

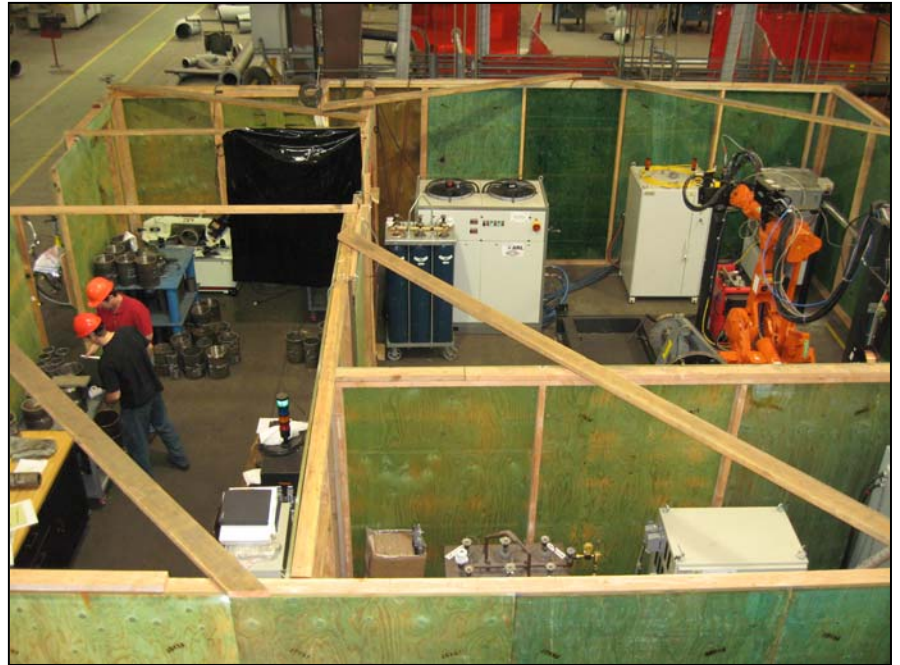
Hybrid Pipe Welding System at NASSCO

PREPARED BY:

Juan Avalos
Randy Doerksen
Assistant Welding Engineer

APPROVED BY:

Michael J. Sullivan
Chief Welding Engineer



Aerial Views of the System Installed In GD NASSCO Pipe Shop.

WELD ENGINEERING

GENERAL DYNAMICS

nasco

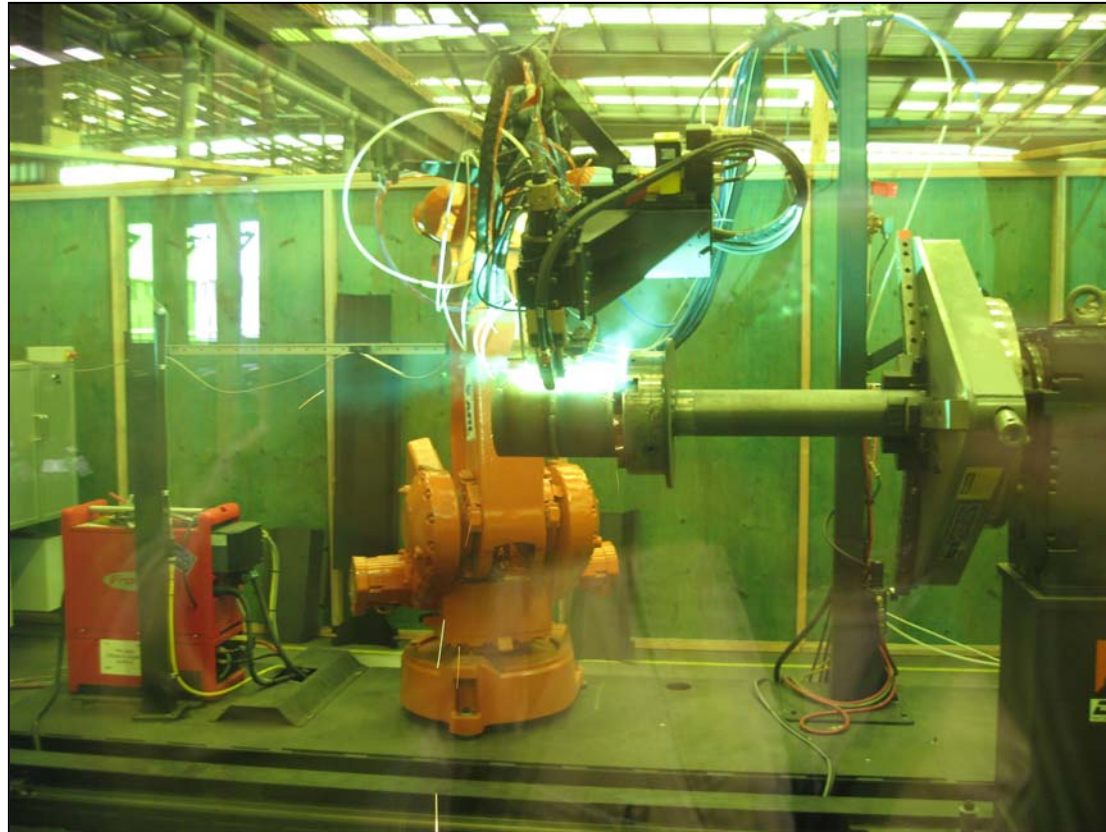


Operator teaches welding position

WELD ENGINEERING

GENERAL DYNAMICS

nasco



Robot Welding

WELD ENGINEERING

GENERAL DYNAMICS




GENERAL DYNAMICS / NASSCO
2798 Harbor Drive
San Diego CA 92186-5278
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PROCEDURE QUALIFICATION RECORD (PQR) NP-11A1.1

Laser-GMA Hybrid
Base Material: CFe Pipe
Filler Material:

THIS IS TO CERTIFY THAT THE PROCEDURE, AS LISTED ABOVE, HAS BEEN SATISFACTORILY QUALIFIED IN ACCORDANCE WITH THE REQUIREMENTS OF ABS 2006 RULES, AND THE SIGNATURES BELOW INDICATE APPROVAL OF THIS PROCEDURE.

PREPARED BY:  DATE: MARCH 22, '07
Randy E Doerksen
Assistant Welding Engineer

APPROVED BY: /s/ Michael J Sullivan DATE: MARCH 22, 2007
Manager of Accuracy Control and Chief Welding Engineer

APPROVED BY:  DATE: MARCH 23 2007
Don Haydock
ABS, Engineer Materials Department

WELD ENGINEERING

GENERAL DYNAMICS



Procedure Qualification Record No. NP-11A1.1 Revision No. --- Date 21, March 2007

FACE BENDS



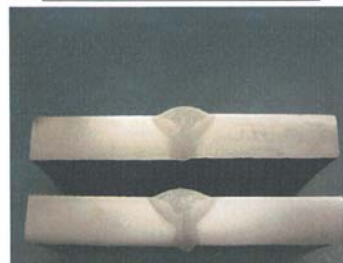
ROOT BENDS



TRANSVERSE TENSILES (2)



WELD MACRO-ETCH





Tacked



Welded

Small production test was run with these
10 pipe samples took 69 minutes.