

Project name: MOBILE LABORATORY FOR PERIODIC METROLOGICAL VERIFICATION OF POWER TRANSFORMER MONITORING EQUIPMENT.

Project class: Module IV – Projects for developing the conformity assessment and certification infrastructure

Phase no.: 03

Phase name: Quality System implementation and analysis.

Planned objectives and got results:

Activity 3.1 Drawing up the Technical Procedures specific to the tests.

◆ The Technical Procedures of the tests were drawn up in accordance with the standards and product specifications for the monitoring equipment: MONITRA IMT02, MONITRA IMT02S, DPD -0X. When drawing up the procedures, it was taken into account that for the specified tests, they should be also applicable to other similar monitoring equipment in operation within the National Power Grid.

- For testing the monitoring equipment as regards the measuring function of core and transformer oil temperature, the Technical procedure PT 12-01 was drawn up;
- For testing the monitoring equipment as regards the measuring function of oil level, on the basis of the correspondence between resistance (Ω) and oil level (%), the Technical procedure PT 12-02 was drawn up ;
- For testing the monitoring equipment as regards the measuring function of water-in-oil content, on the basis of the correspondence between current (mA) and water content ppm), the Technical Procedure PT 12-03 was drawn up ;
- For testing the monitoring equipment as regards the measuring function of hydrogen content H_2 , on the basis of the correspondence between current (mA) and H_2 content (ppm), the Technical Procedure PT 12-04 was drawn up
- For testing the monitoring equipment as regards the measuring function of CO content, on the basis of the correspondence between current (mA) and CO content (ppm), the Technical Procedure PT 12-05 was drawn up
- For testing the monitoring equipment as regards the measuring function of transformer phase current, the Technical Procedure PT 12-06 was drawn up;
- For testing the monitoring equipment as regards the measuring function of dielectric dissipation coefficient at high voltage capacitor-type bushings, the Technical Procedure PT 12-07 was drawn up;

Activity 3.2 *Test validation and measurement uncertainty setting*

◆ The methods used for testing the power transformer monitoring equipment, which are the basis of the tests, are presented in the technical specifications of the monitoring equipment. Their validation was done by tests on monitoring equipment type MONITRA and DPD -0X , aiming at reaching the test purpose - assessing the measurement accuracy of the monitoring equipment.

As a result of the performed experiments, technical performances in accordance with the requirements imposed by the monitoring equipment specifications were got:

- Company standard SF Nr. 9/1999: Microprocessor-based equipment for power transformer monitoring IMT-02 type MONITRA;
- Company standard SF Nr. 16/2005: Microprocessor-based equipment for power transformer monitoring IMT-02S type MONITRA;
- Technical specification No.9/2003: Equipment for monitoring the high voltage capacitor-type bushings type DPD-0X

By the decision no. 03.10.2007 of the Marketing-Production Manager, the Validation Commission for validating the non-standardized laboratory test methods. On 08.10.2007, the first meeting for validating the non-standardized laboratory test methods was held. After the meeting, the Official Report of the Validation meeting (no. 1//08.10.2007) was drawn up, and the declaration for validating the non-standardized laboratory test methods was issued.

Activity 3.3 *Personnel training*

◆ Laboratory personnel participated in the following training courses, organized by RENAR, DRML Craiova and SC ARC Brasov:

- Personnel responsible for quality problems from the structure of the mobile laboratory participated in a training course organized by RENAR, with the topics „Presentation of ISO/IEC 17025:2005 requirements - Referential for the accreditation of testing/calibration laboratories”
- Head of laboratory and project manager participated in the training course organized by RENAR, with the topics „Presentation of ISO/IEC 17025:2005 requirements - Referential for the Accreditation of testing/calibration laboratories”;
- Head of laboratory, test responsible and project manager participated in the training course organized by RENAR, with the topics „ Measurement uncertainty concept”
- Laboratory personnel were trained by specialists from S.C.ARC Brasov, for using the testing equipment purchased from this company;
- Laboratory personnel were trained in the Regional laboratory of DRML Craiova, for getting thorough knowledge the field of electric quantities and temperature measurement.

Activity 3.4 *Internal audit*

◆ The documentation necessary for submitting the accreditation request to the body authorized for this (RENAR) was drawn up and the internal audit was performed.

Activity 3.5 *Settling the non-conformities identified by internal audit.*

◆ The documents presented at the internal audit performed by the audit team of ICMET Craiova, according to the Audit Report no. 26/24.10.2007 were analyzed; no non-conformity was found.

Activity 3.6 *Analysis of Quality System, at the highest level. Drawing up and submitting the Quality System documents and the official request for getting the accreditation. Initiation and preliminary assessment of the documents.*

◆ The documentation necessary for submitting the accreditation request to the body authorized for this (RENAR) was drawn up, namely Quality manual MC – 12, General Procedures, Technical Procedure, and the Quality Management System analysis was done at the highest level

Activity 3.7 *Settling the non-conformities identified at the Quality System analysis at the highest level*

◆ According to Official Report no.1/26.10.2007, no non-conformity was found at the analysis of the Quality System Management at the highest level.