Introduction

The Scope of Accreditation is a formal document issued by L-A-B to accredited laboratories. The Scope is the expression of the calibration parameters, ranges, and an uncertainty for which accreditation has been granted.

The laboratory prepares the “Proposed Scope of Accreditation” as a part of its initial application and renewal application. The Proposed Scope is a working document and is not an indication of accreditation status. Therefore a proposed scope shall not be shared with any entity other than L-A-B or its authorized representatives.

The Proposed Scope of Accreditation, whether it is initial or renewal, shall not display any signature that would lead a reader to believe that the proposed scope has been approved by L-A-B. The signatures that appear on the proposed scope are to verify, at the time of the site assessment, that the assessor and client agree to the proposed scope and that the document will be sent to L-A-B for review.

Use of the Proposed Scope of Accreditation or alteration of the final Scope of Accreditation for the purpose of soliciting business may lead to suspension or termination of accreditation.

When accreditation has been granted, L-A-B will issue an approved final Scope of Accreditation. L-A-B is the final authority on the content of the Scope of Accreditation. This is an official document, which must be provided, in full, to any entity asking for a display of the laboratory's accredited scope. Per L-A-B SOP 306 a laboratory whose accreditation is suspended or terminated shall not use or display the Proposed Scope or the final Scope of Accreditation or the L-A-B name or logo in any way, including but not limited to business solicitations, advertising, correspondence, or web sites.

Purpose

The purpose of these guidelines is to assist L-A-B accreditation applicants (initial and renewal) and L-A-B assessors when filling out L-A-B Form 28 series (“Proposed Scope of Accreditation”). The applicant must fill out this form correctly and completely. It is the responsibility of the applicant to submit a properly completed client proposed scope of accreditation to L-A-B. Failure to submit a properly completed proposed scope of accreditation will delay the process for scheduling and granting accreditation. A properly completed form will assist L-A-B in developing the final Scope of Accreditation for the laboratory. The applicant and the assessors will agree to and sign off on a hard copy of the proposed scope at the time of the assessment. The lead assessor must submit the “Proposed Scope” in an electronic version to L-A-B Operations with the technical packet after the assessment. L-A-B staff will modify or edit the scope as appropriate after reviewing the technical packet submitted by the assessor.

Details

A separate line entry is needed for each parameter/discipline and/or each range listed for that parameter. An example would be for a parameter/discipline that has four ranges; each line would define each range listed. See DC Volts example table at the end of these instructions for additional insight.
Instruction Guidelines for Proposed Scopes of Accreditation – Calibration

Calibration Field Parameters with Related Disciplines and Parameter Examples

**Acoustics, Ultrasound, and Vibration**
- **Acceleration**: Accelerometers
- **Vibration**: Sine Tables, Vibration Meters
- **Acoustic Impedance**: Sound Attenuators
- **Sound Pressure Level**: Sound Level Meters, Noise Dosimeters

**Amount of Substance**
- **Chemical**: gas dividers, certified gasses
- **Gas**: Combustion and Fusion
- **Particulate**: smoke meters, optical emission spectroscopy
- **pH/Conductivity**: pH/ORP meters & transmitters, conductivity/TDS meters & transmitters using aqueous solutions
- **Refractive Index**: Refractometers

**Electrical**
- **Capacitance**: Capacitance Source, Capacitance Measure, etc.
- **Current**: AC Current Source, AC Current Measure, DC Current Source, DC Current Measure, etc.
- **Impedance**: Impedance Meters, RLC Bridges, etc.
- **Inductance**: Inductance Source, Inductance Measure, etc.
- **Magnetic Properties**: Magnetic Fields Measure, Magnetic Fields Source, etc.
- **Power**: AC/DC Power Meters
- **RF Attenuation**: RF Attenuators, RF Attenuation Meters, etc.
- **RF Power**: RF Power Meters, RF Power Sensors
- **Voltage**: Voltage Sources, Voltage Meters, pH Meters (Millivolt Simulation) Thermocouple Millivolt Sources, Thermocouple Temperature Meters, Process Calibrators, etc.

**Ionizing Radiation**
- **Dosimetry**: Absorbed Dose/Rate, Air Kerma Rate, Dose Equivalent, etc.
- **Radioactivity**: Activity, Surface Emission, Emission Rate, Efficiency, etc.
- **Neutron Measurements**: Emission, Fluence, Personal Dose, Absorbed Dose, etc.

**Length – Dimensional Metrology**
- **Artifacts and Standards 1D**: External/Internal Cylinders, Go No-Go Gages, Gage Blocks, lasers, Line Scales, Length Bars, Surface Plates, Sine Plates, Spheres, Cones, Stage Micrometers, Brinell Microscopes, etc.
- **Artifacts and Standards 2D**: Angle Blocks, Autocollimator, Cones, Cylindrical Squares, Granite Squares, Obelisks, Index Tables, Optical Polygons, Optical Squares, Combination Sine Plates, Roughness Standards, Threaded Devices, Gears, etc.
- **Artifacts and Standards 3D**: Ball Plates, Grid Plates, Fixtures, Functional Gages, etc.
- **Hand Tools and Precision Gages 1D**: Calipers, Micrometers, Height Gages, Indicators, Rulers, 2 Point Bore Gages, Laser Micrometers, Protractors (using optical comparator) etc.
- **Hand Tools and Precision Gages 2D**: 3 Point Bore Gages, Bevel Protractors, Clinometers, Levels, 2-Axis Linear Measuring Machines, 2-Axis Measuring Microscopes, Optical Comparators, Profilmeters, etc.
- **Hand Tools and Precision Gages 3D**: CMM’s, 3-Axis Vision Systems, Laser Trackers, etc.
- **Other**: Groove Depth Standards, Pitch Masters, Tip Condition, etc.
Instruction Guidelines for Proposed Scopes of Accreditation – Calibration

Mass
- **Density**: Density Scales, Hydrometers, etc.
- **Flow**: flow rate, mass & volumetric flow
- **Force**: dynamometers, force meters, load cells, proving rings, spring testers, tensile testers, wire tension meters, strain gages etc.
- **Mass Artifacts**: Mass Artifacts, Weights
- **Pressure/ Low Vacuum**: Pressure Gages/Transducers, Vacuum Gages/Transducers to 3kPa (29.5 inHg) etc.
- **Medium/ High Vacuum**: McLeod Gages, Thermal Vacuum Sensors, Capacitive Vacuum Sensors (beyond 3kPa), etc.
- **Scales and Balances**: Balances, Bench Scales, Floor Scales, Truck Scales, Tanks and Hoppers, Rail Scales, etc.
- **Torque**: Torque Analyzers, Torque Watches, Torque Wrenches, Torque Multipliers, Torque Cells etc.
- **Viscosity**: dynamic & kinematic viscometers, efflux cups, capillary viscometers
- **Volume**: Pipettes, Volumetric Flasks

Photometry and Radiometry
- **Photometric Sources**: Luminous Intensity, Illuminance Responsivity, Luminous Flux, Illuminance, Luminance, Luminance Responsivity, Luminance Exposure, etc.
- **Properties of Detectors**: Responsivity (spectral power, spectral irradiance, spectral radiance, laser power, solar power, solar irradiance, blackbody total irradiance, UV broadband irradiance, UV broadband radiant exposure)
- **Spectrally Emission Properties of Sources**: Irradiance (spectral), Radiance (spectral), Power (spectral total radiant), Radiant Intensity (spectral), etc.
- **Spectrally-Integrated Measurements for Sources and Detectors**: Distribution Temperature, Correlated Color Temperature, Correlated Color Temperature Response, Color Emitted, Chromaticity Response, Color Rendering (Ra), Total Radiance, etc.
- **Properties of Materials**: Transmittance, Absorbance, Reflectance, Emissivity, Emittance, BDRF, Reflectance, Radiance, Luminous Radiance Factor, Wavelength, etc.
- **Color and Spectrally-Integrated Measurements of Materials**: Surface Color (x,y,Y) (L*a*b), Transmitted Color (x,y,Y) (L*a*b), Retroreflectance, Gloss, Haze, Luminance Factor, Luminance Coefficient, Whiteness, etc.

Thermodynamic
- **Infrared (IR) Devices**: Infrared Guns, Infrared Sensors, IR Black Bodies, etc.
- **Humidity**: hygrometers sensors, aqueous salt solutions, Dewpoint meters, Psychrometers, chilled-mirror hygrometers, humidity chambers, etc.
- **Thermometers and Probes**: Thermocouples, Thermistors, Resistance Temperature Detectors (RTD), Platinum Resistance Thermometers (PRT, SPRT), Bi-metallic, vapor-filled, and Liquid in Glass Thermometers, etc.
- **Thermodynamic Sources**: temperature chambers, Drywells, Temperature Baths, Fixed Point Cells, etc.

Time and Frequency
- **Time Scale Difference**: Clocks
- **Frequency/ Period**: Electronic Counters, Frequency Meters, Signal Generators, Stopwatches, Timers
- **Modulation**: AM/FM/PM Modulation Meters
- **Oscilloscopes**: Horizontal and Vertical Deflection, bandwidth, rise time, etc
Instruction Guidelines for Proposed Scopes of Accreditation – Calibration

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and remarks.

**Parameter**

When filling out this field, the entry needs to represent the measurement, which is being provided by the laboratory. For Example, Accelerometry, AC Volts, DC Volts, AC Current, Dimensional - Calibration/Inspection, Force, Flow, Hardness, Humidity, Mass, Optical, Pressure, Vacuum, Surface Texture, Thermal, Time & Frequency, Vibration, Volume, Torque. Range modifiers, such as a frequency range for AC Voltage may be listed in the Parameter column.

**Range**

Provide the lower and upper bounds for the range of the parameter. Care must be taken when zero is the lower bound and the uncertainty is given as a function of the range; in these cases the function must be in a form such that the uncertainty at zero is itself not equal to zero. For example, if the uncertainty is given as “10 µV/V”, then this implies that at zero volts the uncertainty is zero volts since 10 µV/V of zero volts is zero. In these cases, a constant, or “floor spec” is included with the proportional part, e.g., “10 µV/V + 1 µV”. The capabilities of the laboratory need to be clearly expressed in an easy to understand format.

The units which define the measurement must comply with acceptable engineering units, please refer to NIST SP 811 (c.f. “NIST SP 811 Checklist” for a handy reference), NIST SP 330 or IEEE/ASTM SI-10 for further definition of units. Assessors and L-A-B staff will treat the presentation of improper or improperly expressed units of measure on a client proposed scope as a noncompliance and will be required to issue a non-conformance. It is the responsibility of the laboratory to insure that proper presentation of in expressed units.

Range modifiers, such as a frequency range for an AC Voltage or Current range are typically noted in the Range column and must always accompanied the defined range of the measurand; e.g. (1 to 10) V followed by (20 to 100) Hz, alternatively, the frequency modifier in this case could be listed in the Parameter column as AC Voltage, (20 to 100) Hz.

The parameters should be grouped together to allow a smooth flow of the discipline(s) being defined.

**Expanded Uncertainty of Measurement**

L-A-B grants accreditation on a laboratory’s capability to make a measurement. This capability is defined in the “Scope of Accreditation” and that capability is further defined by the Calibration and Measurement Capability (CMC) associated with that measurement capability. The uncertainty of measurement, expressed as an expanded uncertainty in the proposed scope, is defined as the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation. Uncertainty of measurement is expressed to, at most, two significant figures (digits).

The CMC displayed on the Client Proposed Scope of Accreditation must be achievable by the laboratory when calibrating a nearly ideal unit under test. They shall be supported or confirmed by experimental evidence. Note: The uncertainty budgets of the organization must support the CMC claimed by the applicant per L-A-B Policy 001.1. CMCs are expressed to, at most, two significant figures (digits).

**Remarks**

The remarks entry is to be used to define any useful information in respect to the measurement being provided by the laboratory. For example, type of equipment used in the calibration (not the manufacturer, type) and/or other relevant information useful for understanding the measurement capability of the laboratory. Detailed and specific notes should be added as comments under the table with footnote listed in the table if remarks column is not large enough to fully define any limitations or other noteworthy considerations associated with the parameter.
Instruction Guidelines for Proposed Scopes of Accreditation – Calibration

Format
The format of the example table must be followed. This includes font (Times New Roman), font size (11), column order and column headings, and placement of notes. Page number, total number of pages, and the date of the draft must be displayed on each page.

NIST SP 811 Checklist

1. Only units of the SI and those units recognized for use with the SI are used to express the values of quantities. Equivalent values in other units are given in parentheses following values in acceptable units only when deemed necessary for the intended audience.

2. Abbreviations such as sec (for either s or second), cc (for either cm³ or cubic centimeter), or mps (for either m/s or meter per second), are avoided and only standard unit symbols, SI prefix symbols, unit names, and SI prefixes are used.

3. The combinations of letters “ppm,” “ppb,” and “ppt,” and the terms part per million, part per billion, and part per trillion, and the like, are not used to express the values of quantities. The following forms, for example, are used instead: 2.1 µL/L or 2.1 × 10⁻⁶ V, 4.3 nm/m or 4.3 × 10⁻⁹ l, 7 ps/s or 7 × 10⁻¹² t, where V, l, and t are, respectively, the quantity symbols for volume, length and time.

4. Unit symbols (or names) are not modified by the addition of subscripts or other information. The following forms, for example, are used instead.

\[ V_{\text{max}} = 10 \text{ V} \quad \text{but not:} \quad V = 10 \text{ V}_{\text{max}} \]

A mass fraction of 10 % \text{ but not: } 10 \% (m/m) or 10 \% (by weight).

5. Statements such as “the length \( l_1 \) exceeds the length \( l_2 \) by 0.2 %” are avoided because it is recognized that the symbol % represents simply the number 0.01. Instead, forms such as “\( l_1 = l_2 (1 + 0.2 \%) \)” or “\( \Delta = 0.2 \% \)” are used, where \( \Delta \) is defined by the relation \( \Delta = (l_1 - l_2)/l_2 \).

6. Information is not mixed with unit symbols (or names). For example, the form “the water content is 20 mL/kg” is used and not “20 mL H₂O/kg” or “20 mL of water/kg.”

7. It is clear to which unit symbol a numerical value belongs and which mathematical operation applies to the value of a quantity because forms such as the following are used:

| 35 cm × 48 cm                             | but not: | 35 × 48 cm                             |
| 1 MHz to 10 MHz or (1 to 10) MHz          | but not: | 1 MHz – 10 MHz or 1 to 10 MHz          |
| 20 °C to 30 °C or (20 to 30) °C            | but not: | 20 °C – 30 °C or 20 to 30 °C           |
| 12 g ± 2 g or (12 ± 2) g                   | but not: | 12 ± 2 g                               |
| 70 % ± 5 % or (70 ± 5) %                   | but not: | 70 ± 5 %                               |
| 24 × (1 ± 10 %) V                         | but not: | 24 V ± 10 % (one cannot add 240 V and 10 %) |

8. Unit symbols and unit names are not mixed and mathematical operations are not applied to unit names. For example, only forms such as kg/m³, kg·m⁻³, or kilogram per cubic meter are used and not forms such as kilogram/m³, kg/cubic meter, kilogram/cubic meter, kg per m³, or kilogram per meter³.

9. Values of quantities are expressed in acceptable units using Arabic numerals and the symbols for the units.
Instruction Guidelines for Proposed Scopes of Accreditation – Calibration

\[ m = 5 \text{ kg} \quad \text{but not:} \quad m = \text{five kilograms or } m = \text{five kg} \]

the current was 15 A \quad \text{but not:} \quad \text{the current was 15 amperes}

10. There is a space between numerical value and unit symbol, even when the value is used in an adjectival sense, except in the case of superscript units for plane angle.

\[ \text{a 25 kg sphere} \quad \text{but not:} \quad \text{a 25-kg sphere} \]

\[ \text{an angle of } 2^\circ 3' 4" \quad \text{but not:} \quad \text{an angle of } 2 \, ^\circ \, 3' \, 4" \]

If the spelled-out name of a unit is used, the normal rules of English are applied: “a roll of 35-millimeter film.”

11. The digits of numerical values having more than four digits on either side of the decimal marker are separated into groups of three using a thin, fixed space counting from both the left and right of the decimal marker. For example, 15 739.012 53 is highly preferred to 15 739.012 53. Commas are not used to separate digits into groups of three.

12. Equations between quantities are used in preference to equations between numerical values, and symbols representing numerical values are different from symbols representing the corresponding quantities. When a numerical-value equation is used, it is properly written and the corresponding quantity equation is given where possible.

13. Standardized quantity symbols such as those given in ISO 31 Parts 0 – 13 are used, for example \( R \) for resistance and \( A_r \) for relative atomic mass, and not words, acronyms, or ad hoc groups of letters. Similarly, standardized mathematical signs and symbols such as are given in ISO 31–11 are used, for example, “\( \tan x \)” and not “tg \( x \).” More specifically, the base of “\( \log \)” in equations is specified when required by writing \( \log_a x \) (meaning log to the base \( a \) of \( x \)), \( \log_2 x \) (meaning log2 \( x \)), \( \ln x \) (meaning loge \( x \)), or \( \log_{10} x \) (meaning log10 \( x \)).

14. Unit symbols are in roman type, and quantity symbols are in italic type with superscripts and subscripts in roman or italic type as appropriate.

15. When the word “weight” is used, the intended meaning is clear. (In science and technology, weight is a force, for which the SI unit is the Newton; in commerce and everyday use, weight is usually a synonym for mass, for which the SI unit is the kilogram.)

16. A quotient quantity, for example, mass density, is written “mass divided by volume” rather than “mass per unit volume.”

17. An object and any quantity describing the object are distinguished. (Note the difference between “surface” and “area,” “body” and “mass,” “resistor” and “resistance,” “coil” and “inductance.”

18. The symbol “\( ^\circ \)” for degrees may be used for angular or for temperature values.

19. The obsolete term normality and the symbol \( N \), and the obsolete term molarity and the symbol \( M \), are not used, but the quantity amount-of-substance concentration of \( B \) (more commonly called concentration of \( B \)), and its symbol \( c_B \) and SI unit \( \text{mol/m}^3 \) (or a related acceptable unit), are used instead. Similarly, the obsolete term molal and the symbol \( m \) are not used, but the quantity molality of solute \( B \), and its symbols \( b_B \) or \( m_B \) and SI unit \( \text{mol/kg} \) (or a related SI unit), are used instead.
### Example Scope of Accreditation

The following table is an example of how a laboratory would fill out the table in a client proposed scope of accreditation. The information listed in the table is only an example. The information required by the applicant needs to fit the services provided by the laboratory.

The “Notes” at the bottom of the table are example notes only and the notes annotated in the proposed scope must be applicable to the proposed scope.

#### Electrical - Voltage

<table>
<thead>
<tr>
<th>Calibration Parameter/Equipment</th>
<th>Range</th>
<th>Expanded Uncertainty of Measurement (+/-)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Volts</td>
<td>100 μV to 100 mV</td>
<td>70 μV/V + 30 μV</td>
<td>Comparisons performed with a</td>
</tr>
<tr>
<td></td>
<td>100 V to 1,000 kV</td>
<td>90 μV/V + 30 mV</td>
<td>Multifunction Calibrator and</td>
</tr>
<tr>
<td></td>
<td>100 V to 1,100 kV</td>
<td>67 μV/V + 0.19 V</td>
<td>DMM</td>
</tr>
<tr>
<td>AC Volts</td>
<td>(1 to 100) V</td>
<td>5.9 mV/V</td>
<td>Comparisons performed with a</td>
</tr>
<tr>
<td></td>
<td>(20 to 100) Hz</td>
<td>3.2 mV/V</td>
<td>Multifunction Calibrator and</td>
</tr>
<tr>
<td></td>
<td>(0.1 to 1) kHz</td>
<td>4.8 mV/V</td>
<td>DMM</td>
</tr>
<tr>
<td></td>
<td>(1 to 10) kHz</td>
<td>7.1 mV/V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(10 to 100) kHz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Length - Artifacts and Standards 1D

<table>
<thead>
<tr>
<th>Calibration Parameter/Equipment</th>
<th>Range</th>
<th>Expanded Uncertainty of Measurement (+/-)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gage Blocks</td>
<td>Up to 4 in</td>
<td>(3.1 + 1.6L) μin</td>
<td>Comparison made with Gage Block Comparator and Gage Blocks</td>
</tr>
</tbody>
</table>

#### Length - Artifacts and Standards 2D

<table>
<thead>
<tr>
<th>Calibration Parameter/Equipment</th>
<th>Range</th>
<th>Expanded Uncertainty of Measurement (+/-)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle Blocks</td>
<td>Up to 90º</td>
<td>11”</td>
<td>Gage Blocks, and Optical Flats used as standards</td>
</tr>
<tr>
<td>Thread Plugs</td>
<td>(4 to 80) tpi</td>
<td>(70 + 7L) μin</td>
<td>Thread Wires and ULM used as standards</td>
</tr>
<tr>
<td>Major Diameter</td>
<td>Up to 4 in</td>
<td>(64 + 3L) μin</td>
<td></td>
</tr>
<tr>
<td>Thread Rings</td>
<td>(0.625 to 4) in</td>
<td>(12 + 9L) μin</td>
<td>Thread Set Plug used as standard</td>
</tr>
</tbody>
</table>

#### Length - Hand Tools and Precision Gages 1D

<table>
<thead>
<tr>
<th>Calibration Parameter/Equipment</th>
<th>Range</th>
<th>Expanded Uncertainty of Measurement (+/-)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calipers¹</td>
<td>(0 to 6) in</td>
<td>(60 + 3L) μin</td>
<td>Gage Blocks used as standards</td>
</tr>
</tbody>
</table>
Instruction Guidelines for Proposed Scopes of Accreditation – Calibration

Length - Hand Tools and Precision Gages 3D

<table>
<thead>
<tr>
<th>Calibration Parameter/Equipment</th>
<th>Range</th>
<th>Expanded Uncertainty of Measurement (+/-)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinate Measuring Machine^1</td>
<td>(0 to 10) m</td>
<td>(3 + 2.4L) µm</td>
<td>Laser Interferometer used as standard</td>
</tr>
<tr>
<td>Linearity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mass – Hardness

<table>
<thead>
<tr>
<th>Calibration Parameter/Equipment</th>
<th>Range</th>
<th>Expanded Uncertainty of Measurement (+/-)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect Verification of Rockwell Hardness Testers^1</td>
<td>HRC</td>
<td>Low</td>
<td>0.32 HRC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle</td>
<td>0.36 HRC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>0.4 HRC</td>
</tr>
</tbody>
</table>

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and remarks. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 (k=2), corresponding to a confidence level of approximately 95%.

Notes:
1) This laboratory offers calibration services at the laboratory’s own facilities and at the client’s or other agreed upon facilities.

If you have any additional questions please contact the L-A-B Operations 260-637-2705.

Revision History

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Revised By</th>
<th>Brief Description of Revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 thru 8</td>
<td></td>
<td>Archived</td>
<td>Moved oscilloscope to Electricity and Magnetism and clarified thermodynamic disciplines, added Fluid Properties and Quantities, moved viscosity and flow to Fluid Properties and Quantities from Mass, moved pH and Conductivity to Fluid Properties and Quantities from Amount of Substance-Chemical, renamed Amount of Substance-Chemical to Amount of Substance, added Gas, Liquid and Particulate disciplines to Amount of Substance, added revision history block, Calibration and Measurement Capability is replacing the Best Measurement Capability per the international directive.</td>
</tr>
<tr>
<td>9</td>
<td>07/08/2009</td>
<td>Randy Long/ Ryan Fischer</td>
<td>Moved oscilloscope to Electricity and Magnetism and clarified thermodynamic disciplines, added Fluid Properties and Quantities, moved viscosity and flow to Fluid Properties and Quantities from Mass, moved pH and Conductivity to Fluid Properties and Quantities from Amount of Substance-Chemical, renamed Amount of Substance-Chemical to Amount of Substance, added Gas, Liquid and Particulate disciplines to Amount of Substance, added revision history block, Calibration and Measurement Capability is replacing the Best Measurement Capability per the international directive.</td>
</tr>
<tr>
<td>10</td>
<td>12/14/2010</td>
<td>Randy Long</td>
<td>Changes made in conjunction with Policy 002.1</td>
</tr>
<tr>
<td>11</td>
<td>3/4/11</td>
<td>Randy Long</td>
<td>Footnote change and table formatting</td>
</tr>
<tr>
<td>12</td>
<td>3/1/14</td>
<td>Ryan Fischer Randy Long</td>
<td>CMC is the measurement parameter, measurement range, expanded uncertainty of measurement and remarks. Changed name of column that host the uncertainty to “Expanded Uncertainty of Measurement”. Harmonized with ILAC P14. Changed the L-A-B Logo</td>
</tr>
<tr>
<td>13</td>
<td>9/22/14</td>
<td>Randy Long</td>
<td>Clarified language for range modifiers and the use of the “°” symbol.</td>
</tr>
</tbody>
</table>

Form 28.10 - Rev 13 – 9/22/14