طرح نگهداشت و افزایش تولید ۲۷ مخزن

MECHANICAL DATA SHEETS FOR FIRE WATER MAIN PUMPS - ELECT. MOTOR DRIVEN (P-2301 A)

نگهداشت و افزایش تولید میدان نفتی بینک

Rev.	Date	Purpose of Issue / Status	Prepared by:	Checked by:	Approved by:	CLIENT Approval
D04	DEC. 2022	IFA	H. Adineh	M. Fakharian	M. Mehrshad	
D03	OCT. 2022	IFA	H. Adineh	M. Fakharian	M. Mehrshad	
D02	AUG. 2022	IFA	H. Adineh	M. Fakharian	M. Mehrshad	
D01	MAY. 2022	IFA	H. Adineh	M. Fakharian	M. Mehrshad	
D00	FEB. 2022	IFC	H. Adineh	M. Fakharian	M. Mehrshad	

Class: 2 **CLIENT Doc. Number: F0Z-708860**

status:

IDC: Inter-Discipline Check

IFC: Issued For Comment

IFA: Issued For Approval

AFD: Approved For Design

AFC: Approved For Construction

AFP: Approved For Purchase

AFQ: Approved For Quotation

IFI: Issued For Information

AB-R: As-Built for CLIENT Review

AB-A: As-Built –Approved

NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح‌الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک	شرکت توسعه پتروایران HIRGAN ENERGY

شماره پیمان:

۰۵۳-۰۷۳-۹۱۸۴

MECHANICAL DATA SHEETS FOR FIRE WATER MAIN PUMPS-ELECTRICAL MOTOR DRIVEN

پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه
BK	GCS	PEDCO	120	ME	DT	0029	D04

REVISION RECORD SHEET

page	D00	D01	D02	D03	D04	D05	D06
1	x	x	x	x	x		
2	x	x	x	x	x		
3	x	x	x	x	x		
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GENERAL NOTES

D04

1 Vendor shall fill in the blanks and return the completed data sheet along with Motor data sheet, "DOC NO.: BK-GCS-PEDCO-120-EL-DT-0009. with his proposal.

2 Vendor shall submit ITP (Inspection & Testing Plan) with his proposal.

3 Vendor is requested to confirm the material, or propose appropriate alternative.

4 For Instrumentation, Project specification 'Specification For Instrument and Control of package Unit System (PU)' Doc. No. BK-GNRAL-PEDCO-000-IN-SP-0004. shall be followed.

5 Instead of mechanical seal, vendor shall advise the suitable Packing specification.

6 NPSH test shall be done & witnessed if the margin of NPSHr & NPSHa is less than 1.

7 The Tie-in flanges shall conform to ASME B-16.1.

8 Pump drain shall be terminated at skid edge with flange connection and valved.

9 Vendor to indicate which minimum flow pumps can achieve.

10 Nozzle loads shall be 2 times the loads shown in API 610 11th Edition.

11 Electrical motor shall be rated according to project site condition; "Process Basis of Design; BK-GNRAL-PEDCO-000-PR-DB-0001".

12 The Suction line size is 12" and discharge line is 10" .

13 Welding repair procedures shall be submitted for approval.

14 Air release valve to be considered by vendor.

15 As the pump jobsite environmental condition is fumy and dusty, any required protection for pumps, panels and electrical parts (in accordance with IPS-E-EL-100) in this regard shall be considered by pump manufacturer.

16 Ultrasonic Test shall be performed for forged shaft.

17 Couplings shall be dry, flexible and spacer type.

18 For electrical motor descriptions, refer to 'Specification For MV Induction Motors' Doc. No.BK-GNRAL-PEDCO-000-EL-SP-0017.

19 There is no LCP for main electric motor. There is only LCS to stop (push button, return type) motor. Start (push button, return type) will be done from LCS, Pressure switch of water pipe & F&G system. Providing LCS without Local/Remote selector switch & with ammeter is in vendor scope of work.

20 Pressure sensing lines are in the vendor's scope of supply.

21 The pumps shall furnish not less than 150% of rated capacity at not less than 65% of rated head.

22 Design pressure is 15.4 barg also as per NFPA 20 standard the hydrotest pressure shall not be less than 17.24 barg.

23 Estimated BHP at rated capacity is 199.2 kW by considering 65% efficiency.

24 Range of ambient temperature (min. / max.): 5 / 55 °c , Maximum temperature of metal surface exposed to the sun (°C): 85 °c .

25 Vendor shall consider all of the derating factors for electrical motor power such as API factor, temperature, elevation and coupling factor so that shall not be less than maximum demand power. Also the diesel engine continuous rating available at the coupling, after de-rating required for the type of service, ambient temperature,
26 fuel quality, Altitude, shall exceed the maximum power demand at 100% speed by not less than 10%.

27 The motor service factor: 1 (shall be followed by vendor)

CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2301 A (Sheet 1 of 6)

CLIENT: National Iranian South Oil Company (NISOC)

PROJECT TITLE: BINAK Gas Compressor Station

JOB NUMBER:

EQUIPMENT NUMBER: P-2301 A

EQUIPMENT SERVICE: Fire Water Main Pumps - Electrical Motor Driven

SERIAL NUMBER:

REQ. / SPEC NO. : BK-GCS-PEDCO-120-ME-SP-0005.

PURCH ORDER NO.

Cells coloured thus contain drop-down options

contain calculated values based on input data; do not change.

identify a cross referenced paragraph in the document note, and may also contain a drop down list

When you have completed the DS, highlight the whole page format cells pattern none
Delete these notes on completion

COMMENTS:

	DATA SHEETS					
	ITEM No.	ATT	ITEM No.	ATT	ITEM No.	ATT
PUMP	P-2301 A	YES				
MOTOR						
GEAR						
TURBINE						

CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2301 A (Sheet 2 of 6)

D04

APPLICABLE TO: PROPOSAL — APPLICABLE NTL/INTNTL STANDARD: NFPA20 (2019) & IPS-M-PM-125, IPS-E-El-100 (1)

FOR NISOC — UNIT

SITE BINAK Gas Compressor Station — SERVICE Fire Water Main Pumps - Electrical Motor Driven

NO. REQ 1 — PUMP SIZE — TYPE — No. STAGES

MANUFACTURER — MODEL BB1 (V.T.C) — SERIAL NO.

LIQUID CHARACTERISTICS

	Units	Maximum	Minimum	Note
LIQUID TYPE OR NAME :		Water		Max & min
VAPOR PRESSURE :	bara	0.0087	0.1219	values refer
DENSITY :	kg/m³	997		only to the
SPECIFIC HEAT :	kj/kgC	4.186		property
VISCOSITY :	cP	1		listed

SERVICE : INTERMITTENT

• IF INTERMITTENT NO. OF STARTS :

PUMPS OPERATE IN:

CORROSION DUE TO : (6.12.1.9)

EROSION DUE TO : (6.12.1.9)

H2S CONCENTRATION (ppm) : (6.12.1.12) N.A.

CHLORIDE CONCENTRATION (ppm) :

PARTICULATE SIZE (DIA IN MICRONS)

PARTICULATE CONCENTRATION (PPM)

OPERATING CONDITIONS (6.1.2)

	Units	Maximum	Rated	Normal	Min
$NPSH_A$ Datum:		C.L. Impeller			
PUMPING TEMPERATURE :	°C	50	33		5
FLOW :	m³/hr		454.2		
DISCHARGE PRESSURE :(6.3.2)	barg		10.4		
SUCTION PRESSURE :	barg	0.83	0.81		0.08
DIFFERENTIAL PRESSURE :	bar		10.3		
DIFFERENTIAL HEAD :	m		105.0		
$NPSH_A$:	m		8.8		
HYDRAULIC POWER: (Note 23)	KW		129.50		

SITE AND UTILITY DATA

LOCATION: OUTDOOR — UNHEATED — UNDER SUNSHADE

MOUNTED AT : — ● TROPICALISATION REQ'D

ELECTRIC AREA CLASSIFICATION: (6.1.22) ZONE SAFE

GROUP — TEMP CLASS

SITE DATA :

ELEVATION (MSL) : 12.5 m — BAROMETER : 990.77 mBar

RANGE OF DESIGN TEMPS:MIN / MAX 5 / 85 °C

RELATIVE HUMIDITY: MIN / MAX 0 / 90 % (@ 25.6 °C)

UNUSUAL CONDITIONS: NA

UTILITY CONDITIONS :

ELECTRICITY :	DRIVERS	HEATING	CONTROL	SHUTDOWN
VOLTAGE	3300			
PHASE	3			
HERTZ	50			

COOLING WATER :

	RETURN	DESIGN
TEMP		
PRESS.		

SOURCE — COOLING WATER CHLORIDE CONCENTRATION:

INSTRUMENT AIR : kg MIN kg

STEAM

	DRIVERS	HEATING
TEMP		
PRESS.		

PERFORMANCE

PROPOSAL CURVE NO. — RPM

As Tested Curve No.

IMPELLER DIA.: RATED	MAX.	MIN.	mm
RATED POWER Kw	EFFICIENCY		(%)
RATED CURVE BEP FLOW (at rated impeller dia)			m³/hr
MIN FLOW : kJ/Nm³			m³/hr
PREFERRED OPERATING REGION (6.1.11)	to		m³/hr
ALLOWABLE OPERATING REGION	to		m³/hr
MAX HEAD @ RATED IMPELLER			m
MAX POWER @ RATED IMPELLER			kW
NPSH3 AT RATED FLOW :			m
CL PUMP TO U/S BASEPLATE			m
NPSH MARGIN AT RATED FLOW :			m
SPECIFIC SPEED (6.1.9)			
SUCTION SPECIFIC SPEED LIMIT			
SUCTION SPECIFIC SPEED			
MAX. ALLOW. SOUND PRESS. LEVEL REQD (6.1.14)		85	(dBA) @ 1 m
EST MAX SOUND PRESS. LEVEL			(dBA)
MAX. SOUND POWER LEVEL REQ'D (6.1.14)			
EST MAX SOUND POWER LEVEL			

DRIVER (7.1.5)

Driver Type		INDUCTION MOTOR
GEAR		NO
VARIABLE SPEED REQUIRED		NO
SOURCE OF VARIABLE SPEED		
OTHER		
MANUFACTURER		
NAMEPLATE POWER	@Site Condition	KW
Nominal RPM		
RATED LOAD RPM		
FRAME OR MODEL		
ORIENTATION		HORIZONTAL
LUBE		
BEARING TYPE:		
RADIAL		/
THRUST		/
STARTING METHOD		D.O.L/Open Discharge Valve
SEE DRIVER DATA SHEET		Note 1
Max Voltage Variation		±10%
Max Frequency Variation		±5%
Max Voltage and Frequency Variation together		±10%
RTD / Type		YES / PT100 (According to IPS-M-EL-132)

D04

NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح‌الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک	شرکت توسعه پتروایران HIRGAN ENERGY

شماره پیمان:	MECHANICAL DATA SHEETS FOR FIRE WATER MAIN PUMPS-ELECTRICAL MOTOR DRIVEN							
۰۵۳-۰۷۳-۹۱۸۴	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه
	BK	GCS	PEDCO	120	ME	DT	0029	D04

شماره صفحه: ۶ از ۹

CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2301 A (Sheet 3 of 6)

CONSTRUCTION

API PUMP TYPE: BB1 **[Based on API 610 definitions]**

NOZZLE CONNECTIONS: (6.5.5) NOTES 7,12 D04

	Size	Facing	Rating	Position
SUCTION		RF	300	SIDE
DISCHARGE		RF	300	SIDE

PRESSURE CASING AUX. CONNECTIONS: (6.4.3.2)

	No.	Size	Type	Facing	Rating	Posn.
BAL./LEAK OFF						
DRAIN						
VENT						
PRESSURE GAGE						
TEMP GAGE						
WARM-UP LINE						

Drain Valve Supplied By	SUPPLIER	
DRAINS MANIFOLDED	YES	
VENT Valve Supplied By	SUPPLIER	
VENTS MANIFOLDED	YES	
THREAD. CONS FOR PIPELINE SERVICE & < 50°C (6.4.3.2)	NO	
SPECIAL FITTINGS FOR TRANSITIONING (6.4.3.3)	NO	
CYLINDRICAL THREADS REQUIRED (6.4.3.8)	NO	
GUSSET SUPPORT REQUIRED	YES	If Needed
MACHINED AND STUDDED CONNECTIONS (6.4.3.12)	NO	
VS 6 DRAIN	N/A	
DRAIN TO SKID EDGE	YES	

MATERIAL (6.12.1.1)

APPENDIX H CLASS	I-2	NOTE 3	
MIN DESIGN METAL TEMP (6.12.4.1)		5	°C
REDUCED-HARDNESS MATERIALS REQ'D (6.12.1.12.1)			
Applicable Hardness Standard (6.12.1.12.3)			
BARREL :			
CASE :			
DIFFUSERS			
IMPELLER :			
IMPELLER WEAR RING :			
CASE WEAR RING :			
SHAFT:			
Bowl (if VS-type)			
Inspection Class **(Note 2)**			

BEARINGS AND LUBRICATION (6.10.1.1) (VTA)

BEARING (TYPE / NUMBER): (6.11.4)

RADIAL /

THRUST /

REVIEW AND APPROVE THRUST BEARING SIZE : (9.2.5.2.4)

LUBRICATION : (6.10.2.2) (6.11.3) (9.2.6)

PRESSURE LUBE SYSTEM TO ISO 10438- (9.2.6.5)

ISO 10438 DATA SHEETS ATTACHED

Pressurized Lube Oil System mtd on pump baseplate

Location of Pressurized Lube Oil System mounted on baseplate :

INTERCONNECTING PIPING PROVIDED BY Supplier

OIL VISC. ISO GRADE VG

CONSTANT LEVEL OILER :

CASING MOUNTING:

CASING TYPE: (6.3.10)

OH3 BACKPULLOUT LIFTING DEVICE REQD. (9.1.2.6)

CASE PRESSURE RATING:

MAWP : (6.3.5) By Vendor barg @ °C

HYDROTEST : 1.5*MAWP barg @ °C

HYDROTEST OH PUMP AS ASSEMBLY	YES
SUCT'N PRESS. REGIONS DESIGNED FOR MAWP	YES
ROTATION: (VIEWED FROM COUPLING END)	
• IMPELLERS INDIVIDUALLY SECURED :	
• BOLT OH 3/4/5 PUMP TO PAD / FOUNDATION :	
• PROVIDE SOLEPLATE FOR OH 3/4/5 PUMPS	
ROTOR:	
SHAFT FLEXIBILITY INDEX (SFI) (9.1.1.3)	
First Critical Speed Wet (Multi stage pumps only)	
COMPONENT BALANCE TO ISO 1940 G1.0	NO
SHRINK FIT -LIMITED MOVEMENT IMPELLERS (9.2.2.3)	
COUPLING:(7.2.3) **(7.2.13.f)** NOTE 17	
MANUFACTURER	
MODEL	
RATING (POWER/100 RPM)	
SPACER LENGTH	mm
SERVICE FACTOR	Min 1.5
RIGID	NO
COUPLING WITH HYDRAULIC FIT (7.2.10)	
COUPLING BALANCED TO ISO 1940-1 G6.3 (7.2.3)	YES
COUPLING WITH PROPRIETARY CLAMPING DEVICE (7.2.11)	
COUPLING IN COMPLIANCE WITH (7.2.4)	API 610 compliant
COUPLING GUARD STANDARD PER (7.2.13.a)	ISO 14120
Window on Coupling Guard	

BASEPLATE

API BASEPLATE NUMBER :		
BASEPLATE CONSTRUCTION (7.3.14)		
BASEPLATE DRAINAGE (7.3.1)		Entire Baseplate Drain Pan
MOUNTING :		
NON-GROUT CONSTRUCTION : (7.3.13)		
VERTICAL LEVELING SCREWS :		REQUIRED
LONGITUDINAL DRIVER POSITIONING SCREWS :		REQUIRED
SUPPLIED WITH :	• GROUT AND VENT HOLES	YES
	• DRAIN CONNECTION	YES
MOUNTING PADS SIZED FOR BASEPLATE LEVELING (7.3.5)		YES
MOUNTING PADS TO BE MACHINED (7.3.6)		YES
PROVIDE SPACER PLATE UNDER ALL EQUIPMENT FEET		YES

OTHER

REMARKS :

CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2301 A (Sheet 4 of 6)

INSTRUMENTATION

SEE ATTACHED API-670 DATA SHEET

ACCELEROMETER (7.4.2.1)

Number of Accelerometers

Mounting Location of Accelerometers

PROVISION FOR MTG ONLY (6.10.2.10) **YES**

Number of Accelerometers

Mounting Location of Accelerometers

FLAT SURFACE REQUIRED (6.10.2.11) **N / A**

Number of Accelerometers

Mounting Location of Accelerometers

VIBRATION PROBES (7.4.2.2) **N / A**

PROVISIONS FOR VIB. PROBES

NUMBER PER RADIAL BEARING

NUMBER PER AXIAL BEARING

MONITORS AND CABLES SUPPLIED BY (7.4.2.4)

TEMPERATURE (7.4.2.3)

PROVISIONS FOR TEMP PROBES

RADIAL BEARING TEMP.

NUMBER PER RADIAL BEARING

THRUST BEARING TEMP.

NUMBER PER THRUST BEARING ACTIVE SIDE

NUMBER PER THRUST BEARING INACTIVE SIDE

TEMP. GAUGES (WITH THERMOWELLS) (9.1.3.6)

PRESSURE GAUGE TYPE

Remarks

SEAL SUPPORT SYSTEM MOUNTING

SEAL SUPPORT SYSTEM MOUNTED ON PUMP BASEPLATE (7.5.1.4)

IDENTIFY LOCATION ON BASEPLATE

INTERCONNECTING PIPING BY **Supplier**

MECHANICAL SEAL (6.8.1)

SEE ATTACHED ISO 21049/API 682 DATA SHEET **N / A** **NOTE 5**

ADDITIONAL CENTRAL FLUSH PORT (6.8.9)

HEATING JACKET REQ'D. (6.8.11) **N / A**

FLUSH PLAN

HEATING AND COOLING (6.1.17)

COOLING REQ'D **NO**

COOLING WATER PIPING PLAN

COOLING WATER PIPING

FITTINGS

COOLING WATER PIPING MATERIALS

COOLING WATER REQUIREMENTS:

TOTAL COOLING WATER

HEATING MEDIUM

OTHER

HEATING PIPING

PIPING & APPURTENANCES

MANIFOLD PIPING FOR PURCHASER CONNECTION (7.5.1.6)

VENT **YES**

DRAIN **YES**

VALVES **YES (NOTE 8)**

COOLING WATER **NO**

TAG ALL ORIFICES (7.5.2.4) **YES**

SOCKET WELD CONN ON SEAL GLAND (7.5.2.8)

NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح‌الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک	شرکت توسعه پتروایران HIRGAN ENERGY

شماره پیمان:	MECHANICAL DATA SHEETS FOR FIRE WATER MAIN PUMPS-ELECTRICAL MOTOR DRIVEN								شماره صفحه: ۸ از ۹
۰۵۳-۰۷۳-۹۱۸۴	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	PEDCO	120	ME	DT	0029	D04	

CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2301 A (Sheet 5 of 6)

SURFACE PREPARATION AND PAINT

MANUFACTURER'S STANDARD
OTHER (SEE BELOW)
SPECIFICATION NO. BK-GNRAL-PEDCO-000-PI-SP-0006, "Specification for Painting"

PUMP:

PUMP SURFACE PREPARATION	
PRIMER	AS PER PROJECT PAINTING SPEC.
FINISH COAT	AS PER PROJECT PAINTING SPEC.

BASEPLATE:

BASEPLATE SURFACE PREPARATION	
PRIMER:	AS PER PROJECT PAINTING SPEC.
FINISH COAT	AS PER PROJECT PAINTING SPEC.
DETAILS OF LIFTING DEVICES	
SHIPMENT: (8.4.1)	EXPORT
EXPORT BOXING REQUIRED	YES
OUTDOOR STORAGE MORE THAN 6 MONTHS	YES
SPARE ROTOR ASSEMBLY PACKAGED FOR:	
ROTOR STORAGE ORIENTATION (9.2.8.2)	
SHIPPING & STORAGE CONTAINER FOR VERT STORAGE (9.2.8.3)	
N_2 PURGE (9.2.8.4)	
SPARE PARTS	
START-UP	YES
NORMAL MAINTENANCE	YES

ITEM No	PUMP	DRIVER	GEAR	BASE	TOTAL

OTHER PURCHASER REQUIREMENTS

COORDINATION MEETING REQUIRED (10.1.3)	YES	
MAXIMUM DISCHARGE PRESSURE TO INCLUDE		
OPERATION TO TRIP SPEED		
MAX DIA. IMPELLERS AND/OR NO OF STAGES	YES	
CONNECTION DESIGN APPROVAL (9.2.1.4)	YES	
TORSIONAL ANALYSIS / REPORT (6.9.2.10)	NO	
PROGRESS REPORTS	YES	
OUTLINE OF PROC FOR OPTIONAL TESTS (10.2.5)		
ADDITIONAL DATA REQUIRING 20 YEARS RETENTION (8.2.1.1)		
	YES	
LATERAL ANALYSIS REQUIRED (9.1.3.4) (9.2.4.1.3)	NO	
MODAL ANALYSIS REQUIRED (9.3.9.2)		
DYNAMIC BALANCE ROTOR (6.9.4.4)	YES	
INSTALLATION LIST IN PROPOSAL (10.2.3.l)	YES	
VFD STEADY STATE DAMPED RESPONSE ANALYSIS (6.9.2.3)		NO
TRANSIENT TORSIONAL RESPONSE	NO	
BEARING LIFE CALCULATIONS REQUIRED (6.10.1.6)		
IGNITION HAZARD ASSMT TO EN 13463-1 (7.2.13.e)		
CASING RETIREMENT THICKNESS DRAWING (10.3.2.3)		
FLANGES RQD IN PLACE OF SKT WELD UNIONS (7.5.2.8)		
INCLUDE PLOTTED VIBRATION SPECTRA (6.9.3.3)		
CONNECTION BOLTING (7.5.1.7)		
CADMIUM PLATED BOLTS PROHIBITED		
VENDOR TO KEEP REPAIR AND HT RCDS (8.2.1.1.c)		
VENDOR SUBMIT TEST PROCEDURES (8.3.1.1)	YES	
SUBMIT INSPECTION CHECK LIST (8.1.5) NOTE 2	YES	

TEST

SHOP INSPECTION (8.1.1)			Yes
PERFORMANCE CURVE & DATA APPROVAL PRIOR TO SHIPMENT.			YES
TEST WITH SUBSTITUTE SEAL (8.3.3.2.b)			
MATERIAL CERTIFICATION REQUIRED		CASING	YES
SHAFT	YES (6.12.1.8)	IMPELLER	YES
OTHER	YES Casing and impeller Wear ring		
CASTING REPAIR WELD PROCEDURE APPR REQD			YES
INSPECTION REQUIRED FOR CONNECTION WELDS (6.12.3.4.d)			
LIQUID PENETRANT	YES	MAG PARTICLE	
ULTRASONIC		RADIOGRAPHY	YES
INSPECTION REQUIRED FOR CASTINGS			
LIQUID PENETRANT	YES	MAG PARTICLE	YES
ULTRASONIC	YES	RADIOGRAPHY	
HARDNESS TEST REQUIRED (8.2.2.7)			
ADDNL SUBSURFACE EXAMINATION (6.12.1.5) (8.2.1.3)			
		FOR	
		METHOD	
PMI TESTING REQUIRED (8.2.2.8)			
COMPONENTS TO BE TESTED			
RESIDUAL UNBALANCE TEST (J.4.1.2)			
NOTIFICATION OF SUCCESSFUL SHOP			YES
PERFORMANCE TEST (8.1.1.c) (8.3.3.5)			YES
BASEPLATE TEST (7.3.21)			
HYDROSTATIC			WIT
HYDROSTATIC TEST OF BOWLS & COLUMN (9.3.13.2)			
PERFORMANCE TEST			WIT
TEST IN COMPLIANCE WITH (8.3.3.2)			NFPA 20
TEST DATA POINTS TO (8.3.3.3)			NFPA 20
TEST TOLERANCES TO (8.3.3.4)			TABLE 16
NPSH (8.3.4.3.1) (8.3.4.3.4)		NOTE 6	WIT
NPSH-1ST STG ONLY (8.3.4.3.2)			
NPSH TESTING TO HI 1.6 OR ISO 9906 (8.3.4.3.3)			
TEST NPSHA LIMITED TO 110% SITE NPSHA (8.3.3.6)			
RETEST ON SEAL LEAKAGE (8.3.3.2.d)			OBSERVE
RETEST REQUIRED AFTER FINAL HEAD ADJ (8.3.3.7.b)			
COMPLETE UNIT TEST (8.3.4.4.1)			WIT
SOUND LEVEL TEST (8.3.4.5)			WIT
CLEANLINESS PRIOR TO FINAL ASSEMBLY (8.2.2.6)			OBSERVE
LOCATION OF CLEANLINESS INSPECTION			
NOZZLE LOAD TEST			
CHECK FOR CO-PLANAR MOUNTING PAD SURFACES			
MECHANICAL RUN TEST UNTIL OIL TEMP STABLE			
4 HR. MECH RUN AFTER OIL TEMP STABLE (8.3.4.2.1)			WIT
4 HR. MECH RUN TEST (8.3.4.2.2)			
BRG HSG RESONANCE TEST (8.3.4.7)			
STRUCTURAL RESONANCE TEST (9.3.9.2)			
REMOVE / INSPECT HYDRODYNAMIC BEARINGS AFTER TEST (9.2.7.5)			
AUXILIARY EQUIPMENT TEST (8.3.4.6)			
EQUIPMENT TO BE INCLUDED IN AUXILIARY TESTS			
LOCATION OF AUXILIARY EQUIPMENT TEST			
IMPACT TEST	PER EN 13445		
	PER ASME SECTION VIII		
REMOVE CASING AFTER TEST			

CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2301 A (Sheet 6 of 6)

PRESSURE VESSEL DESIGN CODE REFERENCES

THESE REFERENCES MUST BE LISTED BY THE MANUFACTURER

CASTING FACTORS USED IN DESIGN (TABLE 3)

SOURCE OF MATERIAL PROPERTIES

WELDING AND REPAIRS (NOTE 13)

THESE REFERENCES MUST BE LISTED BY THE PURCHASER. (DEFAULT TO TABLE 11 IF NO PURCHASER PREFERENCE IS STATED)

ALTERNATE WELDING CODES AND STANDARDS	
WELDING REQUIREMENT (APPLICABLE CODE OR STANDARD)	DEFAULT PER TABLE 11
WELDER/OPERATOR QUALIFICATION	DEFAULT PER TABLE 11
WELDING PROCEDURE QUALIFICATION	DEFAULT PER TABLE 11
NON-PRESSURE RETAINING STRUCTURAL WELDING SUCH AS BASEPLATES OR SUPPORTS	DEFAULT PER TABLE 11
MAGNETIC PARTICLE OR LIQUID PENETRANT EXAMINATION OF PLATE EDGES	DEFAULT PER TABLE 11
POSTWELD HEAT TREATMENT	DEFAULT PER TABLE 11
POSTWELD HEAT TREATMENT OF CASING FABRICATION WELDS	DEFAULT PER TABLE 11

MATERIAL INSPECTION

THESE REFERENCES MUST BE LISTED BY THE PURCHASER — DEFAULT TO TABLE 14 — YES

ALTERNATIVE MATERIAL INSPECTIONS AND ACCEPTANCE CRITERIA (SEE TABLE 15) (8.2.2.5)

TYPE OF INSPECTION	METHOD	FOR FABRICATIONS	FOR CASTINGS
RADIOGRAPHY			
ULTRASONIC INSPECTION			
MAGNETIC PARTICLE INSPECTION			
LIQUID PENETRANT INSPECTION			
VISUAL INSPECTION (all surfaces)			

REMARKS :