GENERAL WELDING PROCEDURES

TITLE: STUD WELDING

This title page is a record of all revisions to the procedure. Any time this procedure is revised only the revised pages will be issued.

REV. NO.	DATE	REVISED PAGES
0	7/12/85	N/A

THIS PROCEDURE APPROVED

DATE: 7/15/85

BY: M Jamal Reza

TITLE: ENGINEERING MANAGER

THIS PROCEDURE AUTHORIZED

DATE: 7/16/85

BY: Frederick Taylor

TITLE: QUALITY CONTROL MANAGER

GENERAL WELDING PROCEDURES

I. PROCESS:
The welding shall be done with the Neilson Stud Welding Gun Machine.

II. BASE: The base metals used in this procedure shall conform to the specifications listed in Appendix K, AWS D1.1-84.

III. POSITION: All welding shall be done by holding the welding gun at a 45° angle to the base metal. This position shall be maintained without movement until the weld metal has solidified.

IV. PREPARATION OF BASE MATERIAL:
The area to which the studs are to be welded shall be free of scale, rust, moisture, or other injurious material to the extent necessary to obtain satisfactory welds. These areas may be cleaned by wire brushing, scaling, prick-punching, or grinding.

V. NATURE OF ELECTRIC CURRENT AND VOLTAGE:
The current used will be DC straight polarity power. Welding voltage, current, time, and gun settings for lift and plunge should be set at optimum settings, based on past practice, recommendations of stud and equipment manufacturer, or both.

VI. WELDING TECHNIQUE:
Before production welding with a particular set-up and with a given size and type of stud, and at the beginning of each days' or shifts' production, testing shall be performed on the first two studs that are welded. The stud technique may be developed on a piece of material similar to the production member in thickness and

properties. If actual production thickness is not available, the thickness may vary plus or minus 25%.

All test studs shall be welded in the same general position as required on the production member.

If an unacceptable stud has been removed from a component subjected to tensile stresses, the area from which the stud was removed shall be made smooth and flush. Where, in such areas, the base metal has been pulled out in the course of stud removal, shielded metal arc welding with low hydrogen shall be used to fill the pockets and the weld surfaces shall be ground flush.

VII. WORKMANSHIP:

At the time of welding, the studs shall be free from rust, rust pits, scale, oil, moisture, or other deleterious matter that would adversely affect the welding operation. The arc shields or ferrules shall be kept dry. Any arc shields which show signs of surface moisture shall be oven dried at 250° F for two hours before use.

VIII. PREHEAT AND INTERPASS TEMPERATURE:

Preheat requirements will be in accordance with Table 4.2, AWS D1.1-84.

VIV. INSPECTION REQUIREMENT:

If a visual inspection reveals any stud that does not show a full 360° flash, or any stud that has been repaired by welding, such stud shall be bent to an angle of approximately 30° from its original axis. Threaded studs may also be torque tested.

The method of bending shall be to an angle of approximately 30° from their original one by either striking the studs with a hammer or placing a pipe or other suitable hollow device over the stud and manually or mechanically bending the stud. For threaded studs the torque values of Figure 7.6.6, AWS 1.1-84 shall be used.

All bending and straightening, when required, shall be done without heating.

X. WELDER IDENTIFICATION:

Each welder identification number shall be recorded on the Shop Traveler that is attached to each assembly being constructed.

XI. SUMMARY:

This welding procedure is in accordance with, and meets the minimum requirements of, but is not limited to, current edition of the American Welding Society Structural Welding Code D1.1-84.

WELDING PROCEDURE QUALIFICATION TEST RECORD

PROCEDURE SPECIFICATION

Material specification ASTM A108
Welding process SMAW
Manual or machine MACHINE
Position of welding ALL
Filler metal specificatin ASTM A108
Filler metal classification N/A
Weld metal grade* N/A
Shielding gas NONE Flow rate
Single or multiple pass N/A
Single or multiple arc N/A
Welding current DCRP
Welding progression N/A
Preheat temperature PER TABLE 4.2 (AWS)
Postheat treatment N/A
Welder's name JOSE VALENCIA

*Applicable when filler metal has no AWS classification.

VISUAL INSPECTION (9.25.1)

Appearance EXCELLENT
Undercut NONE
Piping porosity NONE

Test date JUNE 20, 1985
Witnessed by TED A. TAYLOR

GROOVE WELD TEST RESULTS

Tensile strength, psi
1. NOT DONE
2.

Guided-bend tests (2 root-, 2 face-, or 4 side-bend)

Root	Face
1.	1.
2.	2.

Radiographic-ultrasonic examination

RT report no NOT DONE
UT report no.

FILLET WELD TEST RESULTS

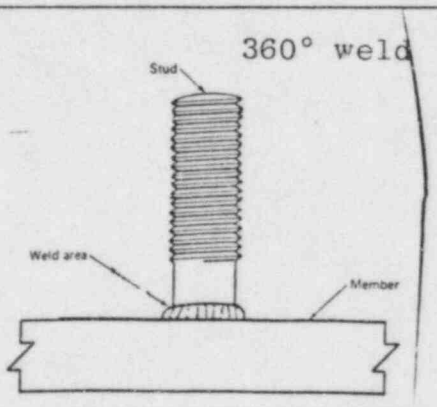
Minimum size multiple pass	Maximum size single pass
Macroetch	Macroetch
1. NOT DONE 3.	1. NOT DONE 3.
2.	2.

All-weld-metal tension test

Tensile strength, psi NOT DONE
Yield point/strength, psi NOT DONE
Elongation in 2 in., % NOT DONE
Laboratory test no. NOT DONE

WELDING PROCEDURE

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Speed of travel	Joint detail
1	5/16 Stud	90	12 VDC	IN PLACE	360° weld



We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of AWS D1.1, (1984 year) Stuctural Welding Code.

Procedure no. PROC- 7
Revision no. 0

Manufacturer or contractor HATCH INC.
Authorized by Ted A Taylor
Date July 12, 1985

See GWP 13-6 for additional information