







SUPPLIER'S NAME AND ADDRESS		REFERENCE FIELD QUALITY PLAN					TO BE FILLED IN BY NTPC			
 BHEL, COMPONENT FABRICATION PLANT, RUDRAPUR		SYSTEM / EQUIPMENT:		QP NO.:	BHE/RU/RFQP/IPBD	SIGNATURE OF SUPPLIER'S  Ajit Ku. Sahay, Mgr(FES/PPC)	QPN No: 0000-999-QVE-T-031	REVIEWED BY	APPROVED BY	
		IPBD (ISOLATED PHASE BUSDUCT)		REV. NO.:	0		REV: 0	S M Shrikant Rao	 S M Shrikant Rao H. SHEKHAR Santosh Malan D. K. M. Jain	
		SUB SYSTEM: APPLICABLE FOR 500 MW, 660 MW, 800 MW		DATE:	29.12.2015		DATE: 22.02.2016	VALID UPTO: 21.02.2019		
SL. NO.	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	REMARKS	
1.	2.	3	4	5	6	7	8	9	10	
1.0	MATERIAL RECEIPT & STORAGE									
1.1		Unloading with use of strap belt/manila ropes near the support channel	C	Visual	100%	Instruction Manual	-	Logbook	Availability of the instruction manual, BoM, Erection and layout drawings, structural arrangements at site for storage, erection & commissioning to be ensured by BHEL.	
1.2		Check for packing condition, transit damages (puncture, bend, scratch etc.) and verification of items as per packing list & NTPC clearance. Compliance of CHP remarks to be ensured -if any	B	Physical	At the time of receipt & storage	Instruction Manual, Packing List / Challan	No physical damage. Material Damage Report (MDR) in case of damage	Logbook / MDR		
1.3		Check for completeness of supply viz. bus ducts, wall frame, support structure, bushings, rubber bellow, gaskets, splice plates, flexibles, LA, CT, VT, NGR, NGT etc. as applicable	B	Visual	Once at receipt	Instruction Manual, Packing List / Challan	Instruction Manual, Packing List / Challan	Logbook		
1.4		Ensure that busduct is not kept directly on ground and the exposed part such as palms are covered/wrapped properly. Storage on wooden sleepers / brick pedestal, etc., to ensure that the same is free from water logging. Ensure that BOIs, hardware, copper, electrical items etc are stored in store rooms and NGT, NGR, CT, PT to be stored in covered area/shed.	C	Physical	Once at receipt	Instruction Manual / BHEL Document No: BD:15012P	Bus-duct to be stored free from water logging and covered with polythene sheet / BHEL Document No: BD:15012P	Logbook		

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

LEGEND TO BE USED: CLASS # A: CRITICAL, B: MAJOR, C: MINOR; "A" SHALL BE WITNESSED BY NTPC PQA, "B" SHALL BE WITNESSED BY NTPC ERECTION/CONSTRUCTION DEPARTMENT AND "C" SHALL BE WITNESSED BY ERECTION/SUPPLIER (A & B CHECK SHALL BE NTPC CHP STAGE)

FORMAT - QS-01-QALP-10/F2-R0

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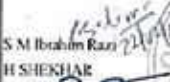


SUPPLIER'S NAME AND ADDRESS		REFERENCE FIELD QUALITY PLAN				TO BE FILLED IN BY NTPC				
 BHEL, COMPONENT FABRICATION PLANT, RUDRAPUR		SYSTEM / EQUIPMENT:		QP NO.:	BHE/RU/RFP/IPBD	SIGNATURE OF SUPPLIER'S  Ajit K. Sahay, Mgr.(FES/PPC)	QP No: 0000-999-QVE-T031	REVIEWED BY	APPROVED BY	
		IPBD (ISOLATED PHASE BUSDUCT)		REV. NO.:	0		REV: 0	S.M Ibrahim Razvi		
		SUB SYSTEM: APPLICABLE FOR 500 MW, 560 MW, 800 MW		DATE:	29.12.2015		DATE: 22.02.2016	H. SHEKHAR		
				PAGE:			VALID UPTO: 21.02.2019	Sunil Malaviya	K. M. Jain	
SL. NO.	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	REMARKS	
1.	2.	3	4	5	6	7	8	9	10	
2.0	PRE-ERECTION									
2.1		Before erection of the structure at site, visually material may be seen on random basis for the quality of the galvanization.	B	Measure	Random Check before erection	Instruction Manual	As per Specification	Logbook		
2.2		Dimensional and level checking of foundation	B	Measure	100%	NTPC Approved Drawings	Handing over protocols from Civil	Logbook		
2.3		Check the equipment for their physical condition and cleanliness	C	Visual	100%	-	Standard Practice			
2.4		Check for position & marking of supporting structures	C	Visual	Once before erection	NTPC Approved Drawings	NTPC Approved Drawings			
2.5		IR value of each bus conductor before erection (Min. 2.5 KV Insulation Tester)	C	Test	100%	IS-8084	IS-8084	Logbook		
3.0	ERECTION									
3.1		Alignment of structure including verticality	B	Measure	100%	NTPC Approved Drawings	NTPC Approved Drawings	Logbook	No iron hammering on bus bar joint bolts is allowed.	
3.2		Layout of Bus Ducts and correct phase sequence	B	Physical	100%	NTPC Approved Drawings	NTPC Approved Drawings	Logbook		
3.3		Check for tightness of bolts (Between enclosure, insulator and conductors)	B	Physical	100%	Instruction Manual	Instruction Manual	Logbook		
3.4		Fixing of Wall frame Assembly with SOB (if any)	C	Physical	100%	NTPC Approved Drawings / Instruction Manual	NTPC Approved Drawings	Logbook		
3.5		Check for alignment of enclosure, conductor and SOB	B	Measure	100%	Instruction Manual	Instruction Manual	Logbook		

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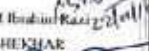

SUPPLIER'S NAME AND ADDRESS		REFERENCE FIELD QUALITY PLAN					 TO BE FILLED IN BY NTPC			
 BHEL, COMPONENT FABRICATION PLANT, RUDRAPUR		SYSTEM / EQUIPMENT:		QP NO.:	EHE/RU/RFOQ/IPBD	SIGNATURE OF SUPPLIER'S Ajit Ku. Sahay, Mgr(FES/PPC)	QP No: 0000-999-QVE-T-031		REVIEWED BY	APPROVED BY
		IPBD (ISOLATED PHASE BUSDUCT)		REV. NO.:	0		REV: 0	S M Ibrahim Razi	  Sunil Malani	 K M Lian
		SUB SYSTEM:		DATE:	29.12.2015		DATE: 22.02.2016			
		APPLICABLE FOR 500 MW, 660 MW, 800 MW		PAGE:			VALID UPTO: 21.02.2019			
SL. NO.	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS		REMARKS
1.	2.	3	4	5	6	7	8	9	D*	10
3.6		Check for fixing of splice plate, flexible, rubber bellow etc	C	Physical	100%	NTPC Approved Drawings / Instruction Manual	NTPC Approved Drawings / Instruction Manual	Logbook		
3.7		Cleaning of conductor, Porcelain insulators and enclosure splice plates, flexible, SOB, etc	C	Physical	100%	Instruction Manual	Instruction Manual	Logbook		
3.8		Ensure that eye-bolts are used for lifting of cubicles & generator adapters	C	Physical	100%	Instruction Manual	Instruction Manual			
3.9		Dimension & Alignment checking for Conductors, Enclosures, Cubicles, etc	B	Measure	100%	NTPC Approved Drawings / Instruction Manual	NTPC Approved Drawings / Instruction Manual			
3.10		Check physically insulators after fixing busbars in the Adapter box	B	Measure	100%	Instruction Manual	Instruction Manual	Logbook		
3.11		Ensure only approved make electrodes and consumables are received and packed in sealed polythene cover	C	Physical	100%	Instruction Manual	Instruction Manual			
3.12		WPS & PQR	A	Verify	100%	NTPC approved WPS	NTPC approved WPS			
3.13		Clearance between phase conductor and enclosure before welding	B	Measure	100%	NTPC Approved Drawings	NTPC Approved Drawings	Logbook		
3.14		Ensure that welder qualification test is done and approved before actual welding work is taken up	A	Test	100%	NTPC approved WPS	ASME SEC-IX	Logbook		
3.15		Welding on conductor & enclosure: (a) Root Welding (for Conductor only) (b) Final welding	B	Physical	100%	NTPC approved WPS	NTPC approved WPS	Logbook		

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SUPPLIER'S NAME AND ADDRESS		REFERENCE FIELD QUALITY PLAN					 TO BE FILLED IN BY NTPC			
 BHEL, COMPONENT FABRICATION PLANT, RUDRAPUR		SYSTEM / EQUIPMENT:		QP NO.:	BHE/RU/RFPQ/IPBD	SIGNATURE OF SUPPLIER'S  Aji K. Sahay, Mgr (FES/PPC)	QP No: 0000-999-QVE-T-031		REVIEWED BY	APPROVED BY
		IPBD (ISOLATED PHASE BUSDUCT)		REV. NO.:	0		REV: 0	S.M. Bhaskar Ravi Varma	 H. SHEKHAR  Sunil Malani	
		SUB SYSTEM: APPLICABLE FOR 500 MW, 660 MW, 800 MW		DATE:	29.12.2015		DATE: 22.02.2016	VALID UPTO: 21.02.2019		
		PAGE:								
SL. NO.	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	REMARKS	
1.	2.	3	4	5	6	7	8	9	10	
3.16		Cleaning/removal of welding spatters, slag, burr, electrode stub/butt, etc.	C	Physical	100%	-	Standard Practice			
3.17		NDT: DPT to be done for conductor & enclosure butt weld joints.	B	Test	As per NTPC Spec.	Welding Manual	Welding Manual	Logbook		
3.18		Radiography test on site welded butt joints of bus bar and enclosure	A	Test	As per NTPC Spec.	Welding Manual	Welding Manual	Logbook	✓	
3.19		mV drop test on site welded joint	A	Test	100%	IS-5561	IS-5561	Logbook	✓	
3.20		IR value of each bus duct element (Min. 2.5 KV Insulation Tester) before erection	B	Test	100%	IS-8084	IS-8084	Logbook		
3.21		Polarity and ratio of CTs and their placement	B	Test	100%	NTPC Approved Drawings / Instruction Manual	IS-2705	Logbook	✓	
3.22		Check CTs' secondaries are kept shorted until connected to respective instrument / relays.	B	Visual	100%	CT Wiring Drawing	CT Wiring Drawing	Logbook		
3.23		Crimping, ferrule numbering and check of wiring (as per wiring diagram) inside CT Terminal box	C	Physical	100%	CT Wiring Drawing	CT Wiring Drawing			
3.24		Positioning of rubber bellows & gaskets	C	Visual	100%	NTPC Approved Drawings	NTPC Approved Drawings			
3.25		Earthing of busducts, structure, NG cubicles & shunt	B	Verify	100%	NTPC Approved Drawings	NTPC Approved Drawings			
3.26		Setting of thermostats	B	Visual	100%	Instruction Manual	Instruction Manual	Logbook		
3.27		Trial Run and operation of Air Pressurization Equipment / Hot Air Blowing Equipment	B	Physical	100%	Instruction Manual	Instruction Manual	Logbook		

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SUPPLIER'S NAME AND ADDRESS:		REFERENCE FIELD QUALITY PLAN				TO BE FILLED IN BY NTPC			
 BHEL, COMPONENT FABRICATION PLANT, RUDRAPUR		SYSTEM / EQUIPMENT:		QP NO.: BHE/RU/RFQP/IPBD	SIGNATURE OF SUPPLIER'S Ajit Ku. Sahay, Mgr(FES/PPC)	QP No: 0000-999-QVE-T-031		REVIEWED BY	APPROVED BY
		IPBD (ISOLATED PHASE BUSDUCT)		REV. NO.: 0		REV: 0		S M Ibrahim Razi	31-TH
		SUB SYSTEM:		DATE: 29.12.2015		DATE: 22.02.2016		H. SHEKHAR	31-TH
		APPLICABLE FOR 500 MW, 660 MW, 800 MW		PAGE:		VALID UPTO: 21.02.2019		Sunil Maani	K. M Jain
SL. NO.	ACTIVITY AND OPERATION	CHARACTERISTICS / INSTRUMENTS	CLASS OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	REMARKS
1.	2.	3	4	5	6	7	8	9	10
3.28		Bus bar connections to NG Transformer & NGR	C	Verify	100%	NTPC Approved Drawings	NTPC Approved Drawings		FOR NG CUBICLE
3.29		Function of heaters	C	Verify	100%	Instruction Manual	Instruction Manual	Logbook	
3.30		Free movement of panel doors	C	Verify	100%	Instruction Manual	Free Movement		
3.31		Check for earthing connections of Neutral Grounding Cubicles and associated equipment	D	Verify	100%	NTPC Approved Drawings	NTPC Approved Drawings		
3.32		Checking IR value of NGT (Insulation tester)	B	Test	100%	Instruction Manual	Instruction Manual	Logbook	
3.33		Wiring and continuity check	C	Verify	100%	NTPC Approved Drawings	NTPC Approved Drawings		
3.34		Movement of trolleys	C	Verify	100%	NTPC Approved Drawings	NTPC Approved Drawings		
3.35		Check of proper shrouding and size of bolts	C	Verify	100%	NTPC Approved Drawings	NTPC Approved Drawings		
3.36		Limit switch operation	C	Verify	100%	Instruction Manual	Instruction Manual		
3.37		Completeness of Bus duct Assembly	B	Visual	100%	NTPC Approved Drawings	NTPC Approved Drawings		
3.38		IR of each completed bus duct section after erection	B	Test	100%	IS-8084	IS-8084	Logbook	✓
NOTE: All commissioning tests are to be conducted as per NTPC Technical Specification.									

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ROURKELA PP-II EXPANSION (1 X 250 MW)

COMPLIANCE REPORT

DOCUMENT NO. : QPE:RKL:250:EL:52 (FIELD QUALITY PLAN FOR ISOLATED PHASE BUS-DUCT)

SL. NO.	Customer/Consultant Comment Dt: 29.04.2017	BHEL Reply Dt : 18.05.2017
1	VENDOR IS NOT APPEARING IN THE APPROVED VENDOR LIST	<ul style="list-style-type: none">Approval for BHEL-Rudrapur as an approved manufacturer of IPBD & SPBD received from NSPCL vide email dated 09/05/2017