GAFTA TRADE ASSURANCE SCHEME

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Analysis and Testing

Scheme Year 2012

Gafta Promoting international trade

Code of Practice for Analysis and Testing Facilities

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A.	**Introduction** Knowledge regarding the quality and condition of goods at any given point in the supply chain from where they are grown and/or produced until delivery to final destination, is fundamental to the functioning of the trade. It is necessary that all parties involved in the food and feed chain have immediate access to accurate information regarding the characteristics of the crops being harvested, stored and handled. The information is required for a number of reasons, for example to ensure that goods are stored safely. Contracts for the supply of goods normally incorporate a condition that the goods delivered meet a set of analytical criteria, usually to be certified by an independent party. In some cases the requirement for testing and analysis is a statutory requirement, for example the testing for the presence of salmonella. Accurate information is also vital in the process of deciding which goods are suitable for which contract, delivery date and time, to minimise the cost implications of misdirected and/or rejected goods. Throughout the life of combinable crops and animal feed materials, consignments of bulk commodities are handled a number of times and are subject to storage and transportation. The nature of harvested crops is that they are highly variable due to varietal, regional and climatic differences and throughout their lives are usually mixed to form part of ascertained or un-ascertained larger bulks, which are subject to movement and variations. It is therefore important that at each stage of the movement and handling of goods that checks are made on the quality and condition of the consignment. Thus, most growing, storage, handling and elevation facilities are equipped with 'testing equipment' (to a greater or lesser extent) but are not considered to be a 'commercial analyst' facility. A commercial analyst is a company engaged in the profession of sample analysis for third parties and who has no contractual, direct or indirect involvement with the samples submitted. At one end of the scale a testing facility may have a simple piece of apparatus to establish moisture and natural weight kept on a farm, up to a fully equipped laboratory at a co-operative grain elevator, capable of testing large quantities of grain for the full range of breadmaking or malting specifications. The quality and condition of goods so established is likely to form the basis of a number of decisions made in relation to the goods, for example the quality on which an on-sale is based or the nature of a blend of goods to achieve a desired overall quality. It follows therefore that the accuracy and dependability of the drawing of samples and subsequent analysis is of vital importance to the efficient running of the industry. This code recognises the importance and number of testing facilities that operate internationally for the purposes of monitoring crop characteristics but are not necessarily producing analysis results leading to the issuance of certificates required to evidence compliance under a sale of goods contract.
B.	**Scope** This Manual and Code of Practice provides the best practice guidance for analysis of goods and is intended to establish uniform standards and best practice for analysis throughout the supply chain. Samples for analysis must be handled with due care and attention.
C.	**Definitions** "Definitions" relating to this Manual are set out in the Scheme Overview or are available separately in Part 3 of the scheme documentation.
D.	**Hazard Analysis and Critical Control Points (HACCP) – [R]** The application of a HACCP approach is central to the Gafta Trade Assurance Scheme with the aim of minimising losses, damages and contaminant risks.
E.	**Analysis** Where the contracting parties use the standard Gafta contract terms, detailed provisions and requirements are made on the appointment of independent analysts who are required to comply with the Gafta Rules and Code of Conduct for Approved Registered Analysts. This is a summary of the Analysts' minimum requirements, appointed by, or on behalf of Buyers and Sellers, using or incorporating the terms and conditions of Gafta Contract forms.
F.	**Contractual Provisions** The requirements for the analysis of contractual samples taken at Ports of Loading and Discharge are contained within the standard Gafta Sampling and Analysis clause, which reads: **For ports of loading:** **"SAMPLING, ANALYSIS AND CERTIFICATES OF ANALYSIS** - *the terms and conditions of Gafta Sampling Rules No.124 are deemed to be incorporated into this contract. Samples shall be taken at time and place of loading. The parties shall appoint superintendents, for the purposes of supervision and sampling of the goods, from the Gafta Register of Superintendents. Unless otherwise agreed, analysts shall be appointed from the Gafta Register of Analysts."*

	For ports of discharge: **"SAMPLING, ANALYSIS AND CERTIFICATES OF ANALYSIS** - *the terms and conditions of Gafta Sampling Rules No.124 are deemed to be incorporated into this contract. Samples shall be taken at time of discharge on or before removal from the ship or quay, unless the parties agree that quality final at loading applies, in which event samples shall be taken at time and place of loading. The parties shall appoint superintendents, for the purposes of supervision and sampling of the goods, from the Gafta Register of Superintendents. Unless otherwise agreed, analysts shall be appointed from the Gafta Register of Analysts."*
G.	**Gafta Methods of Analysis Form No. 130** The Gafta Methods of Analysis Form No.130 is the key document/manual that Gafta Approved Analysts must follow. The Form sets down the methodology for the analysis of contractual samples. [see Part 3 - Rules]
H.	**Register of Approved Analysts** Analysts who have signed up to the Gafta Approved Analysts Scheme and passed the twice-yearly ring tests are included in the Gafta Register of Approved Analysts. The up-to-date Register is freely available to members and non-members of Gafta on the Gafta website www.gafta.com.
I.	**GTAS Certified Testing Facilities** Testing facilities that have been certified under GTAS are included in the GTAS database. The up-to-date database is freely available to members and non-members of Gafta on the Gafta website, www.gafta.com.
J.	**GTAS Certified Testing Facilities Complaints Procedure** Testing Facilities that have been certified as complying with the GTAS Code of Practice for Testing Facilities are bound by the Rules and Code of Conduct. A party/parties that appoints a Testing Facility listed in the GTAS Register of Testing Facilities can use a Gafta Complaints Procedure should the situation arise where the Testing Facility appears not to have conformed to the Rules and Code of Conduct. Full details on the GTAS Complaints and Disciplinary Regulations are contained in the Scheme Manual together with the Scheme Rules, Regulations and Codes of Conduct.
K.	**Other Relevant Documents** • Gafta Analysis Methods No.130 [see Part 3 – Rules]

Code of Practice for Testing Facilities

RULES AND CODE OF CONDUCT FOR TESTING FACILITIES

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1.0	**Introduction** The GTAS Code of Practice for Testing Facilities is available for use by all companies involved in the testing of combinable crops and animal feed materials. It aims to establish uniform standards and best practice for analysis throughout the supply chain. By meeting the requirements of the Code there will be increased confidence that the testing facility is maintaining industry accepted levels of accuracy, precision and repeatability. It is recognised that there is considerable variation between the level of equipment present at facilities where testing of the quality of goods is undertaken. Where a facility only uses equipment for testing purposes that are: a) serviced and calibrated by the instrument supplier or other validated organisation and b) where such equipment processes samples in the form in which they are received [i.e. no sample preparation is required] the audit process may be simplified and an abbreviated audit checklist applied. In such cases, following a successful audit, the Certification Body will issue a certificate recording that the facility is regarded as a "small testing facility (STF)". Testing facilities that successfully undergo a full audit will be issued with unqualified certificates. Small testing facilities must meet the requirements of the Code of Practice identified in bold blue boxes.
2.0	**General Requirements**
2.1 K	A laboratory manual stating operating and management procedures is required and forms the basis of the annual assessment. [R] Those protocols requiring a record to be kept are indicated [R] within the code.
2.2 K	Staff training, equipment and test records should be retained for a minimum of 3 years.
2.3	Methods of analysis used must be traceable to the appropriate contractual requirements or where no specific contractual requirements apply, to the reference method set by ISO (or equivalent).
3.0	**Testing Facility Procedures**
3.1	**Facilities**
3.1.1 K	Laboratory facilities must be fit for the purpose, i.e. have sufficient working spaces, the appropriate equipment and supplies, be clean, ventilated and heated to the extent that will allow the safe and effective operation of the facility.
3.1.2 K	External influences that may affect the satisfactory operation of the facility (for example: electromagnetic interference, voltage fluctuations, water pressure, temperature and vibration) must also be taken into account. Any of these factors must be corrected if shown to influence the quality (i.e. accuracy and/or precision) of the analytical data being produced.[R]
3.1.3 K	Approved providers of services and supplies must be recorded.[R]
3.1.4	The requirements of the applicable Monitoring Code for the Control of Salmonella and any other applicable guidelines must be adhered to when returning waste grain from the laboratory to a store.[R]
3.2	**Equipment**
3.2.1 K	Equipment must be fit for the purpose for which it is used and maintained and serviced to manufacturers' specifications or tolerances. [R]
3.2.2 K	Equipment must be checked before use on a regular (daily) basis. [R]
3.2.3 K	Equipment must be calibrated annually against the reference method. [R]
3.2.4 K	Calibration adjustments must only be undertaken by authorised and trained personnel.
3.2.5	Each piece of laboratory equipment requires a unique identification. [R]
3.2.6	Maintenance and servicing schedules must be recorded. [R]
3.2.7	Calibration frequencies and methods must be recorded. [R]

3.2.8	Manufacturers' operating instructions or in house procedure must be available. [R]
3.3 3.3.1 K	**Management and Personnel** Where a company operates more than one testing facility, all such facilities should be under the control of one permanent member of staff who will be responsible for all aspects of operation. Where responsibility for multiple testing facilities is shared, those persons shall report to one permanent member of staff with ultimate responsibility for all aspects of operation.
3.3.2 K	Both temporary and permanent staff members must be trained for all analysis undertaken including identification of hazardous materials and internal quality control. [R]
3.3.3	Staff members must be familiar with the applicable national guidelines and should undertake self assessments for the appropriate analysis.
3.3.4	Personnel authorised to alter equipment calibrations and adjust records kept must be listed within the operational manual for the facility.
3.3.5 K	Competence in all analysis undertaken must be continuously demonstrated by self-assessment using proficiency test samples or by use of internal Quality Control samples, certified reference materials or through other acceptable means. [R]
3.3.6 K	Training records must be completed for all staff involved in analysis and include: [R]
	• Dated record of training
	• Signed by trainee and trainer • Annual performance review
	• Self assessment reports
	• Include certificates where available
3.4	**Taking Samples for testing/analysis** It is vital to the outcome and relevance of the testing of samples that the samples drawn accurately represent the bulk of goods to which they relate. Those trading goods on Gafta contracts are obliged to follow detailed requirements for the drawing of samples to ensure, as far as it possible to do so, that samples do represent the lot from which they are drawn. Where no such detailed requirements are set out in the applicable contract or where no contract is directly applicable, the methods for taking samples as set down by the International Standards Organisation (ISO) shall apply; for example ISO 13690:1999 Sampling of static batches. Further information regarding sampling of goods is available in the GTAS manual "Supervision, Sampling and Weighing".
3.4.1 K	A written procedure for the taking of samples must be available. [R]
3.5	**Handling Samples**
3.5.1 K	A written procedure for the handling of samples covering all stages from entry to the laboratory to disposal must be available. [R]
3.5.2 K	A written procedure must be put in place to identify samples by a unique reference system, to allow full traceability of samples from date and time of receipt, through analysis to final reporting. [R]
3.5.3	A written procedure for the disposal of contaminated samples or waste goods must be in place. [R]
3.5.4 K	Hazardous admixture detected in samples must be reported to the owner of the goods and recorded. Examples include ergot, glass, dressed seed, rodenticide and faeces. NB: this is not a comprehensive list. [R]

3.5.5	Where a request is received to estimate the overall concentration of hazardous admixture found, to enable a decision to be made concerning the correct remedial action to be taken, the request received and report made must be recorded. [R]
3.6	**Administration and Records**
3.6.1 K	Sample results must be recorded on paper or kept electronically. Paper records must be dated and signed if altered and electronic records may only be altered by named individuals. [R]
3.6.2	Sample records should be retained for a suitable period to cover any potential claims against the test results. [R]
3.6.3	The following records are required to be kept for a minimum of 3 years: [R] • Copies of any Certificates and Reports issued • Invoices • Sample handling and Registration Records • Instructions from Principals • Balance calibrations • Self assessment records
3.6.4 K	Samples received for analysis must be kept for a minimum period of 3 months.
3.7	**Quality Control**
3.7.1 K	The quality control system consists of regular check tests for each of the analyses carried out by the laboratory. Checks should be performed on a daily basis if the method/equipment is in use that day. Checks should be performed at the start of the working day before any samples are tested. [R]
3.7.2 K	Check test samples can be prepared in house as per the laboratories quality system procedures or certified reference materials (CRM's) can be purchased for use as check samples. The check samples will be used to produce a mean value and standard deviation enabling warning and action lines to be established on control charts in accordance with established statistical process controls for laboratory analysis. [R]
3.7.3 K	Corrective action procedures must be in place where check results are outside the warning and action lines. [R]
3.8	**Proficiency Testing**
3.8.1 K	Ring tests are an essential means of providing an external check to ensure that results are consistent by comparison with other participating laboratories. Proficiency ring tests must be undertaken regularly (minimum of every six months) for all relevant analyses. [R]
3.8.2 K	Testing procedures used must be regularly reviewed and either: • Accredited to ISO 17025 or equivalent or • Validated by membership of the Gafta Approved Analysts Scheme or • Validated by participation in the GTAS Proficiency Scheme or • Validated by other acceptable means such as performance in ring tests or compared with a laboratory recognised as operating a fully validated test procedure (i.e. satisfying one or more of the above criteria). [R]
3.9 3.9.1 REV	**Contracting out** A Laboratory Testing Facility may only contract out an operation which it is appointed to carry out to another Testing Facility named on the GTAS Register of Approved Testing Facilities.
3.9.2 K	Participation in Proficiency Ring Tests must be undertaken by the named Testing Facility. Under no circumstances may the analysis of ring test samples be contracted out.

3.10	**Complaints** A documented complaints procedure must be in place recording any complaints and corrective actions taken in relation to these – including the re-checking of any other samples which may be affected. Corrective and preventative action must be taken as soon as practically possible. Any preventative action taken to avoid a re-occurrence in the future must be documented. [R]
4.0	**Internal Auditing**
4.1 K	An annual documented internal auditing procedure must be in place demonstrating that the Code of Practice is being adhered to. Records must include any non-conformances and measures taken to rectify. [R]
4.2	The person responsible for overall control of the laboratory must ensure non-conformances are rectified as soon as possible. [R]
5.0	**Analytical Methods**
5.1	The manufacturer's instructions [on how to use the testing apparatus] must be followed.
5.2	Methods of analysis used must be traceable to the reference procedures where applicable.
5.3	Testing facilities must keep a record of methods used. [R]
5.4	Where in-house methods are used, the relationship between those methods and the reference methods must be retained on a test by test basis.
5.5 K	For the methods used, a documented system must be established to ensure the correct application of the method.
5.6 K	Where non-conformances are identified corrective action must be taken to rectify the non-conformance and records be kept accordingly. [R]
5.7	For the methods used, a documented system must be established to evidence that those methods perform to acceptable limits of variation as demonstrated by recognised performance testing schemes. [R]
5.8	For tests not covered and other commodities, in house methods must conform to an appropriate proficiency scheme.
5.9	Values provided by the reference method must be used for comparison with the in house method where no proficiency scheme exists.
5.10	Unless otherwise agreed the reference Methods for Wheat, Barley, Oats, Pulses and Oilseeds are as per ISO standards.

APPENDIX 1

The GTAS Proficiency Testing Scheme (PTS)

1. Introduction

An approved GTAS Testing Facility is a testing facility engaged in sample analysis for any purpose other than for producing certificates of quality of goods at ports of loading and discharge traded on Gafta contracts. They carry out analysis tests in accordance with agreed methods of analysis which may include those listed in Gafta Form No.130, and the Code of Practice for Testing Facilities, for commodities traded on contract terms.

The aim of the scheme is to continuously monitor and improve the quality of analytical performance of participating testing facilities and to assess the ability of the facility to produce accurate and reliable analytical data. The GTAS PTS provides an external quality assurance system which allows testing facilities to monitor their performance in comparison with other testing facilities operating in the same field.

To join this testing scheme applicants must complete an application form available from GAFTA.

2. Operational Control

The operation of the PTS is the responsibility of the GTAS Technical Advisory Committee.

3. Framework of Scheme

Ring test materials are circulated twice yearly at approximately 6 monthly intervals. Samples are normally dispatched to participating testing facilities during January and July each year continue and are referred to as Round 1 and Round 2 respectively. PTS members are obliged to participate in both ring testing rounds each calendar year.

Participants are advised in advance of the details of the samples to be forwarded together with information required by importing authorities (translated where appropriate into the national language of the country of domicile). Additional and supporting documentation required to enable import clearance of sample material that is issued in the country of dispatch can be arranged on request and at the cost of the facility operator.

Results of analysis and details of the methods used must be returned within a specified period . Thereafter all results received are collated, Z scores and statistics calculated and reports issued and sent to participants within a further 14 day period.

Confidentiality of the participants is ensured by identifying facilities using a unique reference number known only to GAFTA, the participant and the inspecting laboratory. This will be provided to applicants after processing their application form.

Where the performance of participant testing facilities is deemed not to be satisfactory due to returning results in a ring test outside the satisfactory parameters for Z scores (see 7 below), advice for improving analytical techniques based on details of methodology provided is available via the GTAS Technical Advisory Committee.

4 Reference Samples

Additional samples are available from each ring test for reference purposes. An additional charge will be levied for handling and dispatch of reference samples. For details of charges please apply to GAFTA.

5 Ring Test Materials

A range of variable test materials are employed that reflect the materials freely available within the international trade in combinable crops and animal feed materials. For each ring test a sample of grain and a sample of an animal feeding stuff is prepared. Samples are sourced as appropriate.

6 Homogeneity of Samples

Ring test materials are prepared and assessed for homogeneity to ensure that all samples dispatched and those retained for reference purposes are, as far as possible, the same.

7 Establishing the Assigned Value

The assigned value for each analyte is calculated as the mean value of the trial data, once all relevant corrections have been applied. Any results outside of +/- 4 standard deviations (all results) are treated as outliers and the mean value is calculated with the outliers removed.

The target standard deviation for each analyte is chosen from either the appropriate form of the Horowitz equation or the trial SD after removal of outliers. The choice is made using current industry practices used in other collaborative trials and proficiency tests (eg FAPAS). Z scores are deemed satisfactory if $z \leq 2$

8 Analytes to be Determined

Moisture
Crude Protein
Nitrogen
Oil A by Solvent extraction
Crude Fibre
Ash
Sand/Silica

9 Methods of Analysis

Testing facilities are able to elect their method of choice in carrying out analysis of the ring test samples. The methods used must be stated on the Results Submission Form provided by the inspecting laboratory.

10 Assessment of Performance

Testing facilities are assessed on the difference between their results and the assigned value.

11 Returning Test Sample Results

The scheme operates using electronic communication methods therefore results should be submitted to the inspecting laboratory by e-mail or alternatively by facsimile. Where results are returned by facsimile they should be typed and not handwritten to ensure that the results are legible. Results are collated and reports produced by the inspecting laboratory. All results must be submitted by the date for closing of the ring test round. Results submitted after the deadline will not be accepted unless under exceptional circumstances.

Approved Analysts are required to submit their ring test analysis results on the standard form for submission provided for each round by the inspecting laboratory. Forms are provided in electronic form with a further hard copy with each set of samples. Results submitted in any other format or using any other type of form will not be accepted. Analysts are allowed to submit results either on an “as is” basis or adjusted to Dry Matter (DM) basis. Analysts must state on the form whether results are provided “as is” or on a DM basis. In all cases the inspecting laboratory will convert the results into “as is” for comparison purposes. Where results for protein in grain and/or feed are submitted they must be accompanied by a declaration of the nitrogen co-efficient used (for example: N x 5.7 or N x 6.25). Appropriate boxes on the results submission form are provided.

For each ring test round of proficiency testing a deadline for submission of results will be set by the inspecting laboratory and notified to participants. As a guide, this will normally be circa 6 weeks after the date of despatch of samples to allow sufficient time for transit of samples, customs clearance formalities and analysis and reporting procedures. All results must be received by this date. An extension to the date for submission of results may be made in exceptional circumstances, at the discretion of GAFTA and/or the inspecting laboratory.

12 Late Submission of Test Sample Results

Where test sample data is not submitted to the inspecting laboratory [by the applicant] prior to the stipulated deadline, the applicant must forward the data to GAFTA together with an explanation of the circumstances leading to the missing of the deadline. Requests for late acceptance of data will be examined by the Technical Advisory Committee whose judgment will be final and binding.

13 Reporting Results to Participants

Specific results reports (for each participant) will be put in place to enable results and other documentation to be returned by e-mail (in a PDF format); the report will include graphics for z scores.

Hard copies of reports issued are available on application. A charge will be levied for postage/courier charges.

14 Confidentiality

Information regarding individual testing facilities including results returned and reports produced concerning ring tests remain confidential between the participating testing facility, GAFTA and the inspecting laboratory. Participants are identified by means of a unique identification number.

15 Technical Queries

Queries of a technical nature concerning tests should be referred to the Scheme Manager.

16 Fees

The fees for participating in the GTAS Proficiency Scheme are available on application to GAFTA.

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