

ANNEXURE-B

Clarification No. I to Bidding Document for Substation Package-SS01 for Extension of 400kV Tumkur Pooling station (Pavagada) (including transformer & Reactor), Extension of 400/220kV Mysore Substation and Extension of 400/220kV Tumkur (Vasantnarsapur) (Including Transformer)

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			requirement for equipment's under present scope of works. Kindly confirm.	
10	General	Existing 415V AC system	We understand that existing auxiliary LT transformer is sufficient to cater the load requirements under present scope of works at the Tumkur Extension Substation. Please confirm.	Confirmed
11	General	Spare feeders in existing ACDB/DCDB panels	We understand that spare feeders are available at existing LT Switchgear i.e. ACDB/DCDB/MLDB to cater the present requirements at 400/220KV Tumkur Extension Substation. Please confirm.	Confirmed
12	Sec-project,2.2.1 f)	The Bus bar protection system will be provided in a separate contract for Tumkur new Substation, which will also include bus bar protection modules (peripheral units) for bays under present scope. However, necessary wiring for augmentation of busbar protection system for bays under present scope including shifting & installation of existing bus bar bay modules is under present scope. The details of existing Bus Bar protection shall be furnished during detailed engineering. However LBB shall	We understand, LBB shall be inbuilt function of bus bar peripheral units mounted in CB relay panel. Pl confirm.	Bidder shall provide the LBB as a part of CB relay panel for 400kV Tie bays. For main CBs, LBB shall be integral part of existing Busbar peripheral units.

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		be part of CB relay panel.		
13	BPS-Tumkur(Pavagada)		Following Mandatory spares asked in BPS are not applicable for present scope of work & hence not considered, - Distance relay main-1 & main-2, - Bus bar protn bay unit module Kindly Confirm	Please refer SI no. 3 of Amendment 1
14	Sec-project,2.2.1 m)	Telecom Equipment's as per Bid price schedule (BPS).	Telecom equipment's are not envisaged in present bidder scope. Pl confirm.	Please refer SI no. 18 of Amendment 1
15	Sec-project,2.3.1 f)	PLCC system including one no. Digital Protection Coupler for each line at 400kV Mysore substation end matching with Tumkur (Pavagada) Substation	Pl provide the make & model of PLCC & DPC available at Tumkur(Pavagada) SS.	Please refer SI no 17 of Amendment no 1
16	Sec-project,2.3.1 g)	i) Relay panels for bays under present scope shall be placed in existing switchyard panel room and new switchyard panel room location of which shall be decided during detail engineering.	Sentence is contradictory. Pl clarify where panels would be kept	For one dia, SPR is already existing & for other dia SPR is under present scope. Relay panels shall be placed accordingly in the SPRs, which shall be finalized during detailed Engg
17	Sec-project,2.3.1 g)	ii) Control panel along with BCU for bay of ICT3-Tie Line diameter is placed in switchyard panel room. Augmentation of existing control panel for	We understand, control panel for the dia ICT3-Tie-Line is already available in Swyd panel room. Bidder shall augment the same to accommodate new Line with LR with BCU's. Pl confirm. Also confirm that BCU for new bays under	Confirmed. BCU for new bays under present scope can be mounted in respective CB relay panel

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		accommodation of Line bay with reactor along with necessary cables are in the scope of contractor.	present scope can be mounted in respective CB relay panel or protn panel.	
18	Sec-project,2.3.1 g)	iii) Control panel alongwith BCU for bay associated with B/R-Tie- Line shall be provided by the contractor and placed in switchyard panel room. Integration with existing equipment along with cables etc. are in the scope of bidder.	We understand, bidder shall provide new control panel with BCU for the complete diameter. Pl confirm & also confirm whether BCU for existing BR & Tie bays is envisaged in bidder scope.	Confirmed. BCU for existing BR & Tie bays is not envisaged in present scope.
19	Sch - 2, 400 KV Tumkur (Pavgada) EXTN- Sl. No. 127,128		1). We understand that as per present BPS , there is no requirement of SDH /PDH ,therefore SFP's shall also not be required in this package , pls confirm Else 2).If SFP's are required ,please provide the details of make and model of existing SDH equipment as SFPS are proprietary items.	We confirm that SFPs are not required at Tumkur (Pavagada) S/S. Please refer Sl no. 18 of Amendment 1 Also, SFPs is to be considered at Extension of Mysore substation for Hiriyur - Mysore Link. (Existing STM-16, 3 MSP equipment of M/s Tejas make is available at Mysore S/s) Please refer Sl no. 19 of Amendment 1
20	Section Project,2.3.1 (f)	PLCC system including one no. Digital Protection Coupler for each line at 400kV Mysore substation end matching with Tumkur	1).As per Section project , there is a mention of Digital protection coupler to be supplied at Mysore and Tumkur(Pavagada) S/S , We understand that working E1 link over existing SDH equipment shall be in scope of	1.Confirmed 2.If required, suitable converters shall be included alongwith DPC to take care of longer distances.

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		(Pavagada) Substation.	Purchaser. Bidder's responsibility is limited to connection with E1 port of existing SDH equipment. 2)Due to the limitation of technology we understand that Digital protection coupler shall be kept under 50 meter distance from FOTE equipment. Please confirm.	
21	Sch - 2, Extn of Mysore SS- Sl. No. 295		1).We understand that the BOQ consists of PLCC for one substation only. Kindly confirm It may also be noted that ,As per general philosophy of PLCC system, these systems are always commissioned on a link with SAME make/Type of equipment at both ends. 2).Please provide the line link distances (Length in KM) between Substations involved.	Please refer Sl no. 17 of Amendment no 1
22	Section Project,2.2	Extension of Tumkur (Pavagada) Pooling station The necessary interface equipment at Tumkur substation for transferring data to SRLDC (RSCC) and National Transmission Asset Management Centre (NTAMC) at Manesar, etc. through optical fibre based SDH communication link is also under present scope.	As per our information, 400/ 220 KV Tumkur (Pavagada) Substation is not included in 192 nos. Substations (Under Implementation of NTAMC Project at existing S/s) We request you to please kindly confirm availability/ requirement of following functions: 1. Remote Access System (RAS) 2. Automated Fault Analysis System (AFAS)	Bidder to quote as per the scope of bidding document.

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			3. Visual Monitoring System (VMS) 4. Access Control System (ACS) 5. Voice Over IP (VoIP) 6. UPS 7. Networking Architecture Including Substation Router cum firewall and Networking Switches 8. Capability of existing SAS gateway to concurrently communicate with 4 Masters on IEC 101/ 104 protocol. In case the same is not available, extra Gateway is required	
23	General Fire Protection & Detection System		Pl. Provide the existing fire hydrant drg / layout of the substation which is required to find out the suitable tapping point from existing fire pipe header and to calculate the actual quantity of pipe length.	Tapping point for piping of existing Fire protection system is already mentioned in Section project. Drawing for the same shall be furnished to successful bidder during detail engineering.
24	400kV MYSORE SUB STATION EXTENSION Sch. 4, Item No. 123 & SLD - C/ENGG/SS/SR/SR-II/MYSORE-EXT/SLD/001, Rev. 00	Erection hardware for 400KV I type layout - Line bay as per technical specification - 2 Set	As per Tender SLD, 400KV erection hardware for 2 Sets of any feeder extn. Of line bay is required. However, BPS calls for 2 Sets of 400KV erection hardware for line bay. Kindly review & revise the nomenclature of 400KV erection hardware required for any feeder extn. Of line bay.	Please refer Sl no. 16 of Amendment no 1
25	400kV MYSORE SUB STATION EXTENSION Section Project, Cl. No. 2.3.1 - g (i)	Relay panels for bays under present scope shall be placed in existing switchyard panel room and new switchyard panel room	We understand that control & relay panels along with PLCC panels under present scope for ICT3 - Tie-line diameter shall be placed inside existing	Confirmed

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			AC kiosk. Also, control & relay panels along with PLCC panels under present scope for BR - Tie-line diameter shall be placed inside new switchyard panel room. Kindly confirm	
26	400kV MYSORE SUB STATION EXTENSION Section Project, Cl. No. 2.3.1 - I & m	Air Conditioning & Illumination for Switchyard Panel Rooms	Kindly include Air Conditioning & Illumination for Switchyard Panel Room under present scope in BPS since same is not included.	Please refer Sl. No 4 of Amendment 1
27	400kV MYSORE SUB STATION EXTENSION Section Layout - C/ENGG/SS/SR/SR-II/MYSORE-EXT/SEC/001, Rev. 0	400KV side conductor details	Kindly provide existing conductor details at 400KV side for: a). Jack bus b). Equipment interconnection	Existing conductor details are as follows: 1. Jack bus- Twin Moose ACSR 2. Equipment interconnection- 4" IPS Tube
28	400kV MYSORE SUB STATION EXTENSION Sch. 4, Item No. 177 & SLD - C/ENGG/SS/SR/SR-II/MYSORE-EXT/SLD/001, Rev. 00	400KV, 3150A, 1.0mH, 50KA Line trap	As per SLD, 4 Nos. of 400KV, 2000A, 0.5mH, 40KA Line trap is to be envisaged for the present scope. However, BPS calls for total 8 Nos. of 400KV line trap having current rating of 2000A & 3150A. Kindly review & confirm the actual requirement & rating of 400KV line trap to be envisaged under present scope.	Please refer Sl no 5 of Amendment 1
29	400kV MYSORE SUB STATION EXTENSION SLD - C/ENGG/SS/SR/SR-II/MYSORE-EXT/SLD/001, Rev. 00 & Sch. 4, Item No. 193	33KV NCT - 2 No's as per SLD	As per SLD BOM, 2 Nos. of 33KV NCT is required. However same is not envisaged under main equipment's qty. Also the structure required for the same is rated for 132KV as per BPS, Sch. 4, Item No. 193. Kindly review & confirm the actual requirement	33kV CT is mentioned in BPS in the Shunt Reactor head. For Structure, Shedule 3 is correct. For Supply, please refer Sl no 7 of Amendment 1

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		under present scope.		
36	Sec-project,2.4.1 f)	Existing 400kV Tumkur (Vasantnarsapur; i.e. existing Madhugiri substation) is equipped with substation automation system of M/s Siemens Make (based on IEC-61850). In the present scope of work, bidder shall include BCUs required for 01 no. 220kV bays (bay as defined in technical specification, Section-Substation Automation), including hardware and software required to integrate with existing substation automation system.	We understand, BCU for 400kV ICT bay under present scope is already existing. Pl confirm that existing BCU is having sufficient DI/DO/AI inputs required for new ICT bay.	Confirmed
37	Sec-project,2.4.1 f)	The necessary interface equipment and integration at 400kV Madhugiri Substation for transferring data to SRLDC (RSCC) and remote control Centre (NTAMC, Manesar), etc. on OPGW link is also under present scope.	We understand gateways for sending data to SRLDC & NTAMC are already existing, bidder scope is to integrate the new bays & upgrade the existing gateways database to include the data of new bays under present scope. Supply of new gateways is not envisaged in present scope. Please confirm	Bidder to comply with the requirement of TS
38	General Fire Protection & Detection System		Pl. Provide the existing fire hydrant drg / layout of the substation which is required to find out the suitable tapping point from existing fire pipe header and to calculate the actual quantity of pipe length.	Tapping point for piping of existing Fire protection system is already mentioned in Section project Drawings for the same shall be furnished to successful bidder during detail

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	& BPS, Sch. 4, Item No. 205 & 206		However, BPS calls for 1 Set of 420KV, 3150A, 3-Ph. Double break isolator with One E/S & 1 set of 420KV, 2000A, 3-Ph. Double break isolator with One E/S. Kindly review & confirm the actual current rating & quantity of 420KV isolator with E/S.	
42	BPS, Sch. 4, Item No. 242	Erection hardware for 400KV I type layout for GIS termination arrangement - transformer bay as per technical specification	There is a typographical error since erection hardware for 400KV transformer bay with I type layout for GIS termination arrangement is asked. However, present 400KV Tumkur substation is of AIS type. Kindly review & correct the nomenclature for erection hardware for 400KV transformer bay.	Please refer reply for SI no 1
43	Section Layout C/ENGG/SS/TUMKUR PH2/MADHUGIRI/SEC/001, Rev. 0	400KV side conductor details	Kindly provide existing conductor details at 400KV side for: a). Jack bus b). Equipment interconnection since same is not furnished with the tender documents.	a) Jack Bus - Quad Moose b) Equipment Interconnection - 4.5" Tube
44	Section Layout C/ENGG/SS/TUMKUR PH2/MADHUGIRI/SEC/001, Rev. 0	220KV side conductor details	Kindly provide existing conductor details at 220KV side for: a). Jack bus b). Equipment interconnection since same is not furnished with the tender documents.	a) Jack Bus - Twin Moose b) Equipment Interconnection - 4" Tube/Twin Moose
45	Section Project Cl. No. 2.4.1 - h	Present scope 220KV control & relay panels location	Kindly confirm the location of present scope of 400KV control & relay panels either at existing AC kiosk or inside the new switchyard panel to be built under	400kV Panels shall be kept inside existing Switchyard Panel room

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			present scope since same is not clear from the tender provisions	
46	Section Project Cl. No. 2.4.1 - h	Present scope 220KV control & relay panels location	Kindly confirm the location of present scope of 220KV control & relay panels either at existing AC kiosk or inside the new switchyard panel to be built under present scope since same is not clear from the tender provisions	220kV Panels shall be kept in new Switchyard Panel room under present scope
47	General	Existing 220V DC system	We presume that existing 220V battery system including 220V DCDB is sufficient for present load & feeder requirement for equipment's under present scope of works. Kindly confirm.	Confirmed
48	General	Existing 415V AC system	We understand that existing 415V auxiliary LT transformer is sufficient to cater the load requirement under present scope of works at 400KV Tumkur Extn. Substation. Please confirm.	Confirmed
49	General	Spare feeders in existing ACDB/DCDB panels	We understand that sufficient spare feeders are available at existing LT switchgear i.e. ACDB/DCDB/MLDB to cater the present requirement at 400KV Tumkur Extn. Substation. Please confirm.	Confirmed
50	BPS - Tumkur(Vasant narasapur)		Line item is missing in BPS for bus bar protn augmentation 400kV & 220kV. Kindly Include	As per Section project, Clause 2.4.1 (e) & (f) Necessary wiring, trip relay, LBB relay, modification of scheme including hardware and

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				software required to integrate the above with existing system are under present scope. Cost of the above shall deemed to be included in Cost of relay panels.
51	Sec-project,7.1	1.0 Section-Project Rev.00	But section project Rev-01 is available with tender documents. Kindly correct the Rev no.	Since Section project is revised, Rev no. for section project is Rev 1
52	Sec-project,11.26	The broad Scope of the procurement of Communication Equipment and PMU shall include planning, designing, engineering, supply, transportation, insurance, delivery at site, unloading handling, storage, installation, termination, testing, training and demonstration for acceptance, commissioning and documentation for : i. SDH Equipment along with suitable interfaces and line cards. ii. PMU Equipment along with interfaces. iii. All cabling, wiring, Digital Distribution frame patch facilities and interconnection to the supplied equipment at the defined interfaces,iv. System integration of all supplied subsystem v. Integration with the existing	PMU Supply & its integration with PDC is not envisaged in present bidder scope. Pl confirm.	PMU supply shall be under the scope of the Bidder as per the BOQ & The PMU shall be integrated with Phasor Data Concentrators (PDCs) installed at Control centers of SLDC/RLDC and NTAMC (National Transmission Asset Management Center) /NLDC as per IEEE C37.118.1-2011, IEEE C37.118.2-2011 & C37.118.1a-2014 standard. The scope of Integration shall be upto the supplied PMUs and associated substation switches only

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		communication system based on SDH and PDH of employer vi. Integration of supplied subsystem with SCADA system, PLCC equipment, PABX of RLDC/NLDC		
53	General Fire Protection & Detection System		Pl. Provide the existing fire hydrant drg / layout of the substation which is required to find out the suitable tapping point from existing fire pipe header and to calculate the actual quantity of pipe length.	Tapping point for piping of existing Fire protection system is already mentioned in Section project. Drawings for the same shall be furnished to successful bidder during detail engineering.
54	Tumkur - 14-Autotransformer_R10,16.3	Digital RTCC Panel	Digital RTCC panel is required as per Technical Spec, however the same is not included in the BPS. Kindly Confirm	Digital RTCC Panels are not required for present scope as Tumkur Main SS Pkg covers the present requirement. However Cabling, wiring and integration shall be included for present scope.
55	Tumkur - General	-	We understand that Fairly levelled land shall be handover to contractor by PGCIL. Please conform	Confirmed
56	Tumkur - Clause 3 Specific exclusion (page 16 of 32) of Section project	Soil Investigation Report	As per clause no 3.0. Specific exclusion mentioned as "Soil investigation including soil resistivity measurement" not in bidder scope, Therefore request to provide Soil Investigation report for	Since foundation drg for the equipments shall be released by POWERGRID. So Soil investigation report is not required by the bidder.

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65	400/220kV EXTENSION AT TUMKUR S/S (Pavagada)	Bid price schedule (Line item no.2) & SLD(Drg.No. C/ENGG/SS/SR/SR-II/TUMKUR-EXT/SLD/001)	As per the referred clause of BPS, 400kV, 3150A circuit Breaker without closing resistor- 1# ; while as per SLD BOQ , 400kV, 3150A circuit Breaker without closing resistor -2#. Kindly clarify the quantity.	In the SLD & BPS both, 400kV, 3150A circuit Breaker without closing resistor- 1# 400kV, 3150A circuit Breaker with closing resistor- 1#
66	400/220kV EXTENSION AT TUMKUR S/S (Pavagada)	Bid price schedule, Sl.no.33	As per the referred clause, 220kV main bus extension works are required for only 2 bays. However, based on layout drawing & existing Tumkur scope of work, we understand the main bus need to be extended from the portion marked for "Bus sectionaliser" in order to have continuity. Request to amend this line item suitably	Please refer Sl no 2 of Amendment 1
67	400/220kV EXTENSION AT TUMKUR S/S (Pavagada)	Layout Plan (Drg.No. C/ENGG/SS/SR/SR-II/TUMKUR-EXT/LAY/001)	As per the referred Layout, drawing for the marked C-C Section is not available. Kindly provide the same.	Please refer Sl no 15 of Amendment no 1
68	400/220kV EXTENSION AT TUMKUR S/S (Pavagada)	Layout Section (Drg.No. C/ENGG/SS/SR/SR-II/TUMKUR-EXT/400kV SEC/001)	As per the referred section drawing, the strung buses are indicated with various combinations - Quad moose / Twin bersimis / Twin moose. We presume this should be read as "Quad bersimis" for 3150A breaker & "Twin bersimis" for 2000A breaker as per existing Tumkur station. Please confirm whether our understanding is correct	Bidders understanding is correct. Further for Future Devanhally line bay Jack Bus shall be Quad Bersimis & Equipment interconnection shall be done by 4.5"IPS tube.
69	400/220kV EXTENSION AT TUMKUR S/S (Pavagada)	NTAMC integration	Since station is existing & SAS based, we presume the following:1) We do not envisage separate NTAMC gateway in addition to SAS gateway2) All IED's	Confirmed. Bidder to comply with the requirement of TS

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			under present scope of works shall be integrated with existing SAS gateway at Tumkur end. 3) We do not envisage any work at SLDC / RSCC / NTAMC (Manesar) in terms of hardware / software supply (or) database upgradation. These are excluded from the scope of current package. Please confirm whether our understanding is correct.	
70	400kV EXTENSION AT MYSORE S/S	Bid Price Schedule, Sl.no.266	We request to furnish Make & Model no. of existing Tie circuit breakers in order to get appropriate quote for Control switching device.	As per section project clause 2.3.3 (i). Tie CB along with its CSD shall be dismantled from Tie bay and re-erection of the same shall be done in switchable LR bay. New Tie CB to be supplied with CSD.
71	400kV EXTENSION AT MYSORE S/S	Section Project, Annexure-III, NTAMC system, Cl.1	"Attachment-I" as referred in the signal list is not received at our end. We request to furnish the same	Enclosed
72	400kV EXTENSION AT MYSORE S/S	Section Project, Annexure-III, NTAMC system, Cl.1	All necessary signals as required for NTAMC shall be made available at ethernet switch level. Integration / Configuration of these signals to NTAMC gateway (make & model number unknown) is beyond purview of this contract. We trust the same is in order.	Confirmed . However Bidder shall extend full co-operation for integration of all database.
73	400kV EXTENSION AT MYSORE S/S	Section Project, Annexure-III, NTAMC system, Cl.1	We do not envisage any work at SLDC / RSCC / NTAMC (Manesar) in terms of hardware / software supply (or) database upgradation. These are	Bidder to comply with the requirement of TS

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			excluded from the scope of current package.	
74	400kV EXTENSION AT MYSORE S/S	Section Project, Annexure-III, NTAMC system, Cl.2	We presume the Bay control units referred here are the same as indicated in Bid price schedule under Sl. no. 287 & 288. We do not envisage separate BCU's for NTAMC. Please confirm whether our understanding is correct	Confirmed
75	400kV EXTENSION AT MYSORE S/S	Section Project, Annexure-III, NTAMC system, Cl.10	We presume this clause is meant for VMS system. Since Mysore substation is not having VMS & there is no separate line item for VMS in Bid price schedule, we interpret this clause is not applicable for Mysore station. Please confirm whether our understanding is correct	Confirmed
76	400kV EXTENSION AT MYSORE S/S	Inputs	We request the following information pertaining to Mysore station: 1) Main bus conductor 2) Jack bus conductor 3) Equipment interconnecting conductor	4"Tube/ Twin Moose
77	400/220kV EXTENSION AT TUMKUR S/S(Vasantnarsapur)	400/220kV Layout Section No. (Drg. C/ENGG/SR/TUMKUR PH2/MADHUGIRI/SEC/01)	We request the following information pertaining to Tumkur (Vasantnarsapur) station: 1) Main bus conductor 2) Jack bus conductor 3) Equipment interconnecting conductor	1) Main Bus -4.5"Tube 2) Jack Bus-Quad Moose 3) Equipment interconnection - 4.5"Tube for 400kV, Twin Moose for 220kV
78	400/220kV EXTENSION AT TUMKUR S/S(Vasantnarsapur)	NTAMC integration	Since station is existing & SAS based, we presume the following: 1) We do not envisage separate NTAMC gateway in addition to SAS gateway 2) All IED's under present scope of	Please refer reply given above against similar query.

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S.N.	Specification Clause No./Page No.	As per Bidding Documents	Query from Bidder	POWERGRID reply
			works shall be integrated with existing SAS gateway at Tumkur (Vasantnarsapur) end. 3) We do not envisage any work at SLDC / RSCC / NTAMC (Manesar) in terms of hardware / software supply (or) database upgradation. These are excluded from the scope of current package. Please confirm whether our understanding is correct.	
79	400/220kV EXTENSION AT TUMKUR S/S(Vasantnarsapur)	Battery & Charger	We presume that existing battery & chargers in respective stations are adequately rated, capable of handling present scope of work	Confirmed
80	400/220kV EXTENSION AT TUMKUR S/S(Vasantnarsapur)	LT Board	We presume that sufficient spare feeders are available in existing LT AC / DC boards for present scope of work	Confirmed
81	CIVIL Extn. of 400kV Tumkur Pooling SS (Pavagada)	Volume II , Sec. project , '2.2.3 , (ii), c	As per the referred clause, we understand that the drainage system for the proposed area is under the present scope of work. But we trust that the drainage system for the area under the present scope is already covered under earlier package. Furthermore, the item for the drain is not available in BPS. Please confirm the requirement of the drains for the present scope.	Drains are not envisaged under present scope. Bidder to quote as per BPS
82	CIVIL Extn. of 400kV Tumkur Pooling SS (Pavagada)	General	We trust that in the existing station, there are 3 terrains of different levels. As there is a level difference, the	Please refer SI no. 8 of Amendment 1

Clarification No. I to Bidding Document for Substation Package-SS01 for Extension of 400kV Tumkur Pooling station (Pavagada) (including transformer & Reactor), Extension of 400/220kV Mysore Substation and Extension of 400/220kV Tumkur (Vasantnarsapur) (Including Transformer)

Spec. No. CC-CS/702-SR2/SS-3340/7/G7

S.N.	Specification Clause No./Page No.	As per Bidding Documents	Query from Bidder	POWERGRID reply
			washing of existing stone in BPS for use in Gravel Spreading.	
89	Extn. of 400/220kV Tumkur (Vasantnarsapur) SS	General	We presume that for the construction of the new cable trench for the proposed bay extension, the existing road, drain may have to be dismantled. If so, kindly add an item for dismantling and re-construction of concrete road and brick drain.	Please refer Sl no 21 of Amendment 1
90	Extn. of 400/220kV Tumkur (Vasantnarsapur) SS	General	We trust that the dismantling of existing fence is not under the present scope of work. Please confirm.	Confirmed
91	Extn. of 400/220kV Tumkur (Vasantnarsapur) SS	Volume II, Sec. project, '2.3.3, d	As per the referred clause, we understand that Cable trench and drain crossings are in the present scope of work. However, there is no separate item for the same in BPS. Request to add an item of RCC Hume Pipe for Cable trench and drain crossings in BPS.	Pl refer reply of Sl no. 89
92	General		As per Spec, Digital RTCC relay requirement envisaged for existing transformers & shall be integrated for parallel operation but nothing is specified in Section project	Please refer sl no. 10 of Amendment 1
93	General		Vacuum treatment plant requirement specified in Spec but not mentioned in BPS	Vacuum treatment plant not envisaged under present scope
94	General		Augmentation with existing BBP. Existing details not mentioned in Section project	It shall be furnished to successful bidder during detailed engineering.

**Clarification No. I (Part II) to Bidding Document for Substation Package-SS01 for Extension of 400kV Tumkur Pooling station (Pavagada) (including transformer & Reactor), Extension of 400/220kV Mysore Substation and Extension of 400/220kV Tumkur (Vasantnarsapur) (Including Transformer)
Spec. No. CC-CS/702-SR2/SS-3340/7/G7**

S.N	Technical specification Clause No./Page No.	As per TS	Query from Bidder	POWERGRID reply
7	General		As per specs digital RTCC relay requirement envisaged for existing transformers & shall be integrated for parallel operation but nothing is specified in Section project	Already clarified in Clarification 1(Part 1) for Tumkur PS and Amendment 1 for Tumkur (Vasantnarsapur) Substation
8	General		Vacuum treatment plant requirement specified in specs but not mentioned in BPS.	Already clarified in Clarification 1(Part 1)
9	General		Augmentation with existing BBP. Existing details not mentioned in Section project	Already clarified in Clarification 1(Part 1)
10	General		Augmentation with existing SCADA. Existing details not mentioned in Section project	Already clarified in Clarification 1(Part 1)
Extnesion of 400/220kV Tumkur (Vasantnarsapur) Substation):				
1	BPS_2nd_Envelope/Schedule-2/Sr.No.155 & Madhugiri SLD		Please note that as per SLD(C/ENGG/SR/TUMKUR PH2/MADHUGIRI/SLD,Rev-0)420kV 3PH,Double Break Isolator with one E/S Rating=3150A,50kA is indicated as 02(two)numbers. However, as per BPS schedule-2 Sr.No.155,the same is indicated as 01(one)Numbers. Please let us know as to which of the above is to be considered.	Please refer earlier Amendment no 1
2	Section Project_Rev1/Clause 2.4.1 (d)pg. No. 10 of 24		As per the Clause 2.4.1(d) of section project, Augmentation of Bus Bar protection of 220kV for 01 nos. of Bay is under present scope. But the same is not mentioned in the BPS. Please clarify the same.	Please refer Clarification 1(Part 1) for similar query
3	Section Project_Rev1/Clause 2.4.1 (f)pg. No. 10 of 24		We understand that the SAS for 400kV bay of present scope is already integrated with existing system. Kindly confirm/clarify the same.	Bus Bar bay unit for 400kV ICT bay under present scope is existing Necessary wiring, trip relay, LBB relay, modification of scheme including hardware and software required to integrate the above with existing system are under present scope.
4	BPS_2nd_Envelope/Schedule-4/Sr.No.259		We understand that the Switchyard Panel Room is required for the 220kV ICT Bay. But in BPS_2nd_Envelope/Schedule-4/Sr.No.259, it is mentioned as 400kV Panel Room. Please clarify the same.	Please refer earlier Amendment no 1

**Clarification No. I (Part II) to Bidding Document for Substation Package-SS01 for Extension of 400kV Tumkur Pooling station (Pavagada) (including transformer & Reactor), Extension of 400/220kV Mysore Substation and Extension of 400/220kV Tumkur (Vasantnarsapur) (Including Transformer)
Spec. No. CC-CS/702-SR2/SS-3340/7/G7**

S.N	Technical specification Clause No./Page No.	As per TS	Query from Bidder	POWERGRID reply
12	BPS_2nd_Envelope/Schedule-2/Sr.No.218		Please note that as per Technical specification of CB(C/ENGG/SPEC/SWGR/R10A), Clause 1.2, Circuit breaker would be SF6 type. However, as per BPS Schedule-2 Sr.no.218, the same is mentioned ACB. Please let us know as to which of the above is to be considered for mandatory spare.	The description of mandatory Spare for Circuit Breaker is as follows: One complete pole of 245kV, 1600A, 40kA CB including pole column, interrupter, operating mechanism and Marshalling Box but without support structure
13	BPS_2nd_Envelope/Schedule-2/Sr.No.211 & Technical specification of Auto Transformer(C/ENGG/MODEL-SPEC/TRF Rev. 10), Annexure-A Clause 1.17 Bushing ii) Pg. No.47 of 112.		Please note that as per Technical specification of Auto transformer C/ENGG/MODEL-SPEC/TRF Rev. 10), Annexure-A Clause 1.17 Bushing ii) Pg. No.47 of 112 mentioned for 420kV Bushing, amp rating is 1250A. However, as per BPS Schedule-2 Sr.no.211, the same is mentioned as 800A. Please let us know as to which of the above is to be considered for mandatory spare.	Please refer earlier Amendment no 1
14	Technical specification of Auto Transformer(C/ENGG/MODEL-SPEC/TRF Rev. 10), Annexure-A Notes 1) Pg. No.48 of 112.		As per Technical specification of Auto Transformer(C/ENGG/MODEL-SPEC/TRF Rev. 10), Annexure-A Notes 1) Pg. No.48 of 112. mentioned in the notes, kindly provide the detail of the existing transformer, the impedance, OLTC connection & range and winding configuration are required for parallel operation with existing transformer.	It shall be furnished to successful bidder during detail engineering.
Extension of 400/220kV Mysore Substation:				
1	Section Project_Rev1/Clause 2.3.1 (i)pg. No. 07 of 24		As per the clause 2.3.1(i) of section project, Existing switchyard panel room are available for placing of relay panels for bays under present scope. Please clarify the requirement of new switchyard panel room.	Switchyard Panel room for one diameter is under present scope
2	Section Project_Rev1/Clause 11.23, pg. No. 23 of 24 & BPS Schedule-2		Please note that as per Section project_Rev 01 of clause 11.25, Pg. no. 23, Outdoor power receptacle suitable for oil filtration unit near Reactors & Autotransformer Area of switchyard is mentioned with 400A rating. However, as per BPS Schedule-2	Please refer earlier Amendment no 1

**Clarification No. I (Part II) to Bidding Document for Substation Package-SS01 for Extension of 400kV Tumkur Pooling station (Pavagada) (including transformer & Reactor), Extension of 400/220kV Mysore Substation and Extension of 400/220kV Tumkur (Vasantnarsapur) (Including Transformer)
Spec. No. CC-CS/702-SR2/SS-3340/7/G7**

S.N	Technical specification Clause No./Page No.	As per TS	Query from Bidder	POWERGRID reply
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CIVIL PRE-BID QUERIES

1	Section-Project, Annexure-I List of Tender drawings,		We have observed that the following Foundation Bolt drawings in tender document are found to be missing. 1)Details of 28mm Dia FDN Bolt 2)Details of 40mm Dia FDN Bolt. 3)Details of 56mm Dia FDN Bolt. Kindly provide the same for estimation purpose.	Already enclosed with Amendment 1
Extnsion of 400/220kV Tumkur (Vasantnarsapur) Substation) & Extension of 400kV Tumkur Pooling station (Pavagada)				
1	BPS 2nd Envelope/Schedule-4		Please note that the drain length is not included in the BPS. We presume that the existing Drain is sufficient for the present scope. Please clarify the same.	Confirmed
1	BOQ	Serial No: 21-25(Page1 of 13)	Kindly provide the details of existing Busbar and SAS for 400kV Tumkur Pooling station (Pavagada)	It shall be furnished to successful bidder during detail engineering.
2	General		Kindly provide the Earthing Mat spacing to be considered for 400kV Tumkur Pooling station (Pavagada)	It shall be furnished to successful bidder during detail engineering.
3	General		Kindly mention the Soil data (SBC and Type of Soil) for all the 3 substations	Please refer Clarification 1(Part 1) for similar query
4	VOID			
5				
6	BOQ	Serial no: 41, 42, 177,323	Kindly furnish the drawings & tap off details for the HVWS and Hydrant systems for all the substations. This is required for computation of quantities.	Please refer Clarification 1(Part 1) for similar query
7	BOQ	Serial no: 41, 42, 177,323	Kindly confirm that the water at required pressure shall be provided by PGCIL at the tap-off point. Also please confirm that no high pressure test is to be conducted by us.	Bidder shall meet the requirement of Bidding document.
8	Section Project, Rev 1- Tumkur Ph 2 Part A - Copy	2.3.1 (g) 6-7 of Pg 26	Kindly confirm whether augmentation of existing SAS at Mysore is in our scope of present work.	Mysore Substation is of conventional type . However, the scope for NTAMC SCADA requirement & integration of these BCUs

Clarification No. I (Part III) to Bidding Document for Substation Package-S501 for Extension of 400kV Tumkur Pooling station (Pavagada) (including transformer & Reactor), Extension of 400/220kV Mysore Substation and Extension of 400/220kV Tumkur (Vasantnarsapur) (Including Transformer)
Spec. No. CC-CS/702-SR2/SS-3340/7/G7

S. N.	Technical specification Clause No./Page No.	As per TS	Query from Bidder	POWERGRID reply
1	Part II (i) Section Project, Rev 1, 4 of 24, 2.2.1 (l)	Tumkur (Pavagada) Pooling Sub-station extension - "Earthmat already exists for the area under present scope of work."	Please provide layout of existing earthmat of Tumkur (Pavagada) Pooling Sub-station.	As the detailed Engineering of Tumkur (Pavagada) Pooling station is underway, it shall be furnished to successful bidder during detail engineering.
2	Part II (i) Section Project, Rev 1- Page 5 of 24, 2.2.1 (o)	Tumkur (Pavagada) Pooling Sub-station extension - "Extension of Visual Monitoring system for watch and ward for the bays covered under present scope..."	Please provide layout of existing Visual Monitoring system of Tumkur (Pavagada) Pooling Sub-station.	As the detailed Engineering of Tumkur (Pavagada) Pooling station is underway, Earthmat layout, It shall be furnished to successful bidder during detail engineering.
3	Part II (i) Section Project, Rev 1- - 6 of 24 2.2.3 ii) (b) i)	Tumkur (Pavagada) Pooling Sub-station extension - "Stone has already been laid in some portion of the switchyard area under present scope..."	Please provide layout showing area where stone is already laid in Tumkur (Pavagada) Pooling Sub-station extension.	It shall be furnished to successful bidder during detail engineering.
4	Part II (i) Section Project, Rev 1- 4 of 24, 2.2.1 (e)	Tumkur (Pavagada) Pooling Sub-station extension - "Substation Automation system for existing substation is going to be executed under separate package..."	Please provide make of existing automation system of Tumkur (Pavagada) Pooling Sub-station.	It shall be furnished to successful bidder during detail engineering.
5	Part II (i) Section Project, Rev 1- , Page 9 of 24, 2.3.3 ii) (a)	400kV Mysore Sub-station extension - "Site leveling for some portion for line side equipment area..."	Please provide layout showing area where Site leveling is required in 400kV Mysore Sub-station.	The area to be levelled is already shown in the General arrangement drg.
6	Part II (i) Section Project, Rev 1- Page 9 of 24 2.3.3 ii) c) i)	400kV Mysore Sub-station extension - "Stone has already been laid in some portion of the switchyard area under present scope..."	Please provide layout showing area where stone is already laid in 400kV Mysore Sub-station.	It shall be furnished to successful bidder during detail engineering.
7	Part II (i) Section Project, Rev 1- Tumkur Ph 2 Part A Page 12 of 24 2.4.3 ii) (b) i)	400kV Tumkur (Vasantnarsapur, i.e. existing Madhugiri substation) - "Stone has already been laid in some portion of the switchyard area under present scope..."	Please provide layout showing area where stone is already laid in 400kV Tumkur (Vasantnarsapur) S/S.	It shall be furnished to successful bidder during detail engineering.

**Clarification No. I (Part III) to Bidding Document for Substation Package-501 for Extension of 400kV Tumkur Pooling station (Pavagada) (including transformer & Reactor), Extension of 400/220kV Mysore Substation and Extension of 400/220kV Tumkur (Vasantnarsapur) (Including Transformer)
Spec. No. CC-CS/702-SR2/SS-3340/7/G7**

S. N.	Technical specification Clause No./Page No.	As per TS	Query from Bidder	POWERGRID reply
8	Part II (i) Section Project, Rev 1- Tumkur Ph 2 Part A, Page 13 of 24 2.6	"The Contractor shall also training of Owner's manpower....of the substation/switchyard.."	Subject clause mentions "training of Owner's manpower", however please refer Price Schedule 5(a) & 5(b), where Training is mentioned "Not applicable". Please clarify.	Training of Owner's manpower mentioned at Clause 2.6 implies for training to be provided for supervision & maintenance of equipment to Site Engineers during erection activities, for which price may be included in equipment erection cost. Any other training at manufacturer's works is not envisaged. Bidder to quote as per BPS
9	Part II (i) Section Project, Rev 1- Tumkur Ph 2 Part A, Page 3 of 24 2.2.1 e)	"The necessary interface equipment at Tumkur substation for transferring data to SRLDC (RSCC) and National Transmission Asset Management Centre (NTAMC) at Manesar, etc. through optical fibre based SDH communication link is also under present scope."	Bidder requests PGCIL to provide separate line item in price schedule - 1,2 & 4 for "necessary interface equipment at Tumkur substation for transferring data to SRLDC (RSCC) and NTAMC etc. through optical fibre based SDH communication link".	Since Substation is SAS based, Bidder to include the cost of this in the Item - Augmentation of Substation Automation system. So no separate BOQ item is envisaged.
10	Part II (i) Section Project, Rev 1- Tumkur Ph 2 Part A Page 7 of 24 2.3.1 (g)	Mysore S/S Extn - "The scope for NTAMC SCADA requirement & integration of these BCUs with NTAMC in line with technical specification for NTAMC SCADA system enclosed at ANNEX-III."	Bidder requests PGCIL to provide separate line item in price schedule - 1,2 & 4 for "The scope for NTAMC SCADA requirement & integration of these BCUs with NTAMC...ANNEXURE-III."	Since BCU for present scope have been considered as line item. Cost of the above shall deemed to be included in the above. So no separate BOQ item is envisaged.
11	Part II (i) Section Project, Rev 1- Tumkur Ph 2 Part A Page 11 of 24 2.4.1 (f)	"The necessary interface equipment and integration at 400kV Madhugiri Substation for transferring data to SRLDC (RSCC) and remote control Centre (NTAMC, Manesar), etc. on OPGW link is also under present scope.."	Bidder requests PGCIL to provide separate line item in price schedule - 1,2 & 4 for "necessary interface equipment and integration at 400kV Madhugiri Substation for transferring data to SRLDC(RSCC) and NTAMC etc. on OPGW link".	Since Substation is SAS based, Bidder to include the cost of this in the Item - Augmentation of Substation Automation system for 220kV. For, 400kV ,BCU is already existing, only integration is required. So no separate BOQ item is envisaged.

Sl. No.	Short Item description as Given In BPS	Detailed item description as per requirement
1.	420kV Erection Hardware	Insulator strings and hardware, clamps & connectors including connectors for Transformers & Reactors (as specified in section-Project), conductor, spacers, Al tube, earthwire, bus-bar material, earthing material, risers, Insulating mats, cable sealing arrangement, cable trays & covers, Junction box, BMK, PVC pipes, buried cable trenches, cable supporting angles/channels ,cable sealing system etc. for the following 420kV bays :
2.	220kV Erection Hardware	Insulator strings and hardware, clamps & connectors including connectors for Transformers (as specified in section-Project), conductor, spacers, Al tube, earthwire, bus-bar material, earthing material, risers, Insulating mats, cable sealing arrangement, cable trays & covers, Junction box, BMK, PVC pipes, buried cable trenches, cable supporting angles/channels, cable sealing system etc. for the following 220kV bays :
3.	HVV spray system & Hydrant system for Transformer / Reactor :	HVV spray system and complete U/G & O/G piping and accessories etc. out side the pump house for Transformer / Reactor
4.	Hydrant System outside pump house as per technical specification	Hydrant system, complete U/G & O/G piping and accessories etc. outside the Pump House except Hydrants for Transformer and Reactors.
5.	1.1 kV Grade LV cables	1.1 kV Grade cables along with lugs, glands, straight joints and all other accessories
6.	Lighting fixtures and Receptacles as per technical specification	Lighting fixtures and Receptacles including junction box, lighting wires & flexible conduit (if required) from junction box to lighting fixture, mounting arrangements and other accessories/ materials etc. as required for complete installation and commissioning of lighting fixtures
7.	Augmentation of Substation Automation System for 400/220 kV substation as per technical specification	Augmentation of Substation automation system for 400/200 kV substation including hardware and software along with associated equipment for following Bays(Bays as defined in the Technical Specification, Section Substation Automation System) as per technical specification:

NTAMC SCADA SYSTEM

1. **Signal List** - A typical list of signals to be provided to the NTAMC control centers is attached at **Attachment-I**. The contractor shall provide all these signals either through the BCU or through the numerical relays over IEC 61850 protocol and integrate with the Gateways/RTU under NTAMC project.
2. **Control Panel:** The conventional control panels are to be augmented with provision of Bay control unit with one BCU per bay. The Bay control unit shall provide telemetry and tele-control for remote operation from NTAMC control centers. The Bay control unit shall acquire all the analog measurements, Status of Circuit breakers, Isolators and Earth switches, status of alarms, and provide Control of devices (Circuit breaker/ Isolators/ Reset of Relays/position selection for Auto reclose etc).

The Bay control unit shall also provide synchronization check facility for the circuit breakers suitable for the bus bar scheme. It shall allow synchronization between the Bus-1 & Line, Bus-2 & Line, Bus-1 & Bus-2, Line-1 & Line-2 for a 400kV Scheme One and Half breaker scheme and Bus-1 & Line, Bus-2 & Line for 220 /132 kV DMT / Double Main Scheme. The Bay control unit can optionally have other provisions such as auto-reclose inbuilt into it as per design of the manufacturer. The Bay control unit shall communicate over IEC 61850 protocol to the Gateway/RTU provided under NTAMC project.

A Local/Remote selection shall be provided to transfer the control between the BCU and the Control panel. The control shall be available to either the BCU or from the Control panel however data monitoring shall be available at both the devices.

The Bay control unit shall be flush mounted in the Control panel with their mimic displays accessible from the front of the panel. The Bay control unit mimic shall dynamically represent the current value of the measurements, state of the devices and control of devices. The control panel shall have control switches, status indication lamp, semaphores, and synchronization sockets. The indicating meters shall be optimized by having only one voltmeter, one ammeter with selection for any of the three phases (R-Y/Y-B/B-R or R/Y/B). MW /MVAR/Temperature displays are not required. The conventional annunciation panel is not required but an annunciation system (One annunciation lamp and one hooter) shall be provided and each of the BCU shall energize this annunciation on occurrence of alarms.

3. **Local HMI** - No local HMI is required for control of the BCUs however all configuration and maintenance software for the BCUs and numerical relays are to be provided.
4. **Event Logger-** Separate hardware for Event Logging for the new bays is not required. However, the event logging provision shall be configured in the existing Gateways/RTU/SDC under NTAMC Project.
5. **Numerical Relays:** The numerical relays shall communicate all the status/events related to protection over IEC 61850 protocol to the existing redundant Gateways/RTU. The numerical relays shall all be connected on a IEC 61850 Substation LAN to be provided by the contractor.
6. **Disturbance recorder-** Both the Main-1/Main-2 numerical relays for a transmission line/ICT/Reactor shall be provided with disturbance recorder facility. DR facility to be provided in the backup impedance protection relay for Reactor. These shall be communicated to the existing Redundant Station Data Concentrator (SDC) of

NTAMC SCADA SYSTEM

NTAMC system over IEC 61850 protocol. The DR channels are to be configured in a particular sequence which shall be provided by POWERGRID to the successful bidder.

7. **Substation LAN switch** – The Bay Control unit and the numerical relays shall be connected to new substation LAN switch(s) (managed switch) to be supplied by the contractor. The substation LAN switch shall comply with IEC 61850-3 requirements. It shall have sufficient number of ports to accommodate all the IEDs of the new bays and at least 6 spare ports for integrating the numerical Relays/BCUs with NTAMC system i.e. redundant Gateways/RTU and redundant SDC and two spare ports. The IP addressing scheme for the devices shall be provided by POWERGRID.
8. **Auto reclose position selection** –Auto-reclose position selection between single phase auto and Non-Auto mode shall be provided from local as well as through BCU from Remote SCADA system. The selected position shall not change if the BCU/numerical relay's power is cycled.
9. **Protection transfer switch for DMT schemes-** The High Speed Bi-stable relays for protection transfer from 'Normal' to 'Transfer' and vice versa, whose position can be controlled locally as well as from remote through SCADA system shall be provided. The position once selected should not change in case of Power cycling.
10. Procurement of Camera for the substation is to be done as per the specification enclosed.

NTAMC SCADA SYSTEM

400KV LINE

S.No	BAY NO	DIGITAL INPUTS	TYPE
1	40X-52	CB OPEN	DPS
2	40X-52	CB CLOSE	DPS
3	40X-52	CB MANUAL OPEN	DPS
4	40X-52	CB MANUAL CLOSE	DPS
5	40X-89A	ISOLATOR OPEN	DPS
6	40X-89A	ISOLATOR CLOSE	DPS
7	40X-89AE	EARTH SWITCH OPEN	DPS
8	40X-89AE	EARTH SWITCH CLOSE	DPS
9	40X-89B	ISOLATOR OPEN	DPS
10	40X-89B	ISOLATOR CLOSE	DPS
11	40X-89BE	EARTH SWITCH OPEN	DPS
12	40X-89BE	EARTH SWITCH CLOSE	DPS
13	40X-89L	ISOLATOR OPEN	DPS
14	40X-89L	ISOLATOR CLOSE	DPS
15	40X-89LE	EARTH SWITCH OPEN	DPS
16	40X-89LE	EARTH SWITCH CLOSE	DPS
17	40X-52	A/R IN AUTO MODE	DPS
18	40X-52	A/R IN NON AUTO MODE	DPS
19	40X	CB OPERATION LOCKOUT	SPS
20	40X	CB POLE DISCREPANCY OPTD.	SPS
21	40X	DC SOURCE-1 FAIL	SPS
22	40X	DC SOURCE-2 FAIL	SPS
23	40X	CB TC-1 FAULTY	SPS
24	40X	CB TC-2 FAULTY	SPS
25	40X	86A TRIP RELAY OPTD.	SPS
26	40X	86B TRIP RELAY OPTD.	SPS
27	40X	86LO A/R LOCKOUT RELAY OPTD.	SPS
28	40X	MAIN-1 BB PROTN OPTD	SPS
29	40X	MAIN-1 BB PROTN OPTD	SPS
30	40X	MAIN CB LBB OPTD.	SPS
31	40X	MAIN CB A/R OPTD.	SPS
32	40X	CB A/R LOCKOUT	SPS
33	40X	BAY L/R SWITCH IN REMOTE	SPS
34	40X	CB L/R SWITCH IN REMOTE	SPS
35	40X	MAIN-1 DISTANCE PROTECTION OPTD.	SPS
36	40X	MAIN-1 ZONE-1 TRIP	SPS
37	40X	MAIN-1 ZONE-2 TRIP	SPS
38	40X	MAIN-1 ZONE-3 TRIP	SPS
39	40X	MAIN-1 REVERSE ZONE TRIP	SPS
40	40X	MAIN-1 CVT FUSE FAILURE	SPS
41	40X	MAIN-1 UNHEALTHY	SPS
42	40X	MAIN-2 DISTANCE PROTECTION OPTD.	SPS
43	40X	MAIN-2 ZONE-1 TRIP	SPS

S.No	BAY NO	DIGITAL INPUTS	TYPE
44	40X	MAIN-2 ZONE-2 TRIP	SPS
45	40X	MAIN-2 ZONE-3 TRIP	SPS
46	40X	MAIN-2 REVERSE ZONE TRIP	SPS
47	40X	MAIN-2 CVT FUSE FAILURE	SPS
48	40X	MAIN-2 UNHEALTHY	SPS
49	40X	MAIN-1/2 SOTF OPTD.	SPS
50	40X	MAIN-1/2 WEAK END INFEED OPTD.	SPS
51	40X	MAIN-1/2 -POWERSWING BLCK DETECTED	SPS
52	40X	MAIN-1/2 STUB PROTECTION OPTD.	SPS
53	40X	DIRECT TRIP RECEIVED- CH-1/2	SPS
54	40X	DIRECT TRIP SEND-CH-1/2	SPS
55	40X	MAIN-1 BB PU FAULTY	SPS
56	40X	MAIN-2 BB PU FAULTY	SPS
57	40X	CTRL PNL DC SUPPLY-1/2 FAIL	SPS
58	40X	BCU DC SUPPLY -1/2 FAIL	SPS
59	40X	BCU UNHEALTHY	SPS
60	40X	BCU IN LOCAL	DPS
61	40X	BCU IN REMOTE	DPS
62	40X-52	INTERLOCK ENABLED	SPS
63	40X-89A	INTERLOCK ENABLED	SPS
64	40X-89AE	INTERLOCK ENABLED	SPS
65	40X-89B	INTERLOCK ENABLED	SPS
66	40X-89BE	INTERLOCK ENABLED	SPS
67	40X-89L	INTERLOCK ENABLED	SPS
68	40X-89LE	INTERLOCK ENABLED	SPS
69	40X	MFT Healthy	SPS
70	40X-52	CB COMPRESSOR / PUMP ON	SPS
71	40X-52	CB AC SUPPLY FAIL	SPS
72	40X-52	CB LOSS OF SF6	SPS
73	40X-52	CB TROUBLE ALARM	SPS
74	40X	MAIN-1 INTER TRIP RECEIVED	SPS
75	40X	MAIN-1 INTER TRIP SEND	SPS
76	40X	MAIN-2 INTER TRIP RECEIVED	SPS
77	40X	MAIN-2 INTER TRIP SEND	SPS
78	40X	MAIN-1 CARRIER AIDED TRIP	SPS
79	40X	MAIN-2 CARRIER AIDED TRIP	SPS
80	40X	MAIN-1/2 A/R BLOCK	SPS
81	40X	OVERVOLTAGE STAGE-1 OPTD.	SPS
82	40X	OVERVOLTAGE STAGE-2 OPTD.	SPS
83	40X	DRIFT IN CVT VOLTAGE R-PH	SPS
84	40X	DRIFT IN CVT VOLTAGE Y-PH	SPS
85	40X	DRIFT IN CVT VOLTAGE B-PH	SPS
86	40X	DRIFT IN CT CURRENT R-PH	SPS
87	40X	DRIFT IN CT CURRENT Y-PH	SPS
88	40X	DRIFT IN CT CURRENT B-PH	SPS

S.No	BAY NO	DIGITAL OUTPUTS	TYPE
1	40X-52	CB OPEN COMMAND	DPC
2	40X-52	CB CLOSE COMMAND	DPC
3	40X-89A	ISOLATOR OPEN COMMAND	DPC
4	40X-89A	ISOLATOR CLOSE COMMAND	DPC
5	40X-89B	ISOLATOR OPEN COMMAND	DPC
6	40X-89B	ISOLATOR CLOSE COMMAND	DPC
7	40X-89L	ISOLATOR OPEN COMMAND	DPC
8	40X-89L	ISOLATOR CLOSE COMMAND	DPC
9	40X	A/R AUTO COMMAND	DPC
10	40X	A/R NON AUTO COMMAND	DPC
11	40X	86A TRIP RELAY RESET	SPC
12	40X	86B TRIP RELAY RESET	SPC
13	40X	86LO A/R LOCKOUT RELAY RESET	SPC
14	40X	CB CHECK SYNC. BYPASS COMMAND	SPC

S.No	BAY NO	ANALOGUE INPUTS	TYPE
1	40X	I (R-PHASE)	AI
2	40X	I (Y-PHASE)	AI
3	40X	I (B-PHASE)	AI
4	40X	MVAR	AI
5	40X	MW	AI
6	40X	V (B-R PHASE)	AI
7	40X	V (R-Y PHASE)	AI
8	40X	V (Y-B PHASE)	AI
9	40X	FREQUENCY	AI

S.No	BAY NO	DIGITAL INPUTS	TYPE
89	40X	A/R UNSUCCESSFUL	SPS
90	40X	CARRIER FAIL CH-1/2	SPS
91	40X	SPEECH CHANNEL FAIL	SPS
92	40X	86A TRIP RELAY UNHEALTHY	SPS
93	40X	86B TRIP RELAY UNHEALTHY	SPS
94	40X	CB SPRING CHARGED / AIR /OIL PR LOW	SPS
95	40X	CB DC SUPPLY 1/2 FAIL	SPS
96	40X	MAIN CB A/R OPTD.	SPS
97	40X	MAIN-1 CARRIER SWITCH OUT	SPS
98	40X	MAIN-2 CARRIER SWITCH OUT	SPS
99	40XLA	R-PH LA LEAKAGE CURRENT HIGH	SPS
100	40XLA	Y-PH LA LEAKAGE CURRENT HIGH	SPS
101	40XLA	B-PH LA LEAKAGE CURRENT HIGH	SPS
102	40X	CB R-Phase Close/Open	DPS
103	40X	CB Y-Phase Close/Open	DPS
104	40X	CB B-Phase Close/Open	DPS

applicable for Double Main-1 bay Only

400KV TIE

S.No	BAY NO	DIGITAL INPUTS	TYPE
1	40X-52	CB OPEN	DPS
2	40X-52	CB CLOSE	DPS
3	40X-52	CB MANUAL OPEN	DPS
4	40X-52	CB MANUAL CLOSE	DPS
5	40X-89A	ISOLATOR OPEN	DPS
6	40X-89A	ISOLATOR CLOSE	DPS
7	40X-89AE	EARTH SWITCH OPEN	DPS
8	40X-89AE	EARTH SWITCH CLOSE	DPS
9	40X-89B	ISOLATOR OPEN	DPS
10	40X-89B	ISOLATOR CLOSE	DPS
11	40X-89BE	EARTH SWITCH OPEN	DPS
12	40X-89BE	EARTH SWITCH CLOSE	DPS
13	40X	A/R IN AUTO MODE	DPS
14	40X	A/R IN NON AUTO MODE	DPS
15	40X-52	CB OPERATION LOCKOUT	SPS
16	40X-52	CB POLE DISCREPANCY OPTD.	SPS
17	40X	CTRL PNL DC SOURCE-1/2 FAIL	SPS
18	40X	CB TC-1 FAULTY	SPS
19	40X	CB TC-2 FAULTY	SPS
20	40X	CB LBB OPTD.	SPS
21	40X	BAY L/R SWITCH IN REMOTE	SPS
22	40X	CB L/R SWITCH IN REMOTE	SPS
23	40X	BCU DC SUPPLY -1/2 FAIL	SPS
24	40X	BCU UNHEALTHY	SPS
25	40X	86A TRIP RELAY OPTD.	SPS
26	40X	86B TRIP RELAY OPTD.	SPS
27	40X	CB A/R LOCKOUT	SPS
28	40X	BCU IN LOCAL	DPS
29	40X	BCU IN REMOTE	DPS
30	40X-52	INTERLOCK ENABLED	SPS
31	40X-89A	INTERLOCK ENABLED	SPS
32	40X-89AE	INTERLOCK ENABLED	SPS
33	40X-89B	INTERLOCK ENABLED	SPS
34	40X-BE	INTERLOCK ENABLED	SPS
35	40X	BCU TIME SYNC ERROR	SPS
36	40X-52	CB COMPRESSOR / PUMP ON	SPS
37	40X-52	CB AC SUPPLY FAIL	SPS
38	40X-52	CB LOSS OF SF6	SPS
39	40X-52	CB TROUBLE ALARM	SPS

S.No	BAY NO	DIGITAL OUTPUTS	TYPE
1	40X-52		DPC
2	40X-52	CB CLOSE COMMAND	DPC
3	40X-89A	89A OPEN COMMAND	DPC
4	40X-89A	89A CLOSE COMMAND	DPC
5	40X-89B	89B OPEN COMMAND	DPC
6	40X-89B	89B CLOSE COMMAND	DPC
7	40X	A/R AUTO COMMAND	DPC
8	40X	A/R NON AUTO COMMAND	DPC
9	40X	86LO A/R LOCKOUT RELAY RESET	SPC
10	40X	86A TRIP RELAY RESET	SPC
11	40X	86B TRIP RELAY RESET	SPC
12	40X	CB CHECK SYNC. BYPASS COMMAND	SPC

S.No	BAY NO	DIGITAL INPUTS	TYPE
40	40X	A/R OPTD.	SPS
41	40X	A/R UNSUCCESSFUL	SPS
42	40X	CT DRIFT IN R-PH	SPS
43	40X	CT DRIFT IN Y-PH	SPS
44	40X	CT DRIFT IN B-PH	SPS
45	40X	86A TRIP RELAY UNHEALTHY	SPS
46	40X	86B TRIP RELAY UNHEALTHY	SPS
47	40X	CB SPRING CHARGED/AIR/OIL PR LOW	SPS
48	40X	CB DC SUPPLY 1/2 FAIL	SPS
49	40X	BYPASS CMD FROM CNTRL SWITCH DEVICE	SPS
50	40X	CB R-Phase Close/Open	DPS
51	40X	CB Y-Phase Close/Open	DPS
52	40X	CB B-Phase Close/Open	DPS

Not applicable for Tie without A/R(ICT-TIE-ICT DIA)&
(ICT-TIE-BUS REACTOR)

Note: Not used any tag for Double main TIE bay

* Not applicable for Tie without A/R(ICT-TIE-ICT DIA)&
(ICT-TIE-BUS REACTOR)

400KV ICT(ONE AND A HALF BREAKER SCHEME)

S.No	BAY NO	DIGITAL INPUTS	TYPE
1	40X-52	CB OPEN	DPS
2	40X-52	CB CLOSE	DPS
3	40X-52	CB MANUAL OPEN	DPS
4	40X-52	CB MANUAL CLOSE	DPS
5	40X-89A	ISOLATOR OPEN	DPS
6	40X-89A	ISOLATOR CLOSE	DPS
7	40X-89AE	EARTH SWITCH OPEN	DPS
8	40X-89AE	EARTH SWITCH CLOSE	DPS
9	40X-89B	ISOLATOR OPEN	DPS
10	40X-89B	ISOLATOR CLOSE	DPS
11	40X-89BE	EARTH SWITCH OPEN	DPS
12	40X-89BE	EARTH SWITCH CLOSE	DPS
13	40X-89T	ISOLATOR OPEN	DPS
14	40X-89T	ISOLATOR CLOSE	DPS
15	40X-89TE	EARTH SWITCH OPEN	DPS
16	40X-89TE	EARTH SWITCH CLOSE	DPS
17	40X-52	CB OPERATION LOCKOUT	SPS
18	40X-52	CB POLE DISCREPANCY OPTD.	SPS
19	40X-52	CB TC-1 FAULTY	SPS
20	40X-52	CB TC-2 FAULTY	SPS
21	40X-52	CB COMPRESSOR / PUMP ON	SPS
22	40X-52	CB AC SUPPLY FAIL	SPS
23	40X-52	CB LOSS OF SF6	SPS
24	40X-52	CB TROUBLE ALARM	SPS
25	40X-52	CB SPRING CHARGED/AIR/OIL PR LOW	SPS
26	40X-52	CB DC SUPPLY 1/2 FAIL	SPS
27	40X PRT	DC SOURCE-1 FAIL	SPS
28	40X PRT	DC SOURCE-2 FAIL	SPS
29	40X PRT	86A TRIP RELAY OPTD.	SPS
30	40X PRT	86B TRIP RELAY OPTD.	SPS
31	40X PRT	MAIN-1 BB PROTN. OPTD.	SPS
32	40X PRT	MAIN-2 BB PROTN. OPTD.	SPS

S.No	BAY NO	DIGITAL INPUTS	TYPE
33	40X PRT	MAIN CB LBB OPTD.	SPS
34	40X PRT	BAY L/R SWITCH IN REMOTE	SPS
35	40X PRT	CB L/R SWITCH IN REMOTE	SPS
36	40X PRT	TRANSFORMER DIFF. PROTECTION OPTD.	SPS
37	40X PRT	DIFF RELAY FAULTY	SPS
38	40X PRT	REF PROTECTION OPTD.	SPS
39	40X PRT	REF RELAY FAULTY	SPS
40	40X PRT	OVERFLUX PROTECTION OPTD.(HV)	SPS
41	40X PRT	BACKUP E/F OPTD. (HV)	SPS
42	40X PRT	BACKUP O/C OPTD. (HV)	SPS
43	40X PRT	BACKUP O/C E/F RELAY FAULTY	SPS
44	40X PRT	OVERLOAD ALARM	SPS
45	40X PRT	BUCHHOLZ TRIP	SPS
46	40X PRT	OLTC PRV TRIP	SPS
47	40X PRT	OTI TRIP	SPS
48	40X PRT	TRANSFORMER PRV TRIP	SPS
49	40X PRT	WTI TRIP (HV/IV/LV)	SPS
50	40X PRT	OVERFLUX ALARM (HV)	SPS
51	40X PRT	BUCHHOLZ ALARM	SPS
52	40X PRT	OTI ALARM	SPS
53	40X PRT	WTI ALARM (HV/IV/LV)	SPS
54	40X PRT	ICT SELECTED CVT FUSE FAIL ALARM	SPS
55	40X PRT	86A TRIP RELAY UNHEALTHY	SPS
56	40X PRT	86B TRIP RELAY UNHEALTHY	SPS
57	40X OLTC	TAP CHANGER IN PROGRESS	SPS
58	40X OLTC	TAP CHANGER IN REMOTE	SPS
59	40X OLTC	TAP CHANGER OUT OF STEP	SPS
60	40X OLTC	OLTC ON LOWER LIMIT	SPS
61	40X OLTC	OLTC ON UPPER LIMIT	SPS
62	40X OLTC	TAP CHANGER IN FOLLOWER MODE	SPS
63	40X OLTC	TAP CHANGER IN INDEPENDENT MODE	SPS
64	40X OLTC	TAP CHANGER IN MASTER MODE	SPS

S.No	BAY NO	DIGITAL INPUTS	TYPE
65	40X OLTC	LOW OIL LEVEL IN OLTC	SPS
66	40X OLTC	OLTC DRIVE MOTOR FAULY ALARM	SPS
67	40X-52	INTERLOCK ENABLED	SPS
68	40X-89A	INTERLOCK ENABLED	SPS
69	40X-89AE	INTERLOCK ENABLED	SPS
70	40X-89B	INTERLOCK ENABLED	SPS
71	40X-89BE	INTERLOCK ENABLED	SPS
72	40X-89T	INTERLOCK ENABLED	SPS
73	40X-89TE	INTERLOCK ENABLED	SPS
74	40X	MFT Healthy	SPS
75	40X CT	CT DRIFT IN R-PH	SPS
76	40X CT	CT DRIFT IN Y-PH	SPS
77	40X CT	CT DRIFT IN B-PH	SPS
78	40X TRF	COOLING SYSTEM TROUBLE ALARM	SPS
79	40X TRF	FANS FAIL TO START BANK-A	SPS
80	40X TRF	FANS FAIL TO START BANK-B	SPS
81	40X TRF	FANS RUNNING BANK-A/B	SPS
82	40X TRF	PUMPS FAIL TO START BANK-A	SPS
83	40X TRF	PUMPS FAIL TO START BANK-B	SPS
84	40X TRF	PUMPS RUNNING BANK-A/B	SPS
85	40X TRF	FIRE DETECTED IN ICT	SPS
86	40X TRF	DELUGE VALVE OPERATED	SPS
87	40X TRF	LOW OIL LEVEL ALARM MAIN TANK	SPS
88	40X TRF	OIL FLOW LOW ALARM BANK-A	SPS
89	40X TRF	OIL FLOW LOW ALARM BANK-B	SPS
90	40X TRF	FAN/PUMP THERMAL/O/L TRIP ALARM	SPS
91	40X	BYPASS CMD FOR CNTRL SWITCH DEVICE	SPS
92	40XLA	R-PH LA LEAKAGE CURRENT HIGH	SPS
93	40XLA	Y-PH LA LEAKAGE CURRENT HIGH	SPS
94	40XLA	B-PH LA LEAKAGE CURRENT HIGH	SPS

S.No	BAY NO	DIGITAL OUTPUTS	TYPE
1	40X-52	CB OPEN COMMAND	DPC
2	40X-52	CB CLOSE COMMAND	DPC
3	40X-89A	ISOLATOR OPEN COMMAND	DPC
4	40X-89A	ISOLATOR CLOSE COMMAND	DPC
5	40X-89B	ISOLATOR OPEN COMMAND	DPC
6	40X-89B	ISOLATOR CLOSE COMMAND	DPC
7	40X-89T	ISOLATOR OPEN COMMAND	DPC
8	40X-89T	ISOLATOR CLOSE COMMAND	DPC
9	40X PRT	86A TRIP RELAY RESET	SPC
10	40X PRT	86B TRIP RELAY RESET	SPC
11	40X OLTC	TAP CHANGER LOWER COMMAND	SPC
12	40X OLTC	TAP CHANGER RAISE COMMAND	SPC
13	40X OLTC	CB CHECK SYNC. BYPASS COMMAND	SPC
14	40X	COMMAND FOR DELUGE VALVE OPERATION	SPC

S.No	BAY NO	ANALOGUE INPUTS	TYPE
1	40X TRF	WT- TEMP (HV SIDE)	AI
2	40X TRF	WTI - TEMP (IV SIDE)	AI
3	40X TRF	WTI - TEMP (LV SIDE)	AI
4	40X TRF	OTI TEMP	AI
5	40X OLTC	TAP POSITION INDICATION	AI
6	40X	I (R-PHASE)	AI
7	40X	I (Y-PHASE)	AI
8	40X	I (B-PHASE)	AI
9	40X	MVAR	AI
10	40X	MW	AI
11	40X	V (B-R PHASE)	AI
12	40X	V (R-Y PHASE)	AI
13	40X	V (Y-B PHASE)	AI
14	40X	FREQUENCY	AI

400KV BUS REACTOR

S.No	BAY NO	DIGITAL INPUTS	TYPE
1	40X-52	CB OPEN	DPS
2	40X-52	CB CLOSE	DPS
3	40X-52	CB MANUAL OPEN	DPS
4	40X-52	CB MANUAL CLOSE	DPS
5	40X-89A	ISOLATOR OPEN	DPS
6	40X-89A	ISOLATOR CLOSE	DPS
7	40X-89AE	EARTH SWITCH OPEN	DPS
8	40X-89AE	EARTH SWITCH CLOSE	DPS
9	40X-89B	ISOLATOR OPEN	DPS
10	40X-89B	ISOLATOR CLOSE	DPS
11	40X-89BE	EARTH SWITCH OPEN	DPS
12	40X-89BE	EARTH SWITCH CLOSE	DPS
13	40X-89R	ISOLATOR OPEN	DPS
14	40X-89R	ISOLATOR CLOSE	DPS
15	40X-89RE	EARTH SWITCH OPEN	DPS
16	40X-89RE	EARTH SWITCH CLOSE	DPS
17	40X-52	CB COMPRESSOR ON	SPS
18	40X-52	CB OPERATION LOCKOUT	SPS
19	40X-52	CB POLE DISCREPANCY OPTD.	SPS
20	40X-52	CB AC SUPPLY FAIL	SPS
21	40X-52	CB LOSS OF SF6	SPS
22	40X-52	CB TROUBLE ALARM	SPS
23	40X-PRT	DC SOURCE-1 FAIL	SPS
24	40X-PRT	DC SOURCE-2 FAIL	SPS
25	40X	CB TC-1 FAULTY	SPS
26	40X	CB TC-2 FAULTY	SPS
27	40X	86A TRIP RELAY OPTD.	SPS
28	40X	86B TRIP RELAY OPTD.	SPS
29	40X	MAIN-1 BB PROTN. OPTD.	SPS
30	40X	MAIN-2 BB PROTN. OPTD.	SPS
31	40X	MAIN CB LBB OPTD.	SPS
32	40X	BAY L/R SWITCH IN REMOTE	SPS
33	40X	CB L/R SWITCH IN REMOTE	SPS
34	40X	DIFFERENTIAL PROTN OPTD.	SPS
35	40X	DIFF RELAY FAULTY	SPS
36	40X	REF PROTECTION OPTD.	SPS
37	40X	REF RELAY FAULTY	SPS
38	40X	BACK-UP IMPEDANCE PROTN OPTD	SPS
39	40X	BACKUP RELAY FAULTY	SPS
40	40X	BUCHHOLZ TRIP	SPS
41	40X	REACTOR PRV TRIP	SPS
42	40X	OTI TRIP	SPS
43	40X	WTI TRIP	SPS
44	40X	OTI ALARM	SPS
45	40X	WTI ALARM	SPS
46	40X	BUCHHOLZ ALARM	SPS
47	40X	LOW OIL LEVEL ALARM	SPS
48	40X	CB SPRING CHARGED/air/oil pr low	SPS
49	40X	CB DC SUPPLY 1/2 FAIL	SPS
50	40X	TEED PROTN OPTD	SPS
51	40X-52	INTERLOCK ENABLED	SPS
52	40X-89A	INTERLOCK ENABLED	SPS
53	40X-89AE	INTERLOCK ENABLED	SPS
54	40X-89B	INTERLOCK ENABLED	SPS
55	40X-89BE	INTERLOCK ENABLED	SPS
56	40X-89R	INTERLOCK ENABLED	SPS
57	40X-89RE	INTERLOCK ENABLED	SPS
58	40X	MFT HEALTHY	SPS

S.No	BAY NO	DIGITAL INPUTS	TYPE
59	40X	CT DRIFT IN R-PH	SPS
60	40X	CT DRIFT IN Y-PH	SPS
61	40X	CT DRIFT IN B-PH	SPS
62	40X	REACTOR SELECTED CVT FUSE FAIL ALARM	SPS
63	40X	86A TRIP RELAY UNHEALTHY	SPS
64	40X	86B TRIP RELAY UNHEALTHY	SPS
65	40X	BYPASS CMD FROM CNTRL SWITCH DEVICE	SPS
66	40XLA	R-PH LA LEAKAGE CURRENT HIGH	SPS
67	40XLA	Y-PH LA LEAKAGE CURRENT HIGH	SPS
68	40XLA	B-PH LA LEAKAGE CURRENT HIGH	SPS
69	40XLA	REACTOR COOLING SYSTEM TROUBLE ALARM	SPS
70	40X	FIRE DETECTED IN BUS REACTOR	SPS
71	40X	DELUGE VALVE OPERATED	SPS

S.No	BAY NO	DIGITAL OUTPUTS	TYPE
1	40X-52	CB OPEN COMMAND	DPC
2	40X-52	CB CLOSE COMMAND	DPC
3	40X-89A	ISOLATOR OPEN COMMAND	DPC
4	40X-89A	ISOLATOR CLOSE COMMAND	DPC
5	40X-89B	ISOLATOR OPEN COMMAND	DPC
6	40X-89B	ISOLATOR CLOSE COMMAND	DPC
7	40X-89R	ISOLATOR OPEN COMMAND	DPC
8	40X-89R	ISOLATOR CLOSE COMMAND	DPC
9	40X	86A TRIP RELAY RESET	SPC
10	40X	86B TRIP RELAY RESET	SPC
11	40X	COMMAND FOR DELUGE VALVE OPERATION	SPC

S.No	BAY NO	ANALOGUE INPUTS	TYPE
1	40X	WT- TEMP	AI
2	40X	OTI TEMP	AI
3	40X	I (R-PHASE)	AI
4	40X	I (Y-PHASE)	AI
5	40X	I (B-PHASE)	AI
6	40X	MVAR	AI
7	40X	V (B-R PHASE)	AI
8	40X	V (R-Y PHASE)	AI
9	40X	V (Y-B PHASE)	AI
10	40X	FREQUENCY	AI

400KV BUS BAR

S.No	BAY NO	DIGITAL INPUTS	TYPE
1		MAIN-1 PROTN. UNHEALTHY	SPS
2		MAIN-2 PROTN. UNHEALTHY	SPS
3		MAIN-1 BB ZONE-1 OPERATED	SPS
4		MAIN-1 BB ZONE-2 OPERATED	SPS
5		MAIN-2 BB ZONE-1 OPERATED	SPS
6		MAIN-2 BB ZONE-2 OPERATED	SPS
7		MAIN-1 BB ZONE-1 CT SUPVN. ALARM	SPS
8		MAIN-1 BB ZONE-2 CT SUPVN. ALARM	SPS
9		MAIN-2 BB ZONE-1 CT SUPVN. ALARM	SPS
10		MAIN-2 BB ZONE-2 CT SUPVN. ALARM	SPS
11		BUSBAR-1 IN/OUT SWITCH IN OUT POSITION	SPS
12		BUSBAR-2 IN/OUT SWITCH IN OUT POSITION	SPS
13		MAIN-1 CHECK ZONE OPERATED	SPS
14		MAIN-2 CHECK ZONE OPERATED	SPS
15		MAIN-1 CZ CT SUPV ALARM	SPS
16		MAIN-2 CZ CT SUPV ALARM	SPS
17		MAIN-1/2 CZ OUT OF SERVICE	SPS
18		BUS BAR-1 MFT HEALTHY	SPS
19		BUS BAR-2 MFT HEALTHY	SPS
20		BCU SWITCH-1 FAIL	SPS
21		BCU SWITCH-2 FAIL	SPS
22		BCU SWITCH PORT-1 FAIL	SPS
23		BCU SWITCH PORT-2 FAIL	SPS

S.No	BAY NO	ANALOGUE INPUTS	TYPE
1		BUS-1 VOLTAGE R-Y PHASE	AI
2		BUS-1 VOLTAGE Y-B PHASE	AI
3		BUS-1 VOLTAGE B-RPHASE	AI
4		BUS-1 FREQUENCY	AI
5		BUS-2 VOLTAGE R-YPHASE	AI
6		BUS-2 VOLTAGE Y-B PHASE	AI
7		BUS-2 VOLTAGE B-RPHASE	AI
8		BUS-2 FREQUENCY	AI

LINE WITH DMT SCHEME

S.No	BAY NO	INPUTS	TYPE
51	20X	MAIN-1/2 -POWERSWING BLCK DETECT	SPS
52	20X	MAIN-1/2 STUB PROTECTION OPTD.	SPS
53	20X	MAIN-1/2 DEF PROTECTION OPTD.	SPS
54	20X	MAIN-1 CARRIER AIDED TRIP	SPS
55	20X	MAIN-2 CARRIER AIDED TRIP	SPS
56	20X	MAIN-1/2 A/R BLOCK	SPS
57	20X	DIRECT TRIP RECEIVED- CH.-1/2	SPS
58	20X	DIRECT TRIP SEND-CH-1/2	SPS
59	20X	MAIN-1 INTER TRIP RECEIVED	SPS
60	20X	MAIN-1 INTER TRIP SEND	SPS
61	20X-52	MAIN-2 INTER TRIP RECEIVED	SPS
62	20X-A	MAIN-2 INTER TRIP SEND	DPS
63	20X-AE	A/R UNSUCCESSFUL	DPS
64	20X-B	CARRIER FAIL CH-1/2	SPS
65	20X-L	SPEECH CHANNEL FAIL	SPS
66	20X-LE1	CTRL PNL DC SUPPLY-1/2 FAIL	SPS
67	20X-LE2	BCU DC SUPPLY -1/2 FAIL	SPS
68	20X-T	BCU UNHEALTHY	SPS
69	20X	BCU IN LOCAL	SPS
70	20X-52	BCU IN REMOTE	SPS
71	20X-52	INTERLOCK ENABLED	SPS
72	20X-52	INTERLOCK ENABLED	SPS
73	20X-52	INTERLOCK ENABLED	SPS
74	20X	INTERLOCK ENABLED	SPS
75	20X	INTERLOCK ENABLED	SPS
76	20X	INTERLOCK ENABLED	SPS
77	20X	INTERLOCK ENABLED	SPS
78	20X	INTERLOCK ENABLED	SPS
79	20X	MFT HEALTHY	SPS
80	20X-52	CB COMPRESSOR / PUMP ON	SPS
81	20X-52	CB AC SUPPLY FAIL	DPS
82	20X-52	CB LOSS OF SF6	DPS
83	20X	CB TROUBLE ALARM	SPS
84	20X	86A TRIP RELAY UNHEALTHY	SPS
85	20X	86B TRIP RELAY UNHEALTHY	SPS
86	20X-52	CB SPRING CHARGED/ AIR/ OIL PR LOW	SPS
87	20X-52	CB DC SUPPLY 1/2 FAIL	SPS
88	20X	PTS ON NORMAL MODE	DPS
89	20X	PTS ON TRANSFER MODE	DPS
90	20XLA	R-PH LA LEAKAGE CURRENT HIGH	SPS
91	20XLA	Y-PH LA LEAKAGE CURRENT HIGH	SPS
92	20XLA	B-PH LA LEAKAGE CURRENT HIGH	SPS
93	20X-52	CB R-Phase Open	DPS
94	20X-52	CB R-Phase close	DPS
95	20X-52	CB Y-Phase Open	DPS
96	20X-52	CB Y-Phase Close	DPS
97	20X-52	CB B-Phase Open	DPS
98	20X-52	CB B-Phase close	DPS

S.No	BAY NO	INPUTS	TYPE
1	20X-52	CB OPEN	DPS
2	20X-52	CB CLOSE	DPS
3	20X-52	CB MANUAL OPEN	DPS
4	20X-52	CB MANUAL CLOSE	DPS
5	20X-89A	ISOLATOR OPEN	DPS
6	20X-89A	ISOLATOR CLOSE	DPS
7	20X-89AE	EARTH SWITCH OPEN	DPS
8	20X-89AE	EARTH SWITCH CLOSE	DPS
9	20X-89B	ISOLATOR OPEN	DPS
10	20X-89B	ISOLATOR CLOSE	DPS
11	20X-89L	ISOLATOR OPEN	DPS
12	20X-89L	ISOLATOR CLOSE	DPS
13	20X-89LE1	EARTH SWITCH OPEN	DPS
14	20X-89LE1	EARTH SWITCH CLOSE	DPS
15	20X-89LE2	EARTH SWITCH OPEN	DPS
16	20X-89LE2	EARTH SWITCH CLOSE	DPS
17	20X-89T	ISOLATOR OPEN	DPS
18	20X-89T	ISOLATOR CLOSE	DPS
19	20X	A/R IN AUTO MODE	DPS
20	20X	A/R IN NON AUTO MODE	DPS
21	20X-52	CB OPERATION LOCKOUT	SPS
22	20X-52	CB POLE DISCREPANCY OPTD.	SPS
23	20X	DC SOURCE-1 FAIL	SPS
24	20X	DC SOURCE-2 FAIL	SPS
25	20X	CB TC-1 FAULTY	SPS
26	20X	CB TC-2 FAULTY	SPS
27	20X	86A TRIP RELAY OPTD.	SPS
28	20X	86B TRIP RELAY OPTD.	SPS
29	20X	86LO A/R LOCKOUT RELAY OPTD.	SPS
30	20X	MAIN BB PU FAULTY	SPS
31	20X	BB PROTN. OPTD.	SPS
32	20X	MAIN CB LBB OPTD.	SPS
33	20X	CB A/R LOCKOUT/CB READY FOR A/R	SPS
34	20X	L/R SWITCH IN REMOTE	SPS
35	20X	MAIN-1 DISTANCE PROTECTION OPTD.	SPS
36	20X	MAIN-1 ZONE-1 TRIP	SPS
37	20X	MAIN-1 ZONE-2 TRIP	SPS
38	20X	MAIN-1 ZONE-3 TRIP	SPS
39	20X	MAIN-1 REVERSE ZONE TRIP	SPS
40	20X	MAIN-1 CVT FUSE FAILURE	SPS
41	20X	MAIN-1 UNHEALTHY	SPS
42	20X	MAIN-2 DISTANCE PROTECTION OPTD.	SPS
43	20X	MAIN-2 ZONE-1 TRIP	SPS
44	20X	MAIN-2 ZONE-2 TRIP	SPS
45	20X	MAIN-2 ZONE-3 TRIP	SPS
46	20X	MAIN-2 REVERSE ZONE TRIP	SPS
47	20X	MAIN-2 CVT FUSE FAILURE	SPS
48	20X	MAIN-2 UNHEALTHY	SPS
49	20X	MAIN-1/2 SOTF OPTD.	SPS
50	20X	MAIN-1/2 WEAK END INFEEED OPTD.	SPS

S.No	BAY NO	OUTPUTS	TYPE
1	20X-52	CB OPEN COMMAND	DPC
2	20X-52	CB CLOSE COMMAND	DPC
3	20X-89A	ISOLATOR OPEN COMMAND	DPC
4	20X-89A	ISOLATOR CLOSE COMMAND	DPC
5	20X-89B	ISOLATOR OPEN COMMAND	DPC
6	20X-89B	ISOLATOR CLOSE COMMAND	DPC
7	20X-89L	ISOLATOR OPEN COMMAND	DPC
8	20X-89L	ISOLATOR CLOSE COMMAND	DPC
9	20X-89T	ISOLATOR OPEN COMMAND	DPC
10	20X-89T	ISOLATOR CLOSE COMMAND	DPC
11	20X	A/R AUTO COMMAND	DPC
12	20X	A/R NON AUTO COMMAND	DPC
13	20X	86A TRIP RELAY RESET	SPC
14	20X	86B TRIP RELAY RESET	SPC
15	20X	86LO A/R LOCKOUT RELAY RESET	SPC
16	20X	CB CHECK SYNC. BYPASS COMMAND	SPC
17	20X	PTS TO NORMAL MODE	DPC
18	20X	PTS TO TRANSFER MODE	DPC

S.No	BAY NO	ANALOGUE INPUTS	TYPE
1	20X	I (R-PHASE)	AI
2	20X	I (Y-PHASE)	AI
3	20X	I (B-PHASE)	AI
4	20X	MVAR ICT	AI
5	20X	MW ICT	AI
6	20X	V (B-R PHASE)	AI
7	20X	V (R-Y PHASE)	AI
8	20X	V (Y-B PHASE)	AI
9	20X	FREQUENCY	AI

NOTE

Applicable for one bay in the BCU

220KV ICT (LV SIDE)

S.No	BAY NO	INPUTS	TYPE
1	20X-52	CB OPEN	DPS
2	20X-52	CB CLOSE	DPS
3	20X-52	CB MANUAL OPEN	DPS
4	20X-52	CB MANUAL CLOSE	DPS
5	20X-89A	ISOLATOR OPEN	DPS
6	20X-89A	ISOLATOR CLOSE	DPS
7	20X-89AE	EARTH SWITCH OPEN	DPS
8	20X-89AE	EARTH SWITCH CLOSE	DPS
9	20X-89B	ISOLATOR OPEN	DPS
10	20X-89B	ISOLATOR CLOSE	DPS
11	20X-89BE	EARTH SWITCH OPEN	DPS
12	20X-89BE	EARTH SWITCH CLOSE	DPS
13	20X-89L	ISOLATOR OPEN	DPS
14	20X-89L	ISOLATOR CLOSE	DPS
15	20X-89LE1	EARTH SWITCH OPEN	DPS
16	20X-89LE1	EARTH SWITCH CLOSE	DPS
17	20X-89LE2	EARTH SWITCH OPEN	DPS
18	20X-89LE2	EARTH SWITCH CLOSE	DPS
19	20X-89T	ISOLATOR OPEN	DPS
20	20X-89T	ISOLATOR CLOSE	DPS
21	20X-52	CB COMPRESSOR ON	SPS
22	20X-52	CB OPERATION LOCKOUT	SPS
23	20X-52	CB POLE DISCREPANCY OPTD.	SPS
24	20X-52	CB AC SUPPLY FAIL	SPS
25	20X-52	CB LOSS OF SF6	SPS
26	20X-52	CB TROUBLE ALARM	SPS
27		DC SOURCE-1 FAIL	SPS
28		DC SOURCE-2 FAIL	SPS
29		CB TC-1 FAULTY	SPS
30		CB TC-2 FAULTY	SPS
31		86A TRIP RELAY OPTD.	SPS
32		86B TRIP RELAY OPTD.	SPS
33		BB PROTN. OPTD.	SPS
34		CB LBB OPTD.	SPS
35		L/R SWITCH ON REMOTE	SPS
36		LV - BACKUP O/C OPTD	SPS
37		LV - BACKUP E/F OPTD	SPS
38		LV - OVERFLUX OPTD	SPS
39		LV - OVERFLUX ALARM	SPS
40	20X	CTRL PNL DC SUPPLY-1/2 FAIL	SPS
41		BCU DC SUPPLY -1/2 FAIL	SPS
42		BCU UNHEALTHY	SPS
43	20X	86A TRIP RELAY UNHEALTHY	SPS
44	20X	86B TRIP RELAY UNHEALTHY	SPS
45	20X	CB SPRING CHARGED/AIR/OIL PR. LOW	SPS
46	20X	CB DC SUPPLY 1/2 FAIL	SPS
47	20XLA	R-PH LA LEAKAGE CURRENT HIGH	SPS
48	20XLA	Y-PH LA LEAKAGE CURRENT HIGH	SPS
49	20XLA	B-PH LA LEAKAGE CURRENT HIGH	SPS
50	20X	BCU IN LOCAL	DPS
51	20X	BCU IN REMOTE	DPS
52	20X-52	INTERLOCK ENABLED	SPS
53	20X-A	INTERLOCK ENABLED	SPS
54	20X-AE	INTERLOCK ENABLED	SPS
55	20X-B	INTERLOCK ENABLED	SPS
56	20X-BE	INTERLOCK ENABLED	SPS
57	20X-L	INTERLOCK ENABLED	SPS
58	20X-LE1	INTERLOCK ENABLED	SPS
59	20X-LE2	INTERLOCK ENABLED	SPS
60	20X-T	INTERLOCK ENABLED	SPS
61	20X	MFT HEALTHY	SPS
62	20X	MAIN BB PU FAULTY	SPS
63	20X	PTS ON NORMAL MODE	DPS
64	20X	PTS ON AUTOMATED MODE	DPS

S.No	BAY NO	OUTPUTS	TYPE
1	20X-52	CB OPEN COMMAND	DPC
2	20X-52	CB CLOSE COMMAND	DPC
3	20X-89A	ISOLATOR OPEN COMMAND	DPC
4	20X-89A	ISOLATOR CLOSE COMMAND	DPC
5	20X-89B	ISOLATOR OPEN COMMAND	DPC
6	20X-89B	ISOLATOR CLOSE COMMAND	DPC
7	20X-89L	ISOLATOR OPEN COMMAND	DPC
8	20X-89L	ISOLATOR CLOSE COMMAND	DPC
9	20X-89T	ISOLATOR OPEN COMMAND	DPC
10	20X-89T	ISOLATOR CLOSE COMMAND	DPC
11	20X	86A TRIP RELAY RESET	SPC
12	20X	86B TRIP RELAY RESET	SPC
13	20X	CB CHECK SYNC. BYPASS COMMAND	SPC
14	20X	PTS TO NORMAL MODE	DPC
15	20X	PTS TO TRANSFER MODE	DPC

S.No	BAY NO	ANALOGUE INPUTS	TYPE
1	20X	I (R-PHASE)	AI
2	20X	I (Y-PHASE)	AI
3	20X	I (B-PHASE)	AI
4	20X	MVAR ICT	AI
5	20X	MW ICT	AI
6	20X	V (B-R PHASE)	AI
7	20X	V (R-Y PHASE)	AI
8	20X	V (Y-B PHASE)	AI
9	20X	FREQUENCY	AI

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220KV BUS COUPLER

S.No	BAY NO	INPUTS	TYPE
1	20X-52	CB OPEN	DPS
2	20X-52	CB CLOSE	DPS
3	20X-52	CB MANUAL OPEN	DPS
4	20X-52	CB MANUAL CLOSE	DPS
5	20X-89A	ISOLATOR OPEN	DPS
6	20X-89A	ISOLATOR CLOSE	DPS
7	20X-89AE1	EARTH SWITCH OPEN	DPS
8	20X-89AE1	EARTH SWITCH CLOSE	DPS
9	20X-89AE2	EARTH SWITCH OPEN	DPS
10	20X-89AE2	EARTH SWITCH CLOSE	DPS
11	20X-89B	ISOLATOR OPEN	DPS
12	20X-89B	ISOLATOR CLOSE	DPS
13	20X-89BE1	EARTH SWITCH OPEN	DPS
14	20X-89BE1	EARTH SWITCH CLOSE	DPS
15	20X-89BE2	EARTH SWITCH OPEN	DPS
16	20X-89BE2	EARTH SWITCH CLOSE	DPS
17	20X-52	CB COMPRESSOR ON	SPS
18	20X-52	CB OPERATION LOCKOUT	SPS
19	20X-52	CB POLE DISCREPANCY OPTD.	SPS
20	20X-52	CB AC SUPPLY FAIL	SPS
21	20X-52	CB LOSS OF SF6	SPS
22	20X-52	CB TROUBLE ALARM	SPS
23	20X	DC SOURCE-1 FAIL	SPS
24	20X	DC SOURCE-2 FAIL	SPS
25	20X	CB TC-1 FAULTY	SPS
26	20X	CB TC-2 FAULTY	SPS
27	20X	86A TRIP RELAY OPTD.	SPS
28	20X	86B TRIP RELAY OPTD.	SPS
29	20X	BB PROTN. OPTD.	SPS
30	20X	CB LBB OPTD.	SPS
31	20X	L/R SWITCH ON REMOTE	SPS
32	20X	CTRL PNL DC SUPPLY-1/2 FAIL	SPS
33	20X	BCU DC SUPPLY -1/2 FAIL	SPS
34	20X	BCU UNHEALTHY	SPS
35	20X	86A TRIP RELAY UNHEALTHY	SPS
36	20X	86B TRIP RELAY UNHEALTHY	SPS
37	20X	CB SPRING CHARGED / AIR / OIL PR LOW	SPS
38	20X	CB DC SUPPLY 1/2 FAIL	SPS
39	20X	BCU IN LOCAL	DPS
40	20X	BCU IN REMOTE	DPS
41	20X-52	INTERLOCK ENABLED	SPS
42	20X-A	INTERLOCK ENABLED	SPS
43	20X-AE1	INTERLOCK ENABLED	SPS
44	20X-AE2	INTERLOCK ENABLED	SPS
45	20X-B	INTERLOCK ENABLED	SPS
46	20X-BE1	INTERLOCK ENABLED	SPS
47	20X-BE2	INTERLOCK ENABLED	SPS
48	20X	MFT HEALTHY	SPS
49	20X	MAIN BB PU FAULTY	SPS

S.No	BAY NO	OUTPUTS	TYPE	DATA
1	20X-52	CB OPEN COMMAND	DPC	HARD
2	20X-52	CB CLOSE COMMAND	DPC	HARD
3	20X-89A	ISOLATOR OPEN COMMAND	DPC	HARD
4	20X-89A	ISOLATOR CLOSE COMMAND	DPC	HARD
5	20X-89B	ISOLATOR OPEN COMMAND	DPC	HARD
6	20X-89B	ISOLATOR CLOSE COMMAND	DPC	HARD
7	20X	86A TRIP RELAY RESET	SPC	HARD
8	20X	86B TRIP RELAY RESET	SPC	HARD
9	20X	CB CHECK SYNC. BYPASS COMMAND	SPC	SOFT

S.No	BAY NO	ANALOGUE INPUTS	TYPE	DATA
1	20X	I (R-PHASE)	AI	SOFT
2	20X	I (Y-PHASE)	AI	SOFT
3	20X	I (B-PHASE)	AI	SOFT

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220KV TBC

S.No	BAY NO	INPUTS	TYPE
1	20X-52	CB OPEN	DPS
2	20X-52	CB CLOSE	DPS
3	20X-52	CB MANUAL OPEN	DPS
4	20X-52	CB MANUAL CLOSE	DPS
5	20X-89A	ISOLATOR OPEN	DPS
6	20X-89A	ISOLATOR CLOSE	DPS
7	20X-89AE	EARTH SWITCH OPEN	DPS
8	20X-89AE	EARTH SWITCH CLOSE	DPS
9	20X-89B	ISOLATOR OPEN	DPS
10	20X-89B	ISOLATOR CLOSE	DPS
11	20X-89T	ISOLATOR OPEN	DPS
12	20X-89T	ISOLATOR CLOSE	DPS
13	20X-89TE1	EARTH SWITCH OPEN	DPS
14	20X-89TE1	EARTH SWITCH CLOSE	DPS
15	20X-89TE2	EARTH SWITCH OPEN	DPS
16	20X-89TE2	EARTH SWITCH CLOSE	DPS
17	20X	A/R SWITCH IN AUTO MODE	DPS
18	20X	A/R SWITCH IN NON AUTO MODE	DPS
19	20X-52	CB COMPRESSOR ON	SPS
20	20X-52	CB OPERATION LOCKOUT	SPS
21	20X-52	CB POLE DISCREPANCY OPTD.	SPS
22	20X-52	CB AC SUPPLY FAIL	SPS
23	20X-52	CB LOSS OF SF6	SPS
24	20X-52	CB TROUBLE ALARM	SPS
25	20X-52	CB A/R LOCKOUT/CB READY FOR A/R	SPS
26	20X	DC SOURCE-1 FAIL	SPS
27	20X	DC SOURCE-2 FAIL	SPS
28	20X	CB TC-1 FAULTY	SPS
29	20X	CB TC-2 FAULTY	SPS
30	20X	86A TRIP RELAY OPTD.	SPS
31	20X	86B TRIP RELAY OPTD.	SPS
32	20X	86LO A/R LOCKOUT RELAY OPTD.	SPS
33	20X	BB PROTN. OPTD.	SPS
34	20X	TBC CB LBB OPTD.	SPS
35	20X	L/R SWITCH ON REMOTE	SPS
36	20X	CTRL PNL DC SUPPLY-1/2 FAIL	SPS
37	20X	BCU DC SUPPLY -1/2 FAIL	SPS
38	20X	BCU UNHEALTHY	SPS
39	20X	86A TRIP RELAY UNHEALTHY	SPS
40	20X	86B TRIP RELAY UNHEALTHY	SPS
41	40X	CB SPRING CHARGED / AIR / OIL PR LOW	SPS
42	40X	CB DC SUPPLY 1/2 FAIL	SPS
43	20X	TBC CB A/R OPTD.	SPS
44	20X	CB R-Phase Open	DPS
45	20X	CB R-Phase Close	DPS
46	20X	CB Y-Phase Open	DPS
47	20X	CB Y-Phase Close	DPS
48	20X	CB B-Phase Open	DPS
49	20X	CB B-Phase Close	DPS
50	20X	BCU IN LOCAL	DPS
51	20X	BCU IN REMOTE	DPS
52	20X-52	INTERLOCK ENABLED	SPS
53	20X-A	INTERLOCK ENABLED	SPS
54	20X-AE	INTERLOCK ENABLED	SPS
55	20X-B	INTERLOCK ENABLED	SPS
56	20X-T	INTERLOCK ENABLED	SPS
57	20X-TE1	INTERLOCK ENABLED	SPS
58	20X-TE2	INTERLOCK ENABLED	SPS
59	20X	MFT HEALTHY	SPS
60		MAIN BB PU FAULTY	

S.No	BAY NO	OUTPUTS	TYPE
1	20X-52	CB OPEN COMMAND	DPC
2	20X-52	CB CLOSE COMMAND	DPC
3	20X-89A	ISOLATOR OPEN COMMAND	DPC
4	20X-89A	ISOLATOR CLOSE COMMAND	DPC
5	20X-89B	ISOLATOR OPEN COMMAND	DPC
6	20X-89B	ISOLATOR CLOSE COMMAND	DPC
7	20X-89T	ISOLATOR OPEN COMMAND	DPC
8	20X-89T	ISOLATOR CLOSE COMMAND	DPC
9	20X	A/R AUTO COMMAND	DPC
10	20X	A/R NON AUTO COMMAND	DPC
11	20X	86A TRIP RELAY RESET	SPC
12	20X	86B TRIP RELAY RESET	SPC
13	20X	86LO A/R LOCKOUT RELAY RESET	SPC
14	20X	CB CHECK SYNC. BYPASS COMMAND	SPC

S.No	BAY NO	ANALOGUE INPUTS	TYPE
1	20X	I (R-PHASE)	AI
2	20X	I (Y-PHASE)	AI
3	20X	I (B-PHASE)	AI

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220KV BUS BAR

S.No	BAY NO	RTU INPUTS	TYPE
1	20X	BUS BAR RELAY UNHEALTHY	SPS
2	20X	BUS BAR-2 RELAY UNHEALTHY	SPS
3	20X	BUS BAR-TBC RELAY UNHEALTHY	SPS
4	20X	MAIN BUS-1 BUSBAR PROTN OPTD	SPS
5	20X	MAIN BUS-2 BUSBAR PROTN OPTD	SPS
6	20X	TRANSFER BUS BUSBAR PROTN	SPS
7	20X	MAIN BUS-1 CT SUPVN. ALARM	SPS
8	20X	MAIN BUS-2 CT SUPVN. ALARM	SPS
9	20X	TRANSFER BUS CT SUPVN. ALARM	SPS
10	20X	BUS BAR CHECK ZONE CT SUPVN.	SPS
11	20X	BUS BAR CHECK ZONE RELAY	SPS
12	20X	BUS BAR CHECK ZONE RELAY OPTD	SPS
13	20X	BUS BAR SWITCH IN OUT POS	SPS
14	20X	BUS BAR-2 SWITCH IN OUT POS	SPS
15	20X	BUS BAR CHECK ZONE SWITCH IN/OUT POSITION	SPS
16	20X	BUS BAR-1 MFT HEALTHY	SPS
17	20X	BUS BAR-2 MFT HEALTHY	SPS

S.No	BAY NO	RTU ANALOGUE INPUTS	TYPE	DATA
1	20X	BUS-1 VOLTAGE R-Y PHASE	AI	SOFT
2	20X	BUS-1 VOLTAGE Y-B PHASE	AI	SOFT
3	20X	BUS-1 VOLTAGE B-RPHASE	AI	SOFT
4	20X	BUS-1 FREQUENCY	AI	SOFT
5	20X	BUS-2 VOLTAGE R-Y PHASE	AI	SOFT
6	20X	BUS-2 VOLTAGE Y-B PHASE	AI	SOFT
7	20X	BUS-2 VOLTAGE B-RPHASE	AI	SOFT
8	20X	BUS-2 FREQUENCY	AI	SOFT

associated with Tr. System for ultra-mega solar park in Anantpur distt., AP- Part-A