



early Detection,  
fewer Failures

### tap changer activity signature analysis

TJH2b's Tap Changer Activity Signature Analysis (TASA®) provides companies with a cost-effective mean to evaluate the condition of load tap changers (LTCs) and regulators. LTCs and regulators require a higher level of maintenance due to the significant wear of load path components from frequent operations and the concern over transformer failure caused as a direct result of LTC failure. TASA® has been shown to reduce failures by providing maintenance personnel with a reliable tool to identify problems early in their inception. The confidence gained from the implementation of TASA® has enabled companies to revamp their maintenance triggers and protocols.

### benefits

TASA® provides several maintenance and financial benefits, including:

- **early detection.** Conventional maintenance cycles are 4-8 years. Since TASA® is performed annually the ability to monitor wear and detect potential failures is enhanced.
- **failure reduction.** Maintenance personnel can best focus their activities on suspect units resulting in a reduction in LTC and associated transformer failures.
- **broad application.** The TASA® program accounts for LTC model, design, low or high voltage configurations, and ventilation type.
- **improved ROI.** Savings result primarily from the reduced number of failures and labor savings.

### service highlights

#### how TASA works

An insulating fluid sample is obtained from a LTC or regulator tank compartment. In the laboratory the oil is analyzed for dissolved gases, various chemical and physical properties and particle characteristics. Accounting for factors such as LTC model, design and ventilation, a complex algorithm is applied to the laboratory test data. Based on the test results and changes in those results, condition codes are generated that indicate the condition of the components that are in contact with the oil.

Each TASA® report provides a comprehensive condition assessment of the LTC or regulator with recommendations for future action. The report contains re-sampling information based upon a proven protocol that considers the severity of the previous condition code result and future operation of the device. Another important feature of the report is the listing of the SHL or Safe Handling Limit which alerts maintenance personnel to unsafe conditions when handling of the oil is required.

The table below (Table 1) describes the current breakdown of TASA® condition code distributions worldwide. TASA® is designed to allow engineers to make convenient scheduling decisions for repairs. Some companies will adopt a more conservative approach and choose to perform maintenance on units assessed as a code 3 or 4.

Code	1	2	3	4
%	87	7	2	4

Table 1 - Condition Code Distributions  
(based on 40,000 test results)