

CALIBRATION QUALITY MANUAL

TOXICOLOGY LABORATORY DIVISION

WASHINGTON STATE PATROL

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TABLE OF CONTENTS

TABLE OF CONTENTS	2
INTRODUCTION	4
1.0 QUALITY MANAGEMENT SYSTEM	5
1.0.1 POLICY	5
1.0.2 DEFINITIONS	5
1.0.3 QUALITY POLICY STATEMENT	6
1.0.4 QUALITY ASSURANCE OBJECTIVES	7
1.0.5 QUALITY ASSURANCE PROGRAM	8
1.0.6 QUALITY SYSTEM RECORDS: ACCESS, FILING, STORAGE, RETENTION AND DISPOSAL	10
2.0 DOCUMENT CONTROL POLICY AND PROCEDURES	12
2.0.1 POLICY	12
2.0.2 DEFINITIONS	12
2.0.3 PROCEDURE	13
2.0.4 REVISIONS TO PROCEDURES, TRAINING AND TECHNICAL DOCUMENTS.....	15
2.0.5 SUBMISSION OF REQUESTS FOR SIMS SOFTWARE REVISIONS	16
2.0.6 APPROVED DATAMASTER INSTRUMENT SOFTWARE.....	16
3.0 CONTROL OF NONCONFORMING WORK	17
3.0.1 POLICY	17
3.0.2 DEFINITIONS	17
3.0.3 PROCEDURE	18
3.0.4 NOTIFICATION OF CLIENTS	21
3.0.5 RESPONSIBILITY FOR AUTHORIZING RESUMPTION OF WORK	21
3.0.6 CORRECTIVE ACTION ASSESSMENT	21
4.0 INTERNAL AUDITS AND MANAGEMENT REVIEWS	23
4.0.1 POLICY	23
4.0.2 DEFINITIONS	23
4.0.3 PROCEDURES	24
5.0 PURCHASING SERVICES AND SUPPLIES	26
5.0.1 POLICY	26
5.0.2 PROCEDURE	26
6.0 TRACEABILITY AND QUALITY CONTROL	29
6.0.1 TRACEABILITY AND QUALITY CONTROL OF REAGENTS.....	29
6.0.2 VALIDATION OF EQUIPMENT AND INSTRUMENTATION	29
6.0.3 TRACEABILITY OF MEASUREMENT STANDARDS	33
6.0.4 OTHER DIVISION REFERENCE DATABASES	34
6.0.5 UNCERTAINTY OF MEASUREMENT.....	35
7.0 PERSONNEL QUALIFICATIONS AND TRAINING	37
7.0.1 SCOPE	37
7.0.2 DEFINITIONS	37
7.0.3 QUALIFICATIONS OF PERSONNEL.....	38
7.0.4 TRAINING.....	38
7.0.5 JOB PERFORMANCE	41

7.0.6 PROFESSIONAL DEVELOPMENT PROGRAM.....42

8.0 ASSURING THE QUALITY OF CALIBRATION RESULTS44

8.0.1 POLICY44

8.0.2 PROFICIENCY TESTING44

8.0.3 TECHNICAL PROCEDURES AND METHODS.....47

8.0.4 DEVIATION FROM POLICY OR PROCEDURE52

8.0.5 RESOLUTION OF ISSUES CONCERNING TECHNICAL PROCEDURES.....52

9.0 CALIBRATION RECORDS, REVIEWS, AND REPORTS53

9.0.1 POLICY53

9.0.2 DEFINITIONS53

9.0.3 REVIEW OF REQUESTS54

9.0.4 CALIBRATION DOCUMENTATION54

9.0.5 CALIBRATION REVIEW55

9.0.6 TECHNICAL PEER REVIEW IN SPECIAL SITUATIONS58

9.0.7 RESOLUTION OF TECHNICAL DIFFERENCES OF OPINION58

9.0.8 FOCUSED CALIBRATION WORK REVIEW58

10.0 RESEARCH PROJECTS, PUBLICATIONS AND PRESENTATIONS.....60

10.0.1 POLICY FOR RESEARCH PROJECTS.....60

10.0.2 PROCEDURE FOR RESEARCH PROJECTS.....60

10.0.3 POLICY FOR MANUSCRIPTS AND PRESENTATIONS.....60

10.0.4 PROCEDURE FOR MANUSCRIPTS AND PRESENTATIONS.....60

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INTRODUCTION

This manual describes the Quality Assurance (QA) program of the Washington State Patrol (WSP) Toxicology Laboratory Division (TLD) as it relates to its breath alcohol calibration functions, and provides personnel with a description of the Division's policies for maintaining an effective QA program. Written procedures for implementing the policies are described herein.

Within the TLD, the Toxicology Laboratory (Toxicology Lab) and the Breath Test Program (BTP) of the Impaired Driving Section (IDS) are both responsible for the breath alcohol calibration functions. The Toxicology Lab prepares and certifies two types of simulator solutions: the Quality Assurance Procedure (QAP) solutions and the External Standard solution. These solutions are then used by the BTP, where the QAP solutions are used to set and confirm the calibration of the evidentiary breath test instruments, and the External Standard solution is used to verify the accuracy and proper working order of the instrument as part of a field evidential breath test.

This QA program applies to all breath test calibration functions within the TLD and the policies and procedures are binding on all personnel of the TLD and shall be followed. Any adjustments or deviations from the policies and procedures detailed in this manual must be approved by the TLD Commander or the QA Manager, and appropriately documented.

The official version of this manual is the electronic version as it appears on the Forensic Laboratory Services Bureau (FLSB) SharePoint site (FLSB Portal). This manual covers all work done by responsible personnel, to include but not be limited to work done within the individual calibration laboratories within the TLD, in addition to duties outside the laboratory, whether in court, training venues, or anywhere else the duties of responsible personnel might be employed.

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1.0 QUALITY MANAGEMENT SYSTEM

1.0.1 POLICY

The TLD will establish, implement and maintain a quality management system (QMS) appropriate to the scope of its calibration activities. The TLD will document its policies, programs, procedures and instructions to the extent necessary to assure the quality of the test results. The system's documentation will be communicated to, understood by, available to, and implemented by the appropriate personnel. The Division's QMS policies, procedures and objectives are defined in this Quality Manual.

1.0.2 DEFINITIONS

1.0.2.1 ANNUAL

Annual in this manual refers to the calendar year unless otherwise specified.

1.0.2.2 CALIBRATION

For the purposes of this manual, any and all breath alcohol functions of the TLD unless otherwise specified.

1.0.2.3 QUALITY

Adhering to generally recognized standards of good laboratory practice.

1.0.2.4 QUALITY ASSURANCE (QA)

Those processes and systematic actions necessary to provide confidence that the laboratory's work product and services will satisfy given requirements for quality.

1.0.2.5 QUALITY ASSURANCE AUDIT

A systematic examination and review to determine whether quality processes and related results comply with the TLD protocols, policies, and procedures, and whether these practices are suitable and effective in achieving the quality objectives.

1.0.2.6 QUALITY ASSURANCE MANAGER

A designated individual who has the oversight of the QA Program for the TLD.

1.0.2.7 QUALITY ASSURANCE PROGRAM

A planned system of activities describing requirements for forensic analyses and reporting, the purpose of which is to provide confidence that the work product and services provided by the TLD are scientifically sound and valid.

1.0.2.8 QUALITY ASSURANCE RECORDS

Records, logs, worksheets and electronic files that provide documented support of conformity to the quality management system. These records include, but are not limited to, method and equipment validation documents, equipment verification records, reagent and chemical logs, training records, proficiency and competency test records, courtroom testimony monitoring records and audit records.

1.0.2.9 QUALITY CONTROL (QC)

Internal activities or activities conducted according to externally established standards used by the TLD to consistently ensure accurate analytical results.

1.0.2.10 QUALITY MANAGEMENT SYSTEM (QMS)

The total organizational structure, responsibilities, policies, procedures, and resources for implementing quality management. This includes all activities which contribute to quality, directly or indirectly.

1.0.2.11 QUALITY MANUAL

A collection of the TLD's quality management system policies and objectives for its breath alcohol calibration functions, and how these policies and objectives will be implemented.

1.0.2.12 TECHNICAL PROCEDURES/TRAINING PROCEDURES

Scientific methodologies used in forensic analyses. Written procedures will be prepared for routine tests performed in the TLD Laboratories. The procedures used may be those developed and validated in-house or by an outside laboratory and the foundational training program required for all qualified forensic scientists or breath test technicians in their discipline prior to assuming forensic analysis.

1.0.2.13 TOXICOLOGY LABORATORY DIVISION (TLD) COMMANDER

The Commander who oversees, and has ultimate responsibility of, the Toxicology Laboratory Division comprising of the Toxicology Laboratory and the Impaired Driving Section (IDS)/Breath Test Program (BTP). Also known as the Laboratory Director and/or the State Toxicologist.

1.0.2.14 LABORATORY MANAGER

Individuals having overall operational responsibility of the laboratory(s) performing breath alcohol calibration functions. For the IDS the Laboratory Manager is the IDS Commander (Lieutenant), and for the Toxicology Lab it is the Toxicology Lab Manager.

1.0.2.15 SUPERVISOR

Individuals who have overall technical responsibility of personnel performing breath alcohol calibration functions. For the BTP the Supervisor is the BTP Supervisor (Sergeant), and for the Toxicology Lab it is the Forensic Scientist Supervisors (FS-5).

1.0.2.16 APPOINTING AUTHORITY

Individuals who have the authority for hiring personnel, authorizing qualified personnel to perform technical procedures, and remove/reinstate personnel or systems from performing calibration functions. For the IDS/BTP, the Appointing Authority is the IDS Commander. For the Toxicology Lab and the overall Toxicology Laboratory Division, the Appointing Authority is the TLD Commander.

1.0.3 QUALITY POLICY STATEMENT

The TLD, its management, and its employees are committed to professional excellence. All TLD employees will work to continually maintain the highest degree of quality and integrity of services and to ensure that forensic conclusions are scientifically sound and valid.

To this end, all laboratory analyses and related services performed by the laboratory system shall meet generally recognized standards of the forensic community and its accrediting organizations. Specifically, the TLD shall carry out all calibration activities in accordance with stated procedures, the requirements of the client, the State of Washington and Federal

regulatory authorities, and the ISO 17025:2005 standards (hereafter ISO) and any supplemental standards required by the accrediting organization.

The QMS is designed to continually improve the level of services provided to Washington's Criminal Justice System and to assure the credibility of the TLD. The TLD Quality Manual and Operations Manual are binding on all personnel of the division and shall be adhered to.

All employees are required to familiarize themselves with the appropriate manuals and implement the TLD quality assurance policies and procedures in their work. In doing so, the TLD will maintain the highest level of staff expertise and analytical abilities, promote staff confidence, and conform to the ISO accreditation standards and any supplemental requirements.

Management is committed to complying with ISO and any supplemental standards and the policies and procedures described herein, and will proactively strive to continually improve the effectiveness of the QMS. Establishing and implementing such quality practices and proactively improving the QMS will be conducted as a positive learning experience.

The commitment to implement a successful QMS begins with the TLD Laboratory Director and is supported by a commitment from the WSP Standards and Accountability Section (SAS). As the TLD Laboratory Director and the Standards and Accountability Manager, we therefore affirm our commitment to this quality policy statement.

TLD Laboratory Director

Standards and Accountability Manager

1.0.4 QUALITY ASSURANCE OBJECTIVES

The overall quality assurance objectives for the TLD breath alcohol calibration program are:

1.0.4.1 SERVICE

To provide quality service to Washington's Criminal Justice System by using procedures that are valid, reliable and sufficient for the intended purpose and by meeting customer, statutory and regulatory requirements.

1.0.4.2 TRAINING AND EDUCATION

To provide training to TLD personnel in their area of expertise,

To provide training to TLD personnel in the QMS,

To provide continuing education to our customers regarding TLD services, policies and procedures.

1.0.4.3 ACCREDITATION

To maintain laboratory quality, excellence and reliability by conforming to ISO standards and any supplemental standards, and maintaining accreditation requirements.

1.0.4.4 REVIEW

To proactively review and monitor the QMS to identify potential non-conformities to standards.

1.0.4.5 SURVEY AND COMMUNICATION

To facilitate and enhance communication within the division and organization,

To conduct surveys and maintain open communication with both internal and external customers,

To review and analyze customer requirements and satisfaction with the TLD services,

To communicate to all TLD personnel the importance of meeting customer requirements as well as statutory and regulatory requirements.

To meet quality assurance objectives, the TLD personnel will:

- Utilize established technical procedures that are reliable, reproducible, accepted in the forensic science community and adequate for the intended purpose
- Participate in a proficiency testing program to monitor the routine operational performance of the laboratory and its personnel
- Provide sufficient training to all staff. Analysts will successfully complete a competency or qualifying test before the assignment of calibration work. Continuing education and professional career development training will be available to all staff as necessary to provide the best possible work product. Training should include topics on Quality Assurance and Quality Control
- Have an employee performance evaluation program in which the tasks, responsibilities, safety and career development needs of the employee are reviewed each year
- Have a system of technical and administrative review for all calibration files, records and reports
- Undergo an annual QA audit. This audit will be the responsibility of the QA Manager. The QA audit ensures that the TLD's stated policies and procedures are being followed
- Have an annual QMS review to include a review of the QA program and discuss this review at scheduled management meetings. Information from these meetings will be communicated to all TLD personnel by the TLD management

1.0.5 QUALITY ASSURANCE PROGRAM

The TLD QA program includes all technical and supporting procedures and quality records. The TLD management uses these procedures and records to oversee and review the effectiveness of the QA program. This ensures that the TLD is adhering to the Quality Manual policies and procedures and conforms to the ISO standards and any supplemental requirements.

1.0.5.1 DIVISION QUALITY MANAGEMENT

The TLD Commander, managers and supervisors are responsible for ensuring that the policies and procedures adopted by the TLD are implemented and integrated into the daily operations of the laboratory. The QA Manager is also responsible for overseeing, monitoring and ensuring compliance to the QMS.

The main duties of the TLD QA Manager include, but are not limited to:

- Responsible for the overall QA program of the TLD. This includes an annual review of the QMS and an annual review of the Quality Manual
- Works to maintain and improve the QA program of the TLD
- Maintaining QMS documents and records
- Conducts technical, administrative and quality audits in coordination with the TLD management
- Monitors ISO criteria compliance
- Evaluation of statewide compliance to the TLD training programs to ensure uniform quality of education and training in all laboratories
- Ensure uniform methodology implementation and use in all laboratories within the division
- Ensure that procedures and training manuals for the discipline accurately reflect established standards and comply with accreditation requirements
- Review for adherence to procedure and approval of new methodology, technologies and equipment validations
- Evaluate new analytical procedures, equipment or technologies and oversee their validation and assist with implementation
- Administers and coordinates the TLD's proficiency testing program. This includes documentation and response to the Proficiency Review Committee (PRC)
- Organizes and schedules QA meetings
- Oversight and review of root cause analysis and corrective actions for nonconformities and inconsistencies in all calibration work

The supporting duties of the other TLD Management include, but are not limited to:

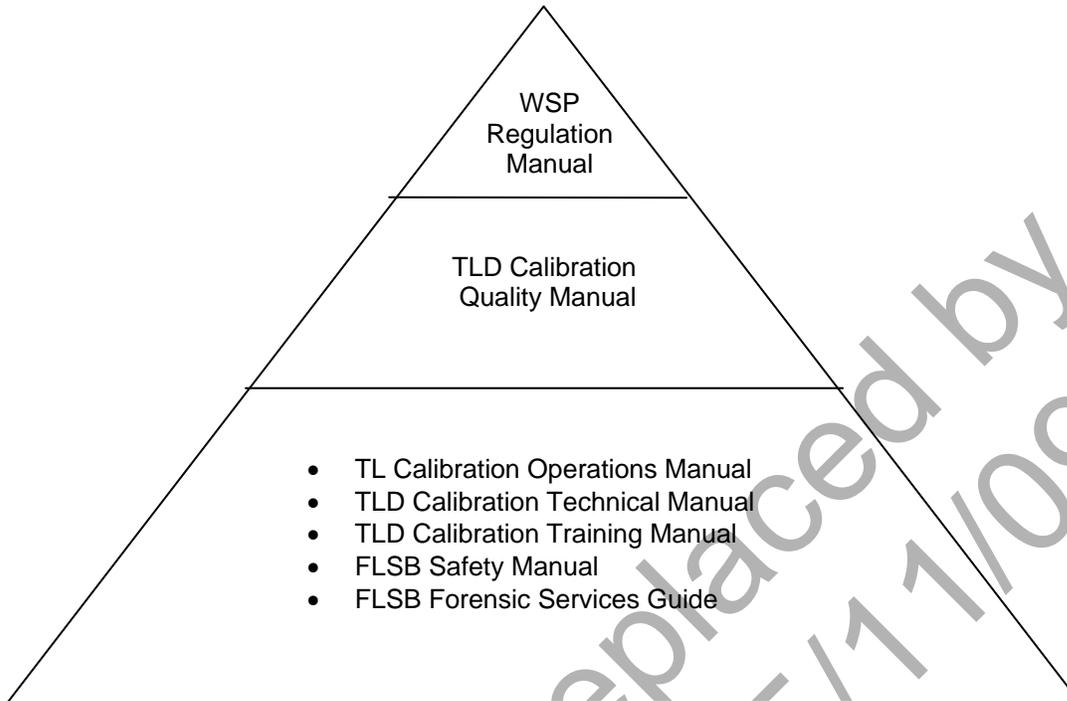
- Coordinates the training and development of each forensic scientist and breath test technician from basic development to continuing education.
- Monitors the development and implementation of the technical and training manuals
- Review of manuscripts for publications
- Review of research projects
- Recruiting, testing and hiring of new personnel

1.0.5.2 ALL TECHNICAL AND SUPPORT STAFF

It is the role of all technical and support staff to follow technical and laboratory supporting procedures, including the documentation required by the QA Program, and to seek to produce the highest quality work in the most efficient manner possible. This commitment helps the TLD to meet the needs of the customer and to demonstrate to the citizens of Washington that the TLD are good stewards of the resources given us.

1.0.5.3 DIVISION DOCUMENTS

The pyramid below represents the documentation upon which the QMS is built. The TLD Calibration Quality Manual has over-riding authority over all operations and technical manuals. The WSP Regulation Manual has over-riding authority over all TLD and FLSSB Manuals.



1.0.6 QUALITY SYSTEM RECORDS: ACCESS, FILING, STORAGE, RETENTION AND DISPOSAL

Quality system records are any logs, worksheets, electronic files or databases that provide documented support of conformity to the QMS. These records include, but are not limited to:

- Method and equipment validation documents
- Equipment repair and verification records
- Reagent and chemical logs
- Training records
- Proficiency test records
- Competency test completion records
- Courtroom testimony monitoring records
- Chemical inventory records
- Audit records

These records are maintained by the TLD staff. Filing, storage and retention of these records are as described below. There may be overlap between records held at TLD Headquarters and the individual laboratories.

1.0.6.1 RECORDS FILED, STORED AND RETAINED AT TLD HEADQUARTERS BY THE TLD QA MANAGER OR DESIGNEE

- Training completion records
- Proficiency test answer sheets
- Method validation approvals
- Corrective actions

- Records on deviations from procedure
- Policy and Procedure manual document review and approval forms
- Audit records and reports
- Laboratory safety inspection reports
- Official electronic controlled documents/forms

1.0.6.2 RECORDS FILED, STORED AND RETAINED AT INDIVIDUAL TLD LABORATORIES

- Equipment validation, performance verification and maintenance records will be maintained at the laboratory in close proximity to the equipment (on-site)
- Calibration files and records, and any associated examination or administrative documentation according to retention schedules
- Chemical and reagent logs and worksheets
- Temperature logs
- Standards inventory records and verification logs
- Key control records
- Vehicle Maintenance Records
- Equipment Inventory
- Building maintenance and security records and logs
- Safety records
- Visitor logs

1.0.6.3 RECORDS MAINTAINED IN BUREAU-WIDE DATABASES

- Laboratory Library Collection
- Chemical Inventory databases
- Breath Test Records database
- Simulator Information Management System (SIMS)

All records shall be legible and shall be stored and retained in such a way that they are readily retrievable in facilities that provide a suitable environment to prevent damage, deterioration or loss.

Records stored electronically shall be stored as to prevent unauthorized access or amendment, and will be routinely backed up to prevent loss.

1.0.6.4 ARCHIVE AND RETENTION OF QUALITY SYSTEM RECORDS

Retention and disposal of quality records will follow the WSP Archive Record Retention Schedule or for a period of one accreditation cycle, whichever is longer. A current copy of the Archive Record Retention Schedule may be found on the FLSB Portal.

2.0 DOCUMENT CONTROL POLICY AND PROCEDURES

2.0.1 POLICY

Quality documents used in the TLD's QMS are controlled to ensure that only current, up-to-date documents are being utilized. All official TLD documents will be made available to TLD staff via the FLSB Portal. The following procedure provides instructions concerning the creation, revision and distribution of these controlled documents. All WSP agency manuals, documents and forms are controlled and distributed by the agency.

Amendment of documents by hand pending the electronic re-issue of the revised controlled document is not allowed. Instead, changes may be relayed to laboratory personnel by e-mail, memorandum, or IOC to allow for immediate implementation prior to actual manual changes.

2.0.2 DEFINITIONS

2.0.2.1 DOCUMENT

A document is information in any medium including, but not limited to, paper copy, electronic file, audio or videotape, photograph.

2.0.2.2 DOCUMENT CONTROL

The process for ensuring that controlled documents, including revisions, are reviewed, approved and released by authorized personnel (see Issuing Authority), and distributed to personnel performing the prescribed activities.

2.0.2.3 CONTROLLED DOCUMENT

A document that is distributed to personnel in a controlled manner and ensures the recipients receive subsequent revisions and replace previous controlled copies. Examples of controlled documents include manuals and forms.

2.0.2.4 DOCUMENT REVIEW AND APPROVAL FORM (DRA)

Document Review and Approval Form, used for all proposed modifications to controlled documents.

2.0.2.5 RECORDS

Documents, logs, worksheets and electronic files that provide support of conformity to the QMS. They may be held in the individual laboratories or at headquarters.

2.0.2.6 UNCONTROLLED COPY

A copy of a controlled document provided for informational purposes only. Examples include copies provided to external inspectors or copies required for legal discovery.

2.0.2.7 ISSUING AUTHORITY

Personnel that are authorized to approve the posting of controlled documents on the FLSB Portal. The issuing authority for FLSB wide controlled documents is the Bureau Director. For Division wide documents and functional area documents, it is the TLD Commander and the IDS Commander.

2.0.2.8 MASTER DOCUMENT FILE

An electronic file maintained by the TLD QA Manager and available to all TLD employees via the FLSB Portal which contains the current revision status of any controlled document.

2.0.3 PROCEDURE

2.0.3.1 CONTROLLED DOCUMENT FORMAT

Each controlled document will have the following format requirements:

A header on each page containing, at a minimum:

- Washington State Patrol Toxicology Laboratory Division
- Document title, including type of manual where applicable

A footer on each page containing, at a minimum:

- Page _ of _ (if more than 1 page)
- A statement indicating that “All Printed Copies are Uncontrolled”
- The unique document identification
- Revision number and effective date

Forms do not require the “All Printed Copies are Uncontrolled” statement, as they are intended to serve as a template for entering data or information. No modifications to forms are allowed without going through the document revision process.

The revision number indicates the total number of times the document has been revised since adoption of original document.

All controlled documents will have a history table indicating when the document was originally adopted and any revisions that have occurred since date of adoption. The table will include the following:

- A brief revision summary (why the revision was made)
- The section(s) revised
- Date revision approved
- Author of revision or reviewer of document and issuing authority
- Record of annual review

This history table will be maintained in the master document file. An abbreviated history table will be maintained at the end of each document, with the exception of forms.

2.0.3.2 CONTROLLED DOCUMENT PREPARATION

Documents should be prepared by personnel with adequate expertise in the subject. The detail of the document should be commensurate with the complexity of the activity and the background of the intended user of the document. The document must include enough detail and specificity to ensure that the activity conforms to quality specifications and/or expectations. The State Toxicologist is legally responsible for technical procedures for the TLD and its programs as authorized by statute (RCW 46.61.506).

Laboratory specific policies and procedures cannot supersede the Washington Administrative Code/Revised Code of Washington, the WSP Regulation Manual, or the Division's Quality Manual.

The preparer of the new or revised document is responsible for:

- Preparing the document in the proper format
- Acquiring copies of listed references
- Addressing or resolving comments from reviewers
- Assuring that there are no conflicts with other TLD manuals, WSP regulations and/or the Washington Administrative Code/Revised Code of Washington
- Submitting for review and approvals using the Document Review and Approval Form.

2.0.3.3 CONTROLLED DOCUMENT REVIEW

Each new or revised controlled document is required to have a technical and a quality review prior to approval. Technical review is for accuracy and clarity. The reviewer(s) must have adequate technical expertise in the discipline to evaluate the document.

A quality review is to ensure that the document conforms to accreditation and quality standards. This will typically be performed by the QA Manager or designee. TLD management may also perform reviews of controlled administrative documents.

2.0.3.4 CONTROLLED DOCUMENT APPROVAL

Each controlled document issued will be approved through the chain of command with final approval by the Issuing Authority.

2.0.3.5 CONTROLLED DOCUMENT ISSUING

After the documents are approved, the document will be issued through the QA Manager or designee and posted on the FLSB Portal.

All personnel will have access to official electronic documents. However, administrative access to the official electronic controlled documents will be restricted to prohibit unauthorized changes. Only those personnel with Issuing Authority can authorize change.

2.0.3.6 ARCHIVING CONTROLLED DOCUMENTS

Obsolete documents will be archived in the "Archived Manuals" section of the FLSB Portal. An archived date will be added to the footer and the document will be given a watermark labeled "Archived".

Employees shall only use current versions of approved documents.

Obsolete documents shall be promptly removed from all points of issue or use, or otherwise assured against unintended use; obsolete documents retained for either legal or knowledge preservation purposes shall be suitably marked.

2.0.3.7 ANNUAL REVIEW OF CONTROLLED DOCUMENTS

Controlled documents will be annually reviewed and revised if needed to ensure they reflect the current policies, practices, and technology. The revised documents are subject to the same review, approval, documentation and issuance requirements of the original document as stated above.

The TLD Commander, QA Manager and/or section supervisors will conduct this review for their respective technical and training manuals. TLD management may also review administrative manuals. Documentation of this review will be by an IOC from the reviewer to the QA Manager, who will record the review on the document history table.

2.0.3.8 OFFICIAL CONTROLLED DOCUMENTS

The official controlled documents to be used by personnel are those posted on FLSB Portal. All TLD employees will have access to this site. Any copies of documents from this site represent unofficial copies and will be designated as such. The QA Manager or designee will maintain the official controlled documents and archived versions of all controlled documents on FLSB Portal.

2.0.4 REVISIONS TO PROCEDURES, TRAINING AND TECHNICAL DOCUMENTS

Recommendations for additions, deletions or modifications to technical and training documents will be made through the TLD Commander, or through a Laboratory Manager if administrative/operational in nature.

For changes to technical documents, the QA Manager or designee (e.g. the preparer) will be responsible to ensure that the recommended changes represent the accepted body of scientific knowledge, both internal and external to the Division. They should provide the opportunity for all affected members of the Division to provide input on the proposed changes, either directly or by representation through the supervisors, prior to submitting the recommendation to the TLD Commander for review, approval and adoption.

For administrative/operational changes to documents, TLD personnel putting forward proposed revisions for consideration must ensure that the recommended changes represent the objectives of the Bureau and are not in conflict with the WSP Regulation Manual or the Washington Administrative Code/Revised Code of Washington.

Recommended changes must be submitted on the Document Review and Approval form (DRA) to the QA Manager for distribution and review by management. The following information must be provided:

- The document name and the specific section of the document to be modified, or the proposed new document or section
- A statement briefly describing the need for the procedure modification or incorporation of a new procedure

Proposed changes must be submitted as an edited version tracking all changes made to the current document or procedure as follows:

- Deleted portions will have a strikeout
- Additions will be highlighted in yellow

The QA Manager will submit the written recommendation(s) to the TLD Commander and/or IDS Commander for review and final approval. The Commanders or designee will make a decision within 30 days to approve/adopt, return or table the recommended document revision or additions.

2.0.4.1 APPROVED/ADOPTED

The approved document will be posted on the FLSB Portal and TLD personnel will be notified by the QA Manager or designee via e-mail. The notification will include the DRA and the effective date.

Once a document is adopted, it will be the responsibility of TLD management to ensure it is implemented. This process will be subject to audit. The affected individuals will be required to sign a directive control sheet, a copy of which will be forwarded to the QA Manager or designee.

2.0.4.2 RETURNED

Any DRAs submitted to the QA Manager that need to be returned, will be accompanied by a written explanation and/or suggestion for modification.

2.0.4.3 TABLED

Any DRAs submitted to the QA Manager that need to be tabled, will be accompanied by a written explanation along with the estimated date for reconsideration if applicable.

2.0.5 SUBMISSION OF REQUESTS FOR SIMS SOFTWARE REVISIONS

Recommendations for additions, deletions or modifications to the Simulator Information Management System (SIMS) must be submitted on the DRA to the QA Manager, who may in turn submit the recommendation for review by the TLD management. The QA Manager will then submit the recommendation to the FLSB IT Liaison or designee for review. The TLD Commander will make the final decision to approve/adopt, return or table the recommended document revision or additions.

The following information must be provided on the DRA or documented on the DRA after review:

- A description of the proposed change(s) to be made
- A statement briefly describing the need for the modification or incorporation of a new feature
- The FLSB IT Liaison or designee will recommend a plan for implementation including cost, resources needed and estimated amount of time where applicable

2.0.6 APPROVED DATAMASTER INSTRUMENT SOFTWARE

The State Toxicologist shall approve software which allows the DataMaster to meet the strict accuracy and precision standards of the Quality Assurance Procedure (QAP) and perform evidentiary breath tests in compliance with the standards required by statute and the WAC.

The software employed within the DataMaster instrument will be those versions currently approved for use by the State Toxicologist. A list of those versions of software currently approved for use can be obtained from the TLD Headquarters. Documentation for the approved software is also available on the WebDMS web site.

3.0 CONTROL OF NONCONFORMING WORK

3.0.1 POLICY

In the event that any TLD personnel becomes aware of a nonconformity with any aspect of calibration, testing, work or the results of this work (e.g., in analyses, proficiency tests, reports, documentation testimony, or care and preservation of calibration items), the TLD personnel will notify the appropriate supervisor. The supervisor will notify the QA Manager, Laboratory Manager and/or the TLD Commander, as appropriate.

The supervisor shall ensure that significant nonconformities are documented. Level 1 nonconformities will be investigated using root cause analysis as directed by the QA Manager or designee, and appropriate corrective action taken.

3.0.2 DEFINITIONS

3.0.2.1 APPOINTING AUTHORITY

For the purposes of nonconformities the appointing authority for the Toxicology Lab shall be the TLD Commander, and for the Breath Test Program it shall be the IDS Commander. The TLD Commander has overall appointing authority for the TLD.

3.0.2.2 NONCONFORMITY OF WORK

Non-fulfillment of a work requirement; any aspect of calibration that does not agree with established laboratory, technical or quality system procedures or requirements.

3.0.2.3 ROOT CAUSE ANALYSIS

A process of fact finding used to evaluate all aspects of the occurrence to identify the basis of the nonconformity; a tool designed to help identify what, how, and why an event occurred, or the underlying factors leading up to the non-conformity.

3.0.2.4 CORRECTIVE ACTION

The overall process used to address a nonconformity, including fact finding or root cause analysis, development and implementation of a corrective action plan, and an evaluation of the effectiveness of the plan. The Corrective Action process is documented in a Corrective Action Report.

3.0.2.5 CORRECTIVE ACTION PLAN

A detailed plan describing the action(s) taken to address a nonconformity. It should include:

- Immediate steps to correct the nonconformance
- A preventive action plan to eliminate the cause(s) of a detected nonconformity or an existing undesirable condition, in order to minimize or prevent its recurrence.

The plan may include removal of an analyst/technician from calibration work, review of calibration work or procedures, retraining, or an additional proficiency test.

3.0.2.6 CORRECTIVE ACTION REPORT (CAR)

A formal report by the supervisor or appropriate authority detailing the following:

- A description of the incident (what is the nature of the nonconformance?)
- A root cause analysis, including any chain of events leading to or causing the nonconformance
- A developed Corrective Action Plan

3.0.3 PROCEDURE

In dealing with a nonconformity, the Corrective Action process can be broken down into the following steps (see flow chart on page 22):

3.0.3.1 IDENTIFICATION

The initial step in the corrective action process is to identify the nonconformance. While not an exhaustive list, identification of nonconformities may occur through any of the following:

- internal or external inquiries or complaints
- quality control
- instrument calibration
- staff observations
- supervisor observations
- technical and administrative review of reports and documentation
- indications of inadequate peer review
- management reviews
- internal or external audits

3.0.3.2 EVALUATION OF THE SIGNIFICANCE OF NONCONFORMING WORK

If the evaluation of the significant nonconforming work indicates that the problem could recur, or that there is doubt about the compliance of the laboratory's operations with policies and procedures, the corrective action procedure will be implemented.

Nonconformance may occur at several levels, some more serious than others. For the purposes of the TLD calibration functions, two levels are distinguished:

- Level I Nonconformity - the nature or cause of the nonconformity directly affects, raises immediate concern and has a fundamental, substantive impact on the work product of the laboratory and the integrity of evidence. These nonconformities would result in a finding by an accreditation assessor and will be reported to the accrediting agency within 30 calendar days of determining that the nonconformance has occurred. They will also be reported in the annual audit report. Level I nonconformities will result in immediate removal of the personnel/method/laboratory from calibration related work by the Appointing Authority. If the discrepancy is determined to be related to a laboratory wide or system wide deficiency, then the Appointing Authority will ensure the entire laboratory will discontinue work in that area until the nonconformity is addressed and resolved. The customer(s) will be notified and work recalled, when necessary.
- Level II Nonconformity - the nature or cause of the nonconformity does not, to any significant degree, affect the fundamental reliability of the laboratory work product or the integrity of evidence. These can generally be handled at the supervisory level by counseling and documentation, where appropriate. Repeated Level II violations by a single individual and/or laboratory may result in the incident being elevated to a Level I response.

3.0.3.3 ASSIGNMENT OF CORRECTIVE ACTION PROCESS

Upon identification of any Level I nonconformance, the person having supervisory authority will notify the QA Manager and the Appointing Authority. A determination will be made by the Appointing Authority whether the issue may be handled locally or if it will require involvement of other personnel. The QA Manager will assign the person having immediate supervisory authority to move forward with the Corrective Action process by implementing a Corrective Action Plan (see below). The Appointing Authority will inform the SAS Manager and the FLSB Director of all Level 1 nonconformities.

The Appointing Authority, with input from the SAS Manager and/or FLSB Director, may request an external investigation be conducted by the WSP Office of Professional Standards (OPS) or external auditors depending upon the severity and nature of the nonconformity. The Appointing Authority will have final authority to determine the appropriate course of corrective action to eliminate and/or correct the problem and prevent recurrence. Depending upon the severity of the nonconformity, a course of corrective action may be ordered by the Appointing Authority, such as a focused calibration work review (see *Chapter 9.0.8*). Corrective actions shall be appropriate for the magnitude and risk of the problem.

Level II nonconformities are typically handled by the immediate supervisor, generally with counseling. They should be documented by the supervisor and the corrective action process implemented as needed. If documentation occurs, it stays with the supervisor in the individual's supervisory desk file or documentation book. If technical in nature, the nonconformity may also be documented in the appropriate calibration files and/or records. Repeated level II nonconformities, when documented appropriately, may become justification for raising the issue to a Level I. It is important that supervisors be responsible for monitoring the work of their staff and address these problems quickly.

3.0.3.4 ROOT CAUSE ANALYSIS

Once the significant nonconformance has been identified, a root cause analysis is performed to find the basis of the nonconformity. The QA Manager may direct other TLD personnel to conduct the root cause analysis investigation. Root cause analysis may include an evaluation of procedures, documents and records, staff training, consumable supplies, equipment, customer requests and requirements, calibration items, reagents and controls. While conducting a root cause investigation, the investigator may consult with all necessary personnel, inside and outside of the laboratory, to determine the basis of the nonconformity.

Nonconforming work can often be a systemic error rather than employee error, or a combination of both. The root cause analysis may provide a platform for process improvement, and may help guide value-additive changes in policy and procedure.

3.0.3.5 FORMULATING THE CORRECTIVE ACTION PLAN

When assigned, the person with supervisory authority will prepare a Corrective Action Plan, which will be forwarded to the QA Manager and Appointing Authority for approval as part of the formal Corrective Action Report (CAR). Once the Corrective Action Plan is approved, it should be implemented immediately. If the Corrective Action Plan continues more than a month, then monthly reports should be issued by the QA Manager to the Appointing Authority.

A Corrective Action Plan should consider the following:

- Recall and review of prior calibration work to ensure correct analysis
- Consideration if the analyst/technician, laboratory or entire system is to be removed from calibration work and a plan describing timeframe to return analyst/technician, laboratory or system to calibration work.
- A Job Performance Improvement Plan (JPIP) if needed, limited to no more than 90 days in length
- A description of how the work is to be reassigned until the nonconformity is corrected
- Identification of any training, equipment, protocol modification, or calibration work reanalysis needed to correct the problem. A reasonable timeline for completion should be established
- Any steps needed to inform external customers of the extent of the problem and recommendations for appropriate resolution
- Possible notification of the accrediting agency's QA Manager

Difficulties with an employee's individual work performance will normally be addressed by the employee's supervisor with assistance and input from other appropriate individuals if necessary. The actions taken to correct the problem should be focused on the professional development of the employee, which normally includes remedial training and other assistance designed to help the employee overcome the problem.

3.0.3.6 PREVENTATIVE ACTIONS

Preventative actions are designed to eliminate the cause of a potential nonconformity or its reoccurrence. Implementation of a preventative action may include one or more of the following:

- Research regarding policies and procedures in other calibration laboratories or jurisdictions
- Consultation with clients to ascertain the extent of their needs
- Consultation with TLD personnel to obtain developmental suggestions
- Validation of technical methods following the Method Validation section of the TLD Quality Manual
- Monitoring of effectiveness with TLD personnel and clients of the calibration services

The preventative action plan is included in the CAR.

TLD personnel are encouraged to identify preventative actions as opportunities to improve quality and correct potential sources of noncompliance before they become problems.

These proposals shall be brought to the attention of the supervisor, Laboratory Manager and/or QA Manager preferably through written correspondence such as e-mail or IOC. The Laboratory Manager and/or QA Manager shall evaluate the suggestion and work with the submitting individual to develop an action plan if appropriate. As the preventative action is implemented, it shall be monitored for effectiveness as outlined in the action plan.

3.0.3.7 CORRECTIVE ACTION REPORT (CAR)

Following completion of the corrective action plan, the supervisor will submit through the chain of command to the TLD Commander a written summary of the action taken, the CAR, including all the elements listed above in the definition.

The CAR will be retained by the QA Manager for a minimum of one accreditation cycle.

3.0.4 NOTIFICATION OF CLIENTS

When Level 1 nonconformities occur it may be necessary to notify the customer of the facts surrounding the event. Where necessary, an amended laboratory report will be prepared as soon as possible, and provided to the submitting agency and/or customer (client notification). The calibration files or records should contain documentation of the technical and/or administrative measures taken to resolve the discrepancy.

3.0.5 RESPONSIBILITY FOR AUTHORIZING RESUMPTION OF WORK

In cases where an analyst/technician has been removed from calibration work, or when required by the corrective action plan, a follow-up proficiency test may be issued by the QA Manager following successful completion of the corrective action plan. Anytime someone, some process, or some instrument is removed from work as a result of a Level 1 nonconformity, they/it may not return to casework until authorized by the Appointing Authority.

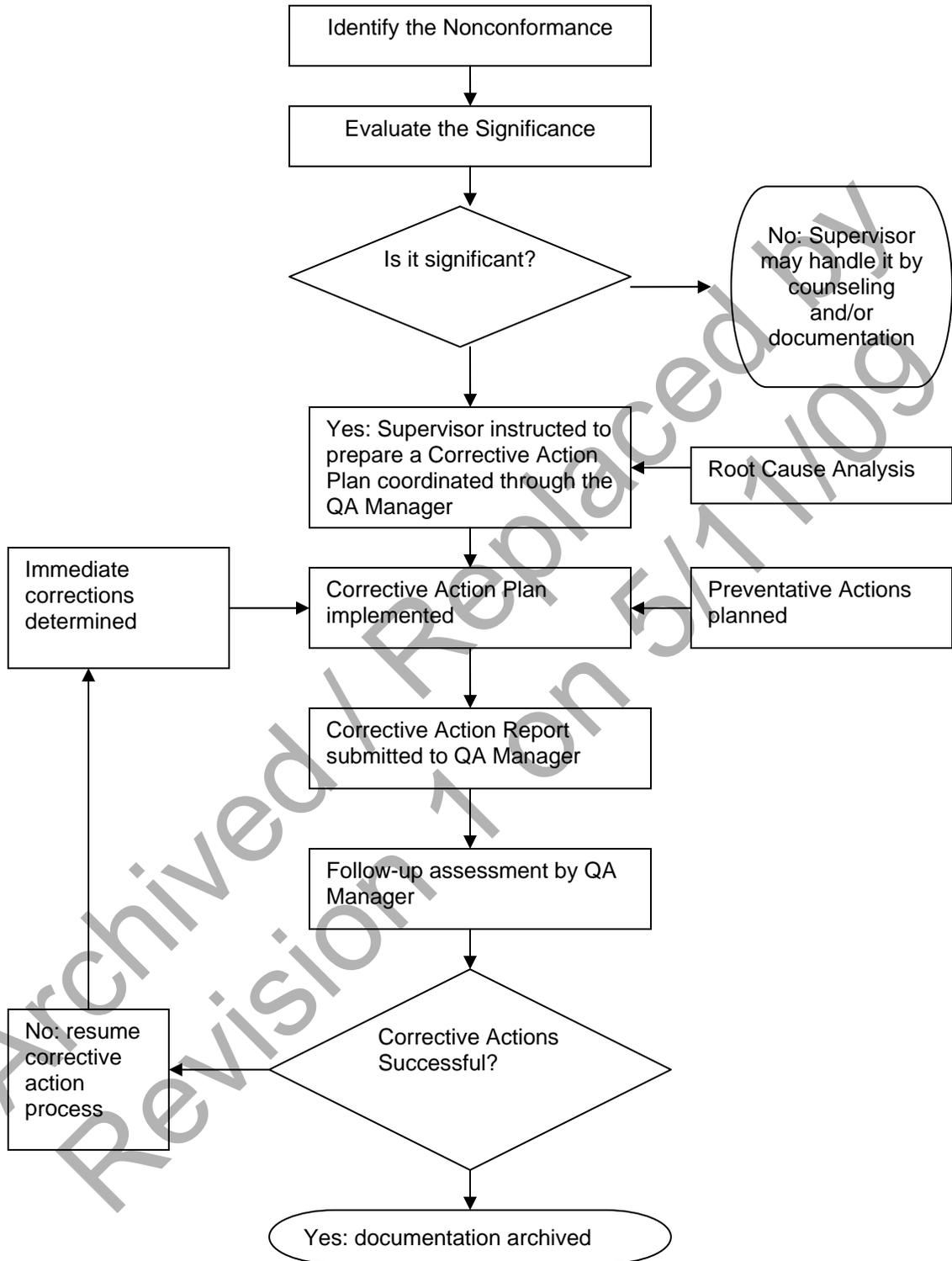
The QA Manager may also direct appropriate follow-up action to confirm the effectiveness of the corrective action plan. This may involve review of calibration work and audits of the area of activity or section or laboratory.

The QA Manager will maintain records of significant nonconformities, quality system complaints and resolutions including corrective actions taken for the period of time for at least one accreditation cycle and in accordance with WSP retention schedules.

Changes to laboratory policies and procedures resulting from corrective actions will be documented in the appropriate Quality, Operations and/or Technical Manuals. Depending upon the impact of these corrective actions, the changes may be relayed to laboratory employees by e-mail, memorandum, or IOC to allow for immediate implementation prior to actual manual changes. The QA Manager will be responsible for coordinating these changes and notifications.

3.0.6 CORRECTIVE ACTION ASSESSMENT

A review of the employee's performance, laboratory performance, or system performance will be conducted after completion of the Corrective Action Plan and at an interval of three and six months of the completion of the plan to ensure continued compliance. A report will be issued by the QA Manager to the Appointing Authority.



4.0 INTERNAL AUDITS AND MANAGEMENT REVIEWS

4.0.1 POLICY

All laboratories will be audited annually to verify that operations are in compliance with established policies and procedures, ISO requirements, any supplemental requirements, and applicable WSP policies, rules and regulations. Internal audits will be documented, and documentation will be retained for at least one cycle of accreditation.

The QA Manager will submit an annual accreditation audit report to the SAS Manager for review 30 days prior to the accreditation date on the accreditation certificate. The QA Manager will then submit the report to the accrediting agency by the accreditation date on the certificate.

In addition to the annual internal quality audit, an annual management system review of the TLD management system's operations for the previous year will be conducted. Calibration activities will be reviewed to ensure their continuing suitability and effectiveness, and to introduce necessary changes or improvements.

Additional audits, such as a focused review, may be requested by the QA Manager or Appointing Authority at any time to address specific concerns.

4.0.2 DEFINITIONS

4.0.2.1 AUDIT CYCLE

An audit cycle is the period of time between on-site audits by the accrediting body. An audit cycle will generally be a period of approximately five (5) years.

4.0.2.2 INTERNAL AUDIT

A review conducted by TLD personnel to compare the various aspects of the laboratory's performance against stated requirements, standards, policies and procedures.

4.0.2.3 EXTERNAL AUDIT

A review conducted by personnel from outside the TLD which compares the various aspects of the laboratory's performance against stated requirements, standards, policies and procedures.

4.0.2.4 FINDING

A finding is a result from an audit that is not in conformance with accreditation criteria, TLD policies and procedures, or applicable WSP regulations. Findings that indicate a Level I nonconformity must be followed up with a Corrective Action Report (CAR).

4.0.2.5 OBSERVATION

An observation is a result from an audit that indicates a potential for nonconformity.

4.0.2.6 FOCUSED REVIEW

A Focused Review is a review of an individual's calibration work or a laboratory process requested by the supervisor, Laboratory Managers, QA Manager and/or the TLD Commander.

4.0.2.7 MANAGEMENT SYSTEM REVIEW (MSR)

A Management System Review is an annual review by TLD management of the laboratory's management and quality systems, and calibration activities to ensure continuing suitability and effectiveness. The finding of this review will be used as a tool to introduce necessary changes or improvements by management.

4.0.3 PROCEDURES

A review of the management system and internal audits will be conducted at least annually to ensure the continued suitability and effectiveness of the quality system and laboratory operations.

Audits will include on-site inspections of laboratory facilities and will address all elements of the quality system including the calibration activities. The QA Manager will plan, organize and direct the audits. The QA Manager has oversight of findings, CARs and follow-up.

Audits will be conducted by trained, qualified personnel who are, wherever resources permit, independent of the activity to be audited. Auditors may come from the TLD, FLSB or outside the Bureau.

4.0.3.1 THE ELEVEN ELEMENTS OF THE MANAGEMENT SYSTEM REVIEW (MSR)

The annual management system review will address the following points:

- The suitability of policies and procedures
- Reports from managerial and supervisory personnel
- A review of the annual internal laboratory audits
- Corrective and preventive actions taken in the last year
- Quality system assessments performed by external organizations
- The proficiency test program
- Changes in the volume and type of work
- Client feedback
- Quality system complaints
- Recommendations for improvement
- Other relevant factors such as quality control activities, resources, and personnel training

The results of the management system review will be considered by the TLD Management for planning purposes. Items from the management review considered for planning purposes will have goals, objectives, and action plans.

A summary report outlining findings and observations of an internal audit or a Management System Review will be prepared by the QA Manager for the TLD Commander.

Any findings from the annual Management System Review or internal audits will be addressed with CARs.

The Management System Review, internal audit reports and any corrective actions associated with findings will be documented by the QA Manager and retained for at least one accreditation cycle.

The QA Manager, Laboratory Managers and supervisors will ensure that corrective actions are implemented within an appropriate and agreed upon timeline.

Implementation of corrective actions initiated from the management system review will be followed up to monitor effectiveness by the QA Manager at three and six month intervals and reviewed the following year at the annual Management System Review.

Archived / Replaced by
Revision 1 on 5/11/09

5.0 PURCHASING SERVICES AND SUPPLIES

5.0.1 POLICY

All purchasing, ordering and payment procedures will comply with WSP Budget and Fiscal Services (BFS) requirements. Such requirements are set forth in BFS policies and procedures, and are found on the BFS Intranet website.

Supplies and services that affect the quality of calibration work shall be selected and purchased at a quality appropriate for the testing.

Where applicable, each functional area or laboratory shall maintain specifications for supplies and materials that affect the quality of their work within the protocols of their procedural manuals.

Documentation shall be kept that demonstrates the receipt of supplies to include the ordering and acquisition date, and the receiver. Each laboratory shall ensure that standards, controls and reagents used in technical procedures are inspected or otherwise verified as complying with standard specifications or requirements defined in the appropriate procedures, or are tested prior to use.

The laboratory shall evaluate all suppliers of materials ensuring that specific requirements and standards of quality are met. One indication is if they are an ISO certified supplier. A list of evaluated and suitable approved suppliers shall be maintained by the relevant Laboratory Manager, Office Manager or designee, along with their record of compliance with established specifications.

5.0.2 PROCEDURE

5.0.2.1 PURCHASING SUPPLIES AND SERVICES

Data describing the type, class, grade, precise identification, specifications or other technical data including quality required of supplies to be ordered will be reviewed prior to purchase to ensure that the quality of the reagent or supply is appropriate for the task.

Only TLD approved vendors for the purchase of supplies and services will be used. An order will be placed with a supplier only after the Laboratory Manager or their designee has authorized the order in writing or by email. Prior to placing an order, it will be assigned a purchase order number or other approved means of payment to be provided to the vendor if needed. A system shall be used for monitoring supply orders.

Laboratory Managers and/or Office Managers will designate:

- Person(s) responsible for placing orders
- Person(s) responsible for receiving orders and verifying that they are complete and correct
- Person(s) responsible for tracking orders from time of placement through preparation of payment vouchers

5.0.2.2 RECEIVING SUPPLIES AND SERVICES

Upon receipt, supplies, reagents or services will be checked or verified as complying with the purchase request. This can be done by checking the packing slip against the purchase request and against what was actually received to ensure all are in agreement. If the

shipping documents or labels do not match, the supplies or material will not be placed into service until the problem is resolved. Any discrepancies in the order will be recorded on the order documents. In addition, if the resolution includes returning the item, this will be noted on the shipping documents.

The person receiving the material should indicate the following on the packing slip:

- The date received
- A check-mark by the items received to indicate the appropriate item and quantity were shipped
- Receiver's initials to indicate approval

The packing slip or receipt will be attached to the order document. Both will be retained for a minimum of one year in the laboratory for future reference.

Where appropriate, purchased supplies will not be placed into service until they have been verified as per procedures in the technical manuals.

If an item or product that has been put in use is found to be defective (e.g., not the expected quality) the following shall occur:

- The supervisor will assess the product/item for suitability
- If the product/item has or may damage instrumentation or a process, then the supervisor will immediately contact the QA Manager or designee who will alert all possible users
- A supervisor will assess the damage and contact the responsible company for replacement of the product/item and/or possible reimbursement for damages
- Review of any calibration work that may have been affected will be conducted (see *Chapter 3: Nonconforming Work*)

The laboratory manager will keep a record of any defective products and take this into account when preparing their review of suppliers as well as considering any future purchases. TLD personnel have the responsibility to inform their immediate supervisor of a problem with product/item or services received from any vendor.

5.0.2.3 STORAGE OF REAGENTS AND LABORATORY CONSUMABLE SUPPLIES

At a minimum, reagents and laboratory consumable supplies should be stored according to manufacturers/vendor recommendations. See the FLSB Safety Manual for additional guidelines.

The Laboratory Manager or designee shall maintain a computerized inventory of all chemicals kept in the laboratory. The inventory shall be reviewed and/or updated once per year. Material Safety Data Sheets (MSDS) shall be readily available to all personnel.

5.0.2.4 VENDOR EVALUATION

The TLD shall maintain a list of approved suppliers of reagents, supplies and services that affect the quality of testing. This list is maintained electronically by the Laboratory Manager or designee, and available on the FLSB Portal. The purchaser shall evaluate new suppliers of reagents, supplies and services and provide this information to the Laboratory Manager or designee. The vendor evaluation may be based on the following criteria:

- The vendor currently meets ISO accreditation or accreditation from another national accrediting organization
- Ability of the vendor to provide service/product in necessary time frame
- Ability of the vendor to provide service/product at acceptable cost
- Quality of product/service provided by the vendor as related to requirements in documented procedures of the Technical, Operations or Quality Manual
- Ability of the vendor to provide technical support when necessary
- Ability of the vendor to provide adequate instruction on use of service/product
- Ability of the vendor to provide adequate documentation of quality of service/product
- Service or description of supplies/materials vendor is approved to provide

A Vendor Approval request, copies of national accreditation documents and/or a memo covering these points for each vendor should be prepared by the purchaser and forwarded to the Laboratory Manager or designee. This information may be transmitted electronically.

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6.0 TRACEABILITY AND QUALITY CONTROL

Many factors contribute to the accuracy and reliability of the calibration functions performed by the TLD, including:

- The training and qualifications of personnel
- Technical/analytical methods
- Reagents and supplies
- Selection, verification and maintenance of equipment

The TLD will take into account these and other factors and will ensure that the personnel are properly qualified and trained; that procedures are validated; that reagents and supplies are traceable and/or verified for performance; and that equipment is calibrated and/or verified. All procedures, reagents, supplies and equipment/instrumentation will be controlled.

6.0.1 TRACEABILITY AND QUALITY CONTROL OF REAGENTS

6.0.1.1 POLICY

All commercially and laboratory prepared reagents, as well as chemicals used to prepare reagents, used for calibration work within the TLD will be of sufficient quality to assure the integrity of the results. Reagents should be checked to ensure their reliability and that the quality will equal or exceed that necessary for the type of testing or use designated in the TLD Calibration Technical Manual. How this will be performed and the frequency of reagent checks will be specified in corresponding laboratory procedures.

Reagents prepared in the laboratory should be labeled with the identity of the reagent, the preparer's initials, the date of preparation, and the expiration date. Records of reagent preparation shall be maintained, including that its reliability was verified prior to use where applicable.

6.0.2 VALIDATION OF EQUIPMENT AND INSTRUMENTATION

6.0.2.1 POLICY

Instrumentation to be used must be validated prior to being placed in service in the TLD. Instrumentation to be used for existing applications and methods must be performance verified before initial use. The purpose is to establish that it is capable of achieving the Division's and the manufacturer's specifications for the test.

All instruments and major equipment will be uniquely identified. Equipment/instruments will have regular maintenance and performance verifications to ensure continued performance. Maintenance, calibration and verification procedures will be documented and maintained in an equipment/instrument maintenance and/or verification logbook. In addition, equipment/instruments will only be operated by authorized personnel, for official breath alcohol calibration work, as determined by the TLD Commander. Each section will maintain a list of persons authorized to operate the equipment/instrumentation.

6.0.2.2 DEFINITIONS

6.0.2.2.1 CALIBRATION

The process by which known traceable standards having unbiased reference values are introduced into an instrument. The instrument is then adjusted or programmed (either by software, hardware, electronics, etc.) to report the known reference value.

6.0.2.2.2 PERFORMANCE VERIFICATION

Performance verification is a set of operations to determine if a piece of equipment or instrumentation is working correctly within manufacturer's specifications or TLD's specified parameters.

6.0.2.2.3 TRACEABILITY

The property of a measurement result whereby it can be related to standard references, usually national or international, through an unbroken chain of comparisons all having stated uncertainties.

6.0.2.3 PROCEDURE

All analytical equipment/instruments and any associated software will have records that are maintained in an Equipment/Instrument Maintenance and/or Verification logbook. This logbook will be kept in each laboratory, and in close proximity to the equipment/instrument whenever possible. The laboratory will maintain retired logbooks for at least one accreditation cycle. An electronic logbook is an acceptable alternative to a written log.

Where applicable, the following information should be kept in the Equipment/Instrument logbook:

- The equipment/instrument identity: type, manufacturer, model, serial number or unique name and current location
- The original equipment paperwork provided with instrument installation, wherever possible
- The maintenance plan and/or procedure and records of maintenance performed
- Date of maintenance, initials of the person doing the maintenance and activity conducted
- Performance verification procedures
- Documentation of performance verification
- Scheduled calibration (if required) including dates, results, reports and certificates
- Any damage, malfunction, modification or repair to the equipment/instrumentation

Each instrument will be uniquely identified and the identifier will be used in all documentation, including any reports or hard copy instrument data.

Maintenance/verification logbooks will be kept with the instrument if the instrument is transferred to another laboratory.

Where applicable, other equipment/instrument documentation to be maintained includes:

- The Manufacturer's maintenance and operating manuals or reference to their location
- Internal validation procedure, data and documentation
- List of authorized instrument users. A copy will be submitted to the Laboratory Manager.

6.0.2.3.1 EQUIPMENT/INSTRUMENT MAINTENANCE

Maintenance procedures will include a maintenance plan that indicates the frequency and type of maintenance to be performed (i.e., annual, as needed, by manufacturer, etc) and any scheduled manufacturer maintenance contract information (if applicable). Calibration check intervals will not be less stringent than that recommended by the manufacturer. The maintenance plan will be located in the technical manuals and/or the maintenance logbook.

6.0.2.3.2 EQUIPMENT/INSTRUMENT PERFORMANCE VERIFICATION

Each laboratory will ensure that all equipment/instrumentation, either newly purchased or existing, that is significantly modified such that the change(s) affects the outcome of the test, are properly validated or have their performance verified prior to use. The process will be as extensive as is necessary to meet the needs of the given application or field of application. All validation/verification studies will be performed by qualified personnel with adequate resources to perform the study.

Performance verification procedures will be documented in the equipment/instrument and/or verification logbook. Verification procedures will include verification requirements (e.g. frequency of verification and tolerances, acceptance criteria) and specific step-by-step verification protocols, including the use of any reference standards. When possible, all verification will be completed with traceable reference standards or materials.

The minimum information that will be recorded in the equipment/instrument and/or verification logbook will include the following:

- The instrument unique identifier or name, model and serial number
- The verification date
- Initials of the person performing the verification
- The type of verification performed (internal diagnostic, comparison to a reference standard, etc)
- If the instrument passed or failed performance verification
- Identification of reference material used, where applicable
- Any comments regarding the performance check

Equipment/instrumentation that does not meet performance specifications shall be taken out of service. The instrument will be clearly labeled or marked as being "Out of Service" until it has been repaired or evaluated, and shown by calibration or performance verification to perform within specifications. In addition, the removal of the instrument from service should be documented in the equipment/instrument log and should indicate why the instrument was removed from service. The date the instrument is placed back in service should also be indicated in these logs.

If the nature of the malfunction is such that the accuracy of previous reported test results are suspect, the situation shall be immediately brought to the attention of the supervisor and the QA Manager. The QA Manager will inform the IDS Commander and/or TLD Commander, and corrective action shall be performed. The laboratory will follow the corrective action process for non-conformities (see *Chapter 3*).

6.0.2.3.3 EQUIPMENT CALIBRATION

Analytical equipment requiring calibration (e.g. NIST traceable thermometers, analytical balances) will be calibrated prior to being implemented in a TLD laboratory.

Calibration status will be checked after any unexpected shutdown or removal of the equipment from service and following service or other substantial maintenance.

Calibration checking procedures will be described in the technical manuals and/or maintenance logbook.

Equipment requiring calibration will have a documented calibration schedule. The calibration schedule will include the frequency of calibration required, the status of calibration and the next calibration due date. Calibration/recalibration documentation and calibration certifications will be maintained in a file at the local laboratory.

Whenever practicable, all equipment requiring calibration will be labeled or identified to indicate the status of calibration. This should include the date when last calibrated and the date when recalibration is due.

When external calibration services are used, traceability of measurement will be assured by the use of services that can demonstrate competence, measurement capability and traceability. The calibration certificates issued by these services will contain the measurement results, including the measurement uncertainty and/or a statement of compliance with an identified metrological specification. Wherever possible, all external calibration services will be ISO accredited. Documentation of vendor competence, capability and traceability will be maintained by each laboratory for the vendors used.

6.0.2.3.4 RESPONSIBILITIES:

Forensic Scientists/ Technicians are responsible for:

- Performing assigned instrument verification and maintenance and will document all necessary information concerning verification and maintenance activities in the instrument logbooks
- Ensuring that the equipment in use has been properly calibrated or verified prior to using for breath alcohol calibration functions

Laboratory Managers/Supervisors are responsible for:

- Ensuring that calibration/verification and maintenance procedures are in place for each instrument determined to require verification and maintenance in their discipline
- Writing and modifying the verification procedures for each instrument in their section. Supervisors are responsible for documented annual review of all verification procedures
- Monitoring compliance with calibration/verification and maintenance procedures through periodic spot checks
- Addressing problems concerning verification according to TLD Policy;
- Ensuring external calibration companies are ISO compliant, wherever possible
- Ensuring that all users are authorized prior to instrument use
- Ensuring that required calibration/verification and maintenance as outlined in the written procedures are carried out, and according to schedule
- Periodic review of all calibration/verification and maintenance records and activities

The QA Manager is responsible for:

- Monitoring compliance with calibration/verification and maintenance procedures through annual audits of logbooks
- Conducting an annual review and update of this policy

The TLD Commander is responsible for:

- Monitoring all instrument calibration/verification and maintenance activities through review of annual audit reports and other communications through laboratory employees

6.0.3 TRACEABILITY OF MEASUREMENT STANDARDS

6.0.3.1 POLICY

All calibration equipment/instruments used in TLD laboratories that has a significant effect on the measurement result and their associated uncertainties of measurement, will be traceable to national and/or international standards of measurement. This will be done through the use of a measurement standard. The TLD will safely handle, transport and store these measurement standards in order to prevent contamination or deterioration and in order to protect their integrity.

6.0.3.2 DEFINITIONS

6.0.3.2.1 NATIONAL/INTERNATIONAL STANDARD

A standard recognized by national or international agreement to serve as the basis for assigning values to other standards of the quantity concerned. The standards which generally apply are the metric system of measures expressed in SI units, the units of the International System of Units.

6.0.3.2.2 NATIONAL INSTITUTE FOR STANDARDS AND TECHNOLOGY (NIST)

This federal agency, also known as NIST, is located within the U.S. Department of Commerce and represents the final authority for metrology in the United States. Ideally, all measurement results should be documented and shown to be traceable to NIST.

6.0.3.2.3 REFERENCE MATERIAL PRODUCER

An organization or firm which manufactures and provides certified reference materials for the purpose of ensuring traceability and estimations of combined uncertainty. The reference material producer shall be responsible for assigning the unbiased reference value to the reference material along with its combined uncertainty.

6.0.3.2.4 CERTIFIED REFERENCE MATERIAL (CRM)

A material or substance, accompanied by a certificate, one or more of whose property values are certified by a procedure that establishes traceability to an accurate realization of the unit in which the property values are expressed. Each certified value is accompanied by an uncertainty at a stated level of confidence. An example of such a CRM would be a NIST traceable thermometer.

6.0.3.2.5 CONSENSUS STANDARDS

Consensus standards are voluntary standards that are accepted and agreed upon within an industry by bodies such as ASTM.

6.0.3.2.6 CALIBRATION EQUIPMENT/INSTRUMENTATION

Any instrumentation or measuring equipment used to as part of the laboratory's breath alcohol calibration functions, according to a procedure.

6.0.3.3 PROCEDURE

Reference standards or materials (e.g., thermometers, weights) used to check accuracy of other equipment or instruments shall not be used for other purposes.

All calibrations and adjustments to these materials will be documented.

All in-house NIST traceable CRMs must be periodically checked and recertified by an external agency to maintain their NIST traceability. Recalibration or recertification of these materials will take place before their certification expires.

Vendors used for calibration or recertification of these standards shall be certified or accredited by ISO or other international/national accrediting bodies.

Following service, maintenance and recalibration by such vendors, the certification or documentation provided by them will be maintained in the laboratory.

If mishandling of standards brings accuracy into question, the standards shall be taken out of service and recalibrated.

When traceability of measurements cannot be made in or is not relevant to SI units, then reference materials will establish traceability by one of the following:

- The use of certified reference material from a supplier
- The use of specified methods, published standards, and/or consensus standards
- Participation in inter-laboratory comparisons

Documentation of this traceability to SI units or CRMs and the recalibration/recertification information shall be maintained by the individual laboratory or the QA Manager.

6.0.4 OTHER DIVISION REFERENCE DATABASES

6.0.4.1 POLICY

The TLD maintains databases for the cataloging, storing and retrieval of quality and technical information. Access to these databases will be limited to TLD personnel and other authorized personnel such as FLSB IT staff. Administration and changes to these databases will be by designated individuals only. The TLD Commander and/or IDS Commander will designate an individual(s) for the management and administration of the Division specific databases. The Division databases will be overseen by the QA Manager or designee.

These databases include but are not limited to:

- Chemical Inventory Database (All laboratories)
- Key Inventory Database (All laboratories)
- Simulator Information Management System (SIMS)
- Breath Test Records Database

6.0.5 UNCERTAINTY OF MEASUREMENT

6.0.5.1 POLICY

The TLD will have procedures for estimating the uncertainty of measurement where required. Typically, the uncertainty of measurement shall be determined for quantitative measurements. The procedure will attempt to identify all the components of uncertainty and make a reasonable estimation to ensure that the form of reporting the result takes into consideration any applicable measurement uncertainty.

6.0.5.2 DEFINITIONS

6.0.5.2.1 ACCURACY

The ability of a measurement result to report the true or target value of the property being measured.

6.0.5.2.2 BIAS

The difference between a measurement result and the true or target value of the property being measured. The bias can be absolute or relative. The bias quantifies the accuracy of the measurement.

6.0.5.2.3 COEFFICIENT OF VARIATION (CV)

The relative standard deviation expressed as a percentage. Another way to quantify the precision of measurement.

6.0.5.2.4 COMBINED UNCERTAINTY

The estimate of measurement uncertainty that includes the contribution from all components significantly influencing a measurement result.

6.0.5.2.5 CONFIDENCE INTERVAL

An interval that is symmetric about a statistical estimate (i.e., the mean) determined from a multiple of the standard deviation for the statistical estimate and in which the true measured value is expected to lie with a stated level of probability. A confidence interval is one way to report the expanded uncertainty.

6.0.5.2.6 EXPANDED UNCERTAINTY

A multiple of the standard uncertainty which provides an interval within which the true quantitative result is expected to lie with a stated level of confidence. For a multiple of $k=2$, the interval will yield approximately 95% confidence that it contains the true property being measured.

6.0.5.2.7 MEASUREMENT UNCERTAINTY

The property associated with a measurement result that characterizes the dispersion of the values that could reasonably be attributed to the true value being measured.

6.0.5.2.8 PRECISION

The degree of agreement or repeatability among replicate measurements performed at the same time, on the same instrument, by the same operator and under the same conditions. Precision is quantified by the standard deviation.

6.0.5.2.9 SIGNIFICANT FIGURES

Significant figures are those digits between and including the least and most significant digits in a number. The leftmost nonzero number is the most significant. The rightmost nonzero number is the least significant digit. If a decimal point is in the number, the rightmost digit is the least significant even if it is a zero.

6.0.5.2.10 STANDARD UNCERTAINTY

The uncertainty of a measurement result expressed as a standard deviation.

6.0.5.3 PROCEDURE

Uncertainty of Measurement is a parameter associated with a measured result that characterizes the possible range of values that could, under a specified level of confidence, be attributed to the result or method. In other words, the Measurement Uncertainty is used to indicate the degree of variability, at a specified level of confidence that can be expected for that particular measurement or method.

Measurement uncertainty takes into consideration all the potential variables that contribute to the measured result. Sources contributing to the uncertainty may include, but are not limited to, the reference standards or materials used, the procedure or equipment used, the environmental conditions, the properties or condition of the item being tested and the analyst/technician performing the test. Components that may contribute to the measured uncertainty should be taken into consideration when estimating the measurement uncertainty.

For the breath alcohol calibration functions performed by the Division, the TLD Policy for Estimating the Uncertainty of Measurement details the procedures describing how the measurement uncertainty is calculated and how it should be applied when reporting the result.

6.0.5.3.1 SIGNIFICANT FIGURES AND TRUNCATING VALUES

The number of significant figures must, at a minimum, correspond to the uncertainty in the measurement and must not be more than the precision of the measuring device. If truncation is required for reporting purposes, truncation will occur after calculation to the appropriate significant figures and calculation of the measurement uncertainty.

6.0.5.3.2 REPORTING UNCERTAINTY OF MEASUREMENT

When uncertainty of measurement is required, the calibration record(s) must contain the uncertainty of measurement or a reference to it. When this uncertainty of measurement is of significance to the requestor, the range of values and the uncertainty will be reported with specific confidence limits. Reports of analysis shall not overstate certainty of findings.

7.0 PERSONNEL QUALIFICATIONS AND TRAINING

7.0.1 SCOPE

The TLD will ensure that personnel performing specific tasks shall be qualified on the basis of appropriate education, training, experience and/or demonstrated skills, as required.

A Position Description Form (PDF) shall be completed for all TLD personnel. The PDF shall be retained in the employee's supervisory desk file or document book and shall be updated as necessary.

The TLD will have a documented training program to include new employee training, training in a new area, retraining and continuing education for maintaining skills and expertise.

All analysts/technicians regardless of academic qualifications or past work experience, shall satisfactorily complete a competency test prior to assuming calibration work in the laboratory.

Each laboratory shall maintain records of the relevant authorization(s), competence, educational and professional qualifications, training, skills and experience of all technical personnel. This information shall be readily available and shall include the date on which authorization and/or competence is confirmed. Training records will be sufficiently detailed to provide evidence that employees have been properly trained and that their ability to perform the task of their specific discipline has been assessed.

TLD Management will ensure that proper training occurs for all TLD personnel. In addition, each employee will share in the responsibility of maintaining his/her functional area expertise.

Various types of training opportunities are available for TLD personnel including in-state and out-of-state workshops and seminars, professional meetings and conferences, laboratory specific training, reading literature, networking with other experts and through state resources. Continuing education opportunities are also available through local universities and community colleges. In addition, the TLD will periodically provide in-service training opportunities for the purpose of exchanging technical information on techniques, legal challenges, policy changes and/or research developments.

Training needs of an employee may be identified through individualized training plans and goals (e.g. quarterly Performance Development Plans for new forensic scientists), TLD strategic plans, management requests and needs of the client agency. Requests for training shall be processed through the chain of command.

7.0.2 DEFINITIONS

7.0.2.1 COMPETENCY TEST

The final examination provided to a trainee at the end of training modules or at the end of the training plan for a specific area or procedure. The competency test may be written, oral and/or practical. The competency test results are evaluated by the assigned trainer and supervisor.

7.0.2.2 CALIBRATION WORK

Analytical work performed by a forensic scientist or technician, relating to breath alcohol calibration functions.

7.0.2.3 TRAINEE

A trainee is any employee of the TLD who is training in a new discipline, procedure or job classification. Trainees can be permanent, probationary or trial service.

7.0.2.4 TRAINER / INSTRUCTOR

Trainers/Instructors interact with the trainee to teach one or more aspects of a technical procedure or administrative topic. Trainers/Instructors have the responsibility for ensuring the trainee successfully completes his/her training tasks. See the Trainer/Instructor Qualifications section below.

7.0.2.5 TRAINING MANUAL

A training manual outlines the necessary requirements to become competent in a specific discipline or procedure. It may include modules or sections on theory and principles, reading assignments, and practical exercises. The manual is designed to provide the trainee with a sufficient understanding and skill level to satisfactorily conduct independent breath alcohol calibration work.

7.0.3 QUALIFICATIONS OF PERSONNEL

All personnel assigned to the TLD must be competent, trained and supervised by competent staff to ensure that they conduct work according to the quality program of the TLD. It is the responsibility of the laboratory manager to demonstrate the competence of all personnel. There must be documented evidence of the training and qualifications for all personnel.

7.0.3.1 EDUCATIONAL BACKGROUND

Minimum educational and/or other requirements for TLD technical positions are found in the TLD Calibration Operations Manual (*see Appendix C*). Verification of educational requirements for personnel is under the purview of the Washington State Department of Personnel (DOP) and WSP Human Resource Division (HRD). Whenever possible, Laboratory Managers should ensure that college transcripts of all employees are reviewed at the time of employment and maintained on site at the TLD Headquarters. Educational background and training history for relevant personnel should be updated on a Statement of Qualifications form during the yearly ISO assessment.

7.0.3.2 RECRUITING AND SELECTING PERSONNEL

Refer to the TLD Calibrations Operations Manual (*see Chapter 1*).

7.0.4 TRAINING

7.0.4.1 TRAINING GOALS

Forensic science demands highly skilled professionals. New employees must become qualified to perform competently in their assigned area of responsibility, and tenured employees must build upon their current knowledge and abilities in order to meet the challenges of a constantly evolving science. Training goals include:

- Basic competency in area(s) of responsibility
- Maintenance of acquired skills and abilities
- Instruction in new and improved techniques
- Acquiring and maintaining professional accreditation or certification
- Meeting agency requirements for mandatory training and policy awareness

7.0.4.2 TRAINER/TRAINEE METHOD

The TLD employs the trainer/trainee method as one component in teaching for technical area training and training in a new job classification. This method has proven invaluable to ensure that the TLD training goals are met and that a feedback mechanism is in place.

7.0.4.3 TRAINING PLANS

Training plans will be developed for each new and permanent employee. The training plan for permanent employees is normally accomplished as part of their annual performance evaluation. Supervisors will work with each employee to develop a training plan, the plan forming the basis for the employee's professional development program. In developing the training plan, the supervisor must take into consideration the needs of the individual employee, the discipline, the TLD and the customer agencies.

Training plans will have clearly defined goals which are measurable in order to document progress and successful completion of the training module. Measurement tools will normally include but are not limited to scored examinations and/or competency tests.

Training plans should be updated annually during the employee's performance evaluation and may be adjusted as needed throughout the year. Supervisors must be actively involved in the employees' training, including documenting training events and training performance in the employee's supervisory desk file or document book.

7.0.4.4 TRAINING MANUALS

Training manuals are provided for each area of responsibility and provide the guidelines and instructions for the basic technical procedures used in breath alcohol calibration functions. The goal of the training manual is to provide employees with an understanding of theory and principles, application, methodology, technical limitations, and equipment involved in the area. The technical procedures or training manuals will contain the approved methods, the scientific references and resources, and the requirements for successfully completing a training program for each area.

These training manuals will be used to develop training plans for employees, and will also be used as a guide when designing job performance improvement plans.

The training manuals are developed by the section supervisors and/or competent laboratory personnel, with input from the TLD management. The training manuals shall be reviewed annually by the QA Manager and/or supervisors and updated as more current information and techniques become available. In addition to the basic technical procedures employed in the discipline, the training manual may address other areas such as documentation, quality assurance program, ethics, safety and report writing.

7.0.4.5 TRAINING PROGRAM

7.0.4.5.1 POLICY

Prior to being authorized to perform calibration work, trainees will successfully complete the established training modules and competency tests for that discipline.

7.0.4.5.2 PROCEDURE

The following steps will be taken to ensure successful completion of the training program:

- **Assign Trainer/Instructor:** The trainee will work under the direction of a trainer/instructor, who is assigned by the supervisor or laboratory manager. The

primary considerations for trainer/instructor selection will be laboratory needs and the qualifications of the trainer/instructor

- **Develop Training Plan:** The supervisor will develop a comprehensive training plan for each new employee. Modified training plans will require approval from the Laboratory Manager or QA Manager. Training plans may also be developed for journey level employees as required
- **Complete Training Plan:** The trainee will work with the assigned trainer/instructor to successfully complete the developed training plan. Completion of the required training elements will be documented by both the trainee and the trainer/instructor. TLD Management will be notified of successful completion of the training plan
- **Training Evaluations:** During the period of training, training evaluations will be completed and documented by the trainer/instructor. The results of these evaluations will be discussed with both the trainee and the supervisor of the trainee. At the end of the training period, the effectiveness of the training actions shall be evaluated and documented. One example may be to provide a questionnaire to the trainee
- **Final Competency Test:** The supervisor/instructor will be responsible for administering a final competency test. The final competency test must be successfully completed by the trainee prior to the start of calibration work. The results will be maintained as part of the training record
- **Approval for Calibration Work:** The trainee must demonstrate the successful completion of the training plan by passing examinations and/or competency tests that are part of the training plan. Upon successful completion of either training modules or the final training plan, an IOC will be submitted through the chain of command to the TLD Commander for final approval before the trainee can begin work in that defined area. The analyst/technician will be authorized to perform work in only those areas in which he/she was approved
- **Training Records:** Training records of the trainee will be retained by the trainee and/or supervisor

7.0.4.6 TRAINER/INSTRUCTOR QUALIFICATIONS

7.0.4.6.1 ABILITIES AND EXPECTATIONS

The trainer/instructor will be selected by the supervisor and/or laboratory manager and should be able to demonstrate the following abilities:

- Have a thorough understanding of WSP structure, policies, and procedures, as well as the structure, policies, and procedures of the TLD
- Has experience or has demonstrated an ability to instruct others successfully
- Have an understanding and working knowledge of the current procedures, requirements, and expectations for the given discipline
- Be willing to standardize their instruction and training based on the training manual for the given discipline
- Be able to offer constructive criticism and positive reinforcement that is crucial to the trainee's learning process
- Be flexible and able to accommodate for differences in trainee learning styles

- Interact routinely, frequently, and one-on-one with the trainees to assess their understanding and mastery of the new discipline
- Record the trainees' progress with evaluations per TLD requirements
- Should possess those personal qualities that motivate the trainees and enable them to reach their maximum potential
- Have demonstrated good organizational, verbal and written skills
- Have management commitment to provide a quality training experience that does not allow the trainer to be pressured to rush the training process

The list of qualified trainers/instructors will be maintained by each Laboratory Manager.

7.0.5 JOB PERFORMANCE

7.0.5.1 DOCUMENTING JOB PERFORMANCE

Supervisors will document the work performance of each employee they supervise and maintain those records in a supervisory desk file or document book. Supervisory desk files or document books may contain positive and/or negative supporting documents, counseling, work directives, evaluations, or records relating to an employee's job performance throughout the performance period. Supervisory desk files or document books are required to be purged each year following an annual evaluation; training records will be maintained separately and shall not be purged.

Employees will have access to and be made aware of the contents of the supervisory desk file or document book (see the Collective Bargaining Agreements). Regular performance appraisals are required and will be completed for each employee.

7.0.5.2 RE-TRAINING

Re-training in a given discipline will be required when:

- Employees who were once qualified in the discipline but have not maintained the required competency or proficiency in that discipline
- Employees who were previously qualified at another laboratory system (non-WSP) in the particular discipline
- A discipline's procedure or training manual has been significantly revised
- Directed by a corrective action request (CAR), corrective action plan, job performance improvement plan (JPIP) and/or remedial training
- As required by administrative rule

7.0.5.3 JOB PERFORMANCE IMPROVEMENT PLANS, CORRECTIVE ACTION PLANS AND REMEDIAL TRAINING

Remedial training, a JPIP, or a corrective action plan may be required due to problems discovered during any of the quality review processes utilized by the TLD, or by complaints received from inside/outside the division. Problems and complaints will be investigated and a determination made as to the need for further corrective action.

If a discrepancy in calibration work has been determined, the employee will be removed from such work until further assessment is completed. If remedial training is needed, the supervisor and the employee, with input from TLD management, will design a JPIP or corrective action plan with clearly defined goals and time lines. The time limit for the JPIP should be 90 days or less. The progress of this plan will be measured at frequent intervals and thoroughly documented in the employee's supervisory desk file or document book.

If the employee removed from calibration work successfully completes their JPIP or corrective action plan, the supervisor will forward a recommendation for the employee to resume work to the Appointing Authority for final approval.

If the employee cannot assimilate the required training and achieve competency, the supervisor will consult with the laboratory manager and/or QA Manager to recommend a course of action to the Appointing Authority. Any course of action will be taken with due regard given to the needs of both the employee and the agency.

Should the issue involve commissioned personnel the process established by their bargaining unit and contract will also be followed (*see the Collective Bargaining Agreement*).

7.0.6 PROFESSIONAL DEVELOPMENT PROGRAM

7.0.6.1 TRAINING VENUES

Available training resources include:

- TLD personnel experienced in a variety of forensic analyses and processes
- TLD in-service training
- TLD sponsored forensic training courses utilizing visiting experts
- WSP sponsored training
- Agencies and institutions such as the Washington Criminal Justice Training Commission
- Professional forensic science organizations such as the American Academy of Forensic Sciences, the Society of Forensic Toxicologists, and the International Association of Chemical Testing
- Journals of professional forensic science organizations and other scientific literature

7.0.6.2 CONTINUING PROFESSIONAL DEVELOPMENT AND MAINTAINING COMPETENCY

The TLD's functional areas will normally meet at least once annually to conduct functional area business aimed at scientific advancement, process improvement, solving technical problems, identification of relevant training needs and opportunities, and conducting in-service training. All of these goals support the continuing professional development and maintenance of competency of individual employees which in turn support the overall competency of the TLD's programs. TLD management will support the functional area meetings and endeavor to act on recommendations when possible.

The TLD will provide support to personnel who wish to pursue personal certification through a relevant professional organization. This support will normally consist of covering the cost of the initial application and testing fees. Subsequent maintenance fees are the responsibility of the individual employee.

Attendance at conferences and workshops sponsored by professional forensic organizations is an effective way for personnel to stay current in their field. Such venues provides a significant source of continuing education that directly supports their professional development and maintenance of competency. Serving as members or officers of these organizations facilitates employees staying in contact with their peers across the nation, a process vital to scientific advancement. In order to achieve these goals, the TLD will provide membership in two relevant professional forensic organizations for each forensic scientist/technician. The TLD will endeavor to send at least one scientist/technician to each

of the annual conferences sponsored by the major professional forensic organizations with a level of financial support consistent with current resources.

7.0.6.3 REQUESTS FOR TRAINING

To attend a training event at or outside an employee's worksite where there are costs for registration or tuition, or costs for training materials, the employee must submit a Training/Travel Request along with a Training Request Checklist. The same form will be used for training requests for time only. The completed forms will be routed through the chain of command for approval. All education and training requests should be approved or disapproved within thirty (30) calendar days from the submission of a properly completed request. If a request is denied, the person denying the request will provide a reason for the denial to the employee.

In-state training events over \$500 in cost require approval through the chain of command to the TLD Commander or designee. Out-of-state training events require approval through the chain of command to the WSP Chief. Employees engaged in their planned training program in their laboratory generally do not need to submit Training/Travel Requests for the training modules in their program unless the above conditions apply. Copies of all approved Training/Travel Request or training records will be maintained on file with the employee's laboratory manager.

7.0.6.4 COMPLETION OF TRAINING

An employee must report the completion of their approved training event on a Training/Travel Request form for any training requiring management approval as discussed above, and the supervisor will sign the report form. If a certificate of completion is provided for the training, a copy will be attached. The completed form must be routed through the chain of command to the supervisor who will keep a record of completed training and then forward to the SAS or QA Manager for entering the information into the employee training records. It is recommended that employees maintain their own training records for career planning, performance appraisals, individual certification, and other uses.

7.0.6.5 LABORATORY LIBRARY

Each laboratory will have access to a library containing current books, journals, and reference materials for each discipline. Each analyst/technician is responsible for taking time to read periodicals, journals, articles, books, laboratory memorandums and other relevant literature in order to keep current with information and developments in their respective disciplines. A list of the contents in each library is maintained by the TLD Librarian. The TLD Librarian distributes by email the table of contents of various journals, magazines and publications. The TLD Librarian is a resource for obtaining journal articles and other needed reference material and should be contacted when necessary. These may also be found on FLSB Portal.

7.0.6.6 COURTROOM TESTIMONY TRAINING

TLD management is responsible for ensuring that testimony training is provided to employees who testify in court. Topics such as chain of custody, calibration work results and interpretation of calibration results should be discussed during the training. This training can be given internally by a TLD employee or by an external source. Documentation will be maintained for each individual with their regular training records.

8.0 ASSURING THE QUALITY OF CALIBRATION RESULTS

8.0.1 POLICY

The TLD is committed to providing the best quality service available to all members of the criminal justice system. A key component to providing high quality service is through a documented proficiency testing program. While proficiency testing is an integral part of an effective quality assurance program, it is not the sole indicator of satisfactory performance or delivery of a quality product. Proficiency testing does not replace high-quality work, standards, controls, and other conventional quality assurance practices.

The TLD may use, but is not limited to the following for monitoring the validity of tests and calibrations performed:

- Certified reference materials
- Positive and negative controls
- Replicate testing
- Repeat testing (re-examination)
- A documented proficiency testing program
- Technical and administrative reviews

The monitoring will be planned and any resulting data will be recorded and reviewed.

8.0.2 PROFICIENCY TESTING

8.0.2.1 DEFINITIONS

8.0.2.1.1 ASCLD/LAB

The American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB). An organization that offers accreditation under the ASCLD/LAB-*International* program, which is based on the ISO 17025 standards and the ASCLD/LAB-*International* Supplemental Requirements.

8.0.2.1.2 APPROVED PROFICIENCY TEST PROVIDER

An individual, organization or company which has applied for and obtained approval from ASCLD/LAB to prepare and provide proficiency tests to participating forensic laboratories, in the forensic disciplines for which the provider has been approved.

8.0.2.1.3 PROFICIENCY TEST

A proficiency test is an internal or external test that is provided to evaluate the capability of analysts, technical support personnel and the quality performance of a laboratory.

8.0.2.1.4 PROFICIENCY REVIEW COMMITTEE (PRC)

A committee of individuals appointed by the Board of ASCLD/LAB, because of their experience and expertise, to provide oversight for ASCLD/LAB in the proficiency testing program for specific forensic disciplines.

8.0.2.1.5 PROFICIENCY TEST EVALUATION FORM

The form used to provide comments on a laboratory's or an individual's proficiency test.

8.0.2.2 PROCEDURE

The TLD proficiency program will be directed by the QA Manager and shall be in compliance with the ASCLD/LAB Proficiency Review Program. ASCLD/LAB approved proficiency test providers will be used where available. Before ordering proficiency tests, the QA Manager will confer with the laboratory managers and supervisors to determine the numbers and types of tests needed.

Each analyst/technician within the TLD will complete at least one proficiency test per year in the area(s) in which they perform calibration work. Further, each laboratory must complete at least one external proficiency test for in each area in which it provides accredited services.

The objectives of the proficiency testing program are to:

- Demonstrate the current competence of the analyst and technical support personnel
- Demonstrate the current competence of the laboratory
- Ensure that quality work is being maintained
- Identify areas where additional training or resources would be beneficial
- Verify the validity of technical procedures

8.0.2.2.1 PROFICIENCY TEST SAMPLES

Proficiency test samples will be handled in the same manner as routine calibration work until the QA Manager determines that all proficiency test requirements have been satisfied and the sample is no longer needed for that purpose. The sample may then be kept as a training sample, or it may be destroyed as determined by the supervisor or QA Manager.

8.0.2.2.2 PROFICIENCY TESTING PROCESS

Proficiency tests must be completed and the results submitted to the test provider within the timeframe imposed by the provider. This requirement is essential to the overall success of the TLD Proficiency Testing Program; therefore it is the responsibility of the analyst/technician assigned the test to ensure that this requirement is met. Management has the responsibility to see that the proficiency test is assigned to and received by the analyst/technician in a reasonable time frame.

The test must also be completed in a similar manner as calibration work. The proficiency test results will undergo a technical peer review and an administrative review before results are sent back to the test provider. The technical peer review will be documented on the copy of the answer sheet by the reviewer's initials and date.

The proficiency will be assigned to the analyst/technician in a timely manner. The analyst/technician must perform the testing so that there is sufficient time to accomplish appropriate reviews for the test results to be sent to the test provider by the due date.

The intent of the proficiency testing program is to identify individual technical issues and also systemic issues. Therefore, if a technical peer reviewer disagrees with the conclusions reached by an analyst/technician, then it is incumbent upon the reviewer to bring the problem to the attention of the analyst/technician and their supervisor. The procedure used to resolve technical peer review conflicts in calibration work, as outlined in Section 9.6 below, will be followed.

The QA Manager will keep records regarding how the test samples are obtained or prepared, as well as completion dates and results of the testing. As tests are received, the

QA Manager will disperse the necessary tests to appropriate laboratories. The supervisors are responsible for assigning proficiency tests to their analysts/technicians as needed. The QA Manager will ensure that appropriate proficiency test samples are obtained, assigned, and provided to each analyst/technician with enough advance notice to allow completion prior to deadlines. The analyst/technician will document and report to their supervisor and the QA Manager if a proficiency cannot be completed by the deadline.

It is the responsibility of the QA Manager to ensure that proficiency results are completed and returned to the test provider. Copies of the answer sheets signed with the assigned analyst/technician's signature and other necessary paperwork for the proficiency test will be sent to the QA Manager.

When the results of the proficiency tests are received from the provider, the QA Manager or designee will review the analyst/technician's and the provider's results. The analyst/technician's results, supporting documentation, and the provider's results will be reviewed for technical accuracy based on availability of the test answers.

Proficiency test records will be maintained at TLD Headquarters. Proficiency test records include:

- Proficiency test unique identifier
- How tests were obtained or created
- Written instructions for completion
- Identity of person taking the test
- Due date and completion date
- Copy of the proficiency test report (answer sheet(s))
- Copy of the proficiency test evaluation form
- Any discrepancies noted
- Details of corrective actions taken (when necessary)

The proficiency test records maintained in the calibration file shall also include all data and notes supporting the conclusions.

Proficiency test records at TLD Headquarters will be retained for at least one full audit cycle.

8.0.2.2.3 SATISFACTORY PROFICIENCY TEST RESULTS

If the test results are satisfactory, the QA Manager will complete documentation of the satisfactory result in the records. Documentation of satisfactory completion will be issued to analysts/technician and supervisors. The documentation shall be initialed and dated by the analyst performing the proficiency test before inclusion in the calibration file.

8.0.2.2.4 PROFICIENCY TEST DISCREPANCIES

If there is a discrepancy between the analyst/technician's test results and the provider's results, the QA Manager will immediately notify the laboratory manager or supervisor, as applicable, and the analyst/technician who performed the test. The TLD Commander (Laboratory Director) will subsequently receive a "Notice of Apparent Discrepancy" from the ASCLD/LAB Proficiency Review Committee (PRC). The QA Manager and the Appointing Authority will determine a course of action, if necessary, and coordinate that process with the PRC.

If an analyst/technician's performance on a proficiency test requires further development to meet quality standards, the QA Manager will work with the supervisor and the analyst/technician on a plan of action which shall include removal of the analyst/technician from calibration work and remedial training. The QA Manager will prepare a report to the TLD Commander outlining the issues and the actions taken. The QA Manager will then draft a response from the division to the PRC indicating the actions taken.

The proficiency test calibration file will contain a record of the discrepancy between the analyst/technician's test results and those of the test provider. The QA Manager will retain complete records for the Division.

8.0.2.2.5 PROFICIENCY TESTING AND JOB PERFORMANCE

Satisfactory performance on a proficiency test should be documented in the employee's supervisory desk file or document book. Likewise, any problems identified from the review of a proficiency test, if reflective of difficulties with a analyst/technician's individual work performance, will be addressed by the supervisor and documented in the supervisory desk file or document book. The supervisor may enlist input and assistance from the TLD management, and other appropriate individuals. (See Chapter 3.0 - Control of Nonconforming Testing; and Chapter 7.0.5 - Job Performance).

8.0.3 TECHNICAL PROCEDURES AND METHODS

8.0.3.1 POLICY

The TLD will use appropriate technical procedures and methods that have been scientifically validated and/or accepted for use in the field of forensic science. This includes methods and procedures for the handling, transport, storage and preparation of calibration items, the operation of all relevant equipment and an estimate of the measurement uncertainty where appropriate. All methods and procedures will be documented and readily available for review by laboratory personnel. Any deviation from a standard technical procedure or method will require that the details of the modification, as well as the justification and authorization, be documented in the calibration records.

8.0.3.2 DEFINITIONS

8.0.3.2.1 LABORATORY DEVELOPED METHODS

Methods developed in house as standard methods for a specific laboratory purpose.

8.0.3.2.2 METHODS

Any technical procedure detailing the use of reagents and/or instrumentation for scientific analyses; synonymous with "procedure".

8.0.3.2.3 NEW METHODS

Scientifically validated and/or forensically adopted methods that have not previously been implemented in the TLD laboratories.

8.0.3.2.4 NON-STANDARD METHODS

A scientifically validated method or procedure that is not routinely applied or used for forensic analysis.

8.0.3.2.5 ACCURACY

Accuracy is the degree of conformity or nearness of a measurement to a standard or a true value.

8.0.3.2.6 DEVELOPMENTAL VALIDATION

The initial scientific research, formulation and validation of a novel method, procedure or technology.

8.0.3.2.7 INTERNAL VALIDATION

Validation that occurs within the TLD by qualified TLD personnel.

8.0.3.2.8 NEW METHOD VALIDATION

Internal validation of a scientifically validated and forensically adopted method that has not been implemented in the TLD laboratories.

8.0.3.2.9 PERFORMANCE VERIFICATION

A type of internal validation performed on a method or instrument that has been scientifically validated and adopted for forensic analysis to ensure that the method or instrument conforms to the specifications for which it is intended.

8.0.3.2.10 PRECISION

Also called reproducibility or repeatability, the degree to which further measurements or calculations show the same or similar results.

8.0.3.2.11 VALIDATION

A process used by the scientific community for acquiring the necessary information to assess equipment/instrumentation, a technique or an experimental procedure to determine if the equipment, technique or procedure consistently provides the expected result(s).

8.0.3.3 DEVELOPING ANALYTICAL METHODS AND PROCEDURES

Technical procedures must be based upon sound scientific principles. Every procedure and/or principle used should be generally accepted in the relevant scientific field.

Technical procedures must be as effective and efficient as possible. The following should be considered when developing a technical procedure or when considering it for inclusion in a manual:

- Compatibility with other laboratory technical and administrative procedures
- Ability to quickly provide data
- Accuracy, precision, reliability, speed, and cost
- Compatibility with available equipment and facilities
- Materials, equipment, reagents and standards required

Technical procedures must be as well documented as possible. Documentation may include specific literature articles, texts, reviews, and data compilations. A Reference List may be included in either the technical procedures or the training manuals. Where applicable, the procedure should include:

- Definition of terms
- Literature references

- Scope of the analysis conducted
- Standards for notes, interpretation of results and reporting
- Minimum testing requirements
- Equipment/instrument specifications required
- Equipment/instrument operation, maintenance and verification procedures
- QA and/or QC statement(s)
- Safety statement
- Documented validation studies

Technical procedures should include provisions for quality control and quality assurance. This may include guidelines for acceptance criteria, negative/positive controls, knowns, and calibrations, and how they should be reported.

Safety precautions specific to a technical procedure shall be included in the documentation and incorporated into the technical procedure, when necessary. Safety should also be a major consideration in the development and acceptance of a technical procedure. Any precautions and limitations of the technical procedure must be documented in the technical procedures manual.

An additional criterion for the selection of a new technical procedure is general acceptance by the appropriate functional area within the division. Even though a technical procedure may have gained general acceptance within the relevant forensic science community, it must also be understood, supported and accepted by those who must employ that technical procedure. Supervisors will communicate the development and implementation plan and progress to the members of their functional area.

Where applicable, procedural manuals will include procedures, or make reference to procedures, to ensure safe handling, transport, storage, use and planned maintenance of measuring equipment (i.e., balances, pipettes, thermometers, etc) to ensure proper functioning and in order to prevent contamination or deterioration.

8.0.3.4 METHOD VALIDATION

The TLD will ensure that all methods including new methods or existing methods that are significantly modified, such that the change(s) affects the outcome of the test, are sufficiently validated prior to use.

The validation will be as extensive as is necessary to meet the needs of the given application or field of application. All validation studies will be performed with the aid of, or under the direction of, the QA Manager and/or TLD Commander by qualified personnel with adequate resources to perform the validation. Results of the validation will be documented and archived. Archival may be as part of the technical manual or in a separate validation file/binder. Documentation should include the data, the procedure and controls or standards used, a statement as to whether the method is fit for the intended use, and documentation of approving authority.

New methods shall be thoroughly tested to prove their efficacy before being implemented in calibration work. The guidelines below will be used to introduce new technical procedures or modify existing laboratory procedures. Scientific working group guidelines should be considered in this process.

8.0.3.4.1 PROCEDURE

The proper validation of a new technical procedure requires an understanding of the theoretical basis for the technical procedure. Such knowledge provides a means of assessing the specificity and limitations of the technical procedure and predicting possible sources of error. The validation process should address the baseline characteristics of precision, accuracy, specificity and sensitivity of the technique, procedure, or calibration equipment, where applicable.

Validation determines the conditions under which results can be obtained reliably and determines the limitations of the technique or procedure.

Validation studies can be conducted by the scientific community (as in the case of standard or published methods) or by the laboratory (as in the case of methods developed in-house or where significant modifications are made to previously validated methods). The TLD will ensure that all methods will be validated internally prior to implementation in the laboratory. Validation will be sufficient to ensure the reliability of the procedure against any documented performance expectations of that procedure.

The TLD recognizes three types of internal validation to accommodate the various types of methods, procedures or technology that may be implemented for use in the laboratories:

- Developmental Method Validation
- New Method Validation
- Performance Verification

Developmental Method Validation precedes the implementation of a novel methodology for use in forensic analysis which has not been scientifically validated or has been scientifically validated but not routinely adopted for use in forensics (e.g. a non-standard method).

New Method Validation precedes the introduction of a method that has been scientifically validated and forensically adopted but not implemented in the TLD laboratories. New method validation may also occur on methods implemented in the TLD that have been significantly changed (e.g. laboratory developed methods).

Prior to implementation of a method validated within the TLD, but new to a particular laboratory, the reliability of the procedure shall be demonstrated in-house against any documented performance characteristics of that procedure. Records of performance verification shall be maintained for future reference.

Performance verification is performed on equipment/instrumentation that has undergone internal validation and implemented in the TLD laboratory. This could be for newly purchased equipment of the same make and model that has already been implemented and used in the TLD; equipment transferred from one laboratory to another; or for regular verification of equipment currently in use to ensure that the instrument/equipment continues to function to manufacturer's specifications and to in-house procedure specifications.

The technical procedure must be tested using known samples. If the new technical procedure is intended to supersede an existing procedure or if it parallels an existing procedure, then the two procedures should be compared on split samples. The known samples should be designed to resemble actual calibration items as closely as possible.

If the analysis provides quantitative data, the validation study should include an estimate of accuracy and precision at concentrations which are representative of calibration work.

Prior to beginning any validation study, a validation plan will be prepared by the analyst/technician involved and the supervisor, and submitted to the QA Manager for approval. The selection of the appropriate type of validation should be part of the planning process. As the study progresses, the plan may be updated as necessary. Effective communication amongst all personnel involved, including other analysts/technicians in the section and TLD management, will be accomplished through verbal or written communications.

Laboratory personnel wishing to introduce a new technical procedure, or modify an existing procedure, shall seek initial approval for development through their supervisor. When the proposal is at the draft stage, it shall be presented to the QA Manager. The following guidelines will be considered:

- The basis of the recommendation, including benefits to the laboratory system and relevance to the customer
- Who is to be assigned to conduct the development
- Where the work will be done
- The costs associated with the process, including supplies and materials
- The validation plan for the procedure
- Source of the technical procedure, if scientific in nature
- Material Safety Data Sheets (MSDS) regarding any chemicals required for the technical procedure

The validating laboratory will document the validation process. If the validation is successful, the documentation will be sent to the QA Manager for review. The QA Manager and TLD Commander will decide if the new technical procedure has been sufficiently validated and if it should be included in the Technical Manual or other official procedural manuals. The procedure should be formatted in preparation for inclusion in a procedural or technical manual, following the document control process as outlined in Chapter 2.0 above.

8.0.3.4.2 METHOD VALIDATION MAY INCLUDE:

- **Reference standards and breath alcohol calibration samples:** The samples used for validation should be representative of the type of standards routinely used for controls and calibration samples routinely analyzed using the technique or procedure.
- **Accuracy/Precision Studies:** The results must demonstrate that you are measuring the quantity of standard tested within a reasonable variability according to the manufacturer's specifications or within the variability of the technique being used. An estimate of the uncertainty of measurement will be determined, where required.
- **Reproducibility:** The method must be reproducible by another individual using the original test documentation.
- **Specificity:** Does the procedure give results specific to the substrate tested?
- **Sensitivity or Linearity Studies:** Is the procedure sufficiently sensitive and does it bracket the expected or anticipated linearity? What are the detection limits of the method or instrument?
- **Environmental Studies:** When applicable, evaluate the method using known samples that have been exposed to a variety of environmental conditions.

Developmental method validation will also include:

- **Literature research:** Review of publications, academic materials, safety procedures, protocols and manufacturer's specifications, etc. involving the technique or procedure being validated.
- **Peer review**

8.0.3.4.3 PERFORMANCE VERIFICATION OF METHODS MAY INCLUDE:

- Reference standards and breath alcohol calibration samples: The samples used for verification should be representative of the type of standards routinely used for controls and specimens routinely analyzed using the technique or procedure.
- Accuracy and precision studies to verify that instrument or procedure is within previously established manufacturers or procedure specifications.

All verification results must be documented, maintained onsite, and a summary submitted to the QA Manager.

8.0.4 DEVIATION FROM POLICY OR PROCEDURE

Deviations from the TLD Calibration Quality Manual, Operations Manual, Technical Manual and other specific TLD policies and procedures may occasionally be justified.

8.0.4.1 DEFINITIONS

8.0.4.1.1 DEVIATION

Deviation is a change or variation in a policy or procedure.

8.0.4.2 POLICY

Any deviations from official TLD policy, rules or procedures must be approved in writing by laboratory management as appropriate. If calibration related work, the approval must be technically justified and documented in the calibration record.

8.0.5 RESOLUTION OF ISSUES CONCERNING TECHNICAL PROCEDURES

Technical problems will be resolved by the analyst/technician and the supervisor where possible, and documented appropriately.

Complex technical problems not resolvable by the supervisor will be referred to the QA Manager. The TLD Commander and/or IDS Commander, with input from the QA Manager, may direct cessation of work if a technical procedure being utilized exhibits problems that cannot be resolved. The Corrective Action process will be followed.

9.0 CALIBRATION RECORDS, REVIEWS, AND REPORTS

9.0.1 POLICY

Calibration records (i.e., all administrative and technical documentation related to breath alcohol calibration) will be identifiable, accessible to authorized personnel and properly stored to prevent damage or loss. Electronic documentation will be backed-up and should be protected to prevent unauthorized access to or amendment of these records. Calibration documentation will also contain sufficient information to facilitate identification of factors affecting uncertainty of measurement and to enable the test or calibration to be repeated under conditions as close as possible to the original. Records will include the identity of personnel responsible for the performance of each test, and the reviewing and issuing of results.

9.0.2 DEFINITIONS

9.0.2.1 ADMINISTRATIVE DOCUMENTATION

Documentation either received or generated by the laboratory. Administrative documentation includes records such as reagent receipts, certificate of analyses, simulator solution receipts (packing slips), and other pertinent information.

9.0.2.2 TECHNICAL DOCUMENTATION

Usually generated by the laboratory and includes reference to procedures followed, tests conducted, standards and controls used, printouts, results of tests, technical reviews, etc.

9.0.2.3 CALIBRATION FILE

A calibration file contains both administrative and technical documentation pertaining to a breath alcohol calibration function that is performed by the laboratory. This typically refers to either a Batch File or QAP File, and may include, but is not limited to:

- Calibration certificate
- Calibration affidavits
- QAP documents
- Chromatograms

9.0.2.4 CALIBRATION RECORD

A calibration record is a collection of all the administrative and technical documentation pertaining to a breath alcohol calibration function that is performed by the laboratory. This typically refers to either a Batch Record or Instrument Record, and may include, but is not limited to:

- Electronically stored data
- Instrument maintenance and/or verification documentation
- Reagent and standard quality control documentation

Information in the calibration record may be in the calibration file or in other locations in the laboratory which are designated as extensions of the calibration file.

9.0.2.5 CALIBRATION REPORT

Final report produced as a result of the certification of simulator solutions (i.e. Calibration Certificate) or the Quality Assurance Procedure (i.e. Datamaster QAP Form).

9.0.3 REVIEW OF REQUESTS

9.0.3.1 POLICY

The TLD will ensure that the customer's requirements, including procedures to be used, are adequately defined, documented and understood; that the laboratory has the capability and resources to meet the requirements of the request and that the appropriate procedure is selected and capable of meeting the customers' request requirements.

9.0.3.2 PROCEDURE

Requests for calibration services may be in the form of written or verbal communication. Requests for simulator solution preparation will be recorded in a spreadsheet. Requests for the QAP of instruments may be routine (e.g. scheduled and/or annual QAP) or ad hoc (e.g. customer request), and will be documented as part of the calibration record.

The analyst/technician or supervisor will inform the customer if they are unable to fulfill the request for services and why. In addition, any differences between the requested services and the services that the TLD can provide will be resolved before any calibration work commences. Documentation of this contact will be tracked as part of the calibration record.

9.0.4 CALIBRATION DOCUMENTATION

9.0.4.1 ADMINISTRATIVE DOCUMENTATION

Administrative documentation should bear the calibration number (e.g. Batch number) or other unique identifier in order to be placed back into a calibration file if it becomes separated. If the administrative documentation is a packet of material that is fastened together, the calibration number need only be on the first page.

9.0.4.2 TECHNICAL DOCUMENTATION

Each page of the technical documentation should have the following:

- Analyst/technician's original handwritten signature or initials
- The date of the testing/procedure
- Unique calibration number or other unique identifier
- Machine generated dates and calibration numbers are acceptable

9.0.4.3 GENERAL CALIBRATION DOCUMENTATION REQUIREMENTS

Handwritten documentation will be recorded using permanent ink.

Nothing in the calibration documentation may be erased or obliterated. Changes, additions, or any other form of alteration must be initialed and dated by the person making the alteration. Overwrites should be struck-through, rewritten, and initialed/dated.

Dates must be recorded in the documentation to indicate when work was performed.

Abbreviations are acceptable if they are readily comprehensible to a reviewer or if a key is available.

Calibration documentation include but are not limited to the following:

- Results of testing (e.g. chromatograms and other instrumental printouts)

- Records of data and calculations
- Handwritten or machine-generated worksheets and observations
- Identity and source of any standards or references used

When instrumentation is used, the specific instrument used must be noted in the calibration record. In a laboratory with only one instrument for a specific test or procedure, the instrument's identification may be documented in the laboratory's equipment list. In laboratories that have multiple instruments of the same make/model, the unique identifier of the instrument used must be recorded in the calibration record.

Observations, data and calculations must be recorded at the time they are made, and must be identified to the specific analysis or test.

Documentation to support the results shall be such that in the absence of the analyst/technician, another competent analyst/technician or supervisor could evaluate what was done and interpret the data

Documentation of the technical peer review is discussed below.

9.0.5 CALIBRATION REVIEW

9.0.5.1 POLICY

Each laboratory will ensure that reports are accurate and supported by the technical documentation, and that established policies and procedures are being followed. All laboratory reports and associated calibration documentation will be subject to technical and administrative reviews.

9.0.5.2 DEFINITIONS

9.0.5.2.1 ADMINISTRATIVE REVIEW

Final review for non-technical matters of the calibration file and final report prior to release of the report to the customer.

9.0.5.2.2 SUPERVISOR REVIEW

A general review of calibration records by a supervisor to maintain oversight of laboratory operations.

9.0.5.2.3 TECHNICAL REVIEW

A review of the calibration documents and the report to ensure that proper technical procedures were used and documented, and that the analytical data support the conclusions in the report.

9.0.5.3 PROCEDURE

Review of calibration information by the analyst/technical and other personnel provides a verification of procedures and results.

9.0.5.3.1 ANALYST/TECHNICIAN REVIEW

Analysts/technicians will conduct a thorough review of their own work prior to a technical review. This review is done after all analyses for that request are complete and the report has been printed where applicable. This review is a complete review of the calibration file

consisting of all the elements of the technical and administrative reviews. Analyst reviews should include, but are not limited to, the following:

- Examination of the documentation for transcription errors
- Examination of the documentation for appropriate references to work done in the laboratory, amended reports, calibration numbers, and analyst/technician's initials/signature
- Verification that each page of the calibration file has the required identifying information, and that corrections are documented with initials/date
- Verification that calibration documentation is complete

9.0.5.3.2 TECHNICAL REVIEW

Technical peer review will be conducted on all reports before release of written and verbal reports. This is to ensure that the calibration documentation support the conclusions stated in the report, and that the report is free of omissions and errors.

Technical peer review should be conducted by individuals who are currently performing calibration work, or have completed proficiency tests in that subject matter within the last two years.

The technical reviewer should consider the following points:

- The procedures conducted were appropriate to satisfy the request made by the customer. Are communications and phone notes present if applicable?
- The calibration documentation support the results stated in the report
- All relevant calibration information is included
- All procedures, data, and results are documented
- Established procedures were used and test parameters were appropriate for the examination. Are any deviations from established procedures recorded in the calibration record with adequate justification/foundation for the deviation?
- Appropriate standards and controls were used when necessary and documented
- All strikeouts or insertions were noted with the analyst/technician's initials and date. No obliterations should be present
- All pages of the technical documentation are labeled with the calibration number/unique identifier, dates, and analyst/technician's handwritten initials
- For proficiency tests, the answer sheet has been fully completed and is free of errors

Excessive errors or insufficient documentation to support the results are brought to the attention of the analyst/technician and the supervisor. Even with technical review, the final responsibility for the scientific findings in the report rests with the analyst/technician.

An approved peer review checklist may be used to facilitate the review process and retained in the calibration file as administrative documentation.

The analyst/technician must address all the observations and recommended corrections of the technical peer reviewer. If, during the peer review process, there are concerns regarding technical or quality issues including those listed below, the calibration file must be turned over to the supervisor and/or QA Manager (*see Chapter 3.0 – Control of Non-conforming Work*). The supervisor and/or QA Manager will evaluate the concerns, and if appropriate, notify the TLD Commander and/or IDS Commander.

- The calibration documentation does not support the results stated in the report
- The calibration documentation is not clear in content, intent, or purpose
- The calibration documentation contain procedural errors
- The calibration documentation exhibit numerous errors
- The calibration documentation contain inappropriate strikeouts, obliterations or overwrite or cut-and-paste errors
- If issues or discrepancies cannot be successfully resolved, or if, after communicating issues and discrepancies to the analyst/technician, requests for corrections have been ignored

The technical peer review process is vital to the continued success of the TLD. Peer review is a normal job function of all analysts/technicians qualified to perform that function, and will therefore be subject to documentation and evaluation by supervisors. The peer reviewer is equally responsible for the quality of the final report and will be held accountable.

Errors discovered after the peer review process may be addressed by Corrective Actions and will involve both the originating analyst/technician and the peer reviewer.

Technical reviews will be documented with the reviewer's signature/initials and date on the final report. The presence of the reviewer's initials indicates that the calibration file is complete and the documentation found within the file clearly supports the final results.

9.0.5.3.3 ADMINISTRATIVE REVIEW

An administrative review will be conducted on the calibration file prior to the release of written reports, including amended reports and proficiency test answer sheets. The administrative review is designed to ensure that:

- The report or answer sheets being released correctly and completely reflect the results
- The report or answer sheets being released do not contain misspelled words or grammatical errors
- The calibration numbers are correct
- Calibration documentation are initialed and dated, where applicable
- A technical peer review has been completed and is documented on the report or answer sheet
- Proficiency tests contain a clean copy of the answer sheet (to be sent to the proficiency provider) as well as a second copy of the answer sheet with initials and documentation of peer review, to remain with the file

The administrative reviewer does not have to be technically proficient in the functional area, but may not be the analyst/technician. The administrative reviewer may be the same individual performing the technical review. The administrative review is documented in the calibration file if separate from the technical peer review.

9.0.5.3.4 SUPERVISOR REVIEW

A supervisor review is a general review of calibration records by a supervisor to maintain oversight of laboratory operations. The review is to confirm that laboratory policies are being followed and reported results are accurate. The supervisory review does not necessarily include a full administrative review or technical review. A supervisor review should be done on at least 10% of all calibration work. This review can be done after distribution of the report. Completed supervisor reviews will be documented in the calibration file by date and the supervisor's initials.

9.0.6 TECHNICAL PEER REVIEW IN SPECIAL SITUATIONS

9.0.6.1 AMENDED REPORTS

If the reason for the amended report is clerical in nature, only the supervisor's approval is required. The supervisor will document their review and approval by initialing and dating the amended report.

If the reason for the amended report is due to an analytical error or oversight, the issues must be addressed to the satisfaction of the supervisor, laboratory manager and QA Manager, and must be technically peer reviewed prior to release of the amended report. Copies of all amended reports will be retained by the supervisor and may be audited by the Standards and Accountability Section.

9.0.6.2 PROFICIENCY TESTS

Proficiency test results will undergo a technical review before results are sent to the test provider. The review will be documented in the proficiency case file by the reviewer's initials and date. The assigned analyst/technician must plan the testing so that there is sufficient time to accomplish all of these steps so the QA Manager can send the test results to the test provider by the due date.

9.0.7 RESOLUTION OF TECHNICAL DIFFERENCES OF OPINION

Possible Level I non-conformities (see *Chapter 3.0*) or recurring Level II non-conformities discovered during technical reviews are to be brought to the attention of the QA Manager through the chain of command as soon as possible. The Corrective Action process will be followed.

Disagreements may sometimes arise between the analyst/technician and reviewer during the technical review process. Every effort will be made to resolve these issues at the peer level. Technical peer reviewers may request changes in reports, further work to clarify issues, or further work to complete the calibration work. If there are unresolved differences during the review, the following process will be used:

- The reviewer and the analyst/technician will bring the issue to the attention of the QA Manager who will act as a mediator
- If not resolved, the QA Manager will review the issues and make a recommendation to the Appointing Authority
- Recommendations may include re-analysis, issuance of an administrative report, or other suitable action
- The decision of the Appointing Authority concerning the resolution of the calibration work shall be binding
- The resolution will be concluded prior to the release and distribution of the calibration report

9.0.8 FOCUSED CALIBRATION WORK REVIEW

When internal quality processes uncover serious errors in calibration work, or there is a complaint alleging misconduct or incompetence, the Appointing Authority may initiate a focused calibration work review. If a root cause analysis has been completed, the Appointing Authority will review the analysis and its recommendations and any other input from the QA Manager as part of their deliberation as to the necessity of a focused casework review.

9.0.8.1 REVIEW OF AFFECTED CALIBRATION WORK

The focused calibration work review will be conducted by an appropriate supervisor or panel chosen by the Appointing Authority. The reviewing supervisor will prepare a report summarizing the findings and forward the report to the QA Manager who will review and discuss the report with the Appointing Authority.

9.0.8.2 NOTIFICATIONS

The QA Manager or the Appointing Authority will notify the SAS when this type of focused calibration work review is conducted. The notification must be made as soon as practical but not later than 30 days after the review begins. The notification will include the fact that a review or audit is being conducted and will identify all calibration work under review.

The TLD Commander or designee will notify ASCLD-LAB-*International* within 30 days of the focused calibration work review.

The TLD Commander or designee will notify the Forensic Investigations Council within 30 days of the focused calibration work review. The Forensic Investigations Council may accept the results of the division's focused calibration review, or may commission a subsequent review or investigation independent of that undertaken by the division.

If the calibration report had been released and distributed prior to the commencement of the focused calibration work review, the Appointing Authority will notify the customer as soon as practical but not later than 30 days after the review begins.

9.0.8.3 REMOVAL FROM AND REINSTATEMENT TO CALIBRATION WORK

The analyst/technician who is under review will be removed from calibration work by the Appointing Authority until the matter is resolved, as required by Chapter 3.0 - Control of Non-conforming Work. In addition to the fact finding, technical review, re-examination of work, or other action taken by laboratory management, amended calibration reports may be issued to the customer, with copies sent to the prosecuting attorney's office, where necessary. Reinstatement to calibration work will also be by the Appointing Authority.

Archive
Revision

10.0 RESEARCH PROJECTS, PUBLICATIONS AND PRESENTATIONS

10.0.1 POLICY FOR RESEARCH PROJECTS

All research projects employing the use of laboratory resources will be reviewed and approved by the Laboratory Manager and/or the QA Manager prior to the initiation of the project. This includes research projects for the investigation of new methodology or technology, uncertainty of measurement studies, or additional studies on currently used methods.

10.0.2 PROCEDURE FOR RESEARCH PROJECTS

Prior to beginning any research study, a research plan, including experimental design, will be prepared by the analyst/technician and submitted up the chain of command to the TLD Commander or designee for approval. The selection of the appropriate type of equipment, standards, controls, and reagents should be part of the plan as well as a budget estimate. As the research progresses, the plan will be updated as necessary. Effective communication amongst all personnel involved, including other analysts in the section and TLD management will be accomplished through verbal or written communications.

Where applicable, the research plan shall follow the same criteria as those listed in Chapter 8.0.3 for developmental or non-standard method validation.

10.0.3 POLICY FOR MANUSCRIPTS AND PRESENTATIONS

The analyst/technician must submit presentations of original research or manuscripts prepared for publication to the TLD management for review prior to submission of the manuscript to the journal or prior to the presentation. This policy applies specifically to situations where the TLD is mentioned in manuscripts for publication or presentations, when the author is a representative of the TLD, or when the research or preparation for the presentation occurred on duty time. It is the responsibility of the Laboratory Manager to ensure all presentations from their laboratory have been approved. Final approval will come from the QA Manager or the Appointing Authority.

10.0.4 PROCEDURE FOR MANUSCRIPTS AND PRESENTATIONS

The final draft of the manuscript should be submitted to the TLD management for review via the analyst/technician's supervisor approximately 14 days prior to the time the manuscript is sent to the journal.

The final draft of the presentation should be submitted to the TLD management for review via the analyst/technician's supervisor approximately 5 working days prior to the scheduled presentation.

Preferably, two individuals will be selected to review the manuscript/presentation.

The review of the final draft of the manuscript/presentation will focus on the following topics:

- Accuracy of the conclusions. Does the data in the manuscript/presentation support the conclusions?
- Proofing of mathematics, spelling, grammar and punctuation

Feedback will be presented directly to the author in 7 days from receipt of the manuscript, or in 2-3 working days from receipt of the presentation. The author must address the reviewer's comments and any differences of opinion will be resolved by consensus.

Presentations previously reviewed and approved do not have to be reviewed again when presented in a different venue or do not differ significantly in content.

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