



GUJARAT ENERGY TRANSMISSION CORPORATION LTD

(Formerly known as G.E. BOARD)

HEAD OFFICE: SARDAR PATEL VIDYUT BHAVAN RACE COURSE, VADODARA – 390 007

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CE(ENGG)/EQUIP/I/E-2492/BHEL/160MVA-100MVA/82/ 370

Date: 26.04.2016

To,
M/s Bharat Heavy Electricals Ltd.
C/4 & C/5 BHEL Township, Gayatrinagar,
Gotri, Vadodara – 390 021

2-5-16

Sub: Supply of 220/66KV, 160MVA Power Transformer – Submission of drawings thereof

Ref: 1) A/T No : ACE (Proc)/II/E-2492/e-103808/BHEL/EHV Transformer/4729 dtd. 21.03.2016

2) Your letter No. RE15EVDR001 dtd. 12.02.2016

Dear Sir,

With reference to the above, the drawings as noted below for supply of 220/66KV, 160MVA & 100MVA Power Transformer against order under reference (1) are scrutinized & approved as bellow:

SN	Particulars	Drawing No	Rev	Remark
	220/66 KV, 160 MVA & 100MVA Power Transformer with (1) Oil Sampling Bottle (2) Fiber Optic Sensor (3) Nitrogen Injection System for Protection (NIFPS) against the Fire & Explosion with steel storage tank (4) condition controlled maintenance free on line breather as per specification and (5) GPS/GPRS/ GSM based on line transformer movement tracking system on returnable basis (6) Minimum Creepage distance for bushing (mm) shall be 31 mm/KV (7) The bushing shall be equipped with terminal suitable for connection with ACSR Twin Moose on HV side and ACSR Twin Moose on LV side (8) HV, LV and Neutral Bushing CT HV Side(no of core three and LV side No of core three as per technical specification (9) On Line Moisture and Gas in oil Analyzer as per technical specification			
1	Quality Assurance Plan (Pages: 11)	QP/PT/1203	R1	Approved with comments

The approved drawings copy in AutoCAD and PDF format shall be submitted to this office. Spiral bound set of approved drawings and O&M Manuals shall be sent to each consignee.

This approval, however, does not absolve you from the warranty of the equipment or from rectifying the defects due to faulty design or use of incorrect materials.

This is without any prejudice to the terms and conditions of the order.

Yours faithfully,
For, Gujarat Energy Transmission Corporation Ltd,


B. B. Chauhan
Chief Engineer (Project/ Engineering)

Copy FWCs to : The Chief Engineer (Project), Head Office, GETCO, Vadodara.

Copy To : The Addl. Chief Engineer (Proc), Head Office, GETCO, Vadodara.

QUALITY ASSURANCE
PLAN FOR CUSTOMER
M/s GETCO

**QUALITY ASSURANCE PLAN FOR
POWER TRANSFORMER
WO. NO. 71542A17100,
15x160 MVA, 220/66 kV
WO. NO. 71543A17100,
4x100MVA, 220/66 kV**

**MATERIAL
INSPECTION/ IN-
PROCESS INSPECTION/
FINAL INSPECTION**

**SUB VENDORS/
VENDORS/
CONTRACTORS WORK**

QP No. QP/PT/ 1203
Rev. No. 01
Date: 11/02/2016
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S No.	Item/ Components	List of Tests	Quantum of check/ Sampling	Reference/ Standard	Acceptance norms	M	C	N	Remarks
1	Winding Conductor (PICC)/ (CTC)/ Lead wires	1. Visual & dimensional check of bare conductor. Thickness & width of bare conductor, covered width & thickness <i>(*) Chemical composition</i> <i>(*) Surface finish</i> <i>2-5-16</i>	One sample per supplier	IEC60317 part 27/ IS13730 part 27	1. Bare conductor Width/ Thickness(mm) Tolerance(in mm) 3.15 0.03 3.15 to 6.3 0.05 6.30 to 12.50 0.07 12.50 to 16 0.10 Insulated conductor Paper cover (in mm) Tolerance (In %) 0.25 to 0.50 10 0.51 to 1.30 7.5 >1.30 5	P	V	W	CHP at supplier works
		2. Resistivity at 20°C B Insulation for bunched conductor a) No. of conductors b) Thickness & width of bare conductor, covered width & thickness c) Voltage test between strands 4. Tensile strength & elongation test		IS13730 IS13730	2. 0.017241Ω mm²/m max. 3. As per approved drawing	P P	V V	W W	CHP at supplier works
		5. Proof stress(for proof stress conductor) if applicable 6. Radius of corner of bare conductor		IS13730 IS13730	4. 30% min for thk. up to 2.5mm 32% min for thk. 2.5 to 5.6mm 5. As per design requirement	P P	V V	V V	
				IS13730	6. As per standard	P	V	W	CHP at supplier works
2.	Kraft insulating paper	1. Visual check & measurement of thickness 2. Density 3. Substance 4. Moisture content 5. Tensile index MD 6. Tensile index CD 7. Electric strength in air 8. Ash content 9. PH of aqueous extract 10. Conductivity of aqueous extract	One sample per type per lot	IEC60554/ IS9335 part 3 sec 5	1. paper to be smooth, unglazed surface & free from dust particles 2. 0.8±0.05g/cm³ 3. As per IEC 60554-3, table SB2 4. 8% max. 5. 93Nm/gm min. 6. 34 NM/gm min. 7. NA 8. 1% max. 9. 6 to 8 10. 10 mS/m max.	P	V	--	

Legends: M- Manufacturer, C- Contractor, N- Customer, P- Performer, V- Verification, W- Witness

Prepared by:- 

Checked by:-

 BHEL/CQX/ 007/0006	BHARAT HEAVY ELECTRICALS LIMITED, JHANSI					QP No. QP/PT/ 1203 Rev. No. 01 Date: 11/02/2016 Page: 2 of 11
	QUALITY ASSURANCE PLAN FOR CUSTOMER M/s GETCO	QUALITY ASSURANCE PLAN FOR POWER TRANSFORMER WO. NO. 71542A17100, 15x160 MVA, 220/66 kV WO. NO. 71543A17100, 4x100MVA, 220/66 kV	MATERIAL INSPECTION/ IN- PROCESS INSPECTION/ FINAL INSPECTION	SUB VENDORS/ VENDORS/ CONTRACTORS WORK		

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		11. Air permeability 12. Tear index MD 13. Tear index CMD 14. Water absorption 15. Heat stability			11. 0.5 to 1.0 $\mu\text{m}/\text{Pa.s}$ 12. 5.0 mN m ² /g min. 13. 6.0 mN m ² /g min. 14. 10% 15. As per Test report				
3.	CRGO laminations <i>(mother coil)</i>	Check following documents: a) Invoice of supplier b) Mill's test certificate c) Packing list d) Bill of lading e) Bill of entry Check points: 1. Visual & dimension 2. Thickness 3. Bend/Ductility 4. Surface insulation resistivity check 5. Aging test(type test) 6. Test on stacking factor 7. Test for specific watt loss test 8) Bow/Burr check 9) Magnetic permeability	Each lot	IS3024	As per approved design 1. Visual defect free, 2. As per design requirement 3. As per IS 4. Average value 10 Ωcm^2 min. Individual value 5 Ωcm^2 min. 5. 4% max increase in specific measured loss 6. 95.5% min/As per IS 7. As per grade of CRGO used	P	V	W	CHP Samples shall be taken in presence of GETCO representative for testing at NABL approved lab (points 2-7) Verification of test report. <i>10-370 dtd-2-5-16</i>
4.	Pre-compressed press board <i>(3) cohesion between piles</i>	1. Visual & dimensional check, thickness, width & length 2. Apparent density 3. Compressibility 4. Reversible part compressibility 5. Oil absorption 6. Moisture content 7. Shrinkage MD, CD & PD 8. pH of aqueous extract 9. Conductivity of aqueous extract 10. Electric strength in oil 11. Ash content 12. Elongation MD, CD	One sample of each size per lot	IEC 60641	1. No surface defects 2. 1 gm/cm ³ -1.3gm/cm ³ 3. 4%-10% 4. 45%-50% 5. 7%-11%, depending upon the thickness 6. 8% max. <i>6+ max</i> 7. As per IEC 8. 6-9 9. 5mS/m- 10mS/m 10. 30kV/mm-40kV/mm 11. 1% max. 12. MD-3%; CD-4%	P	V	V	GETCO ENGG. CELL M.Q.P. APPROVAL Particulars Cat ☒ I Approved w/o Comment ☒ II Approved with Comment ☐ III Approved for Information ☐ IV Not Approved Sign.

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Prepared by:- *Rohit*

Dushil Kumar
Checked by:-



BHEL/CQX/
007/0006

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M/s GETCO

QUALITY ASSURANCE PLAN FOR
POWER TRANSFORMER
WO. NO. 71542A17100,
15x160 MVA, 220/66 kV
WO. NO. 71543A17100,
4x100MVA, 220/66 kV

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5.	Perma wood	13. Tensile strength MD, CD 1. Visual & dimensional check, thickness, width & length 2. Density 3. Moisture content 4. Oil absorption at 90°C 5. Electric strength at 90°C 6. Tensile strength 7. Compressive strength test 8. Thickness	One sample of each size per lot	IS 3513	13. MD:- 100-110Mpa; CD:- 75-85Mpa 1. Shall be free from surface defect 2. 0.8 to 1.3 gm/cm ³ 3. 7% max. 4. 5% min. 5. 60kV min. 6. 96MPa min. 7. 170MPa min. 8. As per IS	P	V	✓	
6.	Porcelain bushings (Hollow)	1. Visual & dimensional checks 2. Power frequency voltage withstand test	100%	IS 2099	1. As per approved drawing 2. As per IS	P	V	✓	
7.	Polyester resin impregnated glass fiber tape	1. Visual check 2. Verification of shelf life 3. Thickness 4. Width 5. Resin content 6. Softening point of resin	One sample per lot	BHEL specification & plant standard AA25716	1. Free from visual defects 2. As per standard 3. As per standard 4. As per standard 5. 29±4 6. 235°C max	P	V	✓	
8.	Synthetic rubber bonded cork sheet(SRBC)	1. Visual check, thickness, length, width 2. Hardness 3. Compression set 4. Side flow under compression 5. Tensile strength 6. Flexibility 7. Compressibility 8. Recovery 9. Aging in oil-finish, flexibility & change 10. Ph value	One sample per lot	BHEL specification & plant standard AA59802	1. Free from surface defects 2. 60-80 IRHD 3. 85% max. 4. NA 5. 1.5N/mm ² min. 6. As per standard 7. 25-35% 8. 80% min. 9. As per standard 10. 5-8.5	P	V	✓	
9.	Condenser bushing	1. Measurement of dielectric dissipation factor & capacitance 2. Dry power frequency voltage withstand test	100%	IEC 60137	1. 0.4%-0.7% 2. As per standard/ approved GTP	P	P	✓	CHP at supplier works

NO. 37 dtd 2-5-16

GETCO
ENGG CELL
M.Q.P. APPROVAL
Particulars
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☐ IV. Not Approved

Jasbir Kumar

Checked by:-

Prepared by:- *Rohit*

9) cross breaking strength
10) shear strength
11) Effect of wood on hot oil
③ Electrical properties
④ surface condit
⑤ Mechanical property
⑥ Temp cycle test

7) Tensile strength

 BHEL/CQX/ 007/0006	QUALITY ASSURANCE PLAN FOR CUSTOMER M/s GETCO	QUALITY ASSURANCE PLAN FOR POWER TRANSFORMER WO. NO. 71542A17100, 15x160 MVA, 220/66 kV WO. NO. 71543A17100, 4x100MVA, 220/66 kV	MATERIAL INSPECTION/ IN- PROCESS INSPECTION/ FINAL INSPECTION	SUB VENDORS/ VENDORS/ CONTRACTORS WORK	QP No. QP/PT/ 1203 Rev. No. 01 Date: 11/02/2016 Page: 4 of 11
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⑦ Insulation Resistance Measurement for Test tap ⑧ HV test	10. Buchholz relay	3. Measurement of partial discharge 4. Pressure test 5. Creepage distance 6. Visual & dimensional	100%	IS 3637	3. As per standard/ approved GTP 4. As per standard/ approved GTP 5. As per standard/ approved GTP 6. As per approved drawing	V V V V	W W	V	CHP at supplier works CHP at supplier works
⑧ Float operation test	11. Bimetallic terminal connector	1. Type & make 2. Porosity 3. High voltage 4. Insulation resistance 5. Element test 6. Gas volume test 7. Loss of oil & surge test	100%	IS 5561	1. As per approved drawing 2. As per standard 3. As per standard 4. As per standard 5. As per standard 6. As per standard 7. As per standard	P	V	V	
	12. Marshalling box	1. Dimensional 2. Visual check 3. Tensile strength 4. Resistance	100%	Approved drawing & specification	1. As per approved drawing 2. Free from defect 3. As per test report 4. As per test report	P	V	W	CHP during final testing.
	13. Remote tap changer control cabinet	1. Dimensional & visual check 2. 2k test for Auxiliary wiring 3. Paint shade & thickness 4. Wiring routine check 5. Functional check	100%	Approved drawing & specification	1. As per approved drawing 2. 1 min. withstand 3. As per approved drawing 4. Firm & aesthetic 5. As per approved drawing	P	V	W	CHP during final testing.
③ Routine test on basis of fabric oil side coating-component	14. Air cell (flexible air separator)	1. Dimensional & visual check 2. 2k test for Auxiliary wiring 3. Paint shade & thickness 4. Wiring routing check 5. Functional check 6. Verification of BoQ	100%	Approved drawing & specification	1. As per approved drawing 2. 1 min. withstand 3. As per approved drawing 4. Firm & aesthetic 5. As per approved drawing 6. As per approved drawing	P	V	W	CHP during final testing.
	15. Roller assembly	1. Make, visual & dimensions 2. Pressure test at 0.1.5 kg/cm	100%	IS 3400	1. As per approved drawing 2. No leakage for 24hrs	P	V	W	CHP during final testing.
		1. Visual & dimensions 2. Mechanical properties & chemical composition of raw material used for shaft & roller forging	One sample per melt/ heat treatment batch		1. Free from defect 2. As per BHEL plant standard AA10501/ AA10108/ AA19331	P	V	V	

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Prepared by:- *Rohit*

☐ I Approved w/o Comment
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Cat *108*
 Particulars *26/11/16*
 Sign *[Signature]*

[Signature]
 Checked by:-



BHEL/CQX/
007/0006

QUALITY ASSURANCE
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M/s GETCO

BHARAT HEAVY ELECTRICALS LIMITED, JHANSI

QUALITY ASSURANCE PLAN FOR
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16.	Oil & winding temperature indicator	1. Type & make 2. Calibration 3. 2kV HV test for 1min between all terminal & earth 4. Switch contact operation test	100%	BHEL spec. TR20093/ TR20101/ TR10123	1. As per approved drawing 2. $\pm 1.5\%$ FSD 3. Withstand for 1min. 4. Operation within $\pm 2.5^\circ\text{C}$	P	V	W	CHP during final testing.
17.	Pressure relief device	1. Type & make 2. Operating air pressure 3. Switch contact test 4. HV test	100%	IS 2500	1. As per approved drawing 2. No leakage 3. Satisfactory operation 4. Withstand for 1 min..	P	V	W	CHP during final testing.
18.	Magnetic oil level gauge	1. Type & make 2. Dial Calibration for level 3. 2kV HV test for 1min between all terminal & earth 4. Leak test 5. Switch contact operation test	100%	--	1. As per approved drawing 2. Check pointer position for all levels 3. Withstand for 1 min. 4. No leakage 5. Operate at min. level indication.	P	V	V	
19.	Valves	1. Type & make 2. Leakage test/ seepage test	100%	BHEL spec. TR20036	1. As per approved drawing 2. No leakage	P	V	V	
20.	Transformer oil	As per GETCO spec.	100%	GETCO spec.	As per GETCO spec.	P	V	V	
21.	Tank & accessories	1. Check for a fit up for butt welds on tank walls, base & cover 2. DP test on butt welds after fit up & load bearing welds 3. Visual & dimensional check after final welding 4. Air leakage test on assembled tank with turrets & conservator 5. Visual check of paint shade 6. Tank 6.1 Pressure test 6.2 Vacuum test 6.3 Dimensions as per drg.	100%	CBIP manual	1. Check for proper welding 2. Check for proper welding 3. Free from defect 4. No leakage 5. As per standard	P	V	V	
			One per design	CBIP manual	6.1 As per standard 6.2 As per standard		V	W	CHP at supplier works

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Prepared by:-

Rohit

Checked by:-

⑤ Visual & Dimensional check

⑤ Visual/Dimensional

Transformer oil sample as per cl no. 5.3 of IS 1866-1999 to confirm the quality of oil in presence of GETCO's inspector

⑥ Visual & Dimensional
⑦ Rain Test
⑧ Porosity test

⑥ check for surface cleaning by sand/shot blasting

Mr. 370 dtd. 2-5-16

GETCO
ENGG. CELL
M.Q.P. APPROVAL
Particulars
☒ I Approved w/o Comment
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Sign: *[Signature]*

[Signature]



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22.	Radiators	1. DP test on lifting lugs 2. Surface cleaning of header support & bracing details by sand/ shot blasting 3. Air pressure test on elements 4. Dimensional check after final welding 5. Air pressure test on radiator assembly 6. Visual check of paint shade, paint film & film adhesion	100%	BHEL plant standard no. AA850129	1. No welding defects 2. Free from surface defects 3. As per standard 4. As per approved drawing 5. No leakage 6. As per technical specification	P	V	W	CHP at supplier works
23	OLTC	1. Auxiliary circuit insulation test at 2kV 2. Function test on OLTC 3. Pressure test on diverter switch oil compartment 4. Mechanical operation test 5. Sequence test 6. Visual & dimensional check 7. Operational test on surge relay	100%	IEC 60214	1. To withstand fro 1min 2. Satisfactory working 3. No leakage 4. Satisfactory operation 5. Switching time within permissible limit 6. Free from defects 7. Satisfactory working of trip & set	P	V	W	NO. 370 dtd. 2-5-16 GETCO ENGG. CELL M.Q.P. APPROVAL Particulars Cat I ☐ Approved w/o Comment Cat II ☒ Approved with Comment Cat III ☐ Approved for Informatic Cat PIV ☐ Not Approved Sign. <i>[Signature]</i>
24.	Cooling fans	1. Type & make 2. Power consumption, rating test 3. HV test 4. Insulation resistance value	100%	IS 2312	1. As per approved drawing 2. As per approved drawing 3. As per standard 4. As per standard				
25.	Nitrile rubber gasket	1. Dimensions 2. Shore hardness 3. Tensile strength 4. Compression set test 5. Elongation at break 6. Accelerated aging in air 7. Accelerated aging in oil	One sample per lot	BHEL plant standard no. AA59807	1. Within tolerance 2. 75±5 IRHD 3. As per standard 4. 20% max. 5. 250% min. 6. As per standard 7. As per standard	P	V	W	
26.	Bushing CT	1. Dimensions 2. Verification of terminal marking & polarity 3. Over voltage inter turn test 4. Determination of error 5. HV test	100%	IS 2705	1. As per approved drawing 2. As per IS 2705 3. Rated current withstand for 1 min 4. As per standard 5. As per standard	P	V	V	

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[Signature]

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Jushil Kumar

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31.	Winding <i>built up coil</i>	1. Visual check for drum label & conductor size 2. Number of turns/ discs 3. Dimensional checks a) Outer diameter b) Inner diameter c) Unshrunk height d) Radial thickness 4. Brazing procedure & brazers' qualification 5. Visual inspection of brazed joints 6. Visual check of transposition 7. Insulation arrangements 8. Lead & coil identification & marking 9. continuity test 10. Inter-turn insulation	100%	Approved drawings/ BHEL specifications/ BHEL plant standards	1. As per standards/ drawings 2. As per drawings 3. As per standards/ drawings 4. As per standards/ drawings 5. As per standards/ drawings 6. As per design 7. As per design 8. As per design 9. No breaking of continuity 10. As per design	--	P P P P P P P P P	V V V V V V V V V	X W CHP X W CHP X W CHP- W-CHP
32.	Core coil assembly <i>10) Earthing of Iron parts</i> <i>11) HV test on core bolts</i> <i>12) brazing of joints</i>	1. Visual check for inter coil assembly 2. Lead & coil identification & marking 3. Brazing. Crimping of joints 4. Visual check for completeness & cleanliness 5. Ratio test 6. Magnetic balance test 7. Magnetizing current test 8. Alignment of spacers/ blocks 9. HV test	100%	-- -- -- -- As per IS 2026/ IEC 60076 -- --	1. As per design 2. As per design 3. Shall be smooth & no sharp edge 4. Free from dust 5. As per standard 6. As per standard 7. As per standard 8. Aligned 9. 2kV withstand for 1min.	--	P P P P P P P P P	W W W V V V V W W	CHP at BHEL CHP at BHEL CHP at BHEL CHP at BHEL
33.	Connections & checks before tanking	1. OLTC fitting & connection 2. Check for cable sizes 3. Check for clearance from tank walls 4. Visual checks for crimped joints 5. Visual checks for bushing CT assembly tightness 6. Ratio test	100%	Mfr. Stds. As per design -- -- As per IS	1. As per manufacturer standards 2. As per design 3. As per design 4. Shall be smooth & no sharp edge 5. Proper tightness 6. As per standard.	--	P P P P P	V V V V V	

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Checked by:- Dushil Kumar

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34.	Ovening, tanking & oil filling	1. Drying 2. Checks for complete tightness before tanking a) Tightness of all joints/ screws b) Application of thread locking c) Padding of top yoke d) Pressing of active parts e) Fitting of wall shunts & packing 3. Cleanliness of tank before tanking 4. Tanking of active parts & clearance from tank walls 5. 2kV HV test between a) Core & end frame b) Core & yoke bolts c) End frame & yoke bolts 6. Check for oil quantity before impregnation 7. Oil filling & air release 8. Impregnation process	100%	BHEL standards As per design As per specification BHEL standards	1. Low value of tanδ 2. As per design 3. Shall be clean 4. As per design 5. Withstand 2kV for 1 min 6. As per specification 7. As per standard 8. As per standard	--	P P	V V	
35.	Testing	1. Routine tests a. Resistance of each winding b. Turns ratio for all set of windings on each tap. c. Polarity & phase relationship d. Impedance between each pair of winding. e. Excitation losses at 90, 100 & 110% rated voltage. f. Positive phase sequence impedance measurement. g. Regulation at rated load & unity, 0.9, 0.8 lagging PF. h. Load loss	100%	As per GETCO spec.	As per GETCO spec. No. 370 dtd. 2-5-16		P P P P P	-- V V V W	CHP at BHEL

GETCO ENGG. CELL M.Q.P. APPROVAL		
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S No.	Item/ Components	List of Tests	Quantum of check/ Sampling	Reference/ Standard	Acceptance norms	Applicable codes			Remarks
						M	C	N	

(X) Measurement of harmonic at no load current (aa) Temp rise test (Z) Impulse test (chopped wave) (aa) measurement of acoustic noise level (sb) measurement of power taken by auxiliary (cc) measurement of transferred surge on LV due to lightning impulse on HV (dd) ACLD Test (ee) water content in transformer measurement test (limit 0.5% - 0.7%) of total insulation weight (ff) calibration of temperature indicators and relay. (gg) CT testing viz IR, Ratio, polarity, excitation etc (hh) OTC meter calibration	i. Separate source voltage withstand test. j. SFRA test k. Zero sequence impedance test. l. Tests on tap changer. m. Tan delta & capacitance tests. n. DGA Test on oil including DGA on selected sample before & after temp rise test o. Magnetic circuit test. p. Oil pressure test. q. Magnetic balance & current test on all winding. r. HV withstand test. s. Insulation resistance. t. Measurement of partial discharge. u. Measurement of no load current. v. Lightning impulse test on all windings. w. Tests on fibre optic sensor. 2. Type tests a. Temperature rise test b. Impulse test (chopped wave) 3. Special tests a. Zero phase sequence impedance measurement. b. Measurement of acoustic noise level. c. Measurement of power taken by all auxiliaries. d. Measurement of harmonic level in no load current. e. Measurement of transferred surge in LV due to lightning impulse on HV & IV f. ACLD test.	100% One job per rating One job per rating	As per GETCO spec. As per GETCO spec As per GETCO spec	As per GETCO spec. As per GETCO spec. As per GETCO spec.	-- P P	W W W	CHP at BHEL CHP at BHEL CHP at BHEL	rise test corrosive 62535 subject functionality and conformance tests along with test report for probe dielectric test in NABL Lab presence of NABL representative No. 370 dtd 2-5-16

GETCO
ENGG. CELL
M.Q.P. APPROVAL

Cat	Particulars	Sign
☐ I	Approved w/o Comment	
☒ II	Approved with Comment	
☐ III	Approved for Information	
☐ IV	Not Approved	

26/11/16
Dushil Kumar

Legends: M- Manufacturer, C- Contractor, N- Customer, P- Performer, V- Verification, W- Witness

Prepared by:-

Checked by:-

 BHEL/CQX/ 007/0006	BHARAT HEAVY ELECTRICALS LIMITED, JHANSI				
	QUALITY ASSURANCE PLAN FOR CUSTOMER M/s GETCO	QUALITY ASSURANCE PLAN FOR POWER TRANSFORMER WO. NO. 71542A17100, 15x160 MVA, 220/66 kV WO. NO. 71543A17100, 4x100MVA, 220/66 kV	MATERIAL INSPECTION/ IN- PROCESS INSPECTION/ FINAL INSPECTION	SUB VENDORS/ VENDORS/ CONTRACTORS WORK	QP No. QP/PT/ 1203 Rev. No. 01 Date: 11/02/2016 Page: 11 of 11

S No.	Item/ Components	List of Tests	Quantum of check/ Sampling	Reference/ Standard	Acceptance norms	Applicable codes			Remarks
						M	C	N	
36	Pre shipment checks	1. Pipes & headers 2. Radiators 3. Verification of completeness of accessories 4. Bushings 5. Conservator tank 6. Transformer oil 7. Check nitrogen/dry air pressure after filling 8. Measurement of dew point of nitrogen/ dry air before & after filling in tank 9. Check proper blanking of all opening & leakage, if any 10. Provision of impact recorder/ tracking system 11. Check for soundness of packing	100%	BHEL standards	As per BHEL standards	--	P	--	

No. 370 dtd. 2-5-16

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Prepared by:- *Robert*

Deeshil Kumar

Checked by:-