एसजेवीएन लिमिटेड
(भारत सरकार एवं हिमाचल प्रदेश सरकार का संयुक्त उपक्रम)
SJVN Limited
(A Joint Venture of Govt. of India & Govt. of H.P.)

विद्युत संविदा विभाग
शक्ति सदन, कारपोरेट मुख्यालय, द्वितीय तल, शनान, षिमला, हिमाचल प्रदेश, पिन कोड–171006
Electrical Contract Deptt.,
Shakti Sadan, Corporate Head Quarter, 2nd floor,
Shanan, Shimla,HP, Pin code- 171 006
दूरभाष/Phone No. +91-177-2660201& 2660202
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CORRIGENDUM - 12

E- Tender No.: SJVN/CHQ/ECD/SUNNI/EMP/2024 **Dated: 07.04.2025**

Name of Tender: Electro-Mechanical Works of Sunni Dam HEP (382 MW) located in Distt. Shimla and Mandi in Himachal Pradesh (India).

In terms of clause 11.1 of **'Section –II Instruction to Bidders'** of the bidding documents for procurement of the subject cited package, the Bid Provisions are hereby amended as under:

Ref. Clause of Bid Document	Existing Provision	Amended Provision
1st row of Clause no. 6 of Section - I, Notice Inviting Tender (NIT)	Date and time for availability/downloading of Bid Document on website http://etender.sjvn.co.in 28.08.2024 (1800 Hrs.) to 07.04.2025 (1200 Hrs.)	Date and time for availability/downloading of Bid Document on website http://etender.sjvn.co.in 28.08.2024 (1800 Hrs.) to **07.05.2025 (1200 Hrs.)**
4th row of Clause no. 6 of Section - I, Notice Inviting Tender (NIT)	Deadline for submission of bids: 1. Online submission: 08.04.2025(1300 Hrs.) 2. Offline submission: 15.04.2025(1800 Hrs.) (Hard copy)	Deadline for submission of bids: 1. Online submission: **08.05.2025(1300 Hrs.)** 2. Offline submission: **15.05.2025(1800 Hrs.) (Hard copy)**
5th row of Clause no. 6 of Section - I, Notice Inviting Tender (NIT)	Date & time for Bid opening: Online bid opening (Techno-commercial): 08.04.2025 (1400 Hrs.)	Date & time for Bid opening: Online bid opening **(Techno-commercial): 08.05.2025 (1400 Hrs.)**
Clause 11.0 of D. Submission of Bids, Bid Data Sheets	Deadline for submission of bids: 1. Online submission: 08.04.2025 upto1300 Hrs. 2. Offline submission (Hard copy): 15.04.2025 upto1800 Hrs.	Deadline for submission of bids: 1. Online submission: **08.05.2025 upto1300 Hrs.** 2. Offline submission **(Hard copy)**: **15.05.2025 upto1800 Hrs.**
Clause 7.0 of NIT	The cost estimate shall be intimated only before opening of Price Bids. The Bidders are requested to submit their bid as per Scope of Work defined in the bid document.	The cost estimate shall be intimated **10 days before the last date of submission of Techno-Commercial Bids.**

Other terms and conditions of the bidding documents shall remain unchanged.

(Ravi Rajan)
HOD (ECD)

Clarification (Commercial) -IV				
Sr.No.	**Section/Clause**	**Bid Provision**	**Queries/Clarification**	**SJVN's Reply**
1	Section – VIII, Appendix – 1, cl.no. 6.1	An irrevocable Letter of Credit (LC) with usance period of 45 days (automatic revolving type amounting to 1/6th of the total Ex-works price (Price Schedule-1) including corresponding GST and limited to total ExWorks Price (Schedule-1) plus corresponding GST, as applicable) shall be established from a reputed bank within sixty (60) days from the issuance of contract and providing of all information/details by supplier required for the establishment of the Letter of Credit	We understand from the clarification followings: 1.That the word "automatic revolving LC "means SJVNL will immediately reinstate the L/C to the Original L/C value (1/6th of the total Ex-works price (Price Schedule-1) including corresponding GST) every time after the LC is utilized. This process is automatic without any preconditions. 2.From the sentence “limited to total Ex-Works Price (Schedule-1) plus corresponding GST, as applicable“ we understand that this total amount would be mentioed in LC itself. Kindly provide clear understanding on the above queries as the tender and clarification issued in the past are silent on these aspects. Also please provide the draft of LC wordings as the payment terms are silent on negotiating documents under the L/C.	**The Clause is adequately clear. The amount will be reinstated or renewed without any specific amendments to the LC.**

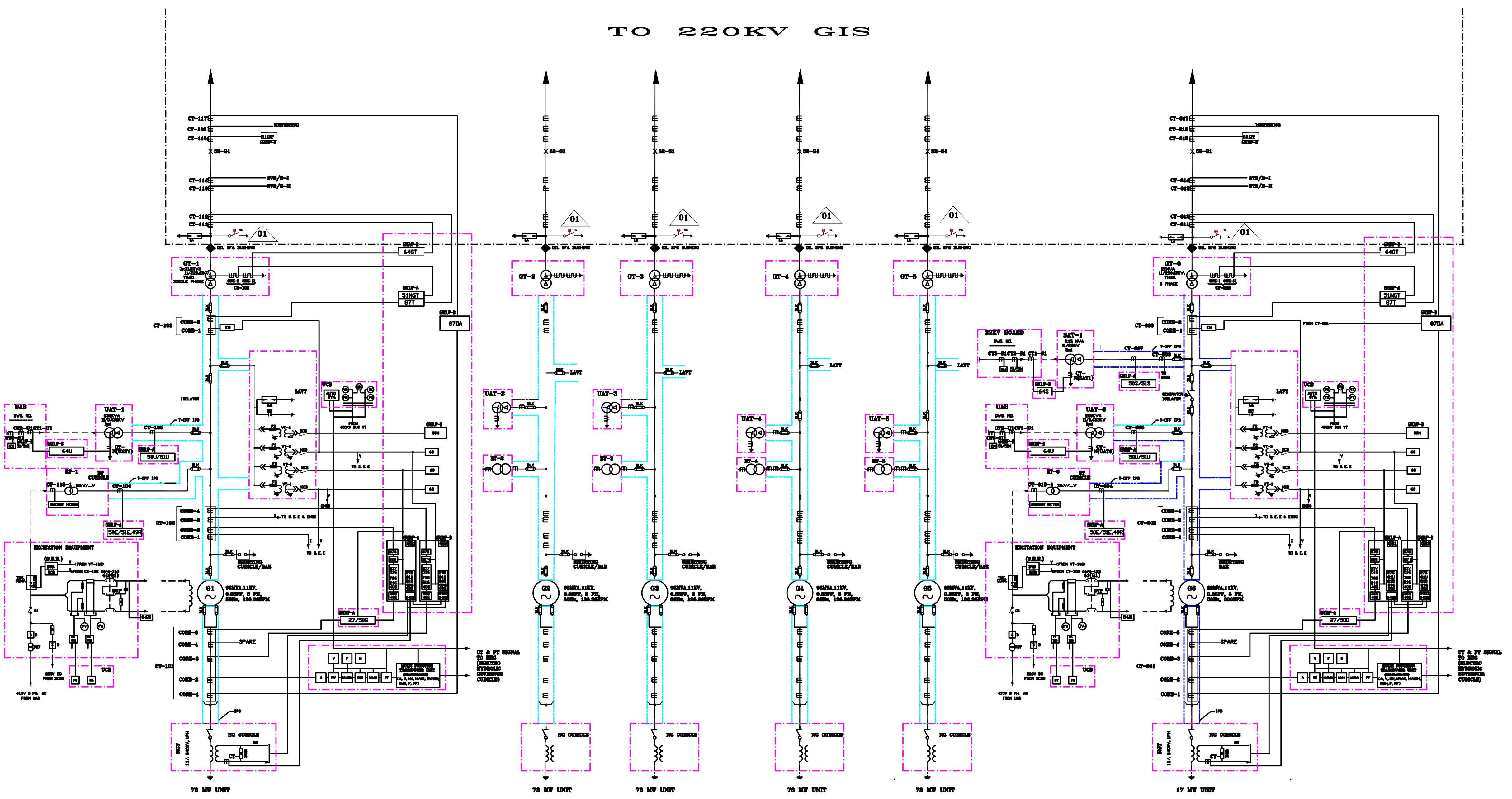
AMENDMENT-IV

Electro-Mechanical Works of Sunni Dam HEP (382 MW)

Sr. No.	Page No.	Chapter No.	Clause No.	Bidders Queries	Original Tender Provision	Amended Tender Provision
1		Gas Insulated Switchgear	Clause 16.1.1.2-a-v) & Clause 16.1.1.2-b-v)	We propose to review the requirement of high-speed fault making grounding switch. In our view, group operated safety grounding switch shall be the requirement. Please confirm.	One (01) Set -three phase high speed fault making grounding switch, complete with group operated manual and motor driven operating mechanisms.	Provision of High Speed Switch also incorporated in Main SLD. Please refer amended SLD Drawing no SJVN/ED/SDHEP/EM/12

SEGRAGATED PHASE BUSDUCT(SPBD)

ISOLATED PHASE BUSDUCT(IPBD)



CT DETAILS:-(Unit-6(17MW UNIT))

NO.	CIRCUIT	RATIO	ACC. CLASS	BURDEN VA	KNEE POINT VOLTAGE Vkp(V)	MAG. CURRENT Im A	PHYSICAL LOCATION
11kVCTs							
CT-601 CORE-1	OVER ALL DIFFERENTIAL (87OA)	1500/5	PS	-	-	-	BUSDUCT
CORE-2	UCB METERING	1500/5	0.2	-	-	-	BUSDUCT
CORE-3	GEN. PROTECTION (GR2) (87G, 37G1, 78G, 21G, 40G, 46G & 49S)	1500/5	PS	-	-	-	BUSDUCT
CORE-4	SPARE	1500/5	PS	-	-	-	BUSDUCT
CORE-5	GEN. PROTECTION (GR1) (87G, 37G2, 78G, 21G, 40G, 46G & 49S)	1500/5	PS	-	-	-	BUSDUCT
CT-602 CORE-1	DVR CUBICLE	1500/5	0.2	-	-	-	BUSDUCT
CORE-2	GEN. DIFFERENTIAL PROTECTION (87G-GR1)	1500/5	PS	-	-	-	BUSDUCT
CORE-3	DVR & EHGC CUBICLE	1500/5	0.2	-	-	-	BUSDUCT
CORE-4	GEN. DIFFERENTIAL PROTECTION (87G-GR2)	1500/5	PS	-	-	-	BUSDUCT
CT-603 CORE-1	METERING	1500/5	0.2	-	-	-	BUSDUCT
CORE-2	TRANSFORMER DIFFERENTIAL(87T)	1500/5	PS	-	-	-	BUSDUCT
CT-604	INST., IDMT O/C & OVERLOAD PROTECTION OF ET (50/51E)	-	-	-	-		BUSDUCT
CT-605	INST. & IDMT O/C PROT. OF UAT (50/51U)	50/1A	5P20	-	-	-	BUSDUCT
CT-606	OVER ALL DIFFERENTIAL (87GT)	200/1	PS	-	-	-	BUSDUCT
CT-607	INST. & IDMT O/C PROT. OF SAT (50/51S)	200/1	5P15	-	-	-	BUSDUCT
N(GT)-BUSHING CT							
CT-608 CORE-I	GT NEUTRAL OVERCURRENT (51NGT)	500/1	5P20	-	-	-	GT NEU. BUSH.
CORE-II	RESTRICTED E/F PROT. OF GT (64GT)	500/1	PS	-	-	-	
415V UAT/UAB CTS							
CT1-U6 & CT-N(UAT6)	RESTRICTED E/F PROT. OF UAT (64U)	500/1A	PS	-	-	-	UAB
CT3-U6	UAT METERING	500/1A	0.2	-	-	-	
CT2-U6	IDMT O/C, E/F PROT. OF UAT-51/51N	500/1A	5P15	-	-	-	
22KV SAT CTS							
CT1-S1 CT-N(SAT2)	RESTRICTED E/F PROT. OF SAT (64S)	100/1	PS	-	-	-	
CT2-S1	IDMT O/C, E/F PROT. OF SAT-51/51N	100/1	5P15	-	-	-	
CT3-S1	SAT METERING	100/1	0.2	-	-	-	
CT4-S1	SAT DIFFERENTIAL (87ST)	100/1	PS	-	-	-	
400KV SIDECTS							
CT-611	GT REF PROTECTION(64GT)	100/1	PS	-	-	-	GIS
CT-612	TRANSFORMER DIFF. PROTECTION(87T)	100/1	PS	-	-	-	GIS
CT-613	MAIN-II BUSBAR DIFF. PROTECTION	FOR DETAILS REFER SHEET NO. 2 OF 2 OF THIS DRAWING					GIS BUS
CT-614	MAIN-I BUSBAR DIFF. PROTECTION	FOR DETAILS REFER SHEET NO. 2 OF 2 OF THIS DRAWING					GIS BUS
CT-615	TRANSFORMER OVERCURRENT PROTECTION	FOR DETAILS REFER SHEET NO. 2 OF 2 OF THIS DRAWING					GIS BUS
CT-616	METERING	FOR DETAILS REFER SHEET NO. 2 OF 2 OF THIS DRAWING					GIS BUS
CT-617	OVERALL DIFF. PROTECTION (87OA)	FOR DETAILS REFER SHEET NO. 2 OF 2 OF THIS DRAWING					GIS BUS

VT DETAILS :-

NO.	CIRCUIT	QTY/UNIT	RATIO V/V	ACCURACY CLASS	BURDEN VA	PHASE	PHYSICAL LOCATION
11KV VTs							
VT-1	DVR	3	$\frac{11000}{\sqrt{3}} / \frac{110}{\sqrt{3}}$	0.2	-	1PH	LAVT CUBICLE
VT-2	PROTECTION (27G, 81U, 81O, 59G, 99G, 51/27G, 37G, 78G, 21G, 40G)	3	$\frac{11000}{\sqrt{3}} / \frac{110}{\sqrt{3}}$	3P	-	1PH	LAVT CUBICLE
VT-3	PROTECTION METERING & SYNCHRONIZING	3	$\frac{11000}{\sqrt{3}} / \frac{110}{\sqrt{3}}$	0.2/3P	-	1PH	LAVT CUBICLE
VT-4#	PROTECTION	3	$\frac{11000}{\sqrt{3}} / 110$	3P	-	1PH	LAVT CUBICLE

CT DETAILS:-(Unit 1 to 5(73MW UNIT))

NO.	CIRCUIT	RATIO	ACC. CLASS	BURDEN VA	KNEE POINT VOLTAGE Vkp(V)	MAG. CURRENT Im A	PHYSICAL LOCATION
11kVCTs							
CT-101 CORE-1	OVER ALL DIFFERENTIAL (87OA)	6000/5	PS	-	-	-	BUSDUCT
CORE-2	UCB METERING	6000/5	0.2	-	-	-	BUSDUCT
CORE-3	GEN. PROTECTION (GR2) (87G, 37G1, 78G, 21G, 40G, 46G & 49S)	6000/5	PS	-	-	-	BUSDUCT
CORE-4	SPARE	6000/5	PS	-	-	-	BUSDUCT
CORE-5	GEN. PROTECTION (GR1) (87G, 37G2, 78G, 21G, 40G, 46G & 49S)	6000/5	PS	-	-	-	BUSDUCT
CT-102 CORE-1	DVR CUBICLE	6000/5	0.2	-	-	-	BUSDUCT
CORE-2	GEN. DIFFERENTIAL PROTECTION (87G-GR1)	6000/5	PS	-	-	-	BUSDUCT
CORE-3	DVR & EHGC CUBICLE	6000/5	0.2	-	-	-	BUSDUCT
CORE-4	GEN. DIFFERENTIAL PROTECTION (87G-GR2)	6000/5	PS	-	-	-	BUSDUCT
CT-103 CORE-1	METERING	6000/5	0.2	-	-	-	BUSDUCT
CORE-2	TRANSFORMER DIFFERENTIAL(87T)	6000/5	PS	-	-	-	BUSDUCT
CT-104	INST., IDMT O/C & OVERLOAD PROTECTION OF ET (50/51E)	-	-	-	-		BUSDUCT
CT-105	INST. & IDMT O/C PROT. OF UAT (50/51U)	50/1A	5P20	-	-	-	BUSDUCT
N(GT)-BUSHING CT							
CT-108 CORE-I	GT NEUTRAL OVERCURRENT (51NGT)	500/1	5P20	-	-	-	GT NEU. BUSH.
CORE-II	RESTRICTED E/F PROT. OF GT (64GT)	500/1	PS	-	-	-	
415V UAT/UAB CTS							
CT1-U1 & CT-N(UAT1)	RESTRICTED E/F PROT. OF UAT (64U)	800/1A	PS	-	-	-	UAB
CT3-U1	UAT METERING	800/1A	0.2	-	-	-	
CT2-U1	IDMT O/C, E/F PROT. OF UAT-51/51N	800/1A	5P15	-	-	-	
400KV SIDECTS							
CT-111	GT REF PROTECTION(64GT)	300/1	PS	-	-	-	GIS
CT-112	TRANSFORMER DIFF. PROTECTION(87T)	300/1	PS	-	-	-	GIS
CT-113	MAIN-II BUSBAR DIFF. PROTECTION	FOR DETAILS REFER SHEET NO. 2 OF 2 OF THIS DRAWING					GIS BUS
CT-114	MAIN-I BUSBAR DIFF. PROTECTION	FOR DETAILS REFER SHEET NO. 2 OF 2 OF THIS DRAWING					GIS BUS
CT-115	TRANSFORMER OVERCURRENT PROTECTION	FOR DETAILS REFER SHEET NO. 2 OF 2 OF THIS DRAWING					GIS BUS
CT-116	METERING	FOR DETAILS REFER SHEET NO. 2 OF 2 OF THIS DRAWING					GIS BUS
CT-117	OVERALL DIFF. PROTECTION (87OA)	FOR DETAILS REFER SHEET NO. 2 OF 2 OF THIS DRAWING					GIS BUS

PROTECTION RELAYS-DEVICE FUNCTION

DEVICE NO.	FUNCTION
21G	GEN. BACK-UP IMPEDANCE PROT.
27G	UNDER VOLTAGE PROT.
32G	REVERSE POWER
40G	LOSS OF EXCITATION
46G	NEGATIVE PHASE SEQUENCE
27/50G	DEAD MACHINE PROTECTION
27/51G	VOLTAGE CONTROLLED OVERCURRENT PROT.
49R	ROTOR OVERLOAD PROTECTION
49S	STATOR OVERLOAD PROTECTION
50E/51E	ET INST. & IDMT O/C PROT.
50U/51U	UAT INST. & IDMT O/C PROT.
50S/51S	SAT INST. & IDMT O/C PROT.
51NGT	GEN. TRANS. B/U E/F RELAY
51GT	GEN. TRANS. OVERCURRENT RELAY
59G	GEN. OVERVOLTAGE PROTECTION
59N	E/F PROTECTION WHILE BACK CHARGING
87TG	GENERATOR INTERTURN PROTECTION
60	PT FUSE FAILURE RELAY FOR VT
64G1	100% STATOR E.F. PROT.
64G2	95% STATOR E.F. PROT.
64GT	GEN. TRANS. R.E.F. PROT.
64E	ET R.E.F PROT.
64U	UAT R.E.F PROT.
64S	SAT R.E.F PROT.
64R	ROTOR E/F PROTECTION
78G	POLE SLIPPING/OUT OF STEP
81O/U	OVER/UNDER FREQUENCY
87G	GENERATOR DIFFERENTIAL
87T	GT DIFFERENTIAL PROT.
87ST	SAT DIFFERENTIAL PROT.
87OA	OVERALL DIFFERENTIAL PROT.
99G	GT OVER FLUXING PROT.

LEGEND	DESCRIPTION	LEGEND	DESCRIPTION
FA	FIELD AMMETER	NGT	NEUTRAL GROUNDING TRANSFORMER
FV	FIELD VOLTMETER	VT	VOLTAGE TRANSFORMER
A	AMMETER	CT	CURRENT TRANSFORMER
V	VOLTMETER	SC	SURGE CAPACITOR
PF	POWER FACTOR METER	LMU	LINE MATCHING UNIT
MW	MEGAWATT METER	DCDB	DC DISTRIBUTION BOARD
MVAR	MEGAVAR METER	ECR	EXCITATION CURRENT REGULATOR
F	FREQUENCY METER	S.E.E	STATIC EXCITATION EQUIPMENT
KWH	KILOWATT HOUR METER	41	FIELD CKT. BREAKER
KVARH	KILOVAR HOUR METER	52	CIRCUIT BREAKER
N	TURBINE SPEED	89	ISOLATOR
AS	AMMETER SELECTOR SWITCH	IPB	INSULATED PHASE BUSDUCT
VS	VOLTMETER SELECTOR SWITCH	UAB	UNIT AUXILIARY BOARD (PART OF LTAC SYSTEM)
OVP	FIELD OVER VOLTAGE PROTECTION	81	DC POWER CONTACTOR
T	FIELD FLASHING TRANSFORMER	LA	LIGHTENING ARRESTER
ET	EXCITATION TRANSFORMER	LAVT	LIGHTENING ARRESTER & VT CUBICLE
D	DIODE RECTIFIER	GT	GENERATOR TRANSFORMER
FFC	FIELD FLASHING CONTACTOR	SAT	STATION AUXILLIARY TRANSFORMER
UAT	UNIT AUXILIARY TRANSFORMER	EM	ENERGY METER
TRD	TRANSDUCER	EHG	ELECTRO HYDRAULIC GOVERNOR CUBICLE
UCB	UNIT CONTROL BOARD	DVR	DIGITAL VOLTAGE REGULATOR
NGR	NEUTRAL GROUNDING RESISTOR	ISF	INSTRUMENT SAFETY FACTOR
GR1,2	GEN. PROT. RELAY 1 & 2		

Note:

1.Parameters,rating, location of equipments in SLD are done on basic estimation only Bidders are requested to carry out various studies & decide parameters,rating & location based on good industry practices subjected to Purchaser's approval.

2.- Unit 2 to 6 have been provided with similar protection & metering as indicated for unit -1.

3.- All CTs and PTs are of single phase.

4.LV side other protection & metering will be shown in respective sld for 22 kV & 415V AC supply.

5.CT numbering of UAB & SSB will be been done as per their respective board.

** The 100% stator earth fault protection shall be injection based.

CROSS REF. DRAWING:

1. MV/LV SINGLE LINE DIAGRAM, DRG. NO. PH-SD-EM-

FOR TENDER PURPOSE ONLY

SHEET 1 OF 3

SJVN LIMITED

सुन्नी डैम जल विद्युत परियोजना

SUNNI DAM HYDRO ELECTRIC PROJECT

MAIN SINGLE LINE DIAGRAM

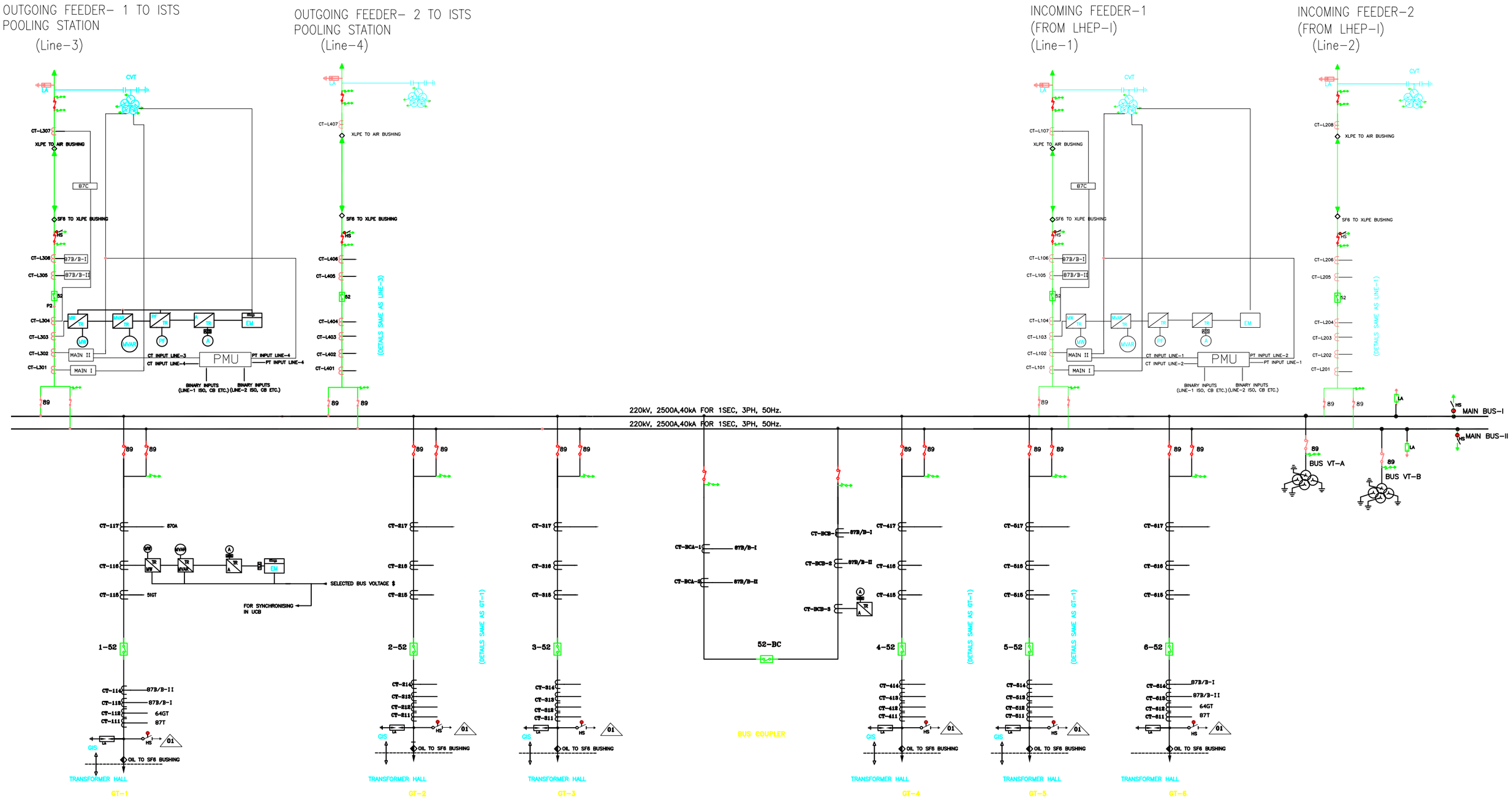
DSGN.	CHKD.	RECM.
DRWN.	RECM.	APPD.

ELECT. DESIGN DEPTT. SJVN LTD.

DRG.NO. SJVN/ED/SDHEP/EM/12

MAR.2025

REV.01



NOTES:

1. PARAMETERS,RATING, LOCATION OF EQUIPMENTS IN SLD ARE DONE ON BASIC ESTIMATION ONLY BIDDERS ARE REQUESTED TO CARRY OUT VARIOUS STUDIES & DECIDE PARAMETERS,RATING & LOCATION BASED ON GOOD INDUSTRY PRACTICES SUBJECTED TO PURCHASER'S APPROVAL.
2. **TO BE DECIDED DURING DETAILED ENGINEERING THROUGH DETAILED CALCULATIONS

FOR TENDER PURPOSE ONLY

SHEET 2 OF 3

SJVN LIMITED

सुन्नी डैम जल विद्युत परियोजना

SUNNI DAM HYDRO ELECTRIC PROJECT

MAIN SINGLE LINE DIAGRAM

DSGN.	CHKD.	RECM.
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ELECT. DESIGN DEPTT. SJVN LTD.

DRG.NO. SJVN/ED/SDHEP/EM/12 | MAR, 2025 REV-01

220 kV INDOOR GIS

S.NOS.	DESCRIPTION	SYMBOLS
1.	CIRCUIT BREAKER	
3.	EARTH SWITCH	
4.	FAST ACTING EARTH SWITCH	
5.	CURRENT TRANSFORMER	
6.	ISOLATOR WITH EARTH SWITCH	
7.	VOLTAGE TRANSFORMER	
8	SF6 AIR BUSHING	
9.	OIL SF6 BUSHING	
10.	LIGHTENING ARRESTOR	

DEVICE DETAILS

DEVICE NO.	DESCRIPTION
A	AMMETER
ASS	AMMETER SELECTOR SWITCH
CT	CURRENT TRANSFORMER
EM	ENERGY METER (ABT TYPE)
F	FREQUENCY METER
PMU	PHASOR MEASUREMENT UNIT
MVAR	MEGA VAR METER
MW	MEGA WATT METER
TR	TRANSDUCER
V	VOLTMETER
VSS	VOLTAGE SELECTOR SWITCH
VT	VOLTAGE TRANSFORMER
52	CIRCUIT BREAKER
89	ISOLATOR
51GT	TRANFORMER IDMT OVERCURRENT PROTECTION
64NGR	REF PROTECTION FOR NEUTRAL GROUNDING REACTOR
64R	REF PROTECTION
870A	OVERALL DIFFERENTIAL PROTECTION
87B/B-I	MAIN-I BUSBAR DIFFERENTIAL RELAY WITH INBUILT LBB
87B/B-II	MAIN-II BUSBAR DIFFERENTIAL RELAY WITH INBUILT LBB
87C	CABLE DIFFERENTIAL PROTECTION
87L	LINE DIFFERENTIAL PROTECTION

PARTICULARS OF CURRENT TRANSFORMER

CT REF.	RATIO	BURDEN (VA)	ACCURACY CLASS	MIN. KNEE POINT VOLTAGE (Vk)	CT SEC. RESIS. (OHMS) AT 75deg.C	MAX.EXCITING CURRENT AT Vk/2 (mA)	LOCATION	PURPOSE
Y=(1,2)							220kV GIS	
CT-LY01	800-400/1A	**	PS	**	**	**		MAIN-I PROTECTION
CT-LY02	800-400/1A	**	PS	**	**	**		MAIN-II PROTECTION
CT-LY03	800-400/1A	**	0.2	**	**	**		METERING
CT-LY04	2500-1250/1A	**	PS	**	**	**		CABLE DIFFERENTIAL PROTECTION
CT-LY05	2500-1250/1A	**	PS	**	**	**		MAIN I BUSBAR DIFF WITH INBUILT LBB
CT-LY06	800-400/1A	**	PS	**	**	**		MAIN II BUSBAR DIFF WITH INBUILT LBB
CT-LY07	800-400/1A	**	PS	**	**	**		CABLE DIFFERENTIAL PROTECTION
Y=(3,4)							220kV GIS	
CT-LY01	2500-1250/1A	**	PS	**	**	**		MAIN-I PROTECTION
CT-LY02	2500-1250/1A	**	PS	**	**	**		MAIN-II PROTECTION
CT-LY03	2500-1250/1A	**	0.2	**	**	**		METERING
CT-LY04	2500-1250/1A	**	PS	**	**	**		CABLE DIFFERENTIAL PROTECTION
CT-LY05	2500-1250/1A	**	PS	**	**	**		MAIN I BUSBAR DIFF WITH INBUILT LBB
CT-LY06	2500-1250/1A	**	PS	**	**	**		MAIN II BUSBAR DIFF WITH INBUILT LBB
CT-LY07	2500-1250/1A	**	PS	**	**	**		CABLE DIFFERENTIAL PROTECTION
U=(1,2,3,4,5)		**	PS	**	**	**	220kV GIS	TRANSFORMER DIFFERENTIAL
CT-U11	300/1	**	5P20	**	**	**		TRANSFORMER REF PROTECTION
CT-U12	300/1		PS					MAIN I BUSBAR DIFF WITH INBUILT LBB
CT-U13	2500-1250/1A		PS					MAIN II BUSBAR DIFF WITH INBUILT LBB
CT-U14	2500-1250/1A	**	5P20	**	**	**		GT OVERCURRENT PROTECTION
CT-U15	300/1A	**	0.2	**	**	**		METERING
CT-U16	300/1A							OVERALL DIFFERENTIAL PROTECTION
CT-U17	300/1A	**	PS	**	**	**		
U=(6)		**	PS	**	**	**	220kV GIS	TRANSFORMER DIFFERENTIAL
CT-U11	100/1	**	5P20	**	**	**		TRANSFORMER REF PROTECTION
CT-U12	100/1		PS					MAIN I BUSBAR DIFF WITH INBUILT LBB
CT-U13	2500-1250/1A		PS					MAIN II BUSBAR DIFF WITH INBUILT LBB
CT-U14	2500-1250/1A	**	5P20	**	**	**		GT OVERCURRENT PROTECTION
CT-U15	100/1A	**	0.2	**	**	**		METERING
CT-U16	100/1A							OVERALL DIFFERENTIAL PROTECTION
CT-U17	100/1A	**	PS	**	**	**		
CT-BCA-1	2500-1250/1A	**	PS	**	**	**	220kV GIS	MAIN I BUSBAR DIFF WITH INBUILT LBB
CT-BCA-2	2500-1250/1A	**	PS	**	**	**		MAIN II BUSBAR DIFF WITH INBUILT LBB
CT-BCB-1	2500-1250/1A	**	PS	**	**	**		MAIN I BUSBAR DIFF WITH INBUILT LBB
CT-BCB-2	2500-1250/1A	**	PS	**	**	**		MAIN II BUSBAR DIFF WITH INBUILT LBB
CT-BCB-3	2500-1250/1A	**	0.2	**	**	**		METERING

PARTICULARS OF VTs/CVTs

VT NO.	VOLTAGE RATION IN (V)	BURDEN (VA)	ACCURACY CLASS	PURPOSE	LOCATION
BUS VT-A	$\frac{220000}{\sqrt{3}}/\frac{110}{\sqrt{3}}/\frac{110}{\sqrt{3}}/\frac{110}{\sqrt{3}}$	**	3P,0.2,0.2	PROTECTION SYNCHRONO SCOPE METERING	220KV GIS
BUS VT-B	$\frac{220000}{\sqrt{3}}/\frac{110}{\sqrt{3}}/\frac{110}{\sqrt{3}}/\frac{110}{\sqrt{3}}$	**	3P,0.2,0.2	PROTECTION SYNCHRONO SCOPE METERING	220KV GIS
LINE CVT	$\frac{220000}{\sqrt{3}}/\frac{110}{\sqrt{3}}/\frac{110}{\sqrt{3}}/\frac{110}{\sqrt{3}}/\frac{110}{\sqrt{3}}$	**	3P,3P,0.2,0.2	PROTECTION & METERING SYNCHRONO CHECK RELAY	ON LINE AT 220KV SIDE

FOR TENDER PURPOSE ONLY

SJVN LIMITED

सुन्नी डैम जल विद्युत परियोजना

SUNNI DAM HYDRO ELECTRIC PROJECT

MAIN SINGLE LINE DIAGRAM

DSGN.	CHKD.	RECM.
DRWN.	RECM.	APPD.

ELECT. DESIGN DEPTT. SJVN LTD.

DRG.NO. SJVN/ED/SDHEP/EM/12 DEC,2023

CLARIFICATION-IV						
Electro-Mechanical Works of Sunni Dam HEP (382 MW)						
PRE BID TECHNICAL cum Techno-Commerical Clarification						
Sl. No.	**Chapter No.**	**Chapter Name**	**Clause No.**	**Original Tender Provision**	**Bidders Queries**	**SJVN Reply**
Turbine and Associated Auxiliaries						
1	Chapter 2	Turbine and Associated Auxiliaries	Clause 2.3.5.4-ii) Clause 2.4.8.2 b)	2.3.5.4 (2) Design stress Limits: For other materials used in the construction of the equipment, the maximum stresses under normal condition shall be as per ASME Section-VIII. 2.4.8.2 (b): Stresses in spiral casing shall be limited as per IS 7418 (latest edition).	Kindly confirm whether the spiral casing is to be designed using either by ASME Section-VIII standard or by IS 7418 standard.	Spiral casing design shall be governed by the specific clause i.e. 2.4.8.2
Cooling Water System						
2	Chapter 3	Cooling Water System		The combination of filter/ strainer (as per applicability) shall be capable for removal of all materials as small as 100 micron in silted water with 2000 ppm for primary cooling water circuit. The secondary circuit shall constitute pumping water in closed circuit loop to be filled (first filling) from fire fighting and cooling water tank, & piping to power house. The combination of filter/strainer (as per applicability) shall be capable for removal of all materials as small as 70 micron in silted water with 2000 ppm for secondary cooling water circuit and filling of fire fighting tanks. The Contractor shall ensure the potable quality of water in his design.	The asked filtration of 100 microns for primary cooling water circuit and 70 microns for secondary cooling water circuit is very stringent requirement and not necessary for the asked purpose. Further, such high filtration requirement may lead to frequent changeover of filters due to chocking of its elements. Kindly allow bidder to propose the filtration as per his experience keeping in consideration the cooler design and water condition.	Provision of TS shall prevail.
Generator& Associated Auxiliaries Chapter 8						
3			8.3.2.3	Line charging capability of 73 MW Unit shall be calculated during detailed engineering based on the input parameters of Transmission Line.	The line charging capacity will be accordingly to formula given in clause 8.3.2.3. Therefore, the changes of the value in later stage is not possible.	Line Charging capability shall be as per Clause 8.3.2.3 only
4			8.3.8	Guarantees and Liquidated damages on Efficiency & Output of Generator	Bidder request to confirm if the tolerance on efficiencies is applicable as per IEC 60034-1 and reference temperature for I^2R losses calculation is 75ºC.	The losses to be calculated at 75ºC.
5			8.4.1.9	Consolidated requirements of signalizers, sensors, operation items required for monitoring, annunciation and tripping etc. given in Schedules VIII A and B of this section shall form part of the supply.	The said schedules are not available in the specifications. Bidder request to provide same.	Schedules VIII A and B to be read as "Not Applicable"

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6	Chapter no. 8	Generator& Associated Auxiliaries	8.4.3.2	The stator core shall be clamped by means of flange and finger assembly at both ends of the core. The assemblies are constructed by welding the non magnetic fingers of the flanges and together that bridge the core and the stator frame.	The bidder's design for core clamping is with separate pressing fingers and pressing plates. The pressing finger & pressing plates are pressed together with the help of pressing bolts. The pressing finger are non-magnetic while pressure plate is made of magnetic steel construction.	In addition to the existing provision of TS, Manufacturers design shall also be acceptable
7			8.4.7.1	The coolers shall be designed for at least 10 kg/cm2 nominal pressure and pressure tested 50% above this pressure. The above shall be designed for 25% extra supported by design calculation.	Bidder request to clarify if an extra of 25% of rated design pressure or rated test pressure or the rated cooling capacity of the cooler is required.	Provision of TS shall prevail
8			8.4.7.2	The cooling water pipes inside the barrel shall be of stainless steel suitably coated with fine quality paint to prevent damages due to condensation on pipes.	Bidder request to allow use of foam based insulation material to prevent the condensation on pipes.	In addition to the existing provision of TS, Manufacturers design shall also be acceptable
9			8.4.7.3	Tubes shall be interchangeable and shall be connected to the mild steel water boxes by ferrule connections.	Bidder do not recommend the interchangeability of tubes as sufficient overcapacity has been designed. Additionally, spare coolers are also shall be available in accordance with your requirement. The connection of water boxes and pipes are made using expansion method and connection by ferrule method is not applicable.	Provision of TS shall prevail
10			8.5.5.3	The piping shall be of stainless steel of requisite class and standards. The valves shall be of Steel, Bronze/Brass as per proven international practice.	In clause 3.4.6 Pipes & Fitting, the cooling water piping are ERW Carbon steel. Therefore, bidder request to maintain same piping material for generator cooling also.	In addition to the existing provision of TS, Manufacturers design shall also be acceptable
11			8.7.3	(iii) Two randomly selected bars shall be subjected to accelerated life test at increased voltage and temperatures Test certificates of similar or higher rating generator is also acceptable.	Bidder will provide the test certificate for a generator with similar or above voltage level. Bidder wants to emphasis that tender requirement of similar or higher rating (Output) generator is not relevant considering that the requested test is conduced to ascertain the quality of insulation. This test is not applicable for smaller unit due to GVPI design.	Provision of TS shall prevail
12			8.7.4.1	(vii) Magnetization test of the ready assembled iron core to verify the absence of hot spots (local overheating) In case the core is brought to site with wound winding, this test will be conducted at works.	For large units, the power requirement to conduct the core loop test will be very high which is not possible with available equipment at bidders facility. Therefore, ELCID method is employed to verify the absence of hotspot. For smaller unit, core induction test will be performed at workshop.	Provision of TS shall prevail
13			8.7.4.2	vi) Insulation resistance test and H.V. withstand test of the stator winding,	Dielectric test will be performed only once after complete assembly of the windings. If further dielectric test is required, same shall be performed at 0.8 time the test voltage as stipulated in IEC 60034-1.	Test shall be performed as per the latest IS/IEC

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14			8.7.4.2	xxv) Following tests in operation without any harmful damage to the machine: • Guide bearings and the thrust bearing to be able to operate for 10 minutes at rated conditions without any water cooling auxiliaries.	The test will be carried out as per design requirements as described in the clause 8.4.6.4 i.e. 5 minutes without cooling water.	Applicability of test shall be as per the specific clause 8.4.6.4
15			8.9.3	The rotor rim piling shall be carried out with an interleaving pattern to ensure maximum compactness of the core and the rim punching shall form continuous helical layer to maintain structural rigidity.	Please allow manufacture to design and assemble the rim in accordance with their proven practice.	In addition to the existing provision of TS, Manufacturers design shall also be acceptable
ISOLATED PHASE BUSDUCT (73 MW UNIT) & SEGRAGATED PHASE BUSDUCT (17 MW UNIT) Chapter 10						
16	Chapter 10	Isolated Phase Busduct (73 MW Unit) & Segragated Phase Busduct	Clause 10.1.1.1-xii)	Bus-duct: Main Supply - NOTE	Length of IPBD / SPBD shall be calculated as per available tender drawing. However, any change due to change in layout / orientation of the PH layout (incl. bus-duct tunnel / GSU cavern) during execution shall be compensated. Please confirm.	Provisions of TS are ample clear.
17			Clause 10.3.2)	Rating and Functional Characteristics	Kindly review the main current requirement (73MW unit). The maximum current that shall flow is 4950Amps. Hence, we suggest that rated current of IPBD shall be 5000Amps. Please review and confirm.	Provision of TS shall prevail.
18			Clause 10.5.2	LAVT Cubicle	Galvanized MS strips of suitable size shall be provided for earthing the LAVT cubicle. Please review and confirm.	Provision of TS shall prevail.
Generator Transformer_Chapter 11						
19	Chapter 11	Generator Transformer	Clause 11.4.4.1	Bushings (HV)	We understand that OIP type bushing is also acceptable as RIP type bushing is mandatory for 400kV and above. Please review and confirm.	Provision of TS shall prevail.
20			Clause 11.7.1.13 – v)	Type Test	We request to consider short-circuit withstand test report carried out on similar transformer / short-circuit calculation as this test is a destructive test and hence not recommended by the transformer manufacturers. Please review and confirm.	Provision of TS shall prevail.
220kV XLPE Cables_Chapter-13						
21	Chapter-13	220 kV XLPE CABLES	Clause 13.4.4	Seismic Design Criteria	Kindly clarify the seismic zone of the said project as there is a discrepancy observed (Zone-IV or Zone-V).	Seismic Zone-V to be considered.
Gas Insulated Switchgear_Chapter-16						

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22	CHAPTER-16	Gas Insulated Switchgear	Clause 16.1.1.1-a)	245kV Double bus-bar	We understand that the rating of the GIS breaker module and bus-bar shall be 2000Amps instead of 2500Amps. Kindly review and confirm.	Provision of TS shall prevail.
23				245kV Double bus-bar	We understand that group operated safety grounding switch are already mentioned along with disconnector and hence, high speed grounding switches are not required. Please review and confirm.	Provision of TS shall prevail
24			Clause 16.3.1 – i)	Ratings	The current rating of all the feeders shall be 2000Amps. Please review and confirm.	Provision of TS shall prevail.
DC System_Chapter-19						
25	Chapter-19	DC System	Clause 19.1.1.1 – vi)	PH / Transformer / GIS Area	Kindly review the rating of UPS as 100kVA seems to be very high.	Provision of TS shall prevail.
26			Clause 19.3-b)	Parameter Guarantees	We understand that 1 float cum boost charger shall be applicable for each battery of 1500AH instead of 3 float cum boost charger. Please review.	Provision of TS shall prevail.For better clarity, please refer DC SLD
LV System Chapter 20						
27	Chapter-20	LV System	Clause 20.1.1.1 – iv)	415V Switchgear	Sectionalized SSB at GIS floor shall be of suitable current rating and not of 3150Amps. Please review and confirm.	Provision of TS shall prevail.
28			Clause 20.3.2 – A – 5)	Rating	Protection class of LT boards shall be IP42. Kindly review and confirm.	Provision of TS shall prevail.
29			Clause 20.3.2 – B / C / D / E) & Clause 20.4.1.7	Rating / Bus-bars	The material of bus-bar shall be Aluminium conductor. Please confirm.	Provision of TS shall prevail.
30			Clause 20.5.2	415V AC Sandwich Bus-duct / NSPBD	We understand that LT bus-duct conductor of Aluminium is also acceptable. Please review and confirm.	Provision of TS shall prevail.
MV System_Chapter 21						
31	Chapter-21	MV System	Clause 21.4.1.1	General	The degree of protection of MV switchgear shall be IP-4X. Please review and confirm.	Provision of TS shall prevail.
32			Clause 21.4.1.7	Busbars	We propose to consider Aluminium conductor for busbar in place of Copper. Please review and confirm.	Provision of TS shall prevail.
Illumination System_Chapter 22						

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33	Chapter-22	Illumination System	Clause 22.1.1.8	Civil works	The civil works shall be excluded from E&M contractor scope. Please review and confirm.	Provision of TS shall prevail.
DG Sets_Chapter 27						
34	CHAPTER-27	DG Sets	Claus 27.1.1.2-iii)	Misc. Components and Aux. System	As DG sets are meant for emergency use, auto and manual synchronizing panel is not applicable. Please review and confirm.	Provision of TS shall prevail.
35			Clause 27.3.1-iii)	Rating & Functional Characteristics	We understand that the installation of the DG set shall be indoor type and accordingly ingress protection shall be as per IS. Please review and confirm.	Provision of TS shall prevail.
36			Clause 27.5.1 – viii)	General	As the DG sets are of LT type, air-core reactor for neutral earthing is not envisaged. Also, the DG sets are meant for emergency use. Kindly review and confirm.	Provision of TS are ample clear.
General						
37				General	We come across GTP's in two different sections. One set of GTP in "Attachment and GTP's" and other set of GTP in "Schedule 2, 3 & 4". Kindly clarify which GTP's are to be filled. Also, kindly share the editable version of GTP's and attachments / forms that are to be filled and submitted as part of bid.	Both GTP's are same. Attachment-12 is to be filled and submitted with the Bid by the Bidder Editable version of attachment-12 are enclosed.
38				General	Interface activity with civil shall be done through Client and not directly by E&M contractor. Please confirm.	Provision of TS shall prevail.Please refer Clause 1.17 of GTS
39	Section-2, NIT & ITB, Clause 10.0	Page 18 of 48		Land	Kindly specify the location and size of land assigned for E&M contractor's infrastructure works, storage and construction facilities	Provisons of Bid shall prevail and it is in Bidder's scope.
40	Section-2, NIT & ITB, Clause 15.0			Civil works	Any kind of civil works (incl. minor and pole lighting of illumination system) is excluded from the E&M contractor's scope. Please confirm,	Provisions of TS are ample clear. Minor civil works and civil works of Illumination system is in Bidder's Scope.
41	Section-2, NIT & ITB, Clause 8.0 and Clause 1.1.6.2 of GTS (Page 4 of 109)		Clause 8 Clause 1.1.6.2	Bidder's Responsibility	We understand that minor civil works in bidder's scope is applicable beyond requirement of 5.0m. Please confirm.	Provision of TS is ample clear and minor civil works as per TS Clause 1.1.6.2 is in Bidder scope only.

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42	Section-2, NIT & ITB, Clause 12.0 & GTS Clause 1.8.10		Clause 1.8.10	Construction Power	Kindly specify the capacity, kV (11/22/33 as local grid) and location of the construction power to be made available to the E&M contractor.	Provisons of Bid shall prevail and it is in Bidder's scope.
43	GTS, Clause 1.7 and BDS, Clause 3			Project Completion Schedule	The unit wise completion schedule in relevant clauses do not match. Kindly clarify.	Project Completion shall be as GTS clause 1.7.
44	GTS		Clause 1.7		Kindly share the Annexure-III and Annexure-IX.	Please Refer Page no. 508 to 514 of GTS Annexures.
45	GTS		Clause 1.8.3	Cabling & Wiring	All control wiring / cabling shall be 1.5sq.mm. Please review and confirm	Provision of TS shall prevail.
46					This is with reference to subject project tender documents available on e-tender portal While reviewing documents, schedule 1 (technical) appears to be missing in the documents, kindly revert.	The Technical Schedule-1 has been attached below.