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Calibration of Tooling and Equipment Policy

1 INTRODUCTION

Calibration of tooling and equipment is covered in Regulation (EU) No 1321/2014 Part-M and Part-145. This topic is fundamental in ensuring accurate, safe and acceptable standards of various measurements required in aircraft maintenance and airworthiness.

1.1 Part-M.A. states:

M.A.608 Components, equipment and tools

(b) Tools and equipment shall be controlled and calibrated to an officially recognised standard. Records of such calibrations and the standard used shall be kept by the organisation.

1.2 Part-145 states:

145.A.40 Equipment, tools and material

(b) The organisation shall ensure that all tools, equipment and particularly test equipment, as appropriate, are controlled and calibrated according to an officially recognised standard at a frequency to ensure serviceability and accuracy. Records of such calibrations and traceability to the standard used shall be kept by the organisation.

AMC 145.A.40(b) states that in the context of Part-145.A.40(b) an officially recognized standard means those standards established or published by an official body whether having legal personality or not, which are widely recognized by the air transport sector as constituting good practice.

1.3 Part-CAO states:

CAO.A.050 Components, equipment and tools

(b) The CAO shall ensure that the tools and equipment it uses are controlled and calibrated to an officially recognised standard. It shall keep records of such calibrations and the standards used and comply with point [CAO.A.090](#).

National Accreditation Body – Malta

In Malta, the National Accreditation Board (NAB-MALTA) is the single national accreditation body appointed as per Article 4 of Regulation (EC) No 765/2008 with responsibility for accreditation of laboratories in accordance with the relevant normative documents.

NAB-MALTA has issued two policy documents serving as a technical guide on the subject of traceability of measurement, namely:

ATG11 – Traceability of measurement

ATG 15 – Performance of in-house calibrations

These are available on:

<https://nab.gov.mt/en/Pages/Documents%20and%20Publications/Policies-and-Guides.aspx>

Documents related to calibration and measurement traceability are available for download from the following websites:

NAB-MALTA: <http://www.nabmalta.org.mt>

EA: <http://www.european-accreditation.org/documents.html>

ILAC: <http://www.ilac.org>

IAF: <http://www.iaf.nu/guidance.asp>

BIPM: <http://www.bipm.org>

2 ACCEPTABLE MEANS OF COMPLIANCE

2.1 Calibration or Confirmation Intervals

Calibration or confirmation intervals should be controlled by the end-user of the measuring equipment and quoted by the end-user (customer) on the purchase order. The establishment of calibration intervals and their evaluation should be accomplished taking into consideration:

- Original Equipment Manufacturer's recommendations;
- Systematic data/statistical analysis and in-service performance record (accuracy trend) of the equipment and/or tooling under calibration control, should back up calibration interval resetting.

This means that as confidence and experience in the measuring process is gained, the frequency of checking may be reduced or increased if this is shown to be justified.

2.2 Management and Control of Calibration and Testing

The management and control of calibrations and testing shall follow the principles and requirements listed below:

(a) The Calibration System in an aircraft maintenance organisation (AMO) must fall under the responsibility of a nominated post-holder or a competent person nominated in the MOE.

(b) The Part-145.A.65 independent quality auditing system should cover the control and management of the testing and calibration facilities in its biannual review. Corrective and preventive actions to confirm the calibration processes remain under control or brought back under control.

(c) The AMO must have adequate procedures on the management, control and accomplishment of the testing and calibration.

(Part-145.A.70)

The procedures should:

- Clearly define the allocation of responsibilities and the actions to be taken.
- Document the control of the calibration (confirmation) interval and surveillance.
- Systematic evaluation of confirmation intervals for interval resetting.

2.3 Calibration and Testing

2.3.1 In-house Accomplishment of Calibration and Testing

(a) The AMO shall have adequate facilities, equipment, environmental control as well as segregation when applicable for the management and accomplishment of testing and calibration. (Cross reference Part-145.A.25)

(b) Calibration, tests and their checking are to be accomplished by suitably qualified and trained personnel. (Part-145.A.35)

(c) The AMO must have adequate procedures on the management, control and accomplishment of the testing and calibration (Part-145.A.70).

The procedures should :

- Clearly define the allocation of responsibilities and the actions to be taken.
- Define the level of education and qualification of personnel.
- Document the measuring processes.
- Document the handling and control of equipment and calibration reports.
- Document the control of the calibration (confirmation) interval and surveillance.
- Systematic evaluation of confirmation intervals for interval resetting.

(d) A clear system of labeling of all tooling, equipment and test equipment, to indicate to the users the necessary information on when the next inspection, service or calibration is due and if the item is unserviceable for any other reason where it may not be obvious. (AMC 145.A.40(a)).

(e) A register should be maintained for all precision tooling and equipment together with a proper safe record of calibrations and standards used.

(f) Traceability of measurement has to be ensured through an unbroken chain of comparisons against a national, an international or primary measurement standard.

2.3.2 Contracting of Testing and Calibration to Third Party Laboratories and Test Houses

If calibration of equipment is contracted out, traceability of measurement has to be ensured through an unbroken chain of comparisons against a national, an international or primary measurement standard.

If calibration of test equipment is carried out by OEM's, their recommendations must be followed.

Calibrations carried out in laboratories not being the tooling or equipment OEM can be contracted to an accredited or a unaccredited calibration laboratories, in accordance with the requirements of EN ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories.

The calibration laboratory's scope of accreditation to EN ISO/IEC 17025, General requirements for the competence of testing and calibration laboratories, shall encompass calibration of the method(s) or parameter(s) that are being required or specified.

The accreditation of the calibration laboratory shall be issued by the National Accreditation Board-Malta (NAB-MALTA) or by an accreditation body (AB), operating in accordance with Regulation (EC) No. 765/2008, and EN ISO/IEC 17011, General requirements for accreditation bodies accrediting conformity assessment bodies and shall be a signatory to the EA Multilateral Arrangement.

Purchase orders for calibration should clearly state the standard calibration method or procedure.

Certificates issued by laboratories must state the identification of the calibration procedure/method used and contain evidence of measurement traceability.

2.3.3 Contracting of Testing and Calibration to Non-Accredited Calibration Facility or Laboratory

A non-accredited calibration facility or laboratory can be any person or organisation who tests and/or calibrates measurement devices or working standards, in a controlled environment to ensure repeatability.

Documented calibration procedures must be used and documented evidence of the traceability of the standards used must be provided.

Contracting can be done to an European Part-145 AMO with capabilities for in-house accomplishment of calibration and testing (reference to 2.3.1) or to original tool manufacturer identified in the approved maintenance data, provided the requirements of a calibration facility or laboratory are met.

Contracting can also be done to non-accredited third-party laboratories. In such a case, the contracted laboratory shall be considered as a subcontractor, working under the Compliance Monitoring System of the approved Part-145 organisation which is contracting-out the testing and calibration (all related provisions of Part-145 apply).

2.4 Calibration Certificates and Test Reports

Calibration certificates and test reports should include the following information :

- a) A title;
- b) The name and address of the laboratory and the location where the tests and/or calibrations were carried out, if different from the address of the laboratory;
- c) A unique identification of the certificate and page numbers;
- d) The name and address of the client;
- e) Identification of the method/procedure used;
- f) A description and the condition of the object subject to test/calibration, and unambiguous identification of person(s) authorizing the test report or calibration certificate;
- g) The test or calibration results with, where appropriate, the units of measurement;

- h) Applicable a statement of the uncertainty of measurement and testing environmental conditions;
- i) Evidence that the measurements are traceable.