PROCUREMENT (SUPPLY), CONSTRUCTION, INSTALLATION/ERECTION, PRE-COMMISSIONING, & COMMISSIONING ASSISTANCE FOR NEW CENTRIFUGAL COMPRESSORS AND MODIFICATION WORKS OF EXISTING TURBO COMPRESSOR TRAINS FOR QADIRPUR COMPRESSION PROJECT

TENDER ENQUIRY NO. PROC-FC/CB/PROJ/QP-4369/2019 POST-BID CLARIFICATION No. OGDCL-QP-4369-001



Sr. No.	Bidder Query	OGDCL/ENAR Response (07-Oct-2019)
1	• P- 2501 A/B • P- 2502 A/B	Please note that Produced water Pumps tag mentioned as P-2501 A/B and P-2501 A/B in BOQ (PS-301B) are typo error & must be read as P-2051 A/B & P-2052 A/B respectively. Futhermore data sheets of Produced water Pumps No. P- 2051 A/B (0220-DS-1706) & P- 2052 A/B (0220-DS-1707) are also attached.



QADIRPUR COMPRESSION PROJECT

ISSUE FOR APPROVAL

Α	29-Mar-19	ISSUE FOR APPROVAL	SHK	JAY	JAY	MPM	TUH		
REV	DATE	DESCRIPTION	ORIG	CHKD	LE	QA	PM	LOCAL REPR.	PROJ. MAN



DOCUMENT TITLE: DATA SHEET FOR PRODUCED WATER PUMPS P-2051 A/B

ENAR Petrotech Services (Pvt.) Limited , 7-B , Sector 7-A , Korangi Industrial Area , Karachi Pakistan

CONTRACT NO. 14-0220

	0220	DS	1706	А	
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1	Note	APPLICABLE TO: PROPOS	AL	APPL	ICABLE NTL/	INTNTL STA	NDARD:	API-610			Rev
2		FOR	OGDCI	L		UNI	т —				
3		SITE	Qadirpur F	Plant		SEF	RVICE	Produced 1	Water		
4		NO. REQ 2 x 100% PUN	MP SIZE			TYF	PE	No. STAGE	S		
5		MANUFACTURER					DEL	SERIAL NO			
6		-	LIQUID CHA	RACTERISTI	cs						
7			Units	Maximum	Minimum			SERVICE :	CONT	INUOUS	
8		LIQUID TYPE OR NAME :		UCED WATE				SERVICE.	CONT	110003	
9		VAPOR PRESSURE :	psia	114.7	17.6			PUMPS OPERATE IN:	PARA		
10		RELATIVE DENSITY:	рзіа	0.984	0.765			CORROSION DUE TO :	-	2 & H2S	
11		SPECIFIC HEAT :	Rtu/(lbm_°E)	1.032	0.703			EROSION DUE TO : (6.1	· · · —	2 0 1125	
12		VISCOSITY:	cP	0.967	0.544			H2S CONCENTRATION	· ·	100	
ľ								4	. , ,		
13		OPE	RATING CO		r` '			CHLORIDE CONCENTR	,	22628_	
14		NIDOLL D.	Units	Maximum	Rated	Normal	Minimum	PARTICULATE SIZE (DIA	,		
15		NPSHa Datum:	0.5		ı i i	oundation		PARTICULATE CONCEN	TRATION (PPM)		
16		PUMPING TEMPERATURE :	°F		122	122	41	LIQUID PH		5.62	
17		FLOW:	gpm	400	165	150		-		-	
18		DISCHARGE PRESSURE : (6.3.2)	psia	180	165.0 80	165.00		-		ŀ	
19		SUCTION PRESSURE :	psia	115		83.000		-			
20		DIFFERENTIAL PRESSURE :	psi	65.0	85.0	82.0		-		-	
21		DIFFERENTIAL HEAD :	ft	153	200	193		1		-	
22		NPSH _A :	ft HP		-13.5			1		ŀ	
23		HYDRAULIC POWER :	HP		8.0			J			
24					SITE AI	ND UTILITY	DATA				
25		LOCATION:				COOLIN	IG WATER :		1		
26		OUTDOOR UN	HEATED					INLET RETURN	DESIGN		
27		MOUNTED AT : GRADE	_ o	TROPICALIS	SATION REQ	D TEN	ΛΡ °C	MAX			
28		ELECTRIC AREA CLASSIFICATION	:	6.1.22 ZC	ONE 2	PRE	ESS. kg/cm ² g	MIN			
29		GROUP Group IIA		TEMP CL	ASS T3	SOI	JRCE				
30		SITE DATA :				CO	OLING WATE	ER CHLORIDE CONCENTRAT	ION:	ppm	
31		ELEVATION (MSL) : 223	ft BA	ROMETER:		g INSTRU	MENT AIR :	MAX 135 psia	MIN85	psia	
32		RANGE OF AMBIENT TEMPS:MIN /	MAX		121 _ °F	STEAM		1 1	1		
33		RELATIVE HUMIDITY: MIN / MAX			%			DRIVERS HEAT	ING		
34		UNUSUAL CONDITIONS:		DUS	т	TE	EMP °C	Max			
35								Nor			
36		UTILITY CONDITIONS:	ı	1	I.			Min			
37		ELECTRICITY: DRIVERS	HEATING	CONTROL	SHUTDOWN	PRE	SS. kg/cm²g	Max			
38		VOLTAGE 415						Nor		:	
39		PHASE 3						Min			
40		HERTZ 50				.]					
41		PERF	ORMANCE					DRIVER (7.1.5)			
42		PROPOSAL CURVE NO.		RPM		Driver T	уре		MOTOR]	
43		As Tested Curve No.				GEAR					
44		IMPELLER DIA.: RATED	MAX	MIN.	in.	VARIAB	LE SPEED R	EQUIRED			
45				CIENCY	(%)	SOURC	E OF VARIAE	BLE SPEED			
46		RATED CURVE BEP FLOW (at rated	l impeller dia)		gpm	OTHER]	
47		MIN FLOW: THERMAL	gpm	STABLE	gpm	MANUF	ACTURER				
48		PREFERRED OPERATING REGION	(6.1.11)	to	gpm	NAMEP	LATE POWE	R		HP	
49		ALLOWABLE OPERATING REGION		to	gpm	n Nominal	RPM				
50		MAX HEAD @ RATED IMPELLER			ft	RATED	LOAD RPM				
51		MAX POWER @ RATED IMPELLER	(6.8	.9)	HP	FRAME	OR MODEL				
52		NPSHR AT RATED FLOW:			ft	ORIENT	ATION				
53		CL PUMP TO U/S BASEPLATE			ft	LUBE					
54		NPSH MARGIN AT RATED FLOW:			ft	BEARIN	G TYPE:				
55		SPECIFIC SPEED (6.1.9)		gpm,rpm,ft		RADIAL					
56		SUCTION SPECIFIC SPEED LIMIT				THRUS	Т				
57		SUCTION SPECIFIC SPEED		gpm,rpm,ft		STARTI	NG METHOD				
58		MAX. ALLOW. SOUND PRESS. LEV	EL REQD (6.	1.14)	85(dB/	A) SEE DR	IVER DATA S	SHEET F	REFER NOTE- 10 &	11	
59		EST MAX SOUND PRESS. LEVEL			(dB/	A)					
60		MAX. SOUND POWER LEVEL REQ'	D (6.1.14)							ļ	
61		EST MAX SOUND POWER LEVEL									



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1	Note							CON	STRUCTION	Rev			
2	Note	API PUMP TYPE:	VS6/ VS7	7 [Ba	sed on F	API 610 de	finitions		CASING MOUNTING:	1.01			
3					E ALSO F				CASING TYPE: (6.3.10)				
4		NOZZLE CONNECT	IONS:	(6.5	5.5)				OH3 BACKPULLOUT LIFTING DEVICE REQD. (9.1.2.6)				
5				Size	Facing	Rating	J Po	osition	CASE PRESSURE RATING:				
6		SUCTION		6"	RF	300		SIDE	MAWP: (6.3.6)psig @	°F			
7		DISCHARGE		4"	RF	300		SIDE	HYDROTEST:psig @	°F			
8		PRESSURE CASING			- `								
9			No.	Size	Туре	Facing	Rating	Posn.	HYDROTEST OH PUMP AS ASSEMBLY YES				
10		BALANCE/LEAK OFF	1						SUCT'N PRESS. REGIONS DESIGNED FOR MAWP YES				
11		DRAIN	1						ROTATION: (VIEWED FROM COUPLING END)				
12		VENT	1						IMPELLERS INDIVIDUALLY SECURED: DOUT ON OVER PLANT TO DAD (FOUNDATION)				
13		PRESSURE GAGE							BOLT OH 3/4/5 PUMP TO PAD / FOUNDATION :				
14 15		TEMP GAGE WARM-UP LINE							PROVIDE SOLEPLATE FOR OH 3/4/5 PUMPS ROTOR:				
16		WARIN-OF LINE		l					SHAFT FLEXIBILITY INDEX (SFI) (9.1.1.3)				
17		Drain Valve Supp	nlied By				SUP	PLIER	First Critical Speed Wet (Multi stage pumps only)				
18		DRAINS MANIF				-		YES	COMPONENT BALANCE TO ISO 1940 G1.0 YES				
19		VENT Valve Supplied By SUPPLIER							SHRINK FIT -LIMITED MOVEMENT IMPELLERS (9.2.2.3)				
20		VENTS MANIFO	. ,			-		YES					
21		THREADED CO	NS FOR P	IPELINE	SERVIC	E & < 50°0	C (6.4.3.2)	YES	COUPLING:(7.2.3) (7.2.13.f)				
22		SPECIAL FITTIN	IGS FOR T	FRANSIT	ONING	(6.4.3.3)			MANUFACTURER				
23		CYLINDRICAL T	HREADS	REQUIR	ED (6.4.3	3.8)			MODEL				
24		GUSSET SUPPO	ORT REQU	JIRED					RATING (POWER/100 RPM)				
25		MACHINED AND	STUDDE	D CONN	IECTION	S (6.4.3.12	2)		SPACER LENGTH	in.			
26		VS 6 DRAIN				_			SERVICE FACTOR				
27		DRAIN TO SKID	EDGE					YES	RIGID				
28									COUPLING WITH HYDRAULIC FIT (7.2.10)				
29			MATE	RIAL (6.	12.1.1) N	lote-9			COUPLING BALANCED TO ISO 1940-1 G6.3 (7.2.3)				
30		APPENDIX H CLASS			D.	-1			COUPLING WITH PROPRIETARY CLAMPING DEVICE (7.2.11)				
31		MIN DESIGN METAL	,	,	FOID (*)			°F					
32		REDUCED-HARDNE				.2.1.12.1)			COUPLING IN COMPLIANCE WITH (7.2.4)				
33		Applicable Hardness	Standard	(6.12.1.1	2.3)	=			COUPLING GUARD STANDARD PER (7.2.13.a)				
34 35		BARREL : BOWL :							Window on Coupling Guard				
36		DIFFUSERS							BASEPLATE				
37		IMPELLER:							API BASEPLATE NUMBER :				
38		IMPELLER WEAR R	ING :					<u>_</u>	BASEPLATE CONSTRUCTION (7.3.14)				
39		CASE WEAR RING :							BASEPLATE DRAINAGE (7.3.1) Entire Baseplate Drain Rin	1			
40		SHAFT:							MOUNTING: GROUTED				
41		Bowl (if VS-type)							NON-GROUT CONSTRUCTION : (7.3.13) NOT REQUIRED				
42		Inspection Class							VERTICAL LEVELING SCREWS : REQUIRED				
		Remarks:											
						(2.42.4	4)		LONGITUDINAL DRIVER POSITIONING SCREWS REQUIRED				
43			ARINGS A			JN (6.10.1	.1)		EGNOROBINAL BRAVERA CONTOURNO CORRENO :				
44 45		BEARING (TYPE / N RADIAL	OIVIBEK):	(6.1	1.4)				SUPPLIED WITH: • GROUT AND VENT HOLES YE • DRAIN CONNECTION YE				
46		THRUST			', .				MOUNTING PADS SIZED FOR BASEPLATE LEVELING (7.3.5)	:5			
47		REVIEW AND APPR	OVE THR	LIST BE	ARING S	IZF · (9 2 !	5 2 4)		MOUNTING PADS TO BE MACHINED (7.3.6)				
48				- O. DE/		(0.2.0	,		PROVIDE SPACER PLATE UNDER ALL EQUIPMENT FEET	\dashv			
49		LUBRICATION :	(6.10.2.2)	(6.11.3)	(9.6.1)				OTHER				
50		PRESSURE LUE					(9.2.6.5)						
50						ATTACHE							
51		Pressurized Lube							REMARKS:				
52		Location of Pressurized Lube Oil System mounted on baseplate :							Suction Type: Single				
53									Impeller Type: Closed				
54		INTERCONNEC	TING PIPI	NG PRO	VIDED B	Y							
55													
56		OIL VISC. ISO G	RADE			VG							
57		CONSTANT LEV	/EI	٠.						1			



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1	Note	INSTRUMENTATION		SEAL SUPPORT SYSTEM MOUNTING		Rev
2		SEE ATTACHED API-670 DATA SHEET		SEAL SUPPORT SYSTEM MOUNTED ON PUMP BASEPLAT	 F	
3		ACCELEROMETER (7.4.2.1)		(7.5.1.4)	YES	
4		Number of Accelerometers		IDENTIFY LOCATION ON BASEPLATE		
5		Mounting Location of Accelerometers				
6		Mounting Location of According to the		INTERCONNECTING PIPING BY Supplie	er	
7		PROVISION FOR MTG ONLY (6.10.2.10)			<u></u>	
8		Number of Accelerometers		MECHANICAL SEAL (6.8.1)		
9		Mounting Location of Accelerometers		SEE ATTACHED ISO 21049/API 682 DATA SHEET	YES	
10		Mounting Location of According to the		ADDITIONAL CENTRAL FLUSH PORT (6.8.9)		
11		FLAT SURFACE REQUIRED (6.10.2.11)	YES	HEATING JACKET REQ'D. (6.8.11)		
12		Number of Accelerometers		(0.011)		
13		Mounting Location of Accelerometers		HEATING AND COOLING (6.1.17)		
14		meaning 200alion of 7 toos of 5 motors		COOLING REQ'D		
15		VIBRATION PROBES (7.4.2.2)		COOLING WATER PIPING PLAN		
16		PROVISIONS FOR VIB. PROBES		COOLING WATER PIPING		
17		NUMBER PER RADIAL BEARING		FITTINGS		
18		NUMBER PER AXIAL BEARING		COOLING WATER PIPING MATERIALS		
10		NOWBER FER AXIAL BEARING		COOLING WATER FIFING MATERIALS COOLING WATER REQUIREMENTS:		
40		MONITORS AND CARLES SUPPLIED BY (7.4.9.4)				
19		MONITORS AND CABLES SUPPLIED BY (7.4.2.4)		BEARING HOUSING	gpm	
20				HEAT EXCHANGER	gpm	
21		TEMPERATURE (7.4.2.3)		TOTAL COOLING WATER	gpm	
22		PROVISIONS FOR TEMP PROBES		HEATING MEDIUM		
23		RADIAL BEARING TEMP.		OTHER		
24		NUMBER PER RADIAL BEARING		HEATING PIPING		
25		THRUST BEARING TEMP.				
26		NUMBER PER THRUST BEARING ACTIVE SIDE		PIPING & APPURTENANCES		
27		NUMBER PER THRUST BEARING INACTIVE SIDE		MANIFOLD PIPING FOR PURCHASER CONNECTION (7.5.1.	6)	
28		TEMP. GAUGES (WITH THERMOWELLS) (9.1.3.6)		VENT		
29		PRESSURE GAUGE TYPE		DRAIN		
30				COOLING WATER		
31		Remarks		TAG ALL ORIFICES (7.5.2.4)		
				_		
32				SOCKET WELD CONN ON SEAL GLAND (7.5.2.8)		
33						
24						
34		-		-		
35						
36						
37						
38						
39						
40						
41		-				
42						
43		-				
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1	Note		SUR	FACE PREPA	ARATION AND	PAINT		TEST				
2		MANUFAC	TURER'S ST	ANDARD				SHOP INSPECTION (8.1.1)				
3		OTHER (SI	EE BELOW)					PERFORMANCE CURVE	·			
4		SPECIFICA	ATION NO.					& DATA APPROVAL PRIOR TO SHIPMENT.	YES			
5								TEST WITH SUBSTITUTE SEAL (8.3.3.2.b)				
6		PUMP:						MATERIAL CERTIFICATION REQUIRED CASING	YES			
7		PUMP SUF	RFACE PREF	PARATION	Manufac	turer's stand	ard	(6.12.1.8) IMPELLER	YES			
8		PRIMER			Minimur	n 3 Coat Syst	em	SHAFT	YES			
9		FINISH CO	AT					OTHER	YES			
10								CASTING REPAIR WELD PROCEDURE APPR REQD				
ļ		BASEPLAT						(6.12.2.5) (6.12.3.1)				
11			TE SURFACE	PREPARATI		ufacturer's st		INSPECTION REQUIRED FOR CONNECTION WELDS (6.12				
12		PRIMER:			Min	imum 3 Coat	System	(6.12.3.4.e) MAG PARTICLE	YES			
13		FINISH CO			-			RADIOGRAPHY				
14		DETAILS C	OF LIFTING D	EVICES				LIQUID PENETRANT ULTRASONIC	YES			
15 16		SHIPMENT	Γ· (8 / 1)					INSPECTION REQUIRED FOR CASTINGS				
17			OXING REQ	LIIRED				MAG PARTICLE				
18				MORE THAN	6 MONTHS			RADIOGRAPHY	YES			
		00120011			0.11.0.11.10			LIQUID PENETRANT	YES			
19		SPARE RC	TOR ASSEM	MBLY PACKA	GED FOR:			ULTRASONIC				
20		ROTOR ST	ORAGE ORI	ENTATION (9	9.2.8.2)			HARDNESS TEST REQUIRED (8.2.2.7)	-			
21					FOR VERTS	TORAGE (9.2	.8.3)	ADDNL SUBSURFACE EXAMINATION (6.12.1.5) (8.2.1.3)				
22								FOR				
23		N2 PURGE	(9.2.8.4)					METHOD				
24		SPARE PA	RTS					PMI TESTING REQUIRED (8.2.2.8)	YES			
25		START-UP					YES	COMPONENTS TO BE TESTED				
26		NORMAL N	MAINTENANC	CE								
27				WEIGHT	r S lb			RESIDUAL UNBALANCE TEST (J.4.1.2)				
28		ITEM No	PUMP	DRIVER	GEAR	BASE	TOTAL	NOTIFICATION OF SUCCESSFUL SHOP				
29								PERFORMANCE TEST (8.1.1.c) (8.3.3.5)				
30								BASEPLATE TEST (7.3.21)				
31								HYDROSTATIC	NON-WIT			
32								HYDROSTATIC TEST OF BOWLS & COLUMN (9.3.13.2)				
33			ОТН	ER PURCHAS	SER REQUIRE	MENTS		PERFORMANCE TEST	NON-WIT			
34					JIRED (10.1.3)			TEST IN COMPLIANCE WITH (8.3.3.2)	8.3.3.2			
35		MAXIMU	JM DISCHAR	RGE PRESSU	RE TO INCLU			TEST DATA POINTS TO (8.3.3.3)	8.3.3.3			
36						IVE DENSITY		TEST TOLERANCES TO (8.3.3.4)				
37					PERATION TO			NPSH (8.3.4.3.1) (8.3.4.3.4)				
38		CONNE			S AND/OR NO	OF STAGES		NPSH-1ST STG ONLY (8.3.4.3.2)				
39 40				GN APPROV SIS / REPOR				NPSH TESTING TO HI 1.6 OR ISO 9906 (8.3.4.3.3)				
41			ESS REPOR		1 (6.9.2.10)			TEST NPSHA LIMITED TO 110% SITE NPSHA (8.3.3.6) RETEST ON SEAL LEAKAGE (8.3.3.2.d)	NON-WIT			
42					IAL TESTS (10).2.5)		RETEST ON SEAL LEARAGE (8.3.3.2.0) RETEST REQUIRED AFTER FINAL HEAD ADJ (8.3.3.7.b)	11011-1111			
43					20 YEARS RI		2.1.1)	COMPLETE UNIT TEST (8.3.4.4.1)				
44						, 0.		SOUND LEVEL TEST (8.3.4.5)	NON-WIT			
45		LATERA	AL ANALYSIS	REQUIRED	(9.1.3.4) (9.2.4	l.1.3)		CLEANLINESS PRIOR TO FINAL ASSEMBLY (8.2.2.6)	NON-WIT			
46				REQUIRED (9				· · ·	JPPLIER'S			
47		DYNAM	IC BALANCE	ROTOR (6.9	.4.4)			NOZZLE LOAD TEST				
48		INSTAL	LATION LIST	IN PROPOS	AL (10.2.3.I)			CHECK FOR CO-PLANAR MOUNTING PAD SURFACES				
49		VFD ST	EADY STATE	DAMPED R	ESPONSE AN	ALYSIS (6.9.2	.3)	MECHANICAL RUN TEST UNTIL OIL TEMP STABLE				
50								MECH RUN AFTER OIL TEMP STABLE (8.3.4.2.1)	NON-WIT			
51				ONAL RESPO	· ·	,		4 HR. MECH RUN TEST (8.3.4.2.2)	NON-WIT			
52					REQUIRED (6.							
_	_				N 13463-1 (7.2	,		FINAL INSPECTION BEFORE SHIP	WIT	<u> </u>		
53					SS DRAWING			STRUCTURAL RESONANCE TEST (9.3.9.2)		<u> </u>		
54					T WELD UNIO			REMOVE / INSPECT HYDRODYNAMIC BEARINGS AFTER	IESI			
55 56					SPECTRA (6.9	.3.3)		(9.2.7.5)		<u> </u>		
56 57				TING (7.5.1.7)				AUXILIARY EQUIPMENT TEST (8.3.4.6)		-		
57 58				BOLTS PROF	HT RCDS (8.2) 1 1 c\		EQUIPMENT TO BE INCLUDED IN AUXILLIARY TESTS				
58 59					DURES (8.3.1.			LOCATION OF AUXILIARY EQUIPENT TEST				
60				N CHECK LIS	,	.,		255. HON OF NOME, ANY EQUIL ENTITED				
61			00	5 2.0	\- ··-/			IMPACT TEST (6.12.4.3) PER EN 13445				
62								PER ASME SECTION VIII				
ľ								REMOVE CASING AFTER TEST				



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1	Note	VERTICAL TYPE (FIG 1.1) VS2						Rev
2		REMARKS						
3								
4								
6		VERTICAL PL	JMPS		VERTICAL PUMPS (C	ONT'D)		1
7		PUMP THRUST:	(+) UP	(-) DOWN	LINE SHAFT:			
8		STATIC THRUST	(1) O. Ibf	lbf	LINE SHAFT DIAMETER	-	in.	
9		AT MIN FLOW	lbf	lbf	TUBE DIAMETER	_	— "". in.	
10		AT RATED FLOW	lbf	lbf	LINE SHAFT COUPLING:	_	""	
11		AT MAX FLOW	lbf	lbf	LINESHAFT CONNECTION			
12		MAX THRUST	lbf	lbf		-	_	
13		SOLEPLATE REQUIRED			SUCTION STRAINER TYPE			
14		SOLEPLATE Length x Width	ft	X ft	LEVEL CONTROL	-	_	
15		SOLEPLATE THICKNESS		in.	IMPELLER COLLETS ACCEPTABLE		_	
16		MOUNTING FLANGE REQUIRED			HARDENED SLEEVES UNDER BEARING	SS (9.3.10.5)	_	
17		COLUMN PIPE:			RESONANCE TEST		_	
18		DIAMETER		in.	STRUCTURAL ANALYSIS (9.3.5)			
19		LENGTH	-	ft			_	
20		NUMBER	-		DRIVER ALIGNMENT SCREWS			
21		SPACING	-	ft	SUCTION CAN			
22		GUIDE BUSHINGS:	-		SUCTION CAN	THICKNESS	in.	
23		NUMBER				LENGTH	— ft	
24		LINE SHAFT BEARING SPACING		in.		DIAMETER	in.	
25		GUIDE BUSHING LUBE:	-		SEPARTATE MOUNTING PLATE		_	
26			-		PROVIDE SEPARATE SOLEPLA	· · · · · · · · · · · · · · · · · · ·	_	
27					DRAIN PIPED TO SUF	· · · · · · · · · · · · · · · · · · ·		
28					BOWL HEAD CALCULATION REQUIRED	, ,	_	
00				MATERIA	1.0 (= 1.1%) == 0		_	1
29 30		SUCTION CAN / BARREL:		MAIERIA	LINESHAFT SLEEVES :			-
31		DISCHARGE HEAD •			BEARING RETAINER :		_	
32		BOWL SHAFT:			SHAFT ENCLOSING TUBE :		_	
33		LINESHAFT:			DISCHARGE COLUMN :		_	
34		LINESHAFT HARDFACING :			PRESSURE RATING:	MAWP HYDR	-	
35		BELLMOUTH:			HEAD	WIAWF HIDN	·	
36		BOWL BEARING :			COLUMN PIPE		_	
37		LINESHAFT BEARING :			BOWL		_	
		EINEGIAI I BEAKING .					_	
38				SUMP AI	RRANGEMENT			
39		SUMP DIMENSIONS :						
40		GRADE ELEVATION		1	ft 1 2	3		
41		LOW LIQUID LEVEL		2	"	Ĭ		
42		C.L. OF DISCHARGE SUMP DEPTH		3	ft	, \		
43				I ₁	ft	\		
44		PUMP LENGTH		I ₂		\	_	
45		GRADE TO DISCH.		l ₃		\		
46		GRADE TO LOW LIQUID LVL		I ₄	ft	/ 4		
47		GRADE TO 1ST STG IMPL'R.		I ₅		\	_	
48		SUBMERGENCE REQ'D SUMP DIAMETER		Ι ₆ Φd	" -			
49		SOME DIAMETER		Ψυ	ft			
50 51					+ -			\vdash
					↓			
52					<u> </u>	Фф		-
53 54					-	*		
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1 Not		PRESSURE VESSEL DESI	GN CODE REFERENCES											
2	THESE REFERENCES MUST BE LISTED													
3		S USED IN DESIGN (TABLE 3)												
4	SOURCE OF MATER	RIAL PROPERTIES												
5														
6		WELDING AN												
7	THESE REFERENCES MUST BE LISTED		ULT TO TABLE 10 IF NO PURCHASE	R PREFERENCE IS STATED)										
8	ALTERNATE WELDING CODES AND ST													
9	WELDING REQUIREMENT (APPLICABLE CODE OR STANDARD)													
10	WELDER/OPERATOR QUALIFICATION		-											
11		WELDING PROCEDURE QUALIFICATION NON-PRESSURE RETAINING STRUCTURAL WELDING SUCH AS BASEPLATES OR SUPPORTS MAGNETIC PARTICLE OR LIQUID PENETRANT EXAMINATION OF PLATE EDGES												
12														
13	POSTWELD HEAT TREATMENT	TRANT EXAMINATION OF PLA	TE EDGES _											
14	POSTWELD HEAT TREATMENT OF CAS	ING EARRICATION WELDS	-											
16	TOSTWEED HEAT INCATINENT OF CAS	SING I ABRICATION WEEDS	_											
17		MATERIAL IN	ISPECTION											
18	THESE REFERENCES MUST BE LISTED			T TO TABLE 14										
10	ALTERNATIVE MATERIAL INSPECTIONS													
19	TYPE OF INSPECTION	METHOD	FOR FABRICATIONS	FOR CASTINGS										
20	RADIOGRAPHY													
21	ULTRASONIC INSPECTION													
22	MAGNETIC PARTICLE INSPECTION		+											
23	LIQUID PENETRANT INSPECTION													
24	VISUAL INSPECTION (all surfaces)													
25			<u> </u>											
26	REMARKS:													
27	_													
28														
29														
30														
31														
32														
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NOTES

1	Noto		Boy
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2	1	VTC = VENDOR TO CONFIRM	
3	2	VTA = VENDOR TO ADVISE	
4	3	THIRD PARTY INSPECTION AND TEST SHALL BE WITNESSED AT MANUFACTURER SHOP.	
5	4	PRE-SHIPMENT INSPECTION SHALL BE REQUIRED.	
6	5	DATA SHEET BASED ON THE PRELIMINARY ESTIMATES/INFORMATION, HOWEVER CONTRACTOR/VENDOR WILL UPDATE THE	
7		DATS SHEET.	
8	6	COMBINED PERFORMANCE AND COMPLETE UNIT TEST	
9	7	VENDOR TO SPECIFY PUMP SUCTION AND DISCHARGE NOZZLE SIZES AND TO PROVIDE CONNECTING FLANGES AND REDUCERS	
10		ACCORDINGLY.	
11	8	VENDOR SHALL FILL THIS DATASHEET COMPLETELY AS PER HIS OFFER.	
12	9	REFER TABLE G-1 AND H-1 OF API-610 (LATEST EDITION)	
13	10	VENDOR TO PROVIDE MOTOR MANUFACTURER'S DATA SHEET.	
14	11	FOR MOTOR SPECIFICATION REFER DOCUMENT # 0220-ELA-6500	
15	12	BALANCE/LEAK OFF LINE FROM DISCHARGED CASING TO SUCTION NOZZLE SHALL BE PROVIDED BY PUMP VENDOR AND SHALL	
16		DESIGN WITH PROPER ENGINEERING (e.g INSTALLATION OF RESTRICTED ORIFICE) IN ALL ASPECTS.	
17		SEGON WITH NO EXCENSIVE (SIGNO) AND	
18			
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QADIRPUR COMPRESSION PROJECT

ISSUE FOR APPROVAL

Α	29-Mar-19	ISSUE FOR APPROVAL	SHK	JAY	JAY	MPM	TUH		
REV	DATE	DESCRIPTION	ORIG	CHKD	LE	QA	PM	LOCAL REPR.	PROJ. MAN



DOCUMENT TITLE:DATA SHEET FOR PRODUCED WATER PUMPS P-2052 A/B

ENAR Petrotech Services (Pvt.) Limited , 7-B , Sector 7-A , Korangi Industrial Area , Karachi Pakistan

CONTRACT NO. 14-0220

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1	Note	APPLICABLE TO: PROPOS	AL	APPL	ICABLE NTL/	INTNTL STA	NDARD:	API-610			Rev
2		FOR	OGDCI	L		UNI	т			ľ	
3		SITE	Qadirpur F	Plant		SEF	RVICE	Produced W	/ater		
4		NO. REQ 2X100 % PUN	MP SIZE			TYF	PE	No. STAGES			
5		MANUFACTURER					DEL	SERIAL NO.			
6			LIQUID CHA	RACTERISTI	CS		-	<u> </u>		_	
7			Units	Maximum	Minimum			SERVICE :	CONTIN	NIIOUS	
8		LIQUID TYPE OR NAME :		UCED WATE				OEKVIOE .	0011111	10000	
9		VAPOR PRESSURE :	psia	114.7	17.6			PUMPS OPERATE IN:	PARAL	ı Fi	
10		RELATIVE DENSITY:	pola	0.984	0.765			CORROSION DUE TO : (6	-	& H2S	
11		SPECIFIC HEAT :	Rtu/(lhm-°F)	1.032	0.491			EROSION DUE TO : (6.12		Q 1120	
12		VISCOSITY:	cP	0.967	0.544			H2S CONCENTRATION (p	· —	100	
ľ								· "			
13		OPE	RATING CO		r` '			CHLORIDE CONCENTRA	" · ' -	22628	
14		NPSHa Datum:	Units	Maximum	Rated	Normal	Minimum	PARTICULATE SIZE (DIA	· -		
15			°F		122	oundation 122	44	PARTICULATE CONCENT	TRATION (PPW)	F 60	
16 17		PUMPING TEMPERATURE :					41	LIQUID PH	-	5.62	
-		FLOW:	gpm	400	165	150		-		ŀ	
18 19		DISCHARGE PRESSURE : (6.3.2) SUCTION PRESSURE :	psia	180 115	165.0 80	165.00 83.000		1		ŀ	
20		DIFFERENTIAL PRESSURE :	psia	65.0	85.0	83.000					
F		DIFFERENTIAL PRESSURE :	psi							-	
21			ft	153	200	193		-		ŀ	
22		NPSH _A :	ft HP		-2.3			-		ŀ	
23		HYDRAULIC POWER :	HP		8.0			J			
24					SITE AI	ND UTILITY	DATA				
25		LOCATION:				COOLIN	IG WATER :	1		L	
26		OUTDOOR UN	HEATED					INLET RETURN	DESIGN	Ļ	
27		MOUNTED AT : GRADE	_ o	TROPICALIS	SATION REQ	D TEN	∕IP °C	MAX			
28		ELECTRIC AREA CLASSIFICATION	:	6.1.22 ZC	ONE 2	PRE	ESS. kg/cm²g	MIN			
29		GROUP Group IIA		TEMP CL	ASS T3	SO	JRCE				
30		SITE DATA :				CO	OLING WATE	R CHLORIDE CONCENTRATION	ON:I	ppm	
31		ELEVATION (MSL) : 223	ft BA	ROMETER:	in H	g INSTRU	MENT AIR :	MAX 135 psia	MIN85	psia	
32		RANGE OF AMBIENT TEMPS:MIN /	MAX		121 °F	STEAM		1 1	1	L	
33		RELATIVE HUMIDITY: MIN / MAX						DRIVERS HEATIN	IG	ļ	
34		UNUSUAL CONDITIONS:		DUS	т	TE	MP °C	Max		Ļ	
35								Nor		ļ	
36		UTILITY CONDITIONS:		1	I			Min		ļ	
37		ELECTRICITY: DRIVERS	HEATING	CONTROL	SHUTDOWN	PRE	SS. kg/cm²g	Max		ŀ	
38		VOLTAGE 415						Nor		ŀ	
39		PHASE 3						Min		F	
40		HERTZ 50									
41		PERF	ORMANCE					DRIVER (7.1.5)			
42		PROPOSAL CURVE NO.		RPM		Driver T	уре		MOTOR	_ 1	
43		As Tested Curve No.				GEAR				[
44		IMPELLER DIA.: RATED	MAX	MIN.	in.	VARIAB	LE SPEED R	EQUIRED			
45		RATED POWER	HP EFFI	CIENCY	(%)	SOURC	E OF VARIAE	BLE SPEED			
46		RATED CURVE BEP FLOW (at rated	l impeller dia)		gpm	OTHER					
47				STABLE	gpm	MANUF	ACTURER		-		
48		PREFERRED OPERATING REGION	(6.1.11)	to	gpm	NAMEP	LATE POWE	R		HP	
49		ALLOWABLE OPERATING REGION		to	gpm	Nominal	RPM				
50		MAX HEAD @ RATED IMPELLER			ft	RATED	LOAD RPM			_	
51		MAX POWER @ RATED IMPELLER	(6.8	.9)	HP	FRAME	OR MODEL				
52		NPSHR AT RATED FLOW:			ft	ORIENT	ATION				
53		CL PUMP TO U/S BASEPLATE			ft	LUBE					
54		NPSH MARGIN AT RATED FLOW:			ft	BEARIN	G TYPE:				
55		SPECIFIC SPEED (6.1.9)		gpm,rpm,ft		RADIAL					
56		SUCTION SPECIFIC SPEED LIMIT				THRUS	Γ				
57		SUCTION SPECIFIC SPEED		gpm,rpm,ft		STARTI	NG METHOD				
58		MAX. ALLOW. SOUND PRESS. LEV	EL REQD (6.	1.14)	85(dB/	A) SEE DR	IVER DATA S	SHEET	REFER NOTE- 10 &	. 11	
59		EST MAX SOUND PRESS. LEVEL			(dB/	A)					
60		MAX. SOUND POWER LEVEL REQ'	D (6.1.14)								
61		EST MAX SOUND POWER LEVEL									



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1	Note							CONS	TRUCTION								Rev
2		API PUMP TYPE:	VS6/ VS7	' [Ba	sed on A	API 610 defi	nitions]		CASING MOUNTIN	IG:							
3		•		SEE	E ALSO F	PAGE 6	_		CASING TYPE:	(6	6.3.10)					Ī	
4		NOZZLE CONNECTI	IONS:	(6.5	.5)				OH3 BACKPULLOU	JT LIFT	ING DEVICE REC	QD. (9.1.2.6)					
5				Size	Facing	Rating	Po	osition	CASE PRESSU	JRE RA	TING:						
6		SUCTION		6"	RF	300	;	SIDE	MAWP	: (6	6.3.6)	ps	ig	@	c	°F	
7		DISCHARGE		4"	RF	300	:	SIDE	HYDROTEST	:		ps	ig	@		°F	
8		PRESSURE CASING	AUX. CO	NNECTI	ONS: (6.	4.3.2) NOTE	E-12									Ī	
9			No.	Size	Туре	Facing F	Rating	Posn.	HYDROTEST (OH PUN	IP AS ASSEMBL	Υ			YES	Ī	
10		BALANCE/LEAK OFF	1						SUCT'N PRES	S. REG	IONS DESIGNED	FOR MAWP			YES		
11		DRAIN	1						ROTATION:	(VIEV	VED FROM COU	PLING END)		_		Ī	
12		VENT	1						• IMPEL	LERS II	NDIVIDUALLY SE	CURED:				Ī	
13		PRESSURE GAGE							• BOLT	OH 3/4/	5 PUMP TO PAD	/ FOUNDATI	ON:			Ī	
14		TEMP GAGE							• PROV	IDE SO	LEPLATE FOR O	H 3/4/5 PUMF	PS			ı	
15		WARM-UP LINE							ROTOR:							Ī	
16						-			SHAFT FLEXIE	BILITY II	NDEX (SFI) (9.1.1	.3)				Ī	
17		Drain Valve Supp	olied By				SUPF	PLIER	First Critical Sp	eed We	et (Multi stage pun	nps only)		_		ı	
18		DRAINS MANIFO	OLDED			_		YES	COMPONENT	BALAN	CE TO ISO 1940	G1.0		_	YES	Ī	
19		VENT Valve Sup	plied By				SUPF	PLIER	SHRINK FIT -L	IMITED	MOVEMENT IMP	PELLERS (9.	2.2.3)			Ī	
20		VENTS MANIFO				_		YES				- (-	-,	_		ľ	
21		THREADED COI	NS FOR P	IPELINE	SERVIC	E & < 50°C	(6.4.3.2)	YES	COUPLING:(7.	2.3)	(7.2.13.f)					ı	
22		SPECIAL FITTIN	IGS FOR T	RANSIT	IONING	(6 4 3 3)	` ′.		MANUFACTUR	•	(ŀ	
23		CYLINDRICAL T				,			MODEL			_				ŀ	
24		GUSSET SUPPO			_D (0.4.c	7.0)			RATING (POW	ED/100	DDM)	_				ŀ	
25		MACHINED AND	-		IECTION	C (6 / 2 12)			SPACER LENG		KFWI)		-		 in	⋰	
			STODDE	D CONN	ECTION	3 (6.4.3.12)								_		՝ ⊦	
26		VS 6 DRAIN	FDOF			_			SERVICE FAC	IOK				_		ŀ	
27		DRAIN TO SKID	EDGE					YES	RIGID	T		4.0\		_		ŀ	
28			MATE	DIAL (C.	40.4.4\.	l-4- 0					DRAULIC FIT (7.2	•		_		ŀ	
29				RIAL (6.	12.1.1) N				1		D TO ISO 1940-1	, ,				ŀ	
30		APPENDIX H CLASS			D.	-1			COUPLING WI	TH PRO	OPRIETARY CLAI	MPING DEVI	CE (7.2	.11)		ŀ	
31		MIN DESIGN METAL	•					°F						_		ŀ	
32		REDUCED-HARDNE	SS MATE	RIALS R	EQ'D (6.1	2.1.12.1)			COUPLING IN	COMPL	JANCE WITH (7.2	2.4)				ļ	
33		Applicable Hardness	Standard (6.12.1.1	2.3)	_			COUPLING GL	JARD S	TANDARD PER (7.2.13.a)				L	
34		BARREL:							Window on Co	upling G	uard			_		L	
35		BOWL:															
36		DIFFUSERS									BASEPLA	ATE					
37		IMPELLER:							API BASEPLAT	TE NUM	IBER :						
38		IMPELLER WEAR R	ING :						BASEPLATE C	ONSTR	RUCTION (7.3.14)						
39		CASE WEAR RING :	:		<u></u>				BASEPLATE D	RAINA	GE (7.3.1)	Entire	Basepla	ate Dra	ain Rim		
40		SHAFT:							MOUNTING :				GROU	JTED			
41		Bowl (if VS-type)							NON-GROUT	CONST	RUCTION : (7.3.13) N	OT RE	QUIRE	D		
42		Inspection Class							VERTICAL LEV	/ELING	SCREWS:		REQU	IRED		Ī	
		Remarks:					-					-					
													-			T	
43		BE	ARINGS A	AND LUB	RICATIO	ON (6.10.1.1	i)		LONGITUDINA	L DRIV	ER POSITIONING	SCREWS:		REQU	IRED		
44		BEARING (TYPE / N	UMBER):	(6.1	1.4)				SUPPLIED WIT	τн: •	GROUT AND	VENT HOLES	;		YES	3	
45		RADIAL			/					•	DRAIN CONNI	ECTION			YES	3	
46		THRUST			/				MOUNTING PA	ADS SIZ	ED FOR BASEPL	ATE LEVELI	NG (7.3	3.5)			
47		REVIEW AND APPR	OVE THR	JST BEA	ARING SI	ZE : (9.2.5.2	2.4)		MOUNTING PA	ADS TO	BE MACHINED (7.3.6)					
48									PROVIDE SPA	CER PL	ATE UNDER ALL	EQUIPMEN	T FEET	-		Ī	
49		LUBRICATION :	(6.10.2.2)	(6.11.3)	(9.6.1)				OTHER							T	
50		PRESSURE LUE				(9	9.2.6.5)										
50						ATTACHED										İ	
51		Pressurized Lube							REMARKS:							ŀ	
52		Location of Press	•				seplate		Suction Type: S	Single						ŀ	
53									Impeller Type:							+	
54		INTERCONNEC	TING PIPI	NG PRO	VIDED B	Y			ponor rype.	J.300u						ŀ	
55		INTLINCONNEC		NO	AIDED D	. –			-							ŀ	
56		OIL VISC. ISO G	RADE			VG										ŀ	
57		CONSTANT LEV				VG			-							ŀ	
J1		CONSTAINT LEV	LL OILLIN						1								



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. 1		INICTOLIMENTATION	SEAL SUPPORT SYSTEM MOUNTING	
1	Note	INSTRUMENTATION		Rev
2		SEE ATTACHED API-670 DATA SHEET	SEAL SUPPORT SYSTEM MOUNTED ON PUMP BASEPLATE	
3		ACCELEROMETER (7.4.2.1)	(7.5.1.4) <u>YES</u>	
4		Number of Accelerometers	IDENTIFY LOCATION ON BASEPLATE	
5		Mounting Location of Accelerometers		
6			INTERCONNECTING PIPING BY Supplier	
7		PROVISION FOR MTG ONLY (6.10.2.10)	-	
8		Number of Accelerometers	MECHANICAL SEAL (6.8.1)	
9		Mounting Location of Accelerometers	SEE ATTACHED ISO 21049/API 682 DATA SHEET YES	
10			ADDITIONAL CENTRAL FLUSH PORT (6.8.9)	
11		FLAT SURFACE REQUIRED (6.10.2.11) YES	HEATING JACKET REQ'D. (6.8.11)	
12		Number of Accelerometers		
13		Mounting Location of Accelerometers	HEATING AND COOLING (6.1.17)	
14			COOLING REQ'D	
15		VIBRATION PROBES (7.4.2.2)	COOLING WATER PIPING PLAN	
16		PROVISIONS FOR VIB. PROBES	COOLING WATER PIPING	
17		NUMBER PER RADIAL BEARING	FITTINGS	
18		NUMBER PER AXIAL BEARING	COOLING WATER PIPING MATERIALS	
			COOLING WATER REQUIREMENTS:	
19		MONITORS AND CABLES SUPPLIED BY (7.4.2.4)	BEARING HOUSING gpn	n
20			HEAT EXCHANGER gpn	
21		TEMPERATURE (7.4.2.3)	TOTAL COOLING WATER gpn	
22		PROVISIONS FOR TEMP PROBES	HEATING MEDIUM	
23		RADIAL BEARING TEMP.	OTHER	
24		NUMBER PER RADIAL BEARING	HEATING PIPING	
25		THRUST BEARING TEMP.		
26		NUMBER PER THRUST BEARING ACTIVE SIDE	PIPING & APPURTENANCES	
27		NUMBER PER THRUST BEARING INACTIVE SIDE	MANIFOLD PIPING FOR PURCHASER CONNECTION (7.5.1.6)	1
			VENT	
28		TEMP. GAUGES (WITH THERMOWELLS) (9.1.3.6)	- I	
29		PRESSURE GAUGE TYPE	DRAIN	-
30		Demonto	COOLING WATER	
31		Remarks	TAG ALL ORIFICES (7.5.2.4)	
32			SOCKET WELD CONN ON SEAL GLAND (7.5.2.8)	
33			- `	
			-	
34				
35				
36			-	
37			-	
38			-	
39			-	
40			-	
		-	-	
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1	Note		SUR	FACE PREPA	ARATION AND	PAINT		TEST					
2		MANUFAC	TURER'S ST	ANDARD				SHOP INSPECTION (8.1.1)					
3		OTHER (SI	EE BELOW)					PERFORMANCE CURVE					
4		SPECIFIC <i>E</i>	ATION NO.					& DATA APPROVAL PRIOR TO SHIPMEN	T.	YES			
5								TEST WITH SUBSTITUTE SEAL (8.3.3.2.b)				
6		PUMP:						MATERIAL CERTIFICATION REQUIRED	CASING	YES			
7		PUMP SUF	RFACE PREF	PARATION	Manufac	turer's stand	ard	(6.12.1.	8) IMPELLER	YES			
8		PRIMER			Minimur	n 3 Coat Syst	em		SHAFT	YES			
9		FINISH CO	AT						OTHER	YES			
10								CASTING REPAIR WELD PROCEDURE A	PPR REQD				
		BASEPLAT	TE:					(6.12.2.5) (6.12.3.1)					
11		BASEPLAT	TE SURFACE	PREPARATI	ON Man	ufacturer's st	tandard	INSPECTION REQUIRED FOR CONNECT	TON WELDS (6.12.	3.4.d)			
12		PRIMER:			Mini	imum 3 Coat	System	(6.12.3.4.e) MA	G PARTICLE	YES			
13		FINISH CO							DIOGRAPHY				
14		DETAILS C	OF LIFTING D	EVICES					UID PENETRANT	YES			
15									TRASONIC				
16		SHIPMENT						INSPECTION REQUIRED FOR CASTINGS					
17		EXPORT BOXING REQUIRED							G PARTICLE				
18		OUTDOOR STORAGE MORE THAN 6 MONTHS							DIOGRAPHY	YES			
40		CDADE DO	TOD ACCE	ADL V DACKA	CED FOR				UID PENETRANT	YES			
19 20				IBLY PACKA ENTATION (9				HARDNESS TEST REQUIRED (8.2.2.7)	TRASONIC				
21					r.z.o.z) R FOR VERT S	TORAGE (9.2	8 3)	ADDNL SUBSURFACE EXAMINATION (6.	12 1 5) (8 2 1 3)				
22		0111111110	& OTORAGE	CONTAINE	TOR VERTO	TORAGE (3.2	.0.5)	FO	· · · ——				
23		N2 PURGE	(9.2.8.4)						THOD				
24		SPARE PA						PMI TESTING REQUIRED (8.2.2.8)		YES			
25		START-UP					YES	COMPONENTS TO BE TESTED					
26			MAINTENANO	CE									
27				WEIGHT	r s lb			RESIDUAL UNBALANCE TEST (J.4.1.2)					
28		ITEM No	PUMP	DRIVER	GEAR	BASE	TOTAL	NOTIFICATION OF SUCCESSFUL SHOP					
29		TILIVITO	1 OWII	DITIVEIX	OLAIN	DAGE	TOTAL	PERFORMANCE TEST (8.1.1.c) (8.3.3.5)					
30								BASEPLATE TEST (7.3.21)					
31								HYDROSTATIC		NON-WIT			
32			1					HYDROSTATIC TEST OF BOWLS & COLI	JMN (9.3.13.2)				
33			ОТН	ER PURCHAS	SER REQUIRE	MENTS		PERFORMANCE TEST	,	NON-WIT			
34		COORD	INATION ME	ETING REQU	JIRED (10.1.3)			TEST IN COMPLIANCE WITH (8.3.3.2)		8.3.3.2			
35		MAXIMU	JM DISCHAR	GE PRESSU	RE TO INCLU	DE		TEST DATA POINTS TO (8.3.3.3)		8.3.3.3			
36					MAX RELAT	IVE DENSITY		TEST TOLERANCES TO (8.3.3.4)					
37				OF	PERATION TO	TRIP SPEED		NPSH (8.3.4.3.1) (8.3.4.3.4)					
38			MAX DI	A. IMPELLER	S AND/OR NO	OF STAGES		NPSH-1ST STG ONLY (8.3.4.3.2)					
39		CONNE	CTION DESI	GN APPROV	AL (9.2.1.4)			NPSH TESTING TO HI 1.6 OR ISO 9906 (3.3.4.3.3)				
40		TORSIC	NAL ANALY	SIS / REPOR	T (6.9.2.10)			TEST NPSHA LIMITED TO 110% SITE NP	SHA (8.3.3.6)				
41		PROGR	ESS REPOR	RTS				RETEST ON SEAL LEAKAGE (8.3.3.2.d)		NON-WIT			
42					IAL TESTS (10			RETEST REQUIRED AFTER FINAL HEAD	ADJ (8.3.3.7.b)				
43		ADDITIO	ONNAL DATA	REQUIRING	20 YEARS RI	ETENTION (8.	2.1.1)	COMPLETE UNIT TEST (8.3.4.4.1)					
44								SOUND LEVEL TEST (8.3.4.5)		NON-WIT	<u> </u>		
45					(9.1.3.4) (9.2.4	1.1.3)		CLEANLINESS PRIOR TO FINAL ASSEM		NON-WIT	\vdash		
46				REQUIRED (9				LOCATION OF CLEANLINESS INSPECTION	ON @ SU	PPLIER'S			
47 40				ROTOR (6.9	,			NOZZLE LOAD TEST	VD 811BEVCES		-		
48				IN PROPOSA	AL (10.2.3.I) ESPONSE AN	ALVOIS (6 C C	3)	CHECK FOR CO-PLANAR MOUNTING P			-		
49 50		VFD 21	LADI SIAIE	_ DAIVIPED RI	LOFUNOE AN	AL 1313 (6.9.2)	MECHANICAL RUN TEST UNTIL OIL TEM MECH RUN AFTER OIL TEMP STABLE (NON-WIT	-		
50 51		TPANCI	IENT TORSIO	ONAL RESPO	NSE (6.9.2	2.4)		4 HR. MECH RUN TEST (8.3.4.2.2)	J.J.4.2.1)	NON-WIT			
52					REQUIRED (6.			41111. MEOTITION 1201 (0.0.4.2.2)		11011 1111			
~~					N 13463-1 (7.2			FINAL INSPECTION BEFORE SHIP		WIT			
53					SS DRAWING	,		STRUCTURAL RESONANCE TEST (9.3.9	.2)				
54					T WELD UNIO			REMOVE / INSPECT HYDRODYNAMIC BI	*	EST			
55					SPECTRA (6.9			(9.2.7.5)					
56				TING (7.5.1.7)				AUXILIARY EQUIPMENT TEST (8.3.4.6)					
57				BOLTS PROF				EQUIPMENT TO BE INCLUDED IN AUXIL	LIARY TESTS				
58					HT RCDS (8.2	2.1.1.c)							
59		VENDO	R SUBMIT TI	EST PROCED	DURES (8.3.1.	1)		LOCATION OF AUXILIARY EQUIPENT TE	ST				
60		SUBMIT	INSPECTIO	N CHECK LIS	ST (8.1.5)								
61								IMPACT TEST (6.12.4.3) PER EN 134	145				
62								PER ASME	SECTION VIII				
								REMOVE CASING AFTER TEST			l		



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1	Note	VERTICAL TYPE (FIG 1.1) VS2						Rev
2		REMARKS						
3								
4								
6		VERTICAL PL	JMPS		VERTICAL PUMPS (C	ONT'D)		1
7		PUMP THRUST:	(+) UP	(-) DOWN	LINE SHAFT:	- ,		
8		STATIC THRUST	(1) O. Ibf	lbf	LINE SHAFT DIAMETER	-	in.	
9		AT MIN FLOW	lbf	lbf	TUBE DIAMETER	_	— "'' in.	
10		AT RATED FLOW	lbf	lbf	LINE SHAFT COUPLING:	_	"	
11		AT MAX FLOW	lbf	lbf	LINESHAFT CONNECTION			
12		MAX THRUST	lbf	lbf			_	
13		SOLEPLATE REQUIRED			SUCTION STRAINER TYPE			
14		SOLEPLATE Length x Width	ft	X ft	LEVEL CONTROL		_	
15		SOLEPLATE THICKNESS		in.	IMPELLER COLLETS ACCEPTABLE		_	
16		MOUNTING FLANGE REQUIRED			HARDENED SLEEVES UNDER BEARING	SS (9.3.10.5)		
17		COLUMN PIPE:			RESONANCE TEST		_	
18		DIAMETER		in.	STRUCTURAL ANALYSIS (9.3.5)			
19		LENGTH	-	ft			_	
20		NUMBER	-		DRIVER ALIGNMENT SCREWS			
21		SPACING	-	ft	SUCTION CAN			
22		GUIDE BUSHINGS:	-		SUCTION CAN	THICKNESS	in.	
23		NUMBER				LENGTH	— ft	
24		LINE SHAFT BEARING SPACING		in.		DIAMETER	in.	
25		GUIDE BUSHING LUBE:	=		SEPARTATE MOUNTING PLATE		_	
26			-	.	PROVIDE SEPARATE SOLEPLA	·		
27					DRAIN PIPED TO SUR	· · · · · · · · · · · · · · · · · · ·	_	
28					BOWL HEAD CALCULATION REQUIRED	, , ,	_	
20				MATERIA	J. C. (additional)			
29 30		SUCTION CAN / BARREL:		WAIERIA	LINESHAFT SLEEVES :			-
31		DISCHARGE HEAD •			BEARING RETAINER:		_	
32		BOWL SHAFT:			SHAFT ENCLOSING TUBE :	-	_	
33		LINESHAFT:			DISCHARGE COLUMN :		_	
34		LINESHAFT HARDFACING :			PRESSURE RATING:	MAWP HYDR		
35		BELLMOUTH:			HEAD	MANN IIIDN		
36		BOWL BEARING :			COLUMN PIPE			
37		LINESHAFT BEARING :			BOWL		_	
							_	
38		OLIMP DIMENDIONIO		SUMP A	RRANGEMENT			-
39		SUMP DIMENSIONS :		4				
40		GRADE ELEVATION		1	ft 1 2	3		
41		LOW LIQUID LEVEL C.L. OF DISCHARGE		2	"	Ĭ		
42		SUMP DEPTH		3	ft	t		
43		PUMP LENGTH		I ₁	ft	3		
44		GRADE TO DISCH.		I ₂		\	_	
45 46		GRADE TO LOW LIQUID LVL		l ₃	ft ft	\		
47		GRADE TO 1ST STG IMPL'R.		I ₄		4		
48		SUBMERGENCE REQ'D		1 ₅		\	_	
49		SUMP DIAMETER		Φ d	ft	أُو ا		
50		OSIVII BIJAWIETEK			" <u>\</u>			
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1 Note		PRESSURE VESSEL DESIG	GN CODE REFERENCES											
2	THESE REFERENCES MUST BE LISTED													
3		S USED IN DESIGN (TABLE 3)												
4	SOURCE OF MATER	RIAL PROPERTIES												
5														
6		WELDING AN												
7	THESE REFERENCES MUST BE LISTED	BY THE PURCHASER. (DEFAL	JLT TO TABLE 10 IF NO PURCHASE	R PREFERENCE IS STATED)										
8	ALTERNATE WELDING CODES AND STA	ANDARDS												
9	WELDING REQUIREMENT (APPLICABLE	ECODE OR STANDARD)	-											
10	WELDER/OPERATOR QUALIFICATION		=											
11	WELDING PROCEDURE QUALIFICATION NON-PRESSURE RETAINING STRUCTURAL WELDING SUCH AS BASEPLATES OR SUPPORTS MAGNETIC PARTICLE OR LIQUID PENETRANT EXAMINATION OF PLATE EDGES													
12														
13	7	TRANT EXAMINATION OF PLA	TE EDGES											
14	POSTWELD HEAT TREATMENT		_											
15	POSTWELD HEAT TREATMENT OF CAS	SING FABRICATION WELDS	_											
16		MATERIALIS	OPPOTION											
17		MATERIAL IN												
18	THESE REFERENCES MUST BE LISTED			T TO TABLE 14										
	ALTERNATIVE MATERIAL INSPECTIONS			FOR CASTINGS										
19	TYPE OF INSPECTION	METHOD	FOR FABRICATIONS	FOR CASTINGS										
20	RADIOGRAPHY													
21	ULTRASONIC INSPECTION		+											
22	MAGNETIC PARTICLE INSPECTION		+											
23	LIQUID PENETRANT INSPECTION													
24	VISUAL INSPECTION (all surfaces)													
25	- PEMARKO													
26	REMARKS:													
27														
28														
29														
30														
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NOTES

	Note		Rev
2	1	VTC = VENDOR TO CONFIRM	_
3	2	VTA = VENDOR TO ADVISE	_
4	3	THIRD PARTY INSPECTION AND TEST SHALL BE WITNESSED AT MANUFACTURER SHOP.	_
5	4	PRE-SHIPMENT INSPECTION SHALL BE REQUIRED.	_
6	5	DATA SHEET BASED ON THE PRELIMINARY ESTIMATES/INFORMATION, HOWEVER CONTRACTOR/VENDOR WILL UPDATE THE	
7		DATS SHEET.	_
9	6	COMBINED PERFORMANCE AND COMPLETE UNIT TEST	
10	7	VENDOR TO SPECIFY PUMP SUCTION AND DISCHARGE NOZZLE SIZES AND TO PROVIDE CONNECTING FLANGES AND REDUCERS	
11		ACCORDINGLY.	
12	8	VENDOR SHALL FILL THIS DATASHEET COMPLETELY AS PER HIS OFFER.	
13	9	REFER TABLE G-1 AND H-1 OF API-610 (LATEST EDITION)	
14	10	VENDOR TO PROVIDE MOTOR MANUFACTURER'S DATA SHEET.	
15	11	FOR MOTOR SPECIFICATION REFER DOCUMENT # 0220-ELA-6500	
16	12	BALANCE/LEAK OFF LINE FROM DISCHARGED CASING TO SUCTION NOZZLE SHALL BE PROVIDED BY PUMP VENDOR AND SHALL	
17		DESIGN WITH PROPER ENGINEERING (e.g INSTALLATION OF RESTRICTED ORIFICE) IN ALL ASPECTS.	
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