

NIST IR 6969

Selected Laboratory and Measurement
Practices, and Procedures, to Support Basic
Mass Calibrations

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Foreword

This NIST IR of Selected Publications has been compiled as an interim update for a number of Good Laboratory Practices, Good Measurement Practices, Standard Operating Procedures, Statistical Techniques and Reference Tables. This interim publication will be used as a reference document for the CD-ROM Mass Metrology Course being prepared by the NIST Weights and Measures Division.

Many of these procedures are updates to procedures that were originally published in NBS Handbook 145, Handbook for the Quality Assurance of Metrological Measurements, in 1986, by Henry V. Oppermann and John K. Taylor. The updates have incorporated many of the requirements noted for procedures in ISO Guide 25, ANSI/NCSL Z 540-1-1994, and ISO/IEC 17025 laboratory quality systems. The major changes incorporate 1) uncertainty analyses that comply with current international methods and 2) measurement assurance techniques using check standards. No substantive changes were made to core measurement processes or equations, with the exception of SOP 2, Standard Operating Procedure for Applying Air Buoyancy Corrections. The CIPM 1981/91 equation for calculating air density has been added to SOP 2.

The following Practices and Procedures are new in this interim publication:

Good Measurement Practices for:

- Assignment and Adjustment of Calibration Intervals for Laboratory Standards (11)
- Standard Operating Procedure Selection (12)
- Ensuring Traceability (13)
- Selection and Use of Sensitivity Weights in Weighing Procedures (14)

Standard Operating Procedures for:

- Assignment of Uncertainty (29)
- Process Measurement Assurance Program (30)

The essential portions of SOP 29, Standard Operating Procedure for Assignment of Uncertainty were first published in 1994 for the NCSL Conference and Symposium and to assist State weights and measures laboratories comply with the ISO Guide to the Expression of Uncertainty in Measurements (1993).

Special thanks go to Val Miller and Jose Torres for the critical editorial reviews needed to complete this interim publication; to the Minnesota Metrology Laboratory for early drafts for GMP 11 and 13; and to Jerry Everhart for assistance with early drafts of SOP 30.

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