

IMG 170186 Grenfell Tower London W11 1TQ

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# K & S Pipe Contractors LLP

## Air Pressure Test Certificate

Site address: GREN FELL TOWER  
GREN FELL RD  
W11

Project reference: 1M9M 170186

Pipe diameter: 50mm	Length: 91m	Material: steel
Pipe diameter: 25mm	Length: 91m	Material: steel
Pipe diameter: 20mm	Length: 8m	Material: steel
Pipe diameter:	Length:	Material: steel
Pipe diameter:	Length:	Material: steel
Pipe diameter:	Length:	Material: steel
Pipe diameter:	Length:	Material: steel

Property/Plot numbers: 22, 32, 52, 62, 72, 82, 102, 112  
132, 142, 182

TEST REPORT	TEST ON	TEST OFF
Date	25/1/17	25/1/17
Time	14.15	14.30
Gauge pressure	350 mbar	350 mbar

Test result: (\*delete as appropriate)

\*Pass

\*fail

Test completed by: R Smith

Signature: R S &

Job title: Riser Team Leader

Date: 25/1/17

Model: Anton APM 150	Serial number: 4607114539	Calibration Date: 21.11.16	Calibration Expiry: 20.11.17
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# K & S Pipe Contractors LLP

## Air Pressure Test Certificate

Site address:

12 Green Park Terrace  
Green Park Rd W11

Project reference:

1M9M 170186

Pipe diameter: 1"	Length: 8m	Material: steel
Pipe diameter: 1/2"	Length: 1m	Material: steel
Pipe diameter:	Length:	Material: steel
Pipe diameter:	Length:	Material: steel
Pipe diameter:	Length:	Material: steel
Pipe diameter:	Length:	Material: steel
Pipe diameter:	Length:	Material: steel

Property/Plot numbers:

TEST REPORT	TEST ON	TEST OFF
Date	16-2-17	16-2-17
Time	1345	1415
Gauge pressure	350 mbar	350 mbar

Test result: (\*delete as appropriate)

\*Pass

\*fail

Test completed by: G Lawrence

Signature: 

Job title: Riser Team Leader

Date: 16-2-17

Gauge type: Electronic	Serial number: 5512248248	Calibration Date: 23/02/16	Calibration Expiry: 22/02/17
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# K & S Pipe Contractors LLP

## Air Pressure Test Certificate

Site address:

92 GLOVALL TOWER  
GLOVALL RD W4

Project reference:

1MGM 170186

Pipe diameter:	1"	Length:	2m	Material:	steel
Pipe diameter:	3/4"	Length:	1m	Material:	steel
Pipe diameter:		Length:		Material:	steel
Pipe diameter:		Length:		Material:	steel
Pipe diameter:		Length:		Material:	steel
Pipe diameter:		Length:		Material:	steel
Pipe diameter:		Length:		Material:	steel

Property/Plot numbers:

TEST REPORT	TEST ON	TEST OFF
Date	20-2-17	20-2-17
Time	1310	1340
Gauge pressure	350 mbar	350 mbar

Test result: (\*delete as appropriate)

\*Pass

\*fail

Test completed by: G Lawrence

Signature: 

Job title: Riser Team Leader

Date: 20-2-17

Gauge type:	Serial number:	Calibration Date:	Calibration Expiry:
Electronic	5512248248	23/02/16	22/02/17



# Inspection of Production Welding Record



Welding Inspector	M. G. Russell (B Gas W0153)	Project	IM&M 170186
Site Address	GRENFELL TOWER GRENFELL WALK LONDON W11 1TE		
Date	24-2-2017	Description	T-SP-P1
Welder	G. LAWRENCE + (i B Gas W0153)	Welding Specification	T-SP-P1
Client	CRIO	Welding Procedure	KS 24. KS 27

Location	Size	No. of Welds	Weld Type	Visual Inspection	RPI	X-Ray One	X-Ray Two	X-Ray Three	X-Ray Four
ENTRY	3"	2	FILLER-FRANGE	2	2	-	-	-	-
"	3/4"	1	BRANCH	1	-	-	-	-	-
BASEMENT FLAT	2"	1	BUTT	1	-	-	-	-	-
"	"	29	Socket	29	2	-	-	-	-
Riser	2"	132	"	132	10	-	-	-	-
OFFTAKES	1"	26	FILLER-FRANGE	26	3	-	-	-	-
"	"	164	Socket	164	15	-	-	-	-
"	3/4"	64		64	6	-	-	-	-

Client		Welding Inspector	M. G. Russell
Signature		Signature	M. G. Russell

Document	08.09	Title	Inspection of Production Welding Record	Page	1 of 1
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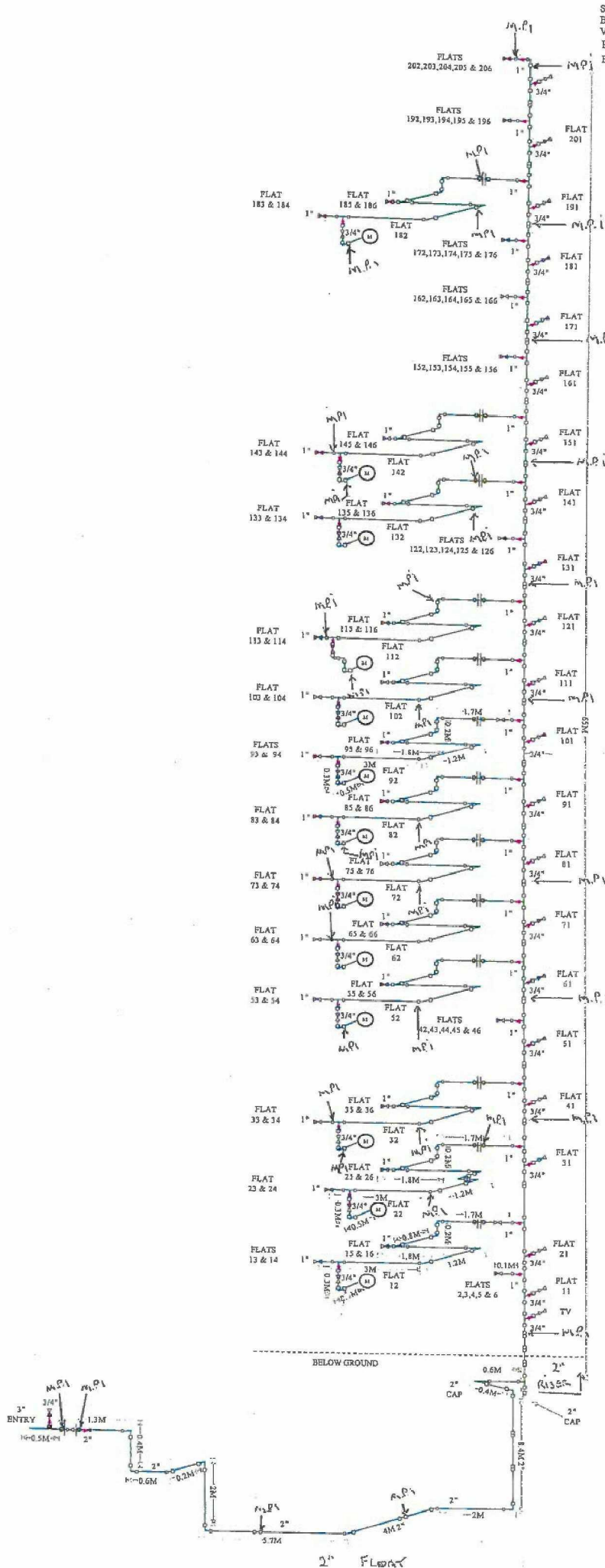
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KEY

- |             |   |                       |   |
|-------------|---|-----------------------|---|
| SOCKET WELD | ○ | ISOLATOR              | □ |
| BUTT WELD   | ○ | FLANGE                | ○ |
| VALVE       | ⊗ | REDUCER               | ○ |
| ECV         | ⊗ | WELDED PIPE           | ○ |
| BRANCH WELD | ○ | SCREWED PIPE          | ○ |
|             |   | THERMAL CUT OFF VALVE | ⊗ |





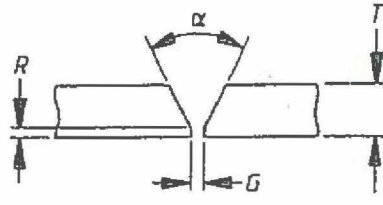
## SPREE NDT

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### WELDER QUALIFICATION RECORD National Grid T/SP/P1

Employer:	K & S Pipe Contractors	Welders Name	Graham Lawrence
WQ Certificate No:	L7726/2016/01366	Joint Details:	 <p>R= 1-2mm G= 1-2mm <math>\alpha = 60^{\circ} \pm 5^{\circ}</math></p>
Place of test:	K & S		
Date:	30.06.2016		
Weld Procedure No:	KS 24		
Base Material:	API 5LX ASTM A106/A106 M-08		
Diameter:	Ø 48.3mm (1½") Pipe to pipe.		
Range Qualified:	Ø 24 to 97mm		
Wall Thickness:	3.68mm		
Range Qualified:	2.76 to 5.52mm		
Weld Position:	HLO45 / 6G		

#### Welding Data

Pass No	Welding Process	Electrode type	Dia	Weld direction	AMPS	Volts	Polarity	AC / DC
1	MMA	Nufive	2.5	Vert up PH	58	28	-ve	DC
2	MMA	Fincord M	2.5	Vert up PH	79	22	-ve	DC
3	MMA	Fincord M	2.5	Vert up PH	71	21	-ve	DC

#### Test Results:

Visual: 3<sup>rd</sup> Party Witnessed and Accepted

MPI: N/A

Radiography: Acceptable

Ultrasonics: N/A

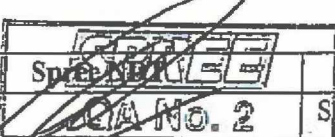
If test result is a failure state reason:

Mechanical test results: (if required)

Not Required

#### Comments:

All test results acceptable to the requirements of T/SP/P/1

 Signed: <i>[Signature]</i> Name: C. Brown Title: Welding Inspector Date: 02.08.2016	Inspector	National Grid
	Signed: <i>[Signature]</i>	Signed:
	Name: M. G. Russell	Name:
	Title: Welding Inspector M.P.1 RADIOGRAPHER	Title:
	Date: 03-08-2016	Date:

DOC SP 283 REV 0

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CAD000







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Fax:

Nationalgrid WELDING PROCEDURE SPECIFICATION										Procedure No. KS 24 Rev No. 0 Date: 05.08.2010			
SPECIFICATION: NG T/SP/P1 2007 & BS 2971										P.Q.R.NO. L6150/2010/48216 Pipe to Pipe			
PROJECT: N/A										CLIENT MORRISON N/A			
BASE MATERIALS	MATERIAL		C/S		PROCESS	WELDING PROCESS		MMA					
	P.NO. / GRADE		ASTM A 106/ A 106 M-08			POSITION		Horizontal					
	THICKNESS / DIAMETER		3.68 X 48.3mm			POSITIONS QUALIFIED		G6					
	RANGE QUALIFIED		2.76 – 5.52mm 24.15 – 96.6mm			P.W.H.T		None					
JOINT DETAILS					PASS LOCATION								
<p>R=1-2mm G=1-2mm <math>\alpha=60^{\circ}, 5^{\circ}</math></p>													
PRE HEAT	PRE HEAT TEMP °C		Min 50°C		P.W.H.T	HEATING RATE C/R		None					
	INTER PASS TEMP°C		50 – 250°C			SOAK TEMP °C		None					
	APPLICATION METHOD		Torch Gas Propane			SOAK PERIOD HRS		None					
	RANGE QUALIFIED		As Above			COOLING RATE		None					
TECHNIQUE	CLEANING METHOD		Grind/Power Brush		ELECTRODE CONTROL	BAKING TEMP °C		N/A					
	TREATMENT OF 2 <sup>ND</sup> SIDE		N/A			HOLDING TEMP °C		N/A					
	CLAMPING METHOD		External Clamp/Tack Weld			QUIVER TEMP °C		N/A					
	STRING, WEAVE BEAD		String		FILLER MATERIAL	ELECTRODE NAME		Nufive/Fincord M					
	BACKING STRIP		N/A			CLASSIFICATION		E6010					
	PURGE GAS		N/A			GROUP NO		AWS A5.1					
	FLOW RATE		N/A			ANALYSIS NO		N/A					
SIDE PASS NO.	WELD PROCESS	WELD DIRECTION	NO OF WELDERS	ELECTRODE	DIA MM	AC/DC	FLUX TYPE/GAS SHIELD	GAS FLOW RATE	AMPS	VOLTS	ROL MM SEC	WELD SPEED	HEAT INPUT
1	MMA	UP	1	Nufive	2.5	DC-	Cellulose	N/A	58	28	2.0		0.8KJ/mm
2	MMA	Up	1	Fincord M	2.5	DC-	Cellulose	N/A	79	22	2.3		0.75KJ/mm
3	MMA	UP	1	Fincord M	2.5	DC-	Cellulose	N/A	71	21	1.3		1.13KJ/mm
TIME LAPSE BETWEEN COMMENCEMENT OF ROOT AND COMMENCEMENT OF SECOND PASS.....5.....MINS TIME LAPSE BETWEEN COMMENCEMENT OF SECOND PASS AND COMMENCEMENT OF OTHER PASSES 6.....MINS MINIMUM NUMBER OF PASSES BEFORE JOINT IS ALLOWED TO COOL 1 X Heat Cycle..... MAXIMUM TIME BETWEEN COMMENCEMENT AND COMPLETION OF WELD...1 X Heat Cycle TYPE OF LINE UP CLAMP.....External / Spaced & Supported... for Tack Welds..... REMOVAL OF LINE UP CLAMP AFTER.....50% ROOT PASS; LOWER OFF AFTER...100% ROOT PASS													
APPROVALS	SUB-CONTRACTOR				CONTRACTOR				CLIENT				
	SIGNED				SIGNED				SIGNED				
	NAME: S G Thomson				NAME: A Spree				NAME: R.W. STAMP				
	TITLE: Quality Manager				TITLE: NDT Technician				TITLE: SPI GRADER				
DATE: 05.08.2010				DATE: 02.08.2010				DATE: 12/8/10					
								APPROVED SUBJECT TO QUALIFICATION					







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### HARDNESS TEST REPORT

**Client:** K & S Pipe Contractors  
**Address:** Unit 1, Stock Road  
Southend on Sea  
Essex  
SS2 5QF

**Client's Order No:** On Going  
**Our Reference:** L6181/L/2010/48303

Page 1 of 2

**Date of Report:** 12.08.2010  
**Date of Inspection:** 09.08.2010  
**Date of Receipt:** 03.08.2010  
**Procedure No.** TM27 Rev 1  
**Departure from Normal Procedure:** Pipe to Pipe  
**Description:** 1 1/2" Butt  
**Condition:** Acceptable to test  
**Parent Material** ASTM A106/A106 M-08  
**Thickness of Material** 3.63mm  
**Type of Weld** Butt Weld  
**Welding Process** MMA  
**Consumables** E6010  
**Post Weld Heat Treatment or Aging Process** None

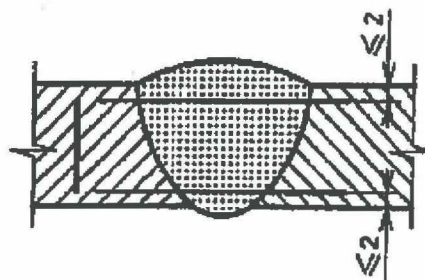
Test Carried out in accordance BS EN 1043 - 1 1996  
& BS EN ISO 6507 - 1 2005

### VICKERS HARDNESS SURVEY

INDENT No	POSITION FIG 1	OCULAR		AV	HARDNESS HV (10)	INDENT No	POSITION FIG 1	OCULAR		AV	HARDNESS HV (10)
1	PM	419	339	379	129	16	PM	318	382	350	151
2	HAZ	318	386	352	150						
3	HAZ	396	331	363	141						
4	WM	294	364	329	171						
5	WM	364	306	335	165						
6	HAZ	325	403	364	140						
7	HAZ	400	321	360	143						
8	PM	302	381	341	159						
9	PM	407	345	376	137						
10	HAZ	334	394	364	140						
11	HAZ	392	330	361	142						
12	WM	328	394	361	142						
13	WM	398	338	368	137						
14	HAZ	327	391	359	144						
15	HAZ	387	329	358	145						

	MIN	MAX	
PM	129	159	Acceptable
HAZ	140	150	Acceptable
WM	137	171	Acceptable

### SKETCH



M1

Test Temperature 20°C

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TESTED BY:

S G Thomson	✓
J A Stewart	

Additional Information

Approved By:

Name:

Date:

Signature:

Quality Manager

S G Thomson

12.08.2010

SPREE  
QA No. 5

DOC SP 43 REV 7T

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Fax:

**MACROSCOPIC REPORT**

<b>Client:</b>	K & S Pipework	<b>Date of Report:</b>	11.08.2010
<b>Address:</b>	Unit 1 Stock Road	<b>Date of Inspection:</b>	03.08.2010
	South End on Sea	<b>Date of Receipt:</b>	03.08.2010
	Essex SS2 5QF	<b>Procedure No:</b>	TM 027 Rev 0
		<b>Departure from normal Procedure:</b>	None

**Client's Order No:** On Going  
**Our Reference** L6181/S/2010/48245

**Page No** 1 of 2

**WPAR: No:** WPS K S 24

<b>Manufacturer:</b>	K & S Pipework	<b>Additional Information:</b>
<b>Purpose of examination:</b>	WPQR	Site: N/A
<b>Test piece:</b>	1 1/2" Pipe to Pipe 3.63wt	
<b>Test specimen:</b>	Butt Weld	
<b>Parent metal:</b>	ASTM A106/A106 M-08	
<b>Consumable:</b>	AWS A5 1-86	
<b>Post weld heat treatment and or ageing treatment:</b>	N/A	
<b>Weld Procedure Approval Record:</b>	WPS K S 24	
<b>Condition:</b>	Acceptable to Test	

**Designation:** EN 1321 A E 22.2 22.2 XY

Tested in accordance with NGT/SP/P/1 2007 & BS 2971 1991

**Macrographic Etchant:** 5% Nital

Method of Application Soak

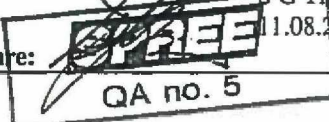


PhotoM1 Approx 6.3 Magnification  
Viewed at 5 X Magnification  
Acceptable to NG/T/SP/P1 2007 & BS 2971 1991

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**Operator:**  
**Name:** S G Thomson

**Approved by: Quality Manager**  
**Name:** S G Thomson  
**Date:** 11.08.2010  
**Signature:**



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Tel: Sittingbourne [REDACTED] Fax: [REDACTED]

**MACROSCOPIC REPORT**

<b>Client:</b>	K & S Pipework	<b>Date of Report:</b>	11.08.2010
<b>Address:</b>	Unit 1 Stock Road	<b>Date of Inspection:</b>	03.08.2010
	South End on Sea	<b>Date of Receipt:</b>	03.08.2010
	Essex SS2 5QF	<b>Procedure No:</b>	TM 027 Rev 0
		<b>Departure from normal Procedure:</b>	None
<b>Client's Order No:</b>	On Going		
<b>Our Reference</b>	L6181/S/2010/48245		
<b>Page No</b>	2 of 2		

**WPAR : No: WPS K S 24**

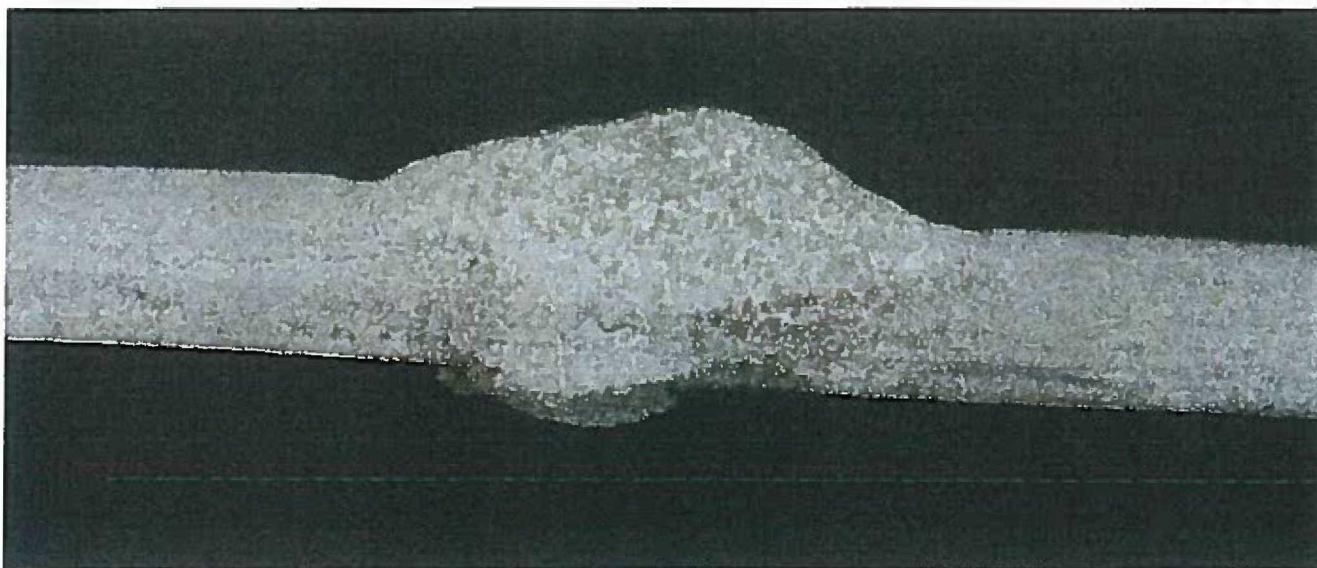
<b>Manufacturer:</b>	K & S Pipework	<b>Additional Information:</b>	
<b>Purpose of examination:</b>	WPQR	<b>Site:</b>	N/A
<b>Test piece:</b>	1 1/2" Pipe to Pipe 3.63wt		
<b>Test specimen:</b>	Butt Weld		
<b>Parent metal:</b>	ASTM A106/A106 M-08		
<b>Consumable:</b>	AWS A5 1-86		
<b>Post weld heat treatment and or ageing treatment:</b>	N/A		
<b>Weld Procedure Approval Record:</b>	WPS K S 24		
<b>Condition:</b>	Acceptable to Test		

**Designation:** EN 1321 A E 22.2 22.2 XY

Tested in accordance with NGT/SP/P/1 2007 & BS 2971 1991

**Macrographic Etchant:** 5% Nital

Method of Application Soak



PhotoM2 Approx 6.3 Magnification  
Viewed at 5 X Magnification  
Acceptable to NG/T/SP/P1 2007 & BS 2971 1991

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**Operator:**

**Name:** S G Thomson

Approved by:  Manager

**Name:** S G Thomson

**Date:** 11.08.2010

**Signature:**

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**MAGNETIC PARTICLE INSPECTION REPORT**

<b>Client</b>	<b>K&amp;S</b>	<b>Date of Report</b>	<b>11.08.2010</b>
<b>Address</b>	<b>Unit 1 Stock Road</b>	<b>Date of Inspection</b>	<b>03.08.2010</b>
	<b>Southend on Sea</b>	<b>Date of Receipt</b>	<b>03.08.2010</b>
	<b>Essex</b>	<b>Procedure No.</b>	<b>1492 Rev 2</b>
	<b>SS2 5QF</b>		
<b>Clients Order No</b>	<b>On Going</b>	<b>Departure from Normal Procedure:</b>	<b>None</b>
<b>Our Reference</b>	<b>S/2010/48246</b>		

**Specimen Details**

**Material thickness:**

**Parent material** Carbon Steel

**Weld material** Carbon Steel

**Type of joint:** Butt

**Type of Weld** MMA

**Welder** Simon

**Post Weld Heat treatment** N/A

**Surface Condition:** Acceptable

**Previously Examined ?** No

**Page No.** 1 of 1

**Materials/Equipment**

**Base** ARDROX 8391W

**Batch No:** 649043

**Black Ink** ARDROX 8032

**Batch No:** 656226

**Magnet** Y6 YOKE

**Serial No:** 007

**Lift Capacity** 4.5KG

**Viewing Condition:** 7500LUX

**Temperature of Test Piece:** 20°C

**Condition:** Acceptable to Test

**ACCEPTANCE STANDARD**

**TESTED IN ACCORDANCE WITH T/SP/P/1BSEN 150 17638**

**WELD IDENTIFICATION**

WPQT KS 24

**ADDITIONAL INFORMATION**

**REMARKS**

Acceptable to Specification



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<b>Operator</b>	<b>A Tretjakov</b>	<b>Approved By:</b>	<b>S Thomson</b>
<b>Approval:</b>	<b>PCN</b>	<b>No:</b> 303634	<b>Quality Manager</b>

DOC SP 21.1 REV 6

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### RADIOGRAPHIC REPORT

<b>Client:</b>	K & S Pipe Contractors	<b>Date of Report:</b>	03.08.2010
<b>Address:</b>	Unit 1 Stock Road	<b>Date of Inspection:</b>	03.08.2010
	Southend on Sea	<b>Date of Receipt:</b>	03.08.2010
	Essex	<b>Procedure No:</b>	1504 Rev 3 & 2094 Rev.0
	SS2 5QF	<b>Departure from normal Procedure:</b>	None
<b>Client's Order No:</b>	On going		
<b>Our Reference</b>	L6181/2010/48280		
<b>Page No</b> 1 <b>of</b> 1			

#### SPECIMEN DETAIL

<b>Welding Process:</b>	MMA	<b>Material:</b>	Carbon Steel
<b>Item:</b>	1 1/2" Pipe to Pipe	<b>Object:</b>	Butt weld
<b>Thickness:</b>	3.63 mm	<b>Heat Treatment:</b>	N/A
<b>Weld Preparation:</b>	Single V	<b>Stage of Manufacture:</b>	Complete
<b>Additional information:</b>	None	<b>Condition:</b>	Acceptable to test

#### RADIOGRAPHIC DETAILS

<b>X-ray Type/Size</b>	Toshiba 260	<b>Focal Spot</b>	2.5mm x 3.5mm	<b>Filters:</b>	None
<b>KV</b>	220	<b>Ma</b>	5	<b>Time</b>	55 sec
<b>Film</b>	Indux R5	<b>Screens</b>	0.125mm Pb F & B	<b>FFD</b>	500 mm
<b>Density</b>	2.5 - 3.5	<b>Penetrameter</b>	10 FE EN		
<b>Sensitivity</b>	W15	<b>Processing</b>	Automatic		
<b>Type/Position of IQI:</b>	Wire/Film side	<b>System of Marking:</b>	Lead markers		
<b>Film Position Plan:</b>	Contact	<b>Required Sensitivity:</b>	W15 or better		
<b>Test Arrangement:</b>	DWSI				

#### TEST CARRIED OUT IN ACCORDANCE WITH BS EN 1435 : 1997

#### INTERPRETATION IN ACCORDANCE WITH NG/T/SP/P1: 2007 & BS 2971 1991

#### WELD IDENTIFICATION

KS 24

#### INTERPRETATION

Lack of side wall fusion & Lack of Fusion noted

#### VERDICT

Acceptable

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#### RADIOGRAPHED BY

J Stewart

#### APPROVED BY

#### INTERPRETED BY

J. Stewart

#### QUALITY MANAGER:

#### Approval

PCN II

No: 209066

S.G Thomson

DOC SP 112 REV 2



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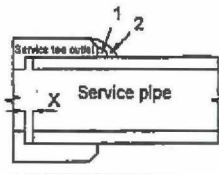
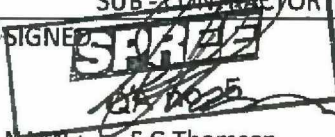

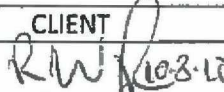
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Tel: Sittingbourne

Fax:

27

Nationalgrid										WELDING PROCEDURE SPECIFICATION										Procedure No. KS 27 Rev No. 0 Date: 05.08.2010	
SPECIFICATION: NG T/SP/P1 2007 & BS 2971										P.Q.R.NO. L6150/2010/48216 Socket											
PROJECT: N/A										CLIENT MORRISON N/A											
BASE MATERIALS		MATERIAL		C/S		PROCESS		WELDING PROCESS		MMA											
		P.NO. / GRADE		ASTM A 106/ A 106 M-08				POSITION		Horizontal											
		THICKNESS / DIAMETER		3.38 X 33.4mm				POSITIONS QUALIFIED		G6											
		RANGE QUALIFIED		2.54 – 5.07mm 16.7 – 66.8mm				P.W.H.T		None											
JOINT DETAILS										PASS LOCATION  Gap 'x' must be 2 to 3mm prior to welding											
PRE HEAT		PRE HEAT TEMP °C		Min 50°C		P.W.H.T		HEATING RATE C/R		None											
		INTER PASS TEMP °C		50 - 250°C				SOAK TEMP °C		None											
		APPLICATION METHOD		Torch Gas Propane				SOAK PERIOD HRS		None											
		RANGE QUALIFIED		As Above				COOLING RATE		None											
TECHNIQUE		CLEANING METHOD		Grind/Power Brush		ELECTRODE CONTROL		BAKING TEMP °C		N/A											
		TREATMENT OF 2 <sup>ND</sup> SIDE		N/A				HOLDING TEMP °C		N/A											
		CLAMPING METHOD		External Clamp/Tack Weld				QUIVER TEMP °C		N/A											
		STRING, WEAVE BEAD		String		FILLER MATERIAL		ELECTRODE NAME		Fincord M											
		BACKING STRIP		N/A				CLASSIFICATION		E6010											
		PURGE GAS		N/A				GROUP NO		AWS A5.1											
		FLOW RATE		N/A				ANALYSIS NO		N/A											
SIDE PASS NO.	WELD PROCESS	WELD DIRECTION	NO OF WELDERS	ELECTRODE	DIA MM	AC/DC-DC-	FLUX TYPE/GAS SHIELD	GAS FLOW RATE	AMPS	VOLTS	ROL MM SEC	WELD SPEED	HEAT INPUT								
1	MMA	UP	1	Nufive	2.5	DC-	Cellulose	N/A	105	21	2.7		0.77KJ/mm								
2	MMA	UP	1	Fincord M	2.5	DC-	Cellulose	N/A	78	22	1.4		1.25KJ/mm								
TIME LAPSE BETWEEN COMMENCEMENT OF ROOT AND COMMENCEMENT OF SECOND PASS.....5.....MINS																					
TIME LAPSE BETWEEN COMMENCEMENT OF SECOND PASS AND COMMENCEMENT OF OTHER PASSES 6.....MINS																					
MINIMUM NUMBER OF PASSES BEFORE JOINT IS ALLOWED TO COOL 1 X Heat Cycle.....																					
MAXIMUM TIME BETWEEN COMMENCEMENT AND COMPLETION OF WELD...1 X Heat Cycle																					
TYPE OF LINE UP CLAMP.....External / Spaced & Supported... for Tack Welds.....																					
REMOVAL OF LINE UP CLAMP AFTER 50% ROOT PASS; LOWER OFF AFTER...100% ROOT PASS																					
APPROVALS	SUB-CONTRACTOR				CONTRACTOR				CLIENT												
	SIGNED  NAME: S G Thomson TITLE: Quality Manager DATE: 05.08.2010				SIGNED  NAME: A Spree TITLE: NDT Technician DATE: 02.08.2010				SIGNED  R.W. STAMM SPI GRADE 1 BG12944 APPROVED SUBJECT TO QUALIFICATION												





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Tel: Sittingbourne [REDACTED] Fax: [REDACTED]

### RADIOGRAPHIC REPORT

**Client:** K & S Pipe Contractors  
**Address:** Unit 1 Stock Road  
Southend on Sea  
Essex  
SS2 5QF

**Client's Order No:** On going  
**Our Reference** L6184/2010/48283  
**Page No** 1 **of** 1

**Date of Report:** 03.08.2010  
**Date of Inspection:** 03.08.2010  
**Date of Receipt:** 03.08.2010  
**Procedure No:** 1504 Rev 3 & 2094 Rev.0  
**Departure from normal Procedure:** None

#### SPECIMEN DETAIL

**Welding Process:** MMA  
**Item:** 1" Socket  
**Thickness:** 3.38 mm  
**Weld Preparation:** Single V  
**Additional information:** None

**Material:** Carbon Steel  
**Object:** Butt weld  
**Heat Treatment:** N/A  
**Stage of Manufacture:** Complete  
**Condition:** Acceptable to test

#### RADIOGRAPHIC DETAILS

**X-ray Type/Size** Toshiba 260  
**KV** 220  
**Film** Indux R5  
**Density** 2.5 - 3.5  
**Sensitivity** W15

**Focal Spot** 2.5mm x 3.5mm  
**Ma** 5  
**Screens** 0.125mm Pb F & B  
**Penetrameter** 10 FE EN  
**Processing** Automatic

**Filters:** None  
**Time** 55 sec  
**FFD** 500 mm

**Type/Position of IQI:** Wire/Film side  
**Film Position Plan:** Contact  
**Test Arrangement:** DWSI

**System of Marking:** Lead markers  
**Required Sensitivity:** W15 or better

#### TEST CARRIED OUT IN ACCORDANCE WITH BS EN 1435 : 1997

#### INTERPRETATION IN ACCORDANCE WITH NG/T/SP/P1; 2007 & BS 2971 1991

#### WELD IDENTIFICATION

KS 27

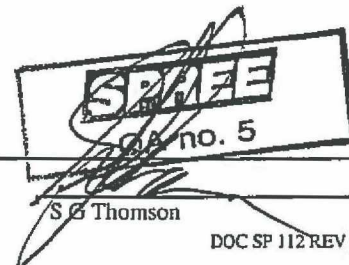
#### INTERPRETATION

Lack of Pen noted

#### VERDICT

Acceptable

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**RADIOGRAPHED BY**

J Stewart

**APPROVED BY**

**INTERPRETED BY**

J. Stewart

**QUALITY MANAGER:**

**Approval**

PCN II

**No:** 209066

S G Thomson

DOC SP 112 REV 2



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Tel: Sittingbourne

Fax:

## MAGNETIC PARTICLE INSPECTION REPORT

<b>Client</b>	<b>K&amp;S</b>	<b>Date of Report</b>	<b>11.08.2010</b>
<b>Address</b>	<b>Unit 1 Stock Road</b>	<b>Date of Inspection</b>	<b>03.08.2010</b>
	<b>Southend on Sea</b>	<b>Date of Receipt</b>	<b>03.08.2010</b>
	<b>Essex</b>	<b>Procedure No.</b>	<b>1492 Rev</b>
	<b>SS2 5QF</b>		
<b>Clients Order No</b>	<b>On Going</b>	<b>Departure from Normal Procedure: None</b>	
<b>Our Reference</b>	<b>S/2010/48252</b>		

### Specimen Details

#### Material thickness:

<b>Parent material</b>	<b>Carbon Steel</b>
<b>Weld material</b>	<b>Carbon Steel</b>
<b>Type of joint:</b>	<b>Butt</b>
<b>Type of Weld</b>	<b>MMA</b>
<b>Welder</b>	<b>Simon</b>
<b>Post Weld Heat treatment</b>	<b>N/A</b>
<b>Surface Condition:</b>	<b>Acceptable</b>
<b>Previously Examined ?</b>	<b>No</b>
<b>Page No.</b>	<b>1 of 1</b>

### Materials/Equipment

<b>Base</b>	<b>ARDROX 8391W</b>	<b>Batch No:</b>	<b>649043</b>
<b>Black Ink</b>	<b>ARDROX 8032</b>	<b>Batch No:</b>	<b>656226</b>
<b>Magnet</b>	<b>Y6 YOKE</b>	<b>Serial No:</b>	<b>007</b>
<b>Lift Capacity</b>	<b>4.5KG</b>		
<b>Viewing Condition:</b>	<b>7500LUX</b>		
<b>Temperature of Test Piece:</b>	<b>20°C</b>		
<b>Condition:</b>	<b>Acceptable to Test</b>		

### ACCEPTANCE STANDARD

TESTED IN ACCORDANCE WITH T/SP/P/1BSEN 150 17638

### WELD IDENTIFICATION

WPQT KS 27

### ADDITIONAL INFORMATION

### REMARKS

Acceptable to Specification

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<b>Operator</b>	<b>A Tretjakov</b>	<b>Approved By:</b>	<b>S Thomason</b>
<b>Approval:</b>	<b>PCN</b>	<b>No: 303634</b>	<b>Quality Manager</b>



DOC SP 21.1 REV 6

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Tel: Sittingbourne

Fax:

**MACROSCOPIC REPORT**

<b>Client:</b>	K & S Pipework	<b>Date of Report:</b>	11.08.2010
<b>Address:</b>	Unit 1 Stock Road	<b>Date of Inspection:</b>	03.08.2010
	South End on Sea	<b>Date of Receipt:</b>	03.08.2010
	Essex SS2 5QF	<b>Procedure No:</b>	TM 027 Rev 0
		<b>Departure from normal Procedure:</b>	None
<b>Client's Order No:</b>	On Going		
<b>Our Reference</b>	L6184/S/2010/48253		
<b>Page No</b>	2	<b>of</b>	2

**WPAR : No: WPS K S 27**

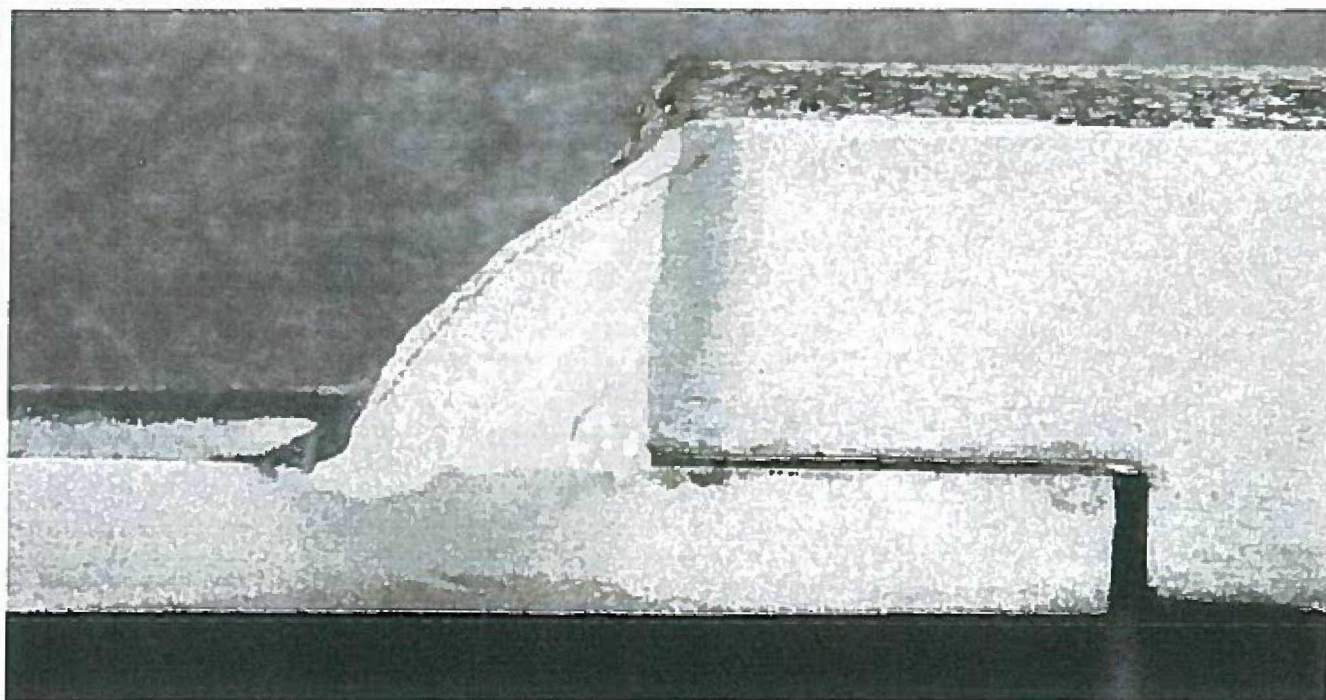
<b>Manufacturer:</b>	K & S Pipework	<b>Additional Information:</b>	
<b>Purpose of examination:</b>	WPQR	<b>Site:</b>	N/A
<b>Test piece:</b>	1" Socket 3.38wt		
<b>Test specimen:</b>	Fillet Weld		
<b>Parent metal:</b>	ASTM A106/A106 M-05		
<b>Consumable:</b>	AWS A5 1-86		
<b>Post weld heat treatment and or ageing treatment:</b>	N/A		
<b>Weld Procedure Approval Record:</b>	WPS K S 27		
<b>Condition:</b>	Acceptable to Test		

**Designation:** EN 1321 A E 22.2 22.2 XY

Tested in accordance with NGT/SP/P/1 2007 & BS 2971 1991

**Macrographic Etchant:** 5% Nital

Method of Application Soak



PhotoM2 Approx 4.4 Magnification  
Viewed at 5 X Magnification  
Acceptable to NG/T/SP/P1 2007 & BS 2971 1991

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**Operator:**  
**Name:** S G Thomson

**Approved by:** Quality Manager  
**Name:** S G Thomson  
**Date:** 11.08.2010  
**Signature:**

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Tel: Sittingbourne

Fax:

## HARDNESS TEST REPORT

Client: K & S Pipe Contractors

Address: Unit 1, Stock Road

Southend on Sea

Essex

SS2 5QF

Client's Order No: On Going

Our Reference: L6184/L/2010/48305

Page 1 of 2

Date of Report: 12.08.2010

Date of Inspection: 09.08.2010

Date of Receipt: 03.08.2010

Procedure No. TM27 Rev 1

Departure from Normal Procedure: None

Description: 1" Socket KS 27

Condition: Acceptable to test

Parent Material ASTM A106/A106 M-08

Thickness of Material 3.38mm

Type of Weld Fillet Weld

Welding Process MMA

Consumables E6010

Post Weld Heat Treatment or Aging Process None

Test Carried out in accordance BS EN 1043 - 1 1996  
& BS EN ISO 6507 - 1 2005

### VICKERS HARDNESS SURVEY

INDENT No	POSITION FIG 1	OCULAR		AV	HARDNESS HV (10)	INDENT No	POSITION FIG 1	OCULAR		AV	HARDNESS HV (10)
1	PM	356	356	356	146	16	PM	360	352	356	146
2	HAZ	347	355	351	151						
3	HAZ	350	344	347	154						
4	WM	340	346	343	158						
5	WM	341	333	337	163						
6	HAZ	328	335	331	169						
7	HAZ	340	335	337	163						
8	PM	363	358	360	143						
9	PM	359	364	361	142						
10	HAZ	352	350	351	151						
11	HAZ	356	356	356	146						
12	WM	347	341	344	157						
13	WM	346	347	346	155						
14	HAZ	336	328	332	168						
15	HAZ	331	340	335	165						

	MIN	MAX	
PM	142	146	Acceptable
HAZ	146	169	Acceptable
WM	155	163	Acceptable

Test Temperature 20°C

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TESTED BY:

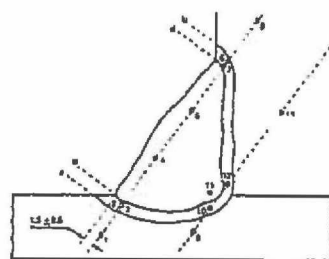
S G Thomson

✓

J A Stewart

Additional Information

### SKETCH



M1

Approved By:

Name:

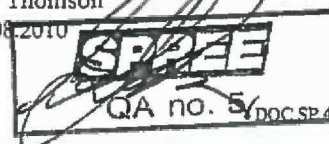
Date:

Signature:

Quality Manager.

S G Thomson

12.08.2010



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Tel: Sittingbourne [REDACTED] Fax: [REDACTED]

## HARDNESS TEST REPORT

**Client:** K & S  
**Address:** Unit 1, Stock Road  
 Southend on Sea  
 Essex  
 SS2 5QF  
**Client's Order No:** On Going  
**Our Reference:** L6184/L/2010/48305  
 Page 2 of 2

**Date of Report:** 12.08.2010  
**Date of Inspection:** 09.08.2010  
**Date of Receipt:** 03.08.2010  
**Procedure No.** TM27 Rev 1  
**Departure from Normal Procedure:** None  
**Description:** 1" Socket KS 27  
**Condition:** Acceptable to test  
**Parent Material** ASTM A106/A106 M-08  
**Thickness of Material** 3.38mm  
**Type of Weld** Fillet Weld  
**Welding Process** MMA  
**Consumables** E6010  
**Post Weld Heat Treatment or Aging Process** None

Test Carried out in accordance BS EN 1043 – 1 1996  
 & BS EN ISO 6507 – 1 2005

### VICKERS HARDNESS SURVEY

INDENT No	POSITION FIG 1	OCULAR		AV	HARDNESS HV (10)	INDENT No	POSITION FIG 1	OCULAR		AV	HARDNESS HV (10)
1	PM	351	379	365	139	16	PM	356	353	354	148
2	HAZ	364	359	361	142						
3	HAZ	359	378	368	137						
4	WM	346	322	334	166						
5	WM	328	332	330	170						
6	HAZ	348	347	347	154						
7	HAZ	344	370	357	146						
8	PM	371	344	357	146						
9	PM	362	356	359	144						
10	HAZ	343	331	337	163						
11	HAZ	344	348	346	155						
12	WM	328	321	324	177						
13	WM	325	335	330	170						
14	HAZ	322	331	326	174						
15	HAZ	330	318	324	177						

	MIN	MAX	
PM	139	148	Acceptable
HAZ	137	177	Acceptable
WM	166	177	Acceptable

Test Temperature 20°C

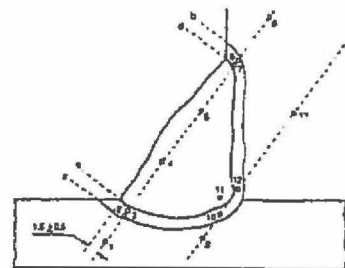
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TESTED BY:

S G Thomson	✓
J A Stewart	

Additional Information

### SKETCH



M2

Approved By: Quality Manager  
 Name: S G Thomson  
 Date: 12.08.2010  
 Signature:



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Tel: Sittingbourne [REDACTED] · Fax: [REDACTED]

**MACROSCOPIC REPORT**

<b>Client:</b>	K & S Pipework	<b>Date of Report:</b>	11.08.2010
<b>Address:</b>	Unit 1 Stock Road	<b>Date of Inspection:</b>	03.08.2010
	South End on Sea	<b>Date of Receipt:</b>	03.08.2010
	Essex SS2 5QF	<b>Procedure No:</b>	TM 027 Rev 0
		<b>Departure from normal Procedure:</b>	None
<b>Client's Order No:</b>	On Going		
<b>Our Reference</b>	L6184/S/2010/48253		
<b>Page No</b>	1 of 2		

**WPAR : No: WPS K S 27**

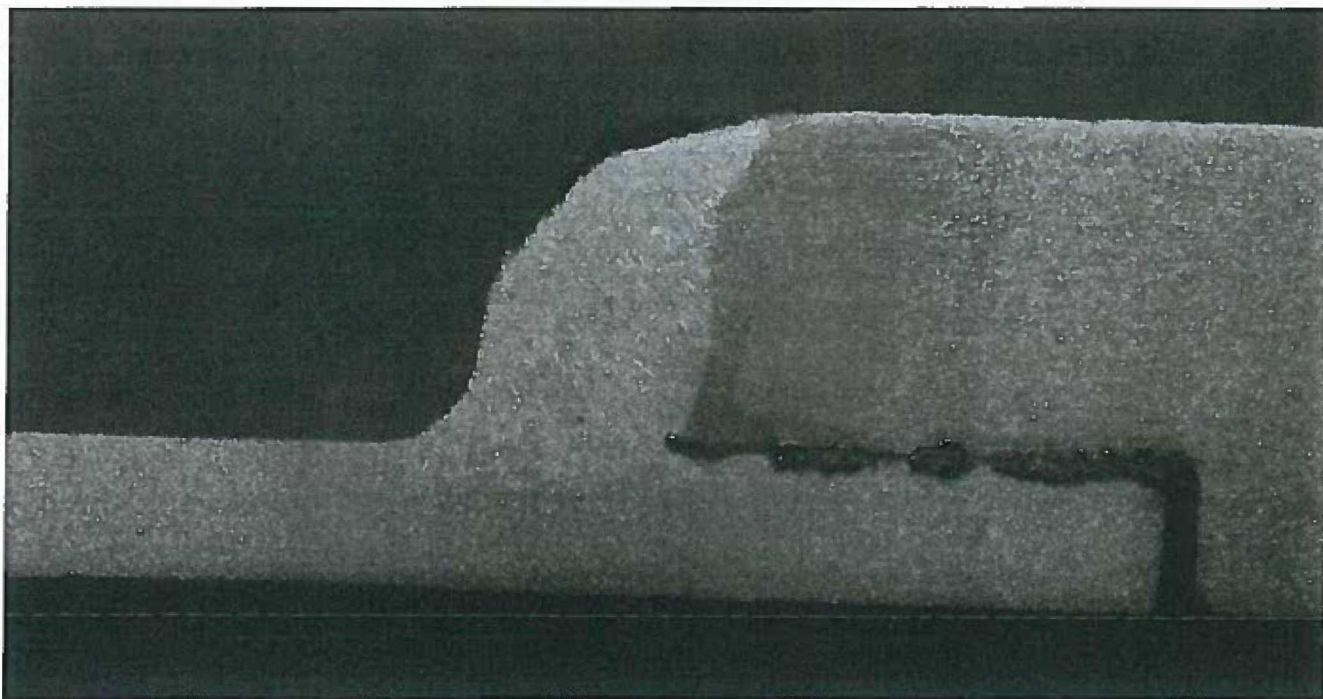
<b>Manufacturer:</b>	K & S Pipework	<b>Additional Information:</b>	
<b>Purpose of examination:</b>	WPQR	<b>Site:</b>	N/A
<b>Test piece:</b>	1" Socket 3.38		
<b>Test specimen:</b>	Fillet Weld		
<b>Parent metal:</b>	ASTM A106/A106 M-05		
<b>Consumable:</b>	AWS A5 1-86		
<b>Post weld heat treatment and or ageing treatment:</b>	N/A		
<b>Weld Procedure Approval Record:</b>	WPS K S 27		
<b>Condition:</b>	Acceptable to Test		

**Designation:** EN 1321 A E 22.2 22.2 XY

Tested in accordance with NGT/SP/P/1 2007 & BS 2971 1991

**Macrographic Etchant:** 5% Nital

Method of Application Soak



PhotoM1 Approx 2.9 Magnification  
Viewed at 5 X Magnification  
Acceptable to NGT/SP/P1 2007 & BS 2971 1991

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**Operator:**  
**Name:** S G Thomson

**Approved by: Quality Manager**  
**Name:** S G Thomson  
**Date:** 11.08.2010  
**Signature:** [Signature]

QA no. 5

DOC SP 195 REV 3

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Tel: Sittingbourne [REDACTED] · Fax: [REDACTED]

## FRACTURE TEST REPORT

Client: **K & S Pipe Contractors** Date of Report: **12.08.2010**  
 Address: **Unit 1 Stock Road** Date of Inspection: **10.08.2010**  
**Southend on Sea** Date of Receipt: **03.08.2010**  
**Essex SS2 5QF** Procedure No.: **TM 027 Rev 1**  
 Order No: **On Going** Departure from Normal Procedure: **None**  
 Our Reference: **L6184/2010/48291**  
 Page 1 of 1

According to: WPS: **K S 27** Additional Information  
 According to: test result 'fracture test' **None**  
 test result

Manufacturer: **K & S Pipe Contractors**  
 Purpose of the examination: **WPQT**  
 Form of product: **1" Socket 3.38**  
 Parent metal: **ASTM 105M**  
 Consumable:

**Table A.1 Fracture test in accordance with EN 1320 1997 NG T/SP/P1 2007 & BS 2971 1991**

Test specimen	Size	Results	
		Type and size of imperfection	Quality Level
F1	30mm	Lack of Pen	Acceptable
F2	30mm.	Lack of pen	Acceptable

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Examiner or examining body:

S G Thomson	X
J A Stewart	

Approved by: Quality Manager

Name: S G Thomson

Date: 12.08.2010

Signature:



DOC SPI63 REV 5

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