EWI®

Joining Innovation

Implementation of Navy Standard Welding Procedures

SP-7 Welding Panel Meeting
Hanover, PA
April 8, 2009

Harvey Castner
Edison Welding Institute
614.688.5063

Implementation of Navy Standard Welding Procedures

- NSRP Welding Technology Panel Project
- Contract Number 2009-347
- Program Technical Representative (PTR):
  - Paul Hebert, NGSB-NN
- Program Technical POC:
  - Justin Montague, ATI
- Period of Performance:
  - Dec. 19, 2009 to Nov. 30, 2009

NSRP ASE

EWI Joining Innovation

Implementation of Navy Standard Welding Procedures

Background:

- 2008 Welding Panel Project *Evaluation of Pre-Qualified Procedures for Naval Construction* determined that standard or pre-qualified welding procedures can provide significant cost savings to shipbuilders and the Navy.
- Two implementation methods:
  - Permit prime contractors to provide qualified welding procedures to vendors and subcontractors.
  - Permit the use of written AWS/Navy Standard Welding Procedure Specifications (SWPS).

NSRP ASE

EWI Joining Innovation

Implementation of Navy Standard Welding Procedures

Objective: Initiate the implementation of standard welding procedures for Navy applications.

Scope of Work:

1. Define requirements and initiate activities to permit prime contractors to provide qualified welding procedures to their vendors and subcontractors.
2. Develop AWS/Navy Standard Welding Procedures based on existing AWS documents.
3. Gather additional welding procedures and procedure qualification data to support expansion of standard welding procedures beyond those currently available.
4. Interface with key stakeholders.
5. Report results with a recommendation for long-term support and funding.

NSRP ASE

EWI Joining Innovation

Implementation of Navy Standard Welding Procedures

Status:

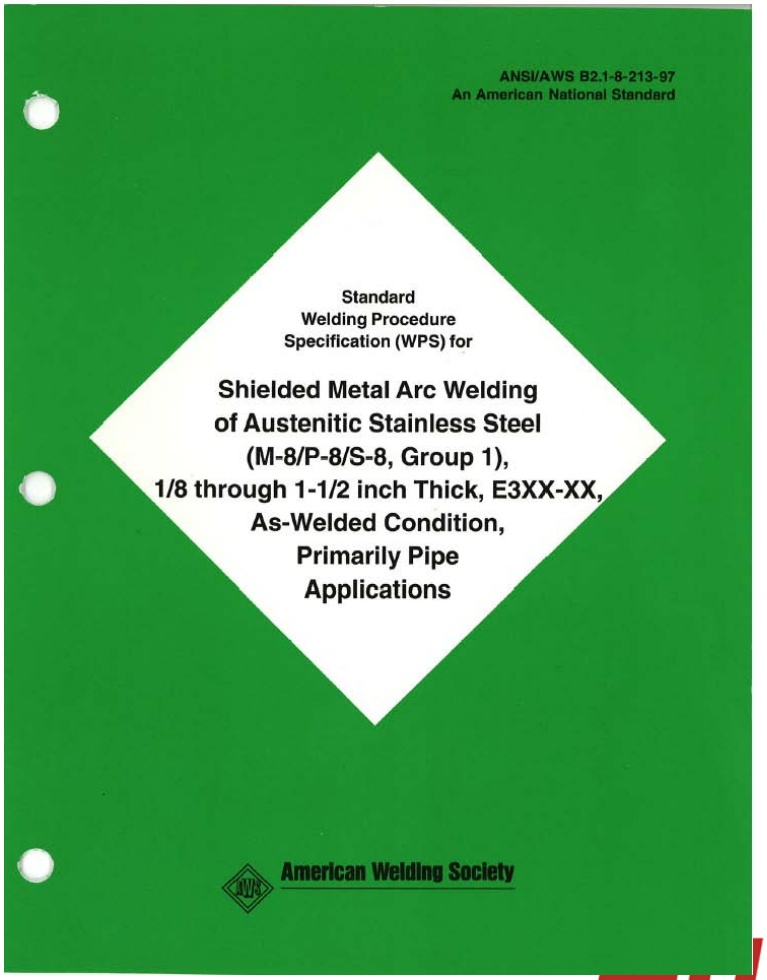
- Met with NAVSEA to confirm approaches.
- Met with AWS B2D committee to review concept, structure, and preparation of SWPS's.
- Established Task Group to work with AWS B2D Committee.
- Developed first drafts of typical AWS/Navy Standard Welding Procedures for review and comment.
- Deliverables provided:
  - Draft requirements document
  - Quarterly report

NSRP ASE

EWI Joining Innovation

AWS Standard Welding Procedure Specifications

- Scope and User Responsibility
- Welding Process, Method of Application
- Base Metal, Thickness
- Filler Metal Spec, Class, Deposit Thickness
- Joint Designs, backing
- Positions, Vertical progression
- Preheat and Interpass Temperatures
- Electrical Characteristics, current, polarity
- Filler metal diameter per layer
- Postweld Heat Treatment
- Weave or Stringer bead
- Peening and backgouging
- Initial and interpass cleaning
- Single or Multiple pass
- Maximum bead thickness



NSRP ASE

EWI Joining Innovation

AWS/Navy Standard Welding Procedures

- Existing procedures for S-1, S-8, and S-1 to S-8 materials welded with GTAW, SMAW, GMAW, FCAW.
  - 17 for pipe and 8 for plate or pipe
  - Not for applications requiring notch toughness.
- Supported by PQR's in WRC data base.
- Include essential elements required by TP 248.
- Draft documents prepared to include Navy requirements:
  - MIL- STD electrodes and filler metals
  - Reference only "S" materials
  - 60F minimum preheat for S-1 materials
  - 3/16" minimum wall thickness for fillets on socket welds
  - Details on joint cleaning
  - Use MIL-STD-22 joint designs
  - Two layers for pressure retaining welds.
- Drafts being reviewed by Task Group.

Open Issues

- Agree on final wording.
- Materials not listed in TP’s.
- Joint designs.
- NVR preheat requirements.
- Additional PQR’s needed for insert types.

Future Work

- Revise current draft documents and review with Task Group and NAVSEA.
- Finalize wording changes to TP 248 and NVR documents.
- Determine additional procedures to be developed and begin to gather PQR data.
  - GMAW and additional combination procedures
  - S-1 qualified for notch toughness
  - CuNi
  - Sheet metal

EWI
Joining Innovation

EWI®

Joining Innovation