



Implementation of Navy Standard Welding Procedures

SP-7 Welding Panel Meeting

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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



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).



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.



Task 1 – Use of Prime Contractors Procedures

- Approach:
 - TP248 and NVR will be modified to permit procedures from prime contractors to vendors and subcontractors.
 - NAVSEA will review and approve prime contractors on individual basis.
 - NGSB-NN preparing draft request for review.



Task 2 – Develop AWS/NAVSEA Standard Welding Procedures for Naval Applications (SWPS-N)

- Approach:
 - Modify TP248 and NVR to permit use of Standard Welding Procedures for Naval Applications (SWPS-N).
 - Modifying 25 existing AWS SWPS to include Navy requirements
 - Task Group of AWS B2D subcommittee, shipbuilders, and Navy will review and approve SWPS-N's.
 - Documents will be approved by AWS B2D and B2 Committees and the ANSI approval process.
 - AWS will publish documents as American National Standards (ANSI).



AWS/NAVSEA Standard Welding Procedure Specifications (SWPS-N)

- Numbering System:
 - Navy SWPS-N's will have unique numbers
 - AWS/NAVSEA B2.1-(S#)-3XX-date
 - 300-series numbers will be Navy SWPS's
 - First procedure will be #301- GTAW of S-1
 - #302-SMAW of S-1,
 - #303 GTAW/SMAW of S-1,
 - #304 FCAW of S-1, etc.
 - #308 GTAW of S-8, etc.



SWPS-N for Plate and Structure

AWS/NAVSEA Document No.	AWS Document No	Material	Process
B2.1-1-301-XXXX	B2.1-1-002:1990R	Carbon steel $\frac{3}{16}$ to $\frac{7}{8}$ in.	GTAW
B2.1-1-302-XXXX	B2.1-1-016-94R	Carbon steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	SMAW
B2.1-1-303-XXXX	B2.1-1-021-94R	Carbon steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	GTAW followed by SMAW
B2.1-1-304-XXXX	B2.1-1-019-94R	Carbon steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	FCAW-G, CO ₂ gas-shielded
B2.1-1-305-XXXX	B2.1-1-020-94R	Carbon steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	FCAW-G, Ar-CO ₂ gas-shielded
B2.1-8-308-XXXX	B2.1-8-024:2001	Stainless steel $\frac{1}{16}$ to $1\frac{1}{2}$ in.	GTAW
B2.1-8-309-XXXX	B2.1-8-023-94R	Stainless steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	SMAW
B2.1-8-310-XXXX	B2.1-8-025:2001	Stainless steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	GTAW followed by SMAW



SWPS-N for Pipe

AWS/NAVSEA Document No.	AWS Document No.	Material	Process
B2.1-1-311-XXXX	B2.1-1-207-96	Carbon steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	GTAW
B2.1-1-312-XXXX	B2.1-1-208-96	Carbon steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	SMAW
B2.1-1-313-XXXX	B2.1-1-209-96	Carbon steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	GTAW and SMAW
B2.1-1-314-XXXX	B2.1-1-210:2001	Carbon steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	GTAW, consumable inserts
B2.1-1-315-XXXX	B2.1-1-211:2001	Carbon steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	GTAW, consumable inserts followed by SMAW
B2.1-1-316-XXXX	B2.1-1-235:2006	Carbon steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	GMAW spray Ar 2% O ₂
B2.1-1-317-XXXX	B2.1-1-234:2006	Carbon steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	FCAW-G, Ar-CO ₂ shielded
B2.1-1/8-323-XXXX	B2.1-1/8-227:2002	Carbon to stainless steel $\frac{1}{16}$ to $1\frac{1}{2}$ in.	GTAW
B2.1-1/8-324-XXXX	B2.1-1/8-228:2002	Carbon to stainless steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	SMAW



SWPS-N for Pipe

AWS/NAVSEA Document No.	AWS Document No.	Material	Process
B2.1-1/8-325-XXXX	B2.1-1/8-229:2002	Carbon to stainless steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	GTAW followed by SMAW
B2.1-1/8-326-XXXX	B2.1-1/8-230:2002	Carbon to stainless steel $\frac{1}{16}$ to $1\frac{1}{2}$ in.	GTAW, consumable inserts
B2.1-1/8-327-XXXX	B2.1-1/8-231:2002	Carbon to stainless steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	GTAW, consumable Inserts followed by SMAW
B2.1-8-318-XXXX	B2.1-8-212:2001	Stainless steel $\frac{1}{16}$ to $1\frac{1}{2}$ in.	GTAW
B2.1-8-319-XXXX	B2.1-8-213-97	Stainless steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	SMAW
B2.1-8-320-XXXX	B2.1-8-214:2001	Stainless steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	GTAW followed by SMAW
B2.1-8-321-XXXX	B2.1-8-215:2001	Stainless steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	GTAW, consumable inserts
B2.1-8-322-XXXX	B2.1-8-216:2001	Stainless steel $\frac{1}{8}$ to $1\frac{1}{2}$ in.	GTAW, consumable inserts/SMAW



AWS/NAVSEA Standard Welding Procedure Specifications (SWPS-N)

Status:

- Prepared five initial draft SWPS-N's for Task Group review and comment.
- Held Task Group meeting Apr. 8 to discuss draft SWPS-N documents.
- Participated in AWS B2.1 committee teleconference Apr. 16.
- Met with NAVSEA and NSWCCD on May 27 to review draft documents and TP 248 wording.
 - Resolved open issues for materials, preheat, joint designs, use of commercial electrodes.
- Revised draft SWPS-N's to include comments from Task Group and NAVSEA.



AWS/Navy Standard Welding Procedure Specifications (SWPS-N)

- Base materials:
 - SWPS-N's need to be usable for base materials in addition to those listed in TP's.
 - Current approach is to publish “approved materials list” in *AWS B2.1 Specification for Welding Procedure and Performance Qualification* and in *AWS B2.1 BMG – Base Material Grouping for Procedure and Performance Qualification*.
- Joint designs will be to MIL-STD-22 (and NVR).
- Added words referring to preheat requirements in ABS NVR.
- Added wording on use of commercial electrodes.



AWS/Navy Standard Welding Procedure Specifications (SWPS-N)

Status:

- Developed additional draft SWPS-N's.
- Deliverables provided in June:
 - Drafts for 16 SWPS-N documents.
 - Quarterly report.
- Developed drafts for 6 SWPS-N's and balloted to the Task Group:
 - AWS/NAVSEA B2.1-1-302 and 312
 - AWS/NAVSEA B2.1-8-309 and 319
 - AWS/NAVSEA B2.1-8-308 and 318



AWS/Navy Standard Welding Procedure Specifications (SWPS-N)

Status - continued:

- Task Group ballots received, approving documents and providing comments for improvement.
- Draft documents revised based on Task Group comments.



Future Work

- Continue to work with NAVSEA and ABS on wording changes to TP 248 and NVR.
- Forward SWPS-N drafts to AWS B2D subcommittee when approved by Task Group.
- Participate in AWS B2D and B2.1 committee meetings in October.
- Continue to develop final draft SWPS-N's and ballot to Task Group and AWS B2D committee.



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