STANDARDS RELATED DOCUMENT

ALogP-33.2

CALIBRATION INTERVALS

Edition A Version 1

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NORTH ATLANTIC TREATY ORGANIZATION

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

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NATO LETTER OF PROMULGATION

1 December 2017

1. The enclosed Standards Related Document, ALogP-33.2, Edition A, Version 1, CALIBRATION INTERVALS, which has been approved in conjunction with ALogP-33 by the nations in the Life Cycle Management Group is promulgated herewith.

3. This publication shall be handled in accordance with C-M(2002)60.

Edvardas MAŽEIKIS
Major General, LTUAF
Director, NATO Standardization Office

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CALIBRATION INTERVALS

1 AIM

The aim of this document is to standardize the methods used to determine the appropriate calibration interval of test & measurement equipment.

2 GENERAL

This SRD contains the NATO requirements for setting up and adjustment of calibration interval in addition to applicable norms and standards. This document provides the recommended methods for the establishment and evaluation of calibration intervals for equipment subject to periodic calibration.

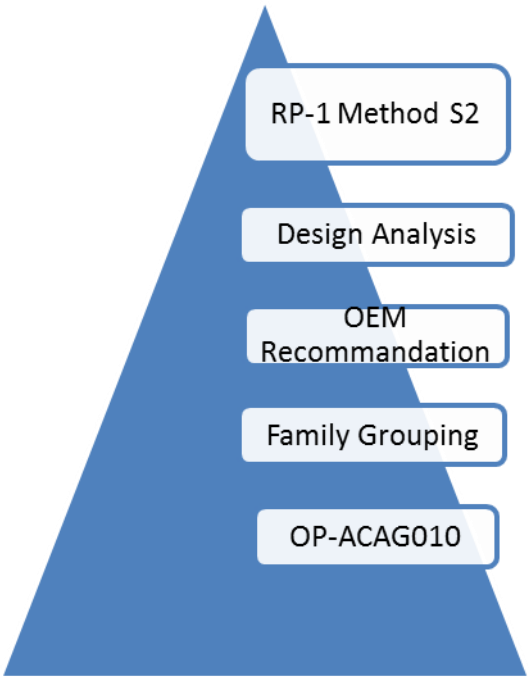
3 DEFINITIONS

Unless stated otherwise, ISO 9000 definitions shall apply.

4 REFERENCES / STANDARDS

- NCSL RP- 1, “Establishment and Adjustment of Calibration Intervals,” National Conference of Standards Laboratories
- OP-ACAG010-Ed.1.1. 1/3. Calibration Intervals for Test Equipment Requiring Calibration, IEC System for Conformity Testing and. Certification of Electrotechnical Equipment and Components. CB Scheme.

5 Methods



5.1 In principle the calibration interval is set up to ensure, that the test & measurement equipment is still within the required specification (reliability).

Recommended Method: (NCSLi RP-1 Method S3)
Mathematical: the calibration interval is a function of reliability and time:

$(t) = e-\lambda t$

$R\ (t)$ Reliabity target $=$ f (t), Values 0 – 1, $R\ (t1) =$ Reliability observed, $R(t2) =$ new Reliability target

$t1 =$ Calibration interval used, $t2 =$ new Calibration interval

$-\lambda =$ ln $R\ (t1)\ /t1$

$R\ (t2) = e-\lambda t2$

$\mathrm{R}(t2) = e$ ln $R(t1)t2\ /t1$

ln $\mathrm{R}(t2) =$ ln $R(t1)$ x $(t2\ /t1)$

$t2 = t1$ x (ln $\mathrm{R}(t2)$ / ln $R(t1)$)

$R\ (t2) =$ new Reliability target (85 % / 90 % / 95 %) is to be determined.

For using this method, at least 20 items of same part number have to be calibrated same way. Practically the new calibration interval should be within a regular monthly / quarterly / yearly interval (e.g. 3 / 6 / 9 / 12 / 24 months).

5.2 If the reliability method cannot be used (e.g. single t & m equipment (lab standard)) the t & m equipment and its documentation has to be examined and the failure rate has to be evaluated. An individual on purpose calibration interval has to be determined.

5.3 If the t & m equipment is to complex or e.g. the failure rate can not be estimated, it is recommended to use the recommended calibration interval by the manufacturer or recommended by a standard.

5.4 If no manufacturer recommendation exists the new / initial calibration interval can be set up by using the calibration interval for items of the same functionality (torque wrenches, manometer, gauges).

5.5 If no other method can be used, the initial calibration interval should be set up using OP-ACAG010-Ed.1.1. 1/3.

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