

WELDING PROCEDURE APPROVAL TEST CERTIFICATE

1
 2
 3 *Manufacturer's Welding Procedure*
 4 *Reference No* WP8
 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:* 05/01/2011
 9 **RANGE OF QUALIFICATION**
 10 *Welding Process:* MANUAL TIG (141) MMA (111)
 11 *Joint Type:* BUTT WELD(1) FILLET WELD(2) BUTT WELDS(3) FILLET WELDS (4)
 12 *Parent Metal Groups /Sub Groups:* 1.1, 11.1 Re<=240 N/mm²
 13 *Parent Metal Thickness (mm):* 3mm - 14.22mm
Weld Metal Thickness (mm): 3mm - 6mm 3mm - 8.22mm
Throat Thickness (mm): NO RESTRICTION (3.55mm-8.53mm MATERIAL THICKNESS)
Single run / Multi run: MULTI RUN
 14 *Pipe Outside Diameter (mm):* >=84.15mm
 15 *Filler Metal Type / Designation:* EN 1668 W3 Si1 EN ISO 2560-A E515B
Filler Material Make: NO RESTRICTION FILARC 56S (5)
Filler Material Size: SEE 8.4.6
 16 *Designation of Gas / Flux:* ARGON 99.99% EN ISO 14175 I1 BASIC FLUX
Designation of Backing Gas: NOT APPLICABLE
 17 *Type of Welding Current / Polarity:* DC-VE 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
 (3) ss,mb,bs,gg

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Inspecting Authority ZC/WP/110056

Reference No. SS42526723/4

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 **ZURICH**
 C DUFFELL **SAFed/CEOC Member Company**
Inspecting Authority Zurich Laboratory Services
 (CEOC Member Organization) Bridge Street
 ZURICH ENGINEERING B70 0DE
 Tel: 0121 520 5868
Traduction des rubriques Imprimées
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Übersetzung des vorgedruckten
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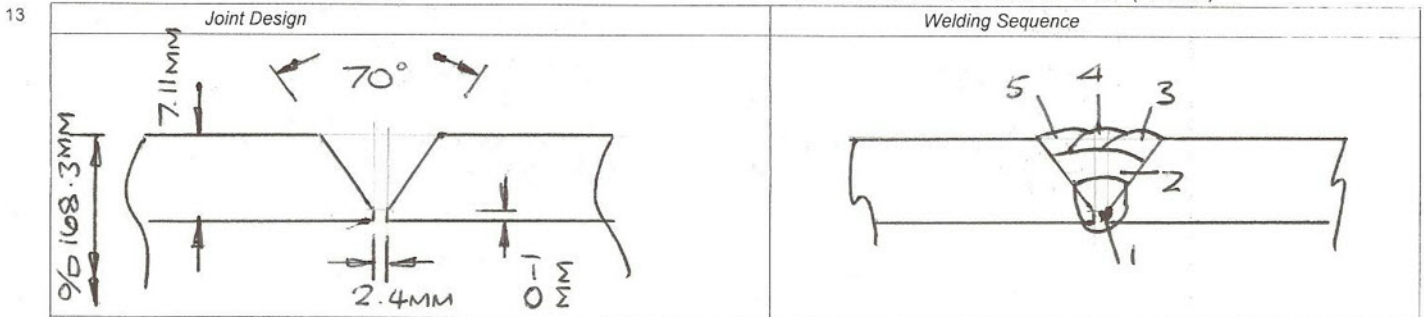
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DETAILS OF WELD TEST

1
2
3 **Manufacturer's Welding Procedure** Inspecting Authority ZC/WP/110056
4 **Reference No.** WP8 Reference No. SS42526723/4
5 **Manufacturer:** VARLOWE INDUSTRIAL SERVICES LTD Date of Welding: 05/01/2011
6 **Address:** UNIT 16 REFLEX BUSINESS PARK Location: WORKSHOP
WEDNESFIELD ROAD

7 **WILLENHALL** Method of Preparation and Cleaning: MACHINE, DEGREASE
8 **WV131AH**
9 **Welder's Name:** PAUL HAWKINS Parent Metal Specification: ASTM A333 GD 6

10 **Welding Process:** MANUAL TIG (141)/ MMA (111) Parent Metal Thickness(mm): 7.11mm
11 **Joint Type:** BUTT WELD IN PIPE Pipe Outside Diameter(mm): 168.3mm
12 **WELD PREPARATION DETAILS (Sketch)** Test Piece / Welding Position: INC 45° V-UP (H-L045)



14 **WELDING DETAILS**

15

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	90-100	8-10	DC-VE	MANUAL/ 0.8mm/S	0.54 KJ/mm
2	MMA (111)	2.5mm	80-100	21-24	DC+VE	- / 2.2mm/S	0.61 KJ/mm
3-5	MMA (111)	2.5mm	80-100	21-24	DC+VE	- / 3.7mm/S	0.36 KJ/mm

16 **Filler Metal:**
17 **Type, Designation, Trade Name:** FILARC PZ6500 EN 1668 W3 Si1/ FILARC 56S EN ISO 2560-A E515B12H5
18 **Any Special Baking or Drying:** DRY STORAGE/ FROM VACUUM PACK
19 **Gas / Flux:** ARGON 99.99% EN ISO 14175 I1 / BASIC FLUX
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,ss,mb
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 welded in the presence of:** C DUFFELL
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)
201 Great Bridge Street
ZURICH ENGINEERING Bromwich B70 0DE
Tel: 0121 520 5868

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TEST RESULTS

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3 *Manufacturer's Welding Procedure:* Inspecting Authority ZC/WP/110056
4 *Reference No.* WP8 Reference No. SS42526723/4
5 *Visual Examination:* ACCEPTABLE Radiography *: ACCEPTABLE
6 *Penetrant Test ** ACCEPTABLE Ultrasonic Examination* : NOT APPLICABLE
7 *Tensile Tests :* EN ISO 6892-1 2009 Temperature: 20°C

Type / No.	Re N/mm ²	Rm N/mm ²	A %on	Z%	Fracture Location	Remarks
Requirement		415				
TRANSVERSE 1	-	557	-	-	28mm Clear of Weld	ACCEPTABLE
TRANSVERSE 2	-	586	-	-	29mm Clear of Weld	ACCEPTABLE

10 *Bend Tests:* EN910:1996 Former Diameter: 4t

Type No.	Bend Angle	Elongation	Result	Fillet Fracture Test* :
ROOT (X2)	180°	-	ACCEPTABLE	NOT APPLICABLE
FACE (X2)	180°	-	ACCEPTABLE	Macro Examination : (X1)ACCEPT:EN1321

13 *IMPACT TESTS*:* Type : EN10045-1 Size : 10 X 5mm Requirement : SEE APPLICATION CODE

Notch Location / Direction	Temp. °C	Values	Average	Remarks
WELD	-30	72J 80J 77J	76.3 J	
HAZ	-30	54J 88J 90J	77.3 J	

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

16 *Type / Load* VICKERS 10 KG
17 *Values - Parent Metal* 150 - 169
18 *- H.A.Z.* 171 - 199
19 *- Weld Metal* 166 - 174

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* SS42526723/4

24 *Test Results Were* ACCEPTABLE

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

27

ZURICH
Name and Signature *S. Puffel*
SAFED CEOC Member Company
Zurich Laboratory Services
Inspecting Authority 204, Great Bridge Street
(CEOC Member Organization) West Bromwich B70 0DE
Tel: 0121 520 5868
ZURICH ENGINEERING

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LABORATORY SERVICES REPORT

Date of Receipt: 05/01/2011

Our Ref. SS42526723/7 ADD 1

Client Ref.

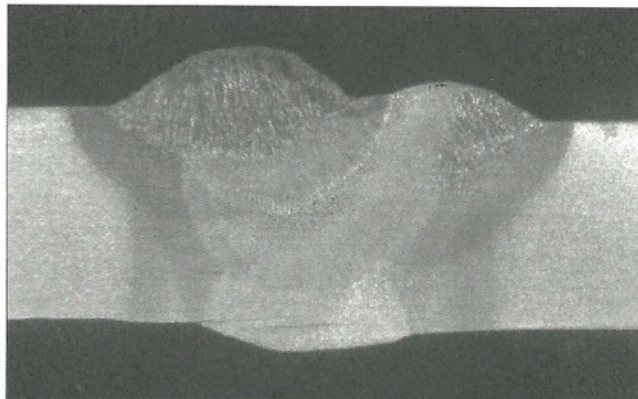
Report No. LSR110182

Manufacturers Name VARLOWE INDUSTRIAL SERVICES LTD
and Address UNIT 16 REFLEX BUSINESS PARK
WEDNESFIELD ROAD

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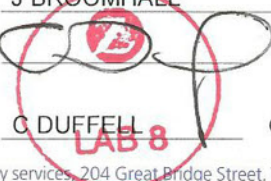
WILLENHALL
WV131AH

WELD PROCEDURE REF:- WP8
MACRO PHOTOGRAPH



Tested By J BROOMHALL Date 10/01/2011

Signature  Position WELDING ENGINEER Date 24/01/2011

Signatory G DUFFELL  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.

Registered Office: The Zurich Centre, 3000 Parkway, Whiteley, Fareham, Portsmouth, Hampshire PO15 7JZ.