# Advanced Mass Seminar Pre-work

Complete a laboratory internal audit) assessing your laboratory compliance to ISO/IEC 17025:2017, NISTIR 6969, and NISTIR 5672 for each of the following topics, related to advanced mass, use of weighing designs, precision mass calibrations. Provide tables/data as requested in this list.

1. Provide a high level overview of the laboratory goals upon completion of this course;
2. **Personnel, Staff Training (6.2):** Describe the staff training, education/experience related to mass calibrations;
3. **Facility, Accommodations (6.3):** Describe the environmental controls in the laboratory that will enable compliance to Echelon I limits as described in NISTIR 5672, SOP 5 and SOP 28, also describe the area where standards (internal and incoming) will be stored;
4. **Equipment (6.4):** Provide an inventory of the balances that will be used to perform advanced weighing designs and include the current standard deviation of the measurement process that designate the procedures currently in use (See NISTIR 5672);
5. **Standards, Calibration Program, and Traceability (6.5, Annex A):** Provide a current and proposed traceability hierarchy/inventory of standards and their calibration dates, calibration sources, and describe if changes are in process (See also GMP 11 and GMP 13 from NISTIR 6969);
6. **Procedures (7.2):** Describe the mass calibration and uncertainty calculation and reporting procedures in current use in the laboratory;
7. **Care and Handling of Standards and Items Submitted for Calibration (7.4):** Describe the process by which standards are accepted for calibration as well as current practices for cleaning, stabilization, and equilibration;
8. **Uncertainty (7.6):** Provide a summary of mass calibration uncertainties for the laboratory that include a description of each component that is currently incorporated as well as an uncertainty budget table and current Scope of recognition or Accreditation (See SOP 29 from NISTIR 6969 as well);
9. **Measurement Assurance (7.7):** Describe the current control charts and assessments that are in place in the laboratory for mass measurements and describe the proficiency tests that you have completed for precision mass calibrations (See NISTIR 6969, SOP 9 and SOP 30); and
10. **Calibration** **Certificates (7.8):** If your laboratory has already been working at this level, assess the calibration certificates issued for calibrations done at this level against the criteria in section 7.8 of 17025:2017 (See also SOP 1, NISTIR 6969 for a checklist). If your laboratory is not working at the Echelon I or weighing design level, assess a mass calibration certificate at the highest level of mass calibrations that is on your Scope.

## Expectations

It is expected that each item will be from a paragraph of a few sentences to a couple of pages of descriptions, with attached objective evidence as appropriate (See the attached optional template). The pre-work should be a narrative and not simply a collection of charts, tables, and graphs. Some of the tables and analysis may be combined in a spreadsheet, as long as suitable identification, document control, and references are made in the summary narrative.

## Assessment

This pre-work will be reviewed by instructors prior to the seminar and used in various activities during the seminar to prepare a Laboratory Action Plan for implementing, improving, and/or gaining recognition/accreditation of mass dissemination techniques in normal laboratory operations. The Laboratory Action Plan will be worked on during the seminar and is considered one of the course deliverables that will be turned in on the last day as partial evidence for successful completion. Keep track of the amount of time spent on this pre-work to be submitted with your work.

**Submit the pre-work to:** Georgia Harris (gharris@nist.gov) **by:** July 10, 2018.

(**Failure to submit the pre-work by this date will result in removal from the seminar roster.)**

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| Provide a high level overview of the Laboratory Goals upon completion of this course. Attach objective evidence as appropriate. Reference included files as appropriate.  |
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| Personnel, Staff Training (6.2): Describe the staff training, education/experience related to mass calibrations. Attach objective evidence as appropriate. Reference included files as appropriate.  |
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| Facility, Accommodations (6.3): Describe the environmental controls in the laboratory that will enable compliance to Echelon I limits as described in NISTIR 5672, SOP 5 and SOP 28, also describe the area where standards (internal and incoming) will be stored. Attach objective evidence as appropriate. Reference included files as appropriate.  |
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| Equipment (6.4): Provide an inventory of the balances that will be used to perform advanced weighing designs and include the current standard deviation of the measurement process that designate the procedures currently in use (See NISTIR 5672). Attach objective evidence as appropriate. Reference included files as appropriate.  |
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| Standards, Calibration Program, and Traceability (6.5, Annex A): Provide a current and proposed traceability hierarchy/inventory of standards and their calibration dates, calibration sources, and describe if changes are in process (See also GMP 11 and GMP 13 from NISTIR 6969). Attach objective evidence as appropriate. Reference included files as appropriate.  |
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| Procedures (7.2): Describe the mass calibration and uncertainty calculation and reporting procedures in current use in the laboratory. Attach objective evidence as appropriate. Reference included files as appropriate. |
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| Care and Handling of Standards and Items Submitted for Calibration (7.4): Describe the process by which standards are accepted for calibration as well as current practices for cleaning, stabilization, and equilibration. Attach objective evidence as appropriate. Reference included files as appropriate. |
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| Uncertainty (7.6): Provide a summary of mass calibration uncertainties for the laboratory that include a description of each component that is currently incorporated as well as an uncertainty budget table and current Scope of recognition or Accreditation (See SOP 29 from NISTIR 6969 as well). Attach objective evidence as appropriate. Reference included files as appropriate. |
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| Measurement Assurance (7.7): Describe the current control charts and assessments that are in place in the laboratory for mass measurements and describe the proficiency tests that you have completed for precision mass calibrations (See NISTIR 6969, SOP 9 and SOP 30). Attach objective evidence as appropriate. Reference included files as appropriate. |
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| Calibration Certificates (7.8): If your laboratory has already been working at this level, assess the calibration certificates issued for calibrations done at this level against the criteria in section 7.8 of 17025:2017 (See also SOP 1, NISTIR 6969 for a checklist). If your laboratory is not working at the Echelon I or weighing design level, assess a mass calibration certificate at the highest level of mass calibrations that is on your Scope. Attach objective evidence as appropriate. Reference included files as appropriate.  |
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## Action Plan Form

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| **Action Typea** |  | **Criteria** |  | **Priority** |  |
| **Finding** |  |
| **Root Cause** |  |
| **Proposed Action** |  |
| **Due Date** |  | **Task Assigned To** |  |
| **Completion Date** |  | **Task Verified By** |  |
| **Final Action** |  |
| **Action Effectiveness** |  |
| **Evaluation Date** |  | **Task Verified By** |  |

aAction Types:

* Corrective Actions (CA)
* Preventive Actions (PA)
* Improvement Actions (IA)
* Complaint (C)
* Internal Audit (A)

## Action Plan Log

(It may be useful or helpful to insert this table into each section and then to summarize all actions in one final table.)

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| Action # | Title | Description | Proposed Action | Assigned To | Goal Completion Date | Actual Completion Date |
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