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**Calibration Procedure for
Measuring and Test Equipment**

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Table of Contents

PREFACE	3
1.0 PURPOSE	4
2.0 SCOPE	4
3.0 APPLICABLE DOCUMENTS	4
4.0 CALIBRATION PROCEDURE	4
4.1 APPLICABLE EQUIPMENT	4
4.2 COORDINATION OF CALIBRATION SERVICE	4
4.3 CALIBRATION SERVICE (CONTRACTOR)	4
4.4 CALIBRATION SERVICE REPORTS	5
4.5 CALIBRATION TRACKING	5
4.6 CALIBRATION CLASSIFICATION AND INDICATION	5
4.7 CALIBRATION EXTENSION	5
4.8 CALIBRATION OUT-OF-TOLERANCE	5

Preface

This document was taken from LSE Specification QAP-C-501 dated 10/01/90.

Revision A was the Initial Release of 99-02003 written by Brian Klatt 04/16/91 and checked by R. F. Goeke on 04/16/91.

Revision B issued a General Revision on 01/20/06.

Revision C issued a new format and general editorial update on 07/16/14.

Revision D is a major rewrite of the procedure.

1.0 Purpose

This procedure provides specific instructions for the verification, calibration, and maintenance of mechanical and electrical force-application, measuring, and test tools to ensure suitable function, precision, and accuracy. This process helps assure that critical products conform to specified requirements. Tools and systems performing assessment relevant to this process are collectively referred to as *equipment* in this procedure. Items and assemblies under evaluation relevant to this process are collectively referred to as *product* in this procedure.

2.0 Scope

This procedure applies to equipment used by MKI for the verification of space flight product acceptability. This procedure is applicable to flight products and may be used for non-flight products when a high level of assurance is desired.

3.0 Applicable Documents

Specification	Title
ANSI/NCSL Z540.1-1994 (R2002)	Calibration Laboratories & Measuring & Test Equipment – General
ANSI/NCSL Z540.3 (Current version)	Requirements for the Calibration of Measuring and Test Equipment
ISO/IEC 17025 (Current version)	General Requirements for the Competence of Testing and Calibration Laboratories
99-02004	Nonconforming Material and Nonconforming Material Reports

4.0 Calibration Procedure

4.1 Applicable Equipment

MKI Mission Assurance, with concurrence of engineering, shall identify which project equipment shall be calibrated and otherwise tracked. As a general guideline, measurement equipment used in the acceptance or assessment of flight product shall be maintained through calibration.

4.2 Coordination of Calibration Service

MKI Mission Assurance is responsible for tracking and maintaining the applicable equipment. They shall also coordinate calibration servicing with the service contractor. The calibration service frequency shall reflect the equipment manufacturer's guidelines and the consideration of actual use conditions.

4.3 Calibration Service (contractor)

Calibration service is performed by a contractor outside of MKI. The service shall provide an as-found status of the equipment with the calibration report. The calibration service used by MKI must meet the requirements of any of the calibration specifications listed in Section 3.0; this is

verified by certification review. Due to the time involved in the calibration, duplicate items of some equipment may be held for use while an item is off-site being serviced.

4.4 Calibration Service Reports

The calibration service shall provide a calibration/service report when calibrated instruments are returned to MKI. Calibration records are maintained for all calibrated equipment to document calibration and repair history. The reports shall be archived as a quality record.

4.5 Calibration Tracking

MKI Mission Assurance maintains a calibration tracking log on all flight project equipment. Tracked property includes both mechanical and electrical equipment that are used for flight testing or measuring, or where accuracy and precision must be controlled. The tracking log is a quality record; it contains the following data fields, as applicable:

- Identification Number
- Product Description, Location
- Model Brand, Part Number, and Serial Number
- Calibration Classification
- Calibration Service Date Performed
- Calibration Service Date Due
- Calibration Service Name

4.6 Calibration Classification and Indication

- Equipment requiring calibration that has a valid calibration status shall be identified with a '**CALIBRATION**' sticker indicating the calibration service name, calibration service date, calibration due date, and a tracking number.
- Equipment requiring calibration that does not have a valid calibration status shall be identified with an '**OUT OF CALIBRATION**' sticker indicating the initials of the calibration administrator and the date of when the calibration expired. Examples of this status include unused/unmaintained, retired, or defective equipment.
- Equipment not requiring calibration shall be identified with a '**CALIBRATION NOT REQUIRED**' sticker.

4.7 Calibration Extension

If equipment calibration expires during use, the Mission Assurance Manager, Chief Engineer, and Flight Integration & Test Manager shall meet to determine disposition of the equipment. Results of that meeting must be documented, signed, and dated. This action must be noted in the final test report.

4.8 Calibration Out-of-Tolerance

If actively used equipment requiring calibration is identified as out-of-tolerance at the time of calibration service, the Mission Assurance Manager, Chief Engineer, and Flight Integration & Test Manager shall meet to determine disposition of the product which had been evaluated with the discrepant equipment. Relevant suspect product shall be treated as non-conforming product and be subject to the *Nonconforming Material and Nonconforming Material Reports* procedure. The review team shall also disposition the equipment.