MATERIAL REQUISITION FOR PRODUCT PUMPS

CLIENT APICAL OIL TERMINAL (PVT.) LTD.

PROJECT CONSULTANCY SERVICES FOR SETTING UP OF EDIBLE OIL STORAGE TERMINAL AT PORT QASIM

ITEM PRODUCT PUMPS

ITEM	MATERIAL DESIGNATION	QTY.	UNIT	RATE / UNIT SUPPLY INCLUDING ALL APPLICABLE TAXES, DUTIES, INSURANCE & INSPECTION ETC. (Pak.Rs.)	TOTAL PRICE (PAK.Rs)	NOTES
		A		B	C = A x B	
	THE SUPPLIED PUMPS SHALL COMPLY WITH THE FOLLOWING DOCUMENTS ATTACHED. ANY DEVIATION SHALL BE CLEARLY HIGHLIGHTED & JUSTIFIED BY THE SUPPLIER. ALL PRICES SHOULD BE EXCLUSIVE OF GST & SST. **GENERAL PURCHASE CONDITIONS** (DOC. NO. 294-1-GCC-010) **INSTRUCTIONS TO BIDDERS** (DOC. NO. 294-1-ITB-010) **DATA SHEETS** 294-1-DSM-001 294-1-DSM-002 294-1-DSM-004 294-1-DSM-005 294-1-DSM-006 294-1-DSM-007 294-1-DSM-008 294-1-DSM-009 294-1-DSM-015					INSPECTION OF SUPPLIED PUMPS, REVIEW OF CERTIFICATES, DIMENSIONAL, QUALITY, QUANTITY AND PACKING LIST CHECK SHALL BE WITNESSED BY THE 3RD PARTY INSPECTORS FROM A REPUTED INSPECTION COMPANY HIRED BY THE OWNER, SUPPLIER SHALL SUBMIT DETAILED MANUFACTURING SCHEDULE, QUALITY CONTROL PLAN AND INSPECTION AND TEST PROCEDURES ALONGWITH THE BID. FINAL ACCEPTANCE OF PUMPS WILL BE SUBJECT TO APPROVAL FROM THE 3RD PARTY INSPECTION COMPANY AND THE OWNER REPRESENTATIVE. QUOTED PUMPS SHALL BE LOCAL OR IMPORTED. IN CASE OF LOCAL PUMPS ACCEPTABLE BRAND IS KSB AND FOR IMPORTED PUMPS THE ORIGIN SHOULD BE WESTERN EUROPE, JAPAN, USA. PUMP VENDOR SHALL BE RESPONSIBLE TO PROVIDE PUMPS PERFORMANCE CURVE AND SHALL CONFIRM THE REQUIRED FLOW RATES AT SPECIFIED HEADS MENTION IN DATA SHEET. PUMPS SHALL BE SUPPLIED WITH DIMENSIONAL DRAWINGS, INSTALLATION, OPERATION AND COMMISSIONING MANUAL, STARTER DOL OR STAR DELTA CONNECTIONS. PUMP VENDORS SHALL BE RESPONSIBLE TO ASSIST PUMP ALIGNMENT WITH AND WITHOUT CONNECTION OF PIPING AND COMMISSIONING WORKS. SUPPLIER SHALL PROVIDE BILL OF LADING FOR ALL IMPORTED ITEMS. PLEASE NOTE THAT QUANTITIES MAY INCREASE OR DECREASE. ALL IMPORTED / LOCAL MATERIAL TO BE DELIVERED AT PORT QASIM TERMINAL AFTER THIRD PARTY INSPECTION OF ALL MATERIALS INCLUDING LOADING, UNLOADING, TRANSPORTATION ETC. TO PORT QASIM TERMINAL SITE.

DATA SHEETS

	Document No.	294-1-DSM-001
	Revision	C
	Date	26-09-2018
	Total Pages (inc front cover)	2

APICAL OIL TERMINAL (PVT.) LTD.

CONSULTANCY SERVICES FOR SETTING UP OF EDIBLE OIL STORAGE TERMINAL AT PORT QASIM

DATA SHEET FOR EDIBLE OIL LOADING PUMPS

ISSUED FOR APPROVAL

Rev.	Date	Description	Prepared By	Checked By	Approved By
C	26-09-2018	Issued for Approval	MW	MKK	MM
B	23-06-2018	Issued for Approval	MW	MKK	MM
A	09-06-2018	Issued for Review	MW	RA	MM

Consultant	Data Sheet			
ZISHAN ENGINEERS (PVT.) LTD.	EDIBLE OIL LOADING PUMPS			
	Document No.		Revision	DATE
Client	294-1-DSM-001		C	26-09-2018
APICAL OIL TERMINAL (PVT.) LTD.	Prepared by	Checked by	Approved by	SHEET
	MW	MKK	MM	2 OF 2

Applicable To: ● Proposals ○ Purchase ○ As Built

Note: ○ Indicates information to be completed by purchaser.

○ Indicates information to be completed by manufacturer.

For			Site	PORT QASIM, KARACHI	
Unit	PRODUCT LOADING PUMPS		Service	EDIBLE OIL LOADING	
No. Pumps Req'd.	4	No. Motors Req'd 4	Provided By		Mtd By
Item No.	PU-101/102/103/104		Item Description		
No. Engines Req'd.	---	No. Turbines Req'd ----	Provided By		Mtd By
Pump Mfr.			Size and Type		Serial No.

OPERATING CONDITIONS, EACH PUMP

Liquid	Edible Oil	Flow at PT. m^3/hr Nor.	136	Rated			
		Disch. Press. Bar G		1.8			
PT.(ºF) Nor.	AMB	Max.	Suct. Press. Bar G	Min	-0.2	Max	1.4
Sp.Gr. at PT.	0.887-0.875		Diff. Press. Bar			2	
Vap. Press. at 37.8 °C (psia)	-		Diff. Head m			22.7	
Vis. at PT.	cST 27-87		NPSHA m			7.3	
Corr/Eros. Caused by			Hyd.KW			7.6	

Location: ○ Indoor ● Outdoor Area: ○ Safe ○ Hazardous

Working: ○ Continuous ● Intermittent ○ Random

PERFORMANCE (VTA)

Proposal Curve No.

RPM NPSHR (Water)

Eff. BHP Rated

Max. BHP rated IMP

Max. Head Rated IMP

gpm

Rotation (Viewed from CPLG End)

Head rise to shut off

CONSTRUCTION

Nozzles	Size	Rating	Facing	Location
Suction	VTS	150 #	RF	
Discharge	VTS	150 #	RF	

Case-mount: ○ Centerline ○ Foot ○ Bracket ○ Vert. (Type)

- Split: ○ Axial ○ Rad; Volute Type: ○ SGL ⬭ DBL ○ Diffuser
- Press: ○ Max. Allow, barg @ ºC; ○ Hydro Test barg
- Connect: ○ Vent ○ Drain ○ Gage

Impeller Dia. : ○ Rated ○ Max. Type:

Mount: ○ Between Bearings ○ Overhung

Bearings-type: ○ Radial ○ Thrust

Lube: ○ Ring Oil ○ Flood ○ Oil Mist ○ Flinger ○ Pressure

Coupling: ○ Mfr. ○ Model

Driver Mtd. By: ○ Pump Mfr. ○ Driver Mfr. ○ Purchaser

Packing: ○ Mfr. & Type ○ Size/No. of Rings

Mech. Seal: ○ Mfr. & Model

○ Mfr. Code --

SHOP TESTS

○ Non-Wit. Perf.	● Wit. Perf.
○ Non-Wit. Hydro	● Wit. Hydro
○ NPSH Req'd.	● Wit. NPSH
● Shop Inspection	
○ Dismant. & Insp. After Test	
● Inspection Required For Nozzle Welds.	
● Inspection Required For Casing	
● Radiography	○ Ultrasonic
○ Other	

MATERIALS

CASE	Carbon Steel
IMPELLER (S)	SS 304
SHAFT	SS 304
WEAR RING	Cast Iron

AUXILIARY PIPING

○ C.W. Pipe Plan ○ CU ○ SS ○ Tubing; ○ Pipe

○ Total Cooling Water Req'd (m^3/hr) req gpm ○ Sight F.I. Req'd

○ Packing Cooling Injection Req'd: ⬭ Total . gpm ○ psig

○ Seal Flush Piping Plan VTS ○ CS ○ SS ○ Tubing ○ Pipe

○ External Seal Flush Fluid ○ gpm ○ psig

○ Auxiliary Seal Plan ○ CS ○ SS ○ Tubing ○ Pipe

○ Aux. Seal Quench Fluid

VERTICAL PUMPS

Pit or Sump Depth

Min. Submergence Req'd.

Column Pipe: ○ Flanged ○ Threaded

Line Shaft: ○ Open ○ Enclosed

Brgs: ○ Bowl ○ Line Shaft

Brg.Lube ○ Water ○ Oil ○ Grease

Float & Rod ○ CS ○ ss ○ BRZ ○ None

Float Switch

Pump thrust,lb. ○ UP ○ Down

MOTOR DRIVER

HP	VTS	RPM VTS	Frame	VTS	Volts/Phase/Cycles	400/3/50	
Mfr.		VTS	Bearings	VTS			
Cooling Type	TEFC		Insulation	CLASS F	Full Load Amps	VTS	
Cable Entries	VTS		Temp. Rise(°C)	75	Locked Rotor Amps	VTS	
Enclosure	Weatherproof, IP55						
Starter Type	SOFT STARTER		S.F	1.15			
Voltage Tolerance	+/- 10%						

Approx. WT. Pump & Base

Motor Turbine

NOTES:

1) NPSH(A) at Pump suction Nozzle
2) VTA: Vendor to Advise
3) Temperature rise shall be adjusted for ambient temperature of 122 °F.
4) VTS = Vendor To Specify
5) Motor to be selected for end of curve operation.
6) The cable entry details shall be provided to the supplier after the detail design & finalization of Power cable size if the motor manufacturer / supplier is unable to accommodate the same in the motor terminal box, suitable arrangement reducer / expander to be provided.
7) VTC: Vendor to Confirm
8) Vendor to provide casing drain with valve and blind flange.
9) Mating flanges for suction & discharge, gaskets, studs & nuts and reducers shall be supplied by pump vendors.

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APICAL OIL TERMINAL (PVT.) LTD.

CONSULTANCY SERVICES FOR SETTING UP OF EDIBLE OIL STORAGE TERMINAL AT PORT QASIM

DATA SHEET FOR WATER DISPOSAL PUMP

ISSUED FOR APPROVAL

Rev.	Date	Description	Prepared By	Checked By	Approved By
C	26-09-2018	Issued for Approval	MW	MKK	MM
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A	09-06-2018	Issued for Review	MW	RA	MM

Consultant	Data Sheet			
ZISHAN ENGINEERS (PVT.) LTD.	WATER DISPOSAL PUMP			
	Document No.		Revision	DATE
Client	294-1-DSM-002		C	26-09-2018
APICAL OIL TERMINAL (PVT.) LTD.	Prepared by	Checked by	Approved by	SHEET
	MW	MKK	MM	2 OF 2

Applicable To: ● Proposals ○ Purchase ○ As Built
Note: ○ Indicates information to be completed by purchaser.
○ Indicates information to be completed by manufacturer.

For | Site: PORT QASIM, KARACHI
Unit: WATER DISPOSAL PUMP | Service: WATER DISPOSAL
No. Pumps Req'd. 1 | No. Motors Req'd 1 | Provided By | Mtd By
Item No. PU-204 | Item Description
No. Engines Req'd. --- | No. Turbines Req'd ---- | Provided By | Mtd By
Pump Mfr. | Type: **VERTICAL TURBINE PUMP** | Serial No.

OPERATING CONDITIONS, EACH PUMP

Liquid	WATER	Flow at PT. m^3/hr Nor.	5	Rated			
		Disch. Press. (barg)		1.5			
PT.(ºF) Nor.	AMB	Max.	Suct. Press.(barg)	Min	0	Rated	
Sp.Gr. at PT.	1		Diff. Press. (bar)			1.5	
Vap. Press. at PT. (psia)	1		Diff. Head (m)			15.3	
Vis. at PT. cP	0.68		NPSHA (m)			Ample	
Corr/Eros. Caused by			Hyd.KW			0.21	
Location: ○ Indoor	● Outdoor		Area:	○ Safe	○ Hazardous		
Working: ○ Continuous	● Intermittent			○ Random			

PERFORMANCE (VTA)

Proposal Curve No.
RPM | NPSHR (Water)
Eff. | BHP Rated
Max. BHP rated IMP
Max. Head Rated IMP
gpm
Rotation (Viewed from CPLG End)
Head rise to shut off

CONSTRUCTION

Nozzles	Size	Rating	Facing	Location
Suction	VTS	150#	RF	
Discharge	VTS	150#	RF	

Case-mount: ○ Centerline ○ Foot ○ Bracket ○ Vert. (Type)
- Split: ○ Axial ○ Rad; Volute Type: ○ SGL ○ DBL ○ Diffuser
- Press: ○ Max. Allow, ____ psig @ ____ ºC; ○ Hydro Test ____ psig
- Connect: ○ Vent ○ Drain ○ Gage

Impeller Dia. : ○ Rated ____ ○ Max. ____ Type: ____
Mount: ○ Between Bearings ○ Overhung
Bearings-type: ○ Radial ○ Thrust
Lube: ○ Ring Oil ○ Flood ○ Oil Mist ○ Flinger ○ Pressure
Coupling: ○ Mfr. ○ Model
Driver Mtd. By: ○ Pump Mfr. ○ Driver Mfr. ○ Purchaser
Packing: ○ Mfr. & Type ○ Size/No. of Rings
Mech. Seal: ○ Mfr. & Model
○ Mfr. Code --

SHOP TESTS

○ Non-Wit. Perf.	● Wit. Perf.
○ Non-Wit. Hydro	● Wit. Hydro
○ NPSH Req'd.	● Wit. NPSH
● Shop Inspection	
○ Dismant. & Insp. After Test	
● Inspection Required For Nozzle Welds.	
● Inspection Required For Casing	
● Radiography ____	○ Ultrasonic

MATERIALS

CASE	Cast Iron (VTC)
IMPELLER (S)	Cast Iron
WEAR RING	Cast Iron / Bronze (VTC)
SHAFT	Cast Steel (VTC)

AUXILIARY PIPING

○ C.W. Pipe Plan ____ ○ CU ○ SS ○ Tubing; ○ Pipe
○ Total Cooling Water Req'd (m^3/hr) req gpm ____ ○ Sight F.I. Req'd ____
○ Packing Cooling Injection Req'd: ○ Total . gpm ○ psig
○ Seal Flush Piping Plan ____ ○ CS ○ SS ○ Tubing ○ Pipe ____
○ External Seal Flush Fluid ____ ○ gpm ____ ○ psig ____
○ Auxiliary Seal Plan ____ ○ CS ○ SS ○ Tubing ○ Pipe ____
○ Aux. Seal Quench Fluid ____

VERTICAL PUMPS

Pit or Sump Depth **VTS (Note-9)**
Min. Submergence Req'd.
Column Pipe: ○ Flanged ○ Threaded
Line Shaft: ○ Open ○ Enclosed
Brgs: ○ Bowl ____ ○ Line Shaft ____
Brg.Lube ○ Water ○ Oil ○ Grease
Float & Rod ○ CS ○ ss ○ BRZ ○ None
Float Switch ____
Pump thrust,lb. ○ UP ____ ○ Down ____

MOTOR DRIVER

HP	VTS	RPM	VTS	Frame	TEFC	Volts/Phase/Cycles	400/3/50
Mfr.	VTS			Bearings	VTS		
Cooling Type	VTS			Insulation	CLASS-F	Full Load Amps	VTS
Cable Entries	VTS			Temp. Rise(°C)	CLASS-B	Locked Rotor Amps	VTS
Enclosure	Weatherproof, IP55						
Starter Type	DOL Starter		S.F.	1.15			
Voltage Tolerance	+/-10%						

Approx. WT. Pump & Base
Motor ____ Turbine ____

NOTES:

1) NPSH(A) at Pump suction Nozzle
2) VTA: Vendor to Advise
3) Temperature rise shall be adjusted for ambient temperature of 122 °F
4) VTS = Vendor To Specify
5) VTC = Vendor To Confirm
6) Motor to be selected for end of curve operation
7) Vendor shall comply all requirements of pumps and its acessories mentioned in ANSI.
8) Water Disposal Pumps P-204 to be supplied by CPI Package Supplier
9) To be confirmed by CPI package supplier.

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APICAL OIL TERMINAL (PVT.) LTD.

CONSULTANCY SERVICES FOR SETTING UP OF EDIBLE OIL STORAGE TERMINAL AT PORT QASIM

DATA SHEET FOR OIL TRANSFER PUMP

ISSUED FOR APPROVAL

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B	23-06-2018	Issued for Approval	MW	MKK	MM
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Consultant	Data Sheet			
ZISHAN ENGINEERS (PVT.) LTD.	OIL TRANSFER PUMP			
	Document No.		Revision	DATE
Client	294-1-DSM-004		C	26-09-2018
APICAL OIL TERMINAL (PVT.) LTD.	Prepared by	Checked by	Approved by	SHEET
	MW	MKK	MM	2 OF 2

Applicable To: ● Proposals ○ Purchase ○ As Built
Note: ○ Indicates information to be completed by purchaser.
○ Indicates information to be completed by manufacturer.

For ____ Site PORT QASIM, KARACHI
Unit OIL TRANSFER PUMP Service OIL TRANSFER
No. Pumps Req'd. 1 No. Motors Req'd 1 Provided By ____ Mtd By ____
Item No. PU-203 Item Description ____
No. Engines Req'd. --- No. Turbines Req'd ---- Provided By ____ Mtd By ____
Pump Mfr. ____ Type **VERTICAL TURBINE PUMP** Serial No. ____

OPERATING CONDITIONS, EACH PUMP

Liquid EDIBLE OIL
PT.(ºF) Nor. AMB Max. ____
Sp.Gr. at PT. 0.887-0.875
Vap. Press. at PT. (psia) -
Vis. at PT. cST 27-87
Corr/Eros. Caused by ____
Location: ○ Indoor ● Outdoor
Working: ○ Continuous ● Intermittent

Flow at PT. m^3/hr Nor.	2.5	Rated	
Disch. Press. (barg)		1.5	
Suct. Press.(barg)	Min 0	Rated	
Diff. Press. (bar)		1.5	
Diff. Head (m)		15.3	
NPSHA (m)		Ample	
Hyd.KW		0.11	

Area: ○ Safe ○ Hazardous ○ Random

PERFORMANCE (VTA)

Proposal Curve No. ____
RPM ____ NPSHR (Water) ____
Eff. ____ BHP Rated ____
Max. BHP rated IMP ____
Max. Head Rated IMP ____
gpm ____
Rotation (Viewed from CPLG End) ____
Head rise to shut off ____

CONSTRUCTION

Nozzles	Size	Rating	Facing	Location
Suction	VTS	150#	RF	
Discharge	VTS	150#	RF	

Case-mount: ○ Centerline ○ Foot ○ Bracket ○ Vert. (Type)
- Split: ○ Axial ○ Rad; Volute Type: ○ SGL ⬭ DBL ○ Diffuser
- Press: ○ Max. Allow, ____ psig @ ____ ºC; ○ Hydro Test ____ psig
- Connect: ○ Vent ○ Drain ○ Gage

Impeller Dia. : ○ Rated ____ ○ Max. ____ Type: ____
Mount: ○ Between Bearings ○ Overhung
Bearings-type: ○ Radial ____ ○ Thrust ____
Lube: ○ Ring Oil ○ Flood ○ Oil Mist ○ Flinger ○ Pressure
Coupling: ○ Mfr. ____ ○ Model ____
Driver Mtd. By: ○ Pump Mfr. ○ Driver Mfr. ○ Purchaser
Packing: ○ Mfr. & Type ____ ○ Size/No. of Rings ____
Mech. Seal: ○ Mfr. & Model ____
○ Mfr. Code ____ --

SHOP TESTS

○ Non-Wit. Perf.	● Wit. Perf.
○ Non-Wit. Hydro	● Wit. Hydro
○ NPSH Req'd.	● Wit. NPSH
● Shop Inspection	
○ Dismant. & Insp. After Test	
● Inspection Required For Nozzle Welds.	
● Inspection Required For Casing	
● Radiography ____	○ Ultrasonic ____

MATERIALS

CASE	Cast Iron (VTC)
IMPELLER (S)	SS 304
WEAR RING	Cast Iron / Bronze (VTC)
SHAFT	SS 304

AUXILIARY PIPING

○ C.W. Pipe Plan ____ ○ CU ○ SS ○ Tubing; ○ Pipe
○ Total Cooling Water Req'd (m^3/hr) req gpm ____ ○ Sight F.I. Req'd ____
○ Packing Cooling Injection Req'd: ○ Total . gpm ○ psig
○ Seal Flush Piping Plan ____ ○ CS ○ SS ○ Tubing ○ Pipe ____
○ External Seal Flush Fluid ____ ○ gpm ____ ○ psig ____
○ Auxiliary Seal Plan ____ ○ CS ○ SS ○ Tubing ○ Pipe ____
○ Aux. Seal Quench Fluid ____

VERTICAL PUMPS

Pit or Sump Depth **VTS (Note-9)**
Min. Submergence Req'd. ____
Column Pipe: ○ Flanged ○ Threaded
Line Shaft: ○ Open ○ Enclosed
Brgs: ○ Bowl ____ ○ Line Shaft ____
Brg.Lube ○ Water ○ Oil ○ Grease
Float & Rod ○ CS ○ ss ○ BRZ ○ None
Float Switch ____
Pump thrust,lb. ○ UP ____ ○ Down ____

MOTOR DRIVER

HP	VTS	RPM	VTS	Frame	TEFC	Volts/Phase/Cycles	400/3/50
Mfr.	VTS			Bearings	VTS		
Cooling Type	VTS			Insulation	CLASS-F	Full Load Amps	VTS
Cable Entries	VTS			Temp. Rise(°C)	CLASS-B	Locked Rotor Amps	VTS
Enclosure	Weatherproof, IP55						
Starter Type	DOL		S.F.	1.15			
Voltage Tolerance	+/-10%						

Approx. WT. Pump & Base ____
Motor ____ Turbine ____

NOTES:

1) NPSH(A) at Pump suction Nozzle
2) VTA: Vendor to Advise
3) Temperature rise shall be adjusted for ambient temperature of 122 °F
4) VTS = Vendor To Specify
5) VTC = Vendor To Confirm
6) Motor to be selected for end of curve operation
7) Vendor shall comply all requirements of pumps and its acessories mentioned in ANSI.
8) Oil Transfer Pump PU-203 to be supplied by CPI Package Supplier
9) To be confirmed by CPI package supplier.

	Document No.	294-1-DSM-005
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APICAL OIL TERMINAL (PVT.) LTD.

CONSULTANCY SERVICES FOR SETTING UP OF EDIBLE OIL STORAGE TERMINAL AT PORT QASIM

DATA SHEET FOR OIL DISPOSAL PUMP

ISSUED FOR APPROVAL

Rev.	Date	Description	Prepared By	Checked By	Approved By
B	26-09-2018	Issued for Approval	MW	RA	MM
A	09-06-2018	Issued for Review	MW	RA	MM

Consultant	Data Sheet			
ZISHAN ENGINEERS (PVT.) LTD.	DATA SHEET FOR OIL DISPOSAL PUMP			
	Document No.		Revision	DATE
Client	294-1-DSM-005		B	26-09-2018
APICAL OIL TERMINAL (PVT.) LTD.	Prepared by	Checked by	Approved by	SHEET
	MW	RA	MM	2 OF 2

Applicable To: ● Proposals ○ Purchase ○ As Built

Note: ○ Indicates information to be completed by purchaser.

○ Indicates information to be completed by manufacturer.

For		Site	PORT QASIM, KARACHI
Unit	OIL DISPOSAL PUMP	Service	OIL DISPOSAL
No. Pumps Req'd.	1	No. Motors Req'd	1
Provided By		Mtd By	
Item No.	PU-205	Item Description	
No. Engines Req'd.	---	No. Turbines Req'd	----
Provided By		Mtd By	
Pump Mfr.		Size and Type	
Serial No.			

OPERATING CONDITIONS, EACH PUMP

Liquid	Edible Oil	Flow at PT. m^3/hr Nor.		10	Rated		
		Disch. Press. Bar G			1.25		
PT.(ºF) Nor.	AMB	Max.	Suct. Press. Bar G	Min	-0.25	Max	
Sp.Gr. at PT.	0.887-0.875		Diff. Press. Bar			1.5	
Vap. Press. at 37.8 °C (psia)	-		Diff. Head m			17	
Vis. at PT.	cST 27-87		NPSHA m			6.5	
Corr/Eros. Caused by			Hyd.KW			0.42	

Location: ○ Indoor ● Outdoor Area: ○ Safe ○ Hazardous

Working: ○ Continuous ● Intermittent ○ Random

PERFORMANCE (VTA)

Proposal Curve No.

RPM NPSHR (Water)

Eff. BHP Rated

Max. BHP rated IMP

Max. Head Rated IMP

gpm

Rotation (Viewed from CPLG End)

Head rise to shut off

CONSTRUCTION

Nozzles	Size	Rating	Facing	Location
Suction	VTS	150 #	RF	
Discharge	VTS	150 #	RF	

Case-mount: ○ Centerline ○ Foot ○ Bracket ○ Vert. (Type)

- Split: ○ Axial ○ Rad; Volute Type: ○ SGL ○ DBL ○ Diffuser
- Press: ○ Max. Allow, barg @ ºC; ○ Hydro Test barg
- Connect: ○ Vent ○ Drain ○ Gage

Impeller Dia. : ○ Rated ○ Max. Type:

Mount: ○ Between Bearings ○ Overhung

Bearings-type: ○ Radial ○ Thrust

Lube: ○ Ring Oil ○ Flood ○ Oil Mist ○ Flinger ○ Pressure

Coupling: ○ Mfr. ○ Model

Driver Mtd. By: ○ Pump Mfr. ○ Driver Mfr. ○ Purchaser

Packing: ○ Mfr. & Type ○ Size/No. of Rings

Mech. Seal: ○ Mfr. & Model

○ Mfr. Code --

SHOP TESTS

○ Non-Wit. Perf.	● Wit. Perf.
○ Non-Wit. Hydro	● Wit. Hydro
○ NPSH Req'd.	● Wit. NPSH
● Shop Inspection	
○ Dismant. & Insp. After Test	
● Inspection Required For Nozzle Welds.	
● Inspection Required For Casing	
● Radiography	○ Ultrasonic
○ Other	

MATERIALS

CASE	Carbon Steel
IMPELLER (S)	Cast Iron
SHAFT	Carbon Steel
WEAR RING	Cast Iron

AUXILIARY PIPING

○ C.W. Pipe Plan ○ CU ○ SS ○ Tubing; ○ Pipe

○ Total Cooling Water Req'd (m^3/hr) req gpm ○ Sight F.I. Req'd

○ Packing Cooling Injection Req'd: (Total) gpm ○ psig

○ Seal Flush Piping Plan VTS ○ CS ○ SS ○ Tubing ○ Pipe

○ External Seal Flush Fluid ○ gpm ○ psig

○ Auxiliary Seal Plan ○ CS ○ SS ○ Tubing ○ Pipe

○ Aux. Seal Quench Fluid

VERTICAL PUMPS

Pit or Sump Depth

Min. Submergence Req'd.

Column Pipe: ○ Flanged ○ Threaded

Line Shaft: ○ Open ○ Enclosed

Brgs: ○ Bowl ○ Line Shaft

Brg.Lube ○ Water ○ Oil ○ Grease

Float & Rod ○ CS ○ ss ○ BRZ ○ None

Float Switch

Pump thrust,lb. ○ UP ○ Down

MOTOR DRIVER

HP	VTS	RPM	VTS	Frame	VTS	Volts/Phase/Cycles	400/3/50
Mfr.		VTS		Bearings	VTS		
Cooling Type	TEFC			Insulation	CLASS F	Full Load Amps	VTS
Cable Entries	VTS	Temp. Rise(°C)		75		Locked Rotor Amps	VTS
Enclosure	Weatherproof, IP55						
Starter Type	D.O.L.	S.F	1.15				
Voltage Tolerance	+/- 10%						

Approx. WT. Pump & Base

Motor Turbine

NOTES:

1) NPSH(A) at Pump suction Nozzle
2) VTA: Vendor to Advise
3) Temperature rise shall be adjusted for ambient temperature of 122 °F.
4) VTS = Vendor To Specify
5) Motor to be selected for end of curve operation.
6) The cable entry details shall be provided to the supplier after the detail design & finalization of Power cable size if the motor manufacturer / supplier is unable to accommodate the same in the motor terminal box, suitable arrangement reducer / expander to be provided.
7) VTC: Vendor to Confirm
8) Vendor to provide casing drain with valve and blind flange.
9) Mating flanges for suction & discharge, gaskets, studs & nuts and reducers shall be supplied by pump vendors.

	Document No.	294-1-DSM-006
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APICAL OIL TERMINAL (PVT.) LTD.

CONSULTANCY SERVICES FOR SETTING UP OF EDIBLE OIL STORAGE TERMINAL AT PORT QASIM

DATA SHEET FOR INTER TANK TRANSFER PUMP

ISSUED FOR APPROVAL

Rev.	Date	Description	Prepared By	Checked By	Approved By
C	26-09-2018	Issued for Approval	MW	MKK	MM
B	23-06-2018	Issued for Approval	MW	MKK	MM
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Consultant	Data Sheet			
ZISHAN ENGINEERS (PVT.) LTD.	INTER TANK TRANSFER PUMP			
	Document No.		Revision	DATE
Client	294-1-DSM-006		C	26-09-2018
APICAL OIL TERMINAL (PVT.) LTD.	Prepared by	Checked by	Approved by	SHEET
	MW	MKK	MM	2 OF 2

Applicable To: ● Proposals ○ Purchase ○ As Built

Note: ○ Indicates information to be completed by purchaser.

○ Indicates information to be completed by manufacturer.

For			Site	PORT QASIM, KARACHI	
Unit	INTER TANK TRANSFER PUMP		Service	PRODUCT INTER TANK TRANSFER	
No. Pumps Req'd.	1	No. Motors Req'd 1	Provided By		Mtd By
Item No.	PU-105		Item Description		
No. Engines Req'd.	---	No. Turbines Req'd ----	Provided By		Mtd By
Pump Mfr.			Size and Type		Serial No.

OPERATING CONDITIONS, EACH PUMP

Liquid	Edible Oil	Flow at PT. m^3/hr Nor.	136	Rated			
		Disch. Press. Bar G		2.8			
PT.(ºF) Nor.	AMB	Max.	Suct. Press. Bar G	Min	-0.2	Max	1.4
Sp.Gr. at PT.	0.887-0.875		Diff. Press. Bar		3		
Vap. Press. at 37.8 °C (psia)	-		Diff. Head m		34.0		
Vis. at PT.	cST 27-87		NPSHA m		7.3		
Corr/Eros. Caused by			Hyd.KW		11.3		

Location: ○ Indoor ● Outdoor Area: ○ Safe ○ Hazardous

Working: ○ Continuous ● Intermittent ○ Random

PERFORMANCE (VTA)

Proposal Curve No.

RPM NPSHR (Water)

Eff. BHP Rated

Max. BHP rated IMP

Max. Head Rated IMP

gpm

Rotation (Viewed from CPLG End)

Head rise to shut off

CONSTRUCTION

Nozzles	Size	Rating	Facing	Location
Suction	VTS	150 #	RF	
Discharge	VTS	150 #	RF	

Case-mount: ○ Centerline ○ Foot ○ Bracket ○ Vert. (Type)

- Split: ○ Axial ○ Rad; Volute Type: ○ SGL ○ DBL ○ Diffuser
- Press: ○ Max. Allow, barg @ ºC; ○ Hydro Test barg
- Connect: ○ Vent ○ Drain ○ Gage

Impeller Dia. : ○ Rated ○ Max. Type:

Mount: ○ Between Bearings ○ Overhung

Bearings-type: ○ Radial ○ Thrust

Lube: ○ Ring Oil ○ Flood ○ Oil Mist ○ Flinger ○ Pressure

Coupling: ○ Mfr. ○ Model

Driver Mtd. By: ○ Pump Mfr. ○ Driver Mfr. ○ Purchaser

Packing: ○ Mfr. & Type ○ Size/No. of Rings

Mech. Seal: ○ Mfr. & Model

○ Mfr. Code --

SHOP TESTS

○ Non-Wit. Perf.	● Wit. Perf.
○ Non-Wit. Hydro	● Wit. Hydro
○ NPSH Req'd.	● Wit. NPSH
● Shop Inspection	
○ Dismant. & Insp. After Test	
● Inspection Required For Nozzle Welds.	
● Inspection Required For Casing	
● Radiography	○ Ultrasonic
○ Other	

MATERIALS

CASE	Carbon Steel
IMPELLER (S)	SS 304
SHAFT	SS 304
WEAR RING	Cast Iron

AUXILIARY PIPING

○ C.W. Pipe Plan ○ CU ○ SS ○ Tubing; ○ Pipe

○ Total Cooling Water Req'd (m^3/hr) req gpm ○ Sight F.I. Req'd

○ Packing Cooling Injection Req'd: ○ Total . gpm ○ psig

○ Seal Flush Piping Plan VTS ○ CS ○ SS ○ Tubing ○ Pipe

○ External Seal Flush Fluid ○ gpm ○ psig

○ Auxiliary Seal Plan ○ CS ○ SS ○ Tubing ○ Pipe

○ Aux. Seal Quench Fluid

VERTICAL PUMPS

Pit or Sump Depth

Min. Submergence Req'd.

Column Pipe: ○ Flanged ○ Threaded

Line Shaft: ○ Open ○ Enclosed

Brgs: ○ Bowl ○ Line Shaft

Brg.Lube ○ Water ○ Oil ○ Grease

Float & Rod ○ CS ○ ss ○ BRZ ○ None

Float Switch

Pump thrust,lb. ○ UP ○ Down

MOTOR DRIVER

HP	VTS	RPM VTS	Frame	VTS	Volts/Phase/Cycles	400/3/50	
Mfr.		VTS	Bearings	VTS			
Cooling Type	TEFC		Insulation	CLASS F	Full Load Amps	VTS	
Cable Entries	VTS		Temp. Rise(°C)	75	Locked Rotor Amps	VTS	
Enclosure	Weatherproof, IP55						
Starter Type	Soft Starter		S.F 1.15				
Voltage Tolerance	+/- 10%						

Approx. WT. Pump & Base

Motor Turbine

NOTES:

1) NPSH(A) at Pump suction Nozzle
2) VTA: Vendor to Advise
3) Temperature rise shall be adjusted for ambient temperature of 122 °F.
4) VTS = Vendor To Specify
5) Motor to be selected for end of curve operation.
6) The cable entry details shall be provided to the supplier after the detail design & finalization of Power cable size if the motor manufacturer / supplier is unable to accommodate the same in the motor terminal box, suitable arrangement reducer / expander to be provided.
7) VTC: Vendor to Confirm
8) Vendor to provide casing drain with valve and blind flange.
9) Mating flanges for suction & discharge, gaskets, studs & nuts and reducers shall be supplied by pump vendors.

	Document No.	294-1-DSM-007
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Apical

APICAL OIL TERMINAL (PVT.) LTD.

CONSULTANCY SERVICES FOR SETTING UP OF EDIBLE OIL STORAGE TERMINAL AT PORT QASIM

DATA SHEET FOR SLUDGE PUMP

ISSUED FOR APPROVAL

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Consultant	Data Sheet			
ZISHAN ENGINEERS (PVT.) LTD.	SLUDGE PUMP			
	Document No.		Revision	DATE
Client	294-1-DSM-007		C	26-09-2018
APICAL OIL TERMINAL (PVT.) LTD.	Prepared By	Checked By	Approved By	SHEET
	MW	MKK	MM	2 OF 3

APPLICABLE TO: ● PROPOSAL ○ PURCHASE ○ AS BUILT

FOR: **APICAL OIL TERMINAL** — UNIT: **PRODUCT STORAGE**

SITE: **PORT QASIM, KARACHI** — NO. OF PUMPS REQUIRED: **1**

SERVICE: **EDIBLE OIL SLUDGE REMOVAL** — SIZE AND TYPE: **ROTARY PUMP**

MANUFACTURER: — SERIAL NO.:

NOTE: ● INDICATES INFORMATION TO BE COMPLETED BY PURCHASER ☐ BY MANUFACTURER

GENERAL

NO. MOTOR DRIVEN	**1**	OTHER DRIVER TYPE			
PUMP ITEMS NO'S	**PU-202**	PUMP ITEM NO'S			
MOTOR ITEM NO'S	**-**	DRIVEN ITEM NO'S		GEAR ITEM NO'S	
MOTOR PROVIDED BY	**MANUFACTURER**	DRIVER PROVIDED BY		GEAR PROVIDED BY	
MOTOR MOUNTED BY	**MANUFACTURER**	DRIVER MOUNTED BY		GEAR MOUNTED BY	
MOTOR DATA SHEET NO.		DRIVER DATA SHEET NO.		GEAR DATA SHEET NO.	

○ OPERATING CONDITIONS

- ● CAPACITY @ PT (m^3/h): **50**
- @ MAXIMUM VISCOSITY **425 cST** @ MINIMUM VISCOSITY
- ● DISCHARGE PRESSURE (barg):
  - MAXIMUM **1.8** MINIMUM **-**
- ● SUCTION PRESSURE (barg)
  - MAXIMUM MINIMUM **-0.2**
- ● DIFFERENTIAL PRESSURE (bar):
  - MAXIMUM **2** MINIMUM
- ● NPSH AVAILABLE (m) **5**
- ○ HYDRAULIC Kw **2.8**

☐ PERFORMANCE

- ☐ RATED CAPACITY (m^3/h)
- ☐ NPSH REQUIRED (m)
- ☐ RATED SPEED (RPM)
- ☐ DISPLACEMENT (m^3/h)
- ☐ VOLUMETRIC EFFICIENCY (%)
- ☐ MECHANICAL EFFICIENTY (%)
- ☐ kW @ MAXIMUM VISCOSITY
- ☐ kW @ RELIEF VALVE SETTING
- ☐ MAXIMUM ALLOWABLE SPEED (RPM)
- ☐ MINIMUM ALLOWABLE SPEED (RPM)

☐ CONSTRUCTION

CONNECTIONS	SIZE	ANSI RATING	FACING	POSITION
SUCTION	**VTS**	**150#**	**RF**	
DISCHARGE	**VTS**	**150#**	**RF**	
GLAND FLUSH	**VTS**			
DRAINS	**VTS**			
VENTS	**VTS**			
JACKET				

PUMP TYPE: **GEAR TYPE**

☐ INTERNAL GEAR ☐ TWIN-SCREW ☐ VANE

☐ EXTERNAL GEAR ☐ THREE-SCREW ☐ PROGRESSING CAVITY

GEAR TYPE

☐ SPUR ☐ HELICAL

☐ OTHER **Vendor to Suggest**

○ LIQUID

- ● TYPE OR NAME OF LIQUID **EDIBLE OIL SLUDGE**
- ● PUMPING TEMPERATURE (°C):
  - NORMAL **AMB** MAXIMUM **50** MINIMUM **15**
- ● SPECIFIC GRAVITY **0.9** MAXIMUM **-** MINIMUM **-**
- ● SPECIFIC HEAT **-** (Kj/kg°C)
- ● VISCOSITY (cst) 425
- ○ CORROSIVE/EROSIVE AGENTS
- ○ CHLORIDE CONCENTRATION (PPM)
- ○ H_2S CONCENTRATION (PPM)

LIQUID ○ TOXIC ○ FLAMMABLE ○ OTHER

○ SITE AND UTILITY DATA

LOCATION ○ INDOOR ● OUTDOOR

○ HEATED ○ UNHEATED ○ UNDER ROOF

○ ELECTRICAL AREA CLASS GROUP DIV

○ WINTERIZATION REQD ○ TROPICALIZATION REQD

SITE DATA

● RANGE OF AMBIENT TEMPS: MIN/MAX 0/45 °C

UNUSUAL CONDITIONS

● DUST ○ FUMES ● SALT ATMOSPHERE

○ OTHER

○ UTILITY CONDITIONS

ELECTRICITY	DRIVERS	HEATING	CONTROL	SHUTDOWN
VOLTAGE				
HERTZ				
PHASE				

COOLING WATER	INLET	RETURN	DESIGN	MAX Δ
TEMP °C		MAX		
PRESS. (kPa) (BARG)		MIN		

SOURCE

INSTRUMENT AIR	MAX	MIN
PRESSURE (kPa) (BARG)		

APPLICABLE SPECIFICATIONS:

○ GOVERNING SPECIFICATION (IF DIFFERENT)

REMARKS:

Consultant	Data Sheet			
ZISHAN ENGINEERS (PVT.) LTD.	SLUDGE PUMP			
	Document No.		Revision	DATE
Client	294-1-DSM-007		C	26-09-2018
APICAL OIL TERMINAL (PVT.) LTD.	Prepared By	Checked By	Approved By	SHEET
	MW	MKK	MM	3 OF 3

OPERATING CONDITIONS

CASING

☐ MAXIMUM ALLOWABLE PRESSURE: ____ (kPa) (BARG) @ ____ °C

☐ HYDROSTATIC TEST PRESSURE: ____ (kPa) (BARG)

☐ STEAM JACKET PRESSURE: ____ (kPa) (BARG) @ ____ °C

ROTOR MOUNT ☐ BETWEEN BEARINGS ☐ OVERHUNG

TIMING GEARS ☐ YES ☐ NO

BEARING TYPE: ☐ RADIAL ____ ☐ THRUST ____

LUBRICATION TYPE: ● CONSTANT LEVELS OILERS

☐ PUMPED FLUID ☐ RING COIL ☐ OIL MIST

■ EXTERNAL ☐ OIL FLOOD ■ GREASE

☐ LUBRICANT TYPE ____

● MECHANICAL SEALS

☐ MANUFACTURER AND MODEL ____

☐ MANUFACTURER CODE ____

○ API 610 SEAL FLUSH PLAN **MANUFACTURER STANDARD**

☐ API 610 SEAL CODE ____

○ PACKING: ○ LANTERN RING

☐ MANUFACTURER AND TYPE ____ ☐ NO. OF RINGS

DRIVE MECHANISM

○ DIRECT-COUPLED ○ V-BELT ● GEAR

☐ COUPLING MANUFACTURER ____

DRIVERS

● MOTOR:

MANUFACTURER **VTS**

TYPE **-**

FRAME NO. **VTS**

● CONSTANT SPEED ____

○ VARIABLE SPEED ____

○ kW ____ RPM **VTS**

● VOLTS **400** PHASE **3**

● HERTZ **50** SERVICE FACTOR **VTS**

● ENCLOSURE **Weatherproof IP55, TEFC**

● STARTER STAR-DELTA

● INSULATION CLASS F FOR CLASS B TEMPERATURE RISE

○ OTHER (SEE SEPARATE DATA SHEETS) ____

OTHER PURCHASER REQUIREMENTS

NAMEPLATE UNITS ○ CUSTOMARY ● SI

● RELIEF VALVES BY PUMP MFGR ● INTERNAL ○ EXTERNAL

PIPING FOR SEAL FLUSH FURNISHED BY:

● PUMP VENDOR ○ OTHERS

PIPING FOR COOLING/HEATING FURNISHED BY:

● PUMP VENDOR ○ OTHER

● PROVIDE TECHNICAL DATA MANUAL

MATERIALS

☐ CASING ____

☐ STATOR ____

☐ END PLATES ____

☐ ROTOR(S) ____

☐ VANES ____

☐ SHAFT ____

☐ SLEEVE(S) ____

☐ GLAND(S) ____

☐ BEARING HOUSING ____

☐ TIMING GEARS ____

○ SPECIAL MATERIAL TESTS (2.3.1.3 ____

○ LOW AMBIENT TEMP. MATERIALS TESTS (2.9.5)

QA INSPECTION AND TEST

○ COMPLIANCE WITH INSPECTORS CHECK LIST

○ CERTIFICATION OF MATERIALS

○ FINAL ASSEMBLY CLEARANCES

○ SURFACE AND SUBSURFACE EXAMINATIONS

○ RADIOGRAPHY ____

○ ULTRASONIC ____

○ MAGNETIC PARTICLE ____

○ LIQUID PENETRANT ____

○ CLENLINESS PRIOR TO FINAL ASSEMBLY

○ HARDNESS OF PARTS, WELDS & HEAT AFFECTED ZONES

○ FURNISH PROCEDURES FOR OPTIONAL TESTS

TESTS	REQ'D	WIT	OBS
HYDROSTATIC	●	○	●
MECHANICAL RUN	●	○	●
PERFORMANCE	●	○	●
NPSH	●	○	●

PREPARATION OF SHIPMENT

○ DOMESTIC ● EXPORT ○ EXPORT BOXING REQD.

○ OUTDOOR STORAGE MORE THAN 6 MONTHS

BASEPLATE

● BY PUMP MANUFACTURER ○ SUITABLE FOR EPOXY GROUT

○ EXTENDED FOR ____

○ SUBSOLE PLATES BY PUMP MANUFACTURER

○ DRAIN-RIM ○ DRAIN-PAN

WIEGHTS (LBS)

○ PUMP ○ BASE ○ GEAR

○ DRIVER

NOTES:-

VTC - Vendor to Confirm

VTS - Vendor to Specify

1- All missing information to be filled by Vendor.

2- Hydraulic Power. Vendor should select the best efficiency point to calculate pump power (BHP).

3- Mating flanges at suction & discharge shall be provided by vendor.

4- Vendor to submit the performance curve and GA drawings.

5- The cable entry details shall be provided to the supplier after the detail design & finalization of Power cable size if the motor manufacturer / supplier is unable to accommodate the same in the motor terminal box, suitable arrangement reducer / expander to be provided.

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APICAL OIL TERMINAL (PVT.) LTD.

CONSULTANCY SERVICES FOR SETTING UP OF EDIBLE OIL STORAGE TERMINAL AT PORT QASIM

DATA SHEET FOR EDIBLE OIL DECANTING PUMP

ISSUED FOR APPROVAL

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Consultant	Data Sheet			
ZISHAN ENGINEERS (PVT.) LTD.	EDIBLE OIL DECANTING PUMP			
	Document No.		Revision	DATE
Client	294-1-DSM-008		C	26-09-2018
APICAL OIL TERMINAL (PVT.) LTD.	Prepared by	Checked by	Approved by	SHEET
	MW	MKK	MM	2 OF 2

Applicable To: ● Proposals ○ Purchase ○ As Built

Note: ○ Indicates information to be completed by purchaser.

○ Indicates information to be completed by manufacturer.

For			Site	PORT QASIM, KARACHI	
Unit	DECANTING PUMP		Service	PRODUCT DECANTING	
No. Pumps Req'd.	1	No. Motors Req'd	1	Provided By	Mtd By
Item No.	PU-201		Item Description		
No. Engines Req'd.	---	No. Turbines Req'd	----	Provided By	Mtd By
Pump Mfr.			Size and Type		Serial No.

OPERATING CONDITIONS, EACH PUMP

Liquid	Edible Oil	Flow at PT. m^3/hr Nor.		50	Rated		
		Disch. Press. Bar G			2.8		
PT.(ºF) Nor.	AMB	Max.	Suct. Press. Bar G	Min	-0.2	Max	1.4
Sp.Gr. at PT.	0.887-0.875		Diff. Press. Bar			3	
Vap. Press. at 37.8 °C (psia)	-		Diff. Head m			34.0	
Vis. at PT.	cST 27-87		NPSHA m			8	
Corr/Eros. Caused by			Hyd.KW			4.2	

Location: ○ Indoor ● Outdoor Area: ○ Safe ○ Hazardous

Working: ○ Continuous ● Intermittent ○ Random

PERFORMANCE (VTA)

Proposal Curve No.			
RPM		NPSHR (Water)	
Eff.		BHP Rated	
Max. BHP rated IMP			
Max. Head Rated IMP			
		gpm	

Rotation (Viewed from CPLG End)

Head rise to shut off

CONSTRUCTION

Nozzles	Size	Rating	Facing	Location
Suction	VTS	150 #	RF	
Discharge	VTS	150 #	RF	

Case-mount: ○ Centerline ○ Foot ○ Bracket ○ Vert. (Type)

- Split: ○ Axial ○ Rad; Volute Type: ○ SGL ⬭ DBL ○ Diffuser
- Press: ○ Max. Allow, barg @ ºC; ○ Hydro Test barg
- Connect: ○ Vent ○ Drain ○ Gage

Impeller Dia. : ○ Rated ○ Max. Type:

Mount: ○ Between Bearings ○ Overhung

Bearings-type: ○ Radial ○ Thrust

Lube: ○ Ring Oil ○ Flood ○ Oil Mist ○ Flinger ○ Pressure

Coupling: ○ Mfr. ○ Model

Driver Mtd. By: ○ Pump Mfr. ○ Driver Mfr. ○ Purchaser

Packing: ○ Mfr. & Type ○ Size/No. of Rings

Mech. Seal: ○ Mfr. & Model

○ Mfr. Code --

SHOP TESTS

○ Non-Wit. Perf.	● Wit. Perf.
○ Non-Wit. Hydro	● Wit. Hydro
○ NPSH Req'd.	● Wit. NPSH
● Shop Inspection	
○ Dismant. & Insp. After Test	
● Inspection Required For Nozzle Welds.	
● Inspection Required For Casing	
● Radiography	○ Ultrasonic
○ Other	

MATERIALS

CASE	Carbon Steel
IMPELLER (S)	SS 304
SHAFT	SS 304
WEAR RING	Cast Iron

AUXILIARY PIPING

○ C.W. Pipe Plan ○ CU ○ SS ○ Tubing; ○ Pipe

○ Total Cooling Water Req'd (m^3/hr) req gpm ○ Sight F.I. Req'd

○ Packing Cooling Injection Req'd: ⬭ Total . gpm ○ psig

○ Seal Flush Piping Plan VTS ○ CS ○ SS ○ Tubing ○ Pipe

○ External Seal Flush Fluid ○ gpm ○ psig

○ Auxiliary Seal Plan ○ CS ○ SS ○ Tubing ○ Pipe

○ Aux. Seal Quench Fluid

VERTICAL PUMPS

Pit or Sump Depth

Min. Submergence Req'd.

Column Pipe: ○ Flanged ○ Threaded

Line Shaft: ○ Open ○ Enclosed

Brgs: ○ Bowl ○ Line Shaft

Brg.Lube ○ Water ○ Oil ○ Grease

Float & Rod ○ CS ○ ss ○ BRZ ○ None

Float Switch

Pump thrust,lb. ○ UP ○ Down

MOTOR DRIVER

HP	VTS	RPM	VTS	Frame	VTS	Volts/Phase/Cycles	400/3/50
Mfr.		VTS		Bearings	VTS		
Cooling Type	TEFC			Insulation	CLASS F	Full Load Amps	VTS
Cable Entries	VTS	Temp. Rise(°C)		75		Locked Rotor Amps	VTS
Enclosure	Weatherproof, IP55						
Starter Type	Star-Delta	S.F	1.15				
Voltage Tolerance	+/- 10%						

Approx. WT. Pump & Base

Motor Turbine

NOTES:

1) NPSH(A) at Pump suction Nozzle
2) VTA: Vendor to Advise
3) Temperature rise shall be adjusted for ambient temperature of 122 °F.
4) VTS = Vendor To Specify
5) Motor to be selected for end of curve operation.
6) The cable entry details shall be provided to the supplier after the detail design & finalization of Power cable size if the motor manufacturer / supplier is unable to accommodate the same in the motor terminal box, suitable arrangement reducer / expander to be provided.
7) VTC: Vendor to Confirm
8) Vendor to provide casing drain with valve and blind flange.
9) Mating flanges for suction & discharge, gaskets, studs & nuts and reducers shall be supplied by pump vendors.

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Apical

APICAL OIL TERMINAL (PVT.) LTD.

CONSULTANCY SERVICES FOR SETTING UP OF EDIBLE OIL STORAGE TERMINAL AT PORT QASIM

DATA SHEET FOR HSD TRANSFER PUMP

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Consultant	Data Sheet			
ZISHAN ENGINEERS (PVT.) LTD.	HSD TRANSFER PUMP			
	Document No.		Revision	DATE
Client	294-1-DSM-009		C	26-09-2018
APICAL OIL TERMINAL (PVT.) LTD.	Prepared By	Checked By	Approved By	SHEET
	MW	MKK	MM	2 OF 3

APPLICABLE TO: ● PROPOSAL ○ PURCHASE ○ AS BUILT

FOR: **APICAL OIL TERMINAL** | UNIT: **HSD TRANSFER**

SITE: **PORT QASIM, KARACHI** | NO. OF PUMPS REQUIRED: **1**

SERVICE: **HSD TRANSFER** | SIZE AND TYPE: **ROTARY PUMP**

MANUFACTURER: | SERIAL NO.:

NOTE: ● INDICATES INFORMATION TO BE COMPLETED BY PURCHASER ☐ BY MANUFACTURER

GENERAL

NO. MOTOR DRIVEN	**1**	OTHER DRIVER TYPE			
PUMP ITEMS NO'S	**PU-503**	PUMP ITEM NO'S			
MOTOR ITEM NO'S	**-**	DRIVEN ITEM NO'S		GEAR ITEM NO'S	
MOTOR PROVIDED BY	**MANUFACTURER**	DRIVER PROVIDED BY		GEAR PROVIDED BY	
MOTOR MOUNTED BY	**MANUFACTURER**	DRIVER MOUNTED BY		GEAR MOUNTED BY	
MOTOR DATA SHEET NO.		DRIVER DATA SHEET NO.		GEAR DATA SHEET NO.	

○ OPERATING CONDITIONS

- ● CAPACITY @ PT (m^3/h): **20**
  - @ MAXIMUM VISCOSITY **180 cST** @ MINIMUM VISCOSITY **5.5 cST**
- ● DISCHARGE PRESSURE (barg):
  - MAXIMUM **1.8** MINIMUM **-**
- ● SUCTION PRESSURE (barg)
  - MAXIMUM MINIMUM **-0.2**
- ● DIFFERENTIAL PRESSURE (bar):
  - MAXIMUM **2** MINIMUM
- ● NPSH AVAILABLE (m) **6**
- ○ HYDRAULIC Kw **1.1**

☐ PERFORMANCE

- ☐ RATED CAPACITY (m^3/h)
- ☐ NPSH REQUIRED (m)
- ☐ RATED SPEED (RPM)
- ☐ DISPLACEMENT (m^3/h)
- ☐ VOLUMETRIC EFFICIENCY (%)
- ☐ MECHANICAL EFFICIENTY (%)
- ☐ kW @ MAXIMUM VISCOSITY
- ☐ kW @ RELIEF VALVE SETTING
- ☐ MAXIMUM ALLOWABLE SPEED (RPM)
- ☐ MINIMUM ALLOWABLE SPEED (RPM)

☐ CONSTRUCTION

CONNECTIONS	SIZE	ANSI RATING	FACING	POSITION
SUCTION	**VTS**	**150#**	**RF**	
DISCHARGE	**VTS**	**150#**	**RF**	
GLAND FLUSH	**VTS**			
DRAINS	**VTS**			
VENTS	**VTS**			
JACKET				

PUMP TYPE: **GEAR TYPE**

☐ INTERNAL GEAR ☐ TWIN-SCREW ☐ VANE

☐ EXTERNAL GEAR ☐ THREE-SCREW ☐ PROGRESSING CAVITY

GEAR TYPE

☐ SPUR ☐ HELICAL

☐ OTHER **Vendor to Suggest**

○ LIQUID

- ● TYPE OR NAME OF LIQUID **High Speed Diesel**
- ● PUMPING TEMPERATURE (°C):
  - NORMAL **AMB** MAXIMUM **50** MINIMUM **15**
- ● SPECIFIC GRAVITY **0.87** MAXIMUM **-** MINIMUM **-**
- ● SPECIFIC HEAT **-** (Kj/kg°C)
- ● VISCOSITY (cst) **5.5 -180 @ 50oC(Note-5)**
- ○ CORROSIVE/EROSIVE AGENTS
- ○ CHLORIDE CONCENTRATION (PPM)
- ○ H_2S CONCENTRATION (PPM)

LIQUID ○ TOXIC ○ FLAMMABLE ○ OTHER

○ SITE AND UTILITY DATA

LOCATION ○ INDOOR ● OUTDOOR

○ HEATED ○ UNHEATED ○ UNDER ROOF

○ ELECTRICAL AREA CLASS GROUP DIV

○ WINTERIZATION REQD ○ TROPICALIZATION REQD

SITE DATA

● RANGE OF AMBIENT TEMPS: MIN/MAX 0/45 °C

UNUSUAL CONDITIONS

● DUST ○ FUMES ● SALT ATMOSPHERE

○ OTHER

○ UTILITY CONDITIONS

ELECTRICITY	DRIVERS	HEATING	CONTROL	SHUTDOWN
VOLTAGE				
HERTZ				
PHASE				

COOLING WATER	INLET	RETURN	DESIGN	MAX Δ
TEMP °C		MAX		
PRESS. (kPa) (BARG)		MIN		

SOURCE

INSTRUMENT AIR	MAX	MIN
PRESSURE (kPa) (BARG)		

APPLICABLE SPECIFICATIONS:

○ GOVERNING SPECIFICATION (IF DIFFERENT)

REMARKS:

Consultant	Data Sheet			
ZISHAN ENGINEERS (PVT.) LTD.	HSD TRANSFER PUMP			
	Document No.		Revision	DATE
Client	294-1-DSM-009		C	26-09-2018
APICAL OIL TERMINAL (PVT.) LTD.	Prepared By	Checked By	Approved By	SHEET
	MW	MKK	MM	3 OF 3

OPERATING CONDITIONS

CASING

☐ MAXIMUM ALLOWABLE PRESSURE: ____ (kPa) (BARG) @ ____ °C

☐ HYDROSTATIC TEST PRESSURE: ____ (kPa) (BARG)

☐ STEAM JACKET PRESSURE: ____ (kPa) (BARG) @ ____ °C

ROTOR MOUNT ☐ BETWEEN BEARINGS ☐ OVERHUNG

TIMING GEARS ☐ YES ☐ NO

BEARING TYPE: ☐ RADIAL ____ ☐ THRUST ____

LUBRICATION TYPE: ● CONSTANT LEVELS OILERS

☐ PUMPED FLUID ☐ RING COIL ☐ OIL MIST

■ EXTERNAL ☐ OIL FLOOD ■ GREASE

☐ LUBRICANT TYPE ____

● MECHANICAL SEALS

☐ MANUFACTURER AND MODEL ____

☐ MANUFACTURER CODE ____

○ API 610 SEAL FLUSH PLAN **MANUFACTURER STANDARD**

☐ API 610 SEAL CODE ____

○ PACKING: ○ LANTERN RING

☐ MANUFACTURER AND TYPE ____ ☐ NO. OF RINGS

DRIVE MECHANISM

○ DIRECT-COUPLED ○ V-BELT ● GEAR

☐ COUPLING MANUFACTURER ____

DRIVERS

● MOTOR:

MANUFACTURER **VTS**

TYPE **-**

FRAME NO. **VTS**

● CONSTANT SPEED

○ VARIABLE SPEED

○ kW ____ RPM **VTS**

● VOLTS **400** PHASE **3**

● HERTZ **50** SERVICE FACTOR **VTS**

● ENCLOSURE **EEx d IIC, T4, IP65, TEFC**

● STARTER D.O.L.

● INSULATION CLASS F FOR CLASS B TEMPERATURE RISE

○ OTHER (SEE SEPARATE DATA SHEETS) ____

OTHER PURCHASER REQUIREMENTS

NAMEPLATE UNITS ○ CUSTOMARY ● SI

● RELIEF VALVES BY PUMP MFGR ● INTERNAL ○ EXTERNAL

PIPING FOR SEAL FLUSH FURNISHED BY:

● PUMP VENDOR ○ OTHERS

PIPING FOR COOLING/HEATING FURNISHED BY:

● PUMP VENDOR ○ OTHER

● PROVIDE TECHNICAL DATA MANUAL

MATERIALS

☐ CASING ____

☐ STATOR ____

☐ END PLATES ____

☐ ROTOR(S) ____

☐ VANES ____

☐ SHAFT ____

☐ SLEEVE(S) ____

☐ GLAND(S) ____

☐ BEARING HOUSING ____

☐ TIMING GEARS ____

○ SPECIAL MATERIAL TESTS (2.3.1.3 ____

○ LOW AMBIENT TEMP. MATERIALS TESTS (2.9.5)

QA INSPECTION AND TEST

○ COMPLIANCE WITH INSPECTORS CHECK LIST

○ CERTIFICATION OF MATERIALS

○ FINAL ASSEMBLY CLEARANCES

○ SURFACE AND SUBSURFACE EXAMINATIONS

○ RADIOGRAPHY ____

○ ULTRASONIC ____

○ MAGNETIC PARTICLE ____

○ LIQUID PENETRANT ____

○ CLENLINESS PRIOR TO FINAL ASSEMBLY

○ HARDNESS OF PARTS, WELDS & HEAT AFFECTED ZONES

○ FURNISH PROCEDURES FOR OPTIONAL TESTS

TESTS	REQ'D	WIT	OBS
HYDROSTATIC	●	○	●
MECHANICAL RUN	●	○	●
PERFORMANCE	●	○	●
NPSH	●	○	●

PREPARATION OF SHIPMENT

○ DOMESTIC ● EXPORT ○ EXPORT BOXING REQD.

○ OUTDOOR STORAGE MORE THAN 6 MONTHS

BASEPLATE

● BY PUMP MANUFACTURER ○ SUITABLE FOR EPOXY GROUT

○ EXTENDED FOR ____

○ SUBSOLE PLATES BY PUMP MANUFACTURER

○ DRAIN-RIM ○ DRAIN-PAN

WIEGHTS (LBS)

○ PUMP ○ BASE ○ GEAR

○ DRIVER

NOTES:-

VTC - Vendor to Confirm

VTS - Vendor to Specify

1- All missing information to be filled by Vendor.

2- Hydraulic Power. Vendor should select the best efficiency point to calculate pump power (BHP).

3- Mating flanges at suction & discharge shall be provided by vendor.

4- Vendor to submit the performance curve and GA drawings.

5- This pump will be used as standby for Furnace Oil Transfer pump

6- The cable entry details shall be provided to the supplier after the detail design & finalization of Power cable size if the motor manufacturer / supplier is unable to accommodate the same in the motor terminal box, suitable arrangement reducer / expander to be provided.

	Document No.	294-1-DSM-015
	Revision	C
	Date	26-09-2018
	Total Pages (inc front cover)	3

APICAL OIL TERMINAL (PVT.) LTD.

CONSULTANCY SERVICES FOR SETTING UP OF EDIBLE OIL STORAGE TERMINAL AT PORT QASIM

DATA SHEET FOR FO TRANSFER PUMP

ISSUED FOR APPROVAL

Rev.	Date	Description	Prepared By	Checked By	Approved By
C	26-09-2018	Issued for Approval	MW	MKK	MM
B	23-06-2018	Issued for Approval	MW	MKK	MM
A	09-06-2018	Issued for Review	MW	RA	MM

Consultant	Data Sheet			
ZISHAN ENGINEERS (PVT.) LTD.	FO TRANSFER PUMP			
	Document No.		Revision	DATE
Client	294-1-DSM-015		C	26-09-2018
APICAL OIL TERMINAL (PVT.) LTD.	Prepared By	Checked By	Approved By	SHEET
	MW	MKK	MM	2 OF 3

APPLICABLE TO: ● PROPOSAL ○ PURCHASE ○ AS BUILT

FOR **APICAL OIL TERMINAL** UNIT **FO TRANSFER**

SITE **PORT QASIM, KARACHI** NO. OF PUMPS REQUIRED **1**

SERVICE **FO TRANSFER** SIZE AND TYPE **ROTARY PUMP**

MANUFACTURER SERIAL NO.

NOTE: ● INDICATES INFORMATION TO BE COMPLETED BY PURCHASER ☐ BY MANUFACTURER

GENERAL

NO. MOTOR DRIVEN	**1**	OTHER DRIVER TYPE			
PUMP ITEMS NO'S	**PU-504**	PUMP ITEM NO'S			
MOTOR ITEM NO'S	**-**	DRIVEN ITEM NO'S		GEAR ITEM NO'S	
MOTOR PROVIDED BY	**MANUFACTURER**	DRIVER PROVIDED BY		GEAR PROVIDED BY	
MOTOR MOUNTED BY	**MANUFACTURER**	DRIVER MOUNTED BY		GEAR MOUNTED BY	
MOTOR DATA SHEET NO.		DRIVER DATA SHEET NO.		GEAR DATA SHEET NO.	

○ OPERATING CONDITIONS

- ● CAPACITY @ PT (m^3/h): **20**
  - @ MAXIMUM VISCOSITY **180 cST** @ MINIMUM VISCOSITY **5.5 cST**
- ● DISCHARGE PRESSURE (barg):
  - MAXIMUM **1.8** MINIMUM **-**
- ● SUCTION PRESSURE (barg)
  - MAXIMUM MINIMUM **-0.2**
- ● DIFFERENTIAL PRESSURE (bar):
  - MAXIMUM **2** MINIMUM
- ● NPSH AVAILABLE (m) **6**
- ○ HYDRAULIC Kw **1.1**

☐ PERFORMANCE

- ☐ RATED CAPACITY (m^3/h)
- ☐ NPSH REQUIRED (m)
- ☐ RATED SPEED (RPM)
- ☐ DISPLACEMENT (m^3/h)
- ☐ VOLUMETRIC EFFICIENCY (%)
- ☐ MECHANICAL EFFICIENTY (%)
- ☐ kW @ MAXIMUM VISCOSITY
- ☐ kW @ RELIEF VALVE SETTING
- ☐ MAXIMUM ALLOWABLE SPEED (RPM)
- ☐ MINIMUM ALLOWABLE SPEED (RPM)

☐ CONSTRUCTION

CONNECTIONS	SIZE	ANSI RATING	FACING	POSITION
SUCTION	**VTS**	**150#**	**RF**	
DISCHARGE	**VTS**	**150#**	**RF**	
GLAND FLUSH	**VTS**			
DRAINS	**VTS**			
VENTS	**VTS**			
JACKET				

PUMP TYPE: **GEAR TYPE**

☐ INTERNAL GEAR ☐ TWIN-SCREW ☐ VANE

☐ EXTERNAL GEAR ☐ THREE-SCREW ☐ PROGRESSING CAVITY

GEAR TYPE

☐ SPUR ☐ HELICAL

☐ OTHER **Vendor to Suggest**

○ LIQUID

- ● TYPE OR NAME OF LIQUID **FURNACE OIL**
- ● PUMPING TEMPERATURE (°C):
  - NORMAL **AMB** MAXIMUM **50** MINIMUM **15**
- ● SPECIFIC GRAVITY **0.87** MAXIMUM **-** MINIMUM **-**
- ● SPECIFIC HEAT **-** (Kj/kg°C)
- ● VISCOSITY (cst) **5.5 -180@50oC (Note-5)**
- ○ CORROSIVE/EROSIVE AGENTS
- ○ CHLORIDE CONCENTRATION (PPM)
- ○ H_2S CONCENTRATION (PPM)

LIQUID ○ TOXIC ○ FLAMMABLE ○ OTHER

○ SITE AND UTILITY DATA

LOCATION ○ INDOOR ● OUTDOOR

○ HEATED ○ UNHEATED ○ UNDER ROOF

○ ELECTRICAL AREA CLASS GROUP DIV

○ WINTERIZATION REQD ○ TROPICALIZATION REQD

SITE DATA

● RANGE OF AMBIENT TEMPS: MIN/MAX 0/45 °C

UNUSUAL CONDITIONS

● DUST ○ FUMES ● SALT ATMOSPHERE

○ OTHER

○ UTILITY CONDITIONS

ELECTRICITY	DRIVERS	HEATING	CONTROL	SHUTDOWN
VOLTAGE				
HERTZ				
PHASE				

COOLING WATER	INLET	RETURN	DESIGN	MAX Δ
TEMP °C		MAX		
PRESS. (kPa) (BARG)		MIN		

SOURCE

INSTRUMENT AIR	MAX	MIN
PRESSURE (kPa) (BARG)		

APPLICABLE SPECIFICATIONS:

○ GOVERNING SPECIFICATION (IF DIFFERENT)

REMARKS:

Consultant	Data Sheet			
ZISHAN ENGINEERS (PVT.) LTD.	FO TRANSFER PUMP			
	Document No.		Revision	DATE
Client	294-1-DSM-015		C	26-09-2018
APICAL OIL TERMINAL (PVT.) LTD.	Prepared By	Checked By	Approved By	SHEET
	MW	MKK	MM	3 OF 3

OPERATING CONDITIONS

CASING

☐ MAXIMUM ALLOWABLE PRESSURE: ____ (kPa) (BARG) @ ____ °C

☐ HYDROSTATIC TEST PRESSURE: ____ (kPa) (BARG)

☐ STEAM JACKET PRESSURE: ____ (kPa) (BARG) @ ____ °C

ROTOR MOUNT ☐ BETWEEN BEARINGS ☐ OVERHUNG

TIMING GEARS ☐ YES ☐ NO

BEARING TYPE: ☐ RADIAL ____ ☐ THRUST ____

LUBRICATION TYPE: ● CONSTANT LEVELS OILERS

☐ PUMPED FLUID ☐ RING COIL ☐ OIL MIST

■ EXTERNAL ☐ OIL FLOOD ■ GREASE

☐ LUBRICANT TYPE ____

● MECHANICAL SEALS

☐ MANUFACTURER AND MODEL ____

☐ MANUFACTURER CODE ____

○ API 610 SEAL FLUSH PLAN **MANUFACTURER STANDARD**

☐ API 610 SEAL CODE ____

○ PACKING: ○ LANTERN RING

☐ MANUFACTURER AND TYPE ____ ☐ NO. OF RINGS

DRIVE MECHANISM

○ DIRECT-COUPLED ○ V-BELT ● GEAR

☐ COUPLING MANUFACTURER ____

DRIVERS

● MOTOR:

MANUFACTURER **VTS**

TYPE **-**

FRAME NO. **VTS**

● CONSTANT SPEED ____

○ VARIABLE SPEED ____

○ kW ____ RPM **VTS**

● VOLTS **400** PHASE **3**

● HERTZ **50** SERVICE FACTOR **VTS**

● ENCLOSURE **EEx d IIC, T4, IP65, TEFC**

● STARTER D.O.L.

● INSULATION CLASS F FOR CLASS B TEMPERATURE RISE

○ OTHER (SEE SEPARATE DATA SHEETS) ____

OTHER PURCHASER REQUIREMENTS

NAMEPLATE UNITS ○ CUSTOMARY ● SI

● RELIEF VALVES BY PUMP MFGR ● INTERNAL ○ EXTERNAL

PIPING FOR SEAL FLUSH FURNISHED BY:

● PUMP VENDOR ○ OTHERS

PIPING FOR COOLING/HEATING FURNISHED BY:

● PUMP VENDOR ○ OTHER

● PROVIDE TECHNICAL DATA MANUAL

MATERIALS

☐ CASING ____

☐ STATOR ____

☐ END PLATES ____

☐ ROTOR(S) ____

☐ VANES ____

☐ SHAFT ____

☐ SLEEVE(S) ____

☐ GLAND(S) ____

☐ BEARING HOUSING ____

☐ TIMING GEARS ____

○ SPECIAL MATERIAL TESTS (2.3.1.3 ____

○ LOW AMBIENT TEMP. MATERIALS TESTS (2.9.5)

QA INSPECTION AND TEST

○ COMPLIANCE WITH INSPECTORS CHECK LIST

○ CERTIFICATION OF MATERIALS

○ FINAL ASSEMBLY CLEARANCES

○ SURFACE AND SUBSURFACE EXAMINATIONS

○ RADIOGRAPHY ____

○ ULTRASONIC ____

○ MAGNETIC PARTICLE ____

○ LIQUID PENETRANT ____

○ CLENLINESS PRIOR TO FINAL ASSEMBLY

○ HARDNESS OF PARTS, WELDS & HEAT AFFECTED ZONES

○ FURNISH PROCEDURES FOR OPTIONAL TESTS

TESTS	REQ'D	WIT	OBS
HYDROSTATIC	●	○	●
MECHANICAL RUN	●	○	●
PERFORMANCE	●	○	●
NPSH	●	○	●

PREPARATION OF SHIPMENT

○ DOMESTIC ● EXPORT ○ EXPORT BOXING REQD.

○ OUTDOOR STORAGE MORE THAN 6 MONTHS

BASEPLATE

● BY PUMP MANUFACTURER ○ SUITABLE FOR EPOXY GROUT

○ EXTENDED FOR ____

○ SUBSOLE PLATES BY PUMP MANUFACTURER

○ DRAIN-RIM ○ DRAIN-PAN

WIEGHTS (LBS)

○ PUMP ○ BASE ○ GEAR

○ DRIVER

NOTES:-

VTC - Vendor to Confirm

VTS - Vendor to Specify

1- All missing information to be filled by Vendor.

2- Hydraulic Power. Vendor should select the best efficiency point to calculate pump power (BHP).

3- Mating flanges at suction & discharge shall be provided by vendor.

4- Vendor to submit the performance curve and GA drawings.

5- This pump will be used as standby for HSD Transfer pump

6- The cable entry details shall be provided to the supplier after the detail design & finalization of Power cable size if the motor manufacturer / supplier is unable to accommodate the same in the motor terminal box, suitable arrangement reducer / expander to be provided.