


 <p>Mokran Ab Niroo</p>	<p align="center">Front End Engineering Design for Utilities and Offsite of MOKRAN Petrochemical Complex-Stage 1</p>						<p align="center">Consultant</p>  <p align="center">GPZ Petrochemical</p>		
	<p align="center">Data Sheet for Main Sea Water Pump in Sea Water Intake (SWI)</p>								<p align="center">Page 1 of 11</p>
	Owner	Cons.	Unit Project No	Phase	Dis.	Doc.	Seq.	Rev.	
MAN	NPT	4103	FD	MA	DSH	0005	03		

Data Sheet for Main Sea Water Pump in Sea Water Intake (SWI)

03	11.Jul.2021	Approved For Design	M.H.Ebrahimi	A.Tafreshi	Sara Saleh Jalali
02	03.Jul.2021	Approved For Design	M.H.Ebrahimi	A.Tafreshi	Sara Saleh Jalali
01	29.Jun.2021	Approved For Design	M.H.Ebrahimi	A.Tafreshi	Sara Saleh Jalali
00	30.May.2021	Issued for Approval	M.H.Ebrahimi	A.Tafreshi	Sara Saleh Jalali
Rev.	Date	Description	Prepared	Checked	Approved

	Front End Engineering Design for Utilities and Offsite of MOKRAN Petrochemical Complex-Stage 1								
	Data Sheet for Main Sea Water Pump in Sea Water Intake (SWI)								
	Owner	Cons.	Unit Project No	Phase	Dis.	Doc.	Seq.		Rev.
MAN	NPT	4103	FD	MA	DSH	0005	03	Page 3 of 11	

1. INTRODUCTION

1.1 Project Description

Negin Mokran Petrochemical Development Co. has decided to develop a third hub of Petrochemical Industries in Chabahar Free Trade-Industrial Zone.

Based on detailed investigation, 1,200 hectares of Chabahar Free Trade- Industrial Zone with dimensions of 2.7×4.4 Km has been allocated for petrochemical zone.

Mokran Abniroo Co. is allocated for the development of the Central Utility & Offsite Facilities.

Front End Engineering Design for Utilities and Offsite of MOKRAN Petrochemical Complex-Stage 1, has been assigned to Namvaran Pazhouhesh va Tose-a (NPT) Company.

In STAGE 1 only two Methanol plant considered and utility will be designed based on this configuration.

1.2 Scope

The main purpose of this document is to provide data sheet for main sea water pump in sea water intake (SWI) for "Utilities and Offsite of MOKRAN Petrochemical Complex-Stage 1".

Nothing in this procedure should contradict or overrule the Contract. In case of any contradiction between this procedure and the Contract, the requirement of the Contract shall prevail.

2 GENERAL INFORMATION

2.1 Definitions and Terminology

In this project, Owner, Consultant and the title of project have been described as follows:

Project Title: Front End Engineering Design for Utilities and Offsite of MOKRAN Petrochemical Complex-Stage 1.

Owner: Mokran Abniroo Company (MAN)

Location: Chabahar Free Trade-Industrial Zone, Islamic Republic of Iran.

Consultant: Namvaran Pazhouhesh va Tose-a Company (NPT)

Subcontractor: Pars Petro Zagros

Supplier/Vendor: Means any firm, Company or Organization whose name is approved by Owner to supply project materials and equipment.




Shall / Must: Are used where a provision is mandatory.

Should: Is used where a provision is advisory only.

May: Is used where a provision is completely discretionary.

Will: Is normally used in connection with the action by the "Owner" rather than by a Consultant, SUBCONTRACTOR, supplier or vendor.

Consultant Project No.: 222

Owner 	Front End Engineering Design for Utilities and Offsite of MOKRAN Petrochemical Complex-Stage 1							Consultant  
	Data Sheet for Main Sea Water Pump in Sea Water Intake (SWI)							
	Owner	Cons.	Unit Project No	Phase	Dis.	Doc.	Seq.	
MAN	NPT	4103	FD	MA	DSH	0005	03	Page 4 of 11

2.2 Unit

International system of units (SI) shall be used for all drawings and documents.

2.3 Language




All Technical quotations, drawings and documentations shall be in English language.

2.4 Reference Codes and Standards

	Code/standard number	Code/standard title
1	API 610 11th edition (ISO 13709)	Centrifugal Pumps for Petroleum, Petrochemical and Natural Gas Industries
2	API 682	Pumps – Shaft Sealing System for Centrifugal and Rotary Pumps
3	API 614	Lubrication, Shaft-sealing, and Control-oil Systems and Auxiliaries for Petroleum, Chemical and Gas Industry Services
4	API 686	Machinery Installation and Installation Design
5	ISO 1940-1	Mechanical vibration- Balance quality requirements for rotors in a constant (rigid) state- Part 1: Specification and verification of balance tolerances
6	ISO 9906	Rotodynamic pumps -- Hydraulic performance acceptance tests
7	H.I. 14.6	Rotodynamic Pumps for Hydraulic-Performance Acceptance Tests
8	ASTM	American Society for Testing and Materials
9	ASME SEC II,	Materials
10	ASME SEC V,	Nondestructive Examination
11	ASME VIII	ASME Boiler and Pressure Vessel Code
12	ASME B 16.5	Pipe Flanges And Flanged Fittings NPS 1/2 Through NPS 24
13	ASME B16.47	Larger Diameter Steel Flanges: NPS 26 Through NPS 60

2.5 Applicable Project Document & Specifications

Specification for pumps

 Mokran Ab Niroo	Front End Engineering Design for Utilities and Offsite of MOKRAN Petrochemical Complex-Stage 1						Consultant  AT <i>Advanced Technology</i> <i>Research, Design and Engineering</i> <i>Oil, Gas, Petrochemical</i>  PPZ <i>Pure Petro Zagros</i>	
	Data Sheet for Main Sea Water Pump in Sea Water Intake (SWI)							
	Owner	Cons.	Unit Project No	Phase	Dis.	Doc.	Seq.	Rev.
MAN	NPT	4103	FD	MA	DSH	0005	03	
Page 5 of 11								

1	Note	APPLICABLE TO: PURCHASE	APPLICABLE NTL/INTNTL STANDARD: API-610	Rev
2		FOR: Mokran Petrochemical Complex	UNIT: RO & SWI Unit	
3		SITE: Chabahar	SERVICE: SEA WATER	
4		NO. REQ: 4 (3+1) (P-4102 A/B/C/D)	PUMP SIZE: _____	
5		MANUFACTURER: _____	MODEL: _____	
6				

LIQUID CHARACTERISTICS					
	Units	Maximum	Minimum	Note	
8	LIQUID TYPE OR NAME :	SEA WATER		Max & min values refer only to the property listed	
9	VAPOR PRESSURE (S/W) :	bar a	0.058		0.023
10	RELATIVE DENSITY :	1.03	1.027		
11	SPECIFIC HEAT (S/W) :	kJ/(kg-K)			
12	VISCOSITY (S/W) :	m Pas	1.2		0.8
OPERATING CONDITIONS (6.1.2)					
	Units	Maximum	Rated	Normal	Minimum
13	NPSHa Datum: _____				
14	C.L. Impeller				
15	PUMPING TEMPERATURE (S/W):	°C	35	25	18
17	FLOW :	m³/h	7777	7070	
18	DISCHARGE PRESSURE : (6.3.2)	barg	5.658		
19	SUCTION PRESSURE :	barg	1.2	0.2	0.2
20	DIFFERENTIAL PRESSURE :	bar	5.46		
21	DIFFERENTIAL HEAD :	m	65.62		
22	NPSH _A :	m	10.8		
23	HYDRAULIC POWER :	kW	1432.29		

03

SERVICE : **CONTINUOUS**

PUMPS OPERATE IN: _____

CORROSION DUE TO : (6.12.1.9) _____

EROSION DUE TO : (6.12.1.9) _____




H2S CONCENTRATION (ppm) : (6.12.1.12) _____

CHLORIDE CONCENTRATION (ppm) : **5 ppm NaOCl+Seawater**

PARTICULATE SIZE (DIA IN MICRONS) **3000**

PARTICULATE CONCENTRATION (PPM) _____

SITE AND UTILITY DATA				
1	LOCATION:			
26	OUTDOOR	UNHEATED		
27	MOUNTED AT : _____ ● TROPICALISATION REQD			
28	ELECTRIC AREA CLASSIFICATION: 6.1.22 ZONE Safe			
29	GROUP _____	TEMP CLASS _____		
30	SITE DATA :			
31	ELEVATION (MSL) :	4.6 m	BAROMETER :	1.013 bar
32	RANGE OF AMBIENT TEMPS:MIN / MAX 7 / 47 °C			
33	RELATIVE HUMIDITY: MIN / MAX 49 / 89 %			
34	UNUSUAL CONDITIONS: DUST			
35	UTILITY CONDITIONS :			
37	ELECTRICITY :			
38	VOLTAGE	6000	HEATING	
39	PHASE	3	CONTROL	
40	HERTZ	50	SHUTDOWN	
41	PERFORMANCE			
42	2.15	PROPOSAL CURVE NO.	RPM _____	Driver Type INDUCTION MOTOR
43	As Tested Curve No.			GEAR NO
44	IMPELLER DIA.:	RATED _____ MAX.	MIN. _____ mm	VARIABLE SPEED REQUIRED NO
45	18	RATED POWER _____ kW	EFFICIENCY _____ (%)	SOURCE OF VARIABLE SPEED _____
46	RATED CURVE BEP FLOW (at rated impeller dia) _____ m³/s			OTHER _____
47	MIN FLOW :	THERMAL _____ m³/s	STABLE _____ m³/s	MANUFACTURER _____
48	PREFERRED OPERATING REGION (6.1.11) _____ to _____ m³/s			NAMEPLATE POWER _____ kW
49	ALLOWABLE OPERATING REGION _____ to _____ m³/s			Nominal RPM _____
50	MAX HEAD @ RATED IMPELLER _____ m			RATED LOAD RPM _____
51	MAX POWER @ RATED IMPELLER (6.8.9) _____ kW			FRAME OR MODEL _____
52	NPSH3 AT RATED FLOW : _____ m			ORIENTATION VERTICAL
53	CL PUMP TO U/S BASEPLATE _____ m			LUBE _____
54	NPSH MARGIN AT RATED FLOW : _____ m			BEARING TYPE: _____
55	SPECIFIC SPEED (6.1.9) _____ m³/h, m, rpm			RADIAL _____ / _____
56	SUCTION SPECIFIC SPEED LIMIT _____ m³/h, m, rpm 11000			THRUST _____ / _____
57	SUCTION SPECIFIC SPEED _____ m³/h, m, rpm			STARTING METHOD Open Valve (Fully-Loaded)
58	MAX. ALLOW. SOUND PRESS. LEVEL REQD (6.1.14) _____ (dBA)			SEE DRIVER DATA SHEET
59	EST MAX SOUND PRESS. LEVEL _____ (dBA)			
60	MAX. SOUND POWER LEVEL REQ'D (6.1.14) _____			
61	EST MAX SOUND POWER LEVEL _____			

 Mokran Ab Niroo	Front End Engineering Design for Utilities and Offsite of MOKRAN Petrochemical Complex-Stage 1						Consultant  NTP Numerical Peshawar & T... (Inventor, Designer and Engineering) Oil, Gas, Petrochemical  PTD Pump Valve Engine	
	Data Sheet for Main Sea Water Pump in Sea Water Intake (SWI)							
	Owner	Cons.	Unit Project No	Phase	Dis.	Doc.	Seq.	Rev.
MAN	NPT	4103	FD	MA	DSH	0005	03	
							Page 6 of 11	

1	Note	CONSTRUCTION		Rev
3	API PUMP TYPE:	VS1	[Based on API 610 definitions] SEE ALSO PAGE 6	VERTICAL
4	NOZZLE CONNECTIONS:	(6.5.5)		
5		Size	Facing	Rating
6	SUCTION			
7	DISCHARGE	FF	300	SIDE
8	PRESSURE CASING AUX. CONNECTIONS:	(6.4.3.2)		
9		No.	Size	Type
10	BALANCE/LEAK OFF			
11	DRAIN			
12	VENT			
13	PRESSURE GAGE			
14	TEMP GAGE			
15	WARM-UP LINE			
17	Drain Valve Supplied By			
18	DRAINS MANIFOLDED			
19	VENT Valve Supplied By		SUPPLIER	
20	VENTS MANIFOLDED			YES
21	THREADED CONS FOR PIPELINE SERVICE & < 50°C (6.4.3.2)			
22	SPECIAL FITTINGS FOR TRANSITIONING (6.4.3.3)			
23	CYLINDRICAL THREADS REQUIRED (6.4.3.8)			
24	GUSSET SUPPORT REQUIRED			
25	MACHINED AND STUDDED CONNECTIONS (6.4.3.12)			
26	VS 6 DRAIN			
27	DRAIN TO SKID EDGE			
29	MATERIAL (6.12.1.1)			
30	APPENDIX H CLASS		D1-D2	
31	MIN DESIGN METAL TEMP (6.12.4.1)		0	°C
32	REDUCED-HARDNESS MATERIALS REQ'D (6.12.1.12.1)			
33	Applicable Hardness Standard (6.12.1.12.3)			
34	BARREL :			
35	COLUMN PIPE, D.BEND, CASE ;:		Duplex S.S	
36	DIFFUSERS		Duplex S.S	
37	IMPELLER :		Super Duplex S.S	
38	IMPELLER WEAR RING :		Duplex S.S	
39	CASE WEAR RING :		Duplex S.S	
40	SHAFT:		Super Duplex S.S	
41	Bowl (if VS-type)		Super Duplex S.S	
42	Inspection Class		Level 2	
43	BEARINGS AND LUBRICATION (6.10.1.1)			
44	BEARING (TYPE / NUMBER):	(6.11.4)		
45	RADIAL		/	
46	THRUST		/	
47	REVIEW AND APPROVE THRUST BEARING SIZE : (9.2.5.2.4)			YES
49	LUBRICATION :	(6.10.2.2) (6.11.3) (9.6.1)		
50	PRESSURE LUBE SYSTEM TO ISO 10438-		(9.2.6.5)	
50	ISO 10438 DATA SHEETS ATTACHED			
51	Pressurized Lube Oil System mtd on pump baseplate			
52	Location of Pressurized Lube Oil System mounted on baseplate :			
54	INTERCONNECTING PIPING PROVIDED BY		Supplier	
56	OIL VISC. ISO GRADE		VG	
57	CONSTANT LEVEL OILER :		REQUIRED	
		CASING MOUNTING:		
		CASING TYPE: (6.3.10)		DIFFUSER
		OH3 BACKPULLOUT LIFTING DEVICE REQD. (9.1.2.6)		
		CASE PRESSURE RATING:		
		MAWP : (6.3.6)		_____ bar g @ _____ °C
		HYDROTEST : 1.5 x MAWP		_____ bar g @ _____ °C
		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 1940-1 G1		NO
		SHRINK FIT -LIMITED MOVEMENT IMPELLERS (9.2.2.3)		
		COUPLING:(7.2.3) (7.2.13.f)		
		MANUFACTURER		
		MODEL		
		RATING (POWER/100 RPM)		
		SPACER LENGTH		_____ mm
		SERVICE FACTOR		≥1.5
		RIGID		NO
		COUPLING WITH HYDRAULIC FIT (7.2.10)		
		COUPLING BALANCED TO ISO 1940-1 G2.5 (7.2.3)		
		COUPLING WITH PROPRIETARY CLAMPING DEVICE (7.2.11)		
		COUPLING IN COMPLIANCE WITH (7.2.4)		API 671
		COUPLING GUARD STANDARD PER (7.2.13.a)		
		Window on Coupling Guard		
		BASEPLATE		
		API BASEPLATE NUMBER :		
		BASEPLATE CONSTRUCTION (7.3.14)		
		BASEPLATE DRAINAGE (7.3.1)		
		MOUNTING :		GROUTED
		NON-GROUT CONSTRUCTION : (7.3.13)		
		VERTICAL LEVELING SCREWS :		REQUIRED
		LONGITUDINAL DRIVER POSITIONING SCREWS :		
		SUPPLIED WITH :		
		• GROUT AND VENT HOLES		
		• 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		
		OTHER		
		Separate mounting ring is required.		
		REMARKS :		

1	Note	INSTRUMENTATION	SEAL SUPPORT SYSTEM MOUNTING	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) YES	
4		Number of Accelerometers	IDENTIFY LOCATION ON BASEPLATE	
5		Mounting Location of Accelerometers	INTERCONNECTING PIPING BY Supplier	
6		(1) on Top of motor and (2) on trust bearing housing		
7		PROVISION FOR MTG ONLY (6.10.2.10)		
8	3	Number of Accelerometers	MECHANICAL SEAL (6.8.1)	
9		Mounting Location of Accelerometers	SEE ATTACHED ISO 21049/API 682 DATA SHEET	
10			ADDITIONAL CENTRAL FLUSH PORT (6.8.9)	
11		FLAT SURFACE REQUIRED (6.10.2.11)	HEATING JACKET REQ'D. (6.8.11)	
12		Number of Accelerometers	MECHANICAL SEAL	
13		Mounting Location of Accelerometers	PER API 682 PLAN 13 or 31	
14			HEATING AND COOLING (6.1.17)	
15			COOLING REQ'D	
16			COOLING WATER PIPING PLAN	
17		VIBRATION PROBES (7.4.2.2)	COOLING WATER PIPING	
18		PROVISIONS FOR VIB. PROBES	FITTINGS	
19		NUMBER PER RADIAL BEARING	COOLING WATER PIPING MATERIALS	
20		NUMBER PER AXIAL BEARING	COOLING WATER REQUIREMENTS:	
21			BEARING HOUSING _____ m ³ /s	
22		MONITORS AND CABLES SUPPLIED BY (7.4.2.4)	HEAT EXCHANGER _____ m ³ /s	
23			TOTAL COOLING WATER _____ m ³ /s	
24		TEMPERATURE (7.4.2.3)	HEATING MEDIUM	
25		PROVISIONS FOR TEMP PROBES	OTHER	
26		RADIAL BEARING TEMP.	HEATING PIPING	
27		NUMBER PER RADIAL BEARING		
28		THRUST BEARING TEMP.		
29		NUMBER PER THRUST BEARING ACTIVE SIDE		
30		NUMBER PER THRUST BEARING INACTIVE SIDE		
31		TEMP. GAUGES (WITH THERMOWELLS) (9.1.3.6)	PIPING & APPURTENANCES	
32		PRESSURE GAUGE TYPE	MANIFOLD PIPING FOR PURCHASER CONNECTION (7.5.1.6)	
33		Remarks	VENT YES	
34		All accelerometers and temperature probes including	DRAIN	
35		electro-motor probes, shall be supplied with 4-20 mA output	COOLING WATER	
36		transmitters	TAG ALL ORIFICES (7.5.2.4)	
37			SOCKET WELD CONN ON SEAL GLAND (7.5.2.8)	
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				
61				
62				
63				
64				
65				
66				
67				

1	Note	SURFACE PREPARATION AND PAINT	TEST (Note 16)	Rev
2		MANUFACTURER'S STANDARD	SHOP INSPECTION (8.1.1)	Yes
3		OTHER (SEE BELOW)	PERFORMANCE CURVE	YES
4		SPECIFICATION NO. <u>MAN-NPT-0002-BD-PI-JSP-0009</u>	& DATA APPROVAL PRIOR TO SHIPMENT.	YES
5			TEST WITH SUBSTITUTE SEAL (8.3.3.2.b)	YES
6		PUMP:	MATERIAL CERTIFICATION REQUIRED	YES
7		PUMP SURFACE PREPARATION	CASING (6.12.1.8)	YES
8		PRIMER	IMPELLER	YES
9		FINISH COAT	SHAFT	YES
10			OTHER (Shaft sleeve & Wear rings)	YES
11		BASEPLATE:	CASTING REPAIR WELD PROCEDURE APPR REQD	YES
12		BASEPLATE SURFACE PREPARATION	(6.12.2.5) (6.12.3.1)	
13		PRIMER:	INSPECTION REQUIRED FOR CONNECTION WELDS (6.12.3.4.d)	
14		FINISH COAT	(6.12.3.4.e)	
15		DETAILS OF LIFTING DEVICES	MAG PARTICLE	YES
16		SHIPMENT: (8.4.1)	RADIOGRAPHY	YES
17		EXPORT BOXING REQUIRED	LIQUID PENETRANT	YES
18		OUTDOOR STORAGE MORE THAN 6 MONTHS	ULTRASONIC	YES
19		SPARE ROTOR ASSEMBLY PACKAGED FOR:	INSPECTION REQUIRED FOR CASTINGS	
20		ROTOR STORAGE ORIENTATION (9.2.8.2)	MAG PARTICLE	YES
21		SHIPPING & STORAGE CONTAINER FOR VERT STORAGE (9.2.8.3)	RADIOGRAPHY	YES
22			LIQUID PENETRANT	YES
23		N2 PURGE (9.2.8.4)	ULTRASONIC	YES
24		SPARE PARTS	HARDNESS TEST REQUIRED (8.2.2.7)	YES
25		START-UP	(If Required)	YES
26		NORMAL MAINTENANCE	ADDNL SUBSURFACE EXAMINATION (6.12.1.5) (8.2.1.3)	
27		WEIGHTS kg	FOR	
28			METHOD	
29			PMI TESTING REQUIRED (8.2.2.8)	YES
30			COMPONENTS TO BE TESTED	
31			RESIDUAL UNBALANCE TEST (J.4.1.2)	
32			NOTIFICATION OF SUCCESSFUL SHOP	
33			PERFORMANCE TEST (8.1.1.c) (8.3.3.5)	YES
34			BASEPLATE TEST (7.3.21)	WIT
35			HYDROSTATIC	WIT
36			HYDROSTATIC TEST OF BOWLS & COLUMN (9.3.13.2)	WIT
37			PERFORMANCE TEST	WIT
38			TEST IN COMPLIANCE WITH (8.3.3.2)	
39			TEST DATA POINTS TO (8.3.3.3)	
40			TEST TOLERANCES TO (8.3.3.4)	TABLE 15 API 610
41			NPSH (8.3.4.3.1) (8.3.4.3.4) (If Required)	WIT
42			NPSH-1ST STG ONLY (8.3.4.3.2)	
43			NPSH TESTING TO HI 1.6 OR ISO 9906 (8.3.4.3.3)	
44			TEST NPSHA LIMITED TO 110% SITE NPSHA (8.3.3.6)	
45			RETEST ON SEAL LEAKAGE (8.3.3.2.d)	NON-WIT
46			RETEST REQUIRED AFTER FINAL HEAD ADJ (8.3.3.7.b)	
47			COMPLETE UNIT TEST (8.3.4.4.1)	
48			SOUND LEVEL TEST (8.3.4.5)	WIT
49			CLEANLINESS PRIOR TO FINAL ASSEMBLY (8.2.2.6)	NON-WIT
50			LOCATION OF CLEANLINESS INSPECTION	
51			NOZZLE LOAD TEST	
52			CHECK FOR CO-PLANAR MOUNTING PAD SURFACES	
53			MECHANICAL RUN TEST UNTIL OIL TEMP STABLE	
54			4 HR. MECH RUN AFTER OIL TEMP STABLE (8.3.4.2.1)	WIT
55			4 HR. MECH RUN TEST (8.3.4.2.2)	
56			BRG HSG RESONANCE TEST (8.3.4.7)	
57			STRUCTURAL RESONANCE TEST (9.3.9.2)	
58			REMOVE / INSPECT HYDRODYNAMIC BEARINGS AFTER TEST	
59			(9.2.7.5)	NON-WIT
60			AUXILIARY EQUIPMENT TEST (8.3.4.6)	
61			EQUIPMENT TO BE INCLUDED IN AUXILIARY TESTS	
62			LOCATION OF AUXILIARY EQUIPMENT TEST	
			IMPACT TEST (6.12.4.3) PER EN 13445	
			PER ASME SECTION VIII	
			REMOVE CASING AFTER TEST	

Owner



**Mokran
Ab Niroo**

**Front End Engineering Design for Utilities and Offsite of
MOKRAN Petrochemical Complex-Stage 1**

Consultant



Page 9 of 11

Data Sheet for Main Sea Water Pump in Sea Water Intake (SWI)

Owner	Cons.	Unit Project No	Phase	Dis.	Doc.	Seq.	Rev.
MAN	NPT	4103	FD	MA	DSH	0005	03

1 Note VERTICAL TYPE (FIG 1.1)

2 REMARKS

3

4

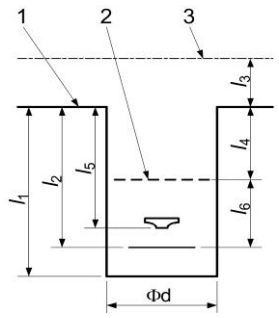
VERTICAL PUMPS			VERTICAL PUMPS (CONT'D)		
PUMP THRUST:	(+) UP	(-) DOWN	LINE SHAFT:		
STATIC THRUST	_____ N	_____ N	LINE SHAFT DIAMETER	_____ mm	
AT MIN FLOW	_____ N	_____ N	TUBE DIAMETER	_____ mm	
AT RATED FLOW	_____ N	_____ N	LINE SHAFT COUPLING:		
AT MAX FLOW	_____ N	_____ N	LINESHAFT CONNECTION	_____	
MAX THRUST	_____ N	_____ N	SUCTION STRAINER TYPE	_____	
SOLEPLATE REQUIRED		YES	LEVEL CONTROL	_____	
SOLEPLATE Length x Width	_____ m	X _____ m	IMPELLER COLLETS ACCEPTABLE	_____	
SOLEPLATE THICKNESS		_____ mm	HARDENED SLEEVES UNDER BEARINGS (9.3.10.5)	_____	
MOUNTING FLANGE REQUIRED		YES	RESONANCE TEST	_____	
COLUMN PIPE:			STRUCTURAL ANALYSIS (9.3.5)	_____	
DIAMETER		_____ mm	DRIVER ALIGNMENT SCREWS	_____	
LENGTH		_____ m	SUCTION CAN		
NUMBER		_____	SUCTION CAN	THICKNESS _____ mm	
SPACING		_____ m		LENGTH _____ m	
GUIDE BUSHINGS:				DIAMETER _____ mm	
NUMBER		_____	SEPARTATE MOUNTING PLATE (9.3.8.3.1)	_____	
LINE SHAFT BEARING SPACING		_____	PROVIDE SEPARATE SOLEPLATE (9.3.8.3.3)	_____	
GUIDE BUSHING LUBE:		Pumping Liq.	DRAIN PIPED TO SURFACE (9.3.13.5)	_____	
			BOWL HEAD CALCULATION REQUIRED	_____	

MATERIALS (additional)

SUCTION CAN / BARREL :	_____	LINESHAFT SLEEVES :	_____
DISCHARGE HEAD	_____	BEARING RETAINER :	_____
BOWL SHAFT :	_____	SHAFT ENCLOSING TUBE :	_____
LINESHAFT :	_____	DISCHARGE COLUMN :	_____
LINESHAFT HARDFACING :	_____	PRESSURE RATING:	MAWP HYDRO
BELLMOUTH :	_____	HEAD	_____ barg
BOWL BEARING :	_____	COLUMN PIPE	_____ barg
LINESHAFT BEARING :	_____	BOWL	_____ barg

SUMP ARRANGEMENT

SUMP DIMENSIONS :			
GRADE ELEVATION	1	4.6	m MSL (Mean Sea Level)
LOW LIQUID LEVEL	2	-3.8	m MSL
C.L. OF DISCHARGE	3	_____	m
SUMP DEPTH	l_1	11.6	m
PUMP LENGTH	l_2	_____	m
GRADE TO DISCH.	l_3	_____	m
GRADE TO LOW LIQUID LVL	l_4	8.4	m
GRADE TO 1ST STG IMPL'R.	l_5	_____	m
SUBMERGENCE REQ'D	l_6	_____	m
SUMP WIDTH	Φd	2.7	m




Owner



**Mokran
Ab Niroo**

**Front End Engineering Design for Utilities and Offsite of
MOKRAN Petrochemical Complex-Stage 1**

Consultant



Page 10 of 11

Data Sheet for Main Sea Water Pump in Sea Water Intake (SWI)

Owner	Cons.	Unit Project No	Phase	Dis.	Doc.	Seq.	Rev.
MAN	NPT	4103	FD	MA	DSH	0005	03

1 Note **Rev**
PRESSURE VESSEL DESIGN CODE REFERENCES

2 THESE REFERENCES MUST BE LISTED BY THE MANUFACTURER
 3 CASTING FACTORS USED IN DESIGN (TABLE 3)
 4 SOURCE OF MATERIAL PROPERTIES

6 WELDING AND REPAIRS

7 THESE REFERENCES MUST BE LISTED BY THE PURCHASER. (DEFAULT TO TABLE 10 IF NO PURCHASER PREFERENCE IS STATED)
 8 ALTERNATE WELDING CODES AND STANDARDS
 9 WELDING REQUIREMENT (APPLICABLE CODE OR STANDARD)
 10 WELDER/OPERATOR QUALIFICATION
 11 WELDING PROCEDURE QUALIFICATION
 12 NON-PRESSURE RETAINING STRUCTURAL WELDING SUCH AS BASEPLATES OR SUPPORTS
 13 MAGNETIC PARTICLE OR LIQUID PENETRANT EXAMINATION OF PLATE EDGES
 14 POSTWELD HEAT TREATMENT
 15 POSTWELD HEAT TREATMENT OF CASING FABRICATION WELDS

17 MATERIAL INSPECTION (Material inspection shall be based on approved ITP)



18 THESE REFERENCES MUST BE LISTED BY THE PURCHASER DEFAULT TO TABLE 14 NO

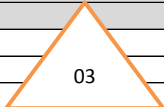
19 ALTERNATIVE MATERIAL INSPECTIONS AND ACCEPTANCE CRITERIA (SEE TABLE 14) (8.2.2.5)

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

26 **REMARKS :**

27 _____
 28 _____
 29 _____
 30 _____
 31 _____
 32 _____
 33 _____
 34 _____
 35 _____
 36 _____
 37 _____
 38 _____
 39 _____
 40 _____
 41 _____
 42 _____
 43 _____
 44 _____
 45 _____
 46 _____
 47 _____
 48 _____
 49 _____
 50 _____
 51 _____
 52 _____
 53 _____
 54 _____
 55 _____
 56 _____
 57 _____
 58 _____
 59 _____
 60 _____
 61 _____

	Front End Engineering Design for Utilities and Offsite of MOKRAN Petrochemical Complex-Stage 1						Consultant 	
	Data Sheet for Main Sea Water Pump in Sea Water Intake (SWI)							
	Owner	Cons.	Unit Project No	Phase	Dis.	Doc.	Seq.	Rev.
MAN	NPT	4103	FD	MA	DSH	0005	03	Page 11 of 11

1	Note		Rev
2		Note 1: REFER TO "Basic Engineering Design Data for BEDD MAN-NPT-0002-FD-PR-DBS-0001".	
3		Note 2: ELECTRIC MOTORS SHALL BE GOVERNED BY "Job Specification for MV Motor # MAN-NPT-0002-FD-EL-JSP-0020" .	
4		Note 3: TO BE REVIEWED AND CONFIRMED BY PUMP VENDOR.	
5		Note 4: MDMT = 0° C	
6		Note 5: NPSH REQUIRED TEST REFERRED TO Job Specification for Centrifugal Pump MAN-NPT-0002-FD-MA-JSP-0005".	
7		Note 6: INLET LINE: N/A, OUTLET LINE: 32".	
8		Note 7: MAXIMUM ALLOWABLE SHUT-OFF PRESSURE =8.6 BARG. AT IMP. SHUT-OFF PRESSURE HAS BEEN CHECKED ACCORDING TO	
9		THE REQUIREMENTS OF "Process Design Criteria MAN-NPT-0002-FD-PR-DCR-0001".	
10		Note 8: IT IS CALCULATED BASED ON MIN. DENSITY.	
11		Note 9: REFER TO PID (MAN-NPT-4103-FD-PR-PID-0003#Piping and Instrumentation Diagram in Sea Water Intake (SWI))	
12		Note 10: (DELETED)	
13		Note 11: DESIGN TEMPERATURE: 85° C	
14		Note 12: MAX. NOISE LEVEL SHALL BE SPECIFIED AND NOT MORE THAN 85 DBA@ 1 METER	
15		Note 13: MOTORS SHALL HAVE THE VENDOR'S PROVEN STANDARD INSULATION SYSTEM ACCORDING TO CLASS "F". THE MINIMUM DEGREE OF	
16		PROTECTION IS IP55. THE FULL LOAD TEMPERATURE RISE SHALL BE LIMITED TO CLASS "B" AT AMBIENT CONDITIONS.	
17		Note 14: THE PUMP IS VERTICAL AND VERTICAL DISTANCE BETWEEN SUCTION AND DISCHARGE IS 11.6 M APP. DIFFERENTIAL PRESSURE AT	
18		IMPELLER OUTLET IS 6.83 BARG. DIFFERENTIAL PRESSURE AT IMPELLER IS 6.63 BAR. PRESSURE AT DISCHARGE FLANGE IS 5.66 BARG.	
19		Note 15: VENDOR SHALL SUGGEST THE LIST OF STARTUP AND TWO YEARS OF OPERATION WITH HIS PROPOSAL FOR PURCHASER REVIEW AND	
20		APPROVAL. PROJECT SPECIFICATIONS SHALL BE CONSIDERED FOR PREPARATIONS OF THOSE LISTS.	
21		Note 16: VENDOR SHALL SUBMIT AN ITP (INSPECTION AND TEST PLAN) FOR PURCHASER REVIEW AND APPROVAL WITH HIS PROPOSAL.	
22		Note 17: FOR SEAWATER ANALYSIS, REFER TO "PROCESS DESIGN BASIS IN SEA WATER INTAKE (SWI)#MAN-NPT-4102-FD-PR-DBS-0001"	
23		Note 18: ASSUMING A TYPICAL EFFICIENCY OF 77.5% FOR THE PUMP, BHP WILL BE 1848 KW. IN SUCH CONDITION A MOTOR WITH NAMEPLATE	01
24		POWER GREATER THAN 2033 KW IS REQUIRED.	01
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			
51			
52			
53			
54			
55			
56			
57			
58			
59			
60			
61			