Central Coal & Oil Testing Laboratory (CCOTL), MAHAGENCO, Vidyut Bhavan, Katol Road, Nagpur, Maharashtra Laboratory

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5380 (in lieu of T-1916, T-2125) Page 1 of 2

Validity 09.03.2017 to 08.03.2019 Last Amended on 27.03.2017

| SI. | Product / | Specific Test | • | Range of Testing / |
|-----|------------------|---------------|-------------------------|---------------------|
| | Material of Test | Performed | against which tests are | Limits of Detection |
| | | | performed | |

CHEMICAL TESTING

| I. | SOLID FUELS | | | |
|----|-------------|--|--|-------------------|
| 1. | Coal | Moisture | IS:1350(P:1) / | 1-25% |
| | | Volatile Matter | ASTM D 7582-15, | 1-60% |
| | | Ash | | 0.5-60% |
| | | Sulphur Analyser | IS:1350 (Part : 3) / ASTM D 4239-14e2 , | 0.05%-10% |
| | | Determination of Gross Calorific Value | IS:1350 (Part : 2 / ASTM D 5865-13, | 1000-8500 Kcal/Kg |

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ELECTRICAL TESTING

| I. | ELECTRICAL MATERIALS - LIQUID DIELECTRIC MATERIALS | | | |
|----|--|---|--|--|
| 1. | Transformer Oil | Water Content | Karl Fischer Method IS:13567 | 1-1000 ppm |
| | | Neutralization Value (Total Acidity) | Potentiometeric Principle IS:1448 (P-2) | 0-14 mgKOH/gm |
| | | Inter Facial Tension | Ring Method IS:6104:1971 | 1-250 mN/m |
| | | Flash Point | Pensky Martens Cup Tester ASTM D93-16A | 110°C – 370°C |
| | | Break Down Voltage | By Flash over Principle IS:6792: | 1-100 KV |
| | | Dielectric Dissipation Factor (Tan Delta) | Ratio Arm Bridge Principle IS:6262 | 0.00001-1.000 |
| | | Specific Resistance (Resistivity) | Ratio Arm Bridge Principle IS:6103 | 10 ⁹ to 10 ¹⁵ Ω-cm |