

Project Engineering
Management

Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)



2X660 MW SURATGARH STPS, STAGE-V / SUMP PUMPS/SUBMERSIBLE PUMPS

Ref No. : PE/PG/SG5/E-4504/14

Date: 25.07.2014

CORRIGENDA / ADDENDA-1

Tender Enquiry no.: PE/PG/SG5/E-4504/14

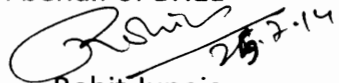
Date: 18.07.2014

DUE DATE
11-Aug-14
02.00 PM

Amendment-1 in Technical Specification No PE-TS-392-172-N001 against Tender Enquiry PE/PG/SG5/E-4504/14 Dated 18.07.14 is enclosed. All other specification requirement for Sump Pumps/Submersible Pumps (except for those indicated in Amended Data Sheet-A enclosed) specified in specification no. PE-TS-392-172-N001, shall remain unchanged.

All other terms and conditions remain unchanged.

With Regards,
For & on behalf of BHEL


Rohit Juneja

Engineer/PG-II-1

Please reply to:

Rohit Juneja
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RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED (RRVUNL)

2 X 660 MW SURATGARH STPS UNIT 7 & 8


AMENDMENT No. 1

**TECHNICAL SPECIFICATION
FOR
SUMP PUMPS**

Specification No. : PE-TS-392-172-N001 (REV. 0)



**BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
PPEI BUILDING, SECTOR 16 A
NOIDA - 201301**


	TECHNICAL SPECIFICATIONS	SPECN. NO.:	PE-TS-392-172-N001	
	AMENDMENT NO. 1			
	SUMP PUMPS FOR SURATGARH PROJECT	REV	0	DATE: 25-07-2014


1.0 The following amendment to specification requirement for Sump Pumps for Suratgarh project w.r.t. the specification No. PE-TS-392-172-N001 of Suratgarh Project Sump pumps may be noted by the bidders:


Specification requirements for Sump pumps have been revised (changes marked in BOLD) as per Amended Data Sheet-A enclosed. Changes made in the Datasheet -A are also listed below:


- a.) Sl. No. 2.6.0 for Group A Rain Water Harvesting Sump Pumps shall be read as 3000 (max.) in place of 1500 (max).
- b.) Sl. No. 3.3.0 for all Sump Pumps shall be read as 50 Deg C in place of 60 Deg C.


All other specification requirement for Sump Pumps (except for those indicated in Amended Data Sheet-A enclosed) specified in specification no. PE-TS-392-172-N001, shall remain unchanged.


 2X660 MW SURATGARH STPS UNIT 7 & 8 TECHNICAL SPECIFICATION FOR SUMP PUMPS		Specification No: PE-TS-392-172-N001 Amendment 1		
		Vol-IIIB Section-D		
DATA SHEET - A (SUMP PUMPS)			Date - 25.07.14	
CL. NO.	DESCRIPTION	UNIT	Group-A	
			Fixed Duty type Submersible Sump	Fixed Duty type Submersible Sump
1.0.0	GENERAL			
1.1.0	Service /Location of Sump pumps		CW Pit in TG Building	Rain Water Harvesting
1.2.0	Equipment name		Sump Pump	Sump Pump
1.3.0	Pump type		Fixed Submersible sump pumps	Fixed Submersible sump pumps
1.4.0	Duty		Intermittent	Intermittent
1.5.0	Location		Indoor/ Outdoor	Indoor/ Outdoor
1.6.0	Maximum Ambient Temperature	°C	60	60
1.7.0	Drive		Motor Driven	Motor Driven
1.8.0	Motor Rating		Motor rating shall be so selected as to have at least 25 % margin over the maximum power required by the pump, throughout its entire range of operation.	
2.0.0	PUMP PARAMETERS			
2.1.0	Design capacity	M3/hr	100	100
2.2.0	Total head at rated capacity	MWC	20	50
2.3.0	Total no.of pumps installed	Nos.	4	4
2.4.0	No. of pumps working / Standby	Nos.	(1 W+1 S) Per Unit	(2W + 2S) for Station
2.5.0	Parallel operation required		Yes	Yes
2.6.0	Pump RPM		1500 (Max.)	3000 (Max.)
2.9.0	Range of operation	%	30 to 150 % of the rated flow	30 to 150 % of the rated flow
2.10.0	Pump design standard		IS 5120/IS 8034	IS 5120/IS 8034
2.11.0	Max. particle size to be handled		35 mm	35 mm
3.0.0	LIQUID DATA			
3.1.0	Liquid handled		water with suspended particles	water with suspended particles
3.2.0	Specific gravity		1.1	1.1
3.3.0	Temperature (max.)	°C	50	50
4.0.0	DESIGN AND CONSTRUCTION			
	FEATURES			
4.1.0	Impeller type		Open, Non-clog type	Open, Non-clog type
4.2.0	Flange drilling standard		ANSI B 16.5	ANSI B 16.5
5.0.0	MATERIAL OF CONSTRUCTION			
5.1.0	Casing / Suction bell		CI,IS:210 Gr FG 260	CI,IS:210 Gr FG 260
5.2.0	Impeller		SS-316	SS-316
5.3.0	Impeller shaft		SS-410	SS-410
5.4.0	Wear ring (where applicable)		Austenitic cast iron	Austenitic cast iron
5.5.0	Shaft sleeve (where applicable)		SS-316/SS410	SS-316/SS410
5.6.0	Coulmn Pipe (where applicable)		-	-
5.7.0	Pump and motor coupling		-	-
5.8.0	Fasteners		SS 316	SS 316
5.9.0	Gland		C.I, IS-210, FG-260/ Equivalent	C.I, IS-210, FG-260/ Equivalent
	Gland Packing		Braided Graphite- free Teflon	Braided Graphite- free Teflon
5.10.0	Mechanical seal		As applicable	As applicable
5.11.0	Pump Lubrication		SELF/Oil/Grease	SELF/Oil/Grease
5.12.0	Pump line shaft lubrication		N/A	N/A
5.13.0	Strainer (Body / Mesh)		Body (CI IS FG260 FG 260)/ Mesh (SS 316)	Body (CI IS FG260 FG 260)/ Mesh (SS 316)
Note :	Bidder's may offer alternative materials, if they are superior to that specified above for the indicated service of the pump.			
6.0.0	INSPECTION AND TESTING		As per approved quality plan by BHEL/ Customer	
7.0.0	SUPPLY OF ACCESSORIES AND SERVICE.			
7.1.0	Counter Flanges with Nuts,Bolts, Gaskets etc.		Yes	Yes
7.2.0	Elastomer cables for connecting pump with its panel length (M)		25M	25M
7.3.0	Relay based control panel with integral starter		Yes Wall mounted,common for two pumps with IP 65 protection	Yes Wall mounted,common for two pumps with IP 65 protection
7.4.0	Suction and Discharge pressure gauge with root valve / pump		Discharge pressure Guage with 3 way isolating valve	Discharge pressure Guage with 3 way isolating valve


		2X660 MW SURATGARH STPS UNIT 7 & 8		Specification No: PE-TS-392-172-N001 Amendment 1	
TECHNICAL SPECIFICATION FOR SUMP PUMPS				Vol-II B Section-D	
DATA SHEET - A (SUMP PUMPS)				Date - 25.07.14	
CL. NO.	DESCRIPTION	UNIT	Group-A		
			Fixed Duty type Submersible Sump	Fixed Duty type Submersible Sump	
7.5.0	Discharge hose/ Pipe - Hose/ Pipe length per pump - Hose/Pipe dia		Fixed MS Piping upto top of Pit (Carbon Steel as per IS 1239, Heave Grade) Min. 150 NB	Fixed MS Piping upto top of Pit (Carbon Steel as per IS 1239, Heave Grade) Min. 150 NB	
7.6.0	Cables (*) for connecting the starter panel with the power supply source - Length (M) / pump (*)including plug matching with purchaser's 63 Amp welding socket		-	-	
7.7.0	Chains		Yes(15M)	Yes, (15M)	
7.8.0	Suction Strainers		Yes	Yes	
7.9.0	Pump Stool		Yes	Yes	
7.10.0	Wheel trolley required per pump		No	No	
7.11.0	Level switches for		Top mounted displacer or capacitive type level switch subject to customer's approval	Top mounted displacer or capacitive type level switch subject to customer's approval	
	- Very Low level		Yes, One level switch for two pumps installed in a pit	Yes, One level switch for two pumps installed in a pit	
	- High level		Yes, One level switch for two pumps installed in a pit	Yes, One level switch for two pumps installed in a pit	
	- Very high level		Yes, One level switch for two pumps installed in a pit	Yes, One level switch for two pumps installed in a pit	
8.0.0	Levels for installation				
8.1	Pump/Motor Support Elevation		N/A	N/A	
8.2	Pump Invert Level		-6.85 M w.r.t. Finished Ground Level	Approx.(-5.0) M to (-6.0) M w.r.t. Finished Ground Level	
9.0.0	Pit Size		2 M X 1.5 M X 1 M	-	
10.0.0	Special Requirements (Applicable Only for Diesel Engine Sump Pumps only)				
10.1.0	Suction Hose Pipe along with Foot Valve		N/A	N/A	


 2X660 MW SURATGARH STPS UNIT 7 & 8 TECHNICAL SPECIFICATION FOR SUMP PUMPS		Specification No: PE-TS-392-172-N001 Amendment 1		
		Vol-IIIB Section-D		
DATA SHEET - A (SUMP PUMPS)			Date - 25.07.14	
CL. NO.	DESCRIPTION	UNIT	Group-B	
			Portable Submersible Sump Pumps	Portable Submersible Sump Pumps
1.0.0	GENERAL			
1.1.0	Service /Location of Sump pumps		For dewatering Various Pump Houses (CW P/H, River Water P/H, Raw Water P/H & Filtered Water P/H)	For dewatering Desilting Chambers
1.2.0	Equipment name		Sump Pump	Sump Pump
1.3.0	Pump type		Portable Submersible sump pumps	Portable Submersible sump pumps
1.4.0	Duty		Intermittent	Intermittent
1.5.0	Location		Indoor/ Outdoor	Indoor/ Outdoor
1.6.0	Maximum Ambient Temperature	°C	60	60
1.7.0	Drive		Motor Driven	Motor Driven
1.8.0	Motor Rating		Motor rating shall be so selected as to have at least 25 % margin over the maximum power required by the pump, throughout its entire range of operation.	
2.0.0	PUMP PARAMETERS			
2.1.0	Design capacity	M3/hr	100	100
2.2.0	Total head at rated capacity	MWC	25	25
2.3.0	Total no.of pumps installed	Nos.	8	2
2.4.0	No. of pumps working / Standby	Nos.	-	-
2.5.0	Parallel operation required		-	-
2.6.0	Pump RPM		1500 (Max.)	1500 (Max.)
2.9.0	Range of operation	%	30 to 150 % of the rated flow	30 to 150 % of the rated flow
2.10.0	Pump design standard		IS 5120/IS 8034	IS 5120/IS 8034
2.11.0	Max. particle size to be handled		35 mm	35 mm
3.0.0	LIQUID DATA			
3.1.0	Liquid handled		water with suspended particles	water with suspended particles
3.2.0	Specific gravity		1.1	1.1
3.3.0	Temperature (max.)	°C	50	50
4.0.0	DESIGN AND CONSTRUCTION			
	FEATURES			
4.1.0	Impeller type		Open, Non-clog type	Open, Non-clog type
4.2.0	Flange drilling standard		ANSI B 16.5	ANSI B 16.5
5.0.0	MATERIAL OF CONSTRUCTION			
5.1.0	Casing / Suction bell		CI,IS:210 Gr FG 260	CI,IS:210 Gr FG 260
5.2.0	Impeller		SS-316	SS-316
5.3.0	Impeller shaft		SS-410	SS-410
5.4.0	Wear ring (where applicable)		Austenitic cast iron	Austenitic cast iron
5.5.0	Shaft sleeve (where applicable)		SS-316/SS410	SS-316/SS410
5.6.0	Coulmn Pipe (where applicable)		-	-
5.7.0	Pump and motor coupling		-	-
5.8.0	Fasteners		SS 316	SS 316
5.9.0	Gland		C.I, IS-210, FG-260/ Equivalent	C.I, IS-210, FG-260/ Equivalent
	Gland Packing		Braided Graphite- free Teflon	Braided Graphite- free Teflon
5.10.0	Mechanical seal		As applicable	As applicable
5.11.0	Pump Lubrication		SELF/Oil/Grease	SELF/Oil/Grease
5.12.0	Pump line shaft lubrication		N/A	N/A
5.13.0	Strainer (Body / Mesh)		Body (CI IS FG260 FG 260)/ Mesh (SS 316)	Body (CI IS FG260 FG 260)/ Mesh (SS 316)
Note :	Bidder's may offer alternative materials, if they are			
6.0.0	INSPECTION AND TESTING		As per approved quality plan by BHEL/ Customer	
7.0.0	SUPPLY OF ACCESSORIES AND SERVICE.			
7.1.0	Counter Flanges with Nuts,Bolts, Gaskets etc.		Yes	Yes
7.2.0	Elastomer cables for connecting pump with its panel length (M)		25M	25M
7.3.0	Relay based control panel with integral starter		Yes Trolley mounted for each sump pump with IP 65 protection	Yes Trolley mounted for each sump pump with IP 65 protection
7.4.0	Suction and Discharge pressure gauge with root valve / pump		-	-

		2X660 MW SURATGARH STPS UNIT 7 & 8		Specification No: PE-TS-392-172-N001 Amendment 1	
		TECHNICAL SPECIFICATION FOR SUMP PUMPS		Vol-IIIB Section-D	
		DATA SHEET - A (SUMP PUMPS)		Date - 25.07.14	
CL. NO.	DESCRIPTION	UNIT	Group-B		
			Portable Submersible Sump Pumps	Portable Submersible Sump Pumps	
7.5.0	Discharge hose/ Pipe - Hose/ Pipe length per pump - Hose/Pipe dia		30 M (Heavy duty rubberised canvas) To suit pump discharge	30 M (Heavy duty rubberised canvas) To suit pump discharge	
7.6.0	Cables (*) for connecting the starter panel with the power supply source - Length (M) / pump (*)including plug matching with purchaser's 63 Amp welding socket		30 m	30 m	
7.7.0	Chains		Yes(15M)	Yes, (15M)	
7.8.0	Suction Strainers		Yes	Yes	
7.9.0	Pump Stool		Yes	Yes	
7.10.0	Wheel trolley required per pump		Yes	Yes	
7.11.0	Level switches for		Float type level probe integral with pump	Float type level probe integral with pump	
	- Very Low level		Yes	Yes	
	- High level		NA	NA	
	- Very high level		NA	NA	
8.0.0	Levels for installation				
8.1	Pump/Motor Support Elevation		N/A	N/A	
8.2	Pump Invert Level		N/A	N/A	
9.0.0	Pit Size		-	-	
10.0.0	Special Requirements (Applicable Only for Diesel Engine Sump Pumps only)				
10.1.0	Suction Hose Pipe along with Foot Valve		N/A	N/A	

 2X660 MW SURATGARH STPS UNIT 7 & 8 TECHNICAL SPECIFICATION FOR SUMP PUMPS		Specification No: PE-TS-392-172-N001 Amendment 1		
		Vol-IIIB Section-D		
DATA SHEET - A (SUMP PUMPS)			Date - 25.07.14	
CL. NO.	DESCRIPTION	UNIT	Group-B	
			Portable Submersible Sump Pumps	Portable Submersible Sump Pumps
1.0.0	GENERAL			
1.1.0	Service /Location of Sump pumps		For dewatering various Cable Trenches	For various general purpose pits
1.2.0	Equipment name		Sump Pump	Sump Pump
1.3.0	Pump type		Portable Submersible sump pumps	Portable Submersible sump pumps
1.4.0	Duty		Intermittent	Intermittent
1.5.0	Location		Indoor/ Outdoor	Indoor/ Outdoor
1.6.0	Maximum Ambient Temperature	°C	60	60
1.7.0	Drive		Motor Driven	Motor Driven
1.8.0	Motor Rating		Motor rating shall be so selected as to have at least 25 % margin over the maximum power required by the pump, throughout its entire range of operation.	
2.0.0	PUMP PARAMETERS			
2.1.0	Design capacity	M3/hr	10	100
2.2.0	Total head at rated capacity	MWC	15	25
2.3.0	Total no.of pumps installed	Nos.	4	8
2.4.0	No. of pumps working / Standby	Nos.	-	-
2.5.0	Parallel operation required		-	-
2.6.0	Pump RPM		1500 (Max.)	1500 (Max.)
2.9.0	Range of operation	%	30 to 150 % of the rated flow	30 to 150 % of the rated flow
2.10.0	Pump design standard		IS 5120/IS 8034	IS 5120/IS 8034
2.11.0	Max. particle size to be handled		35 mm	35 mm
3.0.0	LIQUID DATA			
3.1.0	Liquid handled		water with suspended particles	water with suspended particles
3.2.0	Specific gravity		1.1	1.1
3.3.0	Temperature (max.)	°C	50	50
4.0.0	DESIGN AND CONSTRUCTION			
	FEATURES			
4.1.0	Impeller type		Open, Non-clog type	Open, Non-clog type
4.2.0	Flange drilling standard		ANSI B 16.5	ANSI B 16.5
5.0.0	MATERIAL OF CONSTRUCTION			
5.1.0	Casing / Suction bell		CI,IS:210 Gr FG 260	CI,IS:210 Gr FG 260
5.2.0	Impeller		SS-316	SS-316
5.3.0	Impeller shaft		SS-410	SS-410
5.4.0	Wear ring (where applicable)		Austenitic cast iron	Austenitic cast iron
5.5.0	Shaft sleeve (where applicable)		SS-316/SS410	SS-316/SS410
5.6.0	Coulmn Pipe (where applicable)		-	-
5.7.0	Pump and motor coupling		-	-
5.8.0	Fasteners		SS 316	SS 316
5.9.0	Gland		C.I, IS-210, FG-260/ Equivalent	C.I, IS-210, FG-260/ Equivalent
	Gland Packing		Braided Graphite- free Teflon	Braided Graphite- free Teflon
5.10.0	Mechanical seal		As applicable	As applicable
5.11.0	Pump Lubrication		SELF/Oil/Grease	SELF/Oil/Grease
5.12.0	Pump line shaft lubrication		N/A	N/A
5.13.0	Strainer (Body / Mesh)		Body (CI IS FG260 FG 260)/ Mesh (SS 316)	Body (CI IS FG260 FG 260)/ Mesh (SS 316)
Note :	Bidder's may offer alternative materials, if they are			
6.0.0	INSPECTION AND TESTING		As per approved quality plan by BHEL/ Customer	
7.0.0	SUPPLY OF ACCESSORIES AND SERVICE.			
7.1.0	Counter Flanges with Nuts,Bolts, Gaskets etc.		Yes	Yes
7.2.0	Elastomer cables for connecting pump with its panel length (M)		25M	25M
7.3.0	Relay based control panel with integral starter		Yes Trolley mounted for each sump pump with IP 65 protection	Yes Trolley mounted for each sump pump with IP 65 protection
7.4.0	Suction and Discharge pressure gauge with root valve / pump		-	-

		2X660 MW SURATGARH STPS UNIT 7 & 8		Specification No: PE-TS-392-172-N001 Amendment 1	
		TECHNICAL SPECIFICATION FOR SUMP PUMPS		Vol-IIIB Section-D	
		DATA SHEET - A (SUMP PUMPS)		Date - 25.07.14	
CL. NO.	DESCRIPTION	UNIT	Group-B		
			Portable Submersible Sump Pumps	Portable Submersible Sump Pumps	
7.5.0	Discharge hose/ Pipe - Hose/ Pipe length per pump - Hose/Pipe dia		30 M (Heavy duty rubberised canvas) To suit pump discharge	30 M (Heavy duty rubberised canvas) To suit pump discharge	
7.6.0	Cables (*) for connecting the starter panel with the power supply source - Length (M) / pump (*)including plug matching with purchaser's 63 Amp welding socket		30 m	30 m	
7.7.0	Chains		Yes(15M)	Yes, (15M)	
7.8.0	Suction Strainers		Yes	Yes	
7.9.0	Pump Stool		Yes	Yes	
7.10.0	Wheel trolley required per pump		Yes	Yes	
7.11.0	Level switches for		Float type level probe integral with pump	Float type level probe integral with pump	
	- Very Low level		Yes	Yes	
	- High level		NA	NA	
	- Very high level		NA	NA	
8.0.0	Levels for installation				
8.1	Pump/Motor Support Elevation		N/A	N/A	
8.2	Pump Invert Level		N/A	N/A	
9.0.0	Pit Size		-	-	
10.0.0	Special Requirements (Applicable Only for Diesel Engine Sump Pumps only)				
10.1.0	Suction Hose Pipe along with Foot Valve		N/A	N/A	

 2X660 MW SURATGARH STPS UNIT 7 & 8		Specification No: PE-TS-392-172-N001 Amendment 1		
TECHNICAL SPECIFICATION FOR SUMP PUMPS		Vol-IIIB Section-D		
DATA SHEET - A (SUMP PUMPS)		Date - 25.07.14		
CL. NO.	DESCRIPTION	UNIT	Group-B	
			Portable Submersible Sump Pumps	Portable Diesel Engine Driven Sump
1.0.0	GENERAL			
1.1.0	Service /Location of Sump pumps		For various general purpose pits	For various general purpose pits
1.2.0	Equipment name		Sump Pump	Sump Pump
1.3.0	Pump type		Portable Submersible sump pumps	Portable Diesel Engine Driven sump pumps
1.4.0	Duty		Intermittent	Intermittent
1.5.0	Location		Indoor/ Outdoor	Indoor/ Outdoor
1.6.0	Maximum Ambient Temperature	°C	60	60
1.7.0	Drive		Motor Driven	Diesel Engine Driven
1.8.0	Motor Rating		Motor rating shall be so selected as to have at least 25 % margin over the maximum power required by the pump, throughout its entire range of operation.	N.A.
2.0.0	PUMP PARAMETERS			
2.1.0	Design capacity	M3/hr	150	150
2.2.0	Total head at rated capacity	MWC	25	25
2.3.0	Total no.of pumps installed	Nos.	4	2
2.4.0	No. of pumps working / Standby	Nos.	-	-
2.5.0	Parallel operation required		-	-
2.6.0	Pump RPM		1500 (Max.)	1500 (Max.)
2.9.0	Range of operation	%	30 to 150 % of the rated flow	30 to 150 % of the rated flow
2.10.0	Pump design standard		IS 5120/IS 8034	IS 5120
2.11.0	Max. particle size to be handled		35 mm	35 mm
3.0.0	LIQUID DATA			
3.1.0	Liquid handled		water with suspended particles	water with suspended particles
3.2.0	Specific gravity		1.1	1.1
3.3.0	Temperature (max.)	°C	50	50
4.0.0	DESIGN AND CONSTRUCTION			
	FEATURES			
4.1.0	Impeller type		Open, Non-clog type	Open, Non-clog type
4.2.0	Flange drilling standard		ANSI B 16.5	ANSI B 16.5
5.0.0	MATERIAL OF CONSTRUCTION			
5.1.0	Casing / Suction bell		CI,IS:210 Gr FG 260	CI,IS:210 Gr FG 260
5.2.0	Impeller		SS-316	SS-316
5.3.0	Impeller shaft		SS-410	SS-410
5.4.0	Wear ring (where applicable)		Austenitic cast iron	Austenitic cast iron
5.5.0	Shaft sleeve (where applicable)		SS-316/SS410	SS-316/SS410
5.6.0	Coulmn Pipe (where applicable)		-	-
5.7.0	Pump and motor coupling		-	-
5.8.0	Fasteners		SS 316	SS 316
5.9.0	Gland		C.I, IS-210, FG-260/ Equivalent	C.I, IS-210, FG-260/ Equivalent
	Gland Packing		Braided Graphite- free Teflon	Braided Graphite- free Teflon
5.10.0	Mechanical seal		As applicable	As applicable
5.11.0	Pump Lubrication		SELF/Oil/Grease	SELF/Oil/Grease
5.12.0	Pump line shaft lubrication		N/A	N/A
5.13.0	Strainer (Body / Mesh)		Body (CI IS FG260 FG 260)/ Mesh (SS 316)	Body (CI IS FG260 FG 260)/ Mesh (SS 316)
Note :	Bidder's may offer alternative materials, if they are			
6.0.0	INSPECTION AND TESTING		As per approved quality plan by BHEL/ Customer	
7.0.0	SUPPLY OF ACCESSORIES AND SERVICE.			
7.1.0	Counter Flanges with Nuts,Bolts, Gaskets etc.		Yes	Yes
7.2.0	Elastomer cables for connecting pump with its panel length (M)		25M	NA
7.3.0	Relay based control panel with integral starter		Yes Trolley mounted for each sump pump with IP 65 protection	Not Applicable
7.4.0	Suction and Discharge pressure gauge with root valve / pump		-	-

		2X660 MW SURATGARH STPS UNIT 7 & 8		Specification No: PE-TS-392-172-N001 Amendment 1	
		TECHNICAL SPECIFICATION FOR SUMP PUMPS		Vol-IIIB Section-D	
		DATA SHEET - A (SUMP PUMPS)		Date - 25.07.14	
CL. NO.	DESCRIPTION	UNIT	Group-B		
			Portable Submersible Sump Pumps	Portable Diesel Engine Driven Sump	
7.5.0	Discharge hose/ Pipe - Hose/ Pipe length per pump - Hose/Pipe dia		30 M (Heavy duty rubberised canvas) To suit pump discharge	30 M (Heavy duty rubberised canvas) To suit pump discharge	
7.6.0	Cables (*) for connecting the starter panel with the power supply source - Length (M) / pump (*)including plug matching with purchaser's 63 Amp welding socket		30 m	-	
7.7.0	Chains		Yes(15M)	NA	
7.8.0	Suction Strainers		Yes	Yes	
7.9.0	Pump Stool		Yes	Yes	
7.10.0	Wheel trolley required per pump		Yes	Yes	
7.11.0	Level switches for		Float type level probe integral with pump	NA	
	- Very Low level		Yes	NA	
	- High level		NA	NA	
	- Very high level		NA	NA	
8.0.0	Levels for installation				
8.1	Pump/Motor Support Elevation		N/A	N/A	
8.2	Pump Invert Level		N/A	N/A	
9.0.0	Pit Size		-	-	
10.0.0	Special Requirements (Applicable Only for Diesel Engine Sump Pumps only)				
10.1.0	Suction Hose Pipe along with Foot Valve		N/A	Yes (10 m per Pump)	