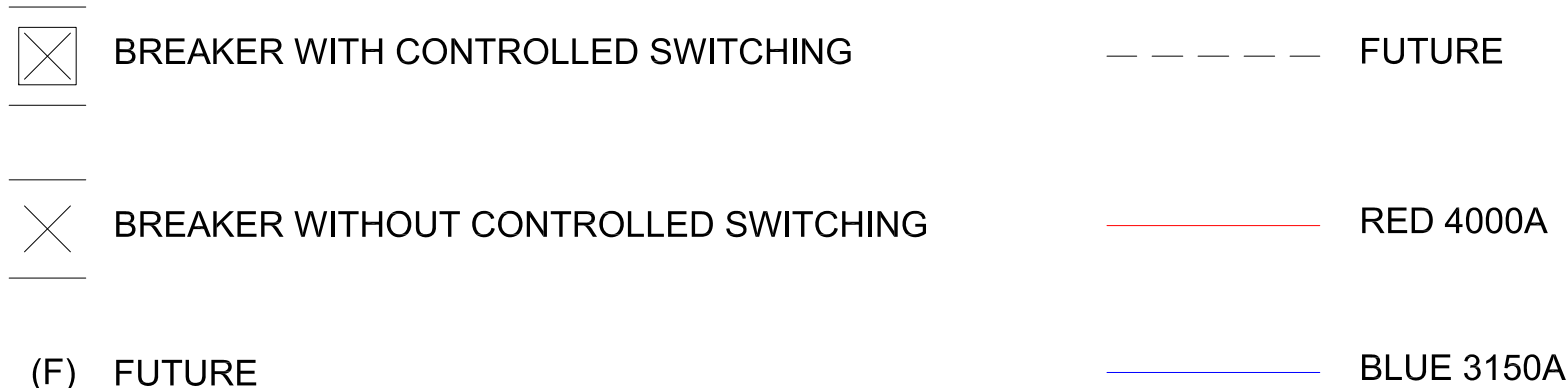


COMMENT RESOLUTION SHEET For Rev 01			
DRG / DOC TITLE		400 kV Switchyard Single Line Diagram	
NTPC DRG / DOC NO.		9585-001-572-PVE-P-0002	
Revision		0	
Reviewed By		NTPC	
Review Date / Location		01-05-2018/NTPCEOC	
400kV GIS SWITCHYARD			
SR. No.	Page No. / Clause No. / Sheet No.	NTPC Observations / Comments	BHEL Reply
1	2	400KV Main BUS -II, 4000A, 63KA, 1sec	Noted and Incorporated
2	2	400KV Main BUS-I, 4000A, 63KA, 1sec	Noted and Incorporated
3	2	Indicate the same in SLD	Noted and Incorporated
4	3	i) All the bays marked with Bay numbering	Noted and Incorporated
5	3	space for future Bus LA to be considered in bus section	Noted and Incorporated
6	4	l) mention The rating & other details of 400KV out door equipments.	Noted and Incorporated
7	4	rating of LA shall be decided based on insulation coordination study and Temporary Overvoltage results	Added as a note.
8	4	i)The item nomenclature mention SLD Designation column not reflecting in SLD diagram.	Identification done through bay numbering as per comment on sheet 3.
9	4	i)Mention the rating & other details of Circuit breaker, disconnector, Earth switch , Fast acting earth switch & other equipments in GIS portion of equipments in the BOM.	Noted and Incorporated
10	4	ii) Also mention the rating & other details of AIS portion equipments in BOM	Noted and Incorporated
11	4	iii) Mention System parameters	Noted and Incorporated
12	4	iv) Equipment designation details for bay equipments along with Bay numbering.	Noted and Incorporated
13	4	v) Details of reference drawing (Tendor drawing details)	Noted and Incorporated in sheet 1.
14	4	This drawing shall be submitted after finalization of vendor to avoid the repeation of drawing & review.	Noted for GIS. Resubmitted with bay numbering and fixing of outdoor equipment and development of protection key diagram.
15	5	CT parameters are primarily in order however considering 63KA fault level available VK shall be checked wrt requirement of relays provided.	Noted.
16	5	i)The CT parameters shall be finalised after the approval of CT / VT sizing calculations	Noted. Shall be submitted separately.
17	5	ii) Mention Voltage T/F details & Busbar VT details	Noted and Incorporated.
18	--	NIL	GT3 and ST3 locations interchanged as per lates plot plan.





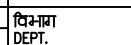

COMPUTER DRG. PATH NAME :

[illegible]

INVENTORY No.	SIGN. & DATE	REF. DRG. No.
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REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED						
ZONE			ZONE			ZONE			ZONE			ZONE			ZONE								
12			11			10			9			8			7			6			5		

CA NO.		01/PVUNL-CS-9585-001-2/NOA-SC DATED 08/03/2018											
ADDITIONAL INFORMATION W.O.No.		ग्राहक/परियोजना का नाम PATRATU VIDYUT UTPADAN NIGAM LTD. STATUS OF DRAWING NAME OF CUSTOMER/PROJECT PATRATU SUPER THERMAL POWER DISTRIBUTION OF PRINTS PROJECT EXPANSION PHASE-I (3x800 MW)											
				भारत हेवी इलेक्ट्रिकल्स लिमिटेड दांचिमिशन परियोजना विभाग BHARAT HEAVY ELECTRICALS LTD. TRANSMISSION PROJECTS DIVISION				नाम /NAME NS		हस्ता /SIGN. -SGD-		दि./DATE 31-03-2018	
								SKS		-SGD-		31-03-2018	
								AG		-SGD-		31-03-2018	
REV.		DATE		ALTERED NS		चित्रा DEPT.		जुलाफ / SCALE		कार्ड कोड CARD CODE			
01		27-11-18		CHECKED SKS APPROVED AG		कोड CODE							
REVISION		AS PER NTPC-EOC COMMENTS DATED 01-05-18.											
		शीट/क/TITLE 400kV GIS SWITCHYARD SINGLE LINE DIAGRAM								ड्राईंग नं./DRAWING NO. NTPC CORP. 9585-001-572-PVE-P-0002 BH&L DRG NO. TB-2-397-316-001			
										पुनः/REV. 01			
		पृष्ठ नं./SHEET No. 02								जमा पृष्ठ/NEXT SHEET 03			



- | | |
|--------------|---|
| शीर्षक/TITLE | 400kV GIS SWITCHYARD SINGLE
LINE DIAGRAM |
|--------------|---|

REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED	REV. 01	DATE	ALTERED CHECKED APPROVED	NS SKS AG
ZONE			ZONE			ZONE			ZONE			ZONE			ZONE			ZONE			ZONE	27-11-18	REVISÉ AS PER NTPC-EOC COMMENT DATED 01-05-18.	

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN MM.)																																																																																																																																																																																																																									
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<div>MAIN SYSTEM PARAMETERS</div> <table><tr><td>1. NOMINAL VOLTAGE</td><td>-</td><td>400kV</td></tr><tr><td>2. HIGHEST SYSTEM VOLTAGE</td><td>-</td><td>420kV</td></tr><tr><td>3. RATED FREQUENCY</td><td>-</td><td>50 HZ</td></tr><tr><td>4. RATED SHORT TIME CURRENT</td><td>-</td><td>63kA FOR 1 SEC</td></tr><tr><td>5. POWER FREQUENCY WITHSTAND VOLTAGE</td><td>-</td><td>650 kVrms</td></tr><tr><td>6. LIGHTNING IMPULSE WITHSTAND VOLTAGE</td><td>-</td><td>± 1425 kVpeak</td></tr><tr><td>7. SWITCHING IMPULSE WITHSTAND VOLTAGE</td><td>-</td><td>± 1050 kVpeak</td></tr><tr><td>8. CREEPAGE</td><td>-</td><td>25mm/kV (10500 MM)</td></tr></table>																						1. NOMINAL VOLTAGE	-	400kV	2. HIGHEST SYSTEM VOLTAGE	-	420kV	3. RATED FREQUENCY	-	50 HZ	4. RATED SHORT TIME CURRENT	-	63kA FOR 1 SEC	5. POWER FREQUENCY WITHSTAND VOLTAGE	-	650 kVrms	6. LIGHTNING IMPULSE WITHSTAND VOLTAGE	-	± 1425 kVpeak	7. SWITCHING IMPULSE WITHSTAND VOLTAGE	-	± 1050 kVpeak	8. CREEPAGE	-	25mm/kV (10500 MM)																																																																																																																																																																												
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2. HIGHEST SYSTEM VOLTAGE	-	420kV																																																																																																																																																																																																																							
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4. RATED SHORT TIME CURRENT	-	63kA FOR 1 SEC																																																																																																																																																																																																																							
5. POWER FREQUENCY WITHSTAND VOLTAGE	-	650 kVrms																																																																																																																																																																																																																							
6. LIGHTNING IMPULSE WITHSTAND VOLTAGE	-	± 1425 kVpeak																																																																																																																																																																																																																							
7. SWITCHING IMPULSE WITHSTAND VOLTAGE	-	± 1050 kVpeak																																																																																																																																																																																																																							
8. CREEPAGE	-	25mm/kV (10500 MM)																																																																																																																																																																																																																							
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400KV CT DETAILS

CT.NO.	APPLICATION	CURRENT RATIO (A)	OUTPUT BURDEN (VA)	ACCURACY CLASS AS PER IEC	MIN. KNEE POINT VOLTAGE (V _k)	MAX CT SEC. WINDING RES. (OHMS)	MAX EXCITING CURRENT AT V _k (mA)
CORE DETAILS OF 400kV CTs - 3000A (SET - 1) TABLE 1							
1	BUS DIFFERENTIAL	3000/2000/1000/1	-----	PS	3000/2000/1000	15/10/5	20/30/60
2	BUS DIFFERENTIAL	3000/2000/1000/1	-----	PS	3000/2000/1000	15/10/5	20/30/60
CORE DETAILS OF 400kV CTs - 3000A (SET - 2) TABLE 2							
1	METERING AND SYNCHRONISING	3000/2000/1000/500/1	20/20/20/20	0.2S	-----	-----	-----
2	TRAFO. BACKUP / LINE PROTECTION	3000/2000/1000/500/1	-----	PS	6000/4000/2000/1000	15/10/5/2.5	20/30/60/120
3	TRAFO. BACKUP / LINE PROTECTION	3000/2000/1000/500/1	-----	PS	6000/4000/2000/1000	15/10/5/2.5	20/30/60/120
ISF FOR METERING CORE SHOULD BE LESS THAN 5.							

400KV VT DETAILS



CORE DETAILS OF 400kV VTs (GIS)				TABLE 3
SECONDARY WINDING	APPLICATION	RATED SECONDARY VOLTAGE (V)	ACCURACY	RATED SECONDARY BURDEN (MIN.) VA
I	PROTECTION	110/v3	3P	75
II	PROTECTION	110/v3	3P	75
III	METERING	110/v3	0.2	75

CORE DETAILS OF 400kV CVTs (AIS) Capacitance(Nominal) = 8800pF / 4400pF TABLE 4				
SECONDARY WINDING	APPLICATION	RATED SECONDARY VOLTAGE (V)	ACCURACY	RATED SECONDARY BURDEN (MIN.) VA
I	PROTECTION	110/√3	3P	75
II	PROTECTION	110/√3	3P	75
III	METERING	110/√3	0.2	75

REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED
ZONE			ZONE			ZONE			ZONE			ZONE		

NOTES 

1. RATED EXTENDED PRIMARY CURRENT OF THE CURRENT TRANSFORMERS SHALL BE 120% CONTINUOUS OF 3000A.
2. PHYSICAL ARRANGEMENT OF CURRENT TRANSFORMERS SHALL BE AS PER PROTECTION SLD.
3. FOR VTs THE ACCURACY OF 0.2 ON SECONDARY III SHOULD BE MAINTAINED THROUGH THE ENTIRE BURDEN RANGE UP TO TOTAL SIMULTANEOUS BURDEN 150 VA ON ALL THE THREE WINDINGS WITHOUT ANY ADJUSTMENTS DURING OPERATION.

CA NO.		01/PVUNL-CS-9585-001-2/NOA-SC DATED 08/03/2018					
ADDITIONAL INFORMATION W.O.No.		आहूत/परियोजना का नाम		PATRATU VIDYUT UTPADAN NIGAM LTD. PATRATU SUPER THERMAL POWER			
STATUS OF DRAWING		NAME OF CUSTOMER/PROJECT		PROJECT EXPANSION PHASE-I (3x800 MW)			
DISTRIBUTION OF PRINTS		<div><div></div><div>भारत हेवी इलेक्ट्रिकल्स लिमिटेड द्वारा भारत भारी बिजलीय प्रियोजना विभाग BHARAT HEAVY ELECTRICALS LTD. TRANSMISSION PROJECTS DIVISION</div></div>		<div><div>क्रमांक DRAWN</div><div>उत्तरा CHECKED</div><div>स्वीकृत APPROVED</div></div>	<div>नाम /NAME</div> <div>NS</div> <div>SKS</div> <div>AG</div>	<div>हस्ता/ .SIGN.</div> <div>-SGD-</div> <div>-SGD-</div> <div>-SGD-</div>	<div>दि./DATE</div> <div>31-03-2018</div> <div>31-03-2018</div> <div>31-03-2018</div>
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