South Coast Air Quality Management District

Laboratory Approval Program

Administrative, Operational and Technical Requirements

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INTRODUCTION

The South Coast Air Quality Management District Laboratory Approval Program (LAP) is largely based on the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute of Standards and Technology (NIST).

Prior to selecting the NVLAP as a guidance, the Applied Science & Technology Division reviewed many existing laboratory accreditation/approval programs. We concluded that NVLAP most closely offered the requirements we believed are necessary for our purposes.

The function of this LAP is to approve testing laboratories based on evaluation of their technical qualifications and competence for performing source testing and laboratory analysis. This document presents the administrative and operational procedures as well as the technical requirements of the LAP. It should be readily accessible to laboratory personnel.

Approval will be granted only after thorough evaluation has determined that all criteria have been met by the applicant. Approval is formalized through the issuance of a Letter of Approval which contains the scope of the approval.

A laboratory may wish to attain approval in order to be recognized as demonstrably competent to meet the needs of its clients. LAP approval means that a testing laboratory is recognized as being competent to perform test methods. It means that the laboratory's system, staff, facilities and equipment, calibration procedures, methods and procedures, records, and test reports, have been evaluated and found to meet LAP criteria. LAP approval does not mean a guarantee (certification) of laboratory performance product test data; it is a finding of laboratory competence.

For further information or assistance in understanding and the LAP requirements and criteria, please write or call:

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SECTION 1.0 ADMINISTRATIVE AND OPERATIONAL REQUIREMENTS

1.1 Laboratory Reference Number

Each participating laboratory will be assigned a unique laboratory code number. The code number is used by the LAP staff for identification, filing, record-keeping, and database management. Participants are requested to put their Lab Reference Number on all correspondences with LAP.

1.2 Approval Period

Approval is granted for a period specified in the Approval Application Package (usually one year). The approval period will be designated in the Letter of Approval, but generally begins on the first day of the month following approval. Each laboratory retains its assigned approval date as long as it remains in the program; its approval expires and can be renewed on that date.

1.3 Renewal

Each participating laboratory will be sent a renewal Application Package, well in advance of the expiration date of its approval, to allow sufficient time to complete the renewal process. The renewal application contains the same forms used for initial application. The laboratory may use copies of pages of previously submitted applications but must indicate any changes that may have occurred in personnel, equipment, facilities, or the scope of approval desired.

The technical requirements and fees for renewal are generally the same as for initial approval. The application and fees should be received by the District one month prior to expiration of the laboratory's current approval to avoid a lapse in approval.

1.4 Publicizing Approval Status by Laboratories

Accredited laboratories are encouraged, within specified limits, to publicize their accredited status. The main restriction is that advertising must not imply product certification by the SCAQMD. Laboratories and their clients may not reference their approval status in consumer media, in product advertising, or on product labels, containers, or packaging.

A laboratory may cite its approval status and use LAP logos on reports, stationery, and in business and trade publications, provided it is clearly indicated that it is the laboratory which is approved.

1.5 Compliance with Existing Laws

Approval does not relieve the laboratory of the need to observe and comply with existing federal, state, and local statutes, ordinances, or regulations that may be applicable to its operations, including consumer protection and antitrust laws.

1.6 Approval Process

Approval is granted following successful completion of a process which includes submission of an application and payment of fees by the laboratory, and may include on-site assessment, resolution of deficiencies identified during the on-site assessment, participation in proficiency testing, technical evaluation, and administrative review. The process is described in the following sections.

1.7 Application and Fees

An Application Package is sent to a laboratory upon request. It includes: a General Application Form, a Fee Guidelines Table, Method-Specific Application Form, and this document. The General Application form must be completed and signed by an authorized representative of the laboratory. The authorized representative is one who can act on behalf of the laboratory and commit it to fulfill the LAP requirements. Before completing and signing the application, the authorized representative would review all documents and become completely familiar with LAP requirements. Although other laboratory staff may be designated to perform activities, such as handling proficiency testing or receiving an assessor, the authorized representative is the only one who can authorize a change in the scope or nature of the application.

In general, the approval fee is composed of several parts, some of which are fixed while others depend on the scope of approval desired and the specifics of the program. The total approval fee must be paid before the approval letter will be issued. The individual parts of the approval fee may include:

- Administrative and Technical Support fee
- Test Method fee
- Proficiency Testing fee
- On-Site Assessment fee

The fees for this approval program are shown in the Table of Laboratory Method Approval Fee Schedule and is updated annually based on Rule 304 amended provisions.

The laboratory will be contacted to schedule a mutually acceptable date for the on-site assessment after payment of all required fees. It will also be notified if any additional information must be supplied, and if any applicable proficiency testing requirements must be completed for the technical evaluation.

1.8 Approved Signatory

Under LAP criteria, an approved laboratory must have one or more individuals (approved signatories) in positions designated as having responsibility for signing all test reports endorsed with the LAP logo. This is the person(s) to be contacted by LAP, laboratory clients, or others if there are questions or problems with the report.

Nomination or approval of persons or laboratory positions designated as approved signatories should be at supervisor level or above. The laboratory should inform LAP of its appointments by completing the appropriate sections in the application for approval. Approved signatories should be persons with adequate responsibility or authority within the organization, with adequate and appropriate technical capabilities, and without conflict of interest. The approved signatory may be the authorized representative who is responsible for signing the LAP Application Form.

By prior agreement, laboratory test reports carrying the LAP logo need not be signed individually by the approved signatory if test report forms are pre-printed with the required information. Forms that are electronically or computer generated may have the information printed along with the test results.

1.9 Technical Experts

LAP uses SCAQMD technical staff and laboratory personnel as assessors and evaluators. This is to ensure that the laboratories are capable of following SCAQMD methods.

Assessors are SCAQMD technical experts who have experience in the pertinent analyses. They will conduct the on-site assessment of laboratories. The laboratory has the right to appeal the assignment of an assessor and, by prior notice, may request an alternate.

Evaluators are members of SCAQMD Senior Staff. They are selected to review the record of the laboratory as a whole, including the application, assessment report, deficiencies, corrections to deficiencies, and proficiency test results and, based on this record, to recommend whether a laboratory should be approved.

1.10 On-Site Assessment

Before initial approval and periodically thereafter, an on-site assessment of each laboratory may be conducted to determine its compliance with the LAP criteria. The assessment is conducted by one or more LAP assessors. Assessors use checklists so that each laboratory receives an assessment comparable to that received by others. However, assessors have considerable latitude to make judgments about a laboratory's compliance with the LAP criteria, depending on the assessor's experience and the unique circumstances of the laboratory. The laboratory may request a change of assigned assessor based on conflict of interest or prior business or professional associations. Each laboratory will be contacted to arrange a mutually agreeable date for an assessment. The time needed to conduct an assessment varies, but one day is the average. Every effort is made to conduct an assessment with as little disruption as possible to the normal operations of the laboratory. During the assessment the assessor will carry out the following functions:

1. Meet with management and supervisory personnel responsible for laboratory activities (for which approval is being sought) to review the assessment process with the individuals involved and to set the assessment agenda.

2. Examine the quality assurance system employed by the laboratory. The assessor may select and trace the history of one or more samples from receipt to final issuance of test reports. The assessor will conduct a thorough review of the laboratory's quality assurance manual or equivalent, evaluate the training program, examine notebooks or records pertaining to the samples, check sample identification and tracking procedures, determine whether the appropriate environmental conditions are maintained, and examine copies of completed test reports.

3. Review records of periodic internal audits, use of check samples or participation in round robin testing or other similar programs.

4. Review personnel records including resumes and job descriptions of key personnel, competency evaluations for all staff members who routinely perform the testing for which approval is sought, calibration or verification records for apparatus used, test reports, and sample control records.

5. Check for chain-of-custody procedures and sample storage at the facility.

6. Observe demonstrations of testing techniques and discuss them with the technical personnel to assure their understanding of the procedures.

7. May provide samples for analysis under observation.

8. Examine major equipment, apparatus, and facilities associated with testing for which the laboratory is seeking approval.

At the conclusion of the assessment, the assessor will conduct an exit briefing to discuss his or her observations with responsible laboratory staff and call attention to any deficiencies uncovered. A written summary of any deficiencies discussed will be left at the laboratory. The assessor will forward the assessment forms and a written summary to the SCAQMD LAP Coordinator.

If deficiencies have been noted, the laboratory must provide LAP with documentation or certification by the authorized representative within 30 days, that the specified deficiencies have been corrected or that specific actions are being taken to correct the deficiencies.

If any deficiencies are noted at laboratories which are currently approved, such deficiencies must be corrected within 30 days after notification or the laboratory may face possible revocation, suspension, or expiration of its approval. Any test equipment that is identified as out of calibration should not be used until corrective action has been completed. All deficiencies noted for corrective action will be subject to thorough review and verification during subsequent assessments and technical evaluations.

1.11 Monitoring Visits

In addition to regularly scheduled assessments, monitoring visits may be conducted by SCAQMD assessors at any time during the approval period. Monitoring visits may occur for cause or on a random selection basis.

These visits serve to verify reported changes in the laboratory's personnel, facilities, and operations or to explore possible reasons for poor performance in proficiency testing.

The scope of a monitoring visit may range from checking a few designated items to a complete review. Failure to cooperate with LAP assessors will be grounds for initiation of adverse approval action.

1.12 Proficiency Testing

Proficiency testing is a means for determining the overall effectiveness of a laboratory through audit sample testing. It is an integral part of the LAP approval process, since demonstration of appropriate facilities, equipment and personnel alone, may not be sufficient for the evaluation of laboratory competence.

Proficiency auditing is a process for checking actual laboratory testing performance, usually by means of inter-laboratory comparisons. The data are analyzed by LAP

advisors and summary reports of the results are sent to the participants. Information obtained from proficiency auditing helps to identify problems in a laboratory. If major problems are found, LAP staff members will recommend a means for the laboratory staff to solve them.

1.13 Technical Evaluation

LAP evaluators will review records on an applicant laboratory and will base their evaluation on:

- Information provided on the application.
- On-site assessment reports.
- Actions taken by the laboratory to correct deficiencies.
- Results of proficiency auditing.
- Information from any monitoring visits of the laboratory.

If the technical evaluation reveals additional deficiencies, written notification describing them will be made to the laboratory. The laboratory must respond within 30 days of such notification and provide documentation by the authorized representative that the specified deficiencies have been corrected. Clarification of some issues may be requested by telephone. *All* deficiencies must be corrected before approval can be granted or renewed.

1.14 Administrative Review

After the technical evaluation has been completed, the LAP staff prepares an administrative recommendation regarding whether the laboratory should be granted or denied approval. This recommendation is based on a review of the technical evaluation and other records to ensure that all LAP technical, financial and administrative obligations have been satisfied.

1.15 Approval Actions

Based on the technical findings pertaining to the laboratory's compliance with the LAP criteria, the Monitoring and Analysis Director, or designee, makes one of the following decisions:

Approval

The recommendation forms the basis for granting approval and Certificate of approval is issued to the laboratory.

Denial

The laboratory is notified of the intent to deny approval and the reason(s) for denial.

Suspension

If a laboratory is found to have violated the terms of its approval, the laboratory will be notified of the reasons for and conditions of the suspension and the action(s) that the laboratory must take to have approval reinstated.

Revocation

If a laboratory is found to have violated the terms of its approval, the laboratory is notified of the intent to revoke approval and the reasons behind it. The laboratory may be given the option of voluntarily terminating approval. If approval is revoked, the laboratory must return its Letter of Approval and must cease using the LAP logo on any of its reports, correspondence, or advertising.

If denial or revocation has been proposed, the laboratory may file a written petition for a hearing within 30 days of the date of receipt of the notification. If a hearing is not requested, the action becomes final upon the expiration of that 30-day period. After a participant's approval has been terminated, whether voluntarily or through adverse action, the approval certificate must be returned to LAP. If a laboratory elects not to renew or voluntarily chooses to terminate its approval at any time, the notification of such intent should be forwarded to SCAQMD in writing.

SECTION 2.0 TECHNICAL REQUIREMENTS

The Criteria for Approval (see Appendix, Part 2.0), provides the basis for the technical evaluation of a laboratory. This section provides interpretive comments and additional information to adapt the criteria for specific application to the Laboratory Approval Program. Except where specifically noted otherwise, these comments do not supersede the criteria for approval.

2.1 Comments on Quality System (See Appendix, Part 2.OA)

The Quality System requirements are designed to promote laboratory practices that ensure technical integrity of the analyses and adherence to quality assurance standards. The laboratory must maintain a Quality Manual which documents the laboratory's practices and the specific steps taken to ensure quality testing. The Quality Manual must contain or refer to documentation that describes and details the laboratory's implementation of procedures covering all technical requirements in this section. These procedures include: sample custody, instrument calibration, staff qualification, and laboratory characterization. This information will be reviewed by LAP assessors prior to and during on-site assessments.

The Quality Assurance Manual must contain procedures for log-in of sample materials, description of materials, and criteria for acceptance or rejection of materials for test. It must also describe how the laboratory assures the accuracy and consistency of its analyses.

The Quality System must provide for routine checks of the competence of analysts and others involved in analysis. The laboratory's Quality Assurance (QA) analyses must represent at least 10% of the total number of analyses performed.

Records must be kept of all quality assurance activities. Test data from quality assurance checks performed in the laboratory (or with other laboratories) must be summarized and retained for use by the laboratory in monitoring its performance.

The following documents should be available in the laboratory as reference in developing and maintaining the Quality System:

- Appropriate test method manuals, containing approved test methods.
- Comments on Facilities and Equipment (see Appendix, Part 2.OC)
- Comments on Test Reports (see Appendix, Part 2.OG)
- Comments on Staff (see Appendix, Part 2.OB)

The laboratory must maintain a list of position descriptions and staff assigned to those positions. The laboratory must ensure that analysts are adequately qualified to conduct analyses.

The laboratory must have a designated quality assurance supervisor to define and maintain the Quality System and the associated Quality Assurance Manual.

The laboratory must maintain a personnel folder for each staff member, including: a resume of qualifications, training, laboratory procedures to which assigned, and the results of periodic testing performance (quality assurance testing) reviews. Performance reviews of staff members will include intra-operator tests, inter-operator tests and between-laboratory tests. The laboratory shall have a description of its training program for ensuring that staff are able to perform tests properly and uniformly.

2.2 Proficiency Testing

Proficiency testing is an integral requirement of the LAP evaluation process. The proficiency testing program will be conducted by SCAQMD. The proficiency testing protocol is expected to be challenging, but representative of samples or sampling methods. The testing material will test the laboratory's ability to follow the method and achieve the proper precision and accuracy. Individual analyst or tester participation in proficiency testing is required for initial approval and continued approval.

Each laboratory will be sent test samples, data sheets, and an information package containing specific instructions for performing the test and reporting the results. The test must be conducted in accordance with the specified test method using the laboratory's normal operating procedures. Any special LAP instructions must also be followed. The special instructions are designed to ensure uniformity in procedures among participants. Completed data sheets must be returned to LAP for analysis by the date specified on the data sheets.

The work must not be contracted out to another laboratory.

All analysts (including those in sub-facilities) wishing to be listed in the approval documents must participate in proficiency testing. Each analyst must separately analyze, record, and report test results. All results are to be reported back to LAP by the laboratory. The test results are to be used for inter-analyst comparisons and entered into the quality system records.

The results of the proficiency testing program will be reported to the participants and recorded in the appropriate documents and reports. The identity and performance of individual laboratories will remain confidential. The results of proficiency testing will be made available to on-site assessors for use during laboratory visits. Any problems

indicated by proficiency testing will be discussed with appropriate laboratory personnel who will be responsible for developing and implementing plans for resolving the problems. Approval decisions will be based on satisfactory resolution of proficiency testing deficiencies.

2.3 On-Site Assessment

Before approval can be granted, the laboratory may be required to undergo a successful on-site assessment and resolve any departures from the LAP criteria noted during an assessment.

A LAP assessor will arrange with the laboratory in advance for the on-site assessment. The laboratory should be in good order and prepared to demonstrate testing. The assessor will try to minimize disruption to the normal working routine. All observations are held in strictest confidence.

The assessor will use LAP checklists containing specific questions about all aspects of the visit. The checklists, based on LAP criteria for approval, serve to ensure a complete assessment and that all assessors cover the same items at each laboratory.

The laboratory will be responsible for demonstrating its competence to analyze samples following the practice outlined in its Quality Manual. During the on-site visit, laboratory staff involved in the analysis of samples may be required to demonstrate their competence by analyzing samples provided by the assessor.

Observation of the measurement process will afford the assessor an immediate opportunity to evaluate procedures and techniques and will provide an opportunity to laboratory personnel to gain insights and advice from a technical peer. This activity is part of the proficiency testing program and will indicate to both the assessor and laboratory problems that need correction.

Both central laboratories and mobile or satellite laboratories must be included in the assessment if those facilities are to be included in the approval. An assessment of a main central laboratory will normally take one day. Assessments of sub-facilities may require one or more additional days depending on their number and location.

The agenda for a typical on-site visit is given below.

1. Assessor conducts an entry briefing with laboratory manager to explain the purpose of the on-site visit and to discuss the schedule for the day. At the discretion of the laboratory manager, other staff may attend the briefing.

2. Assessor reviews equipment calibration and maintenance records, record keeping procedures, Quality System manual(s), laboratory test reports, and

personnel competency records. Although a staff member is available to answer questions, the assessor may wish to review the documents alone. The assessor does not usually ask to take any laboratory documents with him.

3. Assessor observes the demonstration of selected procedures and interviews personnel. The demonstrations should include sample preparation and the use of all major equipment.

4. Assessor physically examines equipment and facilities.

5. Assessor examines mobile or satellite facilities. Laboratory personnel should be available to provide transportation and to accompany the assessor. If the laboratory maintains more than one similar mobile or satellite laboratory, the number to be visited will be based on the number and location of the facilities. The central laboratory must demonstrate that all sites are operated and equipped in the same manner as described in the Quality Manual.

6. The assessor needs time during the day to complete LAP paperwork.

7. An exit briefing is held with the laboratory manager and staff to discuss the assessor's findings. Deficiencies are discussed and resolutions are mapped out. Items that must be addressed before approval can be granted are emphasized. Items that have been corrected during the on-site visit, as well as any recommendations, are specially noted.

8. The assessor completes the Assessment Report to be signed by the laboratory representative. A copy of this report is left at the laboratory.

APPENDIX
LAP CONDITIONS AND CRITERIA FOR APPROVAL

1.0 Conditions for Approval.

A. Agreement

To become approved and maintain approval, a laboratory shall agree in writing to:

1. Be assessed and evaluated initially and on a periodic basis;

2. Demonstrate, upon request, that it is willing and able to perform the tests representative of those for which it is seeking approval;

3. Pay all relevant fees;

4 Participate in proficiency testing as required;

5. Be capable of performing the tests for which it is approved according to the latest version of the test method within one year after its publication or within another time limit specified by the Monitoring and Analysis Director.

6. Limit the representation of the scope of its approval to only those tests or services for which approval is granted;

7. Limit all its test work or services for clients to those areas where competence and capacity are available;

8. Limit advertising of its approval status to letterheads, brochures, test reports, and professional, technical, trade, or other laboratory services publications, and use the LAP logo under guidance provided by the M&A Director.

9. Inform its clients that the laboratory's approval of any of its test reports in no way constitutes or implies product certification, approval, or endorsement by SCAQMD;

10. Maintain records of all actions taken in response to testing complaints for a minimum of one year;

11. Maintain an independent decisional relationship between itself and its clients, affiliates, or other organizations so that the laboratory's capacity to render test reports objectively and without bias is not adversely affected;

12. Report to the M&A Director within 30 days any major changes involving the location, ownership, management structure, authorized representative, approved signatories, or facilities of the laboratory;

13. Return to the M&A Director the certificate of approval for possible revision or other action should it:

    - be requested to do so by the M&A Director;
    - voluntarily terminate its approval status; or
    - become unable to conform to any of these conditions or the applicable criteria of (Part 2), and related technical requirements.

B. Documentation

To become approved and maintain approval, a laboratory shall supply the information requested in the application guidelines, such as:

1. Legal name and full address;

2. Ownership of the laboratory;

3. Organization chart defining relationships that are relevant to performing testing covered in the approval request;

4. General description of the laboratory, including its facilities and scope of operation;

5. Standard Operating Procedures (SOPs) for each method that include detailed step-by-step instructions.

6. Name and telephone number of the authorized representative of the laboratory;

7. Names or titles and qualifications of laboratory staff nominated to serve as approved signatories of test reports that reference LAP approval; and

8. Other information as may be needed for the specific approvals being sought.

2.0 Criteria for Approval

A. Quality System

1. The laboratory shall operate under an internal quality assurance program appropriate to the type, range, and volume of work performed. The quality assurance program must be designed to ensure the required degree of accuracy and precision of the laboratory's work and should include key elements of document control, sample control, data validation, and corrective action. The quality assurance program must be documented in a quality manual or equivalent (e.g., operations notebook) which is available for use by laboratory staff. A specific person(s) must be identified as having responsibility for maintaining the quality manual.

2. The quality manual must include as appropriate:

   - The laboratory's quality assurance policies including procedures for corrective action for detected test discrepancies;
   - Quality assurance responsibilities for each function of the laboratory;
   - Specific quality assurance practices and procedures for each test, type of test, or other specifically delineated function performed;
   - Specific procedures for re-testing, control charts, reference materials, and inter- laboratory tests; and,
   - Procedures for dealing with testing complaints.

3. The laboratory shall periodically review its quality assurance system by or on behalf of management to ensure its continued effectiveness. These reviews must be recorded with details of any corrective action taken.

B. Staff and Training

The laboratory shall include:

1. A staff of individuals having the necessary education, training, technical knowledge, and experience for their assigned functions;

2. A job description for each professional, scientific, supervisory and technical position; including the necessary education, training, technical knowledge, and experience;

3. Documentation of the test methods each staff member has been assigned to perform;

4. A description of its training program for ensuring that new or untrained staff are able to perform tests properly and uniformly to the requisite degree of precision and accuracy;

5. Organization:

   - So that staff members are not subjected to undue pressure or inducement that might influence their judgment or results of their work; and

   - So that staff members are aware of both the extent and the limitation of their area of responsibility.

6. A technical manager (or similar title) who has overall responsibility for the technical operations of the laboratory.

7. One or more signatories approved by the M&A Director to sign test reports that reference LAP approval. Approved signatories shall:

   - Be competent to make a critical evaluation of test results; and,

   - Occupy positions within the laboratory's organization which makes them responsible for the adequacy of test results.

C. Facilities and Equipment

1. The laboratory shall be furnished with all items of equipment and facilities for the correct performance of the tests and measurements for which approval is granted and shall have adequate space, lighting, environmental control, and monitoring to ensure compliance with prescribed testing conditions.

2. All equipment must be properly maintained to ensure protection from corrosion and other causes of deterioration. Instructions for a proper maintenance procedure for those items of equipment which require periodic maintenance must be available. Any item of equipment or component thereof which has been subjected to overloading or mishandling, gives suspect results, or has been shown by calibration or otherwise to be defective, must be taken out of service and clearly labeled until it has been repaired. When placed back in service, this equipment must be shown by test or calibration to be performing its function satisfactorily.

3. Records of each major item of equipment must be maintained. Each record must include:

    - The name of the item;
    - The manufacturer's name and type, identification and serial number;
    - Date received and date placed in service;
    - Current location, where appropriate;
    - Details of maintenance; the maintenance schedules; and,
    - Date of last calibration, next calibration due date, and calibration report references.

D. Calibration

The laboratory shall:

1. Calibrate new testing equipment before putting it into service;
2. Re-calibrate, at regular intervals, in-service testing equipment with the calibration status readily available to the operator;
3. Perform checks of in-service testing equipment between the regular calibration intervals, where relevant;
4. Maintain adequate records of all calibrations and re-calibrations; and
5. Provide traceability of all calibrations and reference standards of measurement where these standards exist. Where traceability of measurement to primary (national or international) standards is not applicable, the laboratory shall provide satisfactory evidence of the accuracy or reliability of test results (e.g., by participation in a suitable program of inter-laboratory comparison).

E. Test Methods and Procedures

The laboratory shall:

1. Conform in all respects with the test methods and procedures required by the specifications against which the test item is to be tested, except that

whenever a departure becomes necessary for technical reasons, the departure must be acceptable to the client and recorded in the test report;

2. Have data to prove that any departures from standard methods and/or procedures, due to apparatus design or for other reasons, do not detract from the expected or required accuracy of the measurement;

3. Maintain a test plan for implementing testing standards and procedures including adequate instructions on the use and operation of all relevant equipment, on the handling and preparation of test items (where applicable), and on standard testing techniques where the absence of such instructions could compromise the test. All instructions, testing standards, specifications, manuals, and reference data relevant to the work of the laboratory must be kept up-to-date and made readily available to the staff;

4. Maintain measures for the detection and resolution of in-process testing discrepancies for manual and automatic test equipment and electronic data processing equipment, where applicable;

5. Maintain a system for identifying samples or items to be tested, which remains in force from the date of receipt of the item to the date of its disposal, either through documents or through marking to ensure that there is no confusion regarding the identity of the samples or test items and the results of the measurements made;

6. Maintain rules for the receipt, retention, and disposal of test items, including procedures for storage and handling precautions to prevent damage to test items which could invalidate the test results. Any relevant instructions provided with the tested item must be observed.

F. Records

The laboratory shall:

1. Maintain a record system which contains sufficient information to permit verification of any issued report;

2. Retain all original observations, calculations and derived data, and calibration records for one year, unless a longer period is specified; and,

3. Hold records secure and in confidence, as required.

G. Test Records

1. The laboratory shall issue test reports of its work which accurately, clearly, and unambiguously present the specified test results and all required information. Each test report must include the following information as applicable:

    - Name and address of the laboratory;
    - Identification of the test report by serial number, date or other appropriate means;
    - Name and address of client;
    - Description and identification of the test specimen, sample, or lot of material represented;
    - Identification of the test specification, method, or procedure used;
    - Any deviations, additions to, or exclusions from the test specifications;
    - A statement of measurement uncertainty where relevant;
    - Identification of the organization and the person accepting technical responsibility for the test report and date of issue;
    - A statement that the report must not be reproduced except with the approval of the laboratory;
    - A statement to the effect that the test report relates only to the items tested.

2. The laboratory shall issue corrections or additions to a test report only by a further document suitably marked, e.g., "Revised Report," and attach a copy of the previous report.

3. The laboratory shall retain a copy of each test report issued for one year, unless a longer period is specified by the M&A Director.

4. The laboratory shall ensure that all test reports endorsed with the LAP logo are signed by an approved signatory, unless prior agreement has been reached on electronic sign-off.