Task Force PCS Continuous Revisions to Test Code C57.12.90

During the Task Force on PCS Revisions to C57.12.90 meeting on October 15, 2018 in Jacksonville Florida, the official quorum was achieved, and the following new sections were approved by the Task Force members to be added to C57.12.90 as new sections. Below is the *task force* approved new sections

As Performance Characteristics Subcommittee member please respond back with one of the following:

- Approve
- Reject with comments
- Abstain

Wording and sections for the changes to C57.12.90 for the On-Load Tap Changer performance

8.7 On-Load Tap Changer End to End Voltage Test

In order to verify the performance of a transformer that has an on-load tap changer (OLTC), the OLTC shall be operated through one end to end to end (from one extreme tap to the other extreme tap and back) with the transformer energized at rated voltage with minimum control and motor voltage of 85%. For safety, the OLTC shall be fitted with and connected as for service including protective devices and must not be operated manually. The test may be performed at intervals, if necessary, such as to adjust the test circuit, but it is a requirement that the transformer be energized at no less than rated voltage corresponding to each tap to be changed and the applied voltage can be adjusted to the rated voltage of the tap position. The transformer shall be observed during this test and the operator shall identify that the sound during the tap changing operations was either normal or abnormal. Note that with some types of tap changers, there will be abnormally loud sound if components are not assembled properly. The transformer will have passed this test if the tap changer operates normally with no abnormal sound and no abnormal observations in the test control system such as a trip of the test circuit. Oil samples shall be taken from the OLTC compartment of vacuum type tap-changers before and after the test and analyzed for dissolved gasses. Results of the analysis may show some increase of dissolved gases due to current commutation, resistor heating and / or stray-gassing of the oil. For mineral oil filled vacuum OLTCs, the increase of the sum of H2, CH4, C2H6, C2H4 and C2H2 should not exceed 12 ppm for in-tank type OLTCs and 6 ppm for compartment type OLTCs. For non-vacuum type OLTCs or OLTCs filled with a liquid other than mineral oil, the determination of abnormality is through sound only and there is not a limit for increase in gases.
Note: During the operation of the change-over selector (reversing switch or coarse-tap selector) the sound can be slightly different.

9.6 On-Load Tap Changer End to End Current Test

In order to verify the performance of a transformer that has an on-load tap changer (OLTC), the OLTC shall be operated through one end to the other end (from one extreme tap to the other extreme tap) with the transformer current corresponding to the top nameplate MVA rating with minimum control and motor voltage of 85%. For safety, the OLTC shall be fitted with and connected as for service including protective devices and must not be operated manually. The test may be performed at intervals, if necessary, such as to adjust the test circuit, but it is a requirement that the transformer current shall not be less than 80% of the top MVA nameplate current for each tap change. The

transformer shall be observed during this test and the operator shall identify that the sound during each tap changing operations was either normal or abnormal. Note that with some types of tap changers, there will be abnormally loud sound if components are not assembled properly. The transformer will have passed this test if the tap changer operates normally with no abnormal sound and no abnormal observations in the test control system such as a trip of the test circuit. Oil samples shall be taken from the OLTC compartment of vacuum type tap changers before and after the test and analyzed for dissolved gasses. Results of the analysis may show some increase of dissolved gases due to current commutation, resistor heating and / or stray-gassing of the oil. For mineral oil filled vacuum OLTCs, the increase of the sum of H2, CH4, C2H6, C2H4 and C2H2 should not exceed 12 ppm for in-tank type OLTCs and 6 ppm for compartment type LTCs. For non-vacuum type OLTCs or OLTCs filled with a liquid other than mineral oil, the determination of abnormality is through sound only and there is not a limit for increase in gases.

Note: During the operation of the change-over selector (reversing switch or coarse-tap selector) the sound can be slightly different.