NATA

ISO/IEC 17020:2012 Inspection Standard Application Document

June 2013

Contents

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Foreword

This document was mainly derived from the NATA Inspection Field Application Document (FAD) 2011 which was in turn derived from IAF/ILAC A4. It has been modified in line with the sources and influences in the development of ISO/IEC 17020:2012. In line with NATA's program for implementation of ISO/IEC 17020:2012 as detailed in NATA Policy Circular 44, this document comes into application from 1 July 2013.

The requirements text of ISO/IEC 17020:1998 was the starting point for the requirements detailed in ISO/IEC 17020:2012, and the text was then:

- Modified in structure in accordance with ISO PAS documents that were endorsed by CASCO;

- Modified in content in accordance with ISO PAS documents to ensure that all conformity assessment (ISO/IEC 17000 series) standards had identical requirements where these are associated with common elements of operation (e.g., independence, impartiality, management systems etc.);

- Additional requirements of IAF/ILAC A4 were included;

- Additional definitions were drawn from ISO/IEC 17000:2004 and ISO 9000:2005;

- A thorough revision by the committee to incorporate experiences and interpretations from operation to the 1998 document and to reflect current expressions, arrangements and practices.

In developing this application document the text of IAF/ILAC A4 was arranged to the current structure and reconciled against clause numbers. Text that was adopted in the 2012 edition of ISO/IEC 17020 was deleted, as was text that became redundant due to clarifications in the requirements of the 2012 standard.

Additional gaps between the requirements of ISO 9001 and ISO/IEC 17020:2012 have been identified and documented.

The NATA Policy Circular that is relevant to Inspection relating to Proficiency Testing has been included as an Appendix.

ISO/IEC 17020:2012 is the first of the ISO/IEC 17000 series of standards to use the PAS text, however ISO/IEC 17024:2004 uses similar text and so the IAF GD 24 document that provides guidance to ISO/IEC 17024 was reviewed for possible guidance relating to the relevant clauses.

Please note that although the term "requirement" remains applicable to ISO and ISO/IEC standards, NATA uses the term "criteria" to describe mandatory statements.

Introduction (Informative)

These criteria detail general principles of good inspection practice. Some clauses may not be relevant to particular industry groups or to small (e.g. one-person) operations.

There are many types of inspection activities that can be conducted. These include activities such as design verification, fabrication inspection, product inspection, installation inspection, commissioning inspection, in-service inspection, expediting, witnessing, consignment verification, quantity surveying, modelling and classification inspection. Inspection of processes includes personnel, facilities, technology and methodology. Interested parties are referred to the guidance documents identified in the opening paragraphs to this section.

Professional judgement is understood to entail decision making that is supported by a body of rigorous and objective analysis.

Identification of what is inspected and where in the process professional judgement is exercised, enables inspection activities to be discriminated from other activities, such as product approval schemes or personnel licensing systems.

Basis of the Guidance

This section provides interpretation of the application of ISO/IEC 17020 that applicant and accredited facilities must comply with. The clause numbers in this section follow those of ISO/IEC 17020 but, since not all clauses require interpretation, the numbering may not be consecutive.

With the publication of ISO/IEC 17020:2012, requirements that were detailed in IAF/ILAC A4:2004 have been taken into the standard in whole or in a modified form. This document reflects the elements of IAF/ILAC A4 *Guidance on the Application of ISO/IEC 17020* and APLAC TC 006 *Guidance notes on ISO/IEC 17020* that were not taken into the 2012 edition, further modified by NATA's accreditation criteria and assessment experience. At the time of publication ILAC is in the process of developing a guidance document on the application of 17020:2012, however this document is still in draft form. As the status and detailed content of the draft ILAC document was not confirmed at the time of release, NATA has determined to implement ISO/IEC 17020 using this guidance so as to meet the ILAC deadline for implementation of the standard, set at March 2015.

4 General Requirements

4.1 Impartiality and Independence

4.1.2

a)　Where an inspection body is a legal entity which is itself part of a larger organisation it should be able to demonstrate that no conflict of interest exists. Relevant information on activities performed by the other parts of the larger organisation should be maintained up to date.

b)　Guidance should be provided, indicating to staff expected behaviours in situations where undue pressure is applied.

c)   Records of situations where undue pressure (from any source) has been applied to inspectors should be kept.

d)   Requirements relating to impartiality are also applicable to subcontractors (See clause 6.1.12)

4.1.3

a)   Inspection bodies should be able to demonstrate how they manage their business and any other activities so as to eliminate actual conflict of interest and minimize any identified risk to impartiality. This should cover all potential sources of conflict of interest. As risks to impartiality may emerge as a result of changes over time, the review of risks to impartiality is an ongoing activity. A formal review that is performed periodically could be considered in addressing this requirement.

In addition to the bases for threats to impartiality offered in the Note to clause 4.1.3, examples of relationships that could impact impartiality include but are not limited to:

- Relationship with a parent organization;

- Relationships with departments within the same organization;

- Relationships with related companies or organizations;

- Relationships with regulators;

- Relationships with clients.

b)   Application of undue pressure on inspectors is a regrettable but commonplace occurrence, and it is not sufficient merely for inspection bodies to state that undue pressure is not acceptable. It is recommended that inspection bodies anticipate their staff will encounter situations where undue pressure is applied, and establish appropriate responses.

Such responses could include

- Guidance to staff on acceptable behaviour;

- Creation of systems to record and respond to instances where undue pressure (from any source) has been applied.

c)   Inspection bodies should expect assessment of these processes to manage conflict of interest and threats to impartiality during NATA assessment. This may include, where practicable and justified, review of records of the inspection body and any related body for the inspection under consideration. If evidence of failure to maintain impartiality is found, there may be a need to extend the audit trail back into related bodies to provide assurance that control over potential conflicts of interest has been re-established.

4.1.6

a)   Categorisation of inspection bodies as Type A, B or C is an indication of their independence based upon formal and structural considerations. The traditional measures of independence (being first-, second- and third-party organisations) but have been indicated in the standard.

b)   Assignment of Type will be made as part of the assessment process. The assigned Type can, however, be amended if the nature of a business changes,

provided the inspection body can demonstrate that it meets the criteria of a different inspection body Type.

4.2 Confidentiality

4.2.1

a)   A policy regarding the confidentiality requirements of clients should be documented.

b)   Requirements relating to confidentiality are also applicable to sub-contractors (See 6.1.13)

5 Structural Requirements

5.1 Administrative requirements

5.1.1 Where the inspection body is a part of a larger legal entity, the structure of the entire legal entity may be subject to assessment to pursue specific audit trails and/or review records relating to the inspection body.

5.1.4

a)   The facility should be able to show the factors taken into consideration when determining the level of provision. If it is applicable, any insurance should be shown to cover sub-contracting activities.

b)   Typical factors considered in determining the provision for liabilities might include risk, client demand and regulation. Inspection bodies should seek professional advice on matters relating to insurance and liability provisions.

c)   Types of liability covered by insurance may include employer's liability, public liability and professional indemnity.

d)   Inspection bodies should pay particular attention to provisions such as insurance when undertaking inspections in another country or jurisdiction, since legal requirements associated with liabilities may vary between countries and jurisdictions.

5.1.5   It is acknowledged that often individual contracts are not signed with clients; and that workscopes may be established through reference to other documents such as regulations.

5.2 Organisation and management

5.2.2   It is recommended that, in maintaining its inspection capability, an inspection body considers ways to ensure the competent performance of inspection activities that are performed infrequently.

5.2.3   The degree of complexity of documentation and the extent to which staff members can hold several functions will depend upon the size of the organisation.

5.2.5 In determining an appropriate level of "availability", it is recommended that the inspection body consider a range of factors that include, but are not limited to:

- The nature of the inspection;
- Hours of operation;

- Consequences of inadequate inspections;

- Consequences of cessation of inspection activities.

5.2.6 In organisations where an absence causes the cessation of work, deputies are not required to be defined.

6 Resource requirements

6.1 Personnel

6.1.3 The competence of inspectors is critical to the validity of inspection findings. Competence is understood to encompass both theoretical knowledge and practical ability. Depending upon the industry group, competence may demand familiarity with relevant regulations, technologies, processes, standards, codes, materials, failure modes and industry practice.

Staff competence

Where relevant, inspection body staff must have:

- relevant qualifications and/or be assessed as competent within the National Training Framework;

- completed relevant in-house training;

- familiarity with the principles of the inspections they perform or supervise including relevant practical experience;

- familiarity with inspection equipment, including its performance, use and calibration;

- knowledge of the standards or specifications used;

- knowledge of the organisation's management system;

- ability to record inspection findings and write clear and appropriate reports and/or certificates;

- an understanding of the legal significance of approving and issuing reports;

- knowledge of ISO/IEC 17020, NATA Rules, this document, and relevant NATA Technical and Policy Circulars; and

- they must participate in continuing professional development.

Management of Inspector and staff competence

The management of an inspection body may appoint and authorise staff in support of the inspection activities. Such appointments shall be in accordance with a documented policy and procedure. This system must cover all inspection staff having an effect upon inspection outcomes, including inspectors, clerical, ancillary and service personnel as appropriate. Appointment and authorisation may cover all, or be limited to specifically identified, technical elements or process steps associated with the inspection. Where administrative personnel are authorised to issue documents the inspection body shall be able to demonstrate that reports are subjected to an appropriate level of technical review prior to issue.

The following matters are required to be addressed:

1.   The inspection body must identify the minimum levels of qualification and experience necessary for people to perform relevant tasks.

2.   A system to manage the development and appointment of staff must be developed and associated procedures must be documented. It may be possible for a graded system to be developed, allowing for personnel development, enabling recognition of experience while limiting the risks associated with using less experienced staff.

3.   The inspection body must develop and implement competency assessment criteria for staff outlining their responsibilities, and the expectations of the inspection body regarding the conduct of work including field activities and interpretation of codes.

4.   Where relevant, staff must participate in professional development (for example, through attendance at exhibitions, industry meetings and ongoing training).

5.   Records of qualification, professional development, experience and participation in in-house training must be kept for each staff member.

6.   A record of the appointment dates and extent of each approval must be retained. At cessation of engagement (for example upon staff leaving the organisation) a record of the withdrawal including the date of withdrawal must be kept.

7.   A system to assure confidence in inspections conducted by different inspectors must be developed. Appendix C offers possible models for implementation. The use of this system must continue at appropriate intervals throughout the employment of the inspector. Records of outcomes and any associated corrective actions must be retained.

Loss of staff

If a facility does not have staff with relevant competencies for one or more technical elements of its scope of accreditation, the inspection body is unable to perform inspection work involving this technical element. NATA must be advised of the situation and the affected part of the accreditation will be suspended pending the organization gaining the necessary resources to competently deliver the relevant services.

It may be possible for work to be subcontracted to another inspection body during the absence of suitable staff (see 6.3.1).

Corporate accreditations

Inspection staff appointed by facilities with corporate accreditation may fulfil their appointed role across different sites, providing they are familiar with each site's operations, and have access to relevant records e.g. training, calibration, quality control.

Records

Facilities should hold a current listing of staff authorised to issue reports, including as appropriate the range of activities for which they are approved.

6.1.5 Trainee inspectors, contract staff and other staff may assist with inspection work while under effective supervision. Their duties should be

commensurate with their knowledge and experience. There should also be adequate direction via provision of detailed procedures, checklists and/or work instructions.

Training records must at all times be able to confirm the competency level of an individual for a given task.

6.1.8 Appendix C identifies some systematic means of assuring the quality of inspection activities, and includes a variety of techniques that are also used in proficiency testing activities.

6.1.10 Copies of relevant health records (for example, records of eyesight or hearing tests) and specialist licences must be maintained as part of the individual's qualification list. If appropriate, systems should exist to prompt when checks or re-certifications fall due.

6.1.11

a)   In many inspection bodies there is often a direct connection between the number of inspections performed and the income of the organisation (and hence its staff). In such cases it is recommended that records be kept of the time taken for each inspection.

b)   The inspection body should consider issues such as work ethics, impartiality, customer relations, presentation, safety, environmental and heritage protection, response to undue pressure (see Clause 4.1 paragraph 2) etc. Guidance can be provided in the form of a code of conduct. Records of training covering these issues should be maintained.

6.2 Facilities and equipment

6.2.1 In this clause "facilities" refers to materiel necessary for the conduct of an inspection. This can include items necessary for access, safety, recording or interpretation of findings as well as items directly used in the inspection task.

Inspection bodies are guided to the information of HB 86.1 when addressing matters of equipment selection, care, calibration and checking.

6.2.4 Even where the equipment is not owned by the inspection body, records must be able to clearly identify what piece of equipment was used in the process and its suitability for use, if relevant. Where verification of suitability for use cannot be achieved, this fact shall be prominently stated in the inspection report and the client shall be informed of it.

6.2.6 Metrologically traceable calibrations are appropriate where

- Measurements play a significant part in the inspection findings, or
- a measurement is required with a clearly defined accuracy.

The need for accuracy may be implicit in statements such as "good engineering practice". Under such expectations measuring equipment used must meet the requirements of ILAC P10.

NATA Policy Circular 11 requires that, in line with ILAC P10 and the guidance of HB 86.1 Clause 5.5.4, all test and measuring equipment having a direct effect on the accuracy and significance of inspection results must be calibrated. Calibrations must demonstrate

- traceability to the Australian national standards of measurement or their international equivalent, or

- demonstrate compliance with national requirements for equipment used in trade measurement.

6.2.7 Calibration information covering the technical process, frequency and means of achieving traceability may be sourced from:

- Experience with use and operation of equipment;

- Equipment manuals and suppliers;

- Calibration providers;

- NATA Reference Equipment Table and General Equipment Table which are available from the NATA website (www.nata.com.au);

- Other NATA documents, such as Technical Notes.

6.2.8

a)   Calibration services accredited by NATA or an MRA partner to ISO/IEC 17025 will be regarded as competent for the purpose of meeting this sub-clause. Equivalent systems for legal metrology may also be used provided there is an equivalent established traceability of measurements system in place. NATA Policy Circular 11 provides further guidance.

b)   Where calibrations are performed in-house using reference standards held by the inspection body, consideration should be given to the

- competence of calibration staff;

- completeness of calibration procedures;

- suitability of reference standards;

- measurement needs.

c)   In some situations it may be appropriate for such calibration activities to be subjected to a specific, technically-focussed assessment to establish the credibility of key inspection measurements

6.2.9 The frequency of in-service checks should be established by the inspection body. Guidance on check intervals for many items of equipment is provided in NATA Reference Equipment Table and General Equipment Table which are available from the NATA website (www.nata.com.au). Where no check interval is offered, the inspection body should establish its own schedule of equipment checks, reviewing these at suitable intervals to ensure that the check interval is appropriate.

6.2.10 Providers of reference materials should operate to ISO Guide 34 *General requirements for the competence of reference material producers* and, where possible, hold accreditation for the production of reference materials.

6.2.13

a)   Records of validation and subsequent checks on its integrity must be retained. Checks on software updates should be carried out before the up-dates are implemented. At all times, the organisation must be able to identify which version of software was or is in use and be able to confirm the current status of software used by staff in portable electronic equipment. Interested parties may refer to the validation and verification requirements outlined in Appendix B Clause 7.1.

b)   Computers, software and electronic automated equipment should be treated as another item of equipment in the equipment register and calibration/validation system and scheduled for service, review and/or update as required. Electronic data security should be considered routinely as part of the record integrity system.

c)   Factors that may be considered in protecting the integrity and security of data include (but are not limited to):

- backup practices and frequencies;

- effectiveness in restoring data from backup;

- virus protection;

- password protection.

6.2.15 Information recorded should, where appropriate, include:

a) the name of the equipment and its identification;

b) manufacturer's name;

c) manufacturer's equipment identification such as serial number;

d) date received and placed in service;

e) condition when received;

f) maintenance instructions;

g) history of maintenance and calibration;

h) calibration records;

i) current location or who the equipment has been assigned to;

j) calibration procedures used.

All equipment checks and calibrations should record the following information:

a) Name of equipment;

b) Identification of equipment (for example, a serial number, etc);

c) Location of equipment if relevant;

d) Specification (including year) where appropriate;

e) Indication of the acceptance criteria used on the records;

f) Identification of personnel carrying out the work;

g) Identification of reference equipment used (for example, vernier callipers 36101, reference thermometer A227, etc);

h) Procedure used or reference to documented procedure;

i) Date the check was performed;

j) Results obtained;

k) Statement of acceptability or otherwise of the check;

l) Any follow-up action required to correct deficiencies.

Where performance checks on critical equipment are conducted by an external provider, these checks must be undertaken by a laboratory accredited to perform that check, and can provide a NATA endorsed report for that check.

Organisations performing equipment checks in-house must document the procedures used. Alternatively, they may use proforma worksheets provided it is clear as to the procedure to be performed.

6.3 Subcontracting

6.3.1   The sub-contracting body should hold the relevant inspection (ISO/IEC 17020) or laboratory (ISO/IEC 17025) accreditation for the work it will be conducting on behalf of the inspection body.

6.3.4

a)   Confirmation of current NATA accreditation scope and status will be considered satisfactory investigation of a sub-contractor's technical competence.

b)   Inspection bodies are reminded however that their service needs may go beyond technical competence and these additional service needs should be considered in identifying suitable providers of sub-contracted services.

7 Process Requirements

7.1 Inspection methods and procedures

7.1.2

a)   Inspection bodies often perform sampling as part of their services. Such samples may be retained for reference purposes or tested.

b)   In some cases appropriate sampling activities demand the development of job-specific sampling plans and/or the use of professional judgement. Sampling may also be performed as part of a wider inspection activity. Accreditation for these activities is possible under NATA's Inspection Accreditation Program. Interested organisations are invited to contact NATA to discuss accreditation of these sampling activities.

c)   Facilities are reminded of the risks associated with extending results from a sample to a wider population of items. While it is the practice in some industries to base an evaluation upon limited sample sizes, facilities are reminded of the existence of Australian standards for sampling. Where assumptions of homogeneity have been made, these must be brought to the attention of the client.

7.1.3   Clear in-house instructions on inspection procedure and technique may be required to support inspections conducted against defined product specifications. The effectiveness of these procedures should be validated and the validation documented.

In many instances it may be more appropriate for accreditation to be held for a technically valid, in-house inspection procedure referencing all applicable specifications against which items are to be evaluated rather than for the scope of accreditation to detail individual specifications. This will vary from industry to industry and should be discussed with your NATA lead assessor.

7.1.4   Where acceptance/rejection criteria are nominated in contracts or specification documents, the criteria should be included, as appropriate, in the worksheets and/or checklists used by the inspection body.

7.1.5   Inspection records must include any amendments to the work order requested by the client. Documented client approval should be obtained for any changes to the work order issued. Verbally established agreements, requests and changes to the scope of works are considered a form of contract and must be documented, included in contract review processes and confirmed in writing with the client.

For routine or repeat work, contract review may be limited to consideration of resource availability.

7.1.7

a)   All primary records must be made as soon as is practicable.

b)   Where inspection includes the manipulation of electronic records to enhance inspection practices or reporting a copy of the unchanged data and details of the processes used in enhancement should be retained.

7.1.8   The policy and system for checking calculations and data transfers must be documented. Corrections to original inspection records shall be initialled and dated by the amending officer.

7.1.9

a)   The safety of inspection personnel should be considered at all times when conducting inspections, as should protection of the surrounding environment. Safety issues of concern noted by an inspector should be recorded and reported to the site management and the client or those responsible for rectification of the situation.

b)   NATA does not define mandatory safety measures but does draw attention to any unsafe work practices that are observed in the course of an assessment. When clauses covering safety are written into standard inspection codes, methods or specifications covered by the scope of accreditation these must be observed by the inspection body. Inspection bodies visiting clients and other organisations must also observe site specific safety requirements.

7.2 Handing inspection items and samples

7.2.3   Inspection records should detail the decisions made by the client regarding the issue.

7.2.4   Any relevant client instructions covering the retention, bonded storage, return or disposal, etc. of inspection items should be observed.

7.3 Inspection records

7.3.1   As ISO/IEC 17020 is not prescriptive with respect to what constitutes inspection records, the following must, where appropriate and/or relevant, be considered as inspection records:

   a)   contract review negotiations;

   b)   client/work instructions (preferably written, with all oral instructions from the client to be recorded);

   c)   all original notes and calculations taken by the inspector and/or other staff during an inspection;

   d)   original copies or negatives of photographs (including electronic retention of original digital photographic data);

e) the identity of the staff undertaking part(s) or the whole of the inspection;

f) computer data files and/or software programs;

g) reports on sampling, tests and measurements including copies of reports on sub-contracted inspection, sampling and/or testing work conducted;

h) a copy of the inspection report and a record of its distribution;

i) records of all discussions with clients during or after the inspection relevant to the preparation of the inspection report.

j) date and time of inspection.

Electronic records involve capture, digitisation, storage and output. Systems to manage electronic records must consider the ability of each step to accurately reproduce the information of interest.

Record modification

Electronic records (both images and sound) are liable to alteration, clarification or enhancement. While such processing offers a number of benefits to the inspection body, it must be used with care. As ISO/IEC 17020 is not prescriptive with respect to post-capture processing upon digital records, the following must be considered where relevant:

a) An original record must be maintained and ultimately archived.

b) The original record must not be subjected to processes that cause permanent alteration. Where processing and/or analysis is required a working copy is needed.

c) The purpose and requirements of the end product drive the selection of enhancement. Therefore, the final use of the record should determine the choice of enhancement.

d) All instances of electronic enhancement of records shall be recorded.

e) Details of the processes used in enhancement must be recorded. This should include all the steps performed in the enhancement operation and the level to which these enhancements were applied. The level of detail required is such as to enable another operator to validate the original enhancement process if required.

7.4 Inspection reports and inspection certificates

7.4.1 The fact that a client does not require a detailed report does not remove the requirement for detailed inspection records to be kept.

Where electronic means are used to approve an inspection report, access to the electronic storage medium must be controlled.

7.4.2 Inspection reports – content

Inspection reports may be simple or complex. ISO/IEC 17020 Clause 7.4.2 mandates some elements, and offers Annex B which identifies optional elements; NATA's Rules include requirements relating to endorsement. Additional reporting requirements may be imposed by the context of the inspection. The text below identifies the source of the element.

a) designation of the document, i.e. as an inspection report or an inspection certificate, as appropriate (Optional Annex B, a))

b)   identification of the issuing body (Requirement 7.4.2 a))

Identification of the issuing facility may be by:

- the name in which the accreditation is held or,

- the accreditation number, or

- the street address.

As required, other unique organisation identification may be used;

c)   unique identification of the report (Requirement 7.4.2 b));

The report must carry this unique identification on each page

d)   indication of the total number of pages, each page being numbered for multi-page reports (Clarity requirement of 7.4.4);

e)   identification of the client; (Optional Annex B, b))

*(***Note**   the owner of the inspected item can be mentioned in the report or certificate if the owner is not the client)

f)   description of the inspection work ordered; (Optional Annex B c))

g)   date(s) of inspection; (Requirement 7.4.2 c))

h)   information on where the inspection was carried out; (Optional Annex B, h))

i)   identification or brief description of the inspection method(s) and procedure(s) mentioning deviations from, additions to or exclusions from the agreed methods and procedures; (Optional Annex B e))

j)   reference to the use of sub-contractors (where appropriate) including identification of the sub-contracted inspection and/or testing results(Subcontractor requirement 7.4.4);

k)   identification of the items inspected (Requirement 7.4.2 d))

l)   Identification of equipment used for measuring / testing; (Optional Annex B d))

m)   where applicable, and if not specified in the inspection method or procedure, reference to or description of the sampling methods and information on where, when, how and by whom the samples were taken; (Optional Annex B g))

n)   information on environmental conditions during the inspection, if relevant; (Optional Annex B, i))

o)   inspection results except where detailed in accordance with clause 7.4.3 (Requirement 7.4.2 g))

Results may include reference to specifications, defects or other non-compliances identified;

p)   a statement of conformity where applicable; (Requirement 7.4.2 f))

q)   statement that the inspection results relate exclusively to the work ordered or to the items or lot inspected; (Optional Annex B, j)

r)   information on what has been omitted from the original scope of work; (Optional Annex B d))

s)   the inspector's mark or seal; (Optional Annex B, l))

t)   names (or unique identification) of the personnel members who have performed the inspection and in cases when secure electronic authentication is not undertaken, their signature (See also 7.4.2)

u)   signature or other indication of approval, by authorised personnel; (Requirement 7.4.2 e))

v)   date of issue of the report; (Requirement 7.4.2 b)

w)   the correct NATA endorsement (see NATA Rules,) including conditions under which the report may be reproduced;

x)   any other information required by the client.

y)   caveats and assumptions made by the facility, and the basis for these (where applicable) (Requirement clarity - 7.4.4);

z)   reference to sub-contractor's attached reports (where appropriate - see Note below);

aa) clear identification of inspection and test data from non-accredited sources that has been utilised in the inspection (where appropriate);

Opinions

Reporting professional judgement including inspector's notes and calculations based upon published formulae applied in reporting the current status of an inspected item is considered normal inspection reporting practice.

Use of client's forms

Regulatory authorities or clients may place additional reporting requirements on the reporting of inspection results and these must be addressed. Where client report forms are used, the issuing NATA-accredited facility must be clearly identified on the report. Where such forms do not require the information detailed above, the facility must retain information sufficient to provide that information if requested. A note to the effect that the client specified the use of these forms must be retained.

Progress reports

Progress reports issued over an extended period in relation to fabrication, installation, commissioning and/or any other time-dependant inspection activities must each comply with the reporting requirements detailed above. The final inspection report/certificate must reference all progress reports issued.

Reports may be handwritten and presented at the inspection site, or typed, checked and formally presented. Site reports and associated work covered by the scope of accreditation must meet all the criteria for accreditation.

7.4.5 Procedures must be documented covering the withdrawal and re-issue of inspection reports when it is required.

7.5 Complaints and appeals

7.5.1 The procedures should cover the authentication, investigation and resolution processes.

An appeals resolution system is not required unless the inspection is carried out under legally delegated authority, e.g. when exercising responsibility as a Designated Authority.

Records (See 8.4) must include the authentication, investigation and resolution of complaints.

8 Management system requirements

8.1 Options

8.1.2 Option A

For comments relating to this clause please see the commentary relating to the individually referenced clauses detailed below

8.1.3 Option B

Option B is included to enable an inspection body which operates a management system in accordance with ISO 9001 to use that system to demonstrate fulfilment of the management system requirements in 8.2 to 8.8 of ISO/IEC 17020. Option B does not require that the inspection body's management system is certified to ISO 9001

Inspection bodies seeking accreditation to ISO/IEC 17020:2012 may exercise option B in clause 8.1.1 (i.e., reliance upon an ISO 9001 management system) and so not have their systems subjected to full assessment by NATA subject to:

- The quality management system being certified by a certification body recognised by JAS-ANZ or another signatory to the IAF MLMRA;

- The scope of certification to include activities relevant to the scope of accreditation sought with NATA;

- Copies of the most recent relevant certification audit reports being made available to the NATA assessment team for review;

- demonstrable application, relevance and use of the certified management system in matters relating to:

    o document control;

    o records management;

    o management review;

    o internal audits;

    o corrective action;

    o preventive action;

with regards the assessed operation of the quality system of the inspection body.

Clauses not covered by ISO 9001 but requirements of ISO/IEC 17020 from Section 8 will be assessed. These clauses are detailed below.

Inspection bodies exercising Option B should note that ISO/IEC 17020 includes requirements not explicit in ISO 9001. These are highlighted in the table below, which reconciles the requirements of ISO/IEC 17020:2012 with the clauses of ISO 9001:2008:

17020 2012	9001 2008	Differences / coverage
8.2.1	5.1	Documentation – no difference
8.2.2	5.1	Commitment – no difference
8.2.3	5.5.2	9001 also requires promotion of awareness of customer requirements
8.2.4	4.1,4.2.1	Coverage of system – no difference
8.2.5		Implied but not stated in 9001 2008 – **will be assessed**
8.3.1	4.2.3	Control of documents – no difference
8.3.2	4.2.3	Control of documents – detail – no difference
8.4	4.2.4	Control of records – no difference
8.4.2		Record retention and confidentiality - Not addressed in 9001:2008 – **will be assessed**
8.5.1.1	5.6.1	Management review – no difference
8.5.1.2		Annual review - Frequency not defined in 9001-2008 – **will be assessed**
8.5.1.3	5.6.1	Review records – no difference
8.5.2	5.6.2	Review inputs – 8.5.2 (e) fulfilment of objectives not in 9001 – **will be assessed**
8.5.3	5.6.3	Review outputs – no difference
8.6	8.2.2	Internal audits - (8.6.4) frequency of audits, not in 9001 – **will be assessed**
8.7.1	8.3	Corrective action – no difference
8.7.2	8.3	Corrective action – no difference
8.7.3&.4	8.5.2	Preventive action – no difference
8.8	8.5.3	Preventive action – no difference

Inspection bodies exercising Option B should note that complaints and appeals have distinct requirements set out in clauses ISO/IEC 17020 7.5 and 7.6 and that an ISO 9001-compliant management system may not meet the specific requirements of these clauses.

8.2 Management system documentation (Option A)

8.2.4   Organisations are free to choose their own format and style of collating and presenting policy, procedure and information in documents. This information may be collated in a form other than as a single document called 'Quality Manual'.

Quality documentation must include or reference the scope of accreditation and the policy on the use of the NATA endorsement.

8.3 Control of documents (Option A)

8.3.2   For staff operating out in the field away from the office environment, extra care should be taken to ensure that they are kept up-to-date with documentation changes. In particular, field notebook computers must be up-dated regularly and included in the internal audit program for content review.

8.4 Control of records (Option A)

8.4.2   All records must be retained by the facility for a minimum of three years from the date of issue of the inspection report. Statutory and contractual obligations may specify longer record retention periods. The inspection body should also be aware of any client requirements regarding records storage.

8.6 Internal audits (Option A)

8.6.4   The internal audit procedure should be flexible enough to include unscheduled internal audits as well as planned audits and identify the conditions under which an unscheduled audit is appropriate.

Audits should be appropriate to the scale, activities and risks of the inspection body. As appropriate a sampling or risk-biased approach may be applied.

Appendix A: Independence Requirements

Annex A1 Requirements for inspection bodies (Type A)

Annex A2 Requirements for inspection bodies (Type B)

A Type B inspection body may form part of a user organisation or a supplier organisation.

Annex A3 Requirements for inspection bodies (Type C)

Type C inspection bodies are distinct from Type B inspection bodies because they are not required to be a separate but identifiable part of the parent organisation. They may also offer their inspection services on the open market.

"Explicitly" is understood to mean "clearly". Often Australian regulations do not identify independence requirements for inspection activities. In situations where the same person may inspect and be asked to put right, make safe or oversee the rectification of any deficiencies that are identified, the client should be advised of and accept the proposed arrangements. The inspection body must have in place safeguards to protect against possible future charges of bias or over-servicing. Such safeguards could include photographic records, client acceptance of findings, retention of replacement items etc.

Appendix B: Application to Modelling

Modelling is the construction of mathematical or physical analogues to objects, systems or environments with a view to the determination of otherwise hard-to-obtain properties. Modelling data may be used to characterise systems of interest, to resolve management problems associated with the object, system or environment, or to predict behaviour under variant conditions. The modelling process involves the selection of suitable media, then the selection, validation and combination of parameters, to establish a predicted performance. Modelling has application in many fields, including engineering design, design verification, construction and in-service asset management. Parameters that may be addressed in modelling can include load, deflection, fluid flow, signal dissemination, fire propagation, remaining asset life, weather patterns etc.

This annex provides additional amplification of those requirements of ISO/IEC 17020 relevant to the accreditation of modelling activities. Where a clause is not included please refer to the general comments above.

Process background

It is assumed that the process flow in modelling an activity may be detailed as in the following table.

Step	Process	Notes
1	Identification of problem	
2	Selection of appropriate modelling technique	A range of physical and mathematical techniques offer solutions
3	Construction of the model	May be through physical construction, programming or setting parameters in an existing program
4	Collection of input data	Data may be sourced from clients, measurement or other public data
5	Application of data to model	Data entry task
6	Determination of outcome	Operation of the key algorithms and input data
7	Iterations of modelling	Time/step-based development, or noting slight variations from parametric changes
8	Output data analysis	As appropriate to task
9	Report generation	To include limitations and details of relevant parameters

Personnel (6.1)

Where models are developed or adapted for specific jobs, the inspection body shall have staff conversant with the techniques or software used.

Facilities and equipment (6.2)

Note: Equipment for the construction of a model may range from workshop machinery to computers. Models may vary from purpose-built structures to electronic configurations and software. In many instances standard modelling tools are modified to suit case-specific applications.

Where physical analogues of input parameters are required in the model (e.g. masses in some structural models), the equipment shall be appropriately calibrated and the scaled effects of the uncertainty of the analogue upon the outcomes of the model shall be determined.

Where the analogous performance of the model is determined by environmental considerations (e.g. temperature of a material analogue) the inspection body shall have procedures in place to ensure the continued suitability of the material in question.

Computers (6.2.13)

Where computers are used (in data capture, storage or manipulation) the inspection body shall be able to demonstrate the adequacy of the complete system.

Where software is open to modification by the inspection body (at all levels from the algorithm used, the input parameters selected and the match of data to inputs i.e. the extended dataset) the inspection body shall record the extended dataset applied to the model, and shall be able to demonstrate the validity of the inputs used.

Inspection methods and procedures (7.1)

Choice of model

The inspection body shall provide guidance to staff upon the selection of models appropriate to the job.

Worst-case models are to be applied unless reasonable justification is available for not doing so.

The inspection body shall perform **validation** of the model chosen. Validation is understood here to entail the steps necessary to establish that the assumptions and governing equations of the model are relevant to the problem as outlined by the client. Considerations relevant here may include geometry, the size, separation and discretisation of both grid and steps, boundary conditions, spatial, temporal, static/dynamic conditions and other limitations relevant to the problem.

The inspection body shall perform **verification** of the model chosen. Verification is understood here to entail the steps necessary to determine the correctness of the solutions generated by the model, including both algorithm validation and code validation.

The inspection body shall also establish systems to control the software in use to ensure that the most appropriate version of software is used in the modelling process. In cases where extensive development of software is necessary, this will include systems for documenting and control of updates and, where necessary, training of staff in new functions.

Selection of parameters

In many models, appropriate parameters will not be available. Examples where this may arise include job specific parameters (such as crushability and impact resistance) or where parameters are not consistently defined between designer, specifier and manufacturer (e.g. 'Yield strength' can have at least 4 different definitions). Frequently solutions to this matter involve the substitution of alternative parameters or the use of approximations. Where such substitution or approximation is applied to a model the justification of the substitution or approximations shall be recorded by the inspection body.

Relevance of data (7.1.6)

The inspection body shall identify all data sources, and any data validation performed, that are used in the model. There shall be an evaluation of the possibility and consequences of parameter variation under conditions of interest.

Note: Product datasheets typically report single-point values under standard or stable conditions. Such data may not be suited to application in modelling dynamic conditions. Inspection bodies should establish property profiles considering the potential variation in environmental conditions in the model.

Where data sources are based upon statistical data the inspection bodies shall detail the assumptions pertaining to the distribution and homogeneity of samples contributing to the data.

In some models the properties of interest may be influenced by transient or ephemeral sources adjacent to the field of interest. Where possible the effect of uncontrolled influences from adjacent sites are to be accommodated in the model and reported. This may be by estimation, approximation, direct measurement or other means. The means of identifying the magnitude of such influences is to be identified and reported.

Output constraints

The inspection body must consider issues of rounding of output data and issues related to non-linear responses / interpolation between grid points. Where such issues have the potential to be significant they must be reported.

Iterations

The reasons for the application of iterations and the application of changes to the extended dataset shall be recorded.

Confirmatory testing

Where possible, modelling statements should be corroborated by confirmatory testing – relating data generated back to:

- Standard test results;
- Full-scale test results;
- Previous experience;
- Accepted benchmarks;
- Other quantitative means.

Records of such confirmatory testing shall be kept.

Records (7.3)

Records must be sufficient to allow replication of the model by an equivalent organisation. Records of validation, verification and confirmatory testing shall be kept.

Inspection reports and inspection certificates (7.4)

Inspection reports and inspection certificates must include the following data:

- General problem description;
- Model objectives;
- Model selected;
- Software used;
- Data set up and sources;
- Model set-up including geometry, discretisation, boundary conditions and model features;
- Results;
- Sensitivity of results to parametric variation, including measurement uncertainty;
- Limitations of the model applied;
- Discussion of results.

Appendix C: Monitoring inspectors and assuring the quality of inspections

Introduction

ISO/IEC 17020:2012 introduces a requirement for "monitoring" of inspectors in clauses 6.1.8 and 6.1.9. Monitoring was previously understood to be an element of "effective supervision" and was dealt with under ISO/IEC 17020:1998 Clause 6.4 and the IAF/ILAC Guidance to that clause. Effective supervision and monitoring assist in assuring the quality of inspections and thus perform the role fulfilled by proficiency testing and quality control in the context of laboratories.

In addition, APLAC MR 001 states that:

> *Proficiency testing activities are also applicable to certain types of inspection. An applicant accreditation body to the APLAC MRA for inspection shall have a documented policy on proficiency testing, and encourage its accredited inspection bodies to participate where relevant proficiency testing activities are available.*

NATA's overarching corporate proficiency testing policy (Policy Circular 2) requires each applicant or accredited facility to participate in appropriate PT, where available. In considering the application of proficiency testing to inspection bodies, the specialised nature of many inspections and the small number of inspection bodies practicing in any one area may make reliance upon externally sourced proficiency testing challenging. Accordingly, "proficiency testing" should at least involve internally conducted technical witnessing of inspectors and other activities that assure the quality of inspection activities.

This appendix seeks to identify a range of practices that provide effective means of monitoring and so provide a practical means to address the concerns underlying NATA's policy for proficiency testing as applied to inspection bodies.

Proficiency testing and inspection bodies

Inspection bodies are required to participate in appropriate quality assurance activities as a condition of accreditation. **Where credible and relevant proficiency testing programs are available it is a requirement of accreditation that applicant and NATA-accredited inspection bodies will participate**.

Facilities are responsible for checking the availability of externally available PT programs, evaluating their appropriateness and participating in programs, when available and appropriate.

Recognising that credible and relevant externally-sourced proficiency testing may not be available for many inspection bodies, and that applicant and NATA-accredited inspection bodies are required by ISO/IEC 17020:2012 to implement systems for the monitoring of inspectors, the options identified in the following section are offered as some (but not an exhaustive list of) acceptable means of performing such monitoring.

Quality assurance activities for inspection bodies

The quality of inspection activities may be established in a number of ways. These include, but are not limited to:

a.   Comparison of findings

Several inspectors (drawn from one or several inspection bodies) may inspect an item (either concurrently or over a time interval such that the stability of the inspected item is assured) and the findings are then compared. Comparisons may be numerical or qualitative and a statistical analysis of outcomes may highlight whether the findings from each inspector are satisfactory. Comparison is against the consensus of the group.

b.   Measurement audits

An object of inspection with known reference values or qualities may be used in a manner similar to that described in a) above. The extent of variance between the reported results from the inspector and the reference value / quality may be used as a performance evaluation tool.

c.   Technical witnessing

An inspector may observe another inspector in the course of an inspection, to confirm the coverage and application of judgment. This technique is frequently used as a measure of the effectiveness of training. ISO/IEC 17020:2012 6.1.9 requires that the monitoring of performance of inspections includes on-site witnessing of inspections by technically competent personnel and cover a representative sample of inspections, unless there is sufficient supporting evidence that the inspector is continuing to perform competently.

d.   Known value schemes

These schemes involve the preparation of items with known issues, such as a standard set of data for analysis. Known value schemes are commonly used as checks on the validity of calculating systems such as spreadsheets and finite element analysis programs.

e.   Partial-process schemes

These schemes involve the evaluation of the ability to perform parts of the overall process. Examples may include:

• calculating from a given set of data (rather than conducting the actual inspection);

• performing an inspection in a controlled environment rather than at client premises;

• repeat inspections performed by another inspector (either concurrently or over a time interval such that the stability of the inspected item is assured).

f.   Review of records and supporting materials

In some cases the records of inspection will be sufficient to establish whether the inspection was conducted properly and it is therefore possible for a high degree of assurance to be established through review of a comprehensive set of records. An example could include structural and condition inspections where these are supported by extensive photographic records, original observations, notes, drawings, etc.

g. Contact with client

Client interaction is often a key element of the inspection process. Appropriately structured interviews with clients can provide information regarding the inspector's approach, behaviour, performance and even coverage of the objects of inspection. Telephone surveys or interview visits by another representative of the inspection body can elicit information regarding inspection performance that may not be available from other means.

h. Review of reports

Often reports are generated from templates that force an inspector's thinking and the recount of inspection into a structured and artificial format. Review of reports may take a check-list approach to confirm that all sections are completed, however report review may also consider whether the report is a true reflection of the effort and coverage of the inspection. Particular attention should be paid to the specification of inspection, identification of work not done and limitations of the inspection, client variations, linkages to supporting information (testing results and photographs) and the final outcomes of the inspection (declaration of conformity and recommendations).

i. Post inspection confirmation

In some applications, data arising in the course of a project and following the completion of the project can provide confirmation that the measures taken in performing the inspection were appropriate, offer some assurance of inspector probity and build client confidence.

The above activities are able to discriminate between varying levels of performance on the part of the inspector, across the diverse dimensions of the service delivery. Other means may be suitable. Inspection bodies should draw upon all such means available to them as appropriate to their industry, the environment, the processes of service delivery and the inspection task.

Implications for inspection bodies

Inspection bodies are required to participate in appropriate quality assurance activities as a condition of accreditation.

Inspection bodies should identify their approach to assuring the quality of inspection services, by including a statement, policy or procedure in their management system.

Where possible, an inspection body should have a plan on their intended participation in relevant proficiency testing activities, to cover the major technical areas included in its scope of accreditation.

At assessment these matters will be discussed and comments recorded as findings (conditions / observations as relevant) under clause 6.1.9 of ISO/IEC 17020:2012.

References

This section lists publications referenced in this document. The year of publication is not included as it is expected that only current versions of the references shall be used.

Standards

ISO 9000	*Quality management – Fundamentals and vocabulary*
ISO 9001	*Quality management systems - Requirements*
ISO 9004	*Quality management systems - Guidelines for performance improvement*
ISO/IEC 17000	*Conformity assessment -- Vocabulary and general principles*
ISO/IEC 17020	*Conformity assessment – Requirements for the operation of various types of bodies performing inspection*
ISO/IEC 17024	*Conformity assessment -- General requirements for bodies operating certification of persons*
ISO/IEC 17025	*General requirements for the competence of testing and calibration laboratories*
ISO Guide 34	*General requirements for the competence of reference materials producers*
SAA/SNZ HB 86	*A guide to the selection, care, calibration and checking of measuring instruments in industry* 1 *General principles*

APLAC Documents

APLAC TC 006	*Guidance Notes on ISO/IEC 17020*
APLAC MR-001	*Procedures for establishing and maintaining the APLAC mutual recognition arrangement among accreditation bodies*

ILAC and IAF Documents

ILAC P10	*ILAC Policy on Traceability of Measurement Results*
IAF/ILAC A4	*Guidance on the Application of ISO/IEC 17020*
IAF GD 24	*Guidance on the Application of ISO/IEC 17024:2003*

NATA Publications

NATA Rules

NATA Policy Circular 2 Proficiency Testing Policy

NATA Policy Circular 11   Policy on Metrological Traceability

Guidance documents covering the implementation of specific accreditation requirements are available from the ILAC (www.ilac.org), IAF (www.iaf.nu) and APLAC (www. aplac.org) websites.

Amendment Table

The following amendments were made to the Inspection Field Application Document December 2011.

Please refer to this sheet in conjunction with the NATA Procedures for Accreditation and the ISO/IEC 17020 Inspection Application Document to ensure that you are familiar with these amendments.

AMENDMENT TABLE			
	Section or Title	**Clause amended**	**Amendment**
Section 1	Introduction	All	Revised to include general information for all fields and programs and issued as NATA Procedures for Accreditation
Section 2	Accreditation procedures	All	Revised to include general information for all fields and programs and issued as NATA Procedures for Accreditation
Section 3	Supplementary requirements for accreditation	All	Revised and reissued as ISO/IEC 17020 Standard Application Document.
		New	Appendix A : Independence requirements
		Annex 3.1	Reissued as Appendix B: Application to modeling
		Technical Circular 11-withdrawn	Revised and reissued as Appendix C: Monitoring inspectors and assuring the quality of inspections
Section 4	Calibration guidance		Removed from Inspection Application Document and reissued as stand alone documents • General Equipment Table • Reference Equipment Table
Section 5	Categories of inspection		Removed from Inspection Application Document and reissued as a stand alone document
Section 6	References		Revised and Updated

Changes between the April 2013 document circulated for information and the formally issued June 2013 edition were merely the removal of drafting remarks and editorial adjustments.