

WELDING & STEEL FABRICATION Ltd.

WPS No.
WSF MMA 02
Rev 01
Sheet 1 of 2

WELDING PROCEDURE SPECIFICATION (WPS)

SUPPORTING WPQR N°.: **WSF MMA 02 Rev. 00**

DATE: **04 / 08 / 2008**

PROJECT: **FARWAH FPSO CRUDE OIL & WATER SETTLEMENT TANK - REPAIR**

REQUIREMENT: **ASME IX - Boiler and Pressure Vessel Code**

Welding Process: **Shield Metal Arc Welding**

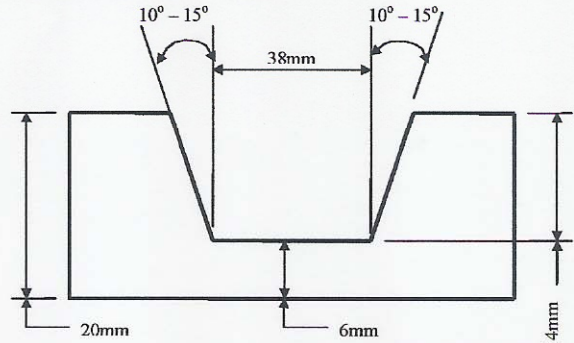
Manual or Automatic:

Manual

Joints: **(QW-402 & QW-453)**

Sketch Details:

JOINT DESIGN: As per Sketch Details
BACKING: (Yes / No) As per Sketch Details
BACKING MATERIAL: (Type) A-131 GRADE AH36
THICKNESS OF TEST COUPON: T 6mm



CORROSION RESISTANT WELD METAL OVERLAY REQUIREMENTS

Base Metals: (QW-403)

P. N° U Group N° N/A To P. N° U Group N° N/A

OR GROUP II AS PER AWS D1.1

SPECIFICATION TYPE and GRADE: A - 131 GRADE AH36 or Equivalent

TO SPECIFICATION TYPE and GRADE: A - 131 GRADE AH36 or Equivalent

OR

CHEMICAL ANALYSIS and MECHANICAL PROPERTIES: _____

TO CHEMICAL ANALYSIS and MECHANICAL PROPERTIES: _____

THICKNESS RANGE: _____

NOMINAL BASEMETAL THICKNESS QUALIFIED - T QUALIFIED TO UNLIMITED

GROOVE: _____ N/A _____ FILLET: _____ N/A

PIPE DIAMETER RANGE: _____ N/A _____ FILLET: _____ N/A

OTHERS: _____ None _____

Filler Metals: (QW-404)

F.No.: 4 OTHERS: N/A

Spec. No. (SFA): A5.1 and A5.5

AWS No. (CLASS): E7016-1 & E7018-G

SIZE OF FILLER METALS: Ø 3.2mm, Ø4.0mm

WELD METAL: _____

THICKNESS RANGE: 6mm TO UNLIMITED

ELECTRODE FLUX (CLASS): None

FLUX TRADE NAME: None

CONSUMABLE INSERT: None

BRAND: Electrodes FILARC 56S And 76S

Approved by Manufacturer:

WELDING & STEEL FABRICATION



Date: 04th August 2008

Approved by Classification Society:

BUREAU VERITAS



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Positions: (QW-405)
POSITION OF GROOVE: _____ 1G _____
POSITION OF FILLET: _____ 1F _____

Postweld Heat Treatment: (QW-407)
TEMPERATURE RANGE: _____ N/A _____
TIME RANGE _____ N/A _____

Preheat: (QW-406)
PREHEAT TEMPERATURE: (MIN) _____ 50°C _____
INTERPASS TEMPERATURE: (MAX) _____ 230°C _____
PREHEAT MAINTENANCE: _____ N/A _____

Gas: (QW-408)
SHIELDING GASES: _____ N/A _____
% COMPOSITION: _____ N/A _____
FLOW RATE: _____ N/A _____
GAS BACKING: _____ N/A _____
TRAILING SHIELDING GAS COMPOSITION: _____ N/A _____


Electrical Characteristics: (QW-409)
CURRENT AC or DC: _____ AC _____
POLARITY: _____ E7016-1 & E7018-G _____
AMPS (RANGE): _____ 110 ~ 180 _____
VOLTS (RANGE): _____ 21 ~ 26 _____
PULSING OF CURRENT: _____ None _____
TUNGSTEN ELECTRODE SIZE and TYPE: _____ N/A _____
MODE OF TRANSFER TO GMAW: _____ N/A _____
ELECTRODE WIRE SPEED FEED RANGE: _____ N/A _____

Technique: (QW-410)
STRINGER or WEAVE BEAD: _____ Stringer _____
ORIFICE or GAS CUP SIZE: _____ N/A _____
INITIAL and INTERPASS CLEANING: _____ Grinding or Brushing _____
METHOD OF BACKGOUGING: _____ N/A _____
OSCILLATION: _____ N/A _____
CONTACT TUBE TO WORK DISTANCE: _____ N/A _____
MULTIPLE or SINGLE PASS (per side): _____ Multiple _____
MULTIPLE or SINGLE ELECTRODES: _____ N/A _____
TRAVEL SPEED RANGE: _____ See Table Below _____
PEENING: _____ Not Permitted _____
OTHER: _____ None _____

| Pass or Weld Layers | Process | Filler Metals | | Current | | Voltage Range (V) | Travel Speed (mm/min.) |
|-------------------------------------|---------|---------------|---------------|-------------------|--------------------|-------------------|------------------------|
| | | Class | Diameter (mm) | Type and Polarity | Amps or Wire Speed | | |
| 1 st Overlay | SMAW | E7016-1 | 3.2 | AC | 110 ~ 130 | 21 ~ 25 | 140 ~ 170 |
| HOT RUNS | SMAW | E7018-G | 4.0 | AC | 140 ~ 180 | 21 ~ 26 | 130 ~ 160 |
| Capping | SMAW | E7018-G | 3.2 | AC | 110 ~ 130 | 21 ~ 25 | 130 ~ 160 |
| Heat Input not to exceed 1.90 KJ/mm | | | | | | | |

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