

1 **WELDING PROCEDURE APPROVAL TEST CERTIFICATE**

Page 1 of 3

2
 3 *Manufacturer's Welding Procedure*

Inspecting Authority ZC/WP/110043

4 *Reference No* WP1

Reference No. SS42526723/1

5 *Manufacturer:* VARLOWE INDUSTRIAL SERVICES LTD

6 *Address:* UNIT 16 REFLEX BUSINESS PARK
 WEDNESFIELD ROAD

WILLENHALL
 WV131AH

7 *Code / Testing Standard:* BS EN ISO 15614-1:2004 A1 2008

8 *Date of Welding:* 21/12/2010

9 **RANGE OF QUALIFICATION**

10 *Welding Process:* MANUAL TIG(141)

11 *Joint Type:* BUTT WELD(1) FILLET WELD(2)

12 *Parent Metal Groups /Sub Groups:* 1.1,11.1 Re<=240N/mm²

13 *Parent Metal Thickness (mm):* 1.94mm-5.54mm

Weld Metal Thickness (mm): 1.94mm-5.54mm

Throat Thickness (mm): NO RESTRICTION(1.94mm-5.54mm MATERIAL THICKNESS)

Single run / Multi run: MULTI RUN

14 *Pipe Outside Diameter (mm):* 10.65mm-42.6mm

15 *Filler Metal Type / Designation:* EN 1668 W3 Si1

Filler Material Make: NO RESTRICTION

Filler Material Size: SEE 8.4.6

16 *Designation of Gas / Flux:* ARGON 99.99% EN ISO 14175 I1

Designation of Backing Gas: NOT APPLICABLE

17 *Type of Welding Current / Polarity:* DC-VE

Mode of Metal Transfer: NOT APPLICABLE

Heat Input: +/-25% RECORDED VALUES

18 *Welding Position(s):* ALL EXCEPT VERTICAL DOWN

19 *Preheat Temperature:* 5° C MINIMUM

Post-Heating: NONE


20 *Post Weld Heat Treatment:* NONE

21 **OTHER INFORMATION** SEE BS EN ISO 15614-1:2004 A1 2008

1)ss,nb,mb,bs,gg,ng
 2) SEE CLAUSE 8.4.3a

22 *Certified that test welds were prepared, welded and tested satisfactorily in accordance with the requirements of the code / testing standard indicated above.*

23 *Location:* BIRMINGHAM *Date of Issue:* 17/01/2011

Name and Signature

 C DUFFELL
Inspecting Authority
 (CEOC Member Organization)
 ZURICH ENGINEERING
 301 Great Bridge Street
 West Bromwich B70 0DE

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DETAILS OF WELD TEST

1
2
3 *Manufacturer's Welding Procedure*
4 *Reference No.* WP1
5 *Manufacturer:* VARLOWE INDUSTRIAL SERVICES LTD
6 *Address:* UNIT 16 REFLEX BUSINESS PARK
WEDNESFIELD ROAD

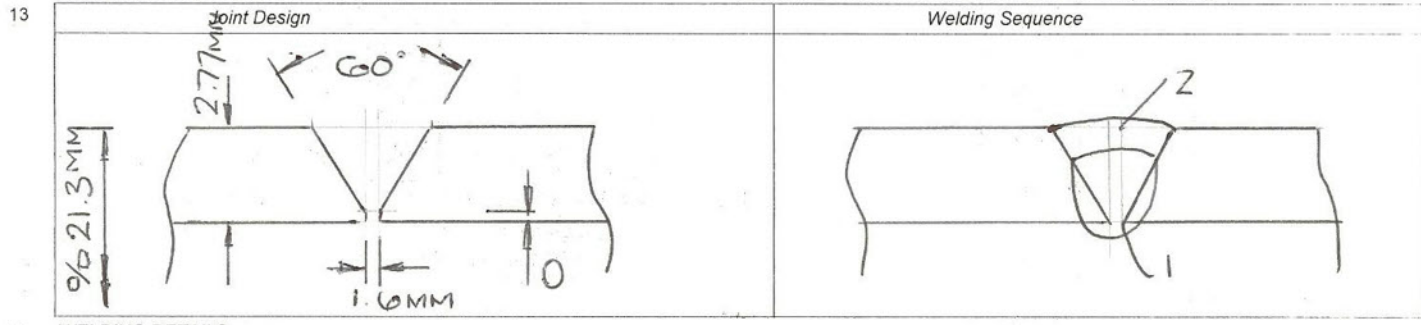
Inspecting Authority ZC/WP/110043
Reference No. SS42526723/1
Date of Welding: 21/12/2010
Location: WORKSHOP

7 WILLENHALL
WV131AH
8 *Welder's Name:* PAUL HAWKINS
9

Method of Preparation and MACHINE, DEGREASE
Cleaning :
Parent Metal Specification: ASTM A333 GD 6

10 *Welding Process:* MANUAL TIG(141)
11 *Joint Type:* BUTT WELD IN PIPE
12 *WELD PREPARATION DETAILS (Sketch)*

Parent Metal Thickness(mm): 2.77mm
Pipe Outside Diameter(mm): 21.3mm
Test Piece / Welding Position: INC 45° V-UP(H-L045)



14 **WELDING DETAILS**

Run	Process	Size of Filler Metal	Current A	Voltage V	Type of Current and Polarity	Wire Feed / Travel Speed *	Heat Input *
1	TIG(141)	1.6mm	80-90	9-10	DC-VE	MANUAL/0.8mm/S	0.54KJ/mm
2	TIG(141)	1.6mm	75-80	8-9	DC-VE	MANUAL/0.7mm/S	0.51KJ/mm EN 1011

16 *Filler Metal:*
17 *Type, Designation, Trade Name:* FILARC PZ6500 EN 1668 W3 Si1
18 *Any Special Baking or Drying:* DRY STORAGE
19 *Gas / Flux:* ARGON 99.99% EN ISO 14175 I1
20 *Gas Flow Rate - Shield:* 10 LPM
21 *Backing:* N/A
22 *Tungsten Electrode Type / Size:* 2% THORIATED 2.4mm DIA
23 *Details of Back Gouging / Backing:* NONE/ss,nb
24 *Preheat Temperature:* 5° C MIN
25 *Interpass Temperature:* 250° C MAX

26 **POST WELD HEAT TREATMENT** NONE
27 *Time, Temperature, Method:*
28 *Heating and Cooling Rates *:*

29 *The above test piece was* C DUFFELL
welded in the presence of: ZURICH ENGINEERING

OTHER INFORMATION

[Empty box for other information]

ZURICH
Name and Signature A D EDWARDS
SAFed/CEOC Member Company

Inspecting Authority Zurich Laboratory Services
(CEOC Member Organization) Bridge Street
ZURICH ENGINEERING B70 0DE
Tel: 0121 520 5868
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TEST RESULTS

1
2
3 *Manufacturer's Welding Procedure:*
4 *Reference No.* WP1
5 *Visual Examination:* ACCEPTABLE
6 *Penetrant Test ** ACCEPTABLE
7 *Tensile Tests :* EN ISO 6892-1 2009

Inspecting Authority ZC/WP/110043
Reference No. SS42526723/1
*Radiography * :* ACCEPTABLE
Ultrasonic Examination :* NOT APPLICABLE
Temperature: 20° C

Type / No.	Re N/mm ²	Rm N/mm ²	A %on	Z%	Fracture Location	Remarks
Requirement		415				
TRANSVERSE 1	-	490	-	-	43mm Clear of Weld	ACCEPTABLE
TRANSVERSE 2	-	489	-	-	41mm Clear of Weld	ACCEPTABLE

10 *Bend Tests:* EN 910:1996 *Former Diameter:* 4t

Type No.	Bend Angle	Elongation	Result
ROOT(X2)	180°	-	ACCEPTABLE
FACE(X2)	180°	-	ACCEPTABLE

*Fillet Fracture Test * :* NOTAPPLICABLE

Macro Examination : (X1) ACC EN 1321

13 *IMPACT TESTS * :* NOT APPLICABLE *Type :* *Size :* *Requirement :*

Notch Location / Direction	Temp. °C	Values	Average	Remarks

15 *HARDNESS TESTS * :* EN ISO 148-1//ISO 6507

16 *Type / Load* VICKERS 10 KG
17 *Values - Parent Metal* 147-152
18 *- H.A.Z.* 144-185
19 *- Weld Metal* 159-170

20 *OTHER TESTS* NONE

21 *REMARKS* FOR MACROPHOTOGRAPH SEE ADDENDUM 1

22 *Tests carried out in accordance with the requirements of :* BS EN ISO 15614-1:2004 A1 2008

23 *Laboratory Report Reference No* SS42526723/1

24 *Test Results Were* ACCEPTABLE

25 *Test carried out in the presence of:* A D EDWARDS
ZURICH ENGINEERING

27

ZURICH
SAFed/CEOC Member Company
Name and Signature O DUFFELL
Zurich Laboratory Services
204, Great Bridge Street
West Bromwich B70 0DE
Inspecting Authority (CEOC Member Organisation) 21 520 5868
ZURICH ENGINEERING

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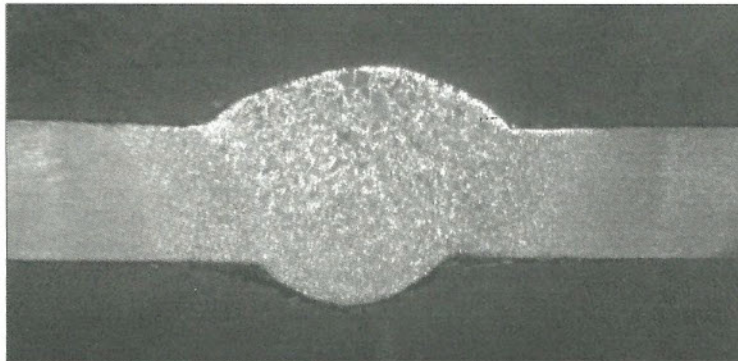
LABORATORY SERVICES REPORT

Date of Receipt: 21/12/2010
Client Ref.
Manufacturers Name VARLOWE INDUSTRIAL SERVICES LTD
and Address UNIT 16 REFLEX BUSINESS PARK
WEDNESFIELD ROAD


WILLENHALL
WV131AH

Our Ref. SS42526723/1 ADD 1
Report No. LSR110175
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WELD PROCEDURE REF:- WP1
MACRO PHOTOGRAPH



Tested By J BROOMHALL Date 05/01/2011

Signature  Position WELDING ENGINEER Date 24/01/2011

Signatory C DUFFELL For Zurich Laboratory Services.
Certified that the tests have been carried out in accordance with client instructions and the quality requirements of Zurich Laboratory Services.

Laboratory services, 204 Great Bridge Street, West Bromwich B70 0DE.
Telephone: 0121 520 5868 Fax: 0121 520 5863

Zurich Management Services Limited, Registered in England no. 2741053.
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