FEI Standard for Laboratories

1. Preamble

The *FEI Equine Anti-Doping and Controlled Medication Regulations* (EADCM Regulations) foresee an *FEI Standard for Laboratories* (the "*Standard*") in order to ensure an appropriate level of scientific and forensic integrity in the analytical process.

The requirements of the EADCM Regulations, together with the established methodologies of the FEI Approved Laboratories for performing analyses of FEI samples to date, form the basis of this *Standard*.

Established methodologies for analysis of equine blood, urine and other relevant samples have for the most part evolved out of the horseracing industry due to the significant volume of samples analyzed on an annual basis. The *Standard* is therefore composed of documents elaborated by the International Laboratory Accreditation Cooperation (ILAC), the Association of Official Racing Chemists (AORC), the International Federation of Horseracing Authorities (IFHA), and the Association of Racing Commissioners International (ARCI). Where appropriate, these documents are supplemented or substituted by standard operating procedures developed in an equestrian testing environment. Further to these standards, the FEI Approved Laboratories seek to operate within a harmonized manner.

This agreed *Standard* has been the subject of review and comment by the FEI Veterinary and Legal Departments, the FEI Approved Laboratories, and members of the FEI Veterinary Committee.

2. Purpose

The purposes of this *Standard* are:

1. to ensure laboratory production of valid test results and evidentiary data;
2. to have uniform and harmonized results among FEI Approved Laboratories;
3. to provide transparency concerning analytical processes used by FEI Approved Laboratories in the context of legal processes undertaken after the detection of positive test results.

3. Rules

The laboratory's drug screening and confirmatory procedures for equine samples are accredited to ISO/IEC 17025 by an internationally recognised accreditation body, and are operating within the current version of both ISO/IEC 17025 and the ILAC-G7 document. Any proficiency testing organised by the FEI would comply with ISO/IEC 17043.

All FEI Approved Laboratories must comply with all requirements of the current ILAC G-7 Document (Accreditation Requirements and Operating Criteria for Horseracing Laboratories) and the current AORC Guidelines for the Minimum Criteria for Identification by Chromatography and Mass Spectrometry, and be accredited to the ISO/IEC 17025 International Standard by an internationally recognized accreditation body.

4. Explanatory Section

A. **Part A** of the ILAC-G7:06/2016 document provides information on test related accreditation requirements for equine doping-control laboratories, as used by accreditation bodies in accordance with the ISO/IEC 17025. This Part provides safeguards as to:

1. The prevention of 'false-negative' test results;
2. Quality-control safeguards for each analytical batch;
3. The storage and handling of controlled drugs;
4. The minimum schedule of tests to be carried out in the initial screening for samples to be reported as negative;
5. Documentation of the decision processes as to which samples should require further investigation;
6. The determination and documentation of limits of detection for representative analytes in all screening methods, and
7. Checking of all records, including those for negative results.

B. **Part B** of the ILAC-G7:06/2016 document is a set of recommendations for establishing the presence of prohibited substances when sufficient analytical data supports the presence of a prohibited substance and no significant data refutes it. It also rejects the concept of rigid standardization and supports development by individual laboratories to improve their procedures. Part B also provides guidelines with regard to:

1. **Forensic integrity** (items 6-11). The sample must be received, identified, the receipt recorded, and then the sample stored according to documented procedures. Access to the sample needs authorization. Unless the sample is analyzed on its own, a positive identification or quantification must be based on two portions of the original sample with consistent findings. All analytical data and chain-of-custody records must be verified. Analysts in charge of the sample analysis and verification must be suitably qualified and able to act as expert witnesses if required.
2. **Regulatory identification**

   2.1. General considerations (items 12-17) as to the use of diagnostic data, the documentation of test methods, the stability of the analytical system and absence of interference between samples, quantification of certain substances, the use of spiked control samples, the use of library spectra or other reference materials for substance identification, and the need for written criteria as to what constitutes a match between a reference material and a sample component.

   2.2. Criteria for common techniques (items 18-22) such as: mass spectrometry, gas or liquid chromatography, thin-layer chromatography, immunoassays, and ultraviolet or fluorescence spectroscopy.

3. **Regulatory quantification.** Criteria for regulatory quantification (items 23-29) relating to the equipment used, the methodology of quantification, internal standards used,

reference materials used, validation, and quality control. It also allows for provisional thresholds that may not be absolute concentrations or ratios.

4. **Referee Analysis.** Specifications concerning the objectives of the referee analysis (also known as B-Sample, or split-sample analysis) (item 30-32)

C. **Part C** of the ILAC-G7:06/2016 document: (i) provides a link to harmonized definitions of terms commonly used by racing chemists, and (ii) compiles a few performance specifications that may be adopted by horseracing laboratories, including one required by the IFHA. The IFHA list is not all encompassing and laboratories may well be capable of detecting below the levels specified in the list. For information, an updated Performance Specification of the IFHA is published in their website, at the URL:
http://www.horseracingintfed.com/racingDisplay.asp?section=10#an4

D. The current AORC Guidelines for the Minimum Criteria for Identification by Chromatography and Mass Spectrometry provide a set of internationally-agreed recommendations for the comparison of chromatographic and mass spectral data consistent with ILAC-G7. Part B.

E. When performing B Sample analyses, laboratories which also performed the initial analysis will ensure that the B Sample analysis is supervised by a qualified analyst who was not responsible for the initial analysis. Upon request by the Person Responsible, the B-sample Laboratory will provide copies of the Laboratory documentation package in accordance with the specific B-sample Laboratory's standards and specifications.

F. For B sample analyses, the Person Responsible for the horse and the owner of the horse (if applicable) shall be authorized to attend the entire (B sample) analysis or to send a representative (the "Witness") so long as the Witness does not present a declared threat to the integrity of the process and the Witness : (i)
is identified at least seven (7) days prior to the confirmatory analysis; (ii) agrees to sign whatever confidentiality documents are required by the individual laboratory, and (iii) agrees to sign the FEI Code of Conduct for B Sample Witnesses. Persons Responsible shall be responsible for paying the cost of the B Sample analysis and any additional costs incurred by the B-sample Laboratory to accommodate the Witness.

5. FEI Approved Laboratory Advisory Group

a. The FEI Approved Laboratory Advisory Group (FALAG) is an advisory expert group.

b. The Chair of the FEI Veterinary Committee shall be the Chairman of the FALAG and the members are the Veterinary Director, Legal Director and a member of AORC. Other members may be appointed by the FEI Bureau from time to time.

c. The purpose of the FALAG is to make recommendations to the FEI Bureau on the appointment, suspension and revocation of appointment as a FEI Approved Laboratory.

d. The FEI Bureau makes decisions on the appointment, suspension and revocation of appointment as a FEI Approved Laboratory.

e. In considering an application for appointment or recommending whether to suspend or revoke an appointment the FALAG may inform itself by any means it considers useful.

f. Amongst other things the FALAG may appoint assessors to carry out "on site" assessment, review documentation, and may arrange Proficiency Testing (PT) to be conducted.

g. The FALAG administers a FEI PT Scheme and a Negative Samples Exchange Program for the FEI Approved Laboratories. The FALAG may instead, if agreed with the administrating governing body, rely on other test schemes and exchange programs such as the PT scheme administered by the IFHA's Reference Laboratory Appointment Committee.

6. FEI Approved Laboratory Technical Group

a. The FEI Approved Laboratory Technical Group (FALTG) is an expert group that supports the FALAG with technical expertise.

b. Members of the FALTG may be appointed by the FALAG from time to time.

c. The purposes of the FALTG are to:

- Train assessors appointed by the FALAG
- Act as a source of advice to assessors on individual assessments
- Act as a source of advice to the FALAG on individual assessments
- Act as a source of advice to the FALAG on revisions to the FEI Standard for Laboratories
- Carry out such other functions as the FALAG may give to it from time to time

7. Process and Requirements for FEI Approved Laboratory Appointment

This section describes the specific requirements that a laboratory shall fulfil in the process of applying for, obtaining, and maintaining appointment as an FEI Approved Laboratory Appointment.

7.1 Applying for FEI Approved Laboratory Appointment

7.1.1 Submit application

The laboratory shall complete an application form approved by the FALAG (Annex A).

Note: The FALAG may require an update of this information during the process of assessment.

All documentation must be delivered to the FALAG in order for the applicant to be considered for appointment. An attachments checklist (Annex B) may be used to assist the submission of relevant documentation. The completed application shall be signed by the Head of the Laboratory.

7.1.2 Assessment fees & charges

The application shall be accompanied by the administrative fee of 1000 CHF . If the preliminary assessment by the FALAG is satisfactory, the applicant will be considered as a candidate laboratory, which will then be responsible for meeting the costs of proficiency testing and on-site assessment.

7.1.3 Initial assessment

The FALAG will carry out an initial assessment of the application. If the FALAG is satisfied on the basis of the documentation provided, that the candidate may satisfy the threshold criteria for appointment then proficiency testing will be arranged and an assessment team (comprising one or more assessors) will be appointed to carry out an on-site inspection. If the FALAG determines on the basis of the documentation provided that the applicant has not met the threshold criteria, then it may at its absolute discretion reject the application.

7.1.4 Proficiency Testing (PT)

A set of approximately 5 PT samples consisting of equine urine and plasma will be prepared and dispatched to the candidate laboratory. Each PT sample will contain one unknown substance at or above the concentration as outlined in Annex C.

The candidate laboratory shall successfully identify, and if relevant quantify, the substances detected. It shall provide a report within 3 weeks from receipt of the PT samples.

All analytical data must be kept by the candidate laboratory, to be reviewed by the assessor and possibly by the FALAG.

7.1.5 Site visit

The FALAG-appointed assessor(s) will carry out an on-site assessment after the reported results of the PT samples have been agreed by the FALAG as being satisfactory (i.e., all unknown substances identified and no false positive reported).

There is no appeal against the results of the proficiency testing.

7.1.6 Report

Within approximately one month after the site visit, the assessment team will submit a confidential report to the FALAG. In preparing the report, the assessor(s) may have regard to the matters set out in Annexure D and to any other matters which in his, her or their judgment are relevant. The assessment team may make a recommendation on whether an appointment should be made or, if this is not the case, may identify deficiencies to be corrected or needed improvements in order to be considered for appointment.

The FALAG may at its absolute discretion copy the assessment team's confidential report or provide a summary of the report to the candidate laboratory.

7.1.7 FEI Bureau's decision

The FEI Bureau shall decide, taking into account the FALAG's recommendations, on the appointment of any FEI Approved Laboratory.

A decision by the FEI Bureau, taking into account the FALAG's recommendations, to reject a candidate laboratory's application is not appealable.

If the FEI Bureau determines that the candidate laboratory has failed its application, it cannot re-apply for appointment within 12 months from the date of notification, unless otherwise agreed by the FEI Bureau.

7.1.8 Issue and publication of award of appointment

A document signed by the Secretary General of the FEI or a nominated delegate shall be issued in recognition of appointment. A list of FEI Approved Laboratories will be available on the FEI's website.

7.2 Maintaining appointment as a FEI Approved Laboratory

The FEI Approved Laboratories shall successfully participate in the FALAG PT Scheme and the Negative Sample Exchange Program. In the normal course, an on-site reassessment will take place every 3 to 4 years. However, the FALAG reserves the right to assess and inspect an FEI Approved Laboratory at any time. The notice of the assessment/inspection will be made in writing to the Head of the FEI Approved Laboratory.

A FEI Approved Laboratory shall continually comply with the criteria set out in Annex A. The FALAG may at its absolute discretion request documentation from an FEI Approved Laboratory relevant to the criteria set out in Annexure A.

Failure of an FEI Approved Laboratory to provide timely information requested by the specified date shall be considered a refusal to cooperate and may result in suspension or revocation of appointment.

7.3 Suspension of appointment

Whenever the FALAG has substantive reason to believe that suspension of appointment may be required and that immediate action is necessary the FEI Bureau may immediately suspend a laboratory's appointment.

The period and terms of suspension shall be proportionate to the seriousness of the non-

compliance(s) or lack of performance. A period of suspension shall be up to 12 months, during which time any non-compliance or identified deficiency must be corrected, documented and reported to the FALAG at least six (6) weeks before the end of the suspension period. Delay in submitting the proper corrective and preventive action reports may lead to an extension of the suspension period. If any non-compliance or identified deficiency is not corrected during the suspension period, the FEI Approved Laboratory appointment will be revoked, unless a one-time only extension of the suspension period, not to exceed two (2) months, is granted by the FEI Bureau.

A decision by the FEI Bureau to suspend an appointment is not appealable.

7.4 Revocation of appointment

The FEI Bureau may revoke the appointment of a laboratory.

If a laboratory, whose appointment has been revoked, should seek a new appointment at a time agreed by the FEI Bureau, it shall begin the process as a new applicant laboratory as described in Section 7.1.

7.5 Notification

7.5.1 Written notice

When a laboratory's appointment is suspended or revoked, the FALAG, on behalf of the FEI Bureau, shall immediately serve the laboratory with written notice of the suspension or revocation. This notice shall state the following:

1) The reason for suspension or revocation;
2) The terms of the suspension or revocation; and
3) The period of suspension.

7.5.2 Effective date

A suspension is immediately effective, unless otherwise decided by the FEI Bureau. A revocation is effective sixty (60) calendar days after the date of the written notice, unless otherwise decided by the FEI Bureau. A FEI Approved Laboratory that has received notice that its appointment is in the process of being revoked shall be immediately suspended until the revocation is made final.

FEI Approved Laboratory – Checklist **ANNEX A**

Date of on-site assessment:

Asseror(s):

Lab representative(s):

Assessment of Fundamental Capability and Capacity Criteria:

	Criteria	**Criteria met (Yes/No)**	**Comment**
1	Major provider of testing services to National Federation/Racing Authority (ies)		List all National Federations/Racing Authorities being served:
2	Minimum of 5 years' experience of doping control		Years of relevant experience
3	Analysed at least 20 B-samples in the last 5 years.		No. of B-samples analysed:
4	At least two Professional members of the AORC		Names of AORC members:
5	ISO/IEC 17025 accreditation for testing a comprehensive range of drugs in both equine urine and blood		Provide copies of the scope of accreditation and the last assessment report:
6	Compliance with the FEI Standards for Laboratories item 2, 3, 4. Operating in accordance with ILAC-G7 and the guidelines listed therein.		
7	Demonstrated capability to meet the latest version of the AORC PT drug list in horse urine and horse plasma		Provide a list of Limits of Detection for these substances:
8	No false positive or more than two (2) false negative results <u>in total</u> in the AORC PT Program issued in the AORC PT programme plus, for maintaining, in the FALAG PT Scheme and Negative Samples Exchange Program in the last three years. No false positive result from any other PT		Provide copies of the reports from all PT and samples exchange programs participated in the past 3 years:

	or samples exchange programmes for at least 3 years.		
9	Minimum of total 3000 official equine samples analysed per year, with no false positive result for at least 3 years.		List the no. of FEI or regulatory horse racing samples analysed in the past 3 years, drugs reported, and any false positive reported:
10	Capability to identify the prohibited substances referred to in Annex C at the required concentrations in the relevant medium		Provide a list of Limits of Detection for these substances:
11	Control the detection of legitimate therapeutic substances through the application of FEI Screening limits/Harmonised Performance Limits		Provide a list of Limits of Detection (or Limits of Quantification) for these substances and the applicable limits for these substances:
12	Control the detection of environmental substances through the application of residue limits where inadvertent exposure is a relevant risk in the jurisdiction		Provide a list of Limits of Detection (or Limits of Quantification) for these substances and the applicable limits for these substances:
13	At least one member of the analytical staff that speaks and writes in fluent English.		

Additional supporting documentation to be provided:

Laboratory organizational chart;

List of technical, administrative, and research staff members and their qualifications; Schematic representation of the laboratory facilities, including square footage, describing functional areas (e.g., sample reception area, GC-MS and LC-MS instrument rooms, sample storage area, etc.), and identifying secure entrances and exits. Photographs and floor plans may be included.

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Date and Signature of the Head of the Laboratory

FEI Approved Laboratory process - Attachment Checklist **ANNEX B**

Documents to be submitted for:

☐ Initial certification ☐ Re-certification

List of attachments:

☐ Number of equine samples tested in the past 3 years and record of false positive if any

☐ A representative Laboratory Document Package submitted for a positive A-sample

☐ Scope of accreditation

☐ Record of attendance at ICRAV and/or AORC meetings

☐ Publications for the advancement of racing chemistry

☐ Laboratory floor plan and floor area

☐ Laboratory organisation charts, with key positions clearly identified

☐ List of major equipment

☐ Approximate number of reference standards

☐ List of drugs reported in the past 2 years

☐ Summary of proficiency test (PT) results for the past 3 years

☐ Documents certifying excellent skills in spoken and written English of at least 1 senior analyst member of staff

☐ List of sponsors of the Laboratory

☐ Other documents (please specify)

FEI EQUINE PROHIBITED SUBSTANCE LIST **ANNEX C**

Selection of substances decided by FEI Veterinary Department to be controlled

Drug Class/Structural Type	Molecule	Urine spike (ng/ml)	Plasma spike (ng/ml)
Anabolic Steroids & steroid esters	stanozolol	0.5 (met)	0.2
	boldenone undecylenate	N/A	0.2
	testosterone propionate	N/A	0.2
Corticosteroids	triamcinolone acetonide	1	0.1
	fluticasone propionate	**N/A**	0.02
	methylprednisolone	40	4
	dexamethasone	0.4	0.1
	prednisolone	40	10
Bronchodilators	clenbuterol	2	0.05
	salbutamol	5	5
	ipratropium	0.5	**N/A**
Proteins and peptides	EPO	**N/A**	1
Beta-blockers	atenolol	10	5
Inorqanics	cobalt	150	50
	arsenic	500	**N/A**
Bis-phosphonates	tiludronic acid	**N/A**	50
Antipsychotics	flufenazine	5	0.4
	reserpine	**N/A**	0.1
NSAIDs	firocoxib	100	20
	phenylbutazone	150	150
	ibuprofen	600	60
	tolmetin	120	15
	salicylic acid	1100000	9000
	naproxen	400	150
	niflumic acid	150	30
	flunixin	150	2
	celecoxib	75	15
	ethacrynic acid	150	50
Sedatives	xylazine	10 (met)	0.2
	acepromazine	4 (met)	0.05
	detomidine	5 (met)	0.1
	oxazepam	5	1
	ketamine	10 (met)	2
	pentobarbital	100	20
	secobarbital	100	20
	romifidine	2	0.5
	n-butylscopolamine	50	0.1

Local anaesthetics	bupivacaine	20 (met)	1
	mepivacaine	20 (met)	1
	lidocaine	20 (met)	1
	procaine	75	10
Opioid analgesics	morphine glucuronide	50 (free equiv)	N/A
	levorphanol	20	N/A
	pethidine	10	N/A
Stimulants	ephidrine	150	50
Xanthines	pentoxifylline	50	50
	caffeine	75	75
	theophylline	400	400
Diuretics	furosemide	75	0.2
	hydrochlorothiazide	75	0.2

FEI APPROVED LABORATORY - ASSESSMENT GUIDE ANNEX D

1. **GENERAL**

ISO ACCREDITATION SCOPE

- Last assessment/reassessment results
- Is accreditation for a flexible scope?
- Different mediums covered by accreditation (could be or not covered by flexibility in some countries).

QUALITY ASSURANCE

- Compliance with latest version of ILAC-G7?
- Performance in FEI Ring tests, AORC PT and Sample Exchange programs
- Internal audit records
- Last annual system review record/report

SAMPLES

- How many samples analysed/year
- Substances reported
- Reporting/turnaround time
- Are « out of Competition » samples collected? How many? Scope of screening?
- Experience in B-sample analyses

EQUIPMENT, METHODOLOGY, AND LAB FLOOR AREA

- Dedicated to routine
- Limits of detection, and compliance to FEI Clean Sport Regulations FEI Standard for Laboratories and MASTERLIST FEI SCREENING LIMITS

STAFF

- Number (FTE), qualifications and experience
- Staff turnover record
- Dedicated to routine
- Number of senior analysing staff with excellent skills in spoken and written English

ACCESS TO REFERENCE STANDARDS

- Standards for the FEI scope of substances

2. **RESULTS of PERFORMANCE TEST**
    a. 2 urine samples :
    b. 2 blood (plasma) sample :
    c. Documentation provided :

3. **ON SITE ASSESSMENT (non stable drugs)**
    a. Procedures in place
    b. Vertical audit of a reported case
    c. Validation of relevant analytical methods (routine or dedicated analytical line)
    d. Availability of equipment and reagents
    e. Participation to sample exchange program (to be organized)

4. **CONCLUSION**