Laboratory Transformer Oil Testing Laboratory, Steag Energy Services (I) Pvt. Ltd,

A-29, Sector-16, Noida, Uttar Pradesh

Accreditation Standard ISO/IEC 17025: 2005

Discipline Electrical Testing Issue Date 11.09.2015

Certificate Number T-2623 Valid Until 10.09.2017

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| S.No. | Product /<br>Material of Test     | Specific Test Performed                       | Test Method Specification<br>against which tests are<br>performed | Range of Testing /<br>Limits of Detection  |
|-------|-----------------------------------|---|---|--|
| I.    | INSULATING MATERIALS & INSULATORS |   |   |  |
| 1.    | Transformer Oil                   | Dissolved Gas Analysis                        | IS 10593: 2006,<br>IS 9434: 1992                                  | $\begin{array}{l} H_2 \leq 1000 \; \mu l / l \\ CO \leq 5000 \; \mu l / l \\ CO_2 \leq 5000 \; \mu l / l \\ CH_4 \leq 1000 \; \mu l / l \\ C_2 H_6 \leq 1000 \; \mu l / l \\ C_2 H_4 \leq 1000 \; \mu l / l \\ C_2 H_2 \leq 1000 \; \mu l / l \end{array}$ |
|       |                                   | Electric Strength                             | IS 6792: 1992   | 5 kV to 100 kV   |
|       |                                   | Flash Point                                   | IS 1448 (Part 21): 2012   | 50°C to 200 °C   |
|       |                                   | Water Content                                 | IS 13567: 1992  | 1 mg/kg to 1000 mg/kg  |
|       |                                   | Density                                       | IS 1448 (Part 16): 2014   | $0.800 \text{ g/cm}^3 \text{ to } 0.900 \text{ g/cm}^3$  |
|       |                                   | Neutralization Value                          | IS 1448 (Part 2): 2007  | (0.02  mg KOH to 5  mg KOH)/g  |
|       |                                   | Dielectric Dissipation<br>Factor(Tanδ)at 90°C | IS 6262: 1971   | Max 1.0  |
|       |                                   | Resistivity                                   | IS 6103: 1971   | Min 0.1x10 <sup>12</sup>   |
|       |                                   | Appearance                                    | IS 1866: 2000 Clause. 7.1,<br>IS 335: 1993                        | Qualitative<br>(Clear, free from sediment<br>& suspended matter)   |

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