

Washington Public Power Supply System
A JOINT OPERATING AGENCY

P. O. BOX 1223

ELMA, WASHINGTON 98541



PHONE (206) 245-5001

January 30, 1981
G03-81-272

Nuclear Regulatory Commission, Region V
Suite 202, Walnut Creek Plaza
1990 North California Boulevard
Walnut Creek, California 94596

Attention: Mr. R. H. Engelken
Chief Reactor Construction and
Engineering Support Branch

Gentlemen:

Subject: WPPSS NUCLEAR PROJECTS 3 AND 5
508/79-10-06 AND 509/79-09-03
FAILURE OF CHICAGO BRIDGE AND IRON
TO QUALIFY WELDING PROCEDURES IN
ACCORDANCE WITH SPECIFIED ASME
REQUIREMENTS



- References:
- 1) Letter, G. S. Spencer to N. O. Strand,
"NRC Inspection WNP-3/5," dated December 14, 1979.
 - 2) G03-80-91, letter, D. L. Renberger to G. S. Spencer,
same subject, dated January 18, 1980.
 - 3) Letter, G. S. Spencer to N. O. Strand,
same subject, dated January 31, 1980.
 - 4) Letter, G. S. Spencer to R. L. Ferguson,
same subject, dated September 4, 1980.

Reference 4 details the NRC position concerning qualification requirements for Chicago Bridge and Iron welding procedure specification E-7018/74-3431, Revision 2. This position is consistent with your original infraction notice. In response thereto, enclosed are additional CB&I procedure qualification records which include the maximum amperages specified in the WPS for 1/8 inch and 5/32 inch electrode diameters. The enclosed test data supplements the original procedure qualification records and is believed to satisfy the requirements of Reference 4. It should be noted that the test results did not list the actual interpass temperature for each pass. However, CB&I has documented in the cover letter that the actual interpass temperature was just below the maximum specified interpass temperature.

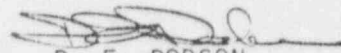
8104080 760

81-10

January 30, 1981
G03-81-272

As previously stated in Reference 2, WNP-3/5 does not agree with the fundamental NRC position in this matter. Specifically, we are concerned with the NRC's request to invoke code requirements that are issued after the effective date of a construction contract. For the case in question the effective contract date is October, 1974 and the effective ASME Code is the 1974 Edition, including the Summer 1974 Addenda. The procedure qualification requirements, referred to in NRC letter Reference 4, were added to the ASME Code in the 1977 Edition, Winter 1978 Addenda. We find no requirement nor intent in the ASME Code to make these new requirements retroactive nor is such felt to be normal industry practice; other than on an exception basis WNP-3/5 intends to follow that practice in the future.

Very truly yours,



D. E. DOBSON

Acting Program Director, WNP-3/5

Enclosures

cc: D. Smithpeter - BPA
Ebasco - New York
WNP-3/5 Files - Richland

D. E. DOBSON, Being first duly sworn, deposes and says: That he is the Acting Program Director, WNP-3/5, for the WASHINGTON PUBLIC POWER SUPPLY SYSTEM, the applicant herein; that he is authorized to submit the foregoing on behalf of said applicant; that he has read the foregoing and knows the contents thereof; and believes the same to be true to the best of his knowledge.

DATED 1.29, 1981.

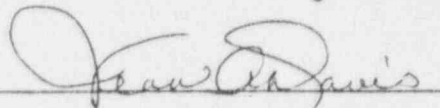


D. E. DOBSON

STATE OF WASHINGTON)
COUNTY OF GRAYS HARBOR) ss

On this day personally appeared before me D. E. DOBSON to me known to be the individual who executed the foregoing instrument and acknowledged that he signed the same as his free act and deed for the uses and purposes therein mentioned.

GIVEN under my hand and seal this 29th day of January, 1981.



Notary Public in and for the State
of Washington
Residing at Elma

Chicago Bridge & Iron Company

41777 Boyce road, p o box 5005
Fremont, California 94538

twx 910 381 6070
cable CHIBRIDGE Fremont
telephones 415. 557 1600

80 SEP 19 P 1: 10



September 17, 1980

Washington Public Power Supply System
P. O. Box 1223
Elma, Washington 98541

ATTENTION: Chris Kudla

RE: WELDING PROCEDURE QUALIFICATION
CBI CONTRACTS 74-3431, 74-3703
SATSOP JOBSITE
UNITS #3 AND #5

WNP-3&5		A
TITLE		OT
DM MANAGER		
MGR PROJECTS		
DEPUTY DM MGR		
MGR CONSTR		
MGR ENGINEERING		
PROJ ENG MGR		
CONTRACT MGR		
OPERATIONS		
BUSINESS MGR		
CONTROL MGR		
QUALITY MGR		
ADMIN MGR		
CONTROLLER		
C. KUOLA		
FILE		
A - ACTION 213		

Chris,

To confirm our phone conversation yesterday concerning the NRC's interpretation of ASME Section IX, S74 Addenda, Paragraph 409.1 and the additional procedure qualification run by CBI, covered by FNC Number 213-15. The two items discussed were an error in recording of amps used on PQR 4657 (corrected copy attached) and how the procedures were run with respect to interpass temperature. Each procedure was qualified by adding weld layers as soon as the test sample cooled to 500°, which is the maximum interpass temperature.

Again we would state that based on previous code inquiries the NRC's position is not parallel to that of the code. We use as an example Mr. Bagner's letter to Mr. Christensen, dated 8-9-77, see copy attached.

If you have any other questions or if we can be of any assistance please let us know.

Paul Van Niel
Fremont Construction

PTV/110
Attachment



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PROCEDURE QUALIFICATION RECORD TO ASME SECTION IX

PART II ESSENTIAL VARIABLES

PQR No. 4656 Date 5/23/80

Process SMAW Manual or Machine Manual

Material specification AS16 Gr. 70 Nom.

ASME p. no. 1 Gd 2 To ASME p. no. 1 Gd 2 FLUX OR ATMOSPHERE
Flux trade name None Required

Thickness (if pipe, dia and wall thick) 6" Inert gas composition None Required

Thickness range this test qualifies 3/16" - max. Flow rate None Required

Filler metal group no. F. 4 Is backing strip used? Yes

Weld metal analysis no. A. 1 Preheat temperature range 200°F - 500°F (1PT)

ASME specification no. SFA 5.1 Postheat treatment 15 hours at 1150°F

AWS specification no. A 5.1

WELDING PROCEDURE

Single or multiple pass Multiple Single or multiple arc Single Position of groove 1G, 4G

Electrode E7018 Filler wire diameter 1/8"Ø, 5/32"Ø, 1/4"Ø

Type of backing Temporary 3/8"Ø P-1 Bar Welding current Direct Current, Electrode Positive

Consult PART III WELDING VARIABLES for joint dimensions and welding current settings. (Reverse Polarity)

TEST RESULTS

Reduced Section Tensile Results

Specimen No.	Dimensions		Area	Ultimate Total Load Lb	Ultimate Unit Stress PSI	Character of Failure and Location
	Width	Thickness				
See Page 2	---	---	---	---	-----	-----
See page 2	---	---	---	---	-----	-----

Guided Bend Test

Type	Result	Type	Result
4 Side Bends	OK	-----	---

Welder's name Carl Westfall Social Security no. 356-16-6278 Welder's Symbol CW

Who by virtue of these tests meets welder performance requirements.

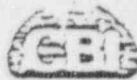
We certify that the statements in this record are correct and that the test weld was prepared, welded and tested in accordance with the requirements of Section IX of the ASME code.

Laboratory test no. H775P Signed CHICAGO BRIDGE & IRON COMPANY Date 5/23/80

By Larry Lamb

Remarks:

Plate edges coated with carboweld 11.



PROCEDURE QUALIFICATION RECORD

To A.S.M.E. Section IX

PART III WELDING VARIABLES

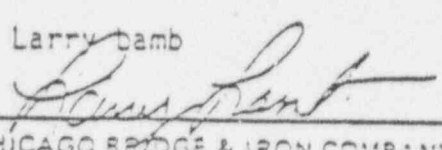
TEST RESULTS

Reduced Section Tensile Results

Specimen No.	Dimensions		Area	Ultimate Total Load Lb	Ultimate Unit Stress PSI	Character of Failure and Location
	Width	Thickness				
H775P-1	1.001	0.750	0.750	56,250	75,000	Ductile in Weld
H775P-2	1.001	0.816	0.816	61,700	75,600	Ductile in Weld
H775P-3	1.006	0.611	0.614	46,500	75,700	Ductile in R
H775P-4	1.005	0.810	0.814	61,300	75,300	Ductile in Weld
H775P-5	1.005	0.750	0.763	57,500	75,400	Ductile in Weld
H775P-6	1.002	0.747	0.748	56,900	76,100	Ductile in R
H775P-7	1.010	0.778	0.785	55,300	71,100	Ductile in Weld
H775P-8	1.007	0.813	0.818	60,000	73,300	Ductile in Weld
H775P-9	1.008	0.775	0.781	58,550	75,000	Ductile in R
H775P-10	1.007	0.783	0.788	56,400	71,500	Ductile in Weld
H775P-11	1.008	0.817	0.823	60,350	73,300	Ductile in Weld
H755P-12	1.009	0.779	0.786	59,050	75,100	Ductile in Weld

Qualification No. 4656
Date: 5/27/80

Larry Lamb

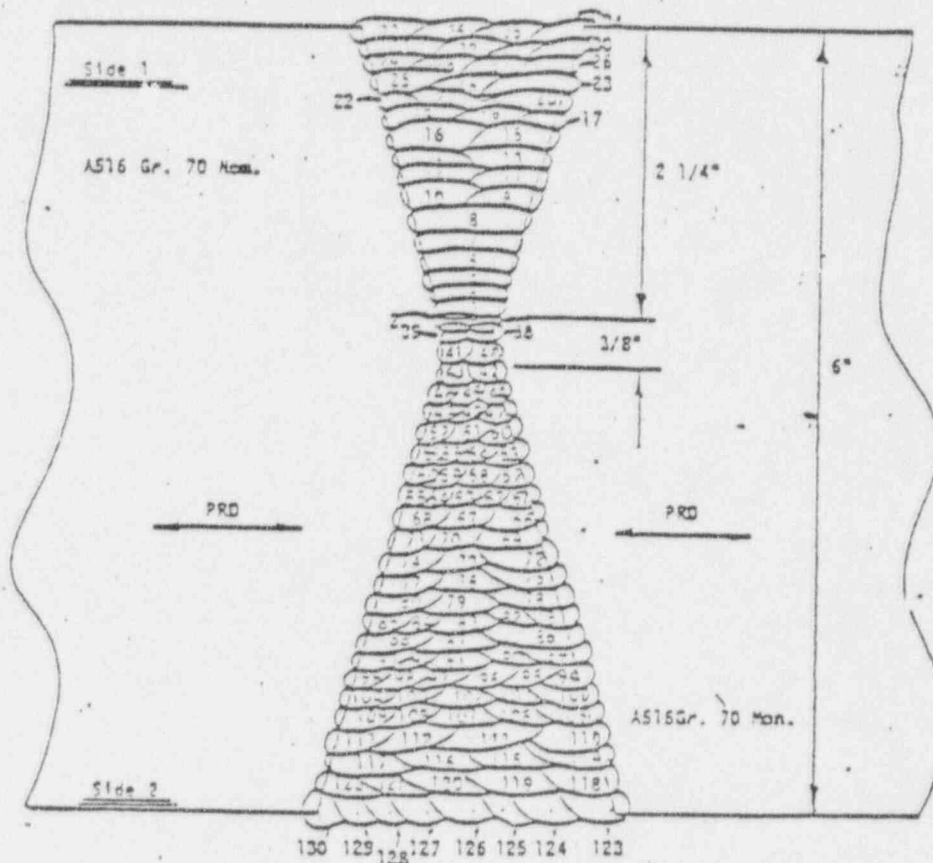
BY 
CHICAGO BRIDGE & IRON COMPANY



PROCEDURE QUALIFICATION RECORD

To A.S.M.E. Section IX

PART III WELDING VARIABLES

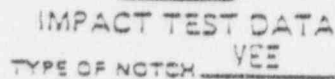


PASS	Electrode		Amps	Volts	Travel Speed in./min.	Remarks (Gas Flow etc)
	Type	Size				
1-2	E7018	5/32"Ø	175	24	---	Stringer Bead Technique
3-6	E7018	1/4"Ø	390	26	---	Stringer Bead Technique
7-8	E7018	1/4"Ø	400	31	---	Stringer Bead Technique
9-38	E7018	1/4"Ø	380	26	---	Stringer Bead Technique
39-65	E7018	5/32"Ø	180	24	---	Stringer Bead Technique
66-71	E7018	5/32"Ø	210	26	---	Weave Bead Technique
72-84	E7018	5/32"Ø	180	24	---	Weave Bead Technique
85-130	E7018	5/32"Ø	170	24	---	Stringer Bead Technique

Qualification No. 4656
Date: 5/27/80

1/4" Max. layer thickness
Larry Lamb

BY Larry Lamb
CHICAGO BRIDGE & IRON COMPANY



202 4656

W.O. H755P

5/23/80

20v 0

REMARKS: Impact specimen taken at a depth of 1/4T from surface of side 2.

Signed CHICAGO BRIDGE & IRON COMPANY

84

Larry Lind

Laboratory Technician

Weld Met.



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PROCEDURE QUALIFICATION RECORD TO ASME SECTION IX

PART II ESSENTIAL VARIABLES

PQR No. 4657 Date 5/23/80
 Process SMAW Manual or Machine Manual
 Material specification A516 Gr. 70 Nom. FLUX OR ATMOSPHERE
 ASME p. no. 1 Gd 2 To ASME p. no. 1 Gd 2 None Required
 Thickness (if pipe, dia and wall thick) 6" Inert gas composition None Required
 Thickness range this test qualifies 3/16" - max. Flow rate None Required
 Filler metal group no. F. 4 Is backing strip used? Yes
 Weld metal analysis no. A. 1 Preheat temperature range 200°F - 500°F (IPT)
 ASME specification no. SFA 5.1 Postheat treatment 15 hours at 1150°F
 AWS specification no. A 5.1

WELDING PROCEDURE

Single or multiple pass Multiple Single or multiple are Single Position of groove 3G

Electrode E7018 Filler wire diameter 1/8"Ø, 5/32"Ø
 Type of backing Temporary 3/8" Ø P-1 Bar Welding current Direct Current, Electrode Positive
 Consult PART III WELDING VARIABLES for joint dimensions and welding current settings. (Reverse Polarity)

TEST RESULTS

Reduced Section Tensile Results

Specimen No.	Dimensions		Area	Ultimate Total Load Lb	Ultimate Unit Stress PSI	Character of Failure and Location
	Width	Thickness				
See page 2	---	---	---	---	---	---
See page 2	---	---	---	---	---	---

Guided Bend Test

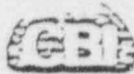
Type	Result	Type	Result
4 Side Bends	OK	---	---

Welder's name Larry Lamb Social Security no. 509-56-3467 Welder's Symbol LOL
 Who by virtue of these tests meets welder performance requirements.

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

Laboratory test no. H775P Signed CHICAGO BRIDGE & IRON COMPANY Date 5/23/80
 Remarks: Larry Lamb

Edges coated with Carboweld 11.



PROCEDURE QUALIFICATION RECORD

To A.S.M.E. Section IX

PART III WELDING VARIABLES

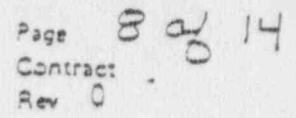
TEST RESULTS

Reduced Section Tensile Results

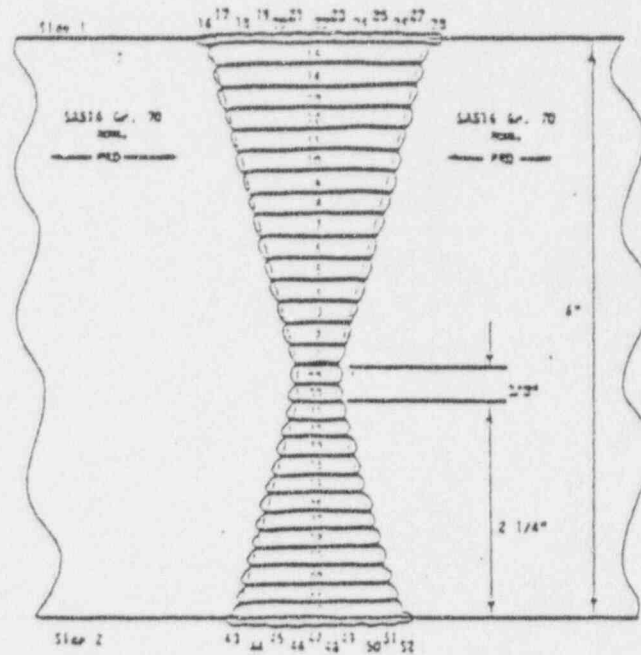
Specimen No.	Dimensions		Area	Ultimate Total Load Lb	Ultimate Unit Stress PSI	Character of Failure and Location
	Width	Thickness				
H776P-1	1.006	0.612	0.615	43,800	71,200	Ductile in Weld
H776P-2	1.010	0.760	0.767	56,350	73,500	Ductile in Weld
H776P-3	1.007	0.682	0.686	48,900	71,300	Ductile in Weld
H776P-4	1.013	0.649	0.657	52,150	52,150	Ductile in PL
H776P-5	1.008	0.735	0.740	54,400	73,500	Ductile in Weld
H776P-6	1.008	0.733	0.738	58,750	79,600	Ductile in PL
H776P-7	1.010	0.568	0.573	39,550	69,000	Ductile in Weld
H776P-8	1.010	0.760	0.767	53,450	69,700	Ductile in Weld
H776P-9	1.009	0.638	0.643	50,200	78,100	Ductile in Weld
H776P-10	1.011	0.775	0.783	66,900	77,800	Ductile in Weld
H776P-11	1.012	0.759	0.768	53,600	69,300	Ductile in Weld
H776P-12	1.013	0.770	0.780	54,450	69,800	Ductile in Weld

Qualification No. 4657
Date: 5/23/80

Larry Lamb
BY *Larry Lamb*
CHICAGO BRIDGE & IRON COMPANY



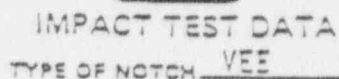
PART III WELDING VARIABLES



Layer	Electrode		Amps	Volts	PASS DIR.	Remarks (Gas Flow etc)
	Type	Size				
1	E7018	5/32"Ø	190	23	UP	Weave bead technique
2-3	E7018	5/32"Ø	180	22	UP	Maximum pass thickness
4-10	E7018	5/32"Ø	190	24	UP	= 1/4"
11-12	E7018	5/32"Ø	200	24	UP	
13-15	E7018	5/32"Ø	210	25	UP	
16-28	E7018	5/32"Ø	225	26	UP	
28-33	E7018	1/8"Ø	180	22	UP	
34-38	E7018	5/32"Ø	190	24	UP	
39-42	E7018	5/32"Ø	200	24	UP	
43-52	E7018	5/32"Ø	225	26	UP	

Qualification No. 4557
Date: 5/23/80

BY Larry Lamb
CHICAGO BRIDGE & IRON COMPANY



POR 4057

W.O. H776P

5/23/80

Rev. 0

[illegible]REMARKS: Impact specimens taken at a depth of 1/4T from surface of side 2.

Signed CHICAGO BRIDGE & IRON COMPANY

By: _____
Larry Lamb

Laboratory Technician Weld Met.



PROCEDURE QUALIFICATION RECORD TO ASME SECTION IX

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PART II ESSENTIAL VARIABLES

PQR No. 4658
Process SMAW Manual or Machine Manual Date 5/23/80
Material specification A516 Gr. 70 Nom.
ASME p. no. 1 GD 2 To ASME p. no. 1 GD 2 Flux or atmosphere None Required
Thickness (if pipe, dia and wall thick) 6" Flux trade name None Required
Thickness range this test qualifies 3/16" - max. Inert gas composition None Required
Filler metal group no. 4 Flow rate None Required
Weld metal analysis no. A Is backing strip used? Yes
ASME specification no. SFA 5.1 Preheat temperature range 200°F + 500°F (IPT)
AWS specification no. A 5.1 Postheat treatment 15 hours at 1150°F

WELDING PROCEDURE
Single or multiple pass Multiple Single or multiple are Single Position of groove 2G
Electrode E7018 Filler wire diameter 5/32"Ø, 3/16"Ø, 7/32"Ø, 1/4"Ø
Type of backing Temporary 3/8"Ø P-1 Bar Welding current Direct Current, Electrode Positive
Consult PART III WELDING VARIABLES for joint dimensions and welding current settings. (Reverse Polarity)

TEST RESULTS

Reduced Section Tensile Results

Specimen No.	Dimensions		Area	Ultimate Total Load Lb	Ultimate Unit Stress PSI	Character of Failure and Location
	Width	Thickness				
H777P-1	1.002	2.630	2.633	206,000	75,383	Ductile in WM
H777P-2	1.002	2.647	2.652	204,500	77,111	Ductile in WM
H777P-3	1.008	2.843	2.846	225,000	79,058	Ductile in WM
H777P-4	1.001	2.850	2.853	220,500	77,287	Ductile in WM

Guided Bend Test

Type	Result	Type	Result
8 Side Bends	OK	- - - - -	- - -

Welder's name Mike Untermeyer Social Security no. 456-17-6543 Welder's Symbol MRU
Who by virtue of these tests meets welder performance requirements.

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

Laboratory test no. H777P Signed CHICAGO BRIDGE & IRON COMPANY Date 5/23/80
By Larry Lamb
Remarks: Larry Lamb

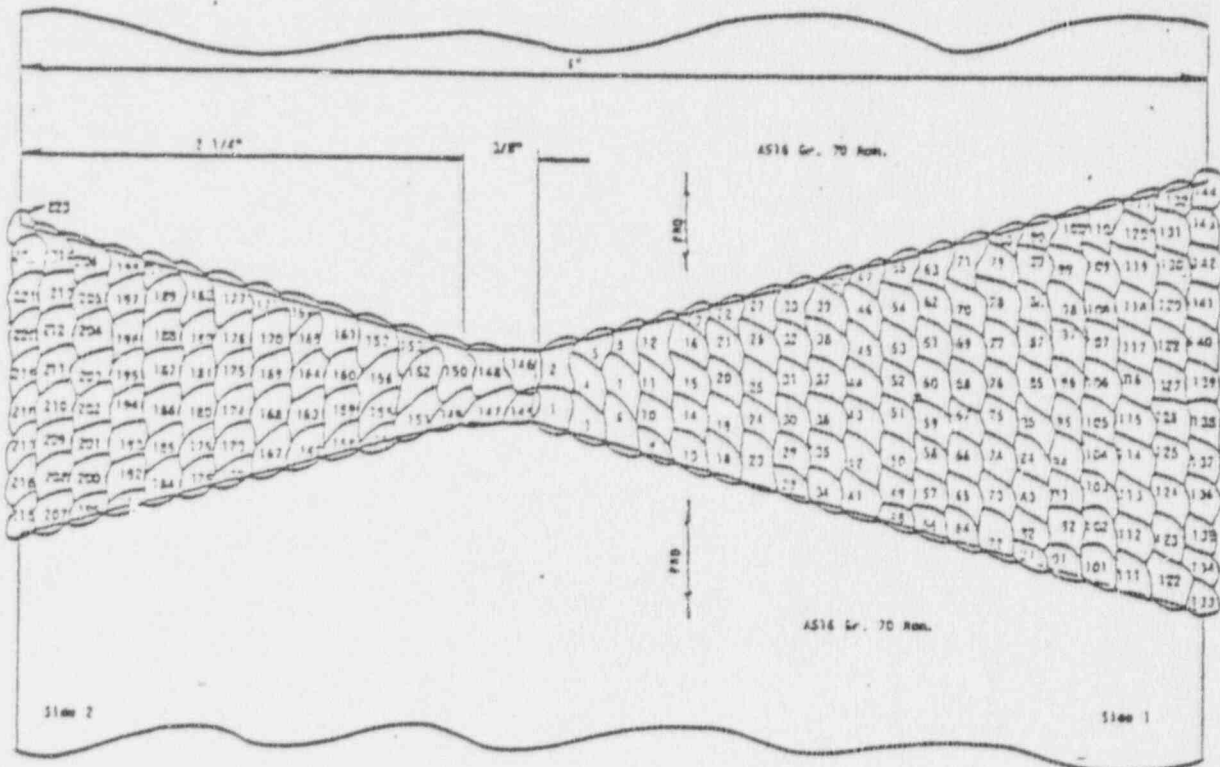
Plate edges coated with Carboweld 11.



PROCEDURE QUALIFICATION RECORD

To A.S.M.E. Section IX

PART III WELDING VARIABLES



PASS	Electrode		Amps	Volts	Travel Speed in./min.	Remarks (Gas Flow etc)
	Type	Size				
1-2	E7018	3/16"Ø	240	24	---	Stringer Bead Technique
3	E7018	3/16"Ø	280	25	---	Maximum pass thickness
4	E7018	3/16"Ø	230	23	---	= 1/4"
5-14	E7018	5/32"Ø	180	22	---	
15-21	E7018	3/16"Ø	240	22	---	
22-32	E7018	7/32"Ø	240	22	---	
33-59	E7018	7/32"Ø	270	22	---	
60-72	E7018	7/32"Ø	280	22	---	

Qualification No. 4658
Date: 5/23/80

Larry Lamb
BY *Larry Lamb*
CHICAGO BRIDGE & IRON COMPANY



PROCEDURE QUALIFICATION RECORD

--- To A.S.M.E. Section IX

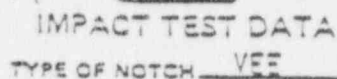
(CONTINUED)

PART III WELDING VARIABLES

PASS	Electrode		Amps	Volts	Travel Speed in./min.	Remarks (Gas Flow etc)
	Type	Size				
73-85	E7018	7/32"Ø	300	23	---	Stringer Bead Technique
86-88	E7018	1/4"Ø	400	28	---	
89-131	E7018	7/32"Ø	280	22	---	
132-144	E7018	3/16"Ø	220	20	---	
145-152	E7018	5/32"Ø	180	22	---	
153-158	E7018	3/16"Ø	240	22	---	
159-172	E7018	7/32"Ø	260	23	---	
173-176	E7018	5/32"Ø	280	25	---	
177-180	E7018	7/32"Ø	300	27	---	
181-182	E7018	1/4"Ø	400	32	---	
183-184	E7018	1/4"Ø	370	28	---	
185-197	E7018	7/32"Ø	290	28	---	
198-203	E7018	3/16"Ø	220	22	---	
204	E7018	5/32"Ø	180	20	---	
205-223	E7018	3/16"Ø	260	24	---	

Qualification No. 4658
Date: 5/23/80

Larry Lamb
BY Larry Lamb
CHICAGO BRIDGE & IRON COMPANY



W.O. H777P

5/23/80

Rev. 0

REMARKS: Impact specimen taken at a depth of 1/4T from surface of side 2

Signed CHICAGO BRIDGE & IRON COMPANY

BY:

Larry Lamb

Laboratory Technician

Diane Sims

Printed in USA

WL 252 REV NOV 71

BOILER AND
PRESSURE VESSEL
COMMITTEE

August 9, 1977

Mr. Lyn J. Christensen
Chicago Bridge & Iron Co.
P.O. Box 40066
Houston, TX 77040

Subject: Section IX, Paragraph Q-11(b)(5)

Reference: Your inquiry of October 15, 1976

Item: W76-59

Dear Mr. Christensen:

Your inquiry of October 15, 1976 requested an interpretation of paragraph Q-11(b)(5) of the 1971 Edition of ASME Section Code as to a change in the specified range for amperage, voltage, and speed of travel.

It was the intent of the Subcommittee on Welding that the procedure qualification record shall record the ranges actually used with the filler metal used in the procedure qualification test, but that the welding procedure specification may specify ranges in amperage, voltage, and speed of travel that will produce acceptable welds and yet might be quite different than the actual values used in the procedure qualification record. For example, the procedure qualification record may have recorded data on a 5/32 inch electrode actually used, whereas the welding procedure specification written as supported by the welding procedure record, gives the ranges to be used for 1/8 inch through 1/4 inch diameter electrodes. The electrode manufacturers ranges when available are an acceptable guide. In the case of shielded metal-arc welding and gas tungsten-arc welding even wider ranges are possible. The size of the electrode or filler metal is not an essential variable.

Sincerely yours,

Alan Bagnor
Alan Bagnor
Assistant Secretary
Boiler and Pressure Vessel Committee

AB/ar

