400/220kV GIS SUBSTATION
PATRAN TRANSMISSION COMPANY LIMITED
COMMUNICATION CONNECTIVITY DIAGRAM

Remote Control Center

Router cum Firewall

Main NRLDC

Backup NRLDC

IEC 60870-104 Master

IEC 60870-104 Master

OWS-1 21` Workstation 1 KVM

OWS-2 21` Workstation 2 KVM

DR/Engg Workstation 21` Workstation 3 KVM

Server-1 / Gateway-1
MicroSCADAStationComputer
SYS600 / HMI / MMC 600 2002

Server-2 / Gateway-2
MicroSCADAStationComputer
SYS600 / HMI / MMC 600 2001

Station Auxiliary-1
REC 670 106 Bay Control Unit IEC61850

Station Auxiliary-2
REC 670 107 Bay Control Unit IEC61850

GPS Receiver
GPS Receiver SNTP 2101
GPS Receiver SNTP IEC61850

AFS650 104 Switch
AFS650 105 Switch

AFS670 Root / 1 Station Ethernet Switch

Total	Used	Spare
10CU+6FO	7CU+3FO	3CU+3FO

AFS670 Backup / 2 Station Ethernet Switch =SAS2

Total	Used	Spare
10CU+6FO	6CU+2FO	4CU+4FO

Total	Used	Spare
16FO	9FO	7FO

AFS670 3 Bay Ethernet Switch =4R2A

Total	Used	Spare
16FO	9FO	7FO

AFS670 4 Bay Ethernet Switch =4R5A

Total	Used	Spare
16FO	13FO	3FO

AFS670 22 Bay Ethernet Switch =4R8A

Total	Used	Spare
16FO	8FO	8FO

AFS670 34 Bay Ethernet Switch =2R1A

Total	Used	Spare
16FO	6FO	10FO

AFS670 13 Bay Ethernet Switch =2R3A

Total	Used	Spare
16FO	7FO	9FO

AFS670 46 Bay Ethernet Switch =2R8A

Total	Used	Spare
16FO	11FO	5FO

AFS670 53 Bay Ethernet Switch =2R10A

401- LILO#1 INC =4R1A
REC 670 9 Bay Control Unit IEC61850
7SA522 11 Distance Protn – M2 IEC61850
=4R1B
REL 670 10 Distance Protn – M1 IEC61850

403- LILO#1 OG =4R3A
REC 670 17 Bay Control Unit IEC61850
7SA522 18 Distance Protn – M2 IEC61850
=4R3B
REL 670 19 Distance Protn – M1 IEC61850

404- LILO#2 OG =4R4A
REC 670 20 Bay Control Unit IEC61850
7SA522 7 Distance Protn – M2 IEC61850
=4R4B
REL 670 15 Distance Protn – M1 IEC61850

406- TRAFO#2 =4R6A
REC 670 21 Bay Control Unit IEC61850
RET670 8 REF Protn IEC61850
=4R6B
RET670 6 Tranfo Diff Protn IEC61850

407- LILO#2 INC =4R7A
REC 670 27 Bay Control Unit IEC61850
7SA522 23 Distance Protn – M2 IEC61850
=4R7B
REL 670 26 Distance Protn – M1 IEC61850

409- TRAFO#1 =4R9A
REC 670 24 Bay Control Unit IEC61850
RET670 29 Ref Protn IEC61850
=4R9B
RET670 28 Tranfo Diff Protn IEC61850

201- LINE#1 =2R1A
REC 670 35 Bay Control Unit IEC61850
7SA522 36 Distance Protn – M2 IEC61850
=2R1B
REL 670 37 Distance Protn – M1 IEC61850

203- LINE#3 =2R3A
REC 670 44 Protection UnIT IEC61850
7SA522 14 Distance Protn IEC61850
=2R3B
REL670 12 IEC61850

205/206- BUSCOUPLER =2R6A
REC 670 50 Bay Control Unit IEC61850

207-TRAFO#2 =2R7A
REC 670 42 Bay Control Unit IEC61850

209- LINE#5 =2R9A
REC 670 52 Bay Control Unit IEC61850
7SA522 54 Distance Protn – M2 IEC61850
=2R9B
REL 670 58 Distance Protn – M1 IEC61850

220kV BBP =2BB1
REB670 43 IEC61850 BUSBAR-87BB
REB670 48 IEC61850 BUSBAR-87BB
REB670 59 IEC61850 BUSBAR-87BB

202-LINE#2 =2R2A
REC 670 38 Bay Control Unit IEC61850
7SA522 39 Distance Protn – M2 IEC61850
=2R2B
REL 670 40 Distance Protn – M1 IEC61850

204-TRAFO#1 =2R4A
REC 670 41 Bay Control Unit IEC61850

208-LINE#4 =2R8A
REC 670 47 Bay Control Unit IEC61850
7SA522 49 Distance Protn – M2 IEC61850
=2R8B
REL 670 51 Distance Protn – M1 IEC61850

210-LINE#6 =2R10A
REC 670 57 Bay Control Unit IEC61850
7SA522 55 Distance Protn – M2 IEC61850
=2R10B
REL 670 56 Distance Protn – M1 IEC61850

402-TIE =4R2A
REC 670 16 Bay Control Unit IEC61850

405-TIE =4R5A
REC 670 5 Bay Control Unit IEC61850

408-TIE =4R8A
REC 670 25 Bay Control Unit IEC61850

4BB - BUSBAR
=4RBB1
REB670 30 Busbar Prot-87BB IEC61850
REB670 31 Busbar Prot-87BB IEC61850
=4RBB2
REB670 32 Busbar Prot-87BB IEC61850
REB670 33 Busbar Prot-87BB IEC61850

FOR BIDDING PURPOSE ONLY

Note:-
1. Supply of any armored cable is not in ABB scope
2. Supplying GSM SIM card and maintaence of SIM card is not in ABB scope.
3. Establishing internet connectivity between TECHNO office, ABB office to substation is not in ABB scope.
4. At TECHNO office ABB will be supplying an IPC for remote monitoring, providing necessary power supply, modem, mounting arrangements are not in ABB scope
5. Providing RSCC and RCC link is not in ABB scope, Communication gateway shall give output on IEC 60870-101 protocol using RS232 port.

LEGEND:
- Unarmored Fibre Optic Cable
- CAT5e -RJ45 Cable
- RS232 DB9 Pin cross cable

Naming convention:
C1 Q01 KF1/FN1
- IED reference(KF=Bay control Unit IED no,FN=Protection IED No.)
- Bay Reference No.
- System Voltage Reference(C1-400kv,DI-220kV)

Based on:	
Prepared: SS	
Approved: MVG	
Project: 400/220kV GIS SUBSTATION PATRAN	
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