



QUALITY ASSURANCE PLAN

ISOLATED PHASE BUS DUCT & ACCESSORIES

QAP NO: RAPP-7&8/QAP/51130/01

CLIENT: M/s NPCIL

EPC CONTRACTOR: M/s L&T

PROJECT: BOTI PACKAGE RAPP 7&8

NPCIL PO NO.: CMM/MEQ/22-40-2-1067/PO/6458/59 DATE: 09-12-2012

SL. NO.

COMPONENT

CHARACTERISTICS

CATEGORY

METHOD OF CHECK

EXTENT OF CHECK

REFERENCE DOCUMENT

ACCEPTANCE NORMS

FORMAT OF RECORDS

AGENCY

P

W

R

H

REMARKS

1.5

Steel Structure
ISMB/ISMC/ISA

a) Dimensions

b) Surface finish

c) Bend Test

d) Chemical composition

Major

Measurement

10 %

Appd TDS / Drg

Appd TDS / Drg

IR

4

3,2,1

2.0

BOUGHTOUT ITEMS

Acceptance / Routine Tests

2.1

Epoxy Seal - off
Bushing

a) Visual Examination

b) Creepage distance

c) Dimension

d) Dry 1 min. PF voltage withstand

e) Insulation Resistance

f) Partial Discharge

*g) Lighting Impulse volatga withstand

*h) Water absorbtion test

*i) Flammability test

Major

Physical

100 %

PS

PS

IR

4

3

2,1

Major

Physical

10%

BHEL Drg / TDS

BHEL Drg / TDS

IR

4

3

2,1

Major

Measurement

10%

BHEL Drg / TDS

BHEL Drg / TDS

IR

4

3

2,1

Major

Electrical

100 %

IS:2099/IS:9431

IS:2099/IS:9431

TR

4

3

2,1

Major

Electrical

100 %

IS:2099/IS:9431

IS:2099/IS:9431

TR

4

3

2,1

Major

Electrical

1 Sample

IS:2099/IS:9431

IS:2099/IS:9431

TR

4

3

2,1

Major

Electrical

1 Sample

IS:2099/IS:9431

IS:2099/IS:9431

TR

4

3

2,1

Major

Physical

1 Sample

IS:2099/IS:9431

IS:2099/IS:9431

TR

4

3

2,1

Major

Electrical

1 Sample

IS:2099/IS:9431

IS:2099/IS:9431

TR

4

3

2,1

Note: Valid type test certificate for above "*" marked characteristic(s) shall be furnished to NPCIL for their acceptance. If valid type test certificate are not available, sub-vendor will carry out type testing in presence of NPCIL QS Engineer.

2.2

Insulators
(Porcelain)

Acceptance Tests

a) Visual

b) Dimensions

c) Creepage distance

d) Dry 1 min. PF voltage withstand

*e) Impulse voltage withstand test

f) Temperature cycle test

*g) Cantilever test

h) Porosity test

*i) Mechanical test

j) Porcelain eccentricity

Major

Visual

100 %

PS

PS

IR

4,3

2,1

Major

Measurement

5% per lot

BHEL Drg / TDS

BHEL Drg / TDS

IR

4,3

2,1

Major

Measurement

1 Sample/lot

BHEL Drg / TDS

BHEL Drg / TDS

TR

4,3

2,1

Major

Electrical

100 %

IS: 2544

IS: 2544

TR

4

3,2,1

Major

Electrical

1 Sample

IS: 2544

IS: 2544

TR

4

3,2,1

Major

Thermal

1 Sample/lot

IS: 2544

IS: 2544

TR

4

3,2,1

Major

Mechanical

1 Sample

IS: 2544

IS: 2544

TR

4

3,2,1

Major

Physical

1 Sample/lot

IS: 2544

IS: 2544

TR

4

3,2,1

Major

Mechanical

1 Sample

IS: 2544

IS: 2544

TR

4

3,2,1

Major

Mechanical

1 Sample/lot

IS: 4318

IS: 4318

TR

4

3,2,1

Note: Valid type test certificate for above "*" marked characteristic(s) shall be furnished to NPCIL for their acceptance. If valid type test certificate are not available, sub-vendor will carry out type testing in presence of NPCIL QS Engineer.

Witness by 2,1 shall be done during final busduct assembly inspection at BHEL


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		QUALITY ASSURANCE PLAN					QAP NO: RAPP-7&8/QAP/51130/01		REV: 00	DATE: 29.09.14			
		ISOLATED PHASE BUS DUCT & ACCESSORIES					CLIENT: M/s NPCIL		EPC CONTRACTOR: M/s L&T				
							PROJECT: BOTI PACKAGE RAPP 7&8		NPCIL PO NO.: CMM/MEQ/72-40-2-1067/PO/6458/59 DATE: 03-12-2012				
SL. NO.	COMPONENT	CHARACTERISTICS	CATEGORY	METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY				REMARKS
									P	W	R	H	
2.14	Pressurisation Equipment	a) Raw materials	Major	Visual	1 Sample	BHEL Appd Drawing / DS	BHEL Appd Drawing / DS	TR	4		3,2,1		Witness at Equipment Manufacturer's Works.
		b) Bought out items such as compressor valves, pipes, fittings, instruments, dryers etc	Major	Visual	100 %			TR	4		3,2,1		
		c) Fabrication & Welding	Major	Visual	100 %			TR	4		3,2,1		
		d) NDT on welds	Major	Visual	100 %			TR	4		3,2,1		
		e) Pressure test	Major	Test	100%			TR	4	3,2,1			
		f) Final inspection including visual, workmanship, dimensional, full functional verification of technical particulars, conformity to BOQ, painting etc.	Critical	Test	100%			TR	4	3,2,1			
2.15	Hot Dip Galvanized Steel Structure	a) Visual & Dimensions	Major	Visual / Measurement	1 sample of each type	BHEL Appd Drawing / DS	BHEL Appd Drawing / DS	IR	4	3	2,1		
		b) Galvanizing thickness	Major	Measurement				TR	4	3	2,1		
		c) Mass of zinc coating	Major	Measurement				TR	4	3	2,1		
		d) Adhesion / Preece test	Major	Physical				TR	4	3	2,1		


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	QUALITY ASSURANCE PLAN						QAP NO: RAPP-7&8/QAP/51130/01		REV: R0	DATE: 29.09.14			
	ISOLATED PHASE BUS DUCT & ACCESSORIES						CLIENT: M/s NPCIL		EPC CONTRACTOR: M/s L&T				
						PROJECT: BOTI PACKAGE RAPP 7&8		NPCIL PONO: CMM/MEQ/22-40-2-1067/PO/6458/59			DATE: 03-12-2012		
SL. NO.	COMPONENT	CHARACTERISTICS	CATEGORY	METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY				REMARKS
									P	W	R	H	

ABBREVIATIONS:

R= REVIEWED BY

P= PERFORMED BY

W= WITNESS BY (AFTER LAPSE OF DUE NOTICE TO NPCIL MANUFACTURER MAY PROCEED WITH MANUFACTURING / NEXT STAGE)

H= HOLD (UNLESS A WRITTEN CLEARANCE IS OBTAINED FROM NPCIL, MANUFACTURER SHALL NOT PROCEED TO NEXT STAGE)

IR= INSPECTION REPORT

TR= TEST REPORT/CERTIFICATE

TDS= TECHNICAL DATA SHEET

APPD DRG= APPROVED DRAWING

PS= PLANT STANDARD

IS= INDIAN STANDARD

IEC= INTERNATIONAL ELECTRO TECHNICAL COMMISSION STANDARD

IEEE= INSTITUTE OF ELECTRONICS & ELECTRICAL ENGINEERS STANDARD

1= NPC-QS

2= L&T-QS

3= BH&L

4= BH&L SUB-VENDOR / NABL APPROVED EXTERNAL LABORATORY

NOTES

1 WHERE EVER R & W ARE BOTH MENTIONED , NPCIL QS / L&T QS TO WITNESS TEST OR REVIEW TRs

2 TRs NOT MORE THAN FIVE YEARS OLD FROM DATE OF PURCHASE ORDER SHALL BE REVIEWED FOR ACCEPTANCE OTHERWISE SUB-VENDOR WILL CARRY OUT TYPE TEST

3 MINOR : THE CHARACTERISTICS OF A COMPOUND , PROCESS OR OPERATIONS WHOSE FAILURE NEITHER MATERIALLY REDUCE USABILITY OF THE PRODUCT IN OPERATION, NOR DOES IT AFFECT THE AESTHETIC ASPECTS


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