

Nebraska Standards Laboratory NESOP No. 5

Laboratory Customer and FSCP Staff Field Standard / Equipment Pre-Calibration Procedure

1. Introduction

- 1.1. This procedure is to provide the NSL's customers and FSCP staff with the requirement that must be met before the NSL will accept artifacts for calibration work

2. Methodology

- 2.1 The laboratory handles, prepares and stores artifacts from both customers and FSCP field staff. Many of these artifacts come in contact with a variety of contaminants. These include chemicals, animal wastes, fuel and hazardous materials. It is the policy of the NSL that a clean environment be maintained within the laboratory. Proper preparation on artifacts is required to help manage this environment.

3. Responsibility and Authority

- 3.1 Standards laboratory responsibility and authority.

- 3.1.1 Trained metrology staff or trained designee will receive artifacts to be tested in the laboratory.
- 3.1.2 Trained metrology staff or trained designee will evaluate all incoming artifacts to determine if they are suitable and properly prepared to be brought into the Lab.
- 3.1.3 The laboratory staff is **not** responsible for the cleaning, painting or preparing of any artifacts that are scheduled for calibration.
- 3.1.4 The Laboratory manager reserves the right to reject and refuse services to all customers for artifacts that are determined not meeting the requirement in NEWAML-80 (NESOP-5).

- 3.2 Client responsibility and authority.

- 3.2.1 The laboratory client is responsible to make sure that all any artifacts, **regardless of ownership**, meet the requirements set forth in NEWAML-80 (NESOP-5).

- 3.3 FSCP staff responsibility and authority.

- 3.3.1 The FSCP staff is responsible for making sure that all State of Nebraska owned artifacts and/or related field equipment used in the scope of their normal respective duties, meet the requirements set forth in NEWAML-80 (SOP-5).

4. Procedures for Preparation of Artifacts Prior to Entry into the NSL

- 4.1. Mass Artifacts.

- 4.1.1 All mass artifacts are required to meet the material and design requirements set forth in NIST HB's 105-1, 150-8 and ASTM E617 (most current editions).

- 4.1.2 Cast iron artifacts;

- 4.1.2.1. All cast iron artifacts will be cleaned so that all lose paint and no foreign material is present on any surfaces especially the underside of the artifacts.

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4.1.2.1.1. **Do not sandblast or use harsh abrasives to clean the artifacts. This may alter the artifact in such a way that calibration time may be extended or not permitted due un-repairable damage to the artifact.**

4.1.2.2. If pressurized water is used, take care not to focus water stream on the sealing/adjustment area of the artifact. Doing so may result in extra time in the lab to let the artifact “dry out”.

4.1.2.3. **All** surfaces shall be painted with a **light** coat of **silver or aluminum colored paint** for avoirdupois (lb) and **gold** for metric (kg) so that no bare metal surfaces are visible. This includes the bottom of the artifact. Do not use paint that has a paint/primer mix or colored battleship grey.

4.1.3 Stainless steel artifacts;

4.1.3.1 All stainless-steel artifacts shall be cleaned in such a way that no dirt, oil, or other contaminants are present on the artifact.

4.1.3.2 NIST Class-F and ASTM 6 artifacts may be cleaned with Windex or simple green.

4.1.3.3 Highly polished artifacts are to be cleaned with **distilled water only**.

4.1.4 Weight kit cases;

4.1.4.1 All weight kit cases shall be presented clean both on the outside and inside.

4.1.4.2 Weight cases are being in good condition with all hinges and locks operating properly and protecting the artifacts in a reasonable manner.

4.1.5 Weight carts;

4.1.5.1 All weight carts shall be presented in clean and free of contaminants that can adhere to the main body of the cart and its wheels.

4.1.5.2 Weight carts shall not have any hydraulic leaks of any kind and will be required to be repaired prior to calibration.

4.1.5.3 All fluid levels are to be at proper operating conditions prior to calibration.

4.1.5.4 All identification tags are to be attached and intact.

4.1.5.5 All specialized lifting devices shall be left with the cart if deemed needed by the Laboratory staff.

4.2 Volumetric Artifacts.

4.2.1 All volumetric artifacts are required to meet the requirements set forth in NIST HB 105-3 and 105-4 (most current editions).

4.2.2 Test Measures, Stainless Steel Provers and LPG Provers;

4.2.2.1 Test Measures.

4.2.2.1.1 All test measures, i.e. 5 gallon, shall be cleaned and dried in such a manner that no fuel, chemical or other contaminants are present **on and inside** of the test measure. It is recommended that a mild detergent is used and not a solvent based chemical to clean the item.

4.2.2.1.2 All sight gauges, scale plates and identification plates shall be intact and readable.

4.2.2.1.3 All mild steel test measures shall be painted Red in color.

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4.2.2.2 Stainless Steel Provers.

- 4.2.2.2.1 Provers are shall be cleaned in such a manner that no fuel, chemical or other contaminants are present on and inside of the prover. It is recommended that a mild detergent is used and not a solvent based chemical to clean the item.
- 4.2.2.2.2 All drain valves shall be in working condition
- 4.2.2.2.3 All sight gauges and scale plates and identification plates shall be intact and readable.
- 4.2.2.2.4 All leveling bubbles and means to level shall be intact and operational.
- 4.2.2.2.5 All prover trailers entering the lab shall be washed and cleaned of all fuel, oil, or other contaminants prior to entering the facility.

4.2.2.3 LPG Provers.

- 4.2.2.3.1 All LPG provers shall be emptied and depressurized before entering the Lab.
- 4.2.2.3.2 Pop off valve shall be removed by the **customer**.
- 4.2.2.3.3 All sight gauges and scale plates shall be intact and readable.
- 4.2.2.3.4 All leveling bubbles and leveling means shall be intact and operational.
- 4.2.2.3.5 All trailers entering the lab shall be washed and cleaned of all foreign material before entering the facility.

4.3 Other artifacts not meeting the requirements set forth in NIST HB 150 series and ASTM E617.

- 4.3.1 All artifacts shall be evaluated to determine if the lab can properly perform a measurable and traceable calibration on such artifacts.
- 4.3.2 Such artifacts **may not** be eligible for an official certificate of calibration.

5.0 FSCP vehicles, trailers, and associated equipment.

- 5.1 All vehicles and trailers and associated equipment, will be evaluated by the lab staff for conditions of and/or signs of misuse. NEWAML-81 "Vehicle, Trailer and associated Equipment Condition Form" will be used and sent to the appropriate supervisor and the Director of FSCP.