100]	BM
reheat Temperature Minimum aximum Interpass Temperaturs stion Width instantion Frequency	Yes 60F re N.R. ch(es), Dwell (a) None th]Thick. or Dia. 9 in.] 0.324 in. 4 in.] 0.305 in. in.] in.	Time Area Sq. I 0.486 0.459	n.]Load] 33,] 32,:	Lbs.] UT:	,100] ,800]	BM BM
reheat Temperature Minimum aximum Interpass Temperaturs ation Width instantion Frequency	Yes 60F re N.R. ch(es), Dwell s None th]Thick. or Dia. 9 in.] 0.324 in. 4 in.] 0.305 in. in.] in.	Time Area Sq. I 0.486 0.459 1	n.]Load] 33,] 32,:	Lbs.] UT:	,100] ,800]	BM
reheat Temperature Minimum aximum Interpass Temperaturs ation Width instantion Frequency	Yes 60F re N.R. ch(es), Dwell s None th]Thick. or Dia. 9 in.] 0.324 in. 4 in.] 0.305 in. in.] in. in.] in. in.] for J Result	Time Area Sq. I 0.486 0.459 - OK	n.]Load] 33,] 32,:	Lbs.] UT:	,100] ,800]	BM BM
reheat Temperature Minimum aximum Interpass Temperature stion Width instantion Frequency	Yes 60F re N.R. ch(es), Dwell None None th	Time Area Sq. I 0.486 0.459 - OK n.]Load] 33,] 32,]] Type &]	Lbs.] UT:	,100] ,800]	BM BM	
reheat Temperature Minimum aximum Interpass Temperature aximum Interpass	Yes 60F re N.R. ch(es), Dwell s None th]Thick. or Dia. 9 in.] 0.324 in. 4 in.] 0.305 in. in.] in. in.] in. in.] for J Result	Time Area Sq. I 0.486 0.459 - OK n.]Load] 33,] 32,]] Type &]	Lbs.] UT:	,100] ,800]	BM BM	
reheat Temperature Minimum aximum Interpass Temperaturs ation Width instantion Frequency EAT TREATMENT: Temp. educed [Specimen No.] Wide ection [1G - 1] 1.49 ensile [1G - 2] 1.50 ests [] uided [Type & Posit end [2 Face - 1 ests [2 Root - 1]	Yes 60F re N.R. ch(es), Dwell None th	Time Area Sq. I 0.486 0.459 - OK n.]Load] 33,] 32,]] Type &]	Lbs.] UT:	,100] ,800]	BM BM	
reheat Temperature Minimum aximum Interpass Temperaturs ation Width instantion Frequency EAT TREATMENT: Temp. educed [Specimen No.] Wide ection [1G - 1] 1.49 ensile [1G - 2] 1.50 ests [] uided [Type & Posit end [2 Face - 1 ests [2 Root - 1]	Yes 60F re N.R. ch(es), Dwell None th	Time Area Sq. I 0.486 0.459 - OK n.]Load] 33,] 32,]] Type &]	Lbs.] UT:	,100] ,800]	BM BM	
reheat Temperature Minimum aximum Interpass Temperaturs ation Width instantion Frequency	Yes 60F re N.R. ch(es), Dwell None th	Time Area Sq. I 0.486 0.459 - OK n.]Load] 33,:] 32,:] Type &]	Lbs.] UT:	,100] ,800]]]]	BM BM Result	
reheat Temperature Minimum faximum Interpass Temperature at ion Width in station Frequency	Yes 60F re N.R. ch(es), Dwell None th]Thick. or Dia. 9 in.] 0.324 in. 4 in.] 0.305 in. in.] in. in.] in. ion] Result G] 180 Degrees G] 180 Degrees y to RT-XG-1, accepts	Time Area Sq. I 0.486 0.459 - OK n.]Load] 33,:] 32,:] Type &]	Lbs.] UT:	,100] ,800]]]]	BM BM Result	

MQS-WPS-014-1 Rev. 3 7/19/79

ed on New Form

Original Designation

Other Designations_

Dear Laf 1

Materials and Quality Services

a KBorline

Research and Engineering

Approved By 3. m. madle of

Reviewed By_

January 8, 1980

P1-F (G) Structural

ENCLOSURE (4) SHEET 6 016 RECORD POR NO. 225

BFCHTEL

WELDING PROCEDURE QUALIFICATION RECORD

rocedure Specification	P1-F (Structural)		Date Aug Location Bel	linoham.	707
elding Process(es)	Flux Cored Arc			hington	
				elf	
al Specification	SA-36	late 0			
SME P-No. 1 to P-No	1 Galla E	s Range Qual	. 17. Kange Qu	thru $3/4$	inch
hickness <u>3/8 inch</u>	Thicknes	s kange Quar	111ed 1/10	Circ Sy	
iller Metal Specifications:	· 			4 37	•
SME SFA-5.20 AW	S Classification F			A-NO•	
SME AW	S Classification	F	'-No •	A-NO•	
lller Metal Chemistry					
lectrode Dia.	5/64 inch	Wire Dia		Fluxcor	1
onsumable Insert	None	Trade Name	s Alfec	FIUXCOL	
ungsten Type			40 cf		
nielding Gas	002	Flow Rate		LII	
irge Cas		Flow Rate			
lux Classification		Flux Name		DINT DESIG	N
osition of Groove	1G -		.	,	
elding Direction	C C+			,	•
acking Strip	Yes - Carbon Stee	<u> </u>			
urrent and Polarity	DCRP-	_		1/8 30-	_/
mperage	N.R.	· ·			
oltage	N.R.		:		
ingle or Multiple Arc	Single		<u> </u>		\leq .
ravel Speed		уш•	. 7		1
ultiple Pass Per Side	Yes				
				1 ("	
reheat Temperature Minimum_	60F				
reheat Temperature Minimum_ authorn Interpass Temperature	60F N.R.				
reheat Temperature Minimum autoum Interpass Temperature ation Width inch	60F e N.R. n(es), Dwell se	C.	-		
reheat Temperature Minimum autom Interpass Temperature ation Width inch	60F e N.R. n(es), Dwell se	***			
reheat Temperature Minimum authum Interpass Temperature ation Width inch station Frequency	60F e N.R. n(es), Dwell se cp	***			
reheat Temperature Minimum authum Interpass Temperature ation Width inch station Frequency	60F e N.R. n(es), Dwell se cp	m. Time		LVTC - 2 d	l Pomorks
reheat Temperature Minimum arinum Interpass Temperature ation Width inchantion Frequency	60F N•R• n(es), Dwell se cp None	Time]Load Lbs.]	UTS psi] Remarks
reheat Temperature Minimum animum Interpass Temperature ation Width inch station Frequency EAT TREATMENT: Temperature inch station Frequency EAT TREATMENT: Temperature inch station	60F e N.R. n(es), Dwell se cp None h]Thick. or Dia.]A in.] N.R. in.]	Time	N.R.	72,860] N.R.
reheat Temperature Minimum autoum Interpass Temperature ation Width inch station Frequency EAT TREATMENT: Temperature at a second	60F e N.R. n(es), Dwell se cp None h]Thick. or Dia.]A	Time	Load Lbs. N.R. N.R.] N.R.
reheat Temperature Minimum_aximum Interpass Temperature ation Width inchest inches inch	60F e N.R. n(es), Dwell se cp None h]Thick. or Dia.]A in.] N.R. in.]	Time	N.R.	72,860] N.R.
reheat Temperature Minimum_aximum Interpass Temperature ation Width inchest inches inch	60F N.R. n(es), Dwell se cp None h]Thick. or Dia.]A in.] N.R. in.]	Time	N.R.	72,860] N.R.
reheat Temperature Minimum animum Interpass Temperature ation Width inches Interpass Temperature ation Frequency EAT TREATMENT: Temperature inches Inch	60F e N.R. n(es), Dwell se cp None h]Thick. or Dia.]A in.] N.R. in.] in.] N.R. in.] in.] in.] in.]	Time	N.R. N.R. 	72,860 71,280] N.R.] N.R.]
reheat Temperature Minimum_animum Interpass Temperature ation Width inches Interpass Temperature ation Frequency EAT TREATMENT: Temperature inches Inch	60F e N.R. n(es), Dwell se cp None h]Thick. or Dia.]A in.] N.R. in.] in.] N.R. in.] in.] in.]	Time	N.R.	72,860 71,280] N.R.
reheat Temperature Minimum animum Interpass Temperature ation Width inch ation Frequency EAT TREATMENT: Temp. educed [Specimen No.] Width ection [1G-1] N.R. ensile [1G-2] N.R. ests [] [] uided [Type & Positi end [2 Face - 1G	60F e N.R. n(es), Dwell se cp None h]Thick. or Dia.]A in.] N.R. in.] in.] N.R. in.] in.] in.] on] Result] 180 Degrees -	Time	N.R. N.R. 	72,860 71,280] N.R.] N.R.]
reheat Temperature Minimum and Tum Interpass Temperature ation Width inches I ation Frequency EAT TREATMENT: Temp. educed [Specimen No.] Width ection [1G-1] N.R. ensile [1G-2] N.R. ensile [] [] Guided [Type & Positi] Guided [2 Face - 1G] Cests [2 Root - 1G	60F e N.R. n(es), Dwell se cp None h]Thick. or Dia.]A in.] N.R. in.] in.] N.R. in.] in.] in.]	Time	N.R. N.R. 	72,860 71,280] N.R.] N.R.]
reheat Temperature Minimum and Tum Interpass Temperature ation Width inches I ation Frequency EAT TREATMENT: Temp. educed [Specimen No.] Width ection [1G-1] N.R. ensile [1G-2] N.R. ensile [] [] Guided [Type & Positi] Guided [2 Face - 1G] Cests [2 Root - 1G	60F e N.R. n(es), Dwell se cp None h]Thick. or Dia.]A in.] N.R. in.] in.] N.R. in.] in.] in.] on] Result] 180 Degrees -	Time	N.R. N.R. 	72,860 71,280] N.R.] N.R.]
reheat Temperature Minimum and Temperature at Interpass Temperature Interpass Int	60F e N.R. n(es), Dwell se cp None h]Thick. or Dia.]A in.] N.R. in.] in.] N.R. in.] in.] in.] on] Result] 180 Degrees -	Time	N.R. N.R. 	72,860 71,280] N.R.] N.R.]
reheat Temperature Minimum and Temperature ation Width inches I ation Frequency EAT TREATMENT: Temperature ation [1G-1] N.R. ensile [1G-2] N.R. ensile [] [] [] [] [] [] [] [] [] [60F e N.R. n(es), Dwell se cp None h]Thick. or Dia.]A in.] N.R. in.] in.] N.R. in.] in.] in.] on] Result] 180 Degrees -] 180 Degrees -	Time	N.R.] N.R.]] ype & Positi	72,860 71,280 on]] N.R.] N.R.]
reheat Temperature Minimum and Temperature at Interpass Temperature at Inch at Inch Inch Inch Inch Inch Inch Inch Inch	60F e N.R. n(es), Dwell se cp None h]Thick. or Dia.]A in.] N.R. in.] in.] in.] in.] on] Result] 180 Degrees -] 180 Degrees -	Time	N.R. N.R. 	72,860 71,280 on]] N.R.] N.R.]
reheat Temperature Minimum and Temperature at Interpass Temperature at Inch at	60F e N.R. n(es), Dwell se cp None h]Thick. or Dia.]A in.] N.R. in.] in.] in.] in.] on] Result] 180 Degrees -] 180 Degrees t Eldridge Test Lab	Time	N.R.] N.R.]] ype & Positi	72,860 71,280 on]] N.R.] N.R.]
reheat Temperature Minimum and Tum Interpass Temperature ation Width inch ation Frequency EAT TREATMENT: Temp. educed [Specimen No.] Width ection [1G-1] N.R. ests [] [] Guided [Type & Positi] Cuided [2 Face - 1G] Cests [2 Root - 1G] Other dechanical Testing By Coas N.R. elder's Name N.R.	60F e N.R. n(es), Dwell se cp None h]Thick. or Dia.]A in.] N.R. in.] in.] in.] in.] on] Result] 180 Degrees -] 180 Degrees -	Time	N.R.] N.R.]] ype & Positi	72,860 71,280 on]] N.R.] N.R.]
reheat Temperature Minimum antique Interpass Temperature ation Width inch station Frequency EAT TREATMENT: Temp. Reduced [Specimen No.] Width ection [1G-1] N.R. Rensile [1G-2] N.R. Rests [] [] Ruided [Type & Positi	60F e N.R. n(es), Dwell se cp None h	Time	N.R.] N.R.] N.R.] J J J J Lab. No.	72,860 71,280 on]	N.R. N.R. Result
reheat Temperature Minimum autoum Interpass Temperature ation Width inch ation Frequency EAT TREATMENT: Temp. Reduced [Specimen No.] Width Section [1G-1] N.R. Censile [1G-2] N.R. Censile [1G-2] N.R. Cests [] Guided [Type & Positi Bend [2 Face - 1G Cests [2 Root - 1G Cests [2 Root - 1G Cests [2 Root - 1G Cests [3 Coas Cest Conducted By J. G	60F N.R. n(es), Dwell se cp None n]Thick. or Dia.]A in.] N.R. in.] in.] in.] in.] in.] on] Result] 180 Degrees -] 180 Degrees - t Eldridge Test Lab	Time	N.R.] N.R.] N.R.] No.R.] No.R.] Lab. No that the te	72,860 71,280 on]] N.R.	N.R. N.R. Result
reheat Temperature Minimum antoum Interpass Temperature ation Width inch ation Frequency EAT TREATMENT: Temp. Educed [Specimen No.] Width ection [1G-1] N.R. Ensile [1G-2] N.R. Eests [] [] Guided [Type & Positi	60F N.R. n(es), Dwell se cp None n]Thick. or Dia.]A in.] N.R. in.] in.] in.] in.] in.] on] Result] 180 Degrees -] 180 Degrees - t Eldridge Test Lab chiselli	Time	N.R.] N.R.] N.R.] No.R.] No.R.] Lab. No that the te	72,860 71,280 on]] N.R.	N.R. N.R. Result
reheat Temperature Minimum antoum Interpass Temperature ation Width inch ation Frequency EAT TREATMENT: Temp. Educed [Specimen No.] Width ection [1G-1] N.R. Ensile [1G-2] N.R. Eests [] [] Guided [Type & Positi	60F N.R. n(es), Dwell se cp None n]Thick. or Dia.]A in.] N.R. in.] in.] in.] in.] in.] on] Result] 180 Degrees -] 180 Degrees - t Eldridge Test Lab chiselli	Time	N.R.] N.R.] N.R.] No.R.] No.R.] Lab. No that the te	72,860 71,280 on]] N.R.	N.R. N.R. Result
reheat Temperature Minimum and Temperature at Interpass Temperature at Interpass Temperature at Inch a	60F N.R. n(es), Dwell se representation of the limited service of the limited servic	Time	N.R.] N.R.] N.R.] N.R.] J J J J J J J J J J J J J J J J J J J	72,860 71,280 on]] N.R.	N.R. N.R. Result Were prepar de AWS D1.0
reheat Temperature Minimum_animum Interpass Temperature ation Width inch ation Frequency EAT TREATMENT: Temp. Reduced [Specimen No.] Width Section [1G-1] N.R. Rensile [1G-2] N.R. Rests [] [] Guided [Type & Positi] Guided [Type & Positi] Guided [2 Face - 1G Tests [2 Root - 1G Other Mechanical Testing By Coas N.R. Fest Conducted By J. G We certify that the statement welded and tested in accordance and AWS D2.0 Reduced Interpass Temperature Minimum Interpass Temperature Reduced Specimen No. Vidtor Video	60F N.R. n(es), Dwell se representation of Dia.] A in.] N.R. in.] in.] N.R. in.] in.] in.] on] Result] 180 Degrees -] 180 Degrees - t Eldridge Test Lab chiselli ats in this record are ance with the requirer	Time	N.R.] N.R.] N.R.] N.R.] J J J J J J J J J J J J J J J J J J J	72,860 71,280 on]] N.R.	N.R. N.R. Result Were prepar de AWS D1.0
reheat Temperature Minimum and Temperature at Interpass Temperature at Interpass Temperature at Inch at Inch at Inch at Inch at Inch Inch Inch Inch Inch Inch Inch Inch	60F N.R. n(es), Dwell se representation of the limited service of the limited servic	Time	N.R.] N.R.] N.R.] N.R.] J J J J J J J J J J J J J J J J J J J	72,860 71,280 on] on] N.R. est welds he ASME Co	N.R. N.R. Result Were prepar de AWS D1.0

MQS-WPS-014-1 Rev. 3 7/19/79

Enclosure 8
BPC Field Weld Check-Off List

FNCLOSURE (8) SHEET 10-12 FIELD WELD CHECK-OFF LIST Job No._____ Unit No.____

FRAL INFORMATION		l W.E.	Authorized Code	e Inst
	Initials		Signature	Date
System				
Iso, No.				
Weld No.				:
Material				
Diameter Wall Thickness				
Welding Procedure	ļ			ļ
Filler Metal: Root				
Filler Passes				
Preheat Dropper Toint Dropper				
Proper Joint Preparation and Fit-Up				ļ
ased for Welding	ļ			
Welders Name & Symbol			·	
Welders Name & Symbol				
WELD INSPECTION DATA				
Visual Inspection				
Post Heat TempTime				
Liquid Penetrant: Root				<u> </u>
Cover				
Magnetic Particle				
Radiographed				
Radiography Results: Accepted				
Rejected				
CERTIFIED CORRECT		,	, i	

Bechtel Job No Unit No
EXHIBIT 8 8 Weld number Original Repair No. Original WR-5 S.N. 9 Pipe diameter 10 Joint thickness 11 Backing rings required Inserts require
FOR FIELD USE ONLY
RECORDED RESULTS FWE Date
Gas type Gas ty
Type: Control Designation(s) F7018 F6010 F308L-16 F309-16 Other F 70S-2 FR308L FR 309 Other

Inspected by:

Above RESULTS CERTIFIED CORRECT:

Date

Authorized Code Inspector Date

Field Welding Engineer (FWE)

Welder's name(s) & symbol

6 Code Inspector Hold Points

Code Inspection, Item(s) No.

Item No.