



November 18, 2015

MEMORANDUM FOR: State Laboratory Metrologists and Laboratory Authorized Representatives

From: Georgia L. Harris, Laboratory Metrology Program
Office of Weights and Measures

Subjects: OWM Training Requirements

The OWM Recognition of laboratories follows requirements published in NIST Handbook 143, Program Handbook. Training requirements are in Section 5.2 and referenced in Table 2 (see Attachment 1). However, in 2011, OWM began offering updated training courses and eliminated courses that were on Table 2 as published in 2007. Updated training requirements have been posted on the OWM Laboratory Metrology website pages with other State Laboratory Program Resources and have been sent to all laboratories each year (<http://www.nist.gov/pml/wmd/labmetrology/lab-resources.cfm>) (see Attachment 2). However, some confusion has remained about who needs to comply with which requirements, how to evaluate compliance in the laboratory's Quality Management System, and how to ensure that job descriptions, hiring, probation, and promotion requirements are met.

Requirements for successful completion of training and Laboratory Auditing Program (LAP) problems are only *one* part of the OWM proficiency and competency evaluations. Additional evaluations may include, but are not limited to evaluation of any or all of the following: proficiency tests, quality of annual submission materials including quality and technical audits, on-site observations of calibrations, review of calibration certificates, and evidence of training implementation.

Please consider the following guidance in updating laboratory and personnel related documents. Note that staff *must* complete these requirements (and those noted above) for OWM to recognize them as an Approved Signatory for the laboratory.

1. Metrologists who successfully completed the Basic Metrology Seminar (2 weeks) and Intermediate Metrology Seminar (1 week) AND the corresponding LAP Problems will be considered to have successfully completed requirements for laboratory Recognition, including recognition for Mass Echelon II and Gravimetric Volume, Echelon I calibrations. LAP Problems for these courses must have been successfully completed no later than December 31, 2015.
2. After 2011, metrologists must successfully complete the following "core" courses and the Fundamentals of Metrology LAP Problems to achieve the same level of Recognition as the former Basic and Intermediate Metrology Seminars: Fundamentals of Metrology, Mass Metrology, and Volume Metrology. Fundamentals of Metrology LAP problems are due within one year of seminar completion or additional refresher training will be required.
3. Any metrologist who has completed the series of courses and associated LAP problems noted in items 1 or 2 must maintain proficiency through ongoing/regular work in the laboratory and through completion of applicable proficiency tests or additional refresher training will be required.
4. Metrologists must have additional records (i.e., evidence) for completing training in any area of the laboratory Scope that is outside the courses noted in items 1 and 2 above. This includes the following measurement areas: Advanced Mass, thermometry, stopwatches or other timing devices, length, LPG provers, small volume provers (compact displacement provers or closed loop provers), tuning forks, watt-hour meters, and so on. Advanced Mass LAP problems must be completed within two years of completing the seminar or additional refresher training will be required.
5. The Laboratory Administration Workshop is *strongly recommended* and may be considered a "core" requirement in the future, based on numerous recommendations and requests regarding its status.

When it is necessary to issue a complete new test report or calibration certificate, this shall be uniquely identified and shall contain a reference to the original that it replaces.

Table 2. Training requirements

Recognition Level	Training Required	For Whom	How Often
Minimum (for legal metrological activities)	Basic Laboratory Metrology Seminar (2 weeks) Basic LAP problems - acceptable completion	Usually all staff, at least one staff member	Once Initially Refresher recommended every 10 years Once
	Attendance at Regional Measurement Assurance Program meeting annually	At least one staff member	Annually
Calibration	All of the above, plus: Intermediate Laboratory Metrology Seminar (1 week) Intermediate LAP problems - acceptable completion	Usually all staff; at least one	Every 3 to 4 years unless attending RMAP annually
Advanced mass calibration	All of the above, plus: Advanced Mass Measurements Seminar Advanced LAP problems completed	At least one if working at this level	At least once; for updates as needed
Thermometry	Attendance at a NIST Precision Thermometry Seminar	At least one as needed	At least once; for updates as needed

NOTE: The Quality Manual Templates (NISTIR 5802 and NISTIR 7028) contain a form that can be used to document training and dates.

Table 2. Training requirements

Recognition Level	Training Required	For Whom	How Often
All Measurement Parameters	Regional Measurement Assurance Program (RMAP) Training	At least one staff member	Annually
Legal Metrology* Mass, Echelon III Volume, Echelon II	<ol style="list-style-type: none"> 1. Fundamentals of Metrology (1 week course) 2. Introduction and Orientation to Mass and Volume Procedures* 3. Fundamentals of Metrology, Laboratory Auditing Program (LAP) problems 4. Successful completion of proficiency testing 	Usually all staff, at least one staff member	Once Initially Refresher portions covered during Regional Measurement Assurance Program (RMAP) training
Mass Calibration Echelon III and II	<ol style="list-style-type: none"> 1. All of the above, plus: 2. Mass Seminar (2 week course) 3. Successful completion of proficiency testing for each area on the laboratory Scope 	Usually all staff, at least one staff member	Once Initially Refresher recommended every 10 years
Advanced Mass Calibration, Echelon I	<ol style="list-style-type: none"> 1. All of the above, plus: 2. Advanced Mass Seminar (1 week course) 3. Advanced Laboratory Auditing Program (LAP) problems 4. Successful completion of proficiency testing using weighing designs 5. Optional: Advanced Hands-On Mass Seminar (if available) 	At least one staff member	Once Initially Refresher recommended every 10 years
Volume Calibration, Echelon I and II	<ol style="list-style-type: none"> 1. Legal Metrology Requirements and Mass Calibration Requirements noted above 2. Volume Calibration Course (1 week) 3. Successful completion of proficiency testing for each area on the laboratory scope using gravimetric calibrations 	Usually all staff, at least one staff member	Once Initially Refresher recommended every 10 years
All measurement parameters in addition to mass and volume	<ol style="list-style-type: none"> 1. Documented evidence of training 2. Successful completion of proficiency testing in each area of the laboratory Scope 	At least one, as needed	At least once; Refresher as needed

*Legal Metrology procedures will be provided as orientation training by NIST for mass and volume procedures during other seminars, during on-site laboratory visits, via web-based training, or through verified on-the-job training by qualified staff who have successfully met all other requirements at the designated level to enable completion of proficiency testing and Fundamentals of Metrology, Laboratory Auditing Program (LAP) problems. Mass and Volume Calibration courses must be completed by at least one person in each laboratory. If there is only one staff member in the laboratory, the laboratory will only be fully Recognized when staff have successfully completed Mass Calibration and Volume Calibration courses.