PROCEDURE QUALIFICATION RECORD

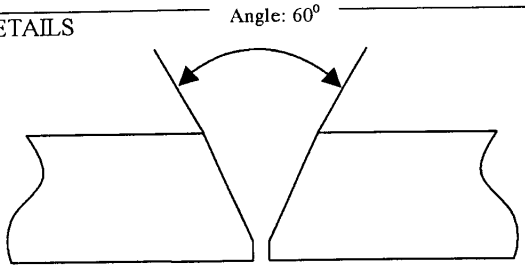
Section	No.	Item
A. GENERAL	1	PQR No. *PTSC – 004* TEST DATE: 25 Feb.*2004* WELDING CODE: *AWS D1.1 2002, PTS 20 104*
	2	WELDING PROCESS (ES): SMAW ......*X*..... SAW ....GMAW ....GTAW ....FCAW ....
	3	EQUIPMENT TYPE: MANUAL ......*X*.........SEMIAUTO .... MACHINE ....AUTO ....
	4	TYPE OF TEST JOINT: *SINGLE VEE*
	5	SUPPORTING WPS NOS: (1) *FSP - PTSC - 17 -S 03* (2)...(3)...
B. BASE METAL & WELDING CONSUMABLES	1	MATERIAL SPECIFICATION : *API 5L Gr.X52* TO *API 5L Gr.X52 OR EQUIVALENT*
		MATERIAL TYPE/GRADE: *Gr.X52* TO *Gr.X52*
	2	FILLER METAL SPECIFICATION :
		(*SMAW*) : ....*A5.1*................ MFG/BRAND *KOBELCO LB52U*
		(*SMAW*) : ....*A5.1*................. MFG/BRAND *LINCOLN 7018*
	3	FILLER METAL CLASSIFICATION:
		(*SMAW*) : ....*E7016*............ A NO. ....*1*............... F NO. ....*4*..............................
		(*SMAW*) : ....*E7018*........... A NO. ....*1*................ F NO. ....*4*..............................
	4	WELDING FLUX SPECIFICATION: .... FLUX/ELEC. COMBINATION: ....
	5	WELDING FLUX CLASSIFICATION: .... MFG/BRAD: ....
	6	TUNGSTEN ELECTRODE DIA: *Ø2.6,Ø3.2* TYPE: *KOBELCO LB52U/LINCOLN 7018* CUP/CRIFICE ....
	7	SHIELDING GAS TYPE(S): .... MIX % ....FLOW .... L/ HR
	8	TRAILING GAS TYPE(S): .... MIX % ....FLOW .... L/ HR
C. ELECTRICAL	1	WELDING CURRENT AND POLARITY:
		(*SMAW*) : DC .....*X*....... AC................ POS........*X*....... NEG................. PULSE............................
		(.............) : DC .... AC.. ....POS................ NEG.............. .. PULSE..............................
	2	MODE OF METAL TRANSFER FOR GMAW: SHORT CIRUIT .... OTHER ....
	3	WIRE FEED SPEED RANGE, CM/MIN: SAW .... FCAW .... GMAW ....
	4	SUPPLEMENTAL FILLER METAL: POWDERED .... GRANULAR .... WIRE ....
D. TECHNIQUE	1	SINGLE OR MULTIPLE: S .... M ...*X*..... STRING ...*X*..... WEAVE ...*X*...... SPLIT LAYER ....X.............
		PASS USING STRING : S .... M .... STRING ....WEAVE .... SPLIT LAYER ....
		WEAVE SPLIT LAYER : S .... M .... STRING ....WEAVE ....SPLIT LAYER ....
	2	MAXIMUM WEAVE WIDTH: MANUAL *MAX 12 MM* SEMIAUTO .... MACHINE .... AUTO ....
	3	VERTICAL WELD PROGRESSION: (*SMAW*) : UPWARD ....*X*....... DOWNWARD.....................................
		: ( ) : UPWARD .... DOWNWARD ....
	4	POSITION OF TEST WELD: SMAW *6G* SAW .... GMAW .... GATW .... FCAW ....
	5	NO. OF ARCS: ....ELEC. ANGLE: TRAVEL DIRECTION .... NORM. TO DIRECTION OF TRAVEL..............
	6	ROOT WELD BACKING: YES .... NO........*X*......... BACKING MATERIALS ....
	7	STICK. OUT LENGTH: .... ORIFICE/CUP SIZE ....CONTACT TUBE TO WORK DISTANCE......................
E. SUPPLEMENT	1	TREATMENT OF BACKSIDE OF ROOT WELD: NONE..*X*... GRIND... ...GOUGE.....BRUSH .. ...OTHER.........
	2	PREHEAT TEMP. OF TEST PIECE: .... MAX. INTERPASS TEMP. OF TEST PIECE ...250^0C............
	3	METHOD OF PREHEAT: *GAS HEATING TORCH.* METHOD OF TEMP. CHECK: *Infrared Thermometer.*
	4	PWHT : .... REPORT NO.: ....
	5	CHARPY IMPACT TESTS: ....X....................REPORT NO: .0406CK4/1 .MIN (SINGLE)..........AVE.
	6	HARDNESS TESTS: ....X..........REPORT NO: 0406CK4/1 .MAXIMUM HV .... HV.
	7	TENSILE/BEND TEST: ....X.. ...... REPORT NO: 0406CK4/1
	8	MACRO ETCH ANALYSIS.................X. .... REPORT NO: 0406CK4/1
	9	OTHERS.. REPORT NO: ....

PTSC :	CLIENT:	THIRD PARTY:
H. V. Ha 25.02.04	ALEX T. APIDAN 5/5/04	LLOYD'S REGISTER ASIA PHONG 21/3/04

PQR NO PTSC – 004 FOR WPS NO FSP - PTSC - 17 - S03 DATE: 25 Feb. 2004

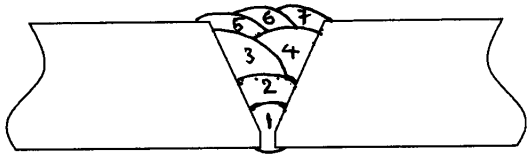
TEST WELD DETAILS

JOINT DETAILS



Root Gap = 3.5mm
Root Face= 1.5mm

BEAD SEQUENCE



TEST POSITION: *6G*
TEST MATERIAL TYPE: *API 5L Gr.X52*
SECT 1:.....SECT 2: .....
HEAT NOS: .....*J2K9162*.....
TEST MATERIAL THK. PLATE: ..... PIPE: *8''Sch 80*
NOM. TEST PIPE DIA: *8''Sch 80 (219 mmOD x 12.7 mmThk)*
ROOT WELD BACKING: YES ..... NO .....*X*.....
BACKING MATERIAL: .....*N/A*.....
MAX WELD WEAVE WIDTH: .....
MANUAL: *Max 12 MM* OTHER: ..... MM
GAS PURGE: TYPE .....*N/A*..... FLOW ..... L/MIN
GAS SHIELD: TYPE .....*N/A*..... FLOW ..... L/MIN
BACKING GAS: TYPE ...*N/A*..... FLOW ..... L/MIN

MIN. PREHEAT: Dry Ambient Min. 20 °C
MAX. INTERPASS TEMP.: .....250..... °C
PWHT : YES ..... NO .....*X*.....
NDT:
RT: ....*X*.....UT: .....*X*.... MPI: .....*X*..... PT: N/A:.....VT:....X .....
IMPACT TEST : YES .....*X*..... NO .....
HARDNESS SURVEY : YES .....*X*..... NO.....
MACRO ETCH + PHOTO : YES .....*X*..... NO .....
TENSILE/BEND TEST : YES .....*X*..... NO .....
OTHERS : YES ..... NO .....

WELDING PARAMETERS

LAYER NO	PASS NO.	PROCESS	FILLER METAL CLASSIFICATION	FILLER METAL DIAMETER	VERTICAL PROGRESSION	CURRENT TYPE AND POLARITY	AMPERAGE	VOLTAGE	TRAVEL SPEED MM/MIN	HEAT INPUT KJ/MM	STRING	WEAVE	SPLIT LAYER	WEAVE WIDTH	INTERPAS TEMP.DEG. ° C
1	1	SMAW	E7016	2.6	UPWARD	DCEP	68~81	19~24	57	1.35~2.03	X	-	-	6.5	27
2	2	SMAW	E7018	3.2	UPWARD	DCEP	121~136	20~26	99	1.47~2.15	-	X	-	9.5	62
3	3	SMAW	E7018	3.2	UPWARD	DCEP	136~146	20~26	98	1.67~2.33	-	X	X	11.0	65
3	4	SMAW	E7018	3.2	UPWARD	DCEP	140~147	20~26	98	1.72~2.35	-	X	X	8.5	68
4	5	SMAW	E7018	3.2	UPWARD	DCEP	142~150	22~28	121	1.55~2.08	-	X	X	12.0	45
4	6	SMAW	E7018	3.2	UPWARD	DCEP	144~152	22~28	117	1.62~2.20	-	X	X	11.5	68
4	7	SMAW	E7018	3.2	UPWARD	DCEP	142~150	20~28	153	1.11~1.67	-	X	X	10.5	85

PTSC : H. V. Ha 25.02.04

CLIENT: Ac'm 5/5/04

THIRD PARTY: LLOYD'S REGISTER ASIA VUNG TAU 21/3/2004

PROCEDURE QUALIFICATION – MECHANICAL AND NON – DESTRUCTIVE TEST RECORD

PQRS NO: *PTSC – 004* FOR WPS NO: *FSP - PTSC - 17 - S 03* REV. *0* PAGE. .....OF.....

TENSILE TEST

SPECIMEN NO.	FINISHED WIDTH (mm)	FINISHED THICKNESS (mm)	MEASURED AREA (mm^2)	ULTIMATE LOAD - KN	UNIT STRESS Ksi (MPa)	FAILURE LOCATION
1	19.2	13.0	249.6	125.7	73.0 (504)	Weld Metal
2	19.2	13.0	249.6	120.1	69.4 (479)	Weld Metal

BEND TEST

SIDE BEND	SIDE BEND	FACE BEND	ROOT BEND
1. Pass	3. Pass	1.	1.
2. Pass	4. Pass	2.	2.

MACRO ETCH

SPECIMEN NO	REMOVAL LOCATION	FUSION		POROSITY – SLAG –L.O.P.	
		ACCEPT	REJ	ACCEPT	REJ
0406CK4-PTSC 004-6h	6 h position	X		X	
0406CK4-PTSC 004-9h	9 h position	X		X	

NON. DESTRUCTIVE TESTS

TYPE			COVERNING CODE			TEST RESULTS		REPORT ATTACHED	
RT	UT	MT	AWS	ANSI	ASME	ACCEPT	REJ	YES	NO
X	X	X	X			X		X	

OTHER TESTS

TYPE	REQUIRED BY			TEST RESULTS		REPORT ATTACHED	
	CODE	STD	SPEC.	ACCEPT	REJ	YES	NO
Hardness	AWS D1.1		PTS 20.104	X		X	
Impact	AWS D1.1		PTS 20.104	X		X	

WE CERTIFY THAT THE STATEMENTS IN THIS RECORD ARE CORRECT AND THAT THE TEST WELDS WERE PREPARED. WELDED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF WPS NO .*FSP - PTSC - 17 -S 03* AND .AWS D1.1 CODE FOR WELDING.

PTSC :	CLIENT:	THIRD PARTY:
H.V. Ha 25.02.04	ALEX T. API/2004 5/5/04	31/3/2004