

Process Industry Practices
Electrical

PIP ELTFT01
New Electrical Equipment and Systems
Field Inspection and Testing

PURPOSE AND USE OF PROCESS INDUSTRY PRACTICES

In an effort to minimize the cost of process industry facilities, this Practice has been prepared from the technical requirements in the existing standards of major industrial users, contractors, or standards organizations. By harmonizing these technical requirements into a single set of Practices, administrative, application, and engineering costs to both the purchaser and the manufacturer should be reduced. While this Practice is expected to incorporate the majority of requirements of most users, individual applications may involve requirements that will be appended to and take precedence over this Practice. Determinations concerning fitness for purpose and particular matters or application of the Practice to particular project or engineering situations should not be made solely on information contained in these materials. The use of trade names from time to time should not be viewed as an expression of preference but rather recognized as normal usage in the trade. Other brands having the same specifications are equally correct and may be substituted for those named. All Practices or guidelines are intended to be consistent with applicable laws and regulations including OSHA requirements. To the extent these Practices or guidelines should conflict with OSHA or other applicable laws or regulations, such laws or regulations must be followed. Consult an appropriate professional before applying or acting on any material contained in or suggested by the Practice.

This Practice is subject to revision at any time.

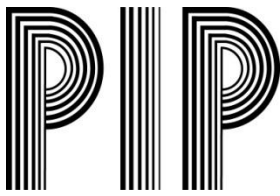
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Data Forms

ELTFT01-R – Inspection and Testing Plan
ELTFT01-T1 – Inspection and Testing Form
for Low and Medium Voltage Switchgear
Line-ups
ELTFT01-T2 – Inspection and Testing Form
for Low-Voltage Power Circuit Breakers

ELTFT01-T3 – Inspection and Testing Form
for Medium-Voltage Circuit Breakers
ELTFT01-T4 – Inspection and Testing Form
for Medium-Voltage Metal Enclosed Air
Switches
ELTFT01-T5 – Inspection and Testing Form
for Bus Duct
ELTFT01-T6 – Inspection and Testing Form
for Low-Voltage MCC Line-ups and
Switchracks
ELTFT01-T7 – Inspection and Testing Form
for Low-Voltage Motor Starters, Circuit
Breakers and Switches
ELTFT01-T8 – Inspection and Testing Form
for Low-Voltage Adjustable Speed
Drives
ELTFT01-T9 – Inspection and Testing Form
for Medium-Voltage MCC Line-up
ELTFT01-T10 – Inspection and Testing
Form for Medium-Voltage Motor Starter
ELTFT01-T11 – Inspection and Testing
Form for Liquid-Immersed Power
Transformers
ELTFT01-T12 – Inspection and Testing
Form for Low-Voltage Cable and Wire
ELTFT01-T13 – Inspection and Testing
Form for Shielded Power Cable
(5-46 kV)

ELTFT01-T14 – Inspection and Testing
Form for Low-Voltage Induction Motors

ELTFT01-T15 – Inspection and Testing
Form for Medium-Voltage Motors,
Induction 5000 HP and Below

ELTFT01-T16 – Inspection and Testing
Form for Low-Voltage Panelboards and
Associated Transformers

ELTFT01-T17 – Inspection and Testing
Form for Uninterruptible Power Supply
(UPS)

ELTFT01-T18 – Inspection and Testing
Form for Automatic Transfer Switch
(ATS)

ELTFT01-T19 – Inspection and Testing
Form for Battery Charger

ELTFT01-T20 – Inspection and Testing
Form for Batteries and Battery Rack

ELTFT01-T21 – Inspection and Testing
Form for Current Transformers (Single
Ratio)

ELTFT01-T22 – Inspection and Testing
Form for Current Transformers (Multi-
Ratio)

ELTFT01-T23 – Inspection and Testing
Form for Voltage (Potential)
Transformers

ELTFT01-T24 – Inspection and Testing
Form for Dielectric Absorption

ELTFT01-T25 – Inspection and Testing
Form for DC High-Potential

ELTFT01-T26 – Inspection and Testing
Form for Relay Information and
Inspection

ELTFT01-T27 – Inspection and Testing
Form for High Resistance Grounding
Equipment

ELTFT01-T28 – Inspection and Testing
Form for Grounding Systems

ELTFT01-T29 – Inspection and Testing
Form for Underground Conduit Systems
(Duct Banks)

ELTFT01-T30 – Inspection and Testing
Form for Electrical Manholes

ELTFT01-T31 – Inspection and Testing
Form for Aboveground Conduit Systems

ELTFT01-T32 – Inspection and Testing
Form for Cable Tray Systems

ELTFT01-T33 – Inspection and Testing
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ELTFT01-T34 – Inspection and Testing Form
for Low-Voltage Metal Enclosed Air
Switches

ELTFT01-T35 – Inspection and Testing Form
for Low Resistance Grounding Equipment

1. Introduction

1.1 Purpose

This Practice provides the minimum requirements for field inspection and testing of new, installed electrical equipment and facilities.

1.2 Scope

This Practice describes the inspection and testing procedures for new electrical equipment and systems after installation. This Practice provides minimum acceptable values for the testing results and forms for recording inspection and test values.

Certain specialty equipment and packaged equipment are application specific and are not covered by this Practice.

Some inspections and tests may require an independent testing organization or an equipment manufacturer's representative. This Practice does not specify which tests require a third party or designate responsibility for obtaining and coordinating these third parties. These tests, if required, shall be defined in the project scope.

This Practice does not cover full compliance inspections required by various codes and regulations but does provide assurance of equipment integrity and compliance with project-specific documents.

2. References

Applicable parts of the following industry codes and standards shall be considered an integral part of this Practice. The edition in effect on the date of contract award shall be used, except as otherwise noted. Short titles are used herein where appropriate.

Industry Codes and Standards

- International Electrical Testing Association (NETA)
 - ANSI/NETA ATS - *Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems (NETA ATS)*
 - ANSI/NETA ETT - *Standard for Certification of Electrical Testing Personnel*

3. Definitions

owner: The party who owns the facility where the inspections and testing services will be performed

purchaser: The party who awards the contract to the supplier. The purchaser may be the owner or the owner's authorized agent.

test: Application of external power source or test equipment to prove the integrity of the unit or system; may require witnessing by owner's authorized representative as indicated on the Inspection and Testing Plan *PIP ELTFT01-R*

tester: The party responsible for performing the check items, inspection items, testing requirements, and function test items as covered herein for the installed electrical equipment and electrical facilities as defined in the project scope

4. Requirements

4.1 General

- 4.1.1 Testing and inspection shall comply with the provisions of this Practice, *ANSI/NETA ATS*, and the equipment manufacturer's instructions. Tests that are necessary to retain the manufacturer's warranty will be conducted in accordance with instructions from the manufacturer. Conflicts between these documents shall be submitted in writing to the Owner's authorized representative for resolution.
- 4.1.2 Test Plan *PIP ELTFT01-R* is provided to develop an inspection and testing plan for electrical equipment and facilities. The plan provides a means to define a scope of work for inspection and testing as well as define witness requirements. Check boxes are provided to select inspection, test and witness for a particular inspection and/or test. Check box definitions are as follows:
 - a. An 'STD' box is a PIP recognized standard inspection and/or test.
 - b. An 'OPT' box is a PIP recognized optional inspection and/or test.
 - c. A 'WITNESS' box is to be selected if purchaser wants to witness a test.
- 4.1.3 Tester shall perform all inspections, measurements, and tests as indicated on purchaser's Inspection and Testing Plan *PIP ELTFT01-R* and in accordance with the Inspection and Testing Forms, *PIP ELTFT01-T* series. Supplemental information may be found in *ANSI/NETA ATS*.
- 4.1.4 Tester shall comply with all federal, state, and local regulations and codes as well as with site-specific safety procedures and requirements.
- 4.1.5 Before starting any inspection and testing, the Purchaser or authorized representative and the Tester must agree on the electrical inspection and testing procedures.
- 4.1.6 Tester shall confirm that all check items, inspection items, and testing are performed. All test forms shall be signed by Tester and Owner's Representative before notifying the owner that the equipment is ready for operation.
- 4.1.7 Tester shall be responsible for arranging and conducting the testing in accordance with the approved project schedule.
- 4.1.8 Inspection, testing, and function test items shall be witnessed by an Owner's authorized representative unless specifically waived in writing. Tester shall give sufficient notice before any witnessed test.

4.2 Specialty Testing

- 4.2.1 For this Practice, the intent is that specialty testing such as Doble testing and relay calibration are to be carried out by an independent testing organization (ITO).
- 4.2.2 Specialty test forms for these tests are not provided by this Practice. Refer to *ANSI/NETA ATS* and ITO test forms.