

FIELD QUALITY PLAN

for

HT SWITCHGEAR

(ERECTION)



NTPC - NORTH KARANPURA (3 X 660 MW)

NTPC DOC. NO. : 4410-001-205-QVE-Q-003, REV. NO. - 00



BHARAT HEAVY ELECTRIC
POWER SECTOR - EAST
KOLKATA - 700091

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Reason: I am the author
Location: NTPCEOC



DOCUMENT NO. : QPE:NKP:660:EL:57
REV No.: 00

Field Quality Plan

for

HT Switchgear

(Erection)


DOC. NO. : QPE:NKP:660:EL:57	REV. NO. : 00	DATE : 08/03/2017
PREPARED BY :  DY. ENGR. / QLY., BHEL, PS:ER	REVIEWED BY:  HEAD / QLY., BHEL, PS:ER	APPROVED BY: NTPC
ISSUED TO :		
COPY NO. :	ISSUED BY :	
DATE OF ISSUE :	(NAME, DESIGNATION/DEPARTMENT) (SIGN.)	



BHARAT HEAVY ELECTRICALS LIMITED


POWER SECTOR: EASTERN REGION



KOLKATA

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		DATE: 08.03.2017
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 PSER-QUALITY		DOCUMENTS REFERRED IN FIEDL QUALITY PLAN		QP NO.: QPE:NKP:660:EL:57
				REV No.: 01
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				PAGE: 01 OF 01
S. NO.	Reference Document	Issuing Authority		
1.	O&M Manual/ Catalogues	BHEL Bhopal		

 PSER	AUTHORISATION FOR DIFFERENT CATEGORY OF CONSTRUCTION/ ERECTION CHECKS & NONCONFORMITY DISPOSITION				 A Bharatnara Company
Category of Check	Inspection Authority	Witness Authority	Accepting Authority	Surveillance By NTPC	Nonconformity Disposition Authority
‘A’ Customer Hold Point	BHEL Erection Engineer & QAE	NTPC FQA in association with Executing Engineer.	NTPC FQA in association with Executing Engineer.	Head (FQA) NTPC	ENGG Centre/ Head (Quality): BHEL PS-ER
‘B’ Customer Hold Point	BHEL Erection Engineer	NTPC Executing Engineer	NTPC Executing Engineer	FQA Engineer NTPC	ENGG Centre/ Head (Quality): BHEL PS-ER
‘C’	BHEL Erection Engineer	BHEL Erection Engineer	BHEL Head of Erection	Another Engineer authorized by Head of Executing Department NTPC	ENGG Centre/ Head (Quality): BHEL PS-ER

LEGEND for TYPE OF CHECK:

R – Record Verification, V – Visual Check, P – Physical Check, M – Measurement, T – Test.


Note:

- Nonconformity Disposition authority for all categories of checks shall be as under:
Product nonconformities: BHEL Engineering Centre.
Process/System nonconformities: Head (Quality): BHEL, PS ER.
- Wherever log sheet is not called for, suitable record shall be maintained in logbook/protocol.
- In case of nonconformity, accepting authority shall ensure the disposition of the nonconformity before acceptance, and disposition shall be reflected in the log sheets/protocols.
- QAE shall witness 'A' category checks. He is also authorized to carry out surveillance in any of B & C category of checks at his discretion.
- Concerned agencies shall ensure that instruments having valid calibration are only used for measurements.
- Quantum of check shall be 100% for all characteristics unless otherwise mentioned specifically in Field Quality Plan/ reference documents.

SUPPLIER'S NAME & ADDRESS		FIELD QUALITY PLAN					NTPC		
BHEL, PS-ER, Kolkata		ITEM: HT SWITCHGEAR SUB-SYSTEM: HT Switchgear		QP NO.: QPE:NKP:660:EL:57 REV. NO.: 01 DATE: 08.03.2017 PAGE: 01 OF 04					
SL NO.	ACTIVITY AND OPERATIONS	CHARACTERISTICS / INSTRUMENTS	TYPE OF CHECK	CLASS OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	REMARKS
1	2	3	4	5	6	7	8	9	10
I		RECEIPT OF MATERIAL AND UNLOADING:							Main contractor/sub Contractor will prepare insurance claim report in case of any damage/theft. A copy of the same will be handed over to owner for information.
1	Visual Inspection	Before unloading check the packing case no. on the packing case.	V	C	100 %	Packing Slip	Packing Slip	Site register	
2	Condition of packing	Check the packing case for external damage if any.	V	C	100 %	Packing Slip	No external damage	Site register	
3	Loose items & accessories	Heck for any loose items or accessories sent along with breakers such as hardware, bus-bars, spare items, maintenance tools and O & M manual	V	C	100%	Packing Slip	Packing Slip	Site register	
4	External paint finish	Check for any damage to painted surface.	V	C	100 %	Packing Slip	No damage	Site register	
II		STORAGE OF EQUIPMENTS							
1	Unpacking and repacking	Check and ensure the crates are unpacked properly, inspect for any damage and then repacked. Ensure that damaged/shortage items are reported to units	V	C	100 %	Packing Slip	No damage/ Shortage	MDR	
2	Storage	Ensure that all the items have been stored properly (away from sunlight, rain water, inflammable material) as per manufacturer's instruction.	V	A	100 %	Storage Instruction	Storage Instruction	Site register	To be stored in top covered area free from flooding
3	Lifting	Ensure the wire ropes are used through slings.	V	C	100 %	O&M Manual	O&M Manual		JLB crane with chain pulley block
4	Storage & transportation	Ensure locking of breakers, wherever provided to stop movement before transportation inside site and during storage.	V	C	100 %			Site register	
III		SWITCHGEAR ASSEMBLY							Main Contractor / sub vendor to ensure that movement stops on breakers etc. wherever provided are in tact before transportation and storage.
1	Placement	Check the breaker is placed on raised platform to prevent the ingress of water.	V	C	100 %	O&M Manual	Elevated level		
2	Protection	Check the items of VCB are well protected with plastic sheets	V	C	100 %	O&M Manual	No ingress of water/foreign item		
3	Transportation and storage	Ensure the equipments are transported and stored in a vertical direction.	V	C	100 %	Storage Instruction	Vertical stacking		
LEGENDS: * FORMAT OF RECORD IDENTIFIED WITH "TICK" (✓) MARK SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. CLASS OF CHECK- A: CRITICAL, B: MAJOR AND C: MINOR. CLASS 'A' SHALL BE WITNESSED BY NTPC FQA, CLASS 'B' SHALL BE WITNESSED BY NTPC ERECTION /CONSTRUCTION DEPTT. CLASS "C" SHALL BE WITNESSED BY ERECTION SUPPLIER, CLASS 'A' & 'B' CHECK SHALL BE NTPC CHP STAGE.									

FORMAT No. QS-01-QAI-P-10/F2-R1

ENGG DIV/ QA & I

SUPPLIER'S NAME & ADDRESS			FIELD QUALITY PLAN					NTPC		
<div></div> <div>BHEL, PS-ER, Kolkata</div>			ITEM: HT SWITCHGEAR			QP NO.: QPE:NKP:660:EL:57				
			SUB-SYSTEM: HT Switchgear			REV. NO. : 01				
			DATE: 08.03.2017			PAGE: 02 OF 04				
SL NO.	ACTIVITY AND OPERATIONS	CHARACTERISTICS / INSTRUMENTS	TYPE OF CHECK	CLASS OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	REMARKS	
1	2	3	4	5	6	7	8	9	D*	
4	Covering of cut outs/ Opening	Ensure that the cut outs on the instrument panel are covered with plastic sheets	V	C	100 %		Covered openings and cutouts		10	
	IV	FOUNDATION								
1	Civil works	Check completeness of civil works	V/P	B	100 %	Appd drg	Appd drg			
2	Cable trenches layout	Check layout of all cable trenches and floor openings for control cable and power cables	V	C	100 %	Appd Layout drg	Appd Layout drg			
	V	INSTALLATION								
1	Switchboard location	Ascertain the position of the switchboard in the respective floor	V	B	100 %	Appd Layout drg	Appd Layout drg			
2	Clearance to wall	Ensure the min. distance between the unit and the wall as per drg.	M	B	100 %	Appd Layout drg	Appd Layout drg			
	VI	ERECTION								
1	Panel erection sequence	Check the panel sequence as per layout drgs.	V	C	100 %	Appd Layout drg	Appd Layout drg			
2		Ensure that each unit is erected properly and truly vertical by using shims of various thickness	V	B	100 %	Appd drg	Appd drg			
3		Ensure the panels are lined up properly/Plumb line & line	V	C	100 %	Appd drg	Appd drg			
4		Ensure the coupling bolts and bus bar connections of the panels are tightened properly. by torque wrench	P	B	100 %	Appd drg/ O&M Manual	O&M Manual		5% at random by NTPC	
5		Ensure the base frame is tag welded	P	C	100 %	Installation manual	Installation manual		Tag welding shall be last activity.	
6		Ensure that all site connections have been done properly	P	C	100 %	Appd drg	Appd drg			

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1	2	3		4	5	6	7	8	9	D*	10		
7		Check the earthing lead of cable is connected properly and connection to station earth is done.		P	C	100 %	Appd drg	Appd drg					
8		Check the electrical clearances P to P , P to Earth		P	C	100 %	Appd drg	Appd drg					
9		Check CT ratios and polarity marking		M	C	100 %	Appd datasheet/ drg.	Appd datasheet/ drg.	L-01		Check CT secondary is not shorted		
10		Check voltage ratio of PTs in case mounting is done at site		M	C	100 %	Appd datasheet/ drg.	Appd datasheet/ drg.	L-02		Check CT secondary is not shorted		
11		Check the pad locking of the doors		P	C	100 %	Appd drg	Appd drg					
12		Ensure the vacuum interrupter has not suffered any damage		V	C	100 %	Appd drg	No damage					
13		Ensure the panel earthing done for all the units		V	B	100 %	Appd drg	Appd drg					
14		Check the interchangeability of the breaker trolleys		P	C	Random sampling	Specn/ drg	Specn/ drg					
15		Check for the earth bus continuity and earth continuity from door to the earth bus.		M	C	100 %	Appd drg	Appd drg					
VII		BUSBAR CONNECTIONS											
1		Check the phase sequence of the busduct and ensure correct phase sequence on the incomer panel by using phase-sequence meter		V	B	100 %	Appd drg	Correct phase sequence	Log sheet	✓			
2		Ensure the bolting surfaces are free from dust grease and other contamination		P	C	100 %	same as column -3	Free from rusting/contamination					
3		Ensure the unplated components if any are thoroughly cleaned and electrical jointing compound applied on the surface after scratching with fine emery sheets		V	C	100 %							
4		Check the tightness of fasteners on the busbar connections: by torque wrench		P	B	100 %	O&M Manual	O&M Manual	Log sheet	✓	5% at random by NTPC		

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ENGG DIV/ QA & I

		RECORD OF QUALITY CHECKS							
PSER		SHEET NO. OF FQP	CHECK NO.	RESULTS ACHIEVED OK / NOT OK	DRAWING / DOCUMENT REFERENCE	FORMAT OF RECORD	INSPECTED BY SIGN. & DATE	CLEARED BY SIGN. & DATE	REMARKS
Note : Any protocol made is to be numbered & mentioned in "Format of Record" column.									
			SYSTEM	SUB-SYSTEM	AREA	FQP NO.: QPE:NKP:660:EL:57			
PROJECT						REV. NO. : R 01			
UNIT NO.						LOG SHEET NO. L-00			
RATING						SHEET / SHEETS			

WI:QLY:03-F10/R0


 PSER	INSTRUMENT REG. NO./TAG NO.					
	DATE OF INSPECTION					
	DRAWING / DOCUMENT REF.					

C.T. POLARITY AND RATIO TEST

Phase	Marked Ratio	Observed Ratio	Polarity (O.K. / NOT O.K.)	
			Protection Core	
			Metering Core	
			Differential Protection Core	
			Protection Core	
			Metering Core	
			Differential Protection Core	
			Protection Core	
			Metering Core	
			Differential Protection Core	

			NAME	SIG./DATE	FQP NO.: QPE:NKP:660:EL:57
PROJECT		INSPECTED BY			REV. NO. : R 01
UNIT NO.		CLEARED BY			LOG SHEET NO. L-01
RATING		CUSTOMER			SHEET 1 / 1 SHEETS

WI:QLY:03-F11/R0

	INSTRUMENT REG. NO./TAG NO.																															
	DATE OF INSPECTION																															
	DRAWING / DOCUMENT REF.																															
PSER																																
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PROJECT		INSPECTED BY			REV. NO. : R 01																											
UNIT NO.		CLEARED BY			LOG SHEET NO. L-02																											
RATING		CUSTOMER			SHEET 1 / 1 SHEETS																											

WI:QLY:03-F11/R0