



BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING MANAGEMENT

PROJECT : 1X800 MW TSGENCO KOTHAGUDEM TPS
PACKAGE : FUEL OIL HANDLING & STORAGE SYSTEM [FOHS]
TENDER ENQUIRY NO.: PE/PG/KG1/E-5665/2017 Dt. 04.08.2017.

DATE: - 18.08.2017

Corrigendum-01

In reference to the above mentioned tender enquiry for FUEL OIL HANDLING & STORAGE SYSTEM [FOHS] package, there are following changes in tender enquiry:

1. There are changes in technical specification. The amendment to the technical specification is enclosed herewith.
2. Reply of pre-bid queries is enclosed herewith.
3. Vendors who have submitted the offers are requested to submit the revised offer (if desire so).

All the other terms and conditions of the tender enquiry remain unchanged. All the bidders are requested to quote accordingly.

Bidders are requested to ensure submission of offer on or before due date.

Regards

Vinit Kumar Verma
Dy. Mgr./ PG-BOP



**AMENDMENT TO TECHNICAL SPECIFICATION FOR FUEL OIL HANDLING SYSTEM
1X800 MW KOTHAGUDEM TPS**

SPECIFICATION NO.: PE-TS-410-166-A002

AMENDMENT NO # 1

REV. NO. 00

DATE: 10/08/2017

Page 1 of 1

THE FOLLOWING MODIFICATIONS WITH RESPECT TO TECHNICAL SPECIFICATION FOR **FUEL OIL HANDLING SYSTEM**, TECHNICAL SPECIFICATION NO **PE-TS-410-166-A002** SHALL APPLY.

BIDDER TO NOTE THAT EXISTING CLAUSES / DETAILS AS APPEARING IN THE SPECIFICATION STANDS DELETED AND CLAUSES / DETAILS AS MENTIONED IN "MODIFIED TO OR READ AS" COLUMN SHALL BE APPLICABLE AND COMPLIED BY THE BIDDER.

MODIFIED CLAUSES / PAGE NUMBERS.

SL NO.	VOL. NO.	SECTION / DESCRIPTION	CLAUSE NO	PAGE NO	EXISTING CLAUSE/DETAILS	MODIFIED TO OR READ AS
1.	-	SECTION- IA, TERMINAL POINT	6.0.0	17 of 387	ISOLATION VALVES AT THE TERMINAL POINTS SHALL BE IN THE SCOPE OF THE BIDDER.	ISOLATION VALVES AT THE TERMINAL POINTS IS DELETED FROM BIDDER SCOPE AND SHALL BE FREE ISSUED TO BIDDER. ERECTION OF VALVES AT TERMINAL POINT SHALL BE IN BIDDER SCOPE.
2.	-	SECTION- IA, ANNEXURE-III INPUT DRAWINGS & DOCUMENT OF TENDER	-	167-168 OF 387	P&ID FOR FUEL OIL HANDLING SYSTEM (HFO) – ADD TANK, PE-DG-410-166-A005, REV.00 SHEET 1 OF 2 P&ID FOR FUEL OIL HANDLING SYSTEM (STEAM) – ADD TANK, PE-DG-410-166-A005, REV. 00 SHEET 1 OF 2	TO BE REPLACED WITH FOLLOWING DOCUMENTS P&ID FOR FUEL OIL HANDLING SYSTEM (HFO) – ADD TANK, PE-DG-410-166-A005, REV.01 SHEET 1 OF 2 P&ID FOR FUEL OIL HANDLING SYSTEM (STEAM) – ADD TANK, PE-DG-410-166-A005, REV. 01 SHEET 1 OF 2

LEGENDS

LT	LEVEL TRANSMITTER (RADAR TYPE)		BALL VALVE WITH SOCKET WELD END (NORMALLY OPEN)
TE	TEMPERATURE ELEMENT (RTD+TT)		BALL VALVE WITH SOCKET WELD END (NORMALLY CLOSED)
	SUCTION HEATER		BALL VALVE WITH BUTT END (NORMALLY OPEN)
	MOTORIZED ACTUATOR		BALL VALVE WITH BUTT END (NORMALLY CLOSED)
TI	TEMPERATURE INDICATOR		GLOBE VALVE WITH SOCKET WELD END (NORMALLY OPEN)
LI	LEVEL INDICATOR		GLOBE VALVE WITH SOCKET WELD END (NORMALLY CLOSED)
	CONTROL FUNCTION ON DCS		GLOBE VALVE WITH BUTT END (NORMALLY OPEN)
	SIGNAL TO DCS (LO OR HI)		GLOBE VALVE WITH BUTT END (NORMALLY CLOSED)
	INSULATION WITH STEAM TRACING		NON-RETURN VALVE WITH BUTT END
	INSULATION		NON-RETURN VALVE WITH SOCKET WELD END
	FLAME ARRESTOR		GATE VALVE WITH SOCKET WELD END (NORMALLY CLOSED)
-----	ELECTRICAL SIGNAL		GATE VALVE WITH SOCKET WELD END (NORMALLY OPEN)
—	OIL AND WATER LINE		CONTROL VALVE WITH BUTT END
	FLOOR COIL HEATER		GATE VALVE WITH BUTT END
LMT	LIMIT SWITCH: OPEN-CLOSE INDICATION TO CP		PLUG VALVE WITH BW END (NORMALLY OPEN)
			PLUG VALVE WITH BW END (NORMALLY CLOSED)

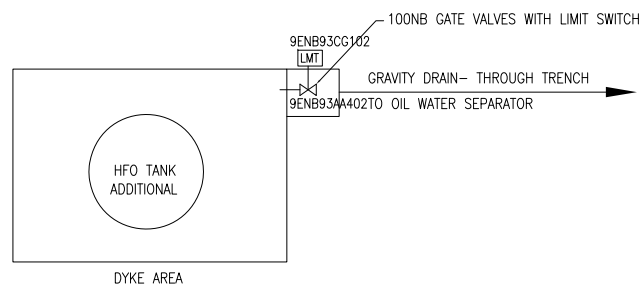
9 ENC 10 AA 001
KKS NOMENALATUREINSTRUMENT NUMBER KEY
EQUIPMENT/INSTRUMENT KEY
AREA KEY
FUNCTION KEY
UNIT NUMBER IDENTIFIER

VALVE SELECTION CRITERIA FOR FUEL LINE		
Sr.No.	FOR OIL LINES	FOR CHECK VALVES
1.	200NB & BELOW BALL VALVE	65NB & ABOVE: SWING CHECK VALVE
2.	250NB TO 350NB: PLUG VALVE	50NB & BELOW: LIFT CHECK VALVE
3.	ABOVE 350NB GATE VALVE	

PIPE SIZE	NO & SIZE OF TRACER
350NB & ABOVE	3 X 20NB
150NB TO 300NB	2 X 20NB
100NB & BELOW	1 X 20NB

NOTES :-

- ALL VALVES USED IN OIL LINES ARE OF FIRE SAFE DESIGN.
- ALL HFO, STEAM AND CONENSATE LINES AND EQUIPMENT SHALL BE INSULATED.
- ALL PRESSURE INSTRUMENTS ISOLATION VALVES SHALL BE 15NB GLOBE VALVE.
- ALL HFO LINES & ENTIRE DRAIN OIL SYSTEM SHOULD BE STEAM TRACED,
- ALL VENT AND DRAIN VALVES SHALL BE GLOBE VALVES
- TANK DRAIN VALVES ARE IN NORMALLY CLOSED CONDITION.
- VENT & DRAIN SHALL BE PROVIDED AT HIGHEST & LOWEST POINT RESPECTIVELY AS PER LAYOUT REQUIREMENT.
- ALL VALVES 80NB & ABOVE BUTT ENDS AND 50NB & BELOW SOCKET WELD ENDS.
- COMPLETE HFO TANK SHELL SHALL BE INSULATED
- PID FOR FUEL OIL HANDLING SYSTEM (STEAM) - ADDITIONAL TANK
REFER DRG No.PE-DG-410-166-A005, SHEET 02 OF 02
- COUNTER FLANGES WITH FASTENER & GASKETS AT TERMINAL POINT WILL BE SUPPLY BY VENDER.

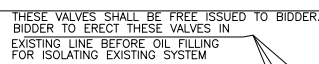


JOB NO.									
STATUS									
DISTRIBUTION									
TO									
No. OF									
REV.	DATE	ALTD		CHD		APPD			

		CUSTOMER TELANGANA STATE POWER GENERATION CORPORATION LIMITED					
		CONSULTANT DEVELOPMENT CONSULTANTS PRIVATE LIMITED					
1X800 MW KOTHAGUDEM TPS							
		BHARAT HEAVY ELECTRICALS LTD, POWER SECTOR, PROJECT ENGINEERING MANAGEMENT, NOIDA		DEPT CODE M	NAME	SIGN	DATE
		DRN	VN		Sd/-	23/06/2017	
		DESIN	VN		Sd/-	23/06/2017	
		CHD	HK		Sd/-	23/06/2017	
		APPD	PK		Sd/-	23/06/2017	
TITLE PID FOR FUEL OIL HANLNDING SYSTEM (HFO) – ADD TANK							
				DEPT.	SCALE	DRAWING No.	
				SIGN		PE-DG-410-166-A005	
				DATE		SHEET 01 OF 02 REV 01	

ALL DIMENSIONS ARE IN MM

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9	ENC	10	AA	001
KKS NOMENALATURE				

- INSTRUMENT NUMBER KEY
- EQUIPMENT/INSTRUMENT KEY
- AREA KEY
- FUNCTION KEY
- UNIT NUMBER IDENTIFIER

1. FOR STEAM & CONDENSATE LINES GATE VALVES ARE USED AS ISOLATION PURPOSE.
2. ALL VALVES 80NB AND ABOVE SHALL HAVE BUTT WELDED ENDS AND 50NB AND BELOW SHALL HAVE SOCKET WELDED ENDS
3. ALL PRESSURE INSTRUMENTS ISOLATION VALVES SHALL BE 15NB GLOBE VALVE.
4. STEAM AND CONDENSATE LINES SHALL BE INSULATED & CLADDED
5. ALL VENT AND DRAIN VALVES SHALL BE GLOBE VALVES.
6. VENT & DRAIN SHALL BE PROVIDED AT HIGHEST & LOWEST POINT RESPECTIVELY AS PER LAYOUT REQUIREMENT.
7. STEAM TRAP FOR STEAM LINE TO BE PROVIDED AT EVERY 40 TO 45 METER OF STRAIGHT LENGTH.
8. FOR PID FOR FUEL OIL HANDLING SYSTEM (HFO) – ADDITIONAL TANK
REFER DRG No.PE-DG-410-166-A005, SHEET 01 OF 02
9. INSULATION SHALL BE PROVIDED TO HFO TANK SHELL UP TO CURBANGLE AND DOT
10. COUNTER FLANGES WITH FASTENER & GASKETS AT TERMINAL POINT WILL BE SUPPLY BY VENDER.



CUSTOMER	TELANGANA STATE POWER GENERATION CORPORATION LIMITED
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CONSULTANT	DEVELOPMENT CONSULTANTS PRIVATE LIMITED
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1X800 MW KOTHAGUDEM TPS



**BHARAT HEAVY ELECTRICALS
LTD, POWER SECTOR, PROJECT
ENGINEERING MANAGEMENT,
NOIDA**

DEPT CODE		NAME	SIGN	DATE
M	DRN	VN	Sd/-	23/06/2017
	DESN	VN	Sd/-	23/06/2017
	CHD	HK	Sd/-	23/06/2017
	APPD	PK	Sd/-	23/06/2017

TITLE
PID FOR FUEL OIL HANLNDING SYSTEM (STEAM) - ADD. TANK

					DEPT.	 	DRAWING No.	
					SIGN		PE-DG-410-166-A005	
					DATE		SHEET 02 OF 02	REV01

FORMAT SIZE A3

PAINTING SCHEDULE FOR FOHS FOR KOTHAGUDEM TPS
TENDER SPECIFICATION NO. PE-TS-410-166-A002
ANNEXURE-I

PAINTING SCHEDULE						
APPLICATION	AREA	PROCESS	PAINT TYPE	NO OF COATS	DRY FILM THICKNESS (MICRONS/COAT)	SHADE / FINISH
			(SUITABLE FOR INDUSTRIAL APPLICATION)			
HFO, LDO TANKS, DOT & HEATERS: (INTERNAL SURFACE OF ROOF, SHELL, BOTTOM AND FLOOR COIL HEATER)	INTERNAL	SURFACE PREPARATION	Wire Brushing			
		PRIMER	Double boiled linseed oil	2	--	NA
		INTERMEDIATE COAT	NA	NA	NA	NA
		FINAL COAT	NA	NA	NA	NA
		TOTAL DFT (MIN)			---	
HFO UN INSULATED & LDO TANKS (FOR EXTERNAL SURFACE)	EXTERNAL	SURFACE PREPARATION	Sand Blasting to SA 2.5			
		PRIMER	Epoxy resin based zinc phosphate primer.	1	100	NA
		INTERMEDIATE COAT	Epoxy resin based paint pigmented with Titanium Dioxide.	1	100	NA
		FINAL COAT	Epoxy paint	1	75	LDO - Dark brown, Shade 412, IS-5 HFO - Light brown, Shade 410, IS-5
			Polyurethane finish paint	1	25	
		TOTAL DFT (MIN)			300	
HFO INSULATED & DRAIN OIL TANKS (FOR EXTERNAL SURFACE)	EXTERNAL	SURFACE PREPARATION	Sand Blasting to SA 2.5			
		PRIMER	Epoxy resin based zinc phosphate primer.	1	100	NA
		INTERMEDIATE COAT	NA	NA	NA	NA
		FINAL COAT	NA	NA	NA	NA
		TOTAL DFT (MIN)			100	
STEAM AND CONDENSATE LINES AND SUCTION HEATER HEAD (FOR EXTERNAL SURFACE) INSULATED	EXTERNAL	SURFACE PREPARATION	Sand Blasting to SA 2.5			
		PRIMER	Heat Resistant Aluminium paint	2	20	NA
		INTERMEDIATE COAT	NA	NA	NA	NA
		FINAL COAT	NA	NA	NA	NA
		TOTAL DFT (MIN)			40	
HFO & LDO TANKS :	UNDERNEATH	SURFACE PREPARATION	Wire brushing			
		PRIMER	Coal tar epoxy	1	80-100	Black
		INTERMEDIATE COAT	NA	NA	NA	NA
		FINAL COAT	NA	NA	NA	NA
		TOTAL DFT (MIN)			80-100	

PAINTING SCHEDULE						
APPLICATION	AREA	PROCESS	PAINT TYPE	NO OF COATS	DRY FILM THICKNESS	SHADE / FINISH
			(SUITABLE FOR INDUSTRIAL APPLICATION)		(MICRONS/COAT)	
HFO, DRAIN OIL PIPE LINES, PUMPS, STRAINERS, VALVES, ETC (INSULATED)	EXTERNAL	SURFACE PREPARATION	Degreasing and Mech. Cleaning with wire brushing/hand tool(SA/ST2/ST3 as applicable)			
		PRIMER	Epoxy resin based zinc phosphate primer.	1	100	NA
		INTERMEDIATE COAT	NA	NA	NA	NA
		FINAL COAT	NA	NA	NA	NA
		TOTAL DFT (MIN)			100	
LDO, OILY WATER, AIR AND WATER LINES, PUMPS, STRAINERS, VALVES AND STRUCTURALS	EXTERNAL	SURFACE PREPARATION	Sand Blasting to SA 2.5			
		PRIMER	Epoxy resin based zinc phosphate primer.	1	100	----
		INTERMEDIATE COAT	Epoxy resin based paint pigmented with Titanium Dioxide.	1	100	LDO: Dark brown, Shade 412, IS-5, Color band: Brilliant green, 221, IS-5
		FINAL COAT	Epoxy paint	1	75	Instrument air: Blue, Shade 101, IS-5, Color band: White, IS-5
			Polyurethane finish paint	1	25	Effluent Water: Sea green, Shade 217, IS-5, Colour band: Black
		TOTAL DFT (MIN)			300	
CONTROL PANEL	INTERNAL & EXTERNAL	SURFACE PREPARATION	Sand Blasting to SA 2.5			
		PRIMER	Inhibitive Epoxy Primer	2	1.5 MIL	----
		INTERMEDIATE COAT	NA	NA	NA	NA
		FINAL COAT	Catalyzed Epoxy or Polyurthane	2	2 MIL	EXTERNAL: Opaline Green, Shade 275 of IS 5 INTERNAL: Brilliant White INTERNAL: Brilliant White
		TOTAL DFT (MIN)			7 MIL	
Notes:						
1		Incase of insulated surfaces,only primer coat shall be applied.				
2		G.I pipes will not be painted.Further GI piping shall be given necessary colour banding for identification as per colour scheme.				
3		All pipes shall be painted at site.				
4		All structural steel items shall be painted at site.				
5		All shop painted equipments should be repainted for any damages during transportation at site.				
6		Method of painting application shall be as per paint manufacturer's recommendation.				
7		All instruments shall be painted as per manufacturer standard practice.				
8		Surface Preparation as per Swedish Standards SIS 05-5900. Degreasing will be as per Standard SSPC-SP1.				

SCETION III C - PRE BID CLARIFICATION SCHEDULE				
Project:	1 x 800MW KOTHAGUDEM TPS			
Enq No:	PE/PG/KG1/E-5665/2017			
Package:	FUEL OIL HANDLING SYSTEM			
Sr.No.	Section/Clause/ Page No.	Statement of the referred clause	Clarification required	BHEL Reply dated 18/08/17
1	Section - IA / clause - 1.1.0 / page no. 13 of 387	One no. shell and tube type suction heater is also provided on the additional storage tank supply oil to pressurizing pump house at required temperature. Temperature will be egulated through one pneumatically operated modulating type control valve on the steam supply line. Initial and final temperature for suction heater shall be 50 deg. C and 60 deg. C respectively. However, suction heater will be designed for a temperature rise of 20 deg. C .	Referred clauses are contradicting each other in the initial and final temperatures. Please clarify.	Temperature rise of Suction Heater shall be 20 Deg. C.
	Section - IIIB / clause - 2 / page no. 132 of 387	SUCTION HEATER IN HFO STORAGE & DAY TANKS : Initial temperature of oil : 50 ± 5degC Final temperature of oil : 60 ± 5degC		
	Section - IIIB / clause - 2 / page no. 132 of 387	OUT FLOW SUCTION HEATER : MAX TEMPERATURE : 60 degC		
2	Section - IIIB / clause - 6.02.16/ page no. 128 of 387	Surface preparation and painting : Primer for internal surface shall be double boiled Linseed oil and that for external shall be synthetic red lead. Finish coat for both internal and external surface shall be of synthetic enamel. For bottom surface protection, one coat of bituminastic paint shall be applied.	Both referred clauses are contradicting each other. However we are considering surface preparation and painting for tanks and pipes as follows: Insulated Pipes(External) : Surface preparation - Wire brushing Primer : 1 coat of Epoxy resin based zinc phosphate primer - 100 dft Insulated Tanks : Internal : Wire brushing , 2 coats of Double boiled linseed oil. External : Sand blasting, 1 coat of Epoxy resin based zinc phosphate primer - 100 dft. Underneath : Wire brushing, 1 coat of Coal tar epoxy - 100 dft Please confirm.	Bidder to follow the detailed painting schedule enclosed under Annexure-I.
	Section - XIII / clause - 4.03.02/ page no. 182 of 387	Specification for application of paints for external surfaces protection of vessels / tanks / equipment / piping / fittings / valves etc to be installed outdoor shall be as follows : Refer Clause		
3	Section - I-A / clause - B/ page no. 150 of 387	Fittings / flange / gasket details : Slip on Flanges / Blind Flanges : All sizes : Fabricated from IS2062 plate	Both referred clauses are contradicting each other. Please clarify the type of flange to be consider.	Flanges provided for FOHS shall be weld neck type.
	Section - 1-A / clause - 8 j)/ page no. 19 of 387	Flanges provided for FOHS shall be weld neck type .		
4	Section - I-A / clause - D/ page no. 151 of 387	Valves of size 50 NB and above shall have flanged end connection . Valve of size below 50 NB shall have butt welded ends . Flange provided shall be weld neck type.	Both referred clauses are contradicting each other. Please clarify the type of end conections to be consider.	Valves of size 50 NB and above shall have flanged end connection. Valve of size below 50 NB shall have butt welded ends. Flange provided shall be weld neck type.
	Section - I-A / page no. 167 of 387, Annexure - III	P&ID for fuel oil handling system(HFO) - ADD TANK - Drawing no. PE-DG-410-166-A0005: Notes : 8. All valves 80NB and above Butt ends and 50NB & below socket weld ends		
5	Section - IIIB / clause - 1/ page no. 132 of 387	2. SUCTION HEATER IN HFO STORAGE & DAY TANKS ii) Shell head and tube sheets : Steel plates of IS-2002 Grade 2A	Due to non avaiability of IS -2002 Grade 2A material in the market, we are considering IS 2062 Gr. B material for shell heads and tube sheets.	Bidder to follow specification.

SCETION III C - PRE BID CLARIFICATION SCHEDULE				
Project:	1 x 800MW KOTHAGUDEM TPS			
Enq No:	PE/PG/KG1/E-5665/2017			
Package:	FUEL OIL HANDLING SYSTEM			
Sr.No.	Section/Clause/ Page No.	Statement of the referred clause	Clarification required	BHEL Reply dated 18/08/17
6	Section - IIIB / clause - 1/ page no. 133 of 387, Annexure - III	For pipe sizing velocity of fluid in various pipe lines shall be considered as follows unless otherwise stated in the specification : Refer Clause	We understood that we have to consider pipe sizes as per P&ID as flow rates are not given for calculating pipe size as per given velocity criteria. Please confirm.	Line sizes for oil and instrument air line indicated in P&ID is final. For steam and condensate lines, line sizes mentioned is minimum and bidder to substantiate the adequacy of same with design calculation during detail engineering.
	Section - I-A / page no. 167 of 387, Annexure - III	P&ID for fuel oil handling system(HFO) - ADD TANK - Drawing no. PE-DG-410-166-A0005 P&ID for fuel oil handling system(HFO) - ADD TANK - Drawing no. PE-DG-410-166-A0005		
7	Section - I-A / page no. 167 of 387, Annexure - III	P&ID for fuel oil handling system(HFO) - ADD TANK - Drawing no. PE-DG-410-166-A0005 P&ID for fuel oil handling system(HFO) - ADD TANK - Drawing no. PE-DG-410-166-A0005	In HFO P&ID Plug type Motorized valve indicated at outlet of HFO Tank. However in steam P&ID the same valve indicated as Gate type Motorized valve. Please clarify the same.	Plug Type motorized valve to be considered at outlet of HFO Tank.
8	VOLUME : VI, Section - VII, Sub section - B / page no. 325 of 387,	Control valves shall be located near floor or platform for ease of access and with adequate clearances for maintenance and lay-down and shall be placed as station with upstream motorized isolating valve, down-stream motorized isolating valve , inching duty motorized bypass valve and manual drain valves. Each redundant control valve shall have its upstream motorized and downstream motorised isolating valves. Where quick shut off requirement is foreseen such as in case of SH & RH attemperation valves, upstream isolation valve shall be pneumatic type.	As per referred clause, Isolation and bypass valves for control valves are motorized type however in the steam P&ID these valves are Manual type. Please clarify the same.	Isolation valve and bypass valve of control station shall be manual.
	Section - I-A / page no. 167 of 387, Annexure - III	P&ID for fuel oil handling system(HFO) - ADD TANK - Drawing no. PE-DG-410-166-A0005		
9	Section - 1-A / clause - 2.0.0/ page no. 14 of 387,	1. The Control Panel is envisaged to achieve the following functions: Refer Clause 2. Bidder to consider Annunciation Facia, Push Button Lamps, Coloured Mimics, Digital Indicators, JB and install same on the existing Local Control Panel. Internal Wiring between JB and Annunciation facia, DI, Push button etc. to be done by the bidder. Further, connection from JB to DCS shall be in BHEL Scope	As per referred clause (point no. 1) it is mentioned one no. control Panel is required. However in (Point no. 2) it is mentioned bidder to consider only Annunciation Facia, Mimic, push button, digital indicator and junction boxes and these component to be installed in Existing Local Control Panel. Please clarify the same.	Control panel mentioned under Clause no. 2.0.0 (1) refers to DCS control system which is in BHEL Scope. Bidder to do modification in existing local control panel as mentioned under Clause no. 2.0.0 (2).
10	General		Please provide Mandatory spares list, as same is not given in the tender.	Mandatory Spares is not applicable for this tender.