SECTION A - PROCEDURE SPECIFICATION

A1 - Scope - All welding of the procedure qualification tests, operator qualification tests, and all welding of the skin plates, stiffening fins, and test charts shall be in accordance with this procedure specification.

A2 - Welding Process - The Direct Current Metallic Shielded Arc Welding Process shall be used for all welded joints.

A3 - Base Metal - Base material shall be "Yoloy" having a chemical composition of C .12% maximum, Mn .30% - .60%, S .05% maximum, P .04% maximum, Ni 1.30% - 2.00%, Cu .70% - 1.25% or Nickel Copper Steel with analysis of C .27% maximum, Mn .30% - .70%, S .05% maximum, P .04% maximum, Ni 1.75% - 2.25%, Cu .50% - .80%.


A5 - Position - Welding shall be classified as being in the flat, horizontal, vertical or overhead position depending upon the manner in which the filler metal must be deposited.

A6 - Edge Preparation - Mill edges, rolled surfaces, square sheared, square or bevel machine burned, and machined edges shall be equally satisfactory for butt, fillet and lap welds. All edges must be brushed clean of all loose rust, dirt, and scale before welding. All moisture, grease or paint shall be removed from the surfaces on which the weld metal is to fuse except that a thin coating of lacquer on the edge of the joint will be permitted. The purpose of the lacquer, if used, is to prevent the weld splatter from sticking to the base metal and to prevent the plate edges from rusting during storage and shipment.

The most common edge preparation will be indicated on the Qualification Record.

A7 - Joint Spacing - The joint spacing or gap between the plate edges of all butt joints should represent the average gap in the length of the seam after tacking. Irregularities in the plate edges will cause the gaps to vary. The minimum permissible gap for welding in any part of the seam shall be 1/16" less than that called for. Where the gaps are smaller than the above minimum gap, or the joint be prepared or welded in some way to secure a satisfactory weld.

A8 - Tack Welds - Most welded structures are assembled by tack welds. If these tack welds are sound and cleaned of all slag and dirt they may be welded over and become part of the welded joint. All cracked, porous, and poorly fused tack welds shall be chipped out before that section of the seam is continuous welded.

A9 - Treatment of Underside of Welding Groove - All butt joints shall be chipped or gas gouged on the underside of the first bead to expose sound metal before welding is begun on that side. The chipping tool, if used, shall have a round nose which will cut a U groove at least 1/32" wider than the nominal size of the electrode used to make the first pass in the chipped groove.
A10 - Cleaning - In addition to the cleaning of the base metal as specified in section A6, each pass in a multiple pass weld shall be thoroughly cleaned of all spatter, slag, and dirt before depositing the next pass.

A11 - Defects - Any cracks or blow-holes that appear on the surface of any pass of welding shall be removed by chipping, grinding, or gas gouging before depositing the next successive pass of welding.

A12 - Qualification Records - A record of the material, preparation, welding procedure, and test results of each test weld shall be filled out and signed as witnessed by a qualified inspector. Copies of the Qualification Record of each joint are attached as part of this specification. The actual welding shall be performed as nearly like the qualified joints as field conditions will permit. Changes in order of welding beads, electrode sizes, welding current values, etc., may be made to suit different thicknesses, variations in field fit, positions, root openings, degree of restraint, etc.

A13 - Bead Procedure - The bead procedure shown on the sketches in the Qualification Records is only for the thickness of the test plate. The same joint in other thicknesses will require fewer or more beads. No two welding operators weld just alike so that some variation of the bead procedure shown is permissible to suit various operators. Wider gaps due to uneven edges change the bead procedure somewhat. Bead procedure for all field joints will be determined by the field foreman subject to approval by the field inspector.

A14 - Preheating - The Copper Nickel Steel base metal shall be preheated to 400 degrees F before welding is begun.

SECTION B - PROCEDURE QUALIFICATION

B1 - Test Welds - The qualification of the following test welds shall comprise the qualification of all joints in the wind tunnel:

<table>
<thead>
<tr>
<th>Position</th>
<th>Type of Joint</th>
<th>Base Metal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat and Overhead</td>
<td>Double Bevel</td>
<td>Nickel Copper Steel</td>
</tr>
<tr>
<td>Overhead and Flat</td>
<td>Single Vee</td>
<td>&quot;Yoloy&quot;</td>
</tr>
<tr>
<td>Vertical</td>
<td>Single Vee</td>
<td>&quot;Yoloy&quot;</td>
</tr>
<tr>
<td>Horizontal</td>
<td>Single Bevel (backed)</td>
<td>&quot;Yoloy&quot;</td>
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<td>Flat and Overhead</td>
<td>Single U</td>
<td>Nickel Copper Steel</td>
</tr>
<tr>
<td>Vertical</td>
<td>Double Vee</td>
<td>&quot;Yoloy&quot;</td>
</tr>
<tr>
<td>Vertical</td>
<td>Single Vee</td>
<td>Nickel Copper Steel</td>
</tr>
<tr>
<td>Vertical</td>
<td>Double Vee</td>
<td>&quot;Yoloy&quot;</td>
</tr>
<tr>
<td>Flat and Overhead</td>
<td>Double Vee</td>
<td>Nickel Copper Steel</td>
</tr>
<tr>
<td>Flat and Overhead</td>
<td>Single Vee</td>
<td>&quot;Yoloy&quot;</td>
</tr>
<tr>
<td>Flat and Overhead</td>
<td>Single Bevel</td>
<td>&quot;Yoloy&quot;</td>
</tr>
<tr>
<td>Horizontal</td>
<td>Single Bevel</td>
<td>Nickel Copper Steel</td>
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<tr>
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</tr>
<tr>
<td>Flat and Overhead</td>
<td>Single J</td>
<td>Nickel Copper Steel</td>
</tr>
</tbody>
</table>

B2 - Test Specimens - The number and type of test specimens from each test weld shall comply with the Standard Qualification Procedure of the American Welding Society.
B3 - Physical Requirements - Soundness - This shall be determined by the guided bend test as described in the Standard Qualification Procedure of the American Welding Society and the results shall meet the following requirements: Any specimen in which a crack exists before bending or results from bending, exceeding 1/8" measured in any direction shall be considered as having failed, except that cracks in the corners of the plate shall not be considered.

Tensile Strength - The reduced section tensile test specimens shall have a strength of at least 55,000 pounds per square inch.

Ductility - The ductility of the weld metal shall be determined by the free-bend test method and shall not be less than 25%.

SECTION C - OPERATOR QUALIFICATION

C1 - Shop Welders - All welding operators working on the welded joints of the wind tunnel in the shop shall be qualified in accordance with the Standard Qualification Procedure of the A.W.S., latest edition.

C2 - Field Welders - All field welding operators shall be qualified in accordance with the Standard Qualification Procedure of the A.W.S., latest edition, before being permitted to weld on any joints of the wind tunnel. Once a weldor has passed the tests he need not be retested for the duration of the job providing he is continuously employed.

Test Welds:
1. 3/8" plate, single vee groove with backing strip, overhead position
2. " " " " horizontal "
3. " " " " " vertical "

Test Specimens:
One root bend and one face bend from each test weld.

It is to be noted that each of the three welding positions not only qualifies the welder for that particular position but also for the flat position. An "all-position" welder must satisfactorily pass all three of the test welds.

SECTION D - WELDING PROCEDURE

D1 - Purpose - The welding procedure or sequence shall be such as to minimize welding shrinkage stresses and distortions while at the same time for practical considerations, hold the alignment of the joints and the axis of the tunnel, and avoid delays as far as possible. For practical reasons, these procedure rules must be limited to general cases. The detailed rules of procedure will be given in the various welding diagrams which shall govern the order of welding of the various joints. In general, all longitudinal seams intersecting a girth seam should be at least one-half welded before the girth seam is welded.

It is very important to use the minimum amount of weld metal consistent with stress requirement, in all joints of this structure to minimize shrinkage effects of welding to secure as smooth a surface as possible of all plates at the air passage. The reinforcement of all welds should be as small as possible without undercutting or having the welds less than flush with the plate.
**WELDING PROCESS QUALIFICATION RECORD**

**PROCESS SPECIFICATION**

- **Test Plate No.** BFO1TV
- **Material Ordered** CARBEN TECHNIO
- **Position** FLAT AND OVERHEAD
- **Plate Tolerance** 1/16
- **Edge Preparation** BY BEND
- **Metallic Shield.Key** REVERSED
- **AWS. EBCO** A.B.T.- A.W.S., EBCO
- **Base Metal** NICKEL COBALT STEEL
- **Chipping Hot** NO
- **Heat Treatmeny** WIRE BRUSH
- **Removal Only** FOR SLAG

**Preheat** 400°F

**Test Results - Butt Joint**

- **Reduced Test Length:** 1/8” per No. 19
- **1/16” 260**
- **1/32” 710**
- **1/32” 710**

**None Required**

**PROCEDURE**

<table>
<thead>
<tr>
<th>№</th>
<th>Electrode Size</th>
<th>Amperes</th>
<th>Volts</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
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<td>30</td>
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</table>

The undersigned certifies that the above statements made in this report are correct, and that the test plates were prepared, welded and tested in accordance with the A.W.S. Standard Qualification Procedure for process qualification. The test results have met and satisfied the requirements of the following codes.

- **SIGNED:** Pittsburgh Des Moines Steel
  - Date: Aug. 8, 1942
  - Works Manager
# Welding Process Qualification Record

## Process Specification
- **Test Plate No.**: BOFGV
- **Welding Operator**: Lawrence Colaretti
- **Position**: Overhead And Flat
- **Plate Thickness**: 3/8".
- **Code Preparation**: By BRN
- **Metallic Shield Arc - Polarity**: Reversed
- **Filler Metal Grade**: A.S.T.M. - A.W.S. E6010
- **Base Metal**: Yes
- **Chipping Root**: No
- **Heat Treatment**: None
- **Cleaning**: Wire Brush
- **Feed**: For slag removal only

## Test Results - Butt Joints
- **Reduced Section Tension - Lbs. Per. Sq. In.**
  - No. 1: 69,000
  - No. 2: 68,930
- **Free Bend Congestion - A**:
  - No. 1: 75%.
  - No. 2: 62.2%.
- **Root Bend**: Max. Crack (")
  - No. 1: 1 Crack 3/4"
  - No. 2: No Defects
- **Face Bend**: Max. Crack (")
  - No. 1: 3 Cracks 1/4"; 1 Crack 3/32"
  - No. 2: 1 Crack 3/32"; 2 Cracks 1/16"

## Procedure

<table>
<thead>
<tr>
<th>Bead No.</th>
<th>Electode Size</th>
<th>Amperes</th>
<th>Volts</th>
<th>Notes</th>
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<tr>
<td>4</td>
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<td>185</td>
<td>28</td>
<td></td>
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</tbody>
</table>

## Test Results - Fillet Welded Joints
- **Transverse Shear Test - Ave. Throat - Inches; Ul. Str. - Lbs. Per. Square In.**
  - No. 1: 1
  - No. 2: 2
- **Longitudinal Shear Test**
  - No. 1: 1
  - No. 2: 2
- **Break Tests - Soundness**
  - No. 1: 1
  - No. 2: 2

The undersigned certifies that the above statements made in this report are correct and that the test plates were prepared, welded and tested in accordance with the A.W.S. Standard Qualification Procedure for process qualification. The test results have met and satisfied the requirements of the following code:

Signed: Pittsburgh Des Moines Steel

Date: Aug 8, 1942

Title: Works Manager
WELDING PROCESS QUALIFICATION RECORD
A. W. S. STANDARD QUALIFICATION PROCEDURE

Process Specification

TEST PLATE NO. BV-6V-BS
WELDING OPERATOR 413850
POSITION VERTICAL
PLATE THICKNESS 3/4"n
EDGE PREPARATION E + H 1/4
METALLIC SHIELD ARC - POLARITY REVERSED
FILLER METAL Grade A.S.T.M. 213 - ANR. ES2100
BASE METAL YO-6Y
CHIPPING ROOT 1/4"n
PRE-TREATMENT NONE
CLEANING WIRE BRUSH
PREP. FLUX - SLAG REMOVAL ONLY

Test Results - Butt Joints

REDUCED SECTION TENSION - LBS. PER SQ. IN.
1. 64,620
REWORK ELECTION 413850
1. 125
ROOT SEAL (MAX. CRACK - INCHES)
1. 1/8
FACE SEAL (MAX. CRACK - INCHES)
V. TYPICAL GAS NOZZLES
1. 6.0 X 1.0 X 75 GAS NOZZLE
WELD UNDEFEATED
2. 2 - TYPICAL GAS NOZZLES
SIDE SEAL (MAX. CRACK - INCHES)
2. 3/16
3. NONE REQUIRED

Test Results - Fillet Welded Joints

TRANSVERSE SHEAR TEST - AVG. THROAT- INCHES; ULT. STR. LBS. PER SQ. IN.
1. 1.5
LONGITUDINAL SHEAR TEST
1. 1.5
BEND TESTS (SOUNDHEATS)
1.
2.

Procedure

<table>
<thead>
<tr>
<th>BEAD NO.</th>
<th>ELECTRODE SIZE</th>
<th>AMPERES</th>
<th>VOLTS</th>
<th>NOTES</th>
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</table>

The undersigned certified that the above statements made in this report are correct, and that the test plates were prepared, welded and tested in accordance with the A. W. S. STANDARD QUALIFICATION PROCEDURE FOR PROCESS QUALIFICATION. The test results have met and satisfied the requirements of the following code.

SIGNED: PITTSBURGH DES MOINES STEEL CO.
Date: Aug. 3, 1943
Title: WORKS MANAGER

[Diagram of welding process]
# Welding Process Qualification Record

## Process Specification

- **Test Plate No.**: B6GL-BS
- **Welding Operator**: [Name Redacted]
- **Position**: Horizontal
- **Plate Thickness**: 3/8" (0.375"
- **Edge Preparation**: By BRM
- **Metallic Shield Arc - Polarity**: Reversed
- **Filler Metal Grade**: A.71 T-AM-ANS. E6010
- **Base Metal**: Yelcoy
- **Chipping Root**: No
- **Heat Treatment**: None
- **Cleaned**: Mize, Cleaned, Cleaned
- **Plen**: For Slag Removal Only

## Test Results - Butt Joints

<table>
<thead>
<tr>
<th>Reduced Section Tension - Lbs. Per Sq. In.</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>6.554.0</td>
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<tr>
<td>6.909.0</td>
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## Procedure

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<tr>
<th>Electrode No.</th>
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<th>Amperes</th>
<th>Volts</th>
<th>Notes</th>
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</tbody>
</table>

## Test Results - Fillet Welded Joints

- **Transverse Shear Test - Ave. Throat - Inches; Ult. Str. - Lbs. Per Sq. In.**: 

## Notes

- The undersigned certifies that the above statements made in this report are correct, and that the test plates were prepared, welded and tested in accordance with the A.W.S. Standard Qualification Procedure for Process Qualification. The test results have not and will not affect the requirements of the following codes.

Signature: [Signature Redacted]
**Process Specification**

Test Plate No.: BFOITU

Welding Operator: Snehen Tasquinio

Position: Flat and overhead

Plate Thickness: 1/4" by 1/8"

Edge Preparation: Reversed

Metallurgical Test: A.S.T.M. - A.W.S. E6010

Base Metal: Nickel Copper Steel

Chipping: None

Heat Treatment: Wire Brush

Cleavage: For slag removal only

Preheat: 400°F

Test Results - Butt, Joints

<table>
<thead>
<tr>
<th>Test No.</th>
<th>Current</th>
<th>Voltage</th>
<th>Result</th>
</tr>
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<tbody>
<tr>
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The above statements made in this report are correct, and that the test plates were prepared, welded, and tested in accordance with the A.S.T.M. STANDARD QUALIFICATION PROCEDURE FOR PROCESS QUALIFICATION. The test results have met and satisfied the requirements of the following grades:

Signed: Pittsburgh De Moines Steel Co.

Date: Aug. 9, 1942

Works Manager: [Signature]
WELDING PROCESS QUALIFICATION RECORD
A.C.S. STANDARD QUALIFICATION PROCEDURE

TEST PLATE NO.: BV17X
WELDING OPERATOR: MACHEN MACQUINIO
POSITION: VERTICAL
PLATE THICKNESS: 1/4" (6.4 mm)
EDGES PREPARED: BY BEIN
METALLIC SHIELD ARC - POLARITY: REVERSED
FILLER METAL: GRADE: ASTM - AWS E6010
BASE METAL: NICKEL-COPPER STEEL
CHIPPING ROOT: YES
HEAT TREATMENT: NONE
CLEANING: WIRE BRUSH
PREN: FOR SLAG REMOVAL ONLY

PREHEAT: 400°F

TEST RESULTS - BUTT JOINTS

REDUCED SECTION TENSION - LBS. PER SQ. IN.
1. 728.20
2. 728.20
FREE BEND ELONGATION:
1. 53.9%
2. 14.5%
SIDE BEND (MAX. CRACK - INCHES):
1. None Required
2. None Required
3. Side Bend (Max. Crack - Inches):
   1. Pinpoint gas pocket
   2. 1/8 crack
   3. 1/4 crack
   4. No defects

TEST RESULTS - FILLET WELD JOINTS

TRANSVERSE SHEAR TEST - AVEL. THICKNESS - INCHES;ULT. STR. - LBS. PER SQ. IN.
1. 
2. 
3. 
4. 
5. 
6. 
7. 

SHEAR TESTS (BENDING):
1. 
2. 
3. 
4. 
5. 
6. 
7. 

THE undersigned certifies that the above statements made in this report are correct, and that the test plates were prepared, welded, and tested in accordance with the A.C.S. standard qualification procedure for process qualification. The test results have met and satisfied the requirements of the following codes.

SIGNED: Pittsburgh Des Moines Steel Co.

DATE: Aug. 3, 1942
TIME: WORKS MANAGER

Barclay Neffstein
WELDING PROCESS QUALIFICATION RECORD
A. V. S. STANDARD QUALIFICATION PROCEDURE

TEST PLATE NO.: BV6V
WELDING OperATOR: LAMINOT. THEQUINNO
POSITION: VERTICAL
PLATE THICKNESS: 3/16"
EDGE PREPARATION: BV BRN
METALLIC SHIELD ARC - POLARITY: REVERSED
FILLER METAL: GRD. ASTM-AWS E6010
BASE METAL: YOLOY
SHIELING ROOST: YES
METAL TREATMENT: NONE
CLEANING: WIRE BRUSH
PREP: FOR SLAG REMOVAL ONLY

TEST RESULTS - ROOT JOINTS
REDUCED SECTION TENSION - LBS. PER SQ. IN.
1. 68,350
2. 69,700
FREH BEAD ELONGATION - %
1. 30.47
2. 38.70
BEND AT FUSION LINE
ROOT BEAD (MAX. CRACK - 1 INCH)
1. 2 CRACKS 1/8"
2. 2 CRACKS 1/8"
ACCE BEAD (MAX. CRACK - 1 INCH)
PINPOINT GAS POCKETS
PINPOINT GAS POCKETS
SIDE BEAD (MAX. CRACK - 1 INCH)
NONE REQUIRED

TEST RESULTS - FILLER-EOCK JOINTS
TRANSVERSE SHEAR TEST - AVE. THROAT - INCHES: ULT. STR. - LBS. PER SQ. IN.
1. 2
LONGITUDINAL SHEAR TEST
1. 2
BEND TESTS (ROLLERING)
1. 2

THE UNDERSSIGNED CERTIFIES THAT THE ABOVE STATEMENTS MADE IN THIS REPORT ARE CORRECT, AND THAT THE TEST PLATES WERE PREPARED, WELDED AND TESTED IN ACCORDANCE WITH THE A.V.S. STANDARD QUALIFICATION PROCEDURE FOR PROCESS QUALIFICATION. THE TEST RESULTS HAVE MET AND SATISFIED THE REQUIREMENTS OF THE FOLLOWING CODES:

SIGNED: PITTSBURGH DES MOINES STEEL Co.

DATER: Aug. 8, 1942 TITLES: WORKS MANAGER
WELDING PROCESS QUALIFICATION RECORD

A. W. S. STANDARD QUALIFICATION PROCEDURE

PROCESS SPECIFICATION

TEST PLATE NO: BFOITX
WELDING OPERATOR: CHERNEN TAKURINIO
POSITION: FLAT AND OVERHEAD
PLATE THICKNESS: 1/4"
EDGE PREPARATION: BY BEN
METALLIC SHIELD: NO - POLARITY: REVERSED
FILLER METAL: GRADE: A.S.T.M. - A.W.S. E6010
BASE METAL: NICKEL COPPER STEEL
CRADLE: NO
CLEANING: WIRE BRUSH
PREHEAT: FOR SLAG REMOVAL ONLY

PREHEAT: 400°F

TEST RESULTS - BUTT JOINTS

MEASURED SECTION: TENSION - LBS. PER SQ. IN.
1. 71,740
2. 74,720
3. 55%
4. 62.7%
5. ROOT BEND (MAX. CRACK - INCHES):
   - NONE REQUIRED
6. FACE BEND (MAX. CRACK - INCHES):
   - NONE REQUIRED
7. SIDE BEND (MAX. CRACK - INCHES)
   - 1-CRACK / 3
   - 1-CRACK / 3
   - NO DEFECTS
   - NO DEFECTS

TEST RESULTS - FILLET WELD JOINTS

TRANSVERSE SHEAR TEST - AVE. THROAT - INCHES; ULT. STR. - LBS. PER SQ. IN.
1. 1.2

LONGITUDINAL SHEAR TEST
1. 1.2

BREAK TESTS (SOUNDNESS)
1. 
2. 

Procedure

<table>
<thead>
<tr>
<th>BEAD NO.</th>
<th>ELECTRODE SIZE</th>
<th>AMPERES</th>
<th>VOLTS</th>
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<tr>
<td>3</td>
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<td>5</td>
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<tr>
<td>12</td>
<td>7/32 φ</td>
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The undersigned certifies that the above statements made in this report are correct, and that the test plates were prepared, welded and tested in accordance with the A. W. S. Standard Qualification Procedure for Process Qualification. The test results have met and satisfied the requirements of the following codes.

SIGNED: PITTSBURGH DES MOINES STEEL CO.

DATE: AUG. 8, 1942; TITLE: WORKS MANAGER;
WELDING PROCESS QUALIFICATION RECORD

A. W. S. STANDARD QUALIFICATION PROCEDURE

TEST PLATE NO.: BFOBV

WELDING OPERATOR: [Blank]

POSITION: FLAT AND OVERHEAD

PLATE THICKNESS: 3/8"

EDGE PREPARATION: By Bevel

METALLIC SHIELD ARC: POLARITY: REVERSED

FILLER METAL: E 7018 AWS, E 6010

BASE METAL: [Blank]

CHIPPING ROOT: YES

HEAT TREATMENT: NO.

CLEANING: WIRE BRUSH

PEEN: FOR PLAG RETENTION ONLY

TEST RESULTS - BUTT JOINTS

REDUCED SECTION TENSION = LBS. PER SQ. IN.

1. 61,000

2. 63,000

3. 62,000

4. 62,000

FREE BEND (DEVIATION X)

1. [Blank]

2. [Blank]

ROOT BEND (MAX. CRACK - INCHES)

1. [Blank]

2. [Blank]

FACE BEND (MAX. CRACK - INCHES)

1. [Blank]

2. [Blank]

SIDE BEND (MAX. CRACK - INCHES)

1. [Blank]

2. [Blank]

3. [Blank]

4. [Blank]

TEST RESULTS - FILLET WELD JOINTS

TRANSVERSE SHEAR TEST = AVE. THROAT - INCHES: ULT. STR.-LBS. PER SQ. IN.

1. [Blank]

2. [Blank]

LONGITUDINAL SHEAR TEST

1. [Blank]

2. [Blank]

BREACH TESTS (SOUNDNESS)

1. [Blank]

2. [Blank]

THE UNDERWROTH CERTIFIES THAT THE ABOVE STATIVEMENTS MADE IN THIS REPORT ARE CORRECT, AND THAT THE TEST PLATES WERE PREPARED, WELDED AND TESTED IN ACCORDANCE WITH THE A. W. S. STANDARD QUALIFICATION PROCEDURE FOR PROCESS QUALIFICATION. THE TEST RESULTS HAVE MET AND SATISFIED THE REQUIREMENTS OF THE FOLLOWING CODES.

SIGNED: PITTSBURGH DES AGNES STEEL CO.

BY: [Signature]

DATE: [Blank]

TITLE: WORKS MANAGER
WELDING PROCESS QUALIFICATION RECORD

A. "S. STANDARD QUALIFICATION PROCEDURE

TEST PLATE NO.: BF06
WELDING OPERATOR: LAWRENCE C. COCHRAN
POSITION: FLAT AND OVERHEAD
PLATE THICKNESS: 5/8"
EDGE PREPARATION: BY BRN
METALLIC SHIELD ARC: POLARITY: REVERSED
FILLER METAL: GRADE: ASTM-AWS E5010
BASE METAL: YELLOTIER
CHIPPING ROOT: NO
HEAT TREATMENT: WIRE BRUSH
CLEANING: PEEN FOR SLAG REMOVAL ONLY
FOR SLAG REMOVAL ONLY

TEST RESULTS - BUTT JOINTS

REDUCED SECTION TENSION - LBS. PER SQ. IN.
1. 70,720
2. 70,540
FLEXURE BEND ELONGATION - %
1. 69.72
2. 62.72
ROOT BEND (MAX. CRACK - INCHES)
1. CRACK 1/8
2. CRACK 1/4
3. NO CRACK
4. NO DEFECTS
FACE BEND (MAX. CRACK - INCHES)
1. CRACK 1/16
SIDE BEND (MAX. CRACK - INCHES)
1. 2.
3. 4.

TEST RESULTS - FILLER YELLOTIER JOINTS

TRANSVERSE SHEAR TEST - AVE. THROAT - INCHES; ULT. STR.- LBS. PER SQ. IN.
1.
2.

LONGITUDINAL SHEAR TEST
1.
2.

BREAK TESTS (SOUNDNESS)
1.
2.

THE UNDERSIGNED CERTIFIES THAT THE ABOVE STATEMENTS MADE IN THIS REPORT ARE CORRECT, AND THAT THE TEST PLATES WERE PREPARED, WELDED AND TESTED IN ACCORDANCE WITH THE A. S. S. STANDARD QUALIFICATION PROCEDURE FOR PROCESS QUALIFICATION. THE TEST RESULTS HAVE MET AND SATISFIED THE REQUIREMENTS OF THE FOLLOWING CODES.

SIGNED: Pittsburgh-Des Moines Steel Co.

DATE: Aug. 3, 1942 TITLE: WORKS MANAGER
WELDING PROCESS QUALIFICATION RECORD

A. U.S. STANDARD QUALIFICATION PROCEDURE

TEST PLATE NO.: BHGL
WELDING OPERATOR: [Name Redacted]
POSITION: HORIZONTAL
PLATE THICKNESS: 3/8"
EDGE PREPARATION: BY BRN
METALLIC SHIELD ARC - POLARITY: REVERSED
FILLER METAL: GRADE: A.S.T.M. - A.W.S. E6010
BASE METAL: YOLOR
CHIPPING ROOT: YES
HEAT TREATMENT: NONE
CLEANING: WIRE BRUSH
PREP FOR SLAG REMOVAL ONLY

Test Results - Butt Joint
Reduced section tension - lbs. per sq. in.
- 62,940
- 66,180
Free bend classification -
- 91.970
- 70.970
Root Bend (max. crack - inches)
1. No Defects
2. No Defects
3. Pinpoint Gas Pockets
Face Bend (max. crack - inches)
1. No Defects
2. No Defects
Side Bend (max. crack - inches)
1. None Required
2. None
3. None

Test Results - Fillet Welded Joint
Transverse shear test - avg. throat - inches; ult. str. - lbs. per sq. in.
1. [Data Provided]
2. [Data Provided]

Longitudinal shear test
1. [Data Provided]
2. [Data Provided]

Bend tests (soundness)
1. [Data Provided]
2. [Data Provided]

Full Scale Sketch - (Bevel, Spacing, and Beads)

The undersigned certifies that the above statements made in this report are correct, and that the test plates were prepared, welded, and tested in accordance with the A. W. S. Standard Qualification Procedure for Process Qualification. The test results have met and satisfied the requirements of the following codes.

Signed: [Signature]
Pittsburgh Des Moines Steel Co.

Date: [Date]
Title: Quality Manager
YELDING PROCESS QUALIFICATION RECORD
A. M. S. STANDARD QUALIFICATION PROCEDURE

Process Specification

Test Plate No. BH17V
Welding Operator: Cahen Tacquin
Position: Horizontal
Plate Thickness: 1/4"
Edge Preparation: By BN
Metallic Shield Arc - Polarity: Reversed
Filler Metal: Grade A.S.T.M.-A.W.S. E6010
Base Metal: Nickel Copper Steel
Chipping Root: Yes
Heat Treatment: None
Cleaning Wire Brush
Pen for Slag Removal Only
Preheat: 400°F

Test Results - Butt Joint
Reduced Section Tension - Lbs. per sq. in.
1. 2530
2. 4140
Preheat Eccentricity:
1. 0.005
2. 0.005
Root Bend (Max. Crack - Inches)
1. None Read

Face Bend (Max. Crack - Inches)
1. None Read

Side Bend (Max. Crack - Inches)
1. No Defects
2. 1 - Pin Point Gas Polkit
3. 1 Crack 3/8
4. 1 Crack 1/8

Test Results - Fillet Welded Joint
Transverse Shear Test - Ave., Throat - Inches; Ult., Str. - Lbs. per sq. in.
1. 1

Longitudinal Shear Test
1. 2

Break Tests (Soundness)
1. 2

Procedure

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<tr>
<th>Read No.</th>
<th>Electrode Size</th>
<th>Amperes</th>
<th>Volts</th>
<th>Notes</th>
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The undersigned certifies that the above statements made in this report are correct, and that the test plates were prepared, welded and tested in accordance with the A. M. S. Standard Qualification Procedure for process qualification. The test results have met and satisfied the requirements of the following codes.

Signed: [Signature]
Date: Aug. 1949
Title: Works Manager

PITTSBURGH-ALLEY WELDING STEEL COMPANY
ALLEY ISLAND PLANT

[Diagram of welding process]
Welding Process Qualification Record

A. W. S. Standard Qualification Procedure

Process Specification

Test Plate No.: BH177
Welding Operator: ACTUAL NAME
Position: Horizontal
Plate Thickness: 1/8
Edge Preparation: By Pin
Metallic Shield Arc - Polarity: Reversed
Filler Metal: Grade: ASTM - AWS, E6010
Base Metal: Nickel Copper Steel
Chipping Root: Yes
Heat Treatment: None
Cleaning: Wire Brush
Pre: For slag removal only
Preheat: 400°F

Test Results - Butt Joints

Reduced Section Tension - Lbs. per sq. in.
1. 92,920
2. 75,600
Frac. Bend Elongation:
1. 57.4%
2. 57.4%
Root Bend (Max. Crack - Inches):
1. None Regd.
Face Bend (Max. Crack - Inches):
1. None Regd.
Side Bend (Max. Crack - Inches):
1. 1/8 Crack
2. 1/2 Pin Point Gas Pocket
3. 1/8 Crack
4. No Defects

Test Results - Fillet Weld Joints

Transverse Shear Test - Ave. Throat-Inches; Ult. Str.-Lbs. per sq. in.
1.
2.
Longitudinal Shear Test
1.
2.
Break Tests (Soundness)
1.
2.

Signed: Pittsburgh Plate Steel Co.
By: [Signature]
Date: Aug. 5, 1972
Title: Works Manager

The undersigned certifies that the above statements made in this report are correct, and that the test plates were prepared, welded and tested in accordance with the A. W. S. Standard Qualification Procedure for Process Qualification. The test results have met and satisfied the requirements of the following codes:

[Signature]
WELDING PROCESS QUALIFICATION RECORD
A.M.S. STANDARD QUALIFICATION PROCEDURE

Process Specification

TEST PLATE NO. BFO17J
WELDING OPERATOR

POSITION FLAT AND CLEANED
PLATE THICKNESS 1/4"
EDGE PREPARATION BY PLII
METALLIC SHEATH ARC - POLARITY REVERSED
FILLER WIRE: GRADE A5.31 - AWS E6010
BASE METAL NICKEL-COPPER STEEL
CHIPPING ROOT NO
HEAT TREATMENT WIRE BRUSH
CLEANING FOR SLAG REMOVAL ONLY

PREHEAT AT 400°F.

Test Results - Butt Joints

REDUCED SECTION TENSION - LBS. PER SQ. IN.
1. 73 B 60
2. 20 C 60
FRIEZE EJECTION -
1. 18 D C 60
2. 30 D C 60

ROOT BEND (MAX. CRACK - INCHES)
1. None Req.

FACE BEND (MAX. CRACK - INCHES)
1. None Req.

SIDE BEND (MAX. CRACK - INCHES)
1. None Req.
2. NORTHERN GAS HOMESTEAD
3. HOMESTEAD ENGINEERS
4. 1 INCH G A VEIN

Test Results - Fillet Welded Joints

TRANSVERSE SHEAR TEST - AVE. THROAT - INCHES; UTL. STR. - LBS. PER SQ. IN.
1. 12
2. 13
3. 12

LONGITUDINAL SHEAR TEST
1. 12

BREAK TESTS (SOUNDNESS)
1.

THE UNDERSIGNED CERTIFIES THAT THE ABOVE STATEMENTS MADE IN THIS REPORT ARE CORRECT AND THAT THE TEST PLATES WERE PREPARED, WELDED AND TESTED IN ACCORDANCE WITH THE A.M.S. STANDARD QUALIFICATION PROCEDURE FOR PROCESS QUALIFICATION. THE TEST RESULTS HAVE BEEN AND SATISFIED THE REQUIREMENTS OF THE FOLLOWING CODES.

SIGNED:

DATE: A.M.S. 77727 FILE: WORKS MANAGER

BY: W. R. Hoggston.