



## ACCREDITATION SCHEME FOR INSPECTION BODIES

# **TECHNICAL NOTE: CI 01**

## **SPECIFIC REQUIREMENTS FOR THE ACCREDITATION OF INSPECTION BODIES FOR CARGO**

## **1. INTRODUCTION**

- 1.1 This document serves to amplify and interpret the requirements of ISO/IEC 17020 for the accreditation of cargo inspection field. The inspection activities under this field include
- a. Inspection for quantity;
  - b. Inspection for quality;
  - c. Inspection for condition of goods, which may include packaging and packing;
  - d. Inspection of loading or discharging of goods
  - e. Inspection of equipment used to determine the quantity and quality

Note: Inspection may also include sampling, verification and control activities.

- 1.2 Accreditation is granted for specific types of inspection for specific products and using specific inspection methods. Accreditation may also be granted for generic inspection methods covering a broad range of different designs for the same category of product. Appendix 1 describes the product categorisation which may be used for defining scope of accreditation.
- 1.3 This technical note should be read in conjunction with documents listed in the Reference Section and/or documents prescribed by implementing authority where applicable.
- 1.4 Supplementary information for specific areas of inspection may be published in/as other Technical Notes.

## **2. PERSONNEL**

- 2.1 The inspection body shall engage staff possessing the required competency necessary to perform the inspections. The staff shall be employed by the inspection body. Inspection staff shall satisfy the requirements defined in ISO/IEC 17020. In the case whereby inspection work is regulated by an authority, the qualification of the inspection staff as required by the authority is to be met where applicable. Inspector qualification criteria are outlined in Appendix 2.
- 2.2 The training programme for an inspection staff should generally include, when applicable,
- the fundamentals of inspection
  - techniques for weighing, measuring, sampling, cleanliness inspections, analysing, testing, etc.
  - product characteristics and uses
  - inspection hazards and safety regulations
  - safe and correct use of equipment
  - reporting of results and certification
  - compliance with quality assurance plan, procedures and other applicable requirements

- 2.3 The inspection body shall evaluate and appraise the inspectors to be competent before allowing them to perform inspection work independently.
- 2.4 When an inspector has acquired sufficient inspection experience in a certain field, he shall be trained and formally qualified to make professional judgments in that field. (See Appendix 2)
- 2.5 The inspection body shall maintain a record to describe the type of inspections that each inspector is qualified to perform.
- 2.6 The inspection body shall ensure that colour blindness and other sensory deficiency of inspectors do not affect the validity of inspection results.
- 2.7 The inspection body shall establish and maintain an effective feedback system to monitor the conduct and performance of inspectors.
- 2.8 To safeguard against any impropriety of the inspectors and attempts to exert improper influence on them by the suppliers, the inspection body shall implement an effective preventive system as defined in ISO/IEC 17020 and documents prescribed by implementing authority, where applicable.

### **3. INSPECTION METHODS AND PROCEDURES**

- 3.1 The inspection body shall provide adequate documented instructions to inspectors to ensure that all the inspections are performed to the requirements against which inspection is to be performed.
- 3.2 Where a customer does not specify an inspection specification or the specification is incomplete, the inspection body shall discuss with the customer and agree on a suitable specification. The inspection specification shall be documented, whether it is provided by the customer or by the inspection body. The inspection body shall inform the client if the inspection method proposed by the client is considered to be inappropriate.
- 3.3 Where an unverifiable specification is provided to the inspector on-site, for replacing the specification provided by the inspection body, the inspector shall verify the integrity of such information with the inspection body.
- 3.4 Work instructions provided to inspectors shall include information spelt out in Appendix 3.
- 3.5 Where the environmental conditions affect the inspection or sampling results, the inspection body shall ensure that they are within the specified limits and are recorded in the inspection records. The inspector shall use suitable and appropriate monitoring equipment to carry out inspection in a competent and safe manner.

- 3.6 The samples selected for inspection shall be representative of the batch of product. Random sampling shall be used unless there is evidence to show that an alternative sampling selection method will give equally representative results.
- 3.7 The inspection body shall ensure that proper arrangements and permission for inspection have been made with the owner of the product to be inspected prior to performing the inspection.
- 3.8 Where the sampling procedure is labour-intensive, the inspection body shall make prior agreement with the supplier or other responsible party to ensure that sufficient and competent manpower is available to assist the inspector.
- 3.9 Before carrying out the on-site inspection, the inspector shall brief the responsible person of the site on the purpose and procedure of the inspection and solicit his cooperation.

#### **4. FACILITIES AND EQUIPMENT**

- 4.1 It is a requirement for inspection bodies to have a policy to ensure that such in-house calibration services are performed in accordance with the relevant criteria for metrological traceability in ISO/IEC 17025.
- 4.2 The preferred routes for inspection bodies who seek external services for calibration of their equipment are defined in sub-sections 1) and 2) of section 2 in ILAC P10. If, however, it is not possible to comply with these two routes for any justifiable reason, then it is acceptable to use the routes 3a) or 3b) of section 2 of ILAC P10. A declaration as to the reasons for non-compliance shall be made and documented. It is a requirement for accreditation bodies to have a policy to ensure that such external calibration services meet the relevant criteria for metrological traceability in ISO/IEC 17025.
- 4.3 Where traceability to national or international standards of measurement is not applicable, the inspection body shall be able to demonstrate how the evidence of correlation or accuracy of inspection are obtained. This could be done via participation in relevant comparison programs or proficiency tests.
- 4.4 When inspection bodies use reference standards of measurement to calibrate working instruments, the reference standards of measurement shall have a higher degree of accuracy than that required of the working instruments that are used for the calibration.
- 4.5 Where equipment is subjected to in-service checks between regular recalibrations, the nature of such checks, the frequency and acceptance criteria should be defined.
- 4.6 To ensure that the appropriate and suitable equipment is available on-site, the inspection body shall consult the responsible person of the supplier at the

inspection site, prior to inspection, to confirm the availability of the equipment at the site and their suitability.

- 4.7 When an equipment is used, the inspector shall ensure that the equipment used is functional and in good working condition.
- 4.8 When electronic means are used for the processing, storage and transfer of information, the systems shall satisfy the requirements of ISO/IEC 17020 and this Supplementary Criteria. Particular attention shall be paid to the validation of software, safety and security of information, maintenance of confidentiality and identity authentication.

## **5. HANDLING INSPECTION SAMPLES AND ITEMS**

- 5.1 Samples and items to be inspected shall be uniquely identified to avoid confusion regarding their identity at any time. Where there is a need to identify the exact sources of origins of individual sub-samples, it may be necessary to assign a unique code to each sub-sample and record the details of its origin, e.g. the carton number, the time and date when the sub-sample was taken from which batch, etc. These identification codes shall be referenced in the inspection records.

Where it is necessary to send samples to laboratories for testing or retain samples for reference, the inspection body shall ensure that they are adequately identified to avoid confusion.

- 5.2 With the exception of Type B inspection body, where an organisation is providing analytical testing and inspection for the same project, the organisation has to ensure that there is sufficient independence between the two activities.

Note: Refer to ISO/IEC 17020 for definition of Type B inspection body.

## **6. RECORDS**

- 6.1 Inspection records shall include sufficient information to permit satisfactory evaluation of the inspection. The record shall be readily retrievable to support the inspection results. Refer to Appendix 4 for more details on information required.
- 6.2 To enable tracing and verification of results or to demonstrate their validity, suitable and appropriate evidences have to be recorded. For example, photographs and video image may have to be taken and kept to demonstrate that the samples have been correctly taken or to show the details of any observed defects.
- 6.3 For record traceability, it may be useful to include the report number, or an equivalent identification number on every document relating to that inspection.

Supplementary information required for the interpretation of the recorded data shall also be kept. Samples may be kept for reference.

## **7. INSPECTION RESULT VERIFICATION**

- 7.1 Before issuing the final inspection result to the customer, the inspection body shall ensure that all the inspection results, calculation, data transfer, inspection conclusions and professional judgments were reviewed and verified. The verification guide can be found in Appendix 5.

## **8. INSPECTION REPORT AND INSPECTION CERTIFICATES**

- 8.1 Unless otherwise specified, certificates and reports are issued to the customer or its designated person. Certificates and reports shall only record facts ascertained by the inspection body. Any data or material obtained from third parties shall be so indicated.
- 8.2 Standard information on any certificate or report shall adhere to the requirements of ISO/IEC 17020.
- 8.3 Where it is necessary to issue interim results on-site, the inspection results shall be verified. The interim report shall clearly state that the results are not final. A final report shall follow.
- 8.4 The inspection body shall ensure that the issuance of such interim document has the consent of the customer and it is given only to the designated person.
- 8.5 The interim report shall present the results clearly and unambiguously. The inspection body shall also ensure that only inspectors appraised to be competent and authorised to issue interim report(s). Such interim reports shall not bear any SAC endorsement.

## **9. REFERENCE**

All references made here are to the latest editions.

- a) ISO/IEC 17020– Conformity Assessment-Requirements for the operation of various types of bodies performing inspection
- b) ISO/IEC 17025– General requirements for the competence of testing and calibration laboratories
- c) ILAC P15– Application of ISO/IEC 17020:2012 for the Accreditation of Inspection Bodies
- d) ILAC P10- ILAC Policy on the Traceability of Measurement Results
- e) SS 600 – Code of Practice for Bunkering
- f) SS 586- Hazard Communication for Hazardous Chemicals and Dangerous Goods
- g) TR 48- Technical Reference for Bunker Mass Flow Metering

## Categories for Accreditation Scope of Cargo Inspection

### 1. Agricultural Products

- Livestock
- Meat products
- Milk and milk products
- Crops
- Grain products
- Cotton & Wool
- Others

### 2. Industrial Equipment and Machinery

- Pressure equipment
- Lifting and lifted equipment
  - Lifting devices
  - Lifted equipment
  - Rigging
  - Elevators and lifts
  - Conveyors
  - Forklifts
- Mobile equipment
- Industrial machinery
- Explosion-protected equipment
- Construction equipment
- Fabricated assemblies and structures
- Electric generators, motors and related equipment
- Power transmission equipment
- Pressurised machines
- Storage tanks
- Others

### 3. Manufactured Goods

- Fabricated metal components and products
- Moulded polymers and composites
- Electrical and electronic products
- Telecommunication devices
- Food and beverages
  - Coffees
  - Cocoa and by-products
  - Wine
  - Alcohols declared to be of agricultural origin
  - Canned food
  - Dairy product
  - Biomass
  - Other processed food & beverages

- Textiles and textile products
- Refractories and ceramics
- Timber products
- Footwear
- Toy & nursery products
- Pharmaceutical products
- Automotives and components
- General manufactured products
- Others

### 4. Natural Resources and Refined Products

- Ores and minerals
- Ore concentrates and metals
- Energy Minerals or Materials, incl coal and coke
- Gas, petroleum and petrochemical products
- Timber
- Biofuel
- Metallurgical Products, incl Precious metals and minerals
- Fertilisers and other chemicals
- Rubber
- Others

### 5. Building & Construction Materials and Products

- Building products
- Underground conduits
- Steel fabricated structures and assemblies
- Concrete structures
- Fire protection equipment
- Playground equipment
- Others

### 6. Reused and Recycled Products

- Scrap metals
- Paper
- Plastics
- Concrete
- Others

## **Qualification Criteria for Inspectors and Approved Signatories**

The general criteria for an inspector for works under accredited scope shall include

1. Minimum of 6 months of working experience in cargo inspection or as stipulated by relevant regulatory authority.
2. Has been evaluated and appraised by the inspection body to be competent for the cargo inspection.

The general criteria for an approved signatory includes

1. Minimum of 2 years of working experience in cargo inspection.
2. Demonstrate knowledge in various aspects of cargo inspection.
3. Demonstrate knowledge in Quality Management and shall be thoroughly conversant with SAC's Terms and Conditions together with other relevant criteria for accreditation.



## **Inspection Methods and Procedures**

Work instructions provided to inspectors shall include the following information:

- a. What are to be inspected, including the type of inspection, identification of the product, the quantity of the product, the location where inspection is to be performed and the contact person, the inspection time and date and other relevant general information.
- b. The sampling method, including the sampling plan and the sample size.
- c. The inspection method, including features of the products to be examined.
- d. The inspection and sampling equipment to be used.
- e. Instructions for recording inspection findings.
- f. Details and quantity of any samples to be sent back to the inspection body for further examination or testing.
- g. The method for affixing identification marks to inspection samples and sub-samples, where necessary.
- h. The acceptance criteria, including the workmanship standard and classification of observed defects shall be specified. Where the customer provides reference samples against which the products to be inspected are to be compared, these standard samples shall be provided to the inspector. The inspection body shall have a system for identification of reference samples.
- i. Any special requirements and instructions relevant to the inspection. E.g. instruction for inspection and sampling equipment, environmental condition requirements and preservation of the collected samples.

## Records

In general, the following information shall be shown in inspection records:

- a. What have been inspected?  
For instance, the types of inspection, identification and quantity of the inspected product, the inspection location, the identities of the inspectors, the inspection time and date where relevant, the identity of the customer and any other pertinent information.
- b. What are the inspection and sampling methods used?  
For instance the sampling plan and sample size, and any deviations from them.
- c. What equipment was used in the inspection?  
For instance, the equipment's identification and specification, verification records for the equipment.
- d. What is the environmental condition? (Applicable when environment affects inspection results).
- e. What are the inspection findings?  
Include results obtained from testing or subcontractors as well as details of any defects or abnormality (which may not constitute a defect) observed. Results may be in various forms like written records, diagrams or photographs.
- f. What are the source and origin of the sub-samples? (when relevant)
- g. What are the acceptance and defect criteria?
- h. What is the rationale and basis of the conclusion or professional judgment?
- i. Are the necessary quality assurance checks performed for the inspection results? For instance, the identity and signatory of the checking and reviewing staff member.

## **Inspection Result Verification**

The verification shall confirm the following:

- a. The instructions of the customers have been accurately and comprehensively executed.
- b. Proper inspection and sampling methods have been used.
- c. The inspection has been performed by qualified inspectors.
- d. The equipment used are checked and calibrated.
- e. Samples have been obtained according to the sampling plan, including the location, size, environmental condition, etc.
- f. Samples, and where necessary, sub-samples have been identified.
- g. Data transfer, calculations and conclusions have been correctly made.
- h. The inspection findings have been recorded and all records are traceable.
- i. All the necessary data required to derive the conclusion have been gathered. (including results obtained from any laboratory or subcontractor).
- j. Observed defects have been classified.
- k. The conclusions have been derived from the inspection findings.
- l. Any professional judgment made have been in accordance with relevant guidelines issued by the inspection body, and the basis of the professional judgment has been clearly recorded.
- m. Information included in reports and certificates are correct.

**Additional Requirements for Inspection Body for the Bunker Industry (Only applicable for use in Singapore)**

**1. Scope**

- 1.1. The Accredited Inspection Body to inspect bunkering operations would need to adhere to the latest edition of the following standards, where applicable:
  - a. TR 48– Technical Reference for Bunker Mass Flow Metering
  - b. SS 600- Code of Practice for Bunkering

**2. Qualifications**

- 2.1. The Inspection Body shall obtain a license issued by the Maritime and Port Authority of Singapore (MPA) for bunker surveying activities in the Port of Singapore.
- 2.2. The inspector shall be licensed by MPA before they are allowed to conduct bunker surveys in the Port of Singapore.

**3. Role of the Inspector**

- 3.1. The inspector shall inspect, measure, sample, investigate and report as required on the bunkering operations.
- 3.2. The inspector shall be impartial and free of conflict of interest in the performance of their professional duties.
- 3.3. The inspector shall be independent when providing such professional service and shall not be influenced by any third party before, during and after the bunkering operations.
- 3.4. The inspector shall report to the implementing authority, where required, on any non-compliances and/or irregularities in the bunkering operations or any impediments to the application of the relevant standard.

**4. Professional Ethics**

- 4.1. Integrity  
The Inspection Body and the inspector shall not breach public trust in the profession. Honesty and integrity must underlie all the professional decision and action.
- 4.2. Competence and Training  
The Inspection Body and the inspector shall possess the necessary competency certificates as prescribed by MPA.
- 4.3. Confidentiality

The Inspection Body and the inspector must not disclose information acquired in the course of their professional work except where consent has been obtained or where there is a legal or professional duty to disclose.

## **5. Safety, health and the environment**

- 5.1. The Inspection Body and the inspector shall adhere to the requirements prescribed in TR 48 or SS 600, where appropriate.

## **6. Documentation**

- 6.1. The Inspection Body and the inspector shall use the documents prescribed by TR 48 or SS600, where appropriate.

## **7. Sampling**

- 7.1. The inspector shall adhere to the sampling procedures prescribed in TR 48 or SS 600, where appropriate.

- 7.2. The Inspection Body that stores and transports bunker samples shall adhere to SS 586 (Hazard Communication for Hazardous Chemicals and Dangerous Goods).

## **8. Equipment for bunker surveying**

- 8.1. The Inspection Body and the inspector shall be equipped with standard surveying equipment. The equipment shall meet all appropriate safety requirements and be accompanied by the relevant documentation on safety and calibration at all times.

## **9. Provision for Technical Assessors**

- 9.1. The Inspection Body shall make the appropriate arrangement to ensure that the Technical Assessors assigned by the Singapore Accreditation Council (SAC) to assess the Inspection Body are equipped with the minimum personal protective equipment as specified in the relevant standard(s), including gas detectors.

- 9.2. The Inspection Body shall be responsible for obtaining, in good time, all the necessary clearances for the Technical Assessors to facilitate site witnessing.

## **10. Site witnessing**

- 10.1. In each four-year accreditation cycle, the Inspection Body shall be required to organize a site witnessing by the assessment team during the initial, second surveillance and renewal assessments.