



**PROJECT : 21 MW GANDHAR SOLAR PHOTO VOLTAIC
PROJECT IN GUJARAT**

**PACKAGE : DEVELOPMENT OF 21 MW GANDHAR SOLAR
PHOTO VOLTAIC PROJECT IN GUJARAT**

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				Additionally all vendors identified for Floor mounted Draw out type indoor LT Switchgear Panel			
				Additionally all vendors identified for Floor mounted fixed type indoor LT Switchgear Panel			
10.	Lighting & Welding Transformer	II	Q-007	Southern Electric	Chennai	A	
				Indcoil	Thane	A	
				Pragati	Thane	A	
				Prayog	Pune	A	
				Precise	Mumbai	A	
				Logicstat	Delhi	A	
				Gujarat Plug in	Vadodara	A	
				AE	Thane	A	
				Power Pack Enterprises	Mumbai	A	
				Amex Impex,	Ahmedabad	A	
11.	LT CT/PT/CBCT/ Control Transformer	III		Kappa	Bangalore	A	
				Southern Electric	Chennai	A	



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				Precise	Mumbai	A	
				G&M	Baroda	A	CBCT Only
				Silkaans	Mumbai	A	
				Ind Coil	Mumbai	A	
				Pragati	Thane	A	
				Prayog	Pune	A	
				AE	Mumbai	A	
				Logicstat	Delhi	A	For control transformer only
				C&S Electric	Noida	A	For CT only
				Newtek	Aurangabad	A	For CT/PT/Control transformer
12.	1.1Kv LT Power Cable (From SMB to PCU)	Refer Note-2	Q-008	Universal Cable Ltd.	Satna	A	
				NICCO	Shamnagar , Kolkata	A	
				Torrent Cable Ltd	Nadiad	A	
				Incab	Pune	A	
				Hindustan Vidyut Products Ltd	Faridabad	A	
				KEI Industries	Bhiwadi	A	
				Delton Cable Ltd	Faridabad	A	A) Unarmoured cable all sizes. B) Armoured cable up to 3.5 x 240 sq. Mm with GI strip armour and 1CX70 sq mm with Al strip armour



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				Paramount Cable	Khushkhera	A	
				Polycab Wires Pvt. Ltd	Daman	A	
				Gemscabs Industries	Bhiwadi	A	
				Cords Cables	Bhiwadi	A	
				Havells India Ltd.	Alwar	A	
				Sri ram Cables	Bhiwadi	A	
				Ravin Cables	Pune	A	
				Thermocables	Hyderabad	A	
				Sbee Cables	Bangalore	A	
				Suyog Cables	Vadodara	A	
				Gupta Power Cables	Khurda	A	
				Finolex	Pune	A	
				Scot Innovation wires and cables	Baddi	A	
				Anhui Hualing	China	A	
				LS Cable	Korea	A	
				Radiant Cables	Hyderabad	A	
				Tirupati Plastomatics	Jaipur	A	
				Apar Industries	Umbergao n	A	
				Special Cables	Rudrapur	A	
13.	1.1 KV Control Cable	Refer Note-2	Q-009	Universal Cable Ltd.	Satna	A	



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				NICCO	Shamnagar , Kolkata	A	
				Torrent Cable Ltd	Nadiad	A	
				Incab	Pune	A	
				Polycab WiresPvt. Ltd	Daman	A	
				Hindustan Vidyut Products Ltd	Faridabad	A	
				KEI Industries	Bhiwadi	A	
				Delton Cable Ltd	Faridabad	A	
				Paramount Cable	Khushkher a	A	
				Gemscabs Industries	Bhiwadi	A	
				Cords Cables	Bhiwadi	A	
				SPM Cables	Hyderabad	A	
				Elkay Telelink	Faridabad	A	
				Havells India Ltd.	Alwar	A	
				R.R. Kabel	Silvasa	A	
				Ravin Cables	Pune	A	
				Gupta Power cable	Khurda	A	
				Thermocables	Hyderabad	A	
				Finolex	Pune	A	
				Sbee Cables	Bangalore	A	
				Suyog Cables	Vadodara	A	
				Scot Innovation wires and Cables	Baddi	A	
				Anhui Hauling	China	A	



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				LS Cable	Korea	A	
				Radiant Cables	Hyderabad	A	
				Tirupati Plastomatics	Jaipur	A	
				Apar Industries	Umbergao n	A	
				Special Cables	Rudrapur	A	
14.	HT Cable Upto 11KV	Refer Note 2	Q-010	Universal Cable Ltd.	Satna	A	
				NICCO	Shamnagar , Kolkata	A	
				Torrent Cable Ltd	Nadaid	A	
				Incab	Pune	A	
				Polycab Wires Pvt. Ltd	Daman	A	
				KEI Industries	Bhiwadi	A	
				Havells India Ltd.	Alwar	A	
				Sri ram Cables	Bhiwadi	A	
				Krishna Electrical Industries Ltd	Gwalior	A	
				Apar Industries	Valsad	A	
				Finolex	Pune	A	
				KEC International	Vadodara	A	
				Tirupati Plastomatics	Jaipur	A	
				Gupta Power	Kashipur	A	
				Paramount	Khushkhera	A	



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				Gemscab	Bhiwadi	A	
				Sterlite	Haridwar	A	
				Gupta Power	Kashipur	A	
15.	HT Cable upto 33KV	Refer Note 2	Q-011	Universal Cable Ltd.	Satna	A	
				Torrent Cable Ltd	Nadiad	A	
				Polycab Wires Pvt. Ltd	Daman	A	
				KEI Industries	Bhiwadi	A	
				Havells India Ltd.	Alwar	A	
				Apar Industries	Valsad	A	
				Finolex	Pune	A	
				KEC International	Vadodara	A	
				Gupta Power	Kashipur	A	
				Paramount	Khushkhera	A	
				Gemscab	Bhiwadi	A	
				Sterlite	Haridwar	A	
				Gupta Power	Kashipur	A	
16.	DC Cable (Interconnecting SPV Modules, SPV Module to SMB) As per NTPC specification	I	Q-012	Siechem	Pondicherry	A	Upto 35 sq.mm.



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				Apar	Khatalwada	A	Conditions apply
17.	Battery (Ni-Cd)	II	Q-013	M/S HBL-Power System	Hyderabad	A	Up to 990 Ah with conditions
				M/S Amcosoft	Bangalore	A	8Ah to 990Ah- KPH type 10Ah to 1365 Ah- KPM type 11Ah to 1550Ah – KPL type
18.	Battery Plante /Tubular	II	Q-014	M/s Exide	Kolkata	A	
				Hoppeke	Brilon, Ger many	A	
19.	Battery charger	II	Q-015	M/s Amararaja	Tirupati	A	
				M/s HBL- Power System	Hyderabad	A	
				M/s Chhabi electrical	Jalgaon	A	
				M/s. Chloride Power	Kolkatta	A	
				M/s Statcon	Hapur	A	Up to 220, V 850 A
				M/s Dubas	Bangalore	A	Up to 220 V, 250 A
				M/s Saft Nife Power Systems	Singapore	A	
				M/s Masstek	Jalgaon	A	
20.	Earthing & Lightning Protection Material like GI Strip/GI Wire etc	III		Main contractor Approved Sources box subject to galvanization at NTPC approved sources as per Note-4			



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21.	HT Cable Termination Kits & Straight Through Jointing Kit (Heat shrinkable type)	III		M/s 3M Electro & Communication	Pune	A	Upto 33KV
				Raychem	Halol	A	Upto 33KV
				Hari Consolidated	Delhi	A	Upto 11KV(conditions apply)
22.	Lighting fixtures with accessories including lamp (Filament type)	II	Q-016	M/s Crompton	Mumbai	A	
				M/s Bajaj Electricals	Mumbai	A	
				M/s Philips	Noida	A	
				M/s Wipro	Mumbai	A	
				M/s Surya Roshni	Noida	A	Conditions apply
23.	Lighting fixtures with accessories including lamp (LED type)	II	Q-017	M/ s Wipro	Pune	A	Conditions apply
				M/s Surya Roshni	Noida	A	Conditions apply
				M/s Bajaj	Mumbai	A	Conditions apply
				M/s Goldwyn	Noida	A	Conditions apply
24.	MCB Boxes/Junction boxes / Link Boxes/ Test Link Box/	III		Main Contractor approved sources with galvanization from NTPC approved sources			BOIs preferably with CE/VDE/UL/CSA marked or BIS approved with valid CML no, Refer Note-6



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	Adopter box, Switch Boxes, Pull Boxes (Hot Dip Galvanized)						
25.	Industrial /welding receptacles & boxes	III		Schneider	Nasik	A	
				M/s BCH	Faridabad	A	
				M/s Ajmera	Mumbai	A	
				M/s. Sakthi & Crown	Chennai	A	
				Any other make having CE / UL / CSA mark or BIS approval with valid CML number.			
26.	PVC conduit/hume pipe/lighting wire/GI pipes/HDPE pipe/Structural Steel/ GI steel rigid conduit/ epoxy conduit	III		BIS licensee with valid CML number / ISI marked with valid CML number			
27.	MV Switchgear Panel (Refer Note-5)	I	Q-018	BHEL	Bhopal	A	Upto 33KV
				Megawin	Salem	A	Upto 33KV
				L&T	Ahmednagar	A	Upto 33KV
				Siemens	Mumbai	A	Upto 33KV



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				Jyoti	Vadodara	A	Upto 33KV
				ABB	Nasik	A	Upto 33KV
				Schneider	Kolkata	A	Upto 11KV -Salt lake works -VG series Interrupter made at Salt Lake Works
28.	MV Vacuum Type Circuit Breaker	(part of Swgr MQP)		Siemens	Mumbai	A	Upto 33kv
				BHEL	Bhopal	A	Upto 33kv
				L&T	Ahmednagar	A	Upto 33kv
				ABB	Nasik	A	Upto 33kv
				Megawin	Salem	A	Upto 33kv
				Jyoti	Vadodara	A	Upto 33kv
				Schneider	Kolkata	A	Upto 11kv
29.	IEC 61850 compliant Numerical Protection Relays	(Part of Swgr MQP)		SEL	Pullman, USA	A	
				ALSTOM T&D	Stafford, UK	A	P14X, P34X, P44X, P64X, P74X models only.
				ALSTOM T&D	Chennai	A	P14X, P24X, P34X, P44X, P64X, P74X models only.
				ABB	Finland	A	



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				ABB	Baroda	A	For 6XX Series
				GE Multilin	Zamudio, Vizcaya, Spain/ Markham, Ontario, Canada	A	F-650 only
				Schneider	Stone, UK	A	PX30, PX40, VAMP 5X and VAMP 2XX models only.
				Siemens	Germany	A	7SX Series only
				Siemens	Goa	A	7SR2X series only
30.	Single Rod Air Terminal Type Solar Array Lightning Arrestor	III		Main Contractor approved sources: subject to manufacturer / supplier having valid Type Test Report as per IS 2309 or equivalent Standard			
31.	ESE Type Solar Array Lightning Arrestor	III		Main Contractor approved sources: subject to manufacturer / supplier having valid Type Test Report as per latest version of NF C 17-102 & country of origin documents			
32.	Lighting Poles	III		BIS Licensee as per IS 2713			



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33.	Cable Lug	III		M/s Dowell	Mumbai	A	
				M/s Billets Elektro Werke Ltd. (3 D)	Umbergaon	A	
				M/s Chetna	Nasik	A	
				Additional Vendors with Make-Model having mark of VDE/ UL /CSA / BIS with CML no. Refer Note-1			
34.	Cable Gland	III		Any Make-Model having mark of VDE/ UL /CSA / BIS with CML no. Refer Note-1			
35.	GI Cable Tray, fitting, accessories including bends	Refer Note-3	Q-019	Inar Profiles Ltd	Enkapalli (Vishakhapatnam)	A	
				Vatco	Mumbai	A	Galvanization at Sigma Mumbai
				Indiana cable trays	Mumbai	A	Galvanization at Karamtara galvanizer- Mumbai
				Industrial Perforation	Kolkata	A	Galvanized and offered for inspection at M/s Industrial Perforation Pvt Ltd, Gangaganagar , Kolkata, WB
				Ratan Projects	Howrah	A	Galvanization at DMP Projects- Howrah
				India Electric Syndicate	Kolkata	A	Galvanization at BMW Industries/B.P Projects- Howrah
				Steelite engg.	Mumbai	A	
				Premier Power Products	Howrah	A	Galvanising at Neha Galvaniser- Howrah
				Indiana Gratings	Pune	A	
				M.J. Engineering	Okhla/ Bhiwadi	A	
				T.R.G	Chennai	A	Galvanization at TM Radhakrishna Chetty & Co-Chennai
				Amtech	Pune	A	Galvanization at B.G. Shirke - Pune



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				Kannade Anand Udyog	Mumbai	A	Fabrication at their units: Plot No. 42, Morivali, MIDC Thane & Plot No.: D-35 Anand Nagar MIDC, Addl. Ambernath , Dist.Thane Galvanization and offer the galvanized cable trays for inspection at D-34 Anand Nagar MIDC, Addl. Ambernath, Dist.Thane.
				Rukmani	Raipur	A	Ladder type cable trays only
				Passive Infra	Hasangarh (Rohtak)	A	
				Unitech Fabricators & Engineers	Howrah/ Hoogly (Kolkata)	A	
				Patny System	Hyderabad	A	
				Rabi Engg	Kolkata	A	Galvanizing from NTPC approved sources
				MKSD Industries	Taloja	A	Galvanising at Encorp Power trans PVT Ltd, Palghar
				Reliable Sponge	Kalunga	A	
				Rukmani	Hoogly	A	Galvanization at Rukmani Fab & Gal- Howrah
36.	Cable Tray Flexible Tray Support System	Refer Note-3	Q-020	Vatco	Mumbai	A	Galvanising at Sigma Mumbai
				Inar profiles	Enkapalli	A	
				Industrial perforations	Kolkata	A	



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				Premier power products	Howrah	A	Galvanising at Neha Galvaniser- Howrah
				Steelite engg.	Mumbai	A	
				Indiana gratings	Pune	A	Galvanising at Poona Galvaniser- Pune
				Amtech	Pune	A	Galvanising at B.G. Shirke- Pune
				Ratan Projects	Howrah	A	Galvanization at NTPC approved sources
				MKSD Industries	Taloja	A	Galvanising at Encorp Power trans PVT Ltd, Palghar
37.	Piping – ERW (IS 1239)	III		Main Contractor approved sources; with valid BIS license			
38.	INSTRUMENTATION CABLE	REFER NOTE- 2	Q-031	DELTON CABLES LTD	FARIDABAD	A	PVC, FRLS TYPE
				PARAMOUNT COMMUNICATION LTD	KHUSHKHERA	A	PVC, FRLS TYPE
				CORDS CABLE INDUSTRIES LTD	BHIWADI/ KAHARANI	A	PVC, FRLS TYPE
				KEI INDUSTRIES LTD	BHIWADI	A	PVC, FRLS TYPE
				POLYCAB WIRES PVT. LTD	DAMAN	A	PVC, FRLS TYPE
				THERMOCABLES	HYDERABAD	A	PVC, FRLS TYPE
				ELKAY TELELINKS	FARIDABAD	A	PVC, FRLS TYPE
				GUPTA POWER	KHURDHA	A	PVC, FRLS TYPE
				CMI	Faridabad	A	PVC, FRLS TYPE
				Universal Cables	Satna	A	PVC, FRLS TYPE



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39.	FIRE ALARM PANEL (- MICROPROCESSOR BASED) & MANNUAL CALL POINTS	II	Q-032	NOTIFIER	USA	A	
				TYCO	USA	A	SIMPLEX BRAND
				AUTRONICA	NORWAY	A	
				SCHRACK	AUSTRIA	A	
				EDWARDS	USA	A	
				Shield Fire Safety	UK	A	
40.	ADDRESSABLE DETECTORS (MULTI SENSOR), INTERFACE UNITS ,HOOTER CUM STROBE & HOOTER	II	Q-033	NOTIFIER	USA/GURGAON	A	
				TYCO	USA	A	SIMPLEX BRAND
				AUTRONICA	NORWAY	A	
				SCHRACK	AUSTRIA	A	
				EDWARDS	USA	A	
				Shield Fire Safety	UK	A	



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41.	FIBRE OPTIC CABLES	III		BIRLA ERICSSON OPTICAL	REWA	A	
				AKSH FIBER	BHIWADI	A	
				FINOLEX	PUNE/GOA	A	
				R&M	SWITZERLAND	A	
				HFCL	GOA	A	
				Molex	UK	A	
				Corning	USA	A	
42.	PLC BASED SCADA SYSTEM	I	Q-034	SIEMENS	NASIK	A	
				SCHNEIDER ELECTRIC	BANGALORE	A	
				ROCKWELL AUTOMATION	SAHIBABAD	A	
				ABB	BANGALORE	A	
				GE INTELLIGENT PLATFORM	BANGALORE	A	
43.	ENCLOSURE FOR PANELS	*		PYROTECH	UDAIPUR	A	*Part of PLC Based SCADA System
				PENTAIR (HOFFMAN)	BANGALORE	A	*Part of PLC Based SCADA System
				RITTAL	BANGALORE	A	*Part of PLC Based SCADA System
				MPP	Bangalore	A	*Part of PLC Based SCADA System



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44.	UPS SYSTEM with ACDB	I	Q-036	FUJI ELECTRIC	JAPAN	A	
				Vertiv Energy (Emerson)	AMBERNATH	A	APPROVED UP TO 160 KVA, 1Φ
				HITACHI HIREL	GANDHINAGAR	A	APPROVED UP TO 160 KVA, 1Φ
				Vertiv Energy (DB Power)	PUNE	A	APPROVED UP TO 125 KVA, 1Φ
				KELTRON	TRIVENDRUM	A	APPROVED UP TO 150 KVA, 1Φ
				GUTOR	SWITZERLAND	A	
				AEG(Saft)	Germany	A	
45.	CCTV COMPONENTS IP Based (Refer Note-7)	II	Q-037	BOSCH	BANGALORE	A	1.All active main CCTV components like Camera, Server / Storage, Joystick, Video management software will be of Bosch make and to be procured from M/s. Bosch Ltd., Bangalore [Work address: Hosur Road, Adugodi, Bangalore – 560 030]. 2.Other items like workstation, keyboard, monitors, network switches, media converters, interconnecting cables will be supplied as per LOA agreed source.
				Axis	Sweden	A	1-CCTV components will be of Axis communication AB,Sweden make & Video Management Software will be of Milestone Brand. 2.To make the system complete, other indigenous items like server/OWS/PC, Network Switch, Cables etc are to be procured from NTPC approved sources which will be tied up during the finalization MQP 3. Toshniwal Industries Pvt Its (works address: industrial Estate, Makhupura, Ajmer-305002, Rajasthan, India) will



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							do the complete integration of CCTV System and installation at site which is noted by NTPC.
				Honeywell	Gurgoan	A	CCTV active component including explosion proof camera along with VMS will be honeywell china make
46.	Fire Extinguisher	III		BIS approved sources with valid BIS License.			
47.	Circuit Breaker upto 220 Kv (SF6 & outdoor type)	I	Q-023	Siemens	Aurangabad	A	
				ABB	Vadodara	A	
				CGL	Nasik	A	
				BHEL	Hyderabad	A	
				GE	Kanchipuram	A	
48.	Isolator upto 220 kv (outdoor type)	I	Q-024	GR Power	Hyderabad	A	
				Hivelm	Chennai	A	
				S&S	Pondicherry	A	
				Switchgear & Structural	Hyderabad	A	
				Siemens Ltd	Hyderabad	A	
49.	PT (Outdoor Type, upto 33Kv)	I	Q-025	Mehru	Bhiwadi	A	
				ABB	Vadodara	A	



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				GE	Hosur	A	
				CGL	Nasik	A	
50.	CT (Outdoor Type, upto 220 Kv Oil Filled type)	I	Q-026	Mehru	Bhiwadi	A	
				GE	Hosur	A	
				ABB	Vadodara	A	
				CGL	Nasik	A	
				BHEL	Jhansi/Bhopal	A	
				Vishal Transformer	Meerut	A	UP TO 33 KV CT ONLY
				Heptacare	Meerut	A	UP TO 33 KV CT ONLY
51.	CVT (Outdoor Type, upto 220 Kv	I	Q-027	GE	Hosur	A	
				ABB	Vadodara	A	
				CGL	Nasik	A	
				BHEL	Jhansi/Bhopal	A	
52.	LA (Outdoor Type, upto 220 Kv)	I	Q-028	Oblum	Hyderabad	A	
				Lamco	Hyderabad	A	
				Elektrolite	Jaipur	A	UP TO 33 KV ONLY.
				CGL	Nasik	A	



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53.	AB Tariff energy meter	II	Q-029	SEMS	Udaipur/Solan	A	Inspection with representative from Local Electricity Board.
				Elster	Mumbai	A	
				L&T	Mysore	A	With CMS software.
54.	Conductor	III		Smita	Ghaziabad	A	
				Gupta Power Infra	Bhubaneswar	A	
				Saravathy	Bangalore	A	
				Galaxy	Sangli	A	
				Hindustan Vidyut products	Faridabad	A	
				Apar Industries	Vadodara / Silvassa	A	
				Hira Cables	Hirakud	A	
				JSK	Silvasa	A	
				Cabcon	Kolkatta	A	
55.	Disc Insulator/Long Rod Insulator	III		Aditya Birla	Rishra	A	
				IEC	Bhopal	A	
				WSI	Chennai	A	
				BHEL	Bangalore	A	
				Imperial Ceramics	Bikaner	A	Upto 90KN
				Modern Insulator	Abu Road	A	
				Goldstone	Hyderabad	A	For Long Rod Insulator only



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56.	Bus Post Insulator	III		Aditya Birla	Halol	A	
				IEC	Bhopal	A	
				WSI	Chennai	A	
				MODERN Insulator	Abu Road	A	
				SARAVANA Global Energy	Cuddalore	A	
57.	Clamps & connectors	III		KLEMMEN ENGG	CHENNAI	A	
				MILIND	MUMBAI	A	
				EMI	MUMBAI	A	
				NOOTAN ENGG	MUMBAI	A	
				TAG CORPORATION	CHENNAI	A	
				ITPL	MUMBAI	A	
				RASHTRAUDYOG	KOLKATA	A	
				PEE VEE ENGG	BANGALORE	A	
				MEGHA Engg	CHENNAI	A	
				EXALT	Mumbai	A	
58.	Insulator hardware, conductor accessories & earthwire accessories	III		RASHTRA UDYOG	KOLKATA	A	
				IAC	KOLKATA	A	



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				ITPL	MUMBAI	A	
				EMI	MUMBAI	A	
				EMTT	Kolkatta	A	
59.	Aluminium tube	III		HINDALCO	RENUKUT	A	
				INDALCO	ALUPURAM	A	
				CENTURY EXTRUSIONS	KOLKATA	A	
				JINDAL ALUMINUM TUBE	BANGALORE	A	
				ALOM EXTRUSIONS	KOLKATA	A	
				BALCO	KORBA	A	
				SUDAL	NASIK	A	
				Banco	Vadodara	A	
60.	Switchyard Control & Relay Panel / SAS	I	Q-030	GE (Alstom)	Chennai	A	
				Siemens	Kalwa/Goa	A	
				ABB	Peenya	A	
				Schneider	Noida	A	
				BHEL	Bhopal	A	Approved for C&R Panel only
61.	Numerical Relays for Switchyard	(part of C&R MQP)		GE	UK/Chennai	A A	
				Siemens	Germany	A	



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				ABB	Sweden/ Bangalore	A	
62.	Transformer (Oil filled type) Refer Note-8	I	Q-021	Schneider	UK	A	
				BHEL	Bhopal	A	up to 400 kV Class
				GE (T&D)	Naini	A	up to 400 kV Class
				Toshiba	Hyderabad	A	up to 400 kV Class
				TELK	Agnamaly, Kerala	A	up to 400 kV Class
				ABB	Vadodara	A	up to 400 kV Class
				CG Power & Industrial Solutions Ltd.	Kanjur Marg	A	up to 400 kV Class
				EMCO	Thane	A	up to 400 kV Class
				BHEL	Jhansi	A	up to 220 kV Class
				Schneider	Vadodara	A	up to 50 MVA, 132 kV Class
				T&R	Ahmedabad	A	up to 16 MVA, 132 kV Class
				Kanohar	Merrut	A	up to 16 MVA, 33 kV Class
				EMCO	Jalgaon	A	up to 16 MVA, 33 kV Class
				Kirloskar	Mysore	A	up to 16 MVA, 33 kV Class
				Andrew Yule	Chennai	A	up to 10 MVA, 33 kV Class
				Tesla (unit-2)	Bhopal	A	up to 5.0 MVA, 33 kV Class
				Indotech Transformers	Chennai	A	up to 16 MVA, 11 kV Class
				PETE Hammond	Hyderabad	A	up to 10 MVA, 33 kV Class

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				CG Power & Industrial Solutions Ltd.	Malanpur	A	up to 7.5 MVA, 33 kV Class
				ECE	Sonepat	A	up to 4.0 MVA, 11 kV Class
				Voltamp	Savli	A	up to 3.5 MVA, 33 kV Class
				Kirloskar	Pune	A	up to 2.0 MVA, 33 kV Class
				RAYCHEM RPG	Pune	A	Up to 5 MVA, 33 kV Class
				Esennar	Medak	A	Up to 16 MVA, 66 kV Class
				Technical Associate Ltd	Sitarganj	A	up to 16 MVA, 33 kV Class, Conditions Apply
				Prime Meiden Ltd	Nellur	A	up to 63 MVA, 132 kV Class
				KRYFS Power Components Ltd	Silvassa	A	Up to 2.5 MVA, 33 kV Class
				Sudhir Transformers	Bangalore	A	Upto 12.5 MVA, 33KV Class
63.	Dry Type Transformer (refer note-8)	I	Q-022	ABB	Savli	A	up to 8 MVA, 24 kV Class
				Raychem	Pune	A	Up to 3.5 MVA, 33 kV Class
				Toshiba	Hyderabad	A	Up to 2.0 MVA, 33 kV Class
				BHEL	Jhansi	A	Up to 6.3 MVA, 33 kV Class
				Kirloskar	Pune	A	Up to 4.0 MVA, 33 kV Class
				Voltamp	Savli	A	Up to 3.25 MVA, 33 kV Class
				PETE Hammond	Hyderabad	A	Up to 95 KVA, 33 kV Class

Under Sub Supplier approval status as per NTPC column:

A: mean that manufacturer proposed main contractor for this items is acceptable to NTPC.

CA: mean that manufacturer proposed by main contractor is acceptable to NTPC with certain conditions

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DR-mean that manufacturer proposed by main contractor for the items will be assessed by NTPC. Main contractor is obliged to procure the item from “DR” category manufacturer only after written approval from NTPC

Under QP / INSPN CATEGORY column:

CAT-I : For these items the Quality Plans approved by NTPC & final acceptance will be on physical inspection & witness by NTPC

CAT-II : For these items the Quality Plans approved by NTPC. However no physical inspection shall be done by NTPC. The final acceptance by NTPC shall be on basis of verification of documents as per approved QP

CAT-III : For these items Main supplier approves the Quality Plans. The final acceptance by NTPC shall be on basis of certificate of conformance by the main supplier.

General Notes:

- 1) Vendor list & category of the mandatory spares shall be as mentioned above.
- 2) For item not appearing in the above list, Main Contractor to approach NTPC for acceptable vendors & inspection categorization of the same.
- 3) NTPC Approval conditions to above identified vendors shall be adhered to. Vendor’s approval conditions will be informed on specific request of Main Contractor.

Note-1- “TYPE TEST REPORT AS PER EN 50521” OR “VDE / CE / UL / CSA MARKING CERTIFICATION PREFERABLY FROM THIRD PARTY AGENCY” OR “BIS APPROVAL LETTER” SHALL BE SUBMITTED FOR NTPC’S VERIFICATION /INFORMATION.

Note-2-

Category of inspection for Instrumentation cable/LT Cable(Power & controls) :

TOTAL CONTRACT QUANTITY PER SIZE	CATEGORY OF INSPECTION
LESS THAN EQUAL TO 1KM PER SIZE/TYPE	CAT-III AND SUBMISSION OF TC AND CERTIFICATE OF CONFORMANCE BY MAIN CONTRACTOR
TOTAL QUANTITY UPTO 2.5 KM PER SIZE/TYPE	CAT-II



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TOTAL QUANTITY MORE THAN 2.5 KM PER SIZE/TYPE	CAT-I
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Category of inspection for HT cables

TOTAL CONTRACT QUANTITY PER SIZE/TYPE	CATEGORY OF INSPECTION
LESS THAN EQUAL TO 500 M	CAT-III
GREATER THAN 500 M	CAT-I

Note-3-

FOR CABLE TRAYS THE CATEGORY OF INSPECTION SHALL BE AS FOLLOWS

TOTAL CONTRACT QUANTITY PER SIZE /TYPE	CATEGORY OF INSPECTION
LESS THAN EQUAL TO 1KM	CAT-III AND SUBMISSION OF TC AND CERTIFICATE OF CONFORMANCE BY MAIN CONTRACTOR
GREATER THAN 1 KM AND LESS THAN EQUAL TO 5 KM	CAT-II
GREATER THAN 5 KM	CAT-I

FOR CABLE TRAYS SUPPORT SYSTEM:

THE CATEGORY OF INSPECTION SHALL BE AS FOLLOWS

TOTAL CONTRACT QUANTITY PER TYPE	CATEGORY OF INSPECTION
LESS THAN EQUAL TO 1KM OF SUPPORT CHANNEL	CAT-III AND SUBMISSION OF TC AND CERTIFICATE OF CONFORMANCE BY MAIN CONTRACTOR



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GREATER THAN TO 1KM AND LESS THAN 5 KMS OF SUPPORT CHANNEL	CAT-II
GREATER THAN TO 5KM OF SUPPORT CHANNEL	CAT-I

TOTAL CONTRACT QUANTITY PER SIZE / TYPE	CATEGORY OF INSPECTION
LESS THAN EQUAL TO 500 NOS. OF CANTILEVER ARMS	CAT-III AND SUBMISSION OF TC AND CERTIFICATE OF CONFORMANCE BY MAIN CONTRACTOR
GREATER THAN TO 500 NOS. AND LESS THAN 2500 NOS CANTILEVER ARMS	CAT-II
GREATER THAN TO 2500 NOS. CANTILEVER ARMS	CAT-I

Note-4-

1. M/s M J Engg, Delhi 2. M/s Jamna Metal, Delhi 3. M/s A.V. Engg, Kolkata 4. M/s Inar Profiles, Vishakapatnam 5. M/s Anand Udyog, Mumbai 6. M/s Techno Engg, Chandigarh 7. M/S Steelite Engg, Mumbai	8. M/s National Galvanizer, Kolkata 9. M/s Unistar Galvanizer, Kolkata 10. M/s B.P. Project. Kolkata 11. M/s Bajaj Pune 12. M/s Electrocure Industries, Mumbai 13. M/s B.G. Shirke, Pune 14. M/s Gurpreet Galvanizer, Hyderabad	15. M/s Sigma, Mumbai 16. M/s Radhakrishnan Shetty, Chennai 17. Karamtara Mumbai 18. Poona Galvanizers Pune 19. Neha Galvanizer- Kolkata 20. Unitech Fabricators & Galvanizers- Hoogly 21. Patny Systems- Mehdak	22. Indian Gratings, Pune 23. Encorp Power trans PVT Ltd, Palghar 24. Reliable Sponge, Kalunga 25- Rukmani Fab & Gal- Howrah
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Note-5:

a. Raw material & Bought Out components for main equipment will be finalized with vendor identified by Main Contractor.

Note-6: “VDE / CE / UL / CSA MARKING CERTIFICATION PREFERABLY FROM THIRD PARTY AGENCY” OR “BIS APPROVAL LETTER” SHALL BE SUBMITTED FOR NTPC’s VERIFICATION /INFORMATION.

Note-7: CCTV Components consists of Camera with motorized zoom lens, Enclosure, Pan Tilt arrangement, Matrix Switcher, Key Board with LCD, Digital Video Recorder, Monitor, Receiver Driver Unit, Code Distribution unit, Amplifier etc. shall be supplied from the principal manufacturer of CCTV and shall be identical make. Other than this item can be supplied from Indigenous local source approved by NTPC or Principal Manufacturer's approved source.

Note-8:

8.1 Raw material & bought out components for main equipment will be finalized with vendor identified by Main Contractor.

8.2 For Auxiliary Transformers (Oil Filled & Dry Type- below 1.0 MVA, 11 KV Class):

a. Main Contractor’s approved sub-vendors will also be acceptable subject to sub-vendor shall have minimum two years of supply experience for similar rating & type of transformers.

b. NTPC will review the Routine Test Inspection Report, witnessed by Main Contractor as per IS 2026/IS 1180 for Oil Filled Transformer and as per IS 11171 for Dry type Transformer

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	PACKAGE: DEVELOPMENT OF 21 MW GANDHAR SOLAR PHOTO VOLTAIC PROJECT IN GUJARAT					REV. NO.	0
	MAIN SUPPLIER:	SUB SYSTEM: CIVIL WORKS				DATE	07.08.2017
	CONTRACT NO.:						
SR. NO.	ITEM	QAP / INSP. CAT	QAP NO.	PROPOSED SUB SUPPLIER	PLACE OF MANUFACTURING	APPROVAL STATUS / CATEGORY	REMARKS
1.	CEMENT	III	-	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-	-	
2.	CONSTRUCTION CHEMICALS - ADMIXTURES, PLASTISIZERS, RETARDERS WATER PROOFING COMPOUNDS GROUTS	III	-	SIKA INDIA LTD	-	A	
				CICO TECHONOLOGIES LTD	-	A	
				FOSROC CHEMICALS (I) PVT LTD	-	A	
				BASF	-	A	
3.	PAINT AND PAINTING SYSTEM	III	-	BERGER	-	A	
				SHALIMAR PAINTS	-	A	
				JENSON AND NICHOLSON	-	A	
				KANSAI NEROLAC	-	A	
				AKZO NOBEL	-	A	
				ASIAN PAINTS	-	A	
4.	GI PIPES	III	-	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-		
5.	BITUMEN ASPHALT	III	-	ALL GOVERNMENT REFINARIES	-		
6.	PLASTIC/ PVC PIPES	III	-	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-		
7.	BITUMEN IMPREGNATED FIBER BOARD JOINT FILLER , BITUMEN SEALING COMPOUND	III	-	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-		

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	MAIN SUPPLIER:	SUB SYSTEM: CIVIL WORKS				DATE	07.08.2017
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8.	CERAMIC / VITRIFIED TILES	III	-	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-	-	
9.	PARTICLE BOARDS, PLYWOOD, MDF	III	-	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-	-	
10.	HIGH SOLID CONTENT LIQUID APPLIED URETHANE BASED ELASTOMERIC MEMBRANE FOR WATER PROOFING	III	-	STP	-	A	
				IWL INDIA LTD	-	A	
				LLOYDS	-	A	
				CICO TECHONOLOGIES LTD	-	A	
				FOSROC CHEMICALS (I) PVT LTD	-	A	
11.	POLYTHENE WATER STORAGE TANKS	III	-	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-		
12.	MINERAL WOOL FOR THERMAL INSULATION	III		ROCKWOOL INDIA LTD.	HYDERABAD	A	
				PUNJSTAR INSULATION FIBRE COMPANY	BHILAI	A	
				LAPINUS	MALANPUR (MP)	A	
				MINWOOL	RAJANANDGAON	A	
				LLOYD INSULATION	BHILAI	A	
				GOENKA ROCKWOOL (I) PVT LTD	RAIPUR	A	
				SHREERAM EQUITECH PVT LTD	DURG	A	
				U.P. TWIGA	BULEND SHAHAR	A	

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	MAIN SUPPLIER:	SUB SYSTEM: CIVIL WORKS				DATE	07.08.2017
	CONTRACT NO.:						
SR. NO.	ITEM	QAP / INSP. CAT	QAP NO.	PROPOSED SUB SUPPLIER	PLACE OF MANUFACTURING	APPROVAL STATUS / CATEGORY	REMARKS
13.	CI PIPES	III	-	BIS APPROVED SOURCES HAVING VALID BIS LICENCE			
14.	MODULE MOUNTING STRUCTURES (MMS)	III		MAIN CONTRACTOR'S APPROVED SOURCES			
15.	GALVANISED STEEL STRUCTURES FOR TRANSMISSION LINE	I		L&T	PITAMPUR	A	
				NAMPA STEEL	HOWRAH	A	
				UNITECH POWER TRANSMISSION LTD.	NAGPUR	A	
				L&T	PONDICHERRY	A	
				ASSOCIATED POWER STRUCTURES	VADODARA	A	
				GOOD LUCK STEEL TUBES	SIKANDRABAD	A	
				R.S. INFRAPROJECTS PVT. LTD	SURAJPUR	A	
				ADVANCE STEEL TUBE	SAHIBABAD	A	
				RICHARDSON & CRUDDAS (1972) LTD	NAGPUR	A	
16.	GALVANISED STEEL STRUCTURE (LATTICE & PIPE)	I		GOOD LUCK STEEL TUBES	SIKANDRABAD	A	
				RICHARDSON & CRUDDAS (1972) LTD	NAGPUR	A	
				L&T	PONDICHERRY	A	
				L&T	PITAMPUR	A	
				R.S. INFRAPROJECTS PVT. LTD	SURAJPUR	A	
				VIJAY TRANSMISSION P. LTD	RAIPUR	A	
				UNIQUE STRUCTURES & TOWERS LTD.	RAIPUR	A	

	PROJECT: 21 MW GANDHAR SOLAR PHOTO VOLTAIC PROJECT IN GUJARAT	LIST OF ITEMS REQUIRING QUALITY PLAN AND SUB- SUPPLIER APPROVAL				NTPC DOC NO	
	PACKAGE: DEVELOPMENT OF 21 MW GANDHAR SOLAR PHOTO VOLTAIC PROJECT IN GUJARAT					REV. NO.	0
	MAIN SUPPLIER:	SUB SYSTEM: CIVIL WORKS				DATE	07.08.2017
	CONTRACT NO.:						
SR. NO.	ITEM	QAP / INSP. CAT	QAP NO.	PROPOSED SUB SUPPLIER	PLACE OF MANUFACTURING	APPROVAL STATUS / CATEGORY	REMARKS
				VATCO ELEC-POWER PVT. LTD.	NAVIMUMBAI	A*	*Galvanising at M/s Sigma Galvaniser, Navi Mumbai
				R.S. INFRAPROJECTS PVT. LTD	GHAZIABAD	A	
				ADVANCE STEEL TUBE ,	SAHIBABAD	A	
				SANGAM STRUCTURES LTD.	ALLAHABAD	A	
				NEW MODERN TECHNOMECH	MAYURBHANJ (OR)	A	
				UNITECH POWER TRANSMISSION LTD.	NAGPUR	A	
				ASSOCIATED POWER STRUCTURES	VADODARA	A	
				RELIABLE SPONGE PVT LTD,	KALUNGA, ODISHA	A	
17	FOUNDATION BOLT	III		MAIN CONTRACTOR'S APPROVED SOURCES			

	PROJECT: 21 MW GANDHAR SOLAR PHOTO VOLTAIC PROJECT IN GUJARAT		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUB- SUPPLIER APPROVAL			NTPC DOC NO	
	PACKAGE: DEVELOPMENT OF 21 MW GANDHAR SOLAR PHOTO VOLTAIC PROJECT IN GUJARAT					REV. NO.	0
	MAIN SUPPLIER:		SUB SYSTEM: CIVIL WORKS			DATE	07.08.2017
	CONTRACT NO.:						
SR. NO.	ITEM	QAP / INSP. CAT	QAP NO.	PROPOSED SUB SUPPLIER	PLACE OF MANUFACTURING	APPROVAL STATUS / CATEGORY	REMARKS
LEGENDS: 1. SYSTEM SUPPLIER/SUB-SUPPLIER APPROVAL STATUS CATEGORY (SHALL BE FILLED BY NTPC) A – For these items proposed vendor is acceptable to NTPC. To be indicated with letter “A” in the list along with the condition of approval, if any. DR – For these items “Details required” for NTPC review. To be identified with letter “DR” in the list. 2. QP/INSPN CATEGORY: CAT-I : For these items the Quality Plans are approved by NTPC and the final acceptance will be on physical inspection witness by NTPC. CAT-II : For these items the Quality Plans approved by NTPC. However no physical inspection shall be done by NTPC. The final acceptance by NTPC shall be on the basis review of documents as per approved quality plan. CAT-III : For these items Main Supplier approves the Quality Plans. UNITS/ WORKS : Place of manufacturing Place of Main Supplier of multi units/works. NOTE 1: For the items placed in CAT-III for Civil Works, the review and final acceptance shall be done by NTPC-EIC/ FQA on the basis of MTC / certificate of conformance in line with Indicative FQP / Technical Specifications. NOTE 2: Clearance from NTPC Engineering required wherever the Proveness / Sub-QR criteria mentioned against that particular BOIs or Sub-Suppliers in the Technical specifications.							

SI No	Equipment	Make	Make	Make	Make
1	Switchyard - Sub Vendor	Srex -220 kV	Siemens -132 kV	GE -220 kV	Hartek -132 kV
1.1	CB	Siemens	Siemens-3150 A		
1.2	ISO	Siemens	Siemens-1250 A	GR Power-1250 A	
1.3	CT	Mehru	Hepatcare	GE-400/1-1	
1.4	CVT	Siemens	GE-220kV/110V, 75VA, 8800pF		
1.5	BPI	IEC	Modern Insulators	Aditya Birla-220 kV	
1.6	LA	Oblum	Lamco	Oblum-216 kV, 10kA, Class -III, Polymer	
1.7	Disc Insulator	IEC	IEC-11 kV Disc, 120kN		
1.8	ACSR	Cabcon India	Cabcon India-Moose		
1.9	IPS Al tube	Banco			
1.10	GI Shield wire	Cabcon India			
1.11	Clamps & connectors	Legion Energy	Exalt Engineering		
1.12	Insulator hardware & accessories				
1.13	CRP	Siemens	GE		
1.14	Bay marshalling kiosk,	Pyrotech Electronics			
1.15	Metering CT	GE-400/1-1	Mehru		
1.16	Metering PT				
2	HT Cable	Polycab	KEC	Havells-1Cx300	CMI
3	LT Cable	Havells	Polycab	KEC	Special
4	LT Switchgear	Pyrotech Electronics			
5	HT Switchgear	Tri Square CMCS I/D	Siemens-CMCS I/D	BHEL	
6	ABT	Secure			
7	EHV cable	Diamer Kabel			



SYSTEM EQUIPMENT:

TRANSFORMERS UPTO 100 MVA,
132 kV CLASS

SUB-SYSTEM:

STANDARD FIELD QUALITY PLAN

CONFORMANCE TO: NTPC SPECIFICATION

QP No: 0000-999-QOE-J-001

REV No: 0

DATE: 01.11.2006

PAGE: 1 of 5

VALID UPTO: 31.10.2009

REVIEWED BY

APPROVED BY

H. Shekhar
S. D. Singh
O. P. Narain

U. R. Khosla

REMARKS

Sl No	ACTIVITY AND OPERATION	CHARACTERISTICS	CLASS# OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	D*
1	2	3	4	5	6	7	8	9	10
1.00	MATERIAL RECEIPT AND STORAGE.								
1.01		Inspection of item on receipt at site	B	Visual	100%	Packing List	Packing List	Logbook	
1.02		Condition of packages	B	Visual	-do-	Packing List	Good Condition	-do-	Material Damage Report in case of damage
1.03		Check for short supply, if any	C	Verify	-do-	Packing list	No item short	-do-	Report to Manufacturing Unit for short supply.
1.04		N ₂ pressure in transformer on receipt at site, if transformer is send with N ₂ - N ₂ pressure gauge	B	Visual	At the time of receipt & every fortnight	Mfr's Erection & Maint. Manual	Positive pressure/ Mfr Manual	-do-	In case pressure is zero, inform manufacturer for further necessary action.
1.05		Check oil level in the transformer, if transformer is send with oil - Oil level gauge	B	Visual	At the time of receipt & every fortnight	-do-	Upto the mark.	-do-	In case oil level is low & winding is exposed, call manufacturer representative.
1.06		Check reading of shock recorder on receipt at site - Impact Recorder	B	Visual	At the time of receipt	-do-	Mfr's Erection & Maint. Manual	-do-	In case data recorded is above normal, inform manufacturer for further necessary action.
1.07		Safe unloading of material at site	C	Visual	Each Package		No damage		Material Damage Report in case of damage
1.08		Check safe storage & position for bushings	C	Visual	During storage	Mfr's Erection & Maint. Manual	Mfr's Erection & Maint. Manual	-do-	
1.09		Check oil level in condensor bushings - Oil level	B	Visual	At the time of receipt & every fortnight	-do-	Upto the mark	-do-	Fill in case the same is low
1.10		Check blanking of radiators (if sent separately)	B	Visual	100%		Intactness of blanking plates	-do-	In case of radiators blanks are missing, finshing of the same to be done & cover with new blanking plate.
1.11		Ensure covered storage for identified items (fans, pumps, WTI, OT), breather, etc)	C	Visual	-do-	Mfr's Erection & Maint. Manual	No physical damage	-do-	Store indoor
1.12		Safe storage of other materials (oil, conservator, radiator, etc)	C	Visual	-do-	-do-	No physical damage	-do-	Store in outdoor covered with tarpulin.

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SYSTEM EQUIPMENT:
TRANSFORMERS UPTO 100 MVA,
132 kV CLASS

SUB-SYSTEM:

STANDARD FIELD QUALITY PLAN

CONFORMANCE TO: NTPC SPECIFICATION

QP No: 0000-999-QOE-T-001
 REV No: 0
 DATE: 01.11.2006
 PAGE: 2 of 5
 VALID UPTO: 31.10.2009

REVIEWED BY
 H. Sankar
 S. D. Singh
 O. P. Niranjan

APPROVED BY
 H. Sankar
 S. D. Singh
 O. P. Niranjan



Sl No	ACTIVITY AND OPERATION	CHARACTERISTICS	CLASS# OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	REMARKS
1	2	3	4	5	6	7	8	9	10
1.13		Ensure horizontal storage & protection of oil drums from water	C	Visual	At the time of receipt & monthly	-do-	No leakage	-do-	Check for seal integrity & tampering
1.14		Marshalling box to be stored vertically in their respective cases.	C	Visual	At the time of storage	-do-	No physical damage		In case supplied loose.
2.00 PRE-ERECTION									
2.01		Check availability of relevant drgs., T&P, protocols etc.	C	Verify	Once before erection	Mfr's Erection & Maint. Manual	Available as per list	Logbook	
2.02		Check availability of proper tools and tackles including jacking pad for carrying out erection	C	Visual	-do-	-do-	-do-		
2.03		Where rollers are applicable, check that rollers are greased properly before assembly of transformer	C	Visual	100%	-do-	Free movement of rollers		
2.04		Check for pipe cleaning before erection	B	Visual	100%	-do-	No dust / Moisture ingress	-do-	Oil flushing to be done, if required
2.05		Check insulation resistance between core to earth -500 V meggar	B	Measure	Once before erection	-do-	IR>1 Mega Ohm		If core earthing is done outside the transformer tank.
2.06		Check general condition of core-coil assy. Including wedging of core through inspection covers	A	Visual	As Req'd.	-do-	No damage/distortion	-do-	Material Damage Report in case of damage / misalignment.
2.07		Check oil parameters (as per specification) before & after filling in transformer.	B	Measure	As Req'd.	NTPC Specification	NTPC Specification	-do-	
2.08		Oil filling under vacuum (for N2 filled jobs)	B	Measure	As Req'd.	Mfr's Erection & Maint. Manual		-do-	
2.09		Oil filtration using filter machine	B	Testing	Before erection	NTPC Specification for oil parameters	NTPC Specification		Use new filters in filter machine and ensure M/c is moisture free
2.10		Check IR value between core & earth after oil filling -500v meggar	B	Measure	-do-	-do-	IR>1 Mega Ohm	-do-	✓ If core earthing is done outside the transformer tank.

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LEGEND TO BE USED: CLASS# : A = CRITICAL, B=MAJOR, C=MINOR; 'A' SHALL BE WITNESSED BY NTPC POA, 'B' SHALL BE WITNESSED BY NTPC ERECTION / CONSTRUCTION DEPTT. AND

'C' SHALL BE WITNESSED BY MAIN SUPPLIER (A & B SHALL BE NTPC CHP STAGE)



SYSTEM EQUIPMENT:
TRANSFORMERS UPTO 100 MVA,
132 KV CLASS

SUB-SYSTEM:

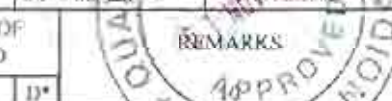
STANDARD FIELD QUALITY PLAN

CONFORMANCE TO: NTPC SPECIFICATION

QP No: 0000-999-QOE-T-001
REV No: 0
DATE: 01.11.2006
PAGE: 3 of 5
VALID UPTO: 31.10.2009

REVIEWED BY: H Shekhar
S D Singh
O P Niranjan

APPROVED BY: P K Khosla



Sl No	ACTIVITY AND OPERATION	CHARACTERISTICS	CLASS# OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	REMARKS
1	2	3	4	5	6	7	8	9	10*
2.11		Check all bushings are free from damage and oil level upto the mark - Oil level gauge	C	Visual	-do-	-do-	Upto the mark	-do-	In case of condenser bushing.
2.12		Check all condenser bushings for IR value & capacitance / tan delta test at 10 kV - (2.5 kV megger)	A	Measure	100%	-do-	IR > 5000 M ohms tan delta < 0.007	Logbook	✓
2.13		Verify tan delta tap is set back to normal earthed position and record the same	A	Physical	100%			-do-	
2.14		Ensure new gaskets during final erection of turrets, bushings and piping	B	Physical	Once before erection	-do-			
3.00	ERECTION								
3.01		Foundation readiness as per layout drawing	B	Measure	100%	Drawing	As per drawing	Log book	
3.02		Proper erection & alignment of all accessories	B	Visual	Each Unit	Mfr's Erection & Maint. Manual	As per drawing		
3.03		Operational checks on fans, oil pumps prior to installation	C	Testing	Each Unit	Mfr's Erection & Maint. Manual	To operate smoothly	Log book	
3.04		Manually operate OLTC / OCTC to raise & lower all taps, before electrical operation	C	Manual	-do-	-do-	To operate smoothly	-do-	
3.05		Direction of rotation of fans & pumps	C	Visual	-do-	-do-	Rotation as per mark	-do-	
3.06		Lubrication of fans & pumps	C	Visual	Each Unit	-do-	No abnormal noise	-do-	As applicable
3.07		Check tightness of core earthing after IR measurement between core to earth	A	Physical	-do-	-do-	No looseness	-do-	If core earthing is done outside the transformer tank.
3.08		Check earthing connections between transformer tank & cover, radiator bank, tank & OLTC head, main tank.	B	Physical	-do-	-do-	To be tight	-do-	
3.09		Check continuity & IR value of internal wiring in marshalling box - 500 V megger	B	Test	-do-	-do-	IR > 1 Mega Ohm	-do-	
3.10		Forming of cables at both ends for identification	C	Visual	-do-	-do-	As per drg	-do-	
3.11		Ratio of CT (for WTB)	B	Visual	-do-	Test report	Test report	-do-	

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SYSTEM EQUIPMENT:
TRANSFORMERS UPTO 100 MVA,
132 KV CLASS

STANDARD FIELD QUALITY PLAN

QP No: 0000-999-QOE-T-001
REV No: 0
DATE: 01.11.2006
PAGE: 4 of 5
VALID UPTO: 31.10.2009

REVIEWED BY:
H. Shukla
S.D. Shukla
O.P. Nigam
APPROVED BY:
U.R. Khosla
NTPC, NOIDA

SUB-SYSTEM:

CONFORMANCE TO: NTPC SPECIFICATION

Sl No	ACTIVITY AND OPERATION	CHARACTERISTICS	CLASS# OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	D*
1	2	3	4	5	6	7	8	9	10
3.12		Oil filling under vacuum (for N2 filled jobs)	B	Measure	As Req'd.	Mfr's Erection & Maint. Manual		-do-	
3.13		Proper cleaning of transformer after erection & oil filtration	C	Visual	-do-	Mfr's Erection & Maint. Manual	No sweating of oil	-do-	
3.14		Neutral grounding arrangement	B	Visual	100%	Drawing		-do-	
3.15		Connection check for neutral formation & core, if applicable	B	Visual	100%	Mfr's Erection & Maint. Manual		-do-	
3.16		Insulation resistance measurement between following by 500V/1kV megger a) high voltage winding to earth b) low voltage winding to earth c) high voltage to low voltage windings	A	Test	100%	Mfr's Erection & Maint. Manual	Minimum IR value is (kV+1) M Ohms	Log book	√
3.17		Polarity of CT's	B	Measure	100%	-do-		-do-	
3.18		Check readiness of alarm / trip of safety & protection equipment	C	Visual	-do-	-do-		-do-	
3.19		Check continuity between HV winding & neutral, while OLTC in operation	A	Visual	-do-	-do-	Continuity should not break, while OLTC in operation	-do-	
3.20		Check oil level in transformer - Oil level gauge	B	Visual	Each unit	-do-	Upto the mark	-do-	Fill processed oil in case oil is below the mark.
3.21		Test on oil samples taken from main tank top & bottom after 24 hours of oil settling for BDV, moisture content, etc.	A	Testing	Each Unit	Mfr's Erection & Maint. Manual / NTPC Specification	Mfr's Erection & Maint. Manual / NTPC Specification	-do-	√
3.22		Oil leakage test at normal head plus 35 kN/sq m measured at the base of tank for 24 hrs - Pressure Gauge	B	Visual	Tank Assly.	-do-	No leakage	-do-	As per NTPC Specification
3.23		Check bushing connections at line ends	B	Visual	Each Unit	-do-	-do-	-do-	
3.24		Check IR values between bushing terminal & flange of bushings-1/2.5 kV megger	B	Measure	Once	-do-	IR>(kV+1) M ohms	-do-	

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SYSTEM EQUIPMENT:
TRANSFORMERS UPTO 100 MVA,
132 KV CLASS
SUB-SYSTEM:

STANDARD FIELD QUALITY PLAN

CONFORMANCE TO: NTPC SPECIFICATION

QP No: 0000-999-QOE-T-001
REV No: 0
DATE: 01.11.2006
PAGE: 5 of 5
VALID UPTO: 31.10.2009

REVIEWED BY: *[Signature]*
APPROVED BY: *[Signature]*
H. Shrivastava
S. D. Singh
O. P. Miranjan
REMARKS:
APPROVED
N.T.P.C. NOIDA

Sl No	ACTIVITY AND OPERATION	CHARACTERISTICS	CLASS# OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	D*
1	2	3	4	5	6	7	8	9	D*
3.25		Functioning of oil pump from manual, local and remote controls.	B	Physical	100%	Schematic Drawing		-do-	
3.26		Sequential operation of cooling system on auto operation.	B	Physical	100%	Schematic Drawing		Log book	
3.27		Touch up painting to be carried out, wherever necessary.	C	Physical	Once before erection	-do-			
3.28		Check for tightness of joints and connections	B	Physical	100%	Mfr's Erection & Maint. Manual	Mfr's Erection & Maint. Manual	-do-	
3.29		Check the readiness of fire alarm system and fire protection system.	B	Test	100%			-do-	
3.30		Record of OLTC - multimeter/stopwatch a) motor current b) operating time c) control voltage	B	Measure	100%	Mfr's Erection & Maint. Manual	Instruction Manual	-do-	
3.31		Check the completeness of erection	A	Visual	100%	Mfr's Erection & Maint. Manual / Apprvd Drg	Mfr's Erection & Maint. Manual / Apprvd Drg	-do-	

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Format No.: QS-01-QAI-P-10/F4-R1

1/1

Engg. Div./QA&I

		SYSTEM EQUIPMENT: EARTHING SYSTEM		STANDARD FIELD QUALITY PLAN CONFORMING TO CODE: IS 3043 & INDIAN ELECTRICITY RULES/ ACTS			QP NO.: 0000-999-QO - E - 1-003 REV. NO.: 00 DATE : 26/03/08 PAGE 1 OF 3		REVIEWED BY: I.J.SINGH VIKRAM TALWAR S.D.SINGH O.P.NIRANJAN		APPROVED BY U.R.KHOSLA	
		SUB-SYSTEM :					VALID UPTO : 25/03/11		Dy. General A-6A, Sector- 44, Kirti-201-001 (U.2.)		REMARKS	
SL. NO	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS# OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	D*	REMARKS		
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*	10.		
1.	RECIPT AND STORAGE											
1.00	EARTHING MATERIAL	--	V	C	100%	DELIVERY CHALLAN/ NTPC SPECTS.	DELIVERY CHALLAN/ NTPC SPECTS.	REGIS TER				
1.01	PROPER STORAGE	CHECK FOR PROPER STORAGE STORAGE LEVEL "A"	V	C	100%	PROPER STACKING	PROPER STACKING			FREE FROM WATER LOGGING		
2.	PRE ERECTION											
2.01	CHECK FOR DAMAGE TO THE MATERIAL	MECH	V	C	100%	FREE FROM DAMAGE/ RUST/ CORROSION	FREE FROM DAMAGE/ RUST/ CORROSION	Register				
2.02	EARTHING OF METALLIC FRAME OF ALL ELECTRICAL EUIPMENTS & STRUCTURES	--DO--	V	B	100%	NTPC TECH. SPECTS.	NTPC TECH. SPECTS.	--DO--				
2.03	EARTHING OF CRANE RAILS, TRACKS, METAL PIPES & CONDUITS	--DO--	V	B	100%	--DO--	--DO--	--DO--				
2.04	STEEL RCC COLUMNS, METTALIC STIAIRS ETC EARTHING	--DO--	V	B	100%	--DO--	--DO--	--DO--				
2.05	NEUTRAL POINT OF H T TRANSFORMER	--DO--	V	B	100%	NTPC TECH. SPECTS. & APPR. DRGS.	SHALL BE EARTHED THROUGH NG RESISTOR	--DO--				
2.06	APPLICATION OF PROTECTIVE PAINTING ON EQUIPMENT BOLTED CONNECTIONS	--DO--	V	B	100%	NTPC TECH. SPECTS.	PAINTING WITH ANTI CORROSIVE PAINT/ COUMPOUND	--DO--				
2.07	CONNECTIONS BETWEEN EQUIPMENT EARTHING LEADS & BETWEEN EARTHING CONDUCTOR SAHLL BE OF WELDED TYPE. CHECK WELDING SLAG HAS BEEN REMOVED BEFORE APPLICATION OF PROTECTIVE COATING.	MECH	V	C	100%	WELDS IS TO BE TREATED WITH RED LEAD COUMPOUND & BITUMEN COMPOUND	WELDS IS TO BE TREATED WITH RED LEAD COUMPOUND & BITUMEN COMPOUND	--DO--		USAGE OF PROPER WELDING ELECTRODE		

LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.
 LEGEND TO BE USED: CLASS # : A = CRITICAL, B=MAJOR, C=MINOR; 'A' SHALL BE WITNESSED BY NTPC FQA, 'B' SHALL BE WITNESSED BY NTPC ERECTION / CONSTRUCTION DEPTT. AND 'C' SHALL BE WITNESSED BY MAIN SUPPLIER (A & B CHECK SHALL BE NTPC CHP STAGE)

		SYSTEM EQUIPMENT: EARTHING SYSTEM		STANDARD FIELD QUALITY PLAN CONFORMING TO CODE: IS 3043 & INDIAN ELECTRICITY RULES/ ACTS			QP NO.: 0000-999-Q0 - E - 1-003 REV. NO.: 00 DATE : 26/03/08 PAGE 2 OF 3		REVIEWED BY: I.J.SINGH <i>Inter</i> VIKRAM TALWAR <i>Me</i> S.D.SINGH <i>ll</i> O.P.NIRANJAN <i>Surajoo</i>		APPROVED BY U.R.KHOSLA <i>[Signature]</i>	
		SUB-SYSTEM :					VALID UPTO : 25/03/11					
SL. NO	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS# OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	उमेश राज खोसला Format of Record एनटीपीसी लिमिटेड A-8A, Sector-24, Noida-201 301 (U.P.)		REMARKS		
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*	10.		
2.08	RESISTANCE OF JOINTS	ELEC	MEAS	B	100%	NOT MORE THAN THE RESISTANCE OF EQUIVALENT LENGTH OF CONDUCTOR	NOT MORE THAN THE RESISTANCE OF EQUIVALENT LENGTH OF CONDUCTOR	--DO--				
2.09	EARTHING CONDUCTORS BURIED, EMBEDDED	MECH	V	C	100%	NTPC LAY OUT DRGS. & NTPC TECH. SPECTS	NTPC LAY OUT DRGS. & NTPC TECH. SPECTS	--DO--				
2.10	EARTH PITS ARE PROPERLY PREPARED FOR ELCTRODES	MECH	V	B	100%	IS 3043/ NTPC TECH. SPECTS.	IS 3043/ NTPC TECH. SPECTS.	--DO--				
2.11	CLAMPING / SUPPORT OF EARTHING CONDUCTORS ALONG WALL, COLUMN ETC.	--DO--	V	C	100%	NTPC TECH. SPECTS.	ONE METER INCASE OF WELDING / 750MM IN CASE OF CLEAT SUPPORT	--DO--				
3.00												
3.01	CONTINUITY OF EARTH CONDUCTORS & EFFICIENCY OF ALL BONDS & JOINTS CHECKING	ELEC	MEGGER	A	100%	IS3043-1987	IS3043-1987	--DO--				
3.02	EARTH RESISTANCE OF TREATED EARTH PIT ONLY	ELEC	EARTHIN G RESISTA NCE TESTER	A	100%	--DO--	--DO--	--DO--				

LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.

LEGEND TO BE USED: CLASS # : A = CRITICAL, B=MAJOR, C-MINOR; 'A' SHALL BE WITNESSED BY NTPC FQA, 'B' SHALL BE WITNESSED BY NTPC ERECTION / CONSTRUCTION DEPTT. AND 'C' SHALL BE WITNESSED BY MAIN SUPPLIER (A & B CHECK SHALL BE NTPC CHP STAGE)

	SYSTEM EQUIPMENT: EARTHING SYSTEM		STANDARD FIELD QUALITY PLAN CONFORMING TO CODE: IS 3043 & INDIAN ELECTRICITY RULES/ ACTS				QP NO.: 0000-999-QO - E - I-003 REV. NO.: 00 DATE : 26/03/08 PAGE 3 OF 3		REVIEWED BY: I.J.SINGH VIKRAM TALWAR S.D.SINGH O.P.NIRANJAN		APPROVED BY U.R.KHOSLA	
	SUB-SYSTEM :						VALID UPTO : 25/03/11					
SL. NO	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS# OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORM FOR RECORD	REMARKS			
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*	10.		

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LEGENDS USED FOR 'STORAGE LEVEL'	
STORAGE LEVEL "A"	OUTSIDE WITH NO PROTECTIVE COVER (OPEN SPACE /YARD ON RAISED SURFACE, PROPERLY STACKED AND FREE FROM WATER LOGGING AND LOADING / UNDUE WEIGHT)
STORAGE LEVEL "B"	OUTSIDE WITH PROTECTIVE COVER (OPEN SPACE /YARD ON RAISED SURFACE, PROPERLY STACKED AND FREE FROM WATER LOGGING AND LOADING / UNDUE WEIGHT, COVERED WITH PVC/TARPAULIN)
STORAGE LEVEL "C"	INDOOR SHELF ITEMS (STORED IN PUCCA SHED, IN STORE)
STORAGE LEVEL "D"	INDOOR CLEAN CONDITIONS (STORED IN PUCCA SHED, IN STORE. THE STORAGE AREA SHALL BE DRY AND FREE FROM DUST AND THERE SHALL NOT BE ACID/ CHEMICALS IN VICINITY)
STORAGE LEVEL "E"	INDOOR TEMPERATURE AND HUMIDITY CONTROLLED – AIR CONDITIONED (STORED IN PUCCA SHED, IN STORE WITH CONTROLLED ATMOSPHERE)

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		SYSTEM EQUIPMENT : STATION LIGHTING		STANDARD FIELD QUALITY PLAN CONFORMING TO CODE:			QP NO.: 0000-999-QOE-I-002 REV. NO.: 00 DATE : 26/03/08 PAGE 1 OF 8		REVIEWED BY: L.J.SINGH V. TALWAR S.D. SINGH O.P. NIRANJAN		APPROVED BY U.R. KHOSLA	
		SUB-SYSTEM :					VALID UPTO : 25/03/11					
SL. NO	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS # OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	उपमहानिरीक्षक (गुणवत्ता) / U.R. KHOSLA उप महाप्रबन्धक (गुणवत्ता) / Dy. General Manager (QA) एनटीपीसी लिमिटेड / NTPC Limited A-8A, Sector-24, Noida-201 301 (U.P.)			
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*			
1	RECEIPT & STORAGE											
1.1	RECEIVING INSPECTION (COMPLETENESS OF DOCUMENTS, TEST CERTIFICATES ETC.)	-	C	V	100%	CHP/ MDCC	CHP/MDCC	REGISTER				
1.2	CHECK FOR TYPE AND NOS. OF LIGHTING FIXTURE	-	C	V	100%	CHP/ MDCC	CHP/ MDCC	REGISTER				
1.3	VISUAL EXAMINATION A) CHECK FOR ANY DAMAGE IN TRANSIT B) THEFT/ LOSS	-	C	V	100%	--DO--	FREE DAMAGE FROM	REGISTER	REPORT DAMAGES/ THEFT/ TO NTPC			
1.4	STORAGE											
1.41	LIGHTING FIXTURES	CHECK FOR PROPER STORING STORAGE LEVEL "D"	C	V	100%	NO DAMAGE	NO DAMAGE	REGISTER				
1.42	LIGHTING PANEL, SWITCH BOXES, RECEPTACLES AND JUNCTION BOXES	CHECK FOR PROPER STORING STORAGE LEVEL "D"	C	V	100%	NO DAMAGE	NO DAMAGE	REGISTER				
1.43	STREET LIGHTING POLES, FLOOD LIGHTING POLES, LIGHTING MASTS	CHECK FOR PROPER STORING STORAGE LEVEL "A"	C	V	100%	NO DAMAGE	NO DAMAGE	REGISTER				
1.44	GI CONDUIT	CHECK FOR PROPER STORING STORAGE LEVEL "A"	C	V	100%	NO DAMAGE	NO DAMAGE	REGISTER				

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FORMAT NO.: QS-01-QAI-P-10/F4-R1

ENGG. DIV./QA&I

		SYSTEM EQUIPMENT : STATION LIGHTING		STANDARD FIELD QUALITY PLAN CONFORMING TO CODE:			QF NO.: 0000-999-QOE-I-002 REV. NO.: 00 DATE : 26/03/08 PAGE 2 OF 8		REVIEWED BY: I.J.SINGH V. TALWAR S.D. SINGH O.P. NIRANJAN		APPROVED BY U.R. KHOSLA	
		SUB-SYSTEM :					VALID UPTO : 25/03/11					
SL. NO	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS # OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	उमेश राज खोसला / U.R. KHOSLA उप निरीक्षक (गुणवत्ता आश्वासन) Dy. General Manager (QA) एनटीपीसी लिमिटेड / NTPC Limited A-8A, Sector-24, Noida-201 301 (U.P.)			
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*			
1.45	CEILING FANS & REGULATORS	CHECK FOR PROPER STORING STORAGE LEVEL "C"	C	V	100%	NO DAMAGE	NO DAMAGE	REGISTER				
1.5	TRANSPORTATION TO ERECTION SITE	-	C	V	100%	MECHANISED SYSTEM	MECHANISED SYSTEM	-				
2.0	PRE ERECTION											
2.1	AVAILABILITY OF CATALOGUE /NTPC SPETS/ NTPC APPR. DRGS.	-	C	V	100%	---	---	-				
2.2	AVAILABILITY OF ALL MATERIALS FOR ERECTION AS PER LAY OUT DRGS.	-	C	V	100%	--	--	-				
2.3	CIVIL/ FOUNDATION READINESS OF STREET LIGHTING POLES, FLOOD LIGHTING POLES, LIGHTING MASTS/ PANEL FOUNDATION ETC.	-	C	V	100%	CIVIL STRUCTURAL DRAWING &	CIVIL STRUCTURAL DRAWING &	-				
2.4	STEEL FABRICATIONS AS PER SPECIFIC SITE REQUIREMENTS	--	C	V	100%	APPROVED LAY OUT DRAWING	APPROVED LAY OUT DRAWING	-	ALL STEEL FABRICATIONS SHALL BE PAINTED WITH TWO COATS OF METAL PRIMER FOLLOWEED BY TWO COATS OF ALUMINIUM PAINT			
3.0	ERECTION											
3.1	MOUNTING OF LIGHTING FIXTURES	--	C	V	100%	APPD. LAY OUT DRGS. & MANUF. CATALOGUE & NTPC SPECTS.	APPD. LAY OUT DRGS. & MANUF. CATALOGUE & NTPC SPECTS.	CHECK LIST	10% "B" CHECK ON FIXTURES MOUNTING IN LINE WITH MANUF. CATALOGUE/ MOUNTING INSTRUCTION			

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FORMAT NO.: QS-01-QAI-P-10/F4-R1

ENGG. DIV./QA&I

		SYSTEM EQUIPMENT : STATION LIGHTING		STANDARD FIELD QUALITY PLAN CONFORMING TO CODE:			QP NO.: 0000-999-QOE-T-002 REV. NO.: 00 DATE : 26/03/08 PAGE 3 OF 8		REVIEWED BY: I.J.SINGH V. TALWAR S.D. SINGH O.P. NIRANJAN		APPROVED BY U.R. KHOSLA	
		SUB-SYSTEM :					VALID UPTO : 25/03/11		उमेश राज खोसला / U.R. KHOSLA उप महाप्रबन्धक (गुणवत्ता आश्वासन) Regional Manager (QA), एनटीपीसी लिमिटेड / NTPC Limited A-8A, Sector-24, Noida-201 301 (U.P.)			
SL. NO	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS # OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	D*	10.		
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*	10.		
3.2	FIXING OF LIGHTING FIXTURES INSTALLED ON/ UNDER PLATFORMS IN BOILER AREA / TG PEDESTALS	-	C	V	100%	APPROVED LAY OUT DRAWING & NTPC SPECTS.	VIBRATION DAMPERS/ RUBBER CUSHIONS TO MINIMISE VIBRATIONS	CHECK LIST				
3.3	FLOOD LIGHTS MOUNTING	--	C	V	100%	--DO--	FLOOD LIGHT SHALL BE PROVIDED TO THE FIXTURES BY ABOUT 5 DEGREES	--DO--				
3.4	LIGHTING FIXTURES ON FALSE CEILING	--	C	V	100%	--DO--	LIGHTING FIXTURES SHALL BE SUPPORTED SEPARATELY BY FALSE SEALING GRID OR ROOF OVER FALSE CEILING	--DO--				
3.5	EMERGENCY AC FIXTURES FROM NORMAL AC FIXTURES	--	C	V	100%	--DO--	RED PAINTED CIRCULAR MARK ONE CM DIA SHALL BE PROVIDED ON EMERGENCY FIXTURES	--DO--				
3.6	STEEL INSTALLATIONS ACCESSORIES	--	C	V	100%	--DO--	PAINING WITH RED LEAD PRIMER FOLLOWED BY TWO COATS OF ALUMINUM PAINT/ ENAMEL PAINT	--DO--				

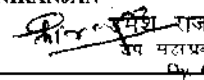
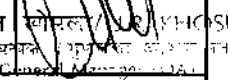
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FORMAT NO.: QS-01-QAI-P-10/F4-R1

ENGG. DIV./QA&I

		SYSTEM EQUIPMENT : STATION LIGHTING		STANDARD FIELD QUALITY PLAN CONFORMING TO CODE:			QP NO.: 0000-999-QOE-T-002 REV. NO.: 00 DATE : 26/03/08 PAGE 4 OF 8		REVIEWED BY: I.J.SINGH V. TALWAR S.D. SINGH O.P. NIRANJAN		APPROVED BY U.R. KHOSLA	
		SUB-SYSTEM :					VALID UPTO : 25/03/11		उमेश राज खोसला/U.R. KHOSLA उप महाप्रबन्धक (गुणवत्ता आश्वासन) REMARKS एनटीपीसी लिमिटेड/NTPC Limited A-8A, Sector - 24, Noida - 201 301 (U.P.)			
SL. NO	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS # OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	D*	REMARKS		
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*	10.		
3.7	LIGHTING PANEL, SWITCH BOXES, RECEPTACLES AND JUNCTION BOXES a) CHECK MOUNTING IS PROPER AND PROPERLY BOLTED b) CHECK EARTHING OF PANELS c) PROPER SIZE CABLE GLAND ARE USED FOR CABLING	--	B	V	100%	APPROVED LAY OUT DRAWING	APPROVED LAY OUT DRAWING/ NTPC TECH. SPECTS.	--DO--		1. IN OFFICE AREAS AND CONTROL ROOMS, SWITCH BOXES SHALL BE FLUSH MOUNTED IN WALL AND JUNCTION BOXES SHALL BE RECESS MOUNTED. 2. NO GAS CUTTING SHALL BE USED FOR DRILLING / PUNCHING.		
3.8	CONDUITS											
3.8	CONDUITS SUPPORTING	--	C	V	100%	NTPC TECH. SPECTS.	USING METTALIC SADDLES CLAMP SECURED TO NYLON RAWL PLUGS WITH SCREWS TO THE BUILDING STEEL AT AN INTERVAL OF NOT MORE THAN ONE METER, BUT EITHER SIDE OF COUPLER S, OR BENDSOR SIMILAR FITTINGS.	--DO--		SADDLES/ CLAMPS SHALL BE FIXED AT A DISTANCE OF 30CM FROM THE CENTRE OF SUCH FITTINGS		
3.81	EPOXY COATED G.I. CONDUITS & ACCESSORIES IN BATTERY ROOM, WATER TREATMENT PLANT ETC.	--	B	V	100%	APPROVED LAY OUT DRAWING	APPROVED LAY OUT DRAWING	--DO--				
3.82	CONDUITS CLAMPING	--	C	V	100%							
3.83	EXPOSED/ EMBEDDED CONDUITS FIXING	--	C	V	100%	APPROVED LAY OUT DRAWING	NTPC TECH. SPECTS.	--DO--				
3.84	SEALING OF CONDUITS	--	C	V	100%	CEMENT MORTAR / PUTTY/ GLASS WOOL SEALING AFTER PULLING OF CABLES	CEMENT MORTAR / PUTTY/ GLASS WOOL SEALING AFTER PULLING OF CABLES	--DO--				

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		SYSTEM EQUIPMENT : STATION LIGHTING		STANDARD FIELD QUALITY PLAN CONFORMING TO CODE:			QP NO.: 0000-999-QOE--I-002 REV. NO.: 00 DATE : 26/03/08 PAGE 5 OF 8		REVIEWED BY: I.J.SINGH V. TALWAR S.D. SINGH O.P. NIRANJAN		APPROVED BY U.R. KHOSLA	
		SUB-SYSTEM :					VALID UPTO : 25/03/11		 उ.र. खोसला By: General Manager (QA)		 I.J. Singh By: General Manager (QA)	
SL. NO	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS # OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	REMARKS			
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*	10.		
3.85	PULL OUT BOXES FOR LONG CONDUITS	--	C	V	100%	NTPC TECH. SPECTS	PULL OUT BOXES SHALL BE PROVIDED AT SUITABLE INTERVALS NOT EXCEEDING 6 MTRS	--DO--		1. PULL OUT BOXES NOT REQUIRED WHEREVER JUNCTION BOXES EXISTS 2. HEAT SHALL NOT BE APPLIED FOR BENDING CONDUITS		
3.86	METAL CONDUITS EARTHING	--	C	V	100%	--DO--	SHALL BE CONTINUOUS AND THOROUGHLY GROUNDED	--DO--				
3.87	DESIGNATION OF CONDUITS	--	C	V	100%	APPROVED LAY OUT DRAWING/ NTPC TECH. SPECTS	SHALL BE BY MEANS OF PAINTING FOR EACH RUN OF CONDUITS AT EACH END. WHERE CONDUITS TERMINATE AT PANELS, SWITCH BOXES, JUNCTION BOXES, OR OTHER ENCLOSURE, THE DESIGNATION SHALL ALSO BE PAINTED ON THE INSIDE OF ENCLOSURE ADJACENT TO CONDUITS.	--DO--				

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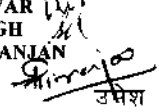
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FORMAT NO.: QS-01-QAI-P-10/F4-R1

ENGG. DIV./QA&I

		SYSTEM EQUIPMENT : STATION LIGHTING		STANDARD FIELD QUALITY PLAN			QF NO.: 0000-999-QOE-I-002 REV. NO.: 00 DATE : 26/03/08 PAGE 6 OF 8		REVIEWED BY: L.J.SINGH V. TALWAR S.D. SINGH O.P. NIRANJAN		APPROVED BY U.R. KHOSLA	
SUB-SYSTEM :		CONFORMING TO CODE:			VALID UPTO : 25/03/11		उमेश राज खोसला / U.R. KHOSLA उप महाप्रबन्धक / उप निदेशक (प्रमाणन) एनटीपीसी लिमिटेड / NTPC Limited A-8A, Sector-24, Noida-201 301 (U.P.)					
SL. NO	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS # OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	D*	REMARKS		
1.	2.	3.	4.	5.	6.	7.	8.	9.		10.		
3.9	LIGHTING POLE/ MAST	--	C	V	100%	APPROVED LAY OUT DRAWING / NTPC TECH. SPECTS	APPROVED LAY OUT DRAWING / NTPC TECH. SPECTS	--DO--		1. NO CUTTING OR DRILLING IS PERMITTED ON GALVANIZED STRUCTURE 2. LIGHTING POLE SHALL BE PAINTED WITH TWO COATS OF ALUMINIUM PAINT AFTER COMPLETION OF INSTALLATION		
3.9.1	WIRING											
3.9.2	LIGHTING FIXTURES	--	C	V	100%	APPROVED LAY OUT DRAWING / NTPC TECH. SPECTS	APPROVED LAY OUT DRAWING / NTPC TECH. SPECTS	--DO--		1. IT SHALL BE GENERALLY GROUP CONTROLLED DIRECTLY FROM LIGHTING PANEL. 2. FOR OFFICE AREA IT SHALL BE FROM SWITCH BOXES		
3.9.3	AC NORMAL, AC EMERGENCY & DC SYSTEM	--	B	V	100%	APPROVED LAY OUT DRAWING / NTPC TECH. SPECTS	WIRING SHALL BE IN DIFFERENT CONDUITS FOR INDIVIDUALS SYSTEM	--DO--				
3.9.4	RECEPTACLES & LIGHTING CIRCUIT a) USE PROPER DIE FOR CRIMPING b) CRIMPING TOOL TO BE CALIBRATED	--	B	V	100%	APPROVED LAY OUT DRAWING / NTPC TECH. SPECTS	SHALL BE FED FROM DIFFERENT CIRCUITS	--DO--				
3.9.5	LIGHTING WIRES CRIMPING a) PULL WIRES TO CHECK CRIMPING QUALITY	--	C	V	100%	--DO--	CRIMPING SHALL BE SOLDERLESS	--DO--				

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		SYSTEM EQUIPMENT : STATION LIGHTING		STANDARD FIELD QUALITY PLAN CONFORMING TO CODE:			QP NO.: 0000-999-QOE-I-002 REV. NO.: 00 DATE : 26/03/08 PAGE 7 OF 8		REVIEWED BY: I.J.SINGH V. TALWAR S.D. SINGH O.P. NIRANJAN		APPROVED BY U.R. KHOSLA	
		SUB-SYSTEM :					VALID UPTO : 25/03/11		 उमेश राय खोसला U.R. KHOSLA डी. जनरल मैनेजर (QA) एन.पी.सी. लिमिटेड / NTPC, Limited A-8A, Sector-24, Noida-201 301 (U.P.)			
SL. NO	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS # OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	REMARKS			
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*	10.		
3.9.6	CEILING FANS & REGULATORS	--	C	V	100%	--DO--	APPROVED LAY PUT DRAWING / NTPC TECH. SPECTS	--DO--				
3.10	EARTHING OF LIGHTING SYSTEM											
3.10 1	LIGHTING PANELS ETC. EARTHING	--	B	V	100%	APPROVED LAY OUT DRAWING / NTPC TECH. SPECTS	TWO SEPARATE & DISTINCT CONNECTIONS WITH EMPLOYER EARTHING	--DO--				
3.10 2	SWITCH BOXES, LIGHTING FIXTURES, JUNCTION BOXES, FANS & SINGLE PHASE RECEPTACLES ETC. EARTHING	--	B	V	100%	--DO--	SHALL BE EARTHED BY SEPARATE EARTH CONTINUITY CONDUCTOR	--DO--				
3.10 3	CABLES EARTHING	--	B	V	100%	--DO--	CABLE ARMOUR SHALL BE EARTHED AT BOTH ENDS TO EARTHING SYSTEM	--DO--				
3.10 4	EARTHING CONDUCTORS	--	B	V	100%	--DO--	APPROVED DRAWING / NTPC TECH. SPECTS	--DO--				
3.10 5	APPLICATION OF PROTECTIVE PAINTING ON EQUIPMENT BOLTED CONNECTIONS	--	C	V	100%	--DO--	PAINTING WITH ANTI CORROSIVE PAINT / COUMPOUND	--DO--				
4.00	ERECTION CHECK											

LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.

LEGEND TO BE USED: CLASS # : A = CRITICAL, B=MAJOR, C=MINOR; 'A' SHALL BE WITNESSED BY NTPC FQA, 'B' SHALL BE WITNESSED BY NTPC ERECTION / CONSTRUCTION DEPTT. AND 'C' SHALL BE WITNESSED BY MAIN SUPPLIER (A & B CHECK SHALL BE NTPC CHP STAGE)

FORMAT NO.: QS-01-QAI-P-10/F4-R1

ENGG. DIV./QA&I

		SYSTEM EQUIPMENT : STATION LIGHTING		STANDARD FIELD QUALITY PLAN CONFORMING TO CODE:				QP NO.: 0000-999-QOE-I-002 REV. NO.: 00 DATE : 26/03/08 PAGE 8 OF 8		REVIEWED BY: L.J.SINGH V. TALWAR S.D. SINGH O.P. NIRANJAN		APPROVED BY U.R. KHOSLA	
		SUB-SYSTEM :						VALID UPTO : 25/03/11		उमेश राज खोसला उप महाप्रबन्धक (सुरक्षा एवं क्वालिटी) REMARKS एनटीपीसी लिमिटेड/ NTPC Limited A-8A, Sector-24, Noida-201 301 (U.P.)			
SL. NO	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS # OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD					
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*	10.			
4.01	IR CHECK ON FIXTURES / PANELS / SWITCH BOXES/ RECEPTACLES AND CABLES / WIRES	ELECTR.	A	MEGGER	100%	SHOULD NOT SHOW ZERO VALUE	SHOULD NOT SHOW ZERO VALUE	CHECK LIST					
4.02	CHECK CONTINUITY OF EARTHING	--DO--	B	--	100%	CONTINUITY OF EARTH CONDUCTORS	CONTINUITY OF EARTH CONDUCTORS	--DO--					

LEGENDS USED FOR 'STORAGE LEVEL'	
STORAGE LEVEL "A"	OUTSIDE WITH NO PROTECTIVE COVER (OPEN SPACE /YARD ON RAISED SURFACE, PROPERLY STACKED AND FREE FROM WATER LOGGING AND LOADING / UNDUE WEIGHT)
STORAGE LEVEL "B"	OUTSIDE WITH PROTECTIVE COVER (OPEN SPACE /YARD ON RAISED SURFACE, PROPERLY STACKED AND FREE FROM WATER LOGGING AND LOADING / UNDUE WEIGHT, COVERED WITH PVC/TARPAULIN)
STORAGE LEVEL "C"	INDOOR SHELF ITEMS (STORED IN PUCCA SHED, IN STORE)
STORAGE LEVEL "D"	INDOOR CLEAN CONDITIONS (STORED IN PUCCA SHED, IN STORE. THE STORAGE AREA SHALL BE DRY AND FREE FROM DUST AND THERE SHALL NOT BE ACID/ CHEMICALS IN VICINITY)
STORAGE LEVEL "E"	INDOOR TEMPERATURE AND HUMIDITY CONTROLLED – AIR. CONDITIONED (STORED IN PUCCA SHED, IN STORE WITH CONTROLLED ATMOSPHERE)

LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.
 LEGEND TO BE USED: CLASS # : A = CRITICAL, B=MAJOR, C=MINOR; 'A' SHALL BE WITNESSED BY NTPC FQA, 'B' SHALL BE WITNESSED BY NTPC ERECTION / CONSTRUCTION DEPTT. AND 'C' SHALL BE WITNESSED BY MAIN SUPPLIER (A & B CHECK SHALL BE NTPC CHP STAGE)

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