

شماره پیمان:

#### نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض

# HIRGAN THE ENERGY

#### احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

MECHANICAL DATA SHEETS FOR SLUG PUMPS

١٨٤ ٩-٣٧٠-٩٠٨٤

پروژه	بسته کاری	صادر کننده	تسهيلات	رشته	نوع مدر ک	سريال	نسخه
BK	GCS	PEDCO	120	ME	DT	0019	D05

شماره صفحه: ۱ از ۱۰

# طرح نگهداشت و افزایش تولید ۲۷ مخزن

#### **MECHANICAL DATA SHEETS FOR SLUG PUMPS**

نگهداشت و افزایش تولید میدان نفتی بینک

Rev.	Date	Purpose of Issue / Status	Prepared by:	Checked by:	Approved by:	CLIENT Approval
D00	DEC. 2021	IFC	H. Adineh	M. Fakharian	M. Mehrshad	
D01	JAN. 2022	IFA	H. Adineh	M. Fakharian	M. Mehrshad	
D02	DEC. 2022	IFA	H. Adineh	M. Fakharian	M. Mehrshad	
D03	MAY.2024	AFC	H. Adineh	M. Fakharian	M. Mehrshad	
D04	JUL.2024	AFC	V.Amjadi	M. Fakharian	M.Sadeghian	
D05	NOV.2024	AFC	V.Amjadi	M. Fakharian	M.Sadeghian	

Class: 1 CLIENT Doc. Number: F0Z-708850

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





#### احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

MECHANICAL DATA SHEETS FOR SLUG PUMPS شماره پیمان: نوع مدرك صادر کننده شماره صفحه: ۲ از ۱۰ پروژه بسته کاری تسهيلات سريال نسخه ٤٨١٩-٣٧٠-٩١٨٤ BK PEDCO 120 ME DT 0019 D05 GCS

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111	+			<b> </b>	+
112	+			<b> </b>	+
113	1	+	<u> </u>	<b>†</b>	+
113	1	+	1	1	+
114		1	1	-	+
115	-				<del>                                     </del>
116	1	1	1		<del>                                     </del>
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#### احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

Objects HIRGAN ENERGY

MECHANICAL DATA SHEETS FOR SLUG PUMPS شماره پیمان:

3418-74-400

		WILCI	IANICAL DATA	A SHEETS I O	C SEUG FUNIF	3	
پروژه	بسته کاری	صادر کننده	تسهيلات	رشته	نوع مدرک	سريال	نسخه
BK	GCS	PEDCO	120	ME	DT	0019	D05

شماره صفحه: ۳ از ۱۰

#### **General Notes**

- 1. Mass Density [kg/m3] at Max. / Norm /Min. Temp: 1023 / 716 / 649 and Viscosity [cP] At Max. / Normal / Min. Temp: 1.37 / 0.58 / 0.449
- 2 Design Conditions:

Min./Max. Design Temperature(°C)

Max. Design Presure(barg)

5 / 85

23.3

- 3 For technical requirements of electrical lv motors refer to "Data sheets for lv induction motors; DOC NO.:BK-GCS-PEDCO-120-EL-DT-0008", 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-0008" with his proposal.
- 4 Vendor shall submit ITP (Inspection & Testing Plan) with his proposal.
- 5 The motors, pump mechanical seal, pump coupling and pump accessories shall be supplied from the project's approved vendor list (A.V.L.).
- 6 Vendor is requested to confirm the material, or propose appropriate alternative.
- 7 For Instrumentation, Project specification 'Specification For Instrument and Control of package Unit System (PU)' Doc. No. BK-GNRAL-PEDCO-000-IN-SP-0004 and other instrument specification which to be attached to MR shall be followed.
- 8 Mechanical seal data sheet shall fill in by vendor as per API 682. Pump Manufacturer shall supply all instrumentation for mechanical seals as per API 682 4th Edition and project requirements.
- 9 NPSH test shall be done & witnessed if the margin of NPSHr & NPSHa is less than 1.
- 10 The Tie-in flanges shall conform to ASME B-16.5
- 11 Valves in the piping system shall be Welded Flanged type.
- 12 Supplier to indicate which minimum flow pumps can achieve.
- 13 Pumps shall be designed, fabricated, tested, and inspected in accordance with the requirements of API 610 11th & IPS-G-PM-105(3).
- 14 Nozzle loads shall be 2 times the loads shown in API 610 11th Edition.
- 15 Pump starts Automatically with open delivery valve.
- 16 Electrical motor shall be rated for the end of curve.
- 17 The Suction line size is 4" and discharge line size is 3".
- 18 The Material shall be followed in accordance with NACE MR0175/ISO15156 and Technical Specification for Material Requirements in sour service. Doc.No: BK-GNRAL-PEDCO-000-PI-SP-0008.
- 19 H2S content is 6707.6 ppmw.
- 20 Pump Manufacturer shall supply all instrumentation for mechanical seals as per API 682 4th Edition and project requirements.
- 21 Based on project instrumentation specification, these equipments are classified as Type B (Connected to DCS/ESD): Centrifugal Pump Package.
- 22 Welding repair procedures shall be submitted for approval.
- 23 Refer to hazardous area classification layout Doc. No.: BK-GCS-PEDCO-120-SA-PY-0002, all instrumentation and electrical devices shall be suitable for: ZONE 2 & Gas group IIA, Temperature class T3.
- 24 Ultrasonic Test shall be performed for forged shaft.
- 25 For pumps with vacuum suction pressure the minimum NPSH margin shall be 2 m. for other pumps the minimum NPSH margin shall be 1 m.
- 26 Spare parts shall be supplied by vendor according to 'MR's appendix for Centrifugal Pumps ' Doc. No. BK-GCS-PEDCO-120-ME-MR-0009.
- 27 Couplings shall be dry, flexible and spacer type and coupling guards shall be of Non-Spark type.
- 28 Bearing temperature shall be measured during mechanical run test.
- 29 For electrical motor descriptions, refer to 'Specification For LV & MV Induction Motors' Doc. No.BK-GNRAL-PEDCO-000-EL-SP-0010 & 0017 .
- 30 Minimum Design Metal Tem (MDMT)= 5 °C
- 31 Turn down and design (rated) flow rates are 30% and 110 % of normal flow rate respectively.
- 32 API Plan 31+53B shall be considered.
- 33 PMI Testing For Alloy Steel Shall be Done.
- 34 Power Factor, efficiency, frequent, voltage, frequent variation and voltage variation of motor shall be specified by vendor in data sheet.
- 35 All drain and vents (If any) to be manifolded, valved and routed to the skid edge. a drain line to be considered in barrel and to be pipe up to mounted skid.
- 36 Range of ambient temperature: Min. ambient temperature: 5 °C , Max. ambient temperature: 50 °C
- 37 Pump is not installed directly on the ground and at least 20~30 cm height for pedestal is considered.
- 38 Max Allowable Pressure at Shut-Off (barg): 23.3
- 39 Barrel and pump shall have the same MAWP and to be hydrotest in same value with pump.





3119-74-70.

		MECHA	ANICAL DATA	SHEETS FOR	SLUG PUMPS		
پروژه	بسته کاری	صادر کننده	تسهيلات	رشته	نوع مدرک	سريال	نسخه
BK	GCS	PEDCO	120	ME	DT	0019	D05

احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

شماره صفحه: ٤ از ١٠

	AP	I Std. 610 CENT	RIFUGAL PUMP DATA SHEET (SI UNIT) - P-2101 A/B (Sheet 1 of	î 7)		
	CLI	IENT:	National Iranian South Oil Company (NISOC)			
	PROJECT T	ITLE:	BINAK Gas Compressor Station			
	JOB NUM	IBER:				
	EQUIPMENT NUM	IBER:	P-2101 A/B			
	EQUIPMENT SER	VICE:	SLUG PUMPS			
	SERIAL NUM	IBER:				
	REQ. / SPEC	NO.:	BK-GCS-PEDCO-120-ME-SP-0003			
	PURCH ORDE	R NO.				
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	contain calc	ulated values	based on input data; do not change.			
	identify a cre	oss referenced	I paragraph in the document note, and may also contain a d	rop down list		
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	COMMENTS:					
	ITEM No.	ATT	DATA SHEETS ITEM No.	ATT	ITEM No.	ATT
PUMP MOTOR	P-2101 A	AII	P-2101 B	All	LI LIVI IVO.	All
		1				

GEAR TURBINE

		DATASILLEIS			
ITEM No.	ATT	ITEM No.	ATT	ITEM No.	ATT
P-2101 A		P-2101 B			





#### احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

MECHANICAL DATA SHEETS FOR SLUG PUMPS شماره پیمان: بسته کاری صادر کننده پروژه تسهيلات نوع مدرك رشته سريال نسخه ٤٨١٩-٣٧٠-٩١٨٤ GCS PEDCO ME DT 0019 D05 120

شماره صفحه: ٥ از ١٠

		4.707	0.1.640 OFFE	DEFECT F	VI		D 2404 + 170 (01) + 2 - 6	·=·				
		Arı	Std. 610 CEN 11	RIFUGAL r	UMP DATA SHI	EET (SI UNI1)	- P-2101 A/B (Sheet 2 of	· 7)				
APPLICABLE TO: PROPO	OSAL				APPLIC	CABLE NTL/INTN	NTL STANDARD:			API 610-1	1th Ed.& II	PS-G-PM-105(3)
FOR NISOC					UNIT		_					_
SITE BINAK Gas Compress	sor Station				SERVI	ICE	SLUG PUMP					_
NO. REQ 2 (1+1)	PUMP SIZ	ZE			TYPE		VS6 (V.T.A)	No.	STAGES			_
MANUFACTURER	-				MODE	šL.	V.T.A.	SEF	RIAL NO.	V.T.A.		-
				1	LIQUID CHARAC		****					
	Units	Maximum	Minimum			SERVICE:				INTER	MITTENT	
LIQUID TYPE OR NAME :		water+hydrocarbo	on	Max &	& min	• IF INTERMIT	TENT NO. OF STARTS :			· <del></del>		_
VAPOR PRESSURE :	bara	6.50		value	s refer	PUMPS OPERA	ATE IN:					_
	kg/m³			only to			DUE TO : (6.12.1.9)					CO <sub>2</sub> H <sub>2</sub> S
	-					EROSION DUE						CO <sub>2</sub> ,12,0
	kj/kgC			prope								
VISCOSITY: (NOTE 1)	cР	L		listed			FRATION (ppm) : (6.12.1.12)					6707.6
1		ATING CONDITIONS (6.1.			1 16		ONCENTRATION (ppm):					
Amort D.	Units	Maximum	Rated	Normal	Min		E SIZE (DIA IN MICRONS)					
NPSH <sub>A</sub> Datum:		22.22	C.L. Impelle	er	0.02	PARTICULATE	E CONCENTRATION (PPM)					
PUMPING TEMPERATURE :	°C	23.22			8.82	4						ļ
FLOW:	m³/hr	ļ	11	10	3.5	_						ļ
DISCHARGE PRESSURE :(6.3.2)	barg	ļ	19.5			_						ļ
SUCTION PRESSURE :	barg	5.75			5.50							ļ
DIFFERENTIAL PRESSURE :	bar		14									
DIFFERENTIAL HEAD :	m		199.56									
NPSH <sub>A</sub> :	m		1.1									ŀ
HYDRAULIC POWER:	KW		4.3									
				s	SITE AND UTIL							
LOCATION:	_					COOLING WA	ATER:					ļ
	UNHEATED	· _ <del> </del>						R	ETURN	DESIGN		
MOUNTED AT :		O TROPICALISATI				TEMP						
ELECTRIC AREA CLASSIFICATION		6.1.22) ZONE	2			PRESS						
GROUP II A		TEMP CLASS	T:	3		SOUR						
SITE DATA:							NG WATER CHLORIDE CONC	CENTRATION:		-		
ELEVATION (MSL): 1.2	-	BAROMETER :			mBa	ar INSTRUMENT	ΓAIR:			MIN	kg	
RANGE OF DESIGN TEMPS:MIN / MAX	K			°C		STEAM		l saurene	ı	ı		
RELATIVE HUMIDITY: MIN / MAX			100	% (@ 25	5.6 °C)	TEMP		DRIVERS		_		
UNUSUAL CONDITIONS:						TEMP			+	_		
UTILITY CONDITIONS:	1	-0177701	CTT TOOM			PRESS	S.					
ELECTRICITY: DRIVERS	HEATING	CONTROL	SHUTDOW	N								
VOLTAGE 400												
PHASE 3												
HERTZ 50	<u> </u>	PERFORMANCE				<del>                                     </del>	n	PRINT (7.1.5) (NO	TEC 2 1	< 20.24 \		
PROPOGAL CURVE NO						Daires Timo	ע	RIVER (7.1.5) (NO	TES 3,10		COD	
PROPOSAL CURVE NO.		RPM				Driver Type				МОТ		
As Tested Curve No.						GEAR				-	NO	
IMPELLER DIA.: RATED	MAX.	MIN.		mm		VARIABLE SPI	EED REQUIRED				NO	
RATED POWER Kw	EFFI	ICIENCY		(%)		SOURCE OF V	ARIABLE SPEED					
RATED CURVE BEP FLOW (at rated imp	peller dia)	_		m³/hr		OTHER						
MIN FLOW:	kJ/Nm³	=		m³/hr		MANUFACTUE	RER					
PREFERRED OPERATING REGION (6.1	1.11)	to		m³/hr		NAMEPLATE F	POWER AND POWER FACT	TOR @S	ite Conditio	on		KW
ALLOWABLE OPERATING REGION		to		m³/hr		Nominal RPM				-		
MAX HEAD @ RATED IMPELLER				m		RATED LOAD	RPM			-		
MAX POWER @ RATED IMPELLER		-		kW		FRAME OR MO				-		
NPSH3 AT RATED FLOW:		-				ORIENTATION				VERTICAL	-	
		=		m			•			VENTICAL		
CL PUMP TO U/S BASEPLATE		-		m		LUBE						
NPSH MARGIN AT RATED FLOW:		_		m		BEARING TYP	E:					
SPECIFIC SPEED (6.1.9)		-				RADIAL				/	· .	
SUCTION SPECIFIC SPEED LIMIT		_				THRUST				/		
SUCTION SPECIFIC SPEED		_				STARTING ME	ETHOD	D.0	).L (OPF	EN DISCHAR	GE VALVI	₹)
MAX. ALLOW. SOUND PRESS. LEVEL	REQD (6.1.14)		85	(dBA)	@ 1 m	INSULATION/I	TEMP. RISE			F/B		l
EST MAX SOUND PRESS. LEVEL		-		(dBA)		Max Voltage Va	ariation			±10	)%	
MAX. SOUND POWER LEVEL REQ'D (	(6.1.14)	-				Max Frequency	Variation			±5	%	
		-				M M 1	d Frequency Variation together			-41	0%	



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PRESSURE CASING AUX. CONNECTIONS: (6.4.3.2)

VS6 (VTC) [Based on API 610 definitions]

(6.5.5)

Size

SEE ALSO PAGE 6

Facing

RF

RF

NOTES 10.14.17

Facing

RF

MATERIAL (6.12.1.1)

S-8

Rating

300

300

NOTES 10, 11

Position

SIDE

SIDE

SUPPLIER

SUPPLIER

External

YES

NOTES 18.19

Level 2

FLOOD

SUPPLIER

REQUIRED

(9.2.6.5)

BEARINGS AND LUBRICATION (6.10.1.1)

ISO 10438 DATA SHEETS ATTACHED

(6.11.4)

REVIEW AND APPROVE THRUST BEARING SIZE : (9.2.5.2.4)

PRESSURE LUBE SYSTEM TO ISO 10438-

Pressurized Lube Oil System mtd on pump baseplate

INTERCONNECTING PIPING PROVIDED BY

OIL VISC. ISO GRADE CONSTANT LEVEL OILER

Location of Pressurized Lube Oil System mounted on baseplate :

(6.10.2.2) (6.11.3) (9.2.6)

NO

NO

NO

YES

NO

Posn.

API PUMP TYPE:

SUCTION

DISCHARGE

BAL/LEAK OFF

PRESSURE GAGE

TEMP GAGE

WARM-LIP LINE

Drain Valve Supplied By

DRAINS MANIFOLDED

VENT Valve Supplied By VENTS MANIFOLDED

THREAD. CONS FOR PIPELINE SERVICE & < 50°C (6.4.3.2)

MACHINED AND STUDDED CONNECTIONS (6.4.3.12)

REDUCED-HARDNESS MATERIALS REQ'D (6.12.1.12.1)

SPECIAL FITTINGS FOR TRANSITIONING (6.4.3.3)

CYLINDRICAL THREADS REQUIRED (6.4.3.8)

GUSSET SUPPORT REQUIRED

VS 6 DRAIN

APPENDIX H CLASS

BARREL:

DIFFUSERS IMPELLER:

IMPELLER WEAR RING:

CASE WEAR RING :

Bowl (if VS-type)

RADIAL

THRUST

LUBRICATION :

Inspection Class (Note 4)

BEARING (TYPE / NUMBER):

CASE :

SHAFT:

DRAIN TO SKID EDGE

MIN DESIGN METAL TEMP (6.12.4.1)

Applicable Hardness Standard (6.12.1.12.3)

VENT

NOZZLE CONNECTIONS:

#### نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض



### احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

MECHANICAL DATA SHEETS FOR SLUG PUMPS ماره پیمان: بسته کاری صادر کننده تسهيلات نوع مدرك سريال يروژه BK PEDCO

شماره صفحه: ۱۱ز ۱۰ 120 ME 0019 D05 API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2101 A/B (Sheet 3 of 7) CONSTRUCTION VERTICAL CASING MOUNTING: CASING TYPE: DIFFUSER OH3 BACKPULLOUT LIFTING DEVICE REQD. (9.1.2.6) CASE PRESSURE RATING: MAWP: By Supplier HYDROTEST : 1.5 X MAWP barg @ HYDROTEST OH PUMP AS ASSEMBLY SUCT'N PRESS. REGIONS DESIGNED FOR MAWP YES ROTATION: (VIEWED FROM COUPLING END) IMPELLERS INDIVIDUALLY SECURED : YES 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 GL0 SHRINK FIT -LIMITED MOVEMENT IMPELLERS (9.2.2.3) COUPLING:(7.2.3) NOTE 27 MANUFACTURER RATING (POWER/100 RPM) SPACER LENGTH If Needed SERVICE FACTOR Min 1.5 COUPLING WITH HYDRAULIC FIT (7.2.10) YES COUPLING BALANCED TO ISO 1940-1 G6 3 (7 2 3) COUPLING WITH PROPRIETARY CLAMPING DEVICE (7.2.11) °C 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) MOUNTING · NON-GROUT CONSTRUCTION: (7.3.13) VERTICAL LEVELING SCREWS : REQUIRED REQUIRED LONGITUDINAL DRIVER POSITIONING SCREWS: SUPPLIED WITH: Q GROUT AND VENT HOLES YES YES DRAIN CONNECTION 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:



# -



شماره پیمان:

3418-74-200

 MECHANICAL DATA SHEETS FOR SLUG PUMPS

 نسخه سریال نوع مدر ک رشته تسهیلات صادر کننده بسته کاری پروژه

 BK
 GCS
 PEDCO
 120
 ME
 DT
 0019
 D05

احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

شماره صفحه: ۷ از ۱۰

API Std. 610 CENTRIFUGAL PUMP DATA	A SHEET (SI UNIT) - P-2101 A/B (Sheet 4 of 7)	
INSTRUMENTATION	SEAL SUPPORT SYSTEM	MOUNTING
SEE ATTACHED API-670 DATA SHEET	SEAL SUPPORT SYSTEM MOUNTED ON PUMP BASEPLATE	
ACCELEROMETER (7.4.2.1)		(7.5.1.4) <b>YES</b>
Number of Accelerometers	IDENTIFY LOCATION ON BASEPLATE	
Mounting Location of Accelerometers		
	INTERCONNECTING PIPING BY	SUPPLIER
PROVISION FOR MTG ONLY (6.10.2.10)		
Number of Accelerometers	MECHANICAL SEAL (6.8.1)	
Mounting Location of Accelerometers	SEE ATTACHED ISO 21049/API 682 DATA SHEET	NOTE 8
	ADDITIONAL CENTRAL FLUSH PORT	(6.8.9)
FLAT SURFACE REQUIRED (6.10.2.11) YES	HEATING JACKET REQ'D.	(6.8.11)
Number of Accelerometers  Mounting Location of Accelerometers	FLUSH PLAN	31+53B
Mounting Location of Acceleronneers		
VIBRATION PROBES (7.4.2.2)	HEATING AND COOLING	(6.1.17) (VTS)
PROVISIONS FOR VIB. PROBES	COOLING REQ'D	(0.515.1) (1.56)
NUMBER PER RADIAL BEARING	COOLING WATER PIPING PLAN	
NUMBER PER AXIAL BEARING	COOLING WATER PIPING	
MONITORS AND CABLES SUPPLIED BY (7.4.2.4)	COOLING WATER PIPING MATERIALS	<del></del>
	COOLING WATER REQUIREMENTS:	
TEMPERATURE (7.4.2.3)		
PROVISIONS FOR TEMP PROBES		<u> </u>
RADIAL BEARING TEMP.	TOTAL COOLING WATER	
NUMBER PER RADIAL BEARING	HEATING MEDIUM	
THRUST BEARING TEMP.	OTHER	
NUMBER PER THRUST BEARING ACTIVE SIDE	HEATING PIPING	
NUMBER PER THRUST BEARING INACTIVE SIDE		
TEMP. GAUGES (WITH THERMOWELLS) (9.1.3.6)	PIPING & APPURTEN	
PRESSURE GAUGE TYPE	MANIFOLD PIPING FOR PURCHASER CONNECTION (7.5.1.6	
Remarks	VENT	YES YES
	DRAIN VALVES	YES (NOTE 11)
<del></del>	COOLING WATER	TES (NOTE II)
	TAG ALL ORIFICES (7.5.2.4)	YES
	SOCKET WELD CONN ON SEAL GLAND (7.5.2.8)	
·		
-		



MANUFACTURER'S STANDARD

PUMP SURFACE PREPARATION

BASEPLATE SURFACE PREPARATION

DETAILS OF LIFTING DEVICES

EXPORT BOXING REQUIRED

OUTDOOR STORAGE MORE THAN 6 MONTHS

SPARE ROTOR ASSEMBLY PACKAGED FOR:

SHIPPING & STORAGE CONTAINER FOR VERT STORAGE (9.2.8.3)

DRIVER

NOTE 26

OPERATION TO TRIP SPEED

MAX DIA. IMPELLERS AND/OR NO OF STAGES

GEAR

ROTOR STORAGE ORIENTATION (9.2.8.2)

PUMP

COORDINATION MEETING REQUIRED (10.1.3)

CONNECTION DESIGN APPROVAL (9.2.1.4)

TORSIONAL ANALYSIS / REPORT (6.9.2.10)

OUTLINE OF PROC FOR OPTIONAL TESTS (10.2.5)

LATERAL ANALYSIS REOUIRED (9.1.3.4) (9.2.4.1.3) MODAL ANALYSIS REQUIRED (9.3.9.2)

DYNAMIC BALANCE ROTOR (6.9.4.4)

TRANSIENT TORSIONAL RESPONSE

CONNECTION BOLTING (7.5.1.7)

CADMIUM PLATED BOLTS PROHIBITED

INSTALLATION LIST IN PROPOSAL (10.2.3.1)

ADDITIONAL DATA REQUIRING 20 YEARS RETENTION (8.2.1.1)

VFD STEADY STATE DAMPED RESPONSE ANALYSIS (6.9.2.3)

BEARING LIFE CALCULATIONS REQUIRED (6.10.1.6)

IGNITION HAZARD ASSMT TO EN 13463-1 (7.2.13.e)

INCLUDE PLOTTED VIBRATION SPECTRA (6.9.3.3)

VENDOR TO KEEP REPAIR AND HT RCDS (8.2.1.1.c)

VENDOR SUBMIT TEST PROCEDURES (8.3.1.1)

SUBMIT INSPECTION CHECK LIST (8.1.5) NOTE 4

CASING RETIREMENT THICKNESS DRAWING (10.3.2.3)

FLANGES RQD IN PLACE OF SKT WELD UNIONS (7.5.2.8)

MAXIMUM DISCHARGE PRESSURE TO INCLUDE

OTHER (SEE BELOW)

SPECIFICATION NO.

PRIMER

PRIMER-

FINISH COAT

BASEPLATE:

FINISH COAT

SHIPMENT: (8.4.1)

N<sub>2</sub> PURGE (9.2.8.4)

NORMAL MAINTENANCE

SPARE PARTS

START-UP

ITEM No

SURFACE PREPARATION AND PAINT

AS PER PROJECT PAINTING SPEC.

BASE

OTHER PURCHASER REQUIREMENTS

YES

BK-GNRAL-PEDCO-000-PI-SP-0006, "Specification

#### نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض



### احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

MECHANICAL DATA SHEETS FOR SLUG PUMPS ماره سمان: بسته کاری صادر کننده نوع مدرك يروژه تسهيلات رشته سر یال ٤٨١ ٩-٣٧٠-٣٥٠ BK PEDCO GCS

شماره صفحه: ۱۸ از ۱۰ ME DT 0019 D05 120 API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2101 A/B (Sheet 5 of 7) TEST SHOP INSPECTION (8.1.1) YES PERFORMANCE CURVE & DATA APPROVAL PRIOR TO SHIPMENT YES TEST WITH SUBSTITUTE SEAL (8.3.3.2.b) NO MATERIAL CERTIFICATION REQUIRED CASING YES YES (6.12.1.8) IMPELLER YES OTHER YES Casing and impeller Wear ring NOTE 18 CASTING REPAIR WELD PROCEDURE APPR REQD YES INSPECTION REQUIRED FOR CONNECTION WELDS (6.12.3.4.d) LIOUID PENETRANT MAG PARTICLE YES YES RADIOGRAPHY LILTRASONIC INSPECTION REQUIRED FOR CASTINGS LIQUID PENETRANT YES MAG PARTICLE YES RADIOGRAPHY ULTRASONIC (NOTE 24) 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) (NOTE 33) YES COMPONENTS TO BE TESTED RESIDUAL UNBALANCE TEST (J.4.1.2) NOTIFICATION OF SUCCESSFUL SHOP PERFORMANCE TEST (8.1.1.c) (8.3.3.5) (WIT) YES TOTAL. BASEPLATE TEST (7.3.21) WIT HYDROSTATIC HYDROSTATIC TEST OF BOWLS & COLUMN (9.3.13.2) WIT PERFORMANCE TEST WIT TEST IN COMPLIANCE WITH (8.3.3.2) 8.3.3.2 8.3.3.3 TEST DATA POINTS TO (8.3.3.3) TEST TOLERANCES TO (8.3.3.4) NPSH (8.3.4.3.1) (8.3.4.3.4) (NOTE 9) 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) RETEST REQUIRED AFTER FINAL HEAD ADJ (8.3.3.7.b) COMPLETE UNIT TEST (8.3.4.4.1) WIT WIT SOUND LEVEL TEST (8.3.4.5) NON-WIT CLEANLINESS PRIOR TO FINAL ASSEMBLY (8.2.2.6) LOCATION OF CLEANLINESS INSPECTION NOZZLE LOAD TEST CHECK FOR CO-PLANAR MOUNTING PAD SURFACES MECHANICAL RUN TEST UNTIL OIL TEMP STABLE WIT 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 YES (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

REMOVE CASING AFTER TEST





# احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

شماره پیمان: ۱۸۶۶-۷۳-۹۱۸۶ 
 MECHANICAL DATA SHEETS FOR SLUG PUMPS

 نسخه سریال نوع مدر ک رشته تسهیلات صادر کننده بسته کاری پروژه

 BK
 GCS
 PEDCO
 120
 ME
 DT
 0019
 D05

شماره صفحه: ۹ از ۱۰

EMARKS	6					
	VERTICAL PUM	une			VEDTICAL PLIMPS (CONTIN)	
UMP THRUST:	(+) UP	<u> </u>	(-) DOWI	N	VERTICAL PUMPS (CONT'D)  LINE SHAFT:	
STATIC THRUST		N		N N	LINE SHAFT DIAMETER	
AT MIN FLOW				 N	TUBE DIAMETER	mm
AT RATED FLOW	·		-		LINE SHAFT COUPLING:	
				N	LINESHAFT CONNECTION	
AT MAX FLOW				N	2.1125.77.1.7.00.11125.110.11	
MAX THRUST		_N		N		
SOLEPLATE REQUIRED					* SUCTION STRAINER TYPE	
SOLEPLATE Length x Width		_ m	х	m	• LEVEL CONTROL	
SOLEPLATE THICKNESS				mm	IMPELLER COLLETS ACCEPTABLE	
MOUNTING FLANGE REQUIRED					HARDENED SLEEVES UNDER BEARINGS (9.3.10.5)	
OLUMN PIPE:					RESONANCE TEST	
DIAMETER		_		mm	STRUCTURAL ANALYSIS (9.3.5)	
LENGTH		_		m		
NUMBER		_			DRIVER ALIGNMENT SCREWS	
SPACING		_		m	SUCTION CAN	
UIDE BUSHINGS:					SUCTION CAN	THICKNESSmm
NUMBER						LENGTHm
LINE SHAFT BEARING SPACING		_		mm	OFFIARTATE MOUNTING PLATE (0.0.0.4)	DIAMETERmm
GUIDE BUSHING LUBE:		-			SEPARTATE MOUNTING PLATE (9.3.8.3.1) PROVIDE SEPARATE SOLEPLATE (9.3.8.3.3)	YES YES
				MATEDI	BOWL HEAD CALCULATION REQUIRED  ALS (additional)	
				WATERI	ALS (auditional)	
SUCTION CAN / BARREL:						
SUCTION CAN / BARREL: DISCHARGE HEAD:					LINESHAFT SLEEVES : BEARING RETAINER :	
SUCTION CAN / BARREL:  DISCHARGE HEAD :  BOWL SHAFT :					LINESHAFT SLEEVES :	
DISCHARGE HEAD : •					LINESHAFT SLEEVES : BEARING RETAINER :	
DISCHARGE HEAD : •					LINESHAFT SLEEVES : BEARING RETAINER : SHAFT ENCLOSING TUBE :	MAWP HYDRO
DISCHARGE HEAD:  BOWL SHAFT:  LINESHAFT:					LINESHAFT SLEEVES: BEARING RETAINER: SHAFT ENCLOSING TUBE: DISCHARGE COLUMN:	MAWP HYDRO
DISCHARGE HEAD : •  BOWL SHAFT :  LINESHAFT :  LINESHAFT HARDFACING :					LINESHAFT SLEEVES:  BEARING RETAINER:  SHAFT ENCLOSING TUBE:  DISCHARGE COLUMN:  PRESSURE RATING:	MAWP HYDRO
DISCHARGE HEAD:  BOWL SHAFT: LINESHAFT: LINESHAFT HARDFACING: BELLMOUTH:					LINESHAFT SLEEVES:  BEARING RETAINER:  SHAFT ENCLOSING TUBE:  DISCHARGE COLUMN:  PRESSURE RATING:  HEAD	MAWP HYDRO
DISCHARGE HEAD:  BOWL SHAFT: LINESHAFT: LINESHAFT HARDFACING: BELLMOUTH: BOWL BEARING:				SUMP A	LINESHAFT SLEEVES:  BEARING RETAINER:  SHAFT ENCLOSING TUBE:  DISCHARGE COLUMN:  PRESSURE RATING:  HEAD  COLUMN PIPE	MAWP HYDRO
DISCHARGE HEAD:  BOWL SHAFT:  LINESHAFT:  LINESHAFT HARDFACING:  BELLMOUTH:  BOWL BEARING:  LINESHAFT BEARING:			1	SUMP A	LINESHAFT SLEEVES: BEARING RETAINER: SHAFT ENCLOSING TUBE: DISCHARGE COLUMN: PRESSURE RATING: HEAD COLUMN PIPE BOWL	
DISCHARGE HEAD:  BOWL SHAFT:  LINESHAFT :  LINESHAFT HARDFACING:  BELLMOUTH:  BOWL BEARING:  LINESHAFT BEARING:			1 - 2	SUMP A	LINESHAFT SLEEVES: BEARING RETAINER: SHAFT ENCLOSING TUBE: DISCHARGE COLUMN: PRESSURE RATING: HEAD COLUMN PIPE BOWL	MAWP HYDRO
DISCHARGE HEAD:  BOWL SHAFT:  LINESHAFT:  LINESHAFT HARDFACING:  BELLMOUTH:  BOWL BEARING:  LINESHAFT BEARING:  UMP DIMENSIONS:  GRADE ELEVATION			-	SUMP A	LINESHAFT SLEEVES: BEARING RETAINER: SHAFT ENCLOSING TUBE: DISCHARGE COLUMN: PRESSURE RATING: HEAD COLUMN PIPE BOWL  MRRANGEMENT  1 2	
DISCHARGE HEAD:  BOWL SHAFT: LINESHAFT: LINESHAFT HARDFACING: BELLMOUTH: BOWL BEARING: LINESHAFT BEARING:  UMP DIMENSIONS: GRADE ELEVATION LOW LIQUID LEVEL			2	SUMP A	LINESHAFT SLEEVES: BEARING RETAINER: SHAFT ENCLOSING TUBE: DISCHARGE COLUMN: PRESSURE RATING: HEAD COLUMN PIPE BOWL  MRRANGEMENT  M 1 2	
DISCHARGE HEAD:  BOWL SHAFT: LINESHAFT: LINESHAFT HARDFACING: BELLMOUTH: BOWL BEARING: LINESHAFT BEARING:  UMP DIMENSIONS: GRADE ELEVATION LOW LIQUID LEVEL C.L. OF DISCHARGE			2 3	SUMP A	LINESHAFT SLEEVES: BEARING RETAINER: SHAFT ENCLOSING TUBE: DISCHARGE COLUMN: PRESSURE RATING: HEAD COLUMN PIPE BOWL  MRRANGEMENT  1 2 m	
DISCHARGE HEAD:  BOWL SHAFT:  LINESHAFT :  LINESHAFT HARDFACING:  BELLMOUTH:  BOWL BEARING:  LINESHAFT BEARING:  UMP DIMENSIONS:  GRADE ELEVATION  LOW LIQUID LEVEL  C.L. OF DISCHARGE  SUMP DEPTH			2 3 1 <sub>1</sub>	SUMP A	LINESHAFT SLEEVES: BEARING RETAINER: SHAFT ENCLOSING TUBE: DISCHARGE COLUMN: PRESSURE RATING: HEAD COLUMN PIPE BOWL  MRRANGEMENT   1 2 m m m	
DISCHARGE HEAD:  BOWL SHAFT:  LINESHAFT:  LINESHAFT HARDFACING:  BELLMOUTH:  BOWL BEARING:  LINESHAFT BEARING:  UMP DIMENSIONS:  GRADE ELEVATION  LOW LIQUID LEVEL  C.L. OF DISCHARGE  SUMP DEPTH  PUMP LENGTH  GRADE TO DISCH.  GRADE TO LOW LIQUID LVL			2 - 3 - I <sub>1</sub> - I <sub>2</sub> -	SUMP A	LINESHAFT SLEEVES: BEARING RETAINER: SHAFT ENCLOSING TUBE: DISCHARGE COLUMN: PRESSURE RATING: HEAD COLUMN PIPE BOWL  ARRANGEMENT	
DISCHARGE HEAD:  BOWL SHAFT: LINESHAFT: LINESHAFT HARDFACING: BELLMOUTH: BOWL BEARING: LINESHAFT BEARING:  UMP DIMENSIONS: GRADE ELEVATION LOW LIQUID LEVEL C.L. OF DISCHARGE SUMP DEPTH PUMP LENGTH GRADE TO DISCH. GRADE TO LOW LIQUID LVL GRADE TO 1ST STG IMPL'R.			2	SUMP A	LINESHAFT SLEEVES: BEARING RETAINER: SHAFT ENCLOSING TUBE: DISCHARGE COLUMN: PRESSURE RATING: HEAD COLUMN PIPE BOWL  MRRANGEMENT	
DISCHARGE HEAD:  BOWL SHAFT:  LINESHAFT:  LINESHAFT HARDFACING:  BELLMOUTH:  BOWL BEARING:  LINESHAFT BEARING:  UMP DIMENSIONS:  GRADE ELEVATION  LOW LIQUID LEVEL  C.L. OF DISCHARGE  SUMP DEPTH  PUMP LENGTH  GRADE TO DISCH.  GRADE TO LOW LIQUID LVL  GRADE TO 1ST STG IMPL'R.  SUBMERGENCE REQ'D			2	SUMP A	LINESHAFT SLEEVES: BEARING RETAINER: SHAFT ENCLOSING TUBE: DISCHARGE COLUMN: PRESSURE RATING: HEAD COLUMN PIPE BOWL  ARRANGEMENT	3
DISCHARGE HEAD:  BOWL SHAFT: LINESHAFT: LINESHAFT HARDFACING: BELLMOUTH: BOWL BEARING: LINESHAFT BEARING:  UMP DIMENSIONS: GRADE ELEVATION LOW LIQUID LEVEL C.L. OF DISCHARGE SUMP DEPTH PUMP LENGTH GRADE TO DISCH. GRADE TO LOW LIQUID LVL GRADE TO 1ST STG IMPL'R.			2	SUMP A	LINESHAFT SLEEVES: BEARING RETAINER: SHAFT ENCLOSING TUBE: DISCHARGE COLUMN: PRESSURE RATING: HEAD COLUMN PIPE BOWL  MRRANGEMENT	
DISCHARGE HEAD:  BOWL SHAFT:  LINESHAFT:  LINESHAFT HARDFACING:  BELLMOUTH:  BOWL BEARING:  LINESHAFT BEARING:  UMP DIMENSIONS:  GRADE ELEVATION  LOW LIQUID LEVEL  C.L. OF DISCHARGE  SUMP DEPTH  PUMP LENGTH  GRADE TO DISCH.  GRADE TO LOW LIQUID LVL  GRADE TO 1ST STG IMPL'R.  SUBMERGENCE REQ'D			2	SUMP A	LINESHAFT SLEEVES: BEARING RETAINER: SHAFT ENCLOSING TUBE: DISCHARGE COLUMN: PRESSURE RATING: HEAD COLUMN PIPE BOWL  ARRANGEMENT	3
DISCHARGE HEAD:  BOWL SHAFT:  LINESHAFT:  LINESHAFT HARDFACING:  BELLMOUTH:  BOWL BEARING:  LINESHAFT BEARING:  UMP DIMENSIONS:  GRADE ELEVATION  LOW LIQUID LEVEL  C.L. OF DISCHARGE  SUMP DEPTH  PUMP LENGTH  GRADE TO DISCH.  GRADE TO LOW LIQUID LVL  GRADE TO 1ST STG IMPL'R.  SUBMERGENCE REQ'D			2	SUMP A	LINESHAFT SLEEVES: BEARING RETAINER: SHAFT ENCLOSING TUBE: DISCHARGE COLUMN: PRESSURE RATING: HEAD COLUMN PIPE BOWL  ARRANGEMENT	3





#### احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

MECHANICAL DATA SHEETS FOR SLUG PUMPS شماره پیمان: نوع مدرك پروژه صادر کننده سريال

شماره صفحه: ۱۰ از ۱۰ ٤٨١٩-٣٢٠-٣٥٠ BK D05 GCS API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2101 A/B (Sheet 7 of 7) 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 22) 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)  $\left(8.2.2.5\right)$ TYPE OF INSPECTION FOR FABRICATIONS FOR CASTINGS RADIOGRAPHY ULTRASONIC INSPECTION MAGNETIC PARTICLE INSPECTION LIQUID PENETRANT INSPECTION VISUAL INSPECTION (all surfaces) REMARKS: