



SUPPLIER DOCUMENT COVER SHEET

Greater Stella Development Project



Supplier Name: TM.P

Purchase Order Title: JI-675-PPFM-002# EXPORT OIL & BOOSTER PUMPS

Equipment / Tag Number: P-0152 A/B EXPORT OIL PIPELINE PUMPS & MOTORS

Supplier's Document No.: 1252195001 R04

Supplier's Issue Record

Rev	Date	Issue	By	Checked	Approved
05	01/09/14	REVIEW	CARRA	LAZZERI	MUSSI
04	26/06/13	REVIEW	LAZZERI	LAZZERI	MUSSI
03	20/05/13	REVIEW	LAZZERI	LAZZERI	MUSSI
02	06/03/13	REVIEW	LAZZERI	LAZZERI	MUSSI
01	30/01/13	FIRST ISSUE	LAZZERI	LAZZERI	MUSSI

Project Document Number

Purchase Order Number	Document Type Code	Discipline Code	Seq. No	Revision	Revision Date
JI-675-PPFM-002	- MD2	- M	- 001	05	01/09/14

DOCUMENT TITLE: P-0152 A/B PUMP / MOTOR DATA SHEETS

SUPPLIER DOCUMENT REVIEW

Purchaser's review of Supplier's documents does not relieve Supplier of the responsibility for correctness under the Purchase Order. Permission to proceed does not constitute acceptance of design, detail and calculations, test methods or materials developed or selected by the Supplier and does not relieve the Supplier from full compliance with the Purchase Order or any other obligations, nor detract from any of the Purchaser's rights.


	A	B	C	D	E
SIGNATURE	<i>M. Carrà</i>				
DATE	5th JAN 2015				

- CODE 1** - Accepted. Work may proceed.
- CODE 2** - Accepted With Comments. Revise and re-submit, but work may proceed subject to the incorporation of Purchaser comments.
- CODE 3** - Rejected. Revise and re-submit, but work may NOT proceed until the incorporation of Purchaser comments and approval received by Supplier
- CODE 4** - Information only Accepted for Information Only.

IMPORTANT

If the Supplier considers that any comments made by the Purchaser change the Scope of Supply the Supplier shall advise the price and delivery implications of such changes within five working days of receipt. The Supplier must not incorporate such changes without prior approval of the Purchaser of the revised price and/or delivery period. RETROSPECTIVE CLAIMS WILL NOT BE CONSIDERED.

The document consists of this front sheet plus
15 pages.

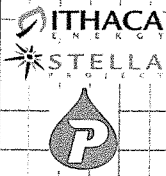
	PROJECT: GREATER STELLA AREA DEVELOPMENT	PROJECT NO: JU11805D	CLIENT: ITHACA ENERGY	DOCUMENT NUMBER: J1-675-PPFM-002-MD2-M-01	
	DOCUMENT TITLE: Datasheet for Export Oil Pipeline PUMPS P-0152 A/B	ORIGINATOR: Petrofac	REV: 5	DATE: 1-Sep-14	PAGE NO 2 OF 16

REVISION

NOTES

1	Notes:	(Referenced on the datasheet as notation '(x)' where x is the NOTE number)																																																																																													
2	1	Please refer to Centrifugal Pump Specification; FPF1-ST-G0001-M-SPE-0007.																																																																																													
3	2	This datasheet defines the operating parameters for the main oil export & oil booster pump for three operating scenarios, namely:-																																																																																													
4		1. FPS via Gael Wye 2. J-Block and 3. Tanker Loading																																																																																													
5		The Supplier shall select a pump configuration that can satisfy the three operating scenarios. Bidder to propose their recommended main oil export pumps configuration																																																																																													
6		to achieve the duties specified. Booster pumps shall only be considered for the tanker loading scenario. Weight shall be kept to a minimum where possible..																																																																																													
7	3	Export Oil Pipeline Pump (P-0152A/B) and Oil Pipeline Booster Pump (P-0158A/B) shall be considered together. The Oil Pipeline Booster Pump discharge pressure and the																																																																																													
8		Export Pump suction pressure may varied to optimise selection. Booster pumps shall fulfil 100% of the tanker loading duty. The main pumps shall not be used for tanker loading.																																																																																													
9	4	Export Oil Pipeline Pump (P-0152A/B) and Oil Pipeline Booster Pump (P-0158A/B) shall be 2 x 100%.																																																																																													
10	5	At rated conditions there is an estimated equipment pressure drop and line loss of 6.1 bar between Oil Pipeline Booster Pump discharge and Export Oil Pipeline Pump suction.																																																																																													
11	6	Deleted																																																																																													
12	7	Deleted																																																																																													
13	8	Deleted																																																																																													
14	9	During normal operation there's no H2S but, for design purposes, a max concentration of 20ppmv is to be considered. Refer to Pump Specification; FPF1-ST-G0001-M-SPE-0007.																																																																																													
15	10	Supplier to select materials of construction taking account of Note 9 and operating / design conditions. All package materials of construction to be submitted to the Contractor																																																																																													
16		Material Engineer for approval.																																																																																													
17	11	A Plan 53 seal arrangement shall be provided. The seal manufacturer shall confirm the seal selection, barrier fluid and accumulator pressure and state this in their bid.																																																																																													
18	12	Refer to Document Number FPF1-ST-G00001-M-SPE-0003, 'Environmental, Vessel Motion and Utility Data' [4]. Supplier shall confirm utility requirements.																																																																																													
19	13	Supplier to advise the Contractor of the NPSH requirement for both Oil Pipeline Booster Pump and Oil Export Pipeline Pump.																																																																																													
20	14	From the oil production profiles it shows that the oil production rate declines after the first few years. Motor rating sized for end of curve, S.G=1.0.																																																																																													
21	15	The Export Oil Pipeline Pump suction temperature is anticipated to be within ±7°C from the normal temperature of 50°C. Vendor to advise high alarm and high-high temperature																																																																																													
22		trip requirement on pump under minimum flow / dead head conditions.																																																																																													
23	16	Deleted																																																																																													
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26	18	Booster Pumps and Export Oil Pipeline Pumps shall not exceed flange pressure ratings of 150# and 1500# respectively.																																																																																													
27	19	Booster and Export Oil Pumps shall meet the oil turndown requirement list below:-																																																																																													
28		Battery Limit Pressure Vs Oil Flow																																																																																													
29		<table border="1"> <thead> <tr> <th rowspan="2">Year</th> <th rowspan="2">Production Profile, Std bpd</th> <th colspan="3">Battery Limit Pressure Vs Oil Flow</th> </tr> <tr> <th>FPS via the Gael Wye</th> <th>J-Block</th> <th>Tanker Loading</th> </tr> <tr> <th></th> <th></th> <th>Pipeline Inlet Pressure, barg</th> <th>Pipeline Inlet Pressure, barg</th> <th>Pipeline Inlet Pressure, barg</th> </tr> </thead> <tbody> <tr><td>2014</td><td>25,000</td><td>167.00</td><td>110.00</td><td>4.00</td></tr> <tr><td>2015</td><td>25,000</td><td>167.00</td><td>110.00</td><td>4.00</td></tr> <tr><td>2016</td><td>17,000</td><td>156.25</td><td>104.09</td><td>2.76</td></tr> <tr><td>2017</td><td>12,500</td><td>152.00</td><td>101.75</td><td>2.28</td></tr> <tr><td>2018</td><td>6,000</td><td>148.15</td><td>99.63</td><td>1.83</td></tr> <tr><td>2019</td><td>4,900</td><td>147.65</td><td>99.36</td><td>1.77</td></tr> <tr><td>2020</td><td>3,000</td><td>147.29</td><td>99.16</td><td>1.73</td></tr> <tr><td>2021</td><td>2,500</td><td>147.20</td><td>99.11</td><td>1.72</td></tr> <tr><td>2022</td><td>2,000</td><td>147.19</td><td>99.07</td><td>1.71</td></tr> <tr><td>2023</td><td>1,000</td><td>147.03</td><td>99.02</td><td>1.70</td></tr> <tr><td>2024</td><td>1,000</td><td>147.03</td><td>99.02</td><td>1.70</td></tr> <tr><td>2025</td><td>1,000</td><td>147.03</td><td>99.02</td><td>1.70</td></tr> <tr><td>2026</td><td>1,000</td><td>147.03</td><td>99.02</td><td>1.70</td></tr> <tr><td>2027</td><td>1,000</td><td>147.03</td><td>99.02</td><td>1.70</td></tr> <tr><td>2028</td><td>1,000</td><td>147.03</td><td>99.02</td><td>1.70</td></tr> <tr><td>2029</td><td>1,000</td><td>147.03</td><td>99.02</td><td>1.70</td></tr> </tbody> </table>	Year	Production Profile, Std bpd	Battery Limit Pressure Vs Oil Flow			FPS via the Gael Wye	J-Block	Tanker Loading			Pipeline Inlet Pressure, barg	Pipeline Inlet Pressure, barg	Pipeline Inlet Pressure, barg	2014	25,000	167.00	110.00	4.00	2015	25,000	167.00	110.00	4.00	2016	17,000	156.25	104.09	2.76	2017	12,500	152.00	101.75	2.28	2018	6,000	148.15	99.63	1.83	2019	4,900	147.65	99.36	1.77	2020	3,000	147.29	99.16	1.73	2021	2,500	147.20	99.11	1.72	2022	2,000	147.19	99.07	1.71	2023	1,000	147.03	99.02	1.70	2024	1,000	147.03	99.02	1.70	2025	1,000	147.03	99.02	1.70	2026	1,000	147.03	99.02	1.70	2027	1,000	147.03	99.02	1.70	2028	1,000	147.03	99.02	1.70	2029	1,000	147.03	99.02	1.70
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30	20	The export oil discharge line is prone to plugging due to waxy gel formation at low temperature during shutdown. The required gel start pressure at the inlet of the export																																																																																													
31		pipeline is stated below:																																																																																													
32		<table border="1"> <thead> <tr> <th>Export Route</th> <th>Gel Start Pressure at the pipeline inlet, barg</th> </tr> </thead> <tbody> <tr> <td>FPS Via the Gael Wye</td> <td>207</td> </tr> <tr> <td>J-Block</td> <td>below 139</td> </tr> <tr> <td>Tanker Loading</td> <td>8, 1</td> </tr> </tbody> </table>	Export Route	Gel Start Pressure at the pipeline inlet, barg	FPS Via the Gael Wye	207	J-Block	below 139	Tanker Loading	8, 1																																																																																					
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39																																																																																															
40	21	It is preferred to have a common pump configuration to handle the gel-start and turndown requirements for the three export routes. If that cannot be achieved in a single, common																																																																																													
41		casing, a rotor / internals change will be acceptable. However, any reduced capacity pump shall still need to meet the gel-start requirement . Supplier to advise their best																																																																																													
42		option to meet all the gel-start and turndown requirements.																																																																																													
43																																																																																															
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45																																																																																															
46	22	There are three potential oil export routes at the flowrate of 25,000 std bpd. Each of the three routes has different hydraulic requirements. The three routes are under consideration																																																																																													
47		and the corresponding pipeline inlet pressures, design pressures & temperatures are shown below:-																																																																																													
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55	23	For the tanker loading option, only the booster pumps shall be in operation.																																																																																													
56	24	Booster pumps shall be identical for the three export routes considered.																																																																																													
57	25	Pumps shall deliver 25,000 bpd at the stock tank condition, i.e. 15 deg C and 1atm.																																																																																													
58	26	The booster pump design temperature is 110 deg C. The maximum suction pressure is 4.1barg. Supplier to provide a booster pump design pressure limit not exceeding 17.3 barg																																																																																													
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65	1	Vendor to advise shutoff pressure.																																																																																													
66	2	Deleted																																																																																													
67	3	Requirement / extent of materials and testing in accordance with ISO 15156, Parts 1, 2 and 3.																																																																																													
68																																																																																															

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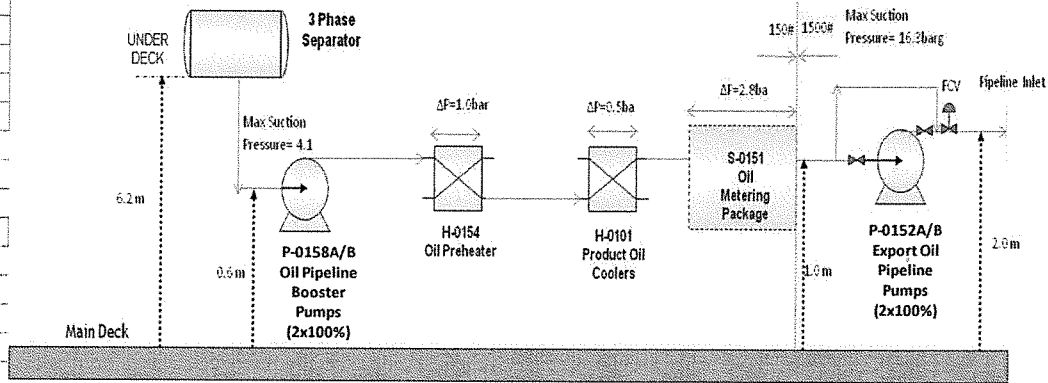


PROJECT:	PROJECT NO:	CLIENT:	DOCUMENT NUMBER:		
GREATER STELLA AREA DEVELOPMENT	JU11805D	ITHACA ENERGY	JI-675-PPFM-002-MD2-M-01		
DOCUMENT TITLE:	ORIGINATOR:	REV:	DATE:	PAGE NO	
Datasheet for Export Oil Pipeline PUMPS P-0152 A/B	Petrofac	5	1-Sep-14	3	OF 16

REVISION


NOTES

1 Notes: (Referenced on the datasheet as notation '(x)' where x is the NOTE number)



	Booster Suction	Booster Discharge	Main Pump Suction	Main Pump Discharge	Pipeline Inlet
Export Route	bara	bara	bara	bara	bara
FPS Via Gael Wye	2.5	12.2	6.2	169.7	168.0
J-Block	2.5	12.2	6.2	112.7	111.0
Tanker Loading	2.5	12.2	-	-	5.0


##

	PROJECT: GREATER STELLA AREA DEVELOPMENT	PROJECT NO: JU11805D	CLIENT: ITHACA ENERGY	DOCUMENT NUMBER: JI-675-PPMF-002-MD2-M-01	
	DOCUMENT TITLE: Datasheet for Export Oil Pipeline PUMPS P-0152 A/B	ORIGINATOR: Petrofac	REV: 5	DATE: 1-Sep-14	PAGE NO 5 OF 16

REVISION

CENTRIFUGAL PUMP DATA SHEET

1	Note	APPLICABLE TO: ENQUIRY	UNITS	SI
2		FOR ITHACA ENERGY	APPLICABLE NTL/INTNTL STANDARD:	
3		SITE GREATER STELLA AREA DEVELOPMENT	UNIT	P-0152 A/B
4	(4)	NO. REQ 2x100% PUMP SIZE	SERVICE	Export Pipeline Pump
5		MANUFACTURER	TYPE	Centrifugal No. STAGES
LIQUID CHARACTERISTICS				
7		LIQUID TYPE OR NAME:	Units	Maximum
8		VAPOR PRESSURE:	bara	2,1
9		RELATIVE DENSITY:		0,804
10		SPECIFIC HEAT:	kJ/(kg-K)	2,144
11		VISCOSITY:	cP	3,2
12				2,4
OPERATING CONDITIONS (6.1.2) - Note 16				
13		NPSHa Datum:	Units	Maximum
14		PUMPING TEMPERATURE:	°C	50
15	(2-9)	FLOW:	m ³ /hr	170,0
16		DISCHARGE PRESSURE: (6.3.2)	bara	112,7
17		SUCTION PRESSURE:	bara	6,2
18	(3)	DIFFERENTIAL PRESSURE:	bar	106,5
19		DIFFERENTIAL HEAD:	m	1350
20	(13)	NPSH _a :	m	50
21		HYDRAULIC POWER:	kW	503,0
SITE AND UTILITY DATA				
24		LOCATION:	OUTDOOR UNHEATED OFFSHORE	
25		MOUNTED AT:	DECK <input type="radio"/> TROPICALISATION REQD	
26		ELECTRIC AREA CLASSIFICATION:	6.1.22 ZONE 2	
27		GROUP	II B TEMP CLASS T3	
28		SITE DATA:	ELEVATION (MSL): 34 m BAROMETER: mmHg	
29		RANGE OF AMBIENT TEMPS: MIN / MAX	-7,5 / 25,6 C	
30		RELATIVE HUMIDITY: MIN / MAX	100 / 100 %	
31		UNUSUAL CONDITIONS:		
32		UTILITY CONDITIONS:		
33		ELECTRICITY:	DRIVERS	HEATING
34		VOLTAGE	6.6kV	110
35		PHASE	3	1
36		HERTZ	60	60
37			CONTROL	SHUTDOWN
38			110AC	
39				
40				
PERFORMANCE				
41		PROPOSAL CURVE NO. (3-4)	JI-675-PPMF-002-MD2-M-01 (TMP DOC. REF . 1252195002) RPM 2720 (J-Block)	
42		As Tested Curve No.		
43		IMPELLER DIA: RATED	336 MAX.	342,5 MIN.
44		RATED POWER	720,2 kW	EFFICIENCY 69,1 (%)
45		RATED CURVE BEP FLOW (at rated impeller dia)	158 m ³ /hr	
46		MIN FLOW: THERMAL	35 m ³ /hr	STABLE
47		PREFERRED OPERATING REGION (6.1.11)	111 to 190 m ³ /hr	
48		ALLOWABLE OPERATING REGION	35 to 205 m ³ /hr	
49		MAX HEAD @ RATED IMPELLER	1809 m	
50		MAX POWER @ RATED IMPELLER	750 kW (6.8.9)	
51		NPSH3 AT RATED FLOW:	6,70 m	
52		CL PUMP TO U/S BASEPLATE	abt. 1 m	
53		NPSH MARGIN AT RATED FLOW:	43,30 m	
54		SPECIFIC SPEED (6.1.9)	m ³ /s, rpm, m 14	
55		SUCTION SPECIFIC SPEED LIMIT	208	
56		SUCTION SPECIFIC SPEED	m ³ /s, rpm, m 143,2	
57		MAX. ALLOW. SOUND PRESS. LEVEL REQD (6.1.14)	(dBA)	
58		EST MAX SOUND PRESS. LEVEL	SEE PAG 15 (dBA)	
59		MAX. SOUND POWER LEVEL REQ'D (6.1.14)		
60		EST MAX SOUND POWER LEVEL		
61				
62				
63				
64				
DRIVER (7.1.5)				
42		Driver Type	MOTOR	
43		GEAR	NO	
44		VARIABLE SPEED REQUIRED	YES	
45		SOURCE OF VARIABLE SPEED	Motor	
46		OTHER		
47		MANUFACTURER		
48		NAMEPLATE POWER	1500 kW	
49		Nominal RPM/MIN RPM TURN DOWN	3564 / 2700	
50		RATED LOAD RPM		
51		FRAME OR MODEL		
52		ORIENTATION		
53		LUBE		
54		BEARING TYPE:	RADIAL	
55		THRUST	/	
56		STARTING METHOD		
57		SEE DRIVER DATA SHEET		

	PROJECT: GREATER STELLA AREA DEVELOPMENT	PROJECT NO: JU11805D	CLIENT: ITHACA ENERGY	DOCUMENT NUMBER: JI-675-PPFM-002-MD2-M-01	
	DOCUMENT TITLE: Datasheet for Export Oil Pipeline PUMPS P-0152 A/B	ORIGINATOR: Petrofac	REV: 5	DATE: 1-Sep-14	PAGE NO 6 OF 16

REVISION

CENTRIFUGAL PUMP DATA SHEET

1	Note	CONSTRUCTION	
2	API PUMP TYPE:	BB5 [Based on API 610 definitions]	CASING MOUNTING: CENTERLINE
3			CASING TYPE: (6.3.10) DIFFUSER
4	NOZZLE CONNECTIONS:	(6.5.5)	OH3 BACKPULLOUT LIFTING DEVICE REQD. (9.1.2.6)
5			CASE PRESSURE RATING:
6	SUCTION	Size Facing Rating Position	MAWP: (6.3.6) 228 barg @ 60 °C
7	DISCHARGE	6" RTJ 1500 TOP	HYDROTEST: 342 barg @ amb °C
8	PRESSURE CASING AUX. CONNECTIONS: (6.4.3.2)		HYDROTEST OH PUMP AS ASSEMBLY YES
9		No. Size Type Facing Rating Posn.	SUCT'N PRESS. REGIONS DESIGNED FOR MAWP YES
10	BALANCE	NOTE (1)	
11	DRAIN	1 3/4" RTJ 1500 Bottom	ROTATION: (VIEWED FROM COUPLING END) CW
12	VENT		• IMPELLERS INDIVIDUALLY SECURED: YES
13	PRESSURE GAGE		• BOLT OH 3/4/5 PUMP TO PAD / FOUNDATION :
14	TEMP GAGE		• PROVIDE SOLEPLATE FOR OH 3/4/5 PUMPS
15	WARM-UP LINE		ROTOR:
16			SHAFT FLEXIBILITY INDEX (SFI) (9.1.1.3)
17	Drain Valve Supplied By	SUPPLIER	First Critical Speed Wet (Multi stage pumps only)
18	DRAINS MANIFOLDED	YES	COMPONENT BALANCE TO ISO 1940 G 1.0
19	VENT Valve Supplied By	(pump self venting) N.A	SHRINK FIT -LIMITED MOVEMENT IMPELLERS (9.2.2.3)
20	VENTS MANIFOLDED		
21	THREADED CONS FOR PIPELINE SERVICE & < 50°C (6.4.3.2)		COUPLING:(7.2.3) (7.2.13.f)
22	SPECIAL FITTINGS FOR TRANSITIONING (6.4.3.3)		MANUFACTURER
23	CYLINDRICAL THREADS REQUIRED (6.4.3.8)		MODEL
24	GUSSET SUPPORT REQUIRED		RATING (POWER/100 RPM)
25	MACHINED AND STUDDED CONNECTIONS (6.4.3.12)		SPACER LENGTH
26	VS 6 DRAIN		SERVICE FACTOR
27	IFE DRAIN TO SKID EDGE	YES	RIGID
28			COUPLING WITH HYDRAULIC FIT (7.2.10)
29	MATERIAL (6.12.1.1)		COUPLING BALANCED TO ISO 1940-1 G6.3 (7.2.3)
30	APPENDIX H CLASS	S-6	COUPLING WITH PROPRIETARY CLAMPING DEVICE (7.2.11)
31	MIN DESIGN METAL TEMP (6.12.4.1)		COUPLING IN COMPLIANCE WITH (7.2.4)
32	REDUCED-HARDNESS MATERIALS REQ'D (6.12.1.12.1)	YES	COUPLING GUARD STANDARD PER (7.2.13.a)
33	Applicable Hardness Standard (6.12.1.12.3)		Window on Coupling Guard
34	BARREL :	ASTM A487 CA6NM cl B (a)	
35	CASE :		
36	DIFFUSERS	ASTM A487 CA6NM cl B (a)	BASEPLATE
37	IMPELLER :	ASTM A487 CA6NM cl B (a)	API BASEPLATE NUMBER :
38	IMPELLER WEAR RING :	ASTM A473 Tp. 410 (a)	BASEPLATE CONSTRUCTION (7.3.14)
39	CASE WEAR RING :	ASTM A473 Tp. 410+HF (a)	BASEPLATE DRAINAGE (7.3.1)
40	SHAFT:	A182 F6NM (a)	MOUNTING :
41	Bowl (if VS-type)		NON-GROUT CONSTRUCTION : (7.3.13)
42	Inspection Class		VERTICAL LEVELING SCREWS :
43	BEARINGS AND LUBRICATION (6.10.1.1)		LONGITUDINAL DRIVER POSITIONING SCREWS : REQUIRED
44	BEARING (TYPE / NUMBER): (6.11.4)		SUPPLIED WITH :
45	RADIAL	SLEEVE /	• GROUT AND VENT HOLES NO
46	THRUST	TILT PAD /	• DRAIN CONNECTION YES
47	REVIEW AND APPROVE THRUST BEARING SIZE : (9.2.5.2.4)		MOUNTING PADS SIZED FOR BASEPLATE LEVELING (7.3.5)
48			MOUNTING PADS TO BE MACHINED (7.3.6)
49	LUBRICATION : (6.10.2.2) (6.11.3) (9.6.1)	PRESSURE LUBE	PROVIDE SPACER PLATE UNDER ALL EQUIPMENT FEET
50	PRESSURE LUBE SYSTEM TO ISO 10438-	(9.2.6.5)	OTHER
51	ISO 10438 DATA SHEETS ATTACHED		
52	Pressurized Lube Oil System mtd on pump baseplate		REMARKS :
53	Location of Pressurized Lube Oil System mounted on baseplate :		
54			
55	INTERCONNECTING PIPING PROVIDED BY		
56			
57	OIL VISC. ISO GRADE	VG	
58	CONSTANT LEVEL OILER :		
59			NOTE
60			
61			(a) materials meet the requirement of the NACE MR0175 / ISO 15156
62			NOTE (1):
63			BALANCE LINE (INTERNAL CONNECTION)
64			DE side 2 1/2" 1500#RF
65			NDE side 2x 1 1/4" 1500#RF
66			
67			



PROJECT: GREATER STELLA AREA DEVELOPMENT	PROJECT NO: JU11805D	CLIENT: ITHACA ENERGY	DOCUMENT NUMBER: J1-675-PPFM-002-MD2-M-01	
DOCUMENT TITLE: Datasheet for Export Oil Pipeline PUMPS P-0152 A/B	ORIGINATOR: Petrofac	REV: 5	DATE: 1-Sep-14	PAGE NO 7 OF 16

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CENTRIFUGAL PUMP DATA SHEET

1	Note	INSTRUMENTATION	SEAL SUPPORT SYSTEM MOUNTING
2		SEE ATTACHED API-670 DATA SHEET	SEAL SUPPORT SYSTEM MOUNTED ON PUMP BASEPLATE
3		ACCELEROMETER (7.4.2.1)	(7.5.1.4) <input checked="" type="checkbox"/> YES
4		Number of Accelerometers	IDENTIFY LOCATION ON BASEPLATE
5		Mounting Location of Accelerometers	INTERCONNECTING PIPING BY <input type="text" value="Supplier"/>
6		X & Y mounted per bearing on pump and motor	MECHANICAL SEAL (6.8.1)
7		PROVISION FOR MTG ONLY (6.10.2.10) <input checked="" type="checkbox"/> YES	SEE ATTACHED ISO 21049/API 682 DATA SHEET <input checked="" type="checkbox"/> YES
8		Number of Accelerometers	ADDITIONAL CENTRAL FLUSH PORT (6.8.9)
9		Mounting Location of Accelerometers	HEATING JACKET REQ'D. (6.8.11)
10		FLAT SURFACE REQUIRED (6.10.2.11) <input checked="" type="checkbox"/> YES	HEATING AND COOLING (6.1.17)
11		Number of Accelerometers	COOLING REQ'D <input checked="" type="checkbox"/> YES
12			COOLING WATER PIPING PLAN <input type="text" value="M"/>
13			COOLING WATER PIPING <input type="text" value="FITTINGS"/>
14			COOLING WATER PIPING MATERIALS <input type="text" value="ASTM A106GRB"/>
15		VIBRATION PROBES (7.4.2.2)	COOLING WATER REQUIREMENTS:
16		PROVISIONS FOR VIB. PROBES <input checked="" type="checkbox"/> YES	BEARING HOUSING <input type="text" value="m³/s"/>
17		NUMBER PER RADIAL BEARING <input type="text" value="1"/>	HEAT EXCHANGER <input type="text" value="m³/s"/>
18		NUMBER PER AXIAL BEARING <input type="text" value="2"/>	TOTAL COOLING WATER <input type="text" value="80"/> L/min
19			HEATING MEDIUM <input type="text" value="OTHER"/>
20		MONITORS AND CABLES SUPPLIED BY (7.4.2.4)	HEATING PIPING <input type="text" value=""/>
21		<input type="text" value="Pump Supplier"/>	PIPING & APPURTENANCES
22		TEMPERATURE (7.4.2.3)	MANIFOLD PIPING FOR PURCHASER CONNECTION (7.5.1.6)
23		PROVISIONS FOR TEMP PROBES <input checked="" type="checkbox"/> YES	VENT <input checked="" type="checkbox"/> YES
24		RADIAL BEARING TEMP. <input checked="" type="checkbox"/> YES	DRAIN <input checked="" type="checkbox"/> YES
25		NUMBER PER RADIAL BEARING <input type="text" value="1"/>	COOLING WATER <input checked="" type="checkbox"/> YES
26		THRUST BEARING TEMP. <input checked="" type="checkbox"/> YES	TAG ALL ORIFICES (7.5.2.4) <input checked="" type="checkbox"/> YES
27	IFE	NUMBER PER THRUST BEARING ACTIVE SIDE <input type="text" value="2"/>	SOCKET WELD CONN ON SEAL GLAND (7.5.2.8) <input type="checkbox"/>
28		NUMBER PER THRUST BEARING INACTIVE SIDE <input type="text" value="2"/>	
29		TEMP. GAUGES (WITH THERMOWELLS) (9.1.3.6)	
30		PRESSURE GAUGE TYPE <input type="text" value=""/>	
31		Remarks	
32			
33		Bently Nevada 3500 system to be supplied per pump.	
34		Each journal bearing to have X/Y sensors with a Duplex RTD.	
35		Each thrust bearing shall have 2 x axial displacement sensors plus 2 x Duplex RTD's per side and a keyphasor sensor for the train.	
36			
37			
38		RTD's shall be 3-wire Duplex type connected back to relevant skid-edge JB.	
39			
40		All cable trays to be 316SS.	
41			
42		All instrumentation shall be Ex'I suitable for Zone 1, IIC, T3.	
43			
44		Skid-edge JB's shall be 316SS, Ex'e', IP66.	
45			
46		A separate JB is required for the motor winding RTD's.	
47			
48		Trip and pre-alarm functions shall be separated, therefore separate transmitters are required.	
49			
50			
51		Each instrument shall be supplied with a stainless steel label engraved with the tag number and fixed to the instrument with stainless steel rivets or screws	
52		plus a Traffolyte label which shall be engraved with the tag number and service description.	
53			
54			
55			
56		Stainless steel instrument items shall not be painted.	
57			
58		All field instrumentation shall be IP56 as a minimum.	
59			
60		All instrument tubing shall be 3/8" OD. Compression fittings shall be Swagelok double-ferrule 316 SS.	
61			
62			
63			
64			
65			
66			
67			
68			

	PROJECT:	PROJECT NO:	CLIENT:	DOCUMENT NUMBER:	
	GREATER STELLA AREA DEVELOPMENT	JU11805D	ITHACA ENERGY	J1-675-PPFM-002-MD2-M-01	
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REVISION

CATEGORY 1 & 2 SEALS
MECHANICAL SEAL DATA SHEET: API 682 3rd EDITION

1 DATA SUPPLIED CUSTOMARY UNITS SI UNITS HARDWARE SUPPLIED CUSTOMARY UNITS SI UNITS
 2 INDICATES DATA COMPLETED BY PURCHASER BY SEAL VENDOR BY SEAL VENDOR OR PURCHASER
 3 DEFAULT SELECTION

4 SEAL SPECIFICATION - (REF CLAUSE 4.1, FIGURES 1 TO 6)

5 CATEGORY SEAL CATEGORY 1 (4.1.1) SEAL CATEGORY 2 (4.1.1) SEAL CODE (ANNEX J)

6 TYPE TYPE A (3.72) TYPE B (3.73) ALTERNATIVE STATIONARY (TYPE A & B)
 7 (CODE-CW) TYPE C (3.74) ALTERNATIVE ROTATING (TYPE C) SINGLE SPRING (TYPE A)

8 ARR'G'T	DEFAULT CONFIGURATION	ALTERNATIVE DESIGN	FLUSH PLANS (SEE ANNEX D)
9 1 (3.2)	<input type="checkbox"/> 1CW-FX	<input checked="" type="checkbox"/> 1CW-FL <input type="checkbox"/> DIST. FLUSH	<input type="checkbox"/> 01 <input type="checkbox"/> 11 <input type="checkbox"/> 14 <input type="checkbox"/> 23 <input type="checkbox"/> 32 <input type="checkbox"/> 50 <input type="checkbox"/> 61
		<input type="checkbox"/> ALTERNATIVE BUSH	<input type="checkbox"/> 02 <input type="checkbox"/> 13 <input type="checkbox"/> 21 <input type="checkbox"/> 31 <input type="checkbox"/> 41 <input type="checkbox"/> 51 <input type="checkbox"/> 62
11 2 (3.3)	LIQUID <input type="checkbox"/> 2CW-CW	<input type="checkbox"/> FX <input type="checkbox"/> DIST. FLUSH	<input type="checkbox"/> 01 <input type="checkbox"/> 13 <input type="checkbox"/> 23 <input type="checkbox"/> 41 <input type="checkbox"/> 62 <input type="checkbox"/> 75
12		<input type="checkbox"/> TANGENTIAL LBO CONN'N	<input type="checkbox"/> 02 <input type="checkbox"/> 14 <input type="checkbox"/> 31 <input type="checkbox"/> 52 <input type="checkbox"/> 71 <input type="checkbox"/> 76
13	GAS <input type="checkbox"/> 2CW-CS	<input type="checkbox"/> 2NC-CS <input type="checkbox"/> FX <input type="checkbox"/> DIST. FLUSH	<input type="checkbox"/> 11 <input type="checkbox"/> 21 <input type="checkbox"/> 32 <input type="checkbox"/> 61 <input type="checkbox"/> 72
14	LIQUID <input type="checkbox"/> 3CW-FB	<input checked="" type="checkbox"/> 3CW-BB <input type="checkbox"/> FX	<input type="checkbox"/> 01 <input type="checkbox"/> 13 <input type="checkbox"/> 53A <input type="checkbox"/> 54 <input type="checkbox"/> 74
15		<input type="checkbox"/> 3CW-FF <input type="checkbox"/> TANG. LBO	<input type="checkbox"/> 02 <input type="checkbox"/> 14 <input type="checkbox"/> 53B <input type="checkbox"/> 61
16	GAS <input type="checkbox"/> 3NC-BB	<input type="checkbox"/> 3NC-FF <input type="checkbox"/> 3NC-FB	<input type="checkbox"/> 11 <input type="checkbox"/> 32 <input type="checkbox"/> 53C <input type="checkbox"/> 62

17 SLEEVE-SHAFT DRIVE SET-SCREW ONTO SHAFT ALTERNATIVE (6.1.3.13) - SPECIFY

18 MATERIALS (REFERENCE 6.1.6 & ANNEX C)

19 SECONDARY SEALS	SEAL FACES	METAL BELLOWS	SPRINGS	METAL PARTS
20 <input checked="" type="checkbox"/> FKM <input type="checkbox"/> FFKM	<input type="checkbox"/> CARBON VS SIC	<input type="checkbox"/> UNS N10276 (TYPE B)	<input checked="" type="checkbox"/> UNS N10276	<input checked="" type="checkbox"/> UNS S31600/ S31635
21 <input checked="" type="checkbox"/> SPIRAL-W GASKET	<input type="checkbox"/> SIC VS SIC	<input type="checkbox"/> UNS N07718 (TYPE C)	OR N06455	<input type="checkbox"/> UNS N10276
22 <input type="checkbox"/> NBR	<input type="checkbox"/> SS-SIC <input type="checkbox"/> RB-SIC	<input type="checkbox"/> UNS N08020	<input checked="" type="checkbox"/> UNS S31600	<input type="checkbox"/> UNS N08020
23 <input type="checkbox"/> OTHER:	<input type="checkbox"/> VS	<input type="checkbox"/> OTHER:	OR S31635	<input type="checkbox"/> OTHER:

24 MECHANICAL SEAL DATA

25 SEAL VENDOR FLUITEN ALTERNATIVE SEAL FOR PUMP PERFORMANCE TEST

26 DATA REQUIREMENTS FORM (ANNEX G)

27 SIZE/TYPE

28 SEAL DRAWING NUMBER GTP/14321-GTP/14322

29 VENDOR'S SEAL CODE GTP/14321/0000 -GTP/14322/0000

30 MODIFIED FACES FOR PUMP PERFORMANCE TEST

DYNAMIC SEALING PRESSURE RATING (3.19) 100 bar (ga)
 STATIC SEALING PRESSURE RATING (3.68) ## 93 bar (ga)
 MAXIMUM ALLOWABLE TEMPERATURE (3.38) _____ °C
 MINIMUM DESIGN METAL TEMPERATURE (6.1.6.11.1) _____ °C

31 SEAL CHAMBER DATA (REFERENCE 6.1.2.4)

32 ASME B73.1 & 2 CYLINDRICAL TAPERED ISO 13709 ISO 3069-C OTHER, SPECIFY _____

33 BOLT-ON CHAMBER (6.1.2.5) SEAL CHAMBER FLUSH PORT REQ'D SEAL CHAMBER VENT REQ'D

34 FLOATING THROAT BUSH FIXED THROAT BUSH CHAMBER HEATING REQ'D

35 PUMP DATA

36 PUMP DESIGN MANUFACTURER TMP MODEL MESB150.11 FRAME/SIZE _____ CASE MATERIAL _____

37 PUMP OPERATING PRESSURE SUCTION PRESS. (RATED) 6,2 bar (a) DISCHARGE PRESSURE 169,7 bar (a)

38 SEAL CHAMBER NORMAL 6-12 bar (g) MIN / MAX (3.40) DE 5,2/8 / NDE 8/16 bar (g) MSSP (3.42) 228 bar (g)

39 SHAFT HORIZONTAL VERTICAL DIA. 103 mm SHAFT SPEED 2720/3564 r/min

40 SHAFT DIRECTION (FROM DRIVER): CW CCW

41 FLUID DATA - (FOR QUENCH, BUFFER AND BARRIER FLUID DATA, SEE PAGE 2)

42 PUMPED STREAM

43 TYPE OR NAME Export Oil CONC'N _____ % HAZARDOUS FLAMMABLE _____

44 DISSOLVED CONTAMINANT H₂S _____ ml/m³ WET FLUID SOLID @ AMBIENT

45 Cl₂ _____ ml/m³ OTHER _____ @ _____ ml/m³ SOLIDIFIES @ _____ °C POUR POINT _____ °C

46 SOLID CONTAMINANT PUMPED STREAM SOLIDIFIES UNDER SHEAR

47 CONCENTRATION (MASS FRACTION) _____ PUMPED STREAM CONTAINS AGENTS THAT POLYMERIZE

48 PUMPING TEMPERATURE SPECIFY AGENTS _____ @ TEMP _____ °C

49 MIN 50 °C NORMAL 50 °C MAX 60 °C PUMPED STREAM CAN PLATE OUT OR DECOMPOSE:

50 RELATIVE DENSITY (TO WATER @ 25°C) AT REF. TEMP. _____ SPECIFY CONDITIONS _____

51 @ NORMAL TEMP _____ @ MAX TEMP _____ PUMPED STREAM IS REGULATED FOR FUGITIVE OR

52 ABSOLUTE VAPOR PRESSURE AT REFERENCE TEMP. _____ OTHER EMISSIONS. REGULATION LEVEL _____ ml/m³

53 NORMAL TEMP 2,1 bar MAX TEMP 2,1 bar SPECIAL PUMP CLEANING PROCEDURES

54 ATMOSPHERIC BOILING POINT. _____ °C SPECIFY: _____

55 VISCOSITY @ NORMAL PUMPING TEMP. 3,2 cP ALTERNATIVE PROCESS FLUIDS & CONCENTRATION (INCL. COMMISSIONING)

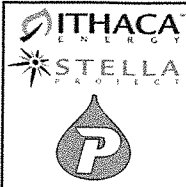
56 FLUSH FLUID (PLAN 32) If flush fluid is pumpage, then flush fluid data is not required.

57 TYPE OR NAME _____ CONC'N _____ % ABSOLUTE VAPOR PRESSURE AT REFERENCE TEMP.

58 SEAL VENDOR REVIEW REQUIRED _____ NORMAL TEMP _____ bar MAX TEMP _____ bar

59 FLUID TEMPERATURE _____ °C ATMOSPHERIC BOILING POINT. _____ °C

60 MIN _____ °C NORMAL _____ °C MAX _____ °C VISCOSITY @ NORMAL PUMPING TEMP. _____ Pa.s



PROJECT: **GREATER STELLA AREA DEVELOPMENT**

PROJECT NO: **JU11805D**

CLIENT: **ITHACA ENERGY**

DOCUMENT NUMBER: **JI-675-PPFM-002-MD2-M-01**

DOCUMENT TITLE: **Datasheet for Export Oil Pipeline PUMPS P-0152 A/B**

ORIGINATOR: **Petrofac**

REV: **5**

DATE: **1-Sep-14**

PAGE NO: **9 OF 16**

REVISION

CATEGORY 1 & 2 SEALS
MECHANICAL SEAL DATA SHEET: API 682 3rd EDITION

INDICATES DATA COMPLETED BY PURCHASER BY SEAL VENDOR BY SEAL VENDOR OR PURCHASER

DEFAULT SELECTION

FLUID DATA - (QUENCH, BUFFER AND BARRIER FLUID DATA, LIQUID AND GAS)

QUENCH MEDIUM (PLAN 51, 62)

TYPE OR NAME SUPPLY TEMPERATURE MAX/MIN _____ / _____ °C

BUFFER/BARRIER MEDIUM FLOW RATE REQ'D MAX/MIN _____ / _____ l/min

TYPE OR NAME **MINERAL OIL** RELATIVE DENSITY (TO WATER @ 25°C) AT REF. TEMP.

PURCHASER SELEC'N SEAL VENDOR SELEC'N @ NORMAL TEMP _____ @ MAX TEMP _____

SEAL VENDOR REVIEW PURCHASER REVIEW ABSOLUTE VAPOR PRESSURE AT REFERENCE TEMP.

FLOW RATE REQ'D MAX/MIN. _____ / _____ l/min NORMAL TEMP _____ bar MAX TEMP _____ bar

COOLING/HEATING REQUIRED (+ OR -) **3/4 Kw** ATMOSPHERIC BOILING POINT (LIQUID) _____ °C

SUPPLY PRESSURE MAX/MIN. _____ / _____ bar (ga) VISCOSITY @ NORMAL TEMP (LIQUID) _____ Pa.s

FLUID OPERATING TEMPERATURE SPECIFIC HEAT CAPACITY @ CONSTANT PRESSURE _____ J/Kg.K

MIN °C NORMAL °C MAX °C FOR LIQUID @ NORMAL TEMPERATURE

SITE AND UTILITIES

CONTROL VOLTAGE **110 V** PHASE **1** HERTZ **60** COOLING H₂O SUPPLY TEMP. _____ °C Cl₂ _____ ml/m³

ELECTRICAL AREA CL _____ GR _____ DIV _____ COOLING H₂O PRESS. NORM./DES. _____ / _____ bar (ga)

DESIGN AMBIENT MIN./MAX. **-7,5 / 25,6 °C** ATEX (EC DIRECTIVE 94/9/EC) GR CAT. T CLASS

ACCESSORIES (CLAUSES 8 AND 9)

GENERAL **PLAN 52 AND 53 SYSTEMS CONTINUED**

JOINT USER/VENDOR LAYOUT OF EQUIPMENT (8.1.4) EQUIPMENT SUPPORT SUPPLIER **FLUITEN**

PIPE TAPER THREADS (8.1.9) ISO 7 ASME B1.20.1 FILLING SYSTEM SUPPLIER **FLUITEN**

SPECIAL REQUIREMENTS FOR HAZARDOUS SERVICE ASME CODE STAMP REQUIRED

SPECIAL CLEANING AND DECONTAMINATION REQ'TS EN 13445 OR OTHER CODE APPLICABLE

UTILITY MANIFOLD CONNECTIONS REQUIRED (8.4.4) RESERVOIR CAPACITY (8.5.4.3) **2X25 l**

TYPE AND SPEC. OF HEAT TRACING (8.6.5.8) NLL TO GLAND PLATE HEIGHT (8.5.4.2) _____ m

THERMAL RELIEF VALVES REQUIRED (9.8.3) RESERVOIR MAWP (3.39) **228 bar (g) @ 93 °C**

COOLING SYSTEM (PLAN 21, 22, 23, 41, 53B, 53C) SET PRESSURE RANGE, MAX/MIN **DE 10/13,5 / NDE 18/24,5 bar (g)**

HEAT EXCHANGER SUPPLIER SYSTEM HOLD-UP PERIOD (PLANS 53B & 53C) **25 DAYS**

WATER COOLED AIR COOLED ISO 15649 TEMPERATURE INDICATOR (PLAN 53B & 53C)

EQUIPMENT REFERENCE/CODE PRESSURE SWITCH (8.5.4.2.h) TO ACTIVATE ON:

COOLING WATER LINES SUPPLIER RISING PRESSURE (ARR 2) SET @ _____ bar (ga)

TUBING GALVANISED PIPING (8.4.2) FALLING PRESSURE (ARR 3) SET @ _____ bar (ga)

COOLING WATER FLOW RATE _____ l/min HIGH LEVEL ALARM REQUIRED (8.5.4.2.i)

SIGHT FLOW INDICATORS (8.4.3) OPEN CLOSED TEST BASED H/Q CURVE FOR INTERNAL CIRC. DEVICE

PLAN 11, 13, 14, 21, 23, 31, 32 AND 41 SYSTEMS EXTERNAL CIRCULATING PUMP (8.6.3.1)

CONNECTING LINES SUPPLIER **PLAN 72 AND 74 SYSTEM**

TUBING PIPING (8.5.2.2) EQ DE 5,2/8 NDE 8/16

RESTRICTION ORIFICE NIPPLE IN FLUSH LINE (8.5.2.4) HIGH FLOW ALARM SWITCH (8.6.6.5)

CYCLONE SEPARATOR SUPPLIER **PLAN 75 AND 76 SYSTEM**

PLAN 32 EQUIPMENT SUPPLIER EQUIPMENT SUPPLIER

PLAN 32 FLOW IND'R PLAN 32 TEMPERATURE IND'R HIGH LEVEL ALARM SWITCH FOR PLAN 75 (8.6.5.3)

PLAN 52 AND 53 SYSTEMS TEST CONNECTION (8.6.5.4)

STANDARD (FIG D.27) ALTERNATIVE (FIG D.28) **INSTRUMENTATION**

DIMENSIONAL VARIATIONS TO STANDARD (FIG D.27) USER SPECIFICATION REFERENCE FOR

DIMENSIONAL VARIATIONS TO ALTERNATIVE (FIG D.28) INSTRUMENTATION/CONTROLS **FPF1-ST-G00001-J-SPE-0002**

ALTERNATIVE FABRICATION STANDARD PRESSURE GAUGES (9.4);

PRIMARY EQUIPMENT SUPPLIER OIL FILLED PRESSURE GAUGES (9.4.3)

SUPPLIER REFERENCE/CODE **FLUITEN** PRESSURE SWITCHES (9.5.2); TRANSMITTER (9.5.2.3)

CONNECTING LINES SUPPLIER TUBING SCH 80 PIPING (8.5.4.4.9) LEVEL SWITCHES (9.5.3); TRANSMITTER (9.5.3.2)

TUBING SCH 80 PIPING (8.5.4.4.9) HYDROSTATIC CAPACITANCE ULTRASONIC

TUBING SCH 80 PIPING (8.5.4.4.9) LEVEL INDICATORS (9.6)

TUBING SCH 80 PIPING (8.5.4.4.9) WELD PAD EXTERNAL, REMOVABLE (9.6.2)

TUBING SCH 80 PIPING (8.5.4.4.9) FLOW INSTRUMENTS (9.7); TRANSMITTER (9.7.3)

INSPECTION AND TESTING

PURCHASER PARTICIPATION IN INSPECTION & TEST SPECIFY; _____

INSPECTOR'S CHECK LIST (10.1.7 & ANNEX E)

PURCHASER APPROVAL REQUIRED FOR WELDED CONNECTION DESIGNS, (6.1.6.10.5)

HARDNESS TEST (10.2.3 k) REQUIRED FOR;

100% INSPECTION OF ALL WELDS (6.1.6.10.5) USING;


MAGNETIC PARTICLE LIQUID PENETRANT

RADIOGRAPHIC 10% ULTRASONIC

OPTIONAL QUALIFICATION TESTING REQ'D (10.3.1.1.2)

MOD. FACES FOR PUMP TEST (10.3.5.1.1), SEE PG 1, LINE 30

ALTERNATIVE SEAL PUMP TEST (10.3.5.1.2), SEE PG 1, LINE 25

	PROJECT: GREATER STELLA AREA DEVELOPMENT	PROJECT NO: JU11805D	CLIENT: ITHACA ENERGY	DOCUMENT NUMBER: J1-675-PPFM-002-MD2-M-01	
	DOCUMENT TITLE: Datasheet for Export Oil Pipeline PUMPS P-0152 A/B	ORIGINATOR: Petrofac	REV: 5	DATE: 1-Sep-14	PAGE NO 10 OF 16

REVISION

CENTRIFUGAL PUMP DATA SHEET

1 Note	SURFACE PREPARATION AND PAINT					TEST			
2	MANUFACTURER'S STANDARD					SHOP INSPECTION (8.1.1)		Yes	
3	OTHER (SEE BELOW)					PERFORMANCE CURVE			
4	SPECIFICATION NO. _____					& DATA APPROVAL PRIOR TO SHIPMENT.		YES	
5	IN ACCORDANCE WITH 7655-K01 AND					TEST WITH SUBSTITUTE SEAL (8.3.3.2.b)			
6	PPF1-ST-G00001-M-SPE-0001					MATERIAL CERTIFICATION REQUIRED		CASING YES	
7	PUMP:					(6.12.1.8) IMPELLER		YES	
8	PUMP SURFACE PREPARATION					SHAFT		YES	
9	PRIMER					OTHER			
10	FINISH COAT					CASTING REPAIR WELD PROCEDURE APPR REQD		YES	
11	BASEPLATE:					(6.12.2.5) (6.12.3.1)			
12	BASEPLATE SURFACE PREPARATION					INSPECTION REQUIRED FOR CONNECTION WELDS (6.12.3.4.d)			
13	PRIMER:					(6.12.3.4.e) MAG PARTICLE			
14	FINISH COAT					RADIOGRAPHY		YES	
15	DETAILS OF LIFTING DEVICES					LIQUID PENETRANT		YES	
16						ULTRASONIC			
17	SHIPMENT: (8.4.1)					INSPECTION REQUIRED FOR CASTINGS			
18	EXPORT BOXING REQUIRED					MAG PARTICLE			
19	OUTDOOR STORAGE MORE THAN 6 MONTHS					RADIOGRAPHY		YES	
20						LIQUID PENETRANT		YES	
21	SPARE ROTOR ASSEMBLY PACKAGED FOR:					ULTRASONIC			
22	ROTOR STORAGE ORIENTATION (9.2.8.2)					HARDNESS TEST REQUIRED (8.2.2.7)		YES	
23	SHIPPING & STORAGE CONTAINER FOR VERT STORAGE (9.2.8.3)					ADDNL SUBSURFACE EXAMINATION (6.12.1.5) (8.2.1.3)			
24						FOR			
25	N2 PURGE (9.2.8.4)					METHOD			
26	SPARE PARTS					PMI TESTING REQUIRED (8.2.2.8)		YES	
27	IFE START-UP					COMPONENTS TO BE TESTED		STAINLESS STEEL COMPONENTS	
28	NORMAL MAINTENANCE								
29	WEIGHTS kg						RESIDUAL UNBALANCE TEST (J.4.1.2)		YES
30									
31	ITEM No	PUMP	DRIVER	AUX SYSTEM	BASE	TOTAL	NOTIFICATION OF SUCCESSFUL SHOP		
32	P-0152A/B	6000	8000	4500	7500	26000	PERFORMANCE TEST (8.1.1.c) (8.3.3.5)		
33						0	BASEPLATE TEST (7.3.21)		
34						0	HYDROSTATIC		
35							HYDROSTATIC TEST OF BOWLS & COLUMN (9.3.13.2)		WIT
36	OTHER PURCHASER REQUIREMENTS						PERFORMANCE TEST		WIT
37	COORDINATION MEETING REQUIRED (10.1.3)					TEST IN COMPLIANCE WITH (8.3.3.2)		8.3.3.2	
38	MAXIMUM DISCHARGE PRESSURE TO INCLUDE					TEST DATA POINTS TO (8.3.3.3)		8.3.3.3	
39	MAX RELATIVE DENSITY					TEST TOLERANCES TO (8.3.3.4)		TABLE 15	
40	OPERATION TO TRIP SPEED					NPSH (8.3.4.3.1) (8.3.4.3.4)		WIT	
41	MAX DIA. IMPELLERS AND/OR NO OF STAGES					NPSH-1ST STG ONLY (8.3.4.3.2)			
42	CONNECTION DESIGN APPROVAL (9.2.1.4)					NPSH TESTING TO HI 1.6 OR ISO 9906 (8.3.4.3.3)			
43	TORSIONAL ANALYSIS / REPORT (6.9.2.10)					TEST NPSHA LIMITED TO 110% SITE NPSHA (8.3.3.6)			
44	PROGRESS REPORTS					RETEST ON SEAL LEAKAGE (8.3.3.2.d)		WIT	
45	OUTLINE OF PROC FOR OPTIONAL TESTS (10.2.5)					RETEST REQUIRED AFTER FINAL HEAD ADJ (8.3.3.7.b)			
46	ADDITIONAL DATA REQUIRING 20 YEARS RETENTION (8.2.1.1)					COMPLETE UNIT TEST (8.3.4.4.1)		WIT	
47						SOUND LEVEL TEST (8.3.4.5)		WIT	
48	LATERAL ANALYSIS REQUIRED (9.1.3.4) (9.2.4.1.3)					CLEANLINESS PRIOR TO FINAL ASSEMBLY (8.2.2.6)		WIT	
49	MODAL ANALYSIS REQUIRED (9.3.9.2)					LOCATION OF CLEANLINESS INSPECTION		@ SUPPLIER'S	
50	DYNAMIC BALANCE ROTOR (6.9.4.4)					NOZZLE LOAD TEST			
51	INSTALLATION LIST IN PROPOSAL (10.2.3.1)					CHECK FOR CO-PLANAR MOUNTING PAD SURFACES			
52	VFD STEADY STATE DAMPED RESPONSE ANALYSIS (6.9.2.3)					MECHANICAL RUN TEST UNTIL OIL TEMP STABLE			
53						4 HR. MECH RUN AFTER OIL TEMP STABLE (8.3.4.2.1)			
54	TRANSIENT TORSIONAL RESPONSE (6.9.2.4)					4 HR. MECH RUN TEST (8.3.4.2.2)		WIT	
55	BEARING LIFE CALCULATIONS REQUIRED (6.10.1.6)					BRG HSG RESONANCE TEST (8.3.4.7)			
56	IGNITION HAZARD ASSMT TO EN 13463-1 (7.2.13.e)					STRUCTURAL RESONANCE TEST (9.3.9.2)			
57	CASING RETIREMENT THICKNESS DRAWING (10.3.2.3)					REMOVE / INSPECT HYDRODYNAMIC BEARINGS AFTER TEST			
58	FLANGES RQD IN PLACE OF SKT WELD UNIONS (7.5.2.8)					(9.2.7.5)			
59	INCLUDE PLOTTED VIBRATION SPECTRA (6.9.3.3)					AUXILIARY EQUIPMENT TEST (8.3.4.6)			
60	CONNECTION BOLTING (7.5.1.7)					EQUIPMENT TO BE INCLUDED IN AUXILIARY TESTS			
61	CADMIUM PLATED BOLTS PROHIBITED					LOCATION OF AUXILIARY EQUIPMENT TEST			
62	VENDOR TO KEEP REPAIR AND HT RCDS (8.2.1.1.c)					IMPACT TEST (6.12.4.3) PER EN 13445			
63	VENDOR SUBMIT TEST PROCEDURES (8.3.1.1)					PER ASME SECTION VIII			
64	SUBMIT INSPECTION CHECK LIST (8.1.5)					REMOVE CASING AFTER TEST			
65									
66									
67									
68									



PROJECT:
GREATER STELLA AREA DEVELOPMENT

PROJECT NO:
JU11805D

CLIENT:
ITHACA ENERGY

DOCUMENT NUMBER:
JI-675-PPFM-002-MD2-M-01

DOCUMENT TITLE:
Datasheet for Export Oil Pipeline
PUMPS P-0152 A/B

ORIGINATOR:
Petrofac

REV:
5

DATE:
1-Sep-14

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REVISION

CENTRIFUGAL PUMP DATA SHEET

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1 Note PRESSURE VESSEL DESIGN CODE REFERENCES

2 THESE REFERENCES MUST BE LISTED BY THE MANUFACTURER
 3 CASTING FACTORS USED IN DESIGN (TABLE 3) 0.8
 4 SOURCE OF MATERIAL PROPERTIES ASTM

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 _____
 14 POSTWELD HEAT TREATMENT _____
 15 POSTWELD HEAT TREATMENT OF CASING FABRICATION WELDS _____
 16 _____

17 MATERIAL INSPECTION

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

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)			

27 **IFE REMARKS :**

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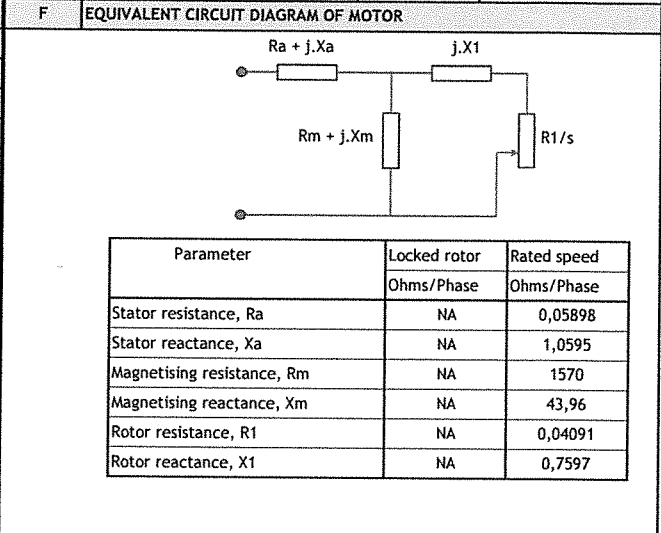
		PROJECT:	PROJECT NO:	CLIENT:	DOCUMENT NUMBER:	
		GREATER STELLA AREA DEVELOPMENT	JU11805D	ITHACA ENERGY	JI-675-PPFM-002-MD2-M-01	
DOCUMENT TITLE:		ORIGINATOR:	REV:	DATE:	PAGE NO	
Datasheet for Export Oil Pipeline PUMPS P-0152 A/B		Petrofac	5	1-Sep-14	12 OF 16	
DRIVEN EQUIPMENT DATA						
1	Driven Equipment description	Export Oil Pump	B.28	Motor Cooling method / Code	T	/ IC 511
2	Type of driven equipment	Centrifugal Pump	B.29	Rated voltage for Cooling Fans		; 1ph/3ph <input checked="" type="checkbox"/> NA
3	Coupling type	FLEXIBLE DIAPHRAGM TYPE	B.30	Number of starts per year	Normal	1000
4	Moment of Inertia of the load	2,2 kg.m ²	B.31	Type of Short Circuit protection	FUSER VACUUM CONTACTOR	
5	Absorbed power	1094,8- 720,2 kW				
6	Speed (synchronous)	NA rpm (VFD)				
GENERAL INFORMATION						
1	Name of motor Manufacturer	ABB	CONSTRUCTION DATA			
2	Country of Manufacture	ITALY	C.1	Final Paint shade / thickness	RAL 5017	/ 320 microns
3	Service Centre (at delivery location)	UK	C.2	Motor Painting Procedure	As per Manufacturing Standard	
A SERVICE CONDITIONS			C.3	Tropical treatment required	No	
A.1	Installation	Offshore	C.4	Motor feeder cable type	Cu/SCN/EPR/SCN/LSOH/TCWB/LSOH	
A.2	Location	Outdoor	C.5	Cable Size, nos. / outer diameter Sq.mm / mm	
A.3	Outdoor environment	Saliferous	C.6	Cable gland type/cable entry size	Double compression / M *	
A.4	Relative Humidity	Max. 100 % Min %	C.7	Gland-plate material & thickness	steel / 8 mm	
A.5	Temperature	Max. 25,6 °C Min -7,4 °C	C.8	Anti-condensation heater rating	200 W Required	
A.6	Design ambient temperature	25.6/-10 °C	C.9	Heater supply voltage	110V ; 1ph <input type="checkbox"/> NA	
A.7	Solar radiation	mW/cm ² <input type="checkbox"/> N.A.	C.10	Bearings :	DE Bearing	NDE Bearing
A.8	Average Annual Rainfall	mm	a	Bearing type	sleeve	sleeve
A.9	Altitude above MSL	<1000 m	b	Make	RENK	RENK
A.10	Earthquake prone Zone	Out of Zone	c	Model (part no.)	GR11 DIAM 110	GR11 DIAM 110
B RATING AND DESIGN DATA			d	Clearance	NA	NA
B.1	KW rating	1450 kW @ 40 °C	e	Bearing life	SEE I&OM hours	SEE I&OM hours
B.2	KW rating at design ambient	1450 kW @ 50 °C	f	Insulated	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes
B.3	Conform to International Std.	IEC 60034	C.11	Lubricating system type	FORCED LUBRICATION	
B.4	Conform to project Standard	FPF1-ST-G00001-E-SPE-0008	C.12	Lubricant type reference	SEE LUBRICATION LIST DOC.	
B.5	Supply Voltage & variation	6.6kV (+/-) 10%	C.14	No. of winding temperature detectors	6	
B.6	Frequency & variation	60 Hz (+/-) 2%	C.15	No. of bearing temperature detectors	2	
B.7	Combined voltage & frequency variation	(+/-) 10%	C.13	Temp. detector wires (2-wire/3-wire)	3 wires	
B.8	System Earthing	Resistive	C.14	No. of earth terminals on enclosure	2	
B.9	Supply system fault level (MVA/kA)	Max 31,5 Min	C.15	No. of earth terminals inside terminal box	2	
B.10	Motor Terminal box fault rating	40 kA for 0,25 s	C.16	Rotor balance grade (ISO 1940-1)	G 1	
B.11	Motor full load speed	3568 rpm	C.17	Max. Axial force	NA	N
B.12	Variable speed drive operation	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	C.18	Bi-directional fan	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	
B.13	Motor speed range for VSD	76 kVA % to 100 % <input type="checkbox"/> NA	C.19	Total weight	7600	kg
B.14	Method of motor starting	VSD	C.20	Weight of Rotor	1280	kg
B.15	Duty	S1 (Continuous)	C.21	Nameplate language	English	
B.16	Direction rotation (facing drive end)	CCW				
B.17	Mounting type per IEC 60034-7	IM 1001		Note 1: Refer to Electrical Specification		
B.18	Motor Frame size	L		Note 2: VFD data sheet by Supplier.		
B.19	Insulation Class	Class F				
B.20	Temperature rise	Limited to class B				
B.21	Area Classification of installation	Zone 2				
B.22	Gas Group / Temperature Class	II A / B / T3				
B.23	EEx Protection - Motor enclosure	EEx 'e' or EEx 'd'				
B.24	EEx Protection of Terminal box	EEx 'e' or N.A.				
B.25	Atex Certificate	Required <input type="checkbox"/> NA				
B.26	Enclosure IP Protection (IEC 60034-5)	IP56				
B.27	Terminal box IP Protection	IP56				

X



PROJECT: GREATER STELLA AREA DEVELOPMENT	PROJECT NO: JU11805D	CLIENT: ITHACA ENERGY	DOCUMENT NUMBER: J1-675-PPFM-002-MD2-M-01	
DOCUMENT TITLE: Datasheet for Export Oil Pipeline PUMPS P-0152 A/B	ORIGINATOR: Petrofac	REV: 5	DATE: 1-Sep-14	PAGE NO 13 OF 16

D PERFORMANCE DATA			
D.1	Full load current	241	A
D.2	Locked rotor current at Un	NA	A
D.3	Locked rotor current at Un / 0.8Un (%FLC)	NA	NA % FLC
D.4	Starting power factor	NA	lag
D.5	pf at 100% /75% /absorbed load	0.91	NA / NA lag
D.6	Efficiency at 100% /75% /absorbed load	95.1	NA / NA %
D.7	Locked rotor torque at Un /0.8Un	NA	NA % FLT
D.8	Pull up torque at Un /0.8Un	NA	NA % FLT
D.9	Breakdown torque at Un /0.8Un	260	NA % FLT
D.10	Allowable Run up Time : Un (hot/cold)	NA	NA sec
D.11	Allowable Run up Time : 0.8Un (hot/cold)	NA	NA sec
D.12	Run up time at Un/ 0.8Un (unloaded m/c)	NA	NA sec
D.13	Run up time at Un/ 0.8Un (loaded m/c)	NA	NA sec
D.14	Locked rotor (stall) time : Un (hot/cold)	NA	NA sec
D.15	Locked rotor (stall) time: 0.8Un(hot/cold)	NA	NA sec
D.16	Heating / cooling constants	65	175 min
D.17	Time t_e for EEx 'e' motor	NA	sec
D.18	Motor Rotor inertia	31,4	kg.m ²
D.19	No. of sequential starts	NA	Hot NA Cold
D.20	Time to elapse before next hot restart	NA	sec
D.21	Max. sound pressure level at full load	85	dB(A)
D.22	Negative sequence withstand	NA	sec
D.23	I_2^2t time constant (K)	NA	
D.24	Max.transient air gap torque during following cases:		
a	2-phase short circuit at motor terminals	31777	kNm
b	3-phase short circuit at motor terminals	24400	kNm
c	Restart on full residual voltage at 120° ph shift	NA	kNm
D.25	Earth fault withstand capacity	NA	amps




E TESTS		Required	Witness
E.1	Routine tests per IEC 60034-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.2	Temperature-rise & performance test (One of each rating OR as per specification)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.3	Special tests per IEC 60034-1 & specification:		
a	Nil	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>


G CT DETAILS (if applicable)		
G.1	CT location:	NOT APPLICABLE
G.2	CT scope pf supply	<input type="checkbox"/> Motor manufacturer <input type="checkbox"/> others
G.3	CT suitability for classified area	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N.A.
G.4	CT ATEX certified	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N.A.

REMARKS AND NOTES

* to be furnished by MOTOR Manufacturer

** to be furnished by DRIVEN EQUIPMENT Manufacturer

		PROJECT: GREATER STELLA AREA DEVELOPMENT	PROJECT NO: JU11805D	CLIENT: ITHACA ENERGY	DOCUMENT NUMBER: JI-675-PPFM-002-MD2-M-01	
DOCUMENT TITLE: Datasheet for Export Oil Pipeline PUMPS P-0152 A/B		ORIGINATOR: Petrofac	REV: 5	DATE: 1-Sep-14	PAGE NO 14 OF 16	
DRIVEN EQUIPMENT DATA			C	CONSTRUCTION DATA		
1	Driven Equipment description	Auxillaries	C.1	Final Paint shade / thickness	RAL 5017 / 320 microns	
2	Type of driven equipment	Lube Oil Pump	C.2	Motor Painting Procedure	As per Manufacturing Standard	
3	Coupling type	flexible	C.3	Tropical treatment required	Yes	
4	Moment of Inertia of the load	NA kg.m ²	C.4	Motor feeder cable type	Cu/EPR/LS0H/TCWB/LS0H	
5	Absorbed power	2 kW	C.5	Cable Size, nos. / outer diameterSq.mm / mm	
6	Speed (synchronous)	1747 rpm	C.6	Cable gland type/cable entry size	Double compression / M *	
GENERAL INFORMATION			C.7	Anti-condensation heater	Required above kW	
1	Name of motor Manufacturer	ABB	C.8	Heater supply voltage	110V AC ; 1ph	
2	Country of Manufacture	ITALY	C.9	Heater rating	* W	
3	Service Centre (at delivery location)	UK	C.10	Bearings :	DE Bearing	NDE Bearing
A	SERVICE CONDITIONS		a	Bearing type	ANTIFRICTION	ANTIFRICTION
A.1	Installation	Offshore	b	Make	SKF	SKF
A.2	Location	Outdoor	c	Model (part no.)	6206-2Z/C3	6006-2Z/C3
A.3	Outdoor environment	Saliferous	d	Clearance	NA	NA
A.4	Relative Humidity	Max. 100 % Min. %	e	Bearing life	NA hours	NA hours
A.5	Temperature	Max. 25,6 °C Min. -7,4 °C	f	Insulated	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes
A.6	Design ambient temperature	25.6/-10 °C	C.11	Lubricant type reference	GRASE	
A.7	Solar radiation	mW/cm ² <input type="checkbox"/> N.A.	C.12	Type of Temperature detectors	* <input checked="" type="checkbox"/> N.A.	
A.8	Average Annual Rainfall	mm	C.13	Nameplate language	English	
A.9	Altitude above MSL	<1000 m	D	PERFORMANCE DATA		
A.10	Earthquake prone Zone	Out of Zone	D.1	Full load current	5,4 A	
B	RATING AND DESIGN DATA		D.2	Locked rotor current at Un	N.A. A	
B.1	kW rating	3 kW @ 40 °C	D.3	Locked rotor current at Un / 0.8Un (%FLC)	N.A. / N.A. % FLC	
B.2	kW rating at design ambient	3 kW @ 50 °C	D.4	Starting power factor	0,48 lag	
B.3	Conform to International Std.	IEC 60034	D.5	pf at 100% /75% /50% /absorbed load	0.83/0.79 /0.7 lag	
B.4	Conform to project Standard	FPF1-ST-G00001-E-SPE-0007	D.6	Efficiency at 100% /75% /50% /absrb.load	87.4/87.8/86.4 %	
B.5	Supply Voltage & variation	440V (+/-) 10%	D.7	Locked rotor torque at Un /0.8Un	16,4 / N.A. % FLT	
B.6	Frequency & variation	60 Hz (+/-) 2%	D.8	Pull up torque at Un /0.8Un	N.A. / N.A. % FLT	
B.7	Combined voltage & frequency variation	(+/-) 10%	D.9	Breakdown torque at Un /0.8Un	N.A. / N.A. % FLT	
B.8	System Earthing	Solid	D.10	Allowable Run up Time : Un (hot/cold)	15 / 27 sec	
B.9	Supply system fault level (MVA/kA)	Max 80 kVA Min	D.11	Allowable Run up Time : 0.8Un (hot/cold)	N.A. / N.A. sec	
B.10	Motor Terminal box fault rating	* kA for * s	D.12	Run up time at Un/ 0.8Un (unloaded m/c)	N.A. / N.A. sec	
B.11	Motor full load speed	1747 rpm	D.13	Run up time at Un/ 0.8Un (loaded m/c)	N.A. / N.A. sec	
B.12	Variable speed drive operation	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	D.14	Locked rotor (stall) time : Un (hot/cold)	N.A. / N.A. sec	
B.13	Motor speed range for VSD	** % to ** % <input checked="" type="checkbox"/> NA	D.15	Locked rotor (stall) time: 0.8Un(hot/cold)	N.A. / N.A. sec	
B.14	Method of motor starting	DOL	D.16	Heating / cooling constants	N.A. / N.A. min	
B.15	Duty	S1 (Continuous)	D.17	Time t _c for EEx 'e' motor	N.A. sec	
B.16	Direction rotation (facing drive end)	CW - CCW	D.18	Motor Rotor inertia	0,0081 kg.m ²	
B.17	Mounting type per IEC 60034-7	IM 3011 ,V1	D.19	No. of sequential starts	N.A Hot N.A Cold	
B.18	Motor Frame size	M3KP 100 LB4	D.20	Time to elapse before next hot restart	N.A. sec	
B.19	Insulation Class	Class F	D.21	Max. sound pressure level at full load	55 dB(A)	
B.20	Temperature rise	Limited to class B	E	TESTS		
B.21	Area Classification of installation	Zone 2	E.1	Routine tests per IEC 60034-1	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B.22	Gas Group / Temperature Class	II B / T3	E.2	Temperature-rise & performance test (One of each rating OR as per specification)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.23	EEx Protection type	EEx 'e' or N.A.	E.3	Special tests per IEC 60034-1 & specification:		
B.24	Atex Certificate	Required <input type="checkbox"/> NA	a	Nil	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.25	Enclosure IP Protection (IEC 60034-5)	IP56				
B.26	Motor Cooling method / Code	TEFC / IC 411				
B.27	Number of starts per year	Normal NA				
REMARKS AND NOTES						
						* to be furnished by MOTOR Manufacturer
						** to be furnished by DRIVEN EQUIPMENT Manufacturer

	PROJECT: GREATER STELLA AREA DEVELOPMENT	PROJECT NO: JU11805D	CLIENT: ITHACA ENERGY	DOCUMENT NUMBER: J1-675-PPFM-002-MD2-M-01	
	DOCUMENT TITLE: Datasheet for Export Oil Pipeline PUMPS P-0152 A/B	ORIGINATOR: Petrofac	REV: 5	DATE: 1-Sep-14	PAGE NO. 15 OF 16

NOISE DATA SHEET

Maximum allowable noise level from equipment in free field measurement conditions for any normal operating conditions, for one unit only.

TABLE 1		OCTAVE BAND LEVELS								
Octave band mid-Frequency (Hz)		63	125	250	500	1k	2k	4k	8k	dB(A)
Equipment Total	SPL									89,7
P-0152 PUMP+AUXILIARY	SPL	100,3	94	89	84,3	80,8	78	76,1	75,7	88
PM-0152 ELECTRIC MOTOR WITH SILENCER	SPL	97,3	91,9	86,2	81,5	77,7	74,3	72,3	71,1	85

TO BE COMPLETED BY VENDOR

The Vendor shall include in his quotation details of any acoustic treatment necessary to meet the requirements given above. All data shall be given for free field conditions after correction for background noise and reverberation effects for one unit only.

Maximum noise level for equipment with special silencing or noise control treatment fitted: **NOT APPLICABLE**

TABLE 2		OCTAVE BAND LEVELS								
Octave band mid-Frequency (Hz)		63	125	250	500	1k	2k	4k	8k	dB(A)
Equipment Total	SPL									

Maximum noise level for equipment with proposed noise control treatment fitted (if applicable): **NOT APPLICABLE**

TABLE 3		OCTAVE BAND LEVELS								
Octave band mid-Frequency (Hz)		63	125	250	500	1k	2k	4k	8k	dB(A)
Equipment Total	SPL									

REMARKS

- * Vendor shall list individual component noise level data e.g. pumps, motors, gearboxes
- 1 All noise shall be guaranteed.
- 2 Any noise control measures included shall be stated.
- 3 Noise test data should be forwarded if available.
- 4 Data should be for equipment 'on load' - please advise if it is not.

TMP Note :

ELECTRIC MOTOR IS SUPPLIED WITH SILENCER



PROJECT:	PROJECT NO:	CLIENT:	DOCUMENT NUMBER:
GREATER STELLA AREA DEVELOPMENT	JU11805D	ITHACA ENERGY	J1-675-PPFM-002-MD2-M-01
DOCUMENT TITLE:	ORIGINATOR:	REV:	DATE: PAGE NO
Datasheet for Export Oil Pipeline PUMPS P-0152 A/B	Petrofac	5	1-Sep-14 16 OF 16

1 SERVICE:	EXPORT OIL PUMPS	MANUFACTURER:	
2 FOR:		MODEL NO:	
3 SITE:	ITHACA STELLA	TYPE:	
4 NO. REQUIRED:	2		

WEIGHT AND CENTER OF GRAVITY DATA REQUIRED					
CONDITION	WEIGHT ACCURACY (%)	WEIGHT (KG)	CENTER OF GRAVITY		
			X	Y	Z
DRY		24800			
OPERATING		26000	3774	1350	1325
TEST			AFTER TEST		

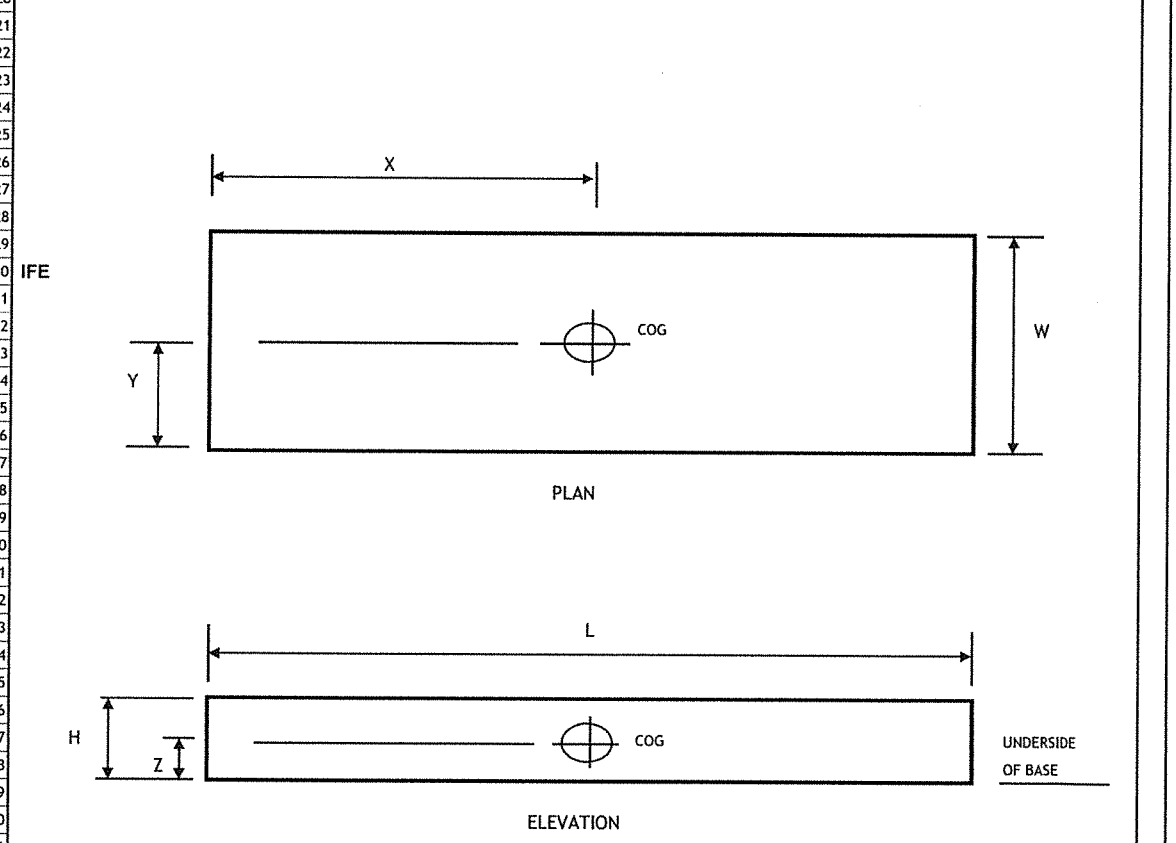
13 PACKAGE OVERALL DIMENSIONS L x W x H: (mm)

14 L=8200

15 W=2700

16 H=2850

19 SKETCH



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