Issued: 2-18-2008 **Revised:** _____ **Number:** 4A **Page:** _____

STANDARD WELDING PROCEDURE SPECIFICATION #: 4A

A. Process: Manual Electric Arc
B. Material: API-5L Grade A thru X42
C. Diameter and Wall Thickness: Less than 2 3/8 and less than 0.188 WT
D. Joint Design: Standard Vee Groove 30 degrees
E. Filler Metal and Number of Beads: Electrode Classification Electrode E6010 AWS Class A5.1 Minimum of 3 Passes
F. Electrical or Flame Characteristics: D.C. Reverse Polarity, Electrode Positive
G. Position: Inclined 45 degrees
H. Direction of Welding: Vertical Down
I. Number of Welders: 1
J. Time Lapse Between Passes: Maximum of 5 minutes between stringer and hot pass; 3 minutes maximum when temperature is below 35° F
K. Type of Line-up Clamp: External
L. Removal of Line-up Clamp: After 50% completion of stringer bead
M. Cleaning: Taper grind starts and craters and flatten crown by grinding stringer bead, power buff all remaining passes
N. Speed of Travel: N/A
O. *Preheat, Stress Relief: Maximum of 300°F, Minimum of 150°F Preheating shall be done with device or equipment which will heat entire circumference(s) in single application 2" back from pipe ends
P. Notes: Welded pipe strings shall be temporarily capped to prevent air draft cooling of stringer beads. Weld shall be completely protected from moisture until it has cooled to ambient temperature. Weld zone shall be protected so that the wind velocity near it does not exceed 8mph.

* X-rated pipe must be stress relief if the carbon content exceeds 30% or C+1/4 Mn exceeds 65%. Heating of X-rated pipe is limited to 600°F.

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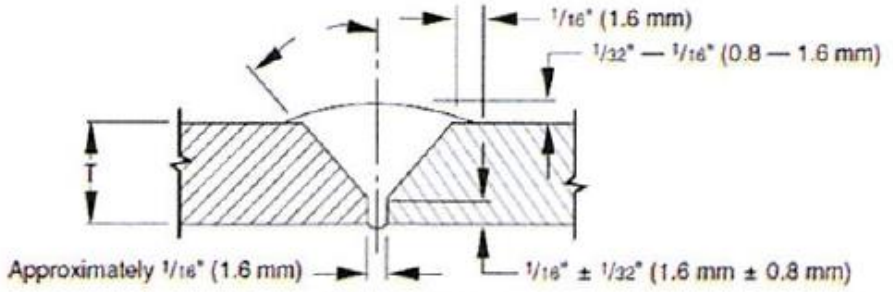
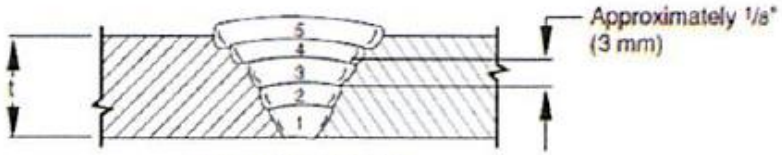
CONSTRUCTION: JOINING OF PIPES BY WELDING



Standard V-Bevel Butt Joint

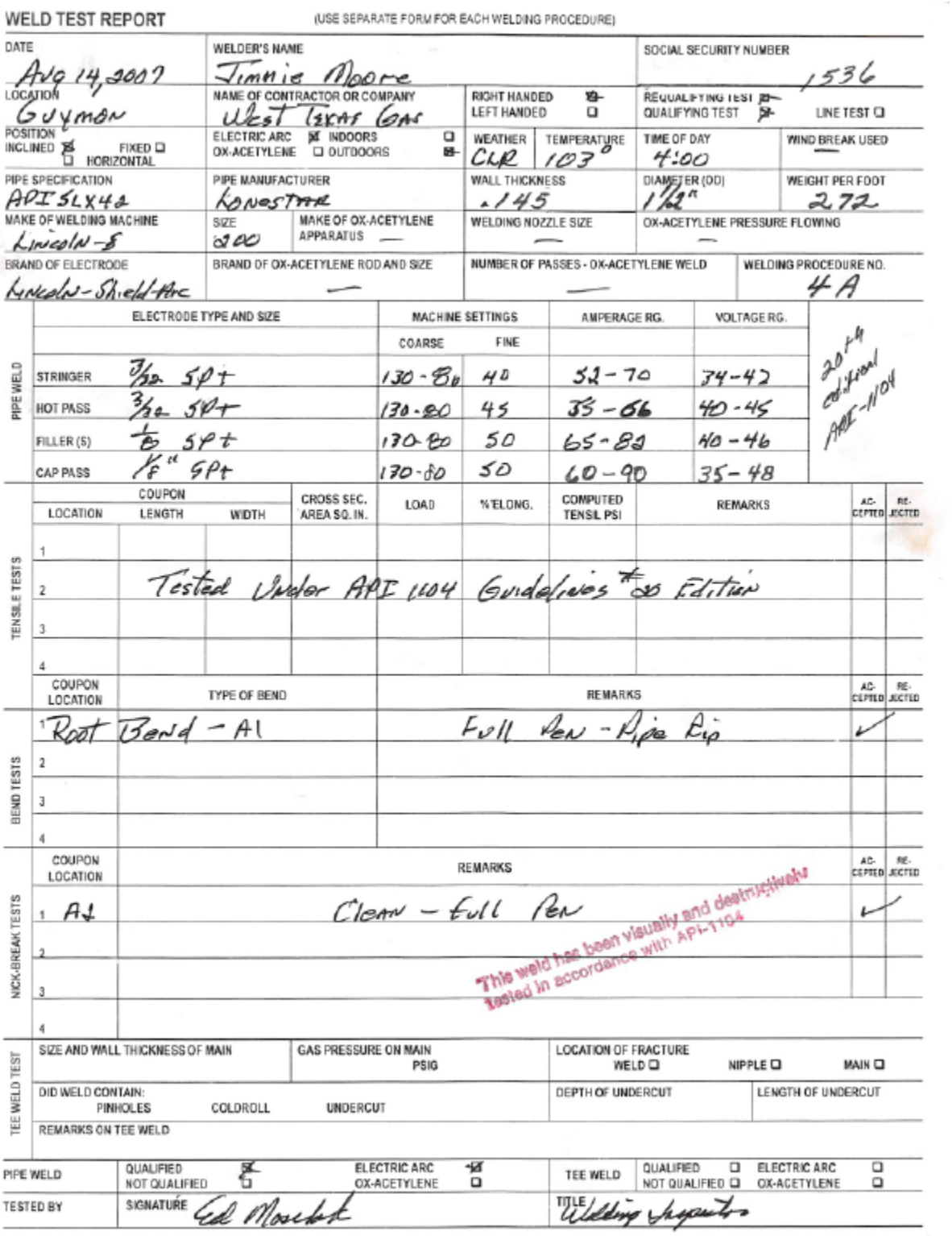


Sequence of Beads

Note: Dimensions are for example only.

Bead No.	Electrode Diameter	Amperage Range	Voltage Range	Type Rod	Notes
1	3/32	55-70	32-42	E6010 5P+	
2	3/32	55-66	40-45	E6010 5P+	
3	1/8	65-82	40-46	E6010 5P+	
4	1/8	60-90	35-48	E6010 5P+	
5					

Bead No.	Notes
	Electrodes may be substituted within Rod group 1&2 of AWS A5.1 - A5.5



WELD TEST REPORT (USE SEPARATE FORM FOR EACH WELDING PROCEDURE)

DATE: Aug 14, 2007	WELDER'S NAME: Jimmie Moore			SOCIAL SECURITY NUMBER: 1536
LOCATION: Guymon	NAME OF CONTRACTOR OR COMPANY: West Texas Gas	RIGHT HANDED ☒ LEFT HANDED ☐		REQUALIFYING TEST ☒ QUALIFYING TEST ☒ LINE TEST ☐
POSITION: INCLINED ☒ FIXED ☐ HORIZONTAL ☐	ELECTRIC ARC ☒ INDOORS ☐ OX-ACETYLENE ☐ OUTDOORS ☒	WEATHER: CLR	TEMPERATURE: 103°	TIME OF DAY: 4:00 / WIND BREAK USED: —
PIPE SPECIFICATION: API 5LX42	PIPE MANUFACTURER: Lonestar	WALL THICKNESS: .145		DIAMETER (OD): 1 1/2" / WEIGHT PER FOOT: 2.72
MAKE OF WELDING MACHINE: Lincoln-S	SIZE: 200 / MAKE OF OX-ACETYLENE APPARATUS: —	WELDING NOZZLE SIZE: —		OX-ACETYLENE PRESSURE FLOWING: —
BRAND OF ELECTRODE: Lincoln-Shield Arc	BRAND OF OX-ACETYLENE ROD AND SIZE: —	NUMBER OF PASSES - OX-ACETYLENE WELD: —		WELDING PROCEDURE NO.: 4A

PIPE WELD

	ELECTRODE TYPE AND SIZE	MACHINE SETTINGS COARSE	MACHINE SETTINGS FINE	AMPERAGE RG.	VOLTAGE RG.
STRINGER	3/32 5P+	130-86	40	52-70	34-42
HOT PASS	3/32 5P+	130-90	45	55-66	40-45
FILLER (S)	1/8 5P+	170-80	50	65-82	40-46
CAP PASS	5/32" 5P+	170-80	50	60-90	35-48

20+4 additional API-1104

TENSILE TESTS

	COUPON LOCATION	COUPON LENGTH	COUPON WIDTH	CROSS SEC. AREA SQ. IN.	LOAD	% ELONG.	COMPUTED TENSIL PSI	REMARKS	ACCEPTED	REJECTED
1										
2	Tested Under API 1104 Guidelines 20th Edition									
3										
4										

BEND TESTS

	COUPON LOCATION	TYPE OF BEND	REMARKS	ACCEPTED	REJECTED
1	Root Bend - A1		Full Pen - Pipe Rip	✓	
2					
3					
4					

NICK-BREAK TESTS

	COUPON LOCATION	REMARKS	ACCEPTED	REJECTED
1	A1	Clean - Full Pen	✓	
2				
3				
4				

"This weld has been visually and destructively tested in accordance with API-1104"

TEE WELD TEST

SIZE AND WALL THICKNESS OF MAIN	GAS PRESSURE ON MAIN PSIG	LOCATION OF FRACTURE WELD ☐ NIPPLE ☐ MAIN ☐	
DID WELD CONTAIN: PINHOLES COLDROLL UNDERCUT		DEPTH OF UNDERCUT	LENGTH OF UNDERCUT
REMARKS ON TEE WELD			

PIPE WELD	QUALIFIED ☒ NOT QUALIFIED ☐	ELECTRIC ARC ☒ OX-ACETYLENE ☐	TEE WELD	QUALIFIED ☐ NOT QUALIFIED ☐	ELECTRIC ARC ☐ OX-ACETYLENE ☐
TESTED BY	SIGNATURE: Ed Mouhot			TITLE: Welding Inspector	