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QUALITY SYSTEM PROGRAM MANUAL

Original Rev. Issued May 13, 1985

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This manual is the property of Laboratory Testing, Inc. and incorporates procedures developed by the company.

Section i

POLICY AND AUTHORITY STATEMENT

It is the policy of Laboratory Testing, Incorporated (LTI)*, as a Material Organization, to furnish and perform testing services in nondestructive, mechanical, chemical, metallographic and metrology fields, including the production of test specimens and machining services, in accordance with all applicable requirements and regulations and to serve our customers needs and expectations with professionalism, competence and the highest degree of ethical standards. LTI's Quality Policy is also defined in the latest revision of *LTI* Procedure ***LTI-QPOLICY**.

****Also doing business as LTI Metrology.***

To accomplish this objective, Laboratory Testing, Incorporated has developed and implemented this Quality System Program Manual that contains the quality management system organizational structures and practices required by the documents as indicated in Section 3.

This Quality System Program Manual shall include instructions for preparation and review of written procedures, training, monitoring or all activities concerned with the control of operations and materials, conducting of examinations and tests, calibration services, calibration of measurement and test equipment, periodic audit of the overall Quality System Program, corrective action, retention of essential records, the protection of customer confidential information and proprietary rights (***LTI-C&P RIGHTS**), preparation of test and examination reports and the purchasing of materials and services to be able to perform all of the above activities.

This manual shall apply to all work performed in the laboratory's permanent facilities, at sites away from its permanent facilities or in associated temporary or mobile facilities.

Laboratory Testing Incorporated is a corporation registered in the State of Georgia and is located at 2331 Topaz Drive – Hatfield, Pennsylvania 19440. ***A satellite facility is located at 2246 North Penn Road – Hatfield, Pennsylvania 19440.***

The authority and organizational freedom are hereby granted to the Quality Assurance Manager to implement and maintain the quality management systems, including the resources needed to implement and maintain the Quality System Program and the responsibilities described in Section 4.7 of this manual. The signatures below acknowledge the granting of this authority and the acceptance of this responsibility.

**** See Section 20 for Procedure Number and Title.***



Frank Peszka
Quality Assurance Manager
Laboratory Testing, Inc.



Michael J. McVaugh
President
Laboratory Testing, Inc.

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SECTION 1

DELETED ITEMS FROM PREVIOUS REVISION

(Areas marked with Δ throughout this revision)

ITEM NO.	ITEMS DELETED
Paragraph 4.2.6	Completely Reworded Paragraph – Included in Procedures
Paragraph 4.6 through 4.6.5	Deleted Entire Section – Deleted Position
Paragraph 4.8 through 4.23.5	Deleted Entire Sections – In Job Descriptions
Paragraph 5.2.3	Completely Reworded Paragraph
Paragraph 5.3 through 5.4.1	Deleted Entire Sections – Included in Procedures
Paragraph 6.2.4	Deleted Complete Paragraph – Included in Procedures
Paragraph 6.2.6 and 6.2.7	Deleted Paragraphs Completely – Included in Procedures
Paragraph 6.3.2	Deleted Paragraph Completely – Included in Procedures
Paragraphs 7.3.2 and 7.3.3	Deleted Paragraphs Completely – Included in Procedures
Paragraphs 8.2.1.2, 8.2.1.4 and 8.2.2	Deleted Paragraphs Completely – Included in Procedures
Paragraphs 10.2.5 and 10.2.9	Deleted Paragraphs Completely – Included in Procedures
Paragraphs 12.1.2, 12.2.2.1, 12.2.2.2, 12.2.4.1, 12.2.5, 12.3.2.1, 12.3.2.2, 12.3.3.1, 12.4.2.1, 12.4.2.2, 12.4.3.1, 12.5.2.1, 12.5.3 through 12.5.7 and 12.10.1a through 12.10.1e	Deleted Paragraphs Completely – Included in Procedures and Redundancy
Paragraphs 13.3.3a through 13.3.3d and 13.3.4 through 13.3.6	Deleted Paragraphs Completely – Included in Procedures
Paragraphs 14.2.1.3, 14.2.1.4	Deleted Paragraphs Completely – Included in Procedures
Paragraphs 18.2.2.1 and 18.2.2.2	Deleted Paragraphs Completely – Included in Procedures
Paragraphs 19.2.3.4, 19.3.1a, 19.5.2 and 19.6.2 through 19.6.5	Deleted Paragraphs Completely – Included in Procedures

NOTE: *All other changes from the previous revision are notated in bold and italics.*



Quality Assurance Approval:

Frank Peszka, Quality Assurance Manager

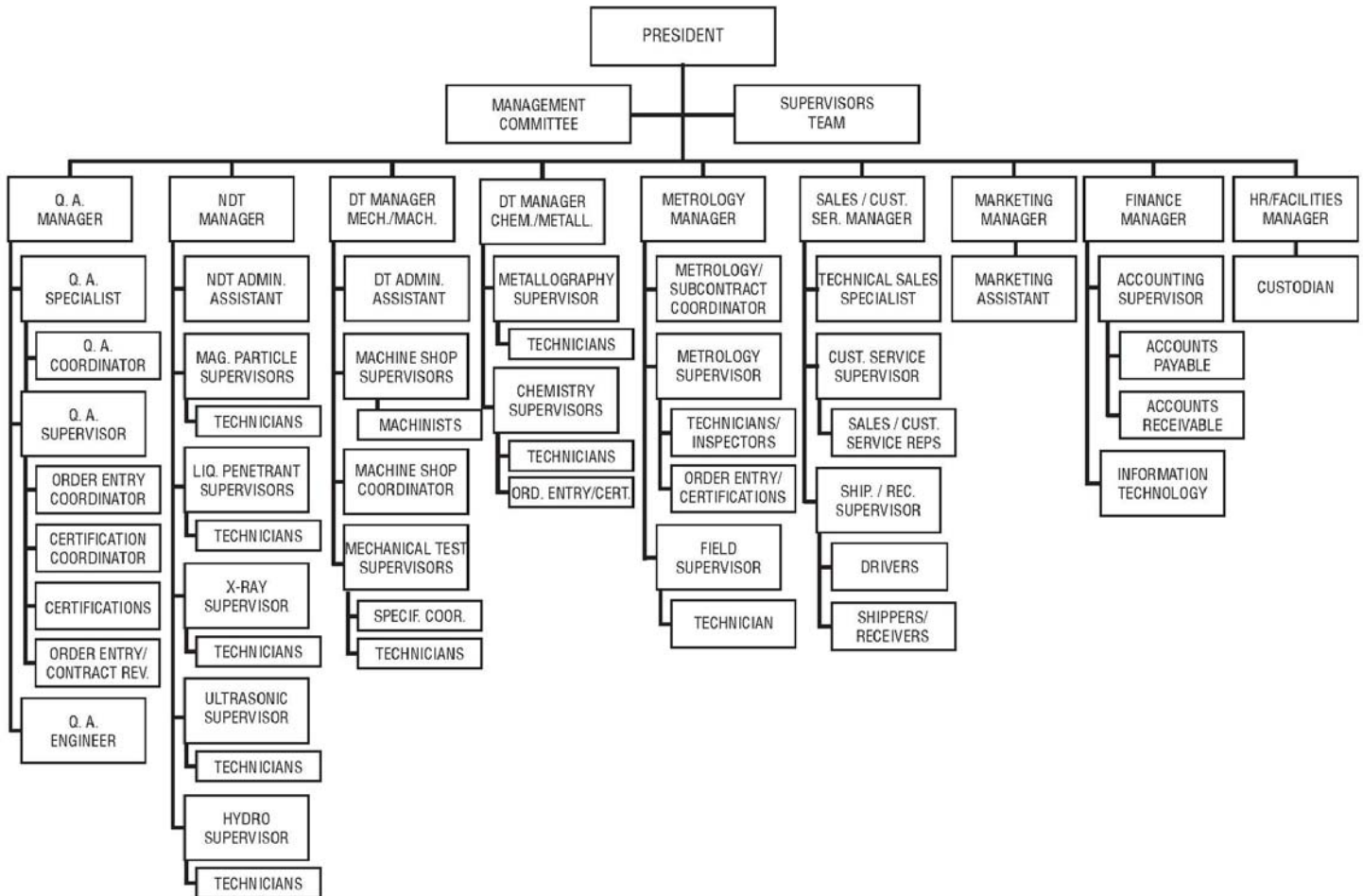


Corporate Approval:

Michael J. McVaugh, President

SECTION 2

LTI ORGANIZATION CHART



10-11

Modifications may be made to the organization structure. However, the Quality Manager and Quality Department shall always report to the President so that the required authority and organization freedom are maintained.

SECTION 3

QUALITY SYSTEMS PROGRAM

3.1 SCOPE:

- 3.1.1 This section provides for the description of the documentation systems used at Laboratory Testing, Inc. (LTI), including instructions on how this quality manual will be controlled.
- 3.1.2 This Quality Systems Program Manual contains a description of the system and is further supplemented by procedures that detail the operational controls of specific processes and examinations.

3.2 MANUAL CONTROL:

- 3.2.1 This manual and any associated procedures shall apply to all testing, dimensional inspections, examinations, calibration, specimen preparation and machining services performed by LTI and the purchasing of materials and equipment to be able to perform the above to the requirements of the Codes, Standards, Specifications or Regulations referenced in Paragraph 3.2.2. In addition, applicable sections of this manual shall apply **to testing**, examinations, calibration, specimen preparation and machining services performed to the requirements of the Codes, Standards, Specifications or Regulations referenced in Paragraph 3.2.2, which are subcontracted by LTI. **As a service organization, design and development are excluded from the scope of this program.**
- 3.2.2 This manual and associated documents are written so as to meet or exceed the applicable requirements of the standards / specifications listed below. The latest applicable edition, addenda or revision shall be maintained.
- a) ASME Boiler and Pressure Vessel Code, Section III, Division 1, Subsection NCA (NCA-3800)
 - b) 10CFR50, Appendix B
 - c) MIL-I-45208A
 - d) MIL-STD-45662A
 - e) ANSI / NCSL Z540-1
 - f) **ANSI / ISO / IEC 17025**
 - g) ISO-9001
 - h) **ASME NQA-1**
 - i) **ISO-10012**
 - j) **SAE AS7003**

- k) **AC7101/1, /2, /3, /4, /5, /6, /7 and /9**
- l) **AC7110/13**
- m) **ISO 13485**
- n) AS9100
- o) **AC7114**
- p) 10CFR21
- q) ISO / TS 16949
- r) **NRC Regulatory Guide 1.28**

3.2.3 This Quality System Program Manual and revisions will be issued to controlled manual holders, the American Association for Laboratory Accreditation (A2LA) and Performance **Review** Institute (PRI).

3.2.4 This manual and associated procedures shall be controlled in accordance with LTI Procedure ***LTI-MAN-CTRL**.

3.2.5 This manual and associated procedures shall be reviewed and revised by the Quality Assurance Manager for conformance to the latest issues of the Codes, Standards, Specifications and Regulations referenced in paragraph 3.2.2.

3.2.6 The Quality Assurance Manager is responsible for obtaining the approval of the President of LTI for this Quality System Program Manual.

3.3 DOCUMENTATION TIERS:

3.3.1 Quality System Program Manual

3.3.2 Quality Procedures

3.3.3 Department Procedures and Technique Sheets

* See Section 20 for Procedure Number and Title

SECTION 4

PERSONNEL: RESPONSIBILITIES, QUALIFICATION, CERTIFICATION

- 4.1 It shall be the responsibility of the Quality Assurance Manager to assure that all personnel performing functions within the scope of this manual are qualified and / or certified as required. This shall include nondestructive testing, mechanical testing, chemical analysis, dimensional inspection, calibration and specimen preparation personnel.
- 4.2 **Responsibilities – All Personnel:** *Shall have the responsibility and authority as stated in their Job Descriptions. In addition, all LTI personnel shall be responsible for:*
- 4.2.1 *Achieving and maintaining quality for the work performed.*
- 4.2.2 *Maintenance of material traceability.*
- 4.2.3 Notifying the Quality Assurance Manager of the following:
- a) Suspected loss of traceability
 - b) Equipment Malfunction
 - c) Procedural Discrepancies
 - d) Contaminated Materials
 - e) Suspected Fraud or Malpractice
- 4.2.4 Maintaining proper qualification for the work assigned.
- 4.2.5 Having proper procedures on hand for the activity being performed.
- 4.2.6 *Documentation of completion of work in hardcopy and / or electronic format.*
- 4.2.7 Compliance with applicable requirements of this Quality Systems Program Manual and related procedures.
- 4.2.8 All personnel shall be and are free from any commercial, financial and other pressures which might adversely affect the quality of their work or technical judgment. **Testing, calibration and QA personnel shall have the authority, independence and organizational freedom to identify quality problems, recommend solutions and control further processing of nonconformances until proper disposition has occurred.**
- 4.2.9 All personnel generating data / documents in regard to tests, examinations, calibrations and inspections are required to sign a signature / **initial** log.
- 4.2.10 All personnel shall comply with the ***LTI Employee Handbook** including avoiding involvement in any activities that would diminish confidence in its competence, impartiality, independence in judgment or operational integrity.
- 4.2.11 **All personnel are responsible for verifying that measuring and test equipment have a current calibration date before using that instrument.**

* See Section 20 for Procedure Number and Title.

4.2.12 Proper handling of materials in-plant to preclude damage or contact with detrimental materials.

4.3 Responsibilities – Management Committee:

- 4.3.1 The Management Committee shall consist of the **President and Department Managers**. The President may select supervisors and other key personnel to serve on the Management Committee.
- 4.3.2 The Management Committee shall be responsible for providing guidance to the President on establishing **quality and other policies**, setting goals and objectives, reviewing performance matrices and taking appropriate action and undertake projects in order to achieve continuing improvement in the management system.
- 4.3.3 Meetings shall be scheduled on a regular basis. An agenda and minutes shall be prepared for each meeting.
- 4.3.4 The Management Committee shall be responsible for communicating the **quality and company** objectives and **the importance of meeting customer, statutory and regulatory requirements** by means of department meetings, employee meetings, newsletters and the posting or distribution of key performance indicators.

4.4 Responsibilities – Outside Board of Advisors:

- 4.4.1 The Board of Advisors shall consist of business leaders who have been selected by the President and ownership of the corporation. The Board of Advisors shall provide guidance to the President and ownership on the operation of the business. The function of the board is strictly advisory without any responsibility or authority for the operation of Laboratory Testing, Inc.

4.5 Responsibilities – President:

- 4.5.1 Assuring that the Quality Assurance Manager has the authority and organizational freedom to meet the responsibilities listed in Section i **and 4.6** of this manual.
- 4.5.2 Review the status and adequacy / effectiveness of the Quality Program through the Management Review process included in this manual.
- 4.5.3 Performance of a management **review** of the Quality System Program once each year.
- 4.5.4 Ultimately responsible for the storage of Quality Assurance records.
- 4.5.5 Assuring that facilities, equipment and personnel are adequate to perform the required work.
- 4.5.6 May perform final review and sign certifications in the absence of the QA Manager and other authorized signers in accordance with Section 15 of this manual.
- 4.5.7 Reporting of defects and non-compliances in accordance with the requirements of 10CFR21.

4.6 Responsibilities – Quality Assurance Manager: Reports to the President.

- 4.6.1 Is appointed the Management Representative.
- 4.6.2 Revision and control of this Quality System Program Manual.
- 4.6.3 Review of customer purchase orders and contracts for defined requirements, capability to meet requirements and the availability of appropriate methods. This responsibility may be performed by Order Entry personnel, **Managers / Supervisors, Customer Service Representatives, Technical Specialists, Coordinators, QA Personnel and the President.**
- 4.6.4 Review / approval and control of all quality, calibration and test procedures.
- 4.6.5 Control of non-conforming materials, equipment and services.
- 4.6.6 Performance of vendor audits and preparation and control of the Approved Vendors List.
- 4.6.7 Control and documentation of calibration system.
- 4.6.8 Performance of Internal Audits.
- 4.6.9 Preparation and control of corrective action requests.
- 4.6.10 Reporting regularly to management on the status and adequacy of the program.
- 4.6.11 Assuring that the policies in this manual are strictly followed for all work performed under the scope of this manual. **Promote the awareness of customer and regulatory requirements throughout the organization.**
- 4.6.12 Identify quality system problems.
- 4.6.13 Initiate actions which result in solutions.
- 4.6.14 Verify implementation and adequacy of corrective actions.
- 4.6.15 Control further processing and shipment of non-conforming items, deficiencies or unsatisfactory conditions, until a proper disposition has been obtained.
- 4.6.16 Monitoring the overall effectiveness of the program by the performance of surveillance / audits, etc.
- 4.6.17 May perform final review and sign certifications in accordance with Section 15 of this manual.
- 4.6.18 Control of personnel indoctrination, training and certification records.
- 4.6.19 **Review and initial or sign all purchase orders for items and services that directly affect examination, testing and calibrations.**

4.6 Responsibilities – Quality Assurance Manager (continued):

- 4.6.20 Oversee preparation of all certifications including review of request for changes to certifications.
- 4.6.21 Delegate others to perform these responsibilities, provided they are independent of the activity or process.
- 4.6.22 Report to the President on all 10CFR21 defects and non-compliances.
- 4.6.23 Be sufficiently independent from the pressures of production.
- 4.6.24 Have direct access to responsible management at a level where appropriate action can be initiated.
- 4.6.25 *Quality Assurance department personnel shall assist the Quality Assurance Manager in the performance of these functions.*

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4.7 Responsibilities – Quality Representative – Satellite Facility: Reports to QA Manager.

- 4.7.1 *Irrespective of other duties, the onsite Quality Representative at the satellite facility shall have the responsibility and authority to implement and maintain the quality management system and to identify the occurrence of departures from the quality management system or quality procedures. In this capacity, the Quality Representative shall report to the Quality Manager who will retain responsibility for the overall effectiveness of the quality management system at both the satellite and the main facility. The Responsible Level III shall have the responsibility and authority for nondestructive testing at both the satellite and the main facility.*

4.8 Personnel Training:

- 4.8.1 LTI employees shall have the education, experience and training to provide testing and calibration services to meet all customer requirements.
- 4.8.2 Procedures are established and maintained for identifying training needs and provide for the training of all personnel performing activities affecting quality. **PQ-NDT-1, PQ-MAS-1, PQ-AUD-1, PQ-410-1, PQ-2132-AQP, PQ-2132-1, LTI-VT-TO, LTI-UT-TO, LTI-RT-TO, LTI-QUAL-NQA-1, LTI-MP-TO and LTI-LP-TO.*
- 4.8.3 The Quality Assurance Manager shall ensure employees whose function affects quality receive the training / indoctrination they need for their position.
- 4.8.4 Personnel performing **and managing** specific assigned tasks are qualified on the basis of appropriate education, training and / or experience.
- 4.8.5 When contracted, and if additional technical and key support personnel are used, LTI shall ensure that such personnel are competent and that they work in accordance with LTI's Quality System.

* See Section 20 for Procedure Number and Title.

4.9 KEY PERSONNEL:

4.9.1 *Nadcap and / or A2LA shall be notified of any changes to key personnel. Key personnel are defined as the only person employed by LTI that posses the knowledge or techniques that are essential to the performance of the specific test or calibration.*

4.10 CHANGES TO RESPONSIBILITIES AND AUTHORITY:

4.10.1 The President, upon written notification to the QA Manager, may revise or append responsibilities and authority stated in this manual.

SECTION 5

INTERNAL AUDIT

5.1 Scope:

5.1.1 This section provides instructions for the periodic evaluation and audit of the LTI Quality Management system to assure its adequacy and implementation.

5.2 Procedure:

5.2.1 Personnel (internal or external) conducting internal audits shall be appointed by the President and have no direct line of responsibility for the area or activity being audited.

5.2.2 Internal auditors shall be qualified in accordance with *LTI* procedure *PQ-AUD-1.

5.2.3 Audits of **testing** departments, **calibration and specimen preparation**, including the quality system, shall be performed at least once each year to a defined documented schedule in accordance with LTI Procedure *LTI-INT-1.

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5.3 Management Review:

5.3.1 The President is responsible for performance of an annual review of the Quality Management System to determine **its** adequacy, effectiveness and implementation. This review shall take into **consideration the following:**

- a. the suitability of policies and procedures;
- b. reports from managerial and supervisory personnel;
- c. the results of recent internal audits;
- d. corrective and preventative actions;
- e. assessments by external bodies;
- f. the results of inter-laboratory comparisons or proficiency tests;
- g. changes in the volume and type of work;
- h. customer feedback and complaints;
- i. changes that could affect the quality management system and its processes;
- j. other relevant factors, such as **process performance and conformance**, resources and staff training;
- k. recommendations for improvement;
- l. performance as related to objectives;
- m. new and revised regulatory requirements;**
- n. follow-up actions from previous management reviews.**

5.3.2 Findings or results from the management review and any actions that arise from it shall be recorded **and should include goals, objectives and plans for the coming year**. The management shall ensure that those actions are carried out within an appropriate and agreed timetable. The actions shall be related to improvements of the quality management system and its processes, improvement of testing, machining and calibrations related to customer requirements, and resources needed.

5.3.3 The Management Review Report shall be distributed to the Management Committee.

*See Section 20 for Procedure Number and Title

SECTION 6

ORDER ENTRY / CONTRACT REVIEW

6.1 Scope:

6.1.1 This section shall detail the requirements for order entry and **contract** review of orders for materials and services within the scope of this manual.

6.2 Procedure:

6.2.1 An order shall be received and processed in accordance with LTI Procedure *RI-1.

6.2.2 Order Entry personnel **and other authorized personnel (see paragraph 6.2.2.1)** review orders to ensure that:

- a. orders include appropriate technical requirements and / or methods and are documented and understood;
- b. requirements are within the scope of LTI's technical capability and resources, and
- c. **the appropriate test and / or calibration methods are selected and are capable of meeting customer's requirements.**

The review shall also cover any work that is to be subcontracted by LTI.

6.2.2.1 QA personnel, **Testing and Calibration Managers and Supervisors, Customer Service personnel, Calibration Coordinator, Technical Specialists and NDT Level III's may also perform this review.**

6.2.3 When Order Entry personnel are unable to determine the appropriate test / process or if the customer's test method is inappropriate, the order will be forwarded to the responsible Lab Manager / **Supervisor** for disposition. The Lab Manager / **Supervisor** will select the appropriate method, procedure or process. **The appropriate Laboratory Manager or Supervisor shall also assure that LTI has the capability and resources to comply with the requirements of the order.** When required, the Customer Service Department or responsible department manager / **supervisor** shall notify the customer to obtain a resolution of any questionable items.

6.2.4 Order entry personnel will enter applicable information into LTI's computerized purchase order tracking system and onto appropriate Technique and Inspection Record.

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6.3 Changes to Orders:

6.3.1 Changes to orders shall be reviewed by the **same personnel authorized to perform contract reviews. The appropriate Lab Manager / Supervisor shall be notified of any changes to orders affecting processing. The Lab Managers / Supervisors are responsible for changing the Technique and Inspection Record and / or computer to reflect the change. The review shall be documented on change orders by the initials and date of the reviewer. Changes for pricing or delivery do not require documentation of the review.**

*See Section 20 for Procedure Number and Title.

SECTION 7

DOCUMENT CONTROL

7.1 Scope:

- 7.1.1 This section provides instructions for the review, issuance and maintenance of customer, commercial, military and internal procedures, specifications, standards and drawings covering systems, traceability, testing, calibration, machining and examination.
- 7.1.2 Procedures, standards, specifications and drawings are defined as documents per this manual.
- 7.1.3 LTI Procedure ***LTI-DOC** and LTI Addenda ***DOCSTAR-PROC** describes in more detail document control.

7.2 Distribution:

- 7.2.1 All standard internal procedures are available online in docSTAR to personnel using the procedure. Original hardcopies are maintained in the Quality Assurance Department.
- 7.2.2 Effected personnel will be notified of new and revised procedures by the Quality Assurance Department.
- 7.2.3 It is the responsibility of the Quality Assurance Department to assure that invalid or obsolete procedures are removed from the docSTAR file. Original hardcopies of superseded procedures are identified and maintained in Quality Assurance.

7.3 Review, Approval and Revision:

- 7.3.1 All internal procedures and revisions thereto shall be **prepared**, reviewed and approved as described in ***LTI-PROCEDURE** as applicable. Additionally, these procedures are subject to periodic review and / or revision as described in ***LTI-DOC**.

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7.4 Published Industry and Customer Documents:

- 7.4.1 Published documents (**either hardcopy or in electronic format**) such as ASME, ASTM and SAE shall be purchased as required. LTI shall keep up to date with new releases, revisions or addenda of required standards / specifications.
- 7.4.2 LTI may maintain relationship(s) with update service(s) to ensure notification and access to the latest documents needed.
- 7.4.3 All published and customer documents shall be maintained in various libraries throughout LTI on an as needed basis.
- 7.4.4 LTI shall also maintain customer specifications where applicable.

***See Section 20 for Procedure Number and Title.**

SECTION 8

IDENTIFICATION AND TRACEABILITY

8.1 Scope:

8.1.1 This section shall **outline** the requirements for marking or identification of material and to maintain traceability from the time LTI receives the material, through completion of processes or examinations and ships the material back to the customer or scraps the material at LTI.

8.2 Procedure:

8.2.1 Equipment or material markings or identification are verified against customer purchase orders / **packing lists** upon receipt by the receiving department in accordance with LTI Procedure *RI-1. Discrepancies or unidentified equipment or material shall be reported to the **Customer Service or** Quality Assurance Department.

8.2.1.1 Equipment and material shall be tagged, marked **or otherwise identified** with LTI Lab Report Number. **Customers' markings are included on the LTI work order.**

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8.2.1.2 Markings on material shall not be removed unless required by the test or examination procedure. If markings are removed, the material shall be **placed in an envelope or container bearing the identification or be accompanied by a document which includes the identification.** Marking shall be reapplied when required using either the customer's number or LTI Lab Report Number as appropriate.

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8.2.2 Additional procedures exist for orders **having unique requirements.**

8.2.3 Equipment provided for calibration as well as materials submitted for examination and test that are suspected of having lost traceability in the LTI **facility**, shall be reported immediately to the Quality Assurance Manager and segregated in a holding area designated by the Quality Assurance Manager.

*See Section 20 for Procedure Number and Title.

SECTION 9

ACCOMMODATION AND ENVIRONMENT

9.1 Scope:

9.1.1 This section details the general requirements for accommodation and environment for the Laboratory.

9.2 General Requirements:

9.2.1 Each area of test shall have appropriate energy sources, lighting, heating, ventilation and environmental conditions to facilitate correct performance of tests and calibrations.

9.2.1.1 Areas that require documentation of specific lighting, heating and ventilation shall have the specific requirements described in working procedures for applicable area.

9.2.2 The environment in which all testing is performed shall be undertaken so as not to invalidate the results or adversely affect the required accuracy of measurement or test.

9.2.2.1 Areas that require specific environmental controls shall have those specific controls addressed in working procedures for specific applicable areas.
(*85-CP-1)

9.2.3 Areas that require specific environmental controls shall maintain records for those controls.

9.2.4 Tests and calibrations shall be stopped when the environmental conditions jeopardize the results of the tests and / or calibrations. **(*85-CP-1)**

9.2.5 All areas that are incompatible shall have effective separation so as not to adversely affect the required accuracy of measurement or test.

9.2.6 It is the responsibility of all employees to maintain acceptable housekeeping within their respective areas.

9.2.6.1 Acceptable housekeeping shall be defined as floors and equipment clean of litter, trash, grease, oil, dust and anything else that will prohibit personnel from performing their respective jobs.

9.2.7 Access to and use of areas affecting the quality of the tests and / or calibrations is limited to authorized personnel.

9.2.8 Particular care shall be taken when tests and / or calibrations are undertaken at sites other than the permanent laboratory facility to ensure that environmental conditions do not adversely affect the required accuracy of the measurement and / or test or invalidate the results. **(*CP-17025-FIELD)**

***See Section 20 for Procedure Number and Title.**

SECTION 10

EQUIPMENT AND REFERENCE MATERIALS / STANDARDS

10.1 Scope:

10.1.1 This section describes the control of equipment and reference standards required for the correct performance of tests and calibrations including preparation of test and calibration items.

10.2 Control of Equipment:

10.2.1 Equipment and its software used for testing and calibration will be capable of achieving the accuracy required and shall comply with specifications relevant to the tests. Software shall be controlled in accordance with **LTI** procedure ***LTI-SWQA-1**. Measuring and test equipment shall be entered into the Labman instrument module and assigned a unique instrument number. Prior to being placed in service and/or used, equipment shall be calibrated or checked to establish that it meets the laboratory's specification requirements and complies with the relevant standard specifications.

10.2.2 Equipment shall be operated by authorized personnel. **Personnel are authorized to operate equipment listed in the procedures for which they have been indoctrinated / trained.** Up-to-date instructions or procedures on the use and maintenance of equipment shall be available to appropriate personnel or shall be obtained from the OEM when required. Generally preventative maintenance shall be performed at the time of calibration as indicated in **LTI procedure *85-CP-1, ADDENDA A**. Maintenance is also performed on an as required basis.

10.2.3 Records are maintained for each item of measuring and test equipment.

10.2.4 The following are entered into the Labman instrument module:

- a. Instrument number
- b. Description
- c. Manufacturer, model no. and / or serial no. (where assigned)
- d. Department where used and work center (if applicable)
- e. Date in service (indicates initial compliance with specifications)
- f. Maintenance, modifications & repairs are listed in the "Notes" section of the Labman Instrument module.
- g. Calibration date and due date

Δ 10.2.5 All equipment shall be handled, stored and transported in such a manner as to prevent damage and to ensure proper function. Equipment shall be kept clean and free from dirt, oil, rust and other containments that may adversely affect the item or its function. Personnel shall report to their supervisor or manager any damage or malfunction and/or requirements for maintenance of equipment. Equipment that has been subjected to overloading or mishandling, gives suspect results, is defective or outside specified limits shall be removed from service, isolated and labeled or marked to indicate that it should not be used.

***See Section 20 for Procedure Number and Title.**

An evaluation shall be made to determine the affect on previous tests and calibrations and where determined necessary a nonconformance report shall be generated in accordance with LTI Procedure ***LTI-NONCONFORMANCE**. Where appropriate the customer will be notified.

10.2.6 Equipment used outside the laboratory's facility shall be controlled in accordance with LTI Procedure ***CP-17025-FIELD**.

10.2.7 Whenever equipment is sent outside the laboratory (ex: calibration, repair, etc.) it shall be examined for function and calibration status and determined to be satisfactory prior to being returned to service

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10.3 Reference Standards.

10.3.1 LTI has procedures for the calibration of its reference standards. Reference standards are calibrated by an organization that can provide traceability to national or international standards in the International System of **Units** (SI). These reference standards are held by LTI and are used for calibration only and for no other purpose, unless it can be shown that their performance as reference standards would not be invalidated. Reference standards shall be calibrated before and after any adjustment.

10.4 Intermediate Checks.

10.4.1 Checks needed to maintain confidence in the calibration status of reference, primary, transfer or working standards shall be carried out in accordance with LTI Procedure ***LTI-AQMR**.

***See Section 20 for Procedure Number and Title.**

SECTION 11

EQUIPMENT, TOOL AND INSTRUMENT CONTROL

11.1 Scope:

11.1.1 This section covers the calibration of all equipment, tools and instruments used for testing, inspection, examination and calibration, as well as measurement standards used for calibration.

11.2 Requirements:

11.2.1 A procedure (*85-CP-1) is maintained in accordance with ISO / IEC 17025, MIL-STD-45662, ANSI 45.2, NQA-1, ISO-10012-1 and ANSI / NCSL Z540-1, latest revisions, that include the following requirements:

- a) Unique serialization of all equipment, tools and instruments;
- b) Controls to assure positive identification and disposition of out-of-service equipment, tools and instruments;
- c) Adequacy of instruments and standards for calibration;
- d) Estimates of the uncertainty of measurement where appropriate;
- e) Consideration of environmental controls;
- f) Calibration of environmental controls;
- g) Maintenance of calibration records that are traceable to measuring and test equipment via the serial number or unique identification number and the data included on the calibration record;
- h) Traceability to national or international standards or fundamental physical constants, where such standards exist;
- i) Control of material tested with equipment, tools or instruments discovered to be out of calibration;
- j) The labeling of equipment, tools or instruments to show calibration date, unique number, calibration technician and recalibration date.

11.2.2 LTI will maintain an internal calibration recall system.

11.3 Computerized Equipment:

11.3.1 Where computers or automated equipment are used for the capture, processing, manipulation, recording, reporting, storage or retrieval of test data, LTI shall assure that:

- a) all applicable requirements are complied with;
- b) computer software is documented and adequate for use;
- c) procedures are established and implemented for protecting the integrity of data; such procedures shall include but are not limited to integrity of data entry or capture, data storage, data transmission and data processing;
- d) computer and automated equipment is maintained to ensure proper functioning and provided with the environmental and operating conditions necessary to maintain the integrity of the test data;
- e) it establishes and implements appropriate procedures for the maintenance of security of data including the prevention of unauthorized access to, and the unauthorized amendment of computer records.

***See Section 20 for Procedure Number and Title.**

SECTION 12

EXAMINATION, TEST, CALIBRATION SERVICES AND SPECIMEN PREPARATION

12.1 Scope:

12.1.1 This section provides the general requirements on how examinations, testing, specimen preparation and calibration services are carried out at LTI.

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12.2 Nondestructive Examination:

12.2.1 All nondestructive examinations shall be performed by personnel qualified by the latest revision of **LTI Procedures *PQ-NDT-1, *PQ-410-1 or *PQ-2132-1**, whichever is applicable.

12.2.2 All contractually required nondestructive examinations shall be performed in accordance with written, qualified procedures prepared and approved by Level III Examiners and reviewed by the Quality Assurance Manager. **Evaluation of nondestructive examination shall be in accordance with contractually required acceptance criteria.**

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12.2.3 All nondestructive examination activities are performed in accordance with the procedure or specification referenced **in the work order**, including the customer's acceptance criteria as applicable. (***LTI-DOC**)

12.2.4 **When nondestructive examinations are complete, the results are recorded in hard copy or electronic format and submitted for preparation of formal report.**

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12.2.5 When the nondestructive examination is performed by an outside source, the procedure and technique used to perform the examination shall be approved by the Quality Assurance Manager or a Level III, as required. Upon completion of the examination, **Quality Assurance or NDE Level III** shall review results and sign or initial the **subcontractors** report.

12.3 Chemical, Dimensional, Mechanical and Metallurgical:

12.3.1 All chemical, dimensional, mechanical and metallurgical testing shall be performed by personnel qualified to the latest revision of LTI Procedure ***PQ-MAS-1**.

12.3.2 Chemical, dimensional, mechanical and metallurgical testing shall be performed by LTI or an approved outside source in accordance with written procedures, industry specification or equipment manufacturer's instructions. All written procedures, industry specifications, or equipment manufacturer's instructions applicable to tests being performed shall be referenced **in the work order**. (***LTI-PROCEDURE, LTI-DOC**)

12.3.3 **When a chemical, dimensional, mechanical or metallurgical test has been completed, the results are recorded on work sheets or templates in hard copy or electronic format and submitted for preparation of formal report.**

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*See Section 20 for Procedure Number and Title.

12.3.3 When a chemical, dimensional, mechanical or metallurgical test is performed by an outside source, Quality Assurance, the Manager or Supervisor of the respective area involved, shall review the results and sign or initial the subcontractors' report.

12.4 Calibration Services:

12.4.1 All calibration services shall be performed by personnel qualified to the latest revision of **LTI Procedure *PQ-MAS-1**.

12.4.2 All calibration performed by LTI or an approved outside source, shall be done in accordance with written procedures developed from ANSI, Federal Standards, National / International Standards or equipment manufacturer's instructions. All written procedures, ANSI Specifications, Federal Standards, National Standards or equipment manufacturer's instructions as applicable to the calibration being performed shall be included on the certificate. (*LTI-PROCEDURE, LTI-DOC)

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12.4.3 Upon completion of calibration, the results are recorded in hard copy or electronic format and submitted for preparation of a formal report.

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12.4.4 When calibrations are performed by an outside source, Quality Assurance, Metrology Manager, **Supervisor**, Metrologist or **Coordinator** shall review the results and sign or initial the subcontractors' calibration certificate.

12.5 Machining Services:

12.5.1 Machining services (**without testing**) shall be performed by personnel qualified by the latest revision of **LTI Procedure *PQ-MAS-1**.

12.5.2 When the Machine Shop Supervisor receives a **work order** for **Machining services**, a Machine Shop Process Control Plan is prepared **and implemented**. (***LTI-MACH-1**)

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12.6 Reports.

12.6.1 **Work orders** for all completed examinations, tests and calibration services shall be submitted to the appropriate personnel for preparation of the test reports or calibration certificates. (***LTI-CERT/REPORT**)

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12.7 Procedure Submittal.

12.7.1 Specific examination, testing and calibration procedures are available and shall be submitted for customer review when contractually required.

12.8 Customer "Hold" Points.

12.8.1 Customer witnessing of tests or calibrations shall be noted on the associated **work order** by the Order Entry personnel.

***See Section 20 for Procedure Number and Title.**

- 12.8.2 When work is ready for testing, **Customer Service or the appropriate Manager** shall be responsible for notifying the customer or their designated representative to coordinate a suitable time for witnessing of the test.
- 12.8.3 Work shall not proceed until appropriate instructions are received from the appropriate customer or their designated representative.
- 12.8.4 LTI shall ensure the confidentiality of work being performed for other customers during such monitoring.
- 12.8.5 Customer representatives shall be provided with the necessary facilities, equipment and the assistance of personnel to perform their functions.

12.9 Sampling.

- 12.9.1 Unless otherwise stipulated by contract, all material will undergo testing or examination for 100% of the lot received.

12.10 Assuring the Quality of Test and Calibration Results.

- 12.10.1 Monitoring the validity of test, inspection and calibration results shall be performed in accordance with **LTI Procedures *LTI-AQMR or LTI-AQTR.**

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12.11 Replacement or Retesting.

- 12.11.1 Prior to completing Technique and Inspection Record on failed items, replacement or retesting per LTI Procedure ***MAS-RETEST** shall be done wherever possible.

12.12 Returning Tested Material.

- 12.12.1** All material that is to be returned to customers upon completion of testing **shall be** tagged or have container tagged with an acceptance or rejection tag, **if applicable.**

12.13 General Requirements for Procedures and Non Standard Methods.

- 12.13.1 Validation of non-standard methods and methods used outside their intended scope.
- 12.13.1.1 LTI shall validate non-standard methods and modifications of standard methods to confirm that the methods are fit for the intended use. The validation shall be as extensive as necessary to meet the needs of the given test and / or calibration.
- 12.13.1.2 LTI shall record the results obtained, the procedure used for the validation and a statement as to whether the method is fit for the intended use.

12.13.2 *When necessary to employ methods that have not been established as a standard, the customer shall give written approval to do so.*

12.13.3 Deviation from test and calibration methods shall occur only if the deviation has been documented, technically justified, authorized and accepted by the customer.

SECTION 13

NON-CONFORMING TESTING AND / OR CALIBRATION

13.1 Scope.

- 13.1.1 This section describes the process of reporting and controlling any aspect of testing, machining and / or calibration work that does not conform to internal procedures or customer requirements.
- 13.1.2 Items found not conforming to acceptance standards during testing or out of tolerance during calibration are addressed in Paragraph 13.2.

13.2 Items Not Meeting Acceptance Standards or Tolerance.

- 13.2.1 Customer materials and equipment which are rejected as a result of testing shall be identified as such.
 - 13.2.1.1 Where feasible, parts shall be tagged as to reason **for** rejection.
 - 13.2.1.2 All rejected material shall be separated from acceptable material where applicable.
 - 13.2.1.3 The Certified Test Report shall identify the noncomplying characteristic(s).
- 13.2.2 Any item that has been submitted for calibration and found out of tolerance shall be identified on the certificate as the "As Found" condition.
 - 13.2.2.1 If the item can be adjusted, it shall be calibrated and identified on the Calibration Certificate "As Left".
 - 13.2.2.2 If the item can be repaired and the customer gives consent, the item shall be repaired and recalibrated. Upon successful repair and acceptable recalibration, certification will be issued.
 - 13.2.2.3** Items that cannot be calibrated in tolerance or repaired shall be identified as such.

13.3 Discrepant Materials, Equipment or Processing.

- 13.3.1 Any LTI employee can initiate a Nonconformance Report. Any deficiency detected during testing, calibration or machining shall be documented on a Nonconformance Report (NCR) in accordance with LTI Procedure ***LTI-NONCONFORMANCE**. Work in process shall be stopped, including the withholding of test reports and calibration certificates.
- 13.3.2 The NCR shall be forwarded to Quality Assurance for initial evaluation and determination of significance as well as 10CFR21 reportability.

**See Section 20 for Procedure Number and Title.*

13.3.3 Nonconformances may be dispositioned by the department manager, QA Manager and customer as stated *in LTI Procedure *LTI-NONCONFORMANCE*. Once the disposition has been completed, a copy of the Nonconformance Report will be forwarded to the appropriate personnel to implement the disposition. All repaired or reworked items will be re-inspected to assure conformance to LTI and customer requirements.

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13.3.4 LTI shall notify customers promptly, in writing, of any identification of defective measuring and test equipment that cast a doubt on the validity of results given in any Test Report or Calibration Certificate.

13.4 10CFR21 Compliance.

13.4.1 For discrepant conditions reportable under the provisions of 10CFR21, the President shall be notified by the Quality Assurance Manager in writing. The President is responsible for all notification outside the company in accordance with established procedures.

13.4.2 The procedure **10CFR21 COMPLIANCE along with required documents* shall be posted by *in areas accessible and conspicuous to all employees*.

**See Section 20 for Procedure Number and Title.*

SECTION 14

HANDLING, STORAGE, PRESERVATION AND SHIPMENT

14.1 Scope.

14.1.1 This section describes the way that LTI shall handle, store, preserve and ship material or items that come to LTI for testing, machining and calibration.

14.2 Method of Handling, Storage, Preservation and Shipment.

14.2.1 All materials or items shall be stored and moved in containers which are not detrimental to the product. In general, materials will be stored and moved in the container in which they were received.

14.2.1.1 When specified in the contract or purchase order, material shall not come in contact with sulfur, mercury, halogens or other detrimental materials while in LTI's possession.

14.2.1.2 Slings and other handling equipment shall not be detrimental to the product.

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14.2.2 All items and material to be shipped back to the customer shall be placed in the returned material holding area after processing.

14.2.2.1 Items for calibration shall remain in the calibration lab or in a specified holding area until calibration certificates have been completed.

14.2.2.2 Upon receiving the certifications and a packing list, shipping shall pack all materials and items in a manner as to preclude any damage. Shipping shall return the package to the customer in accordance with best commercial practice and Interstate Commerce Rules or as required by Purchase Order / Contract.

14.2.2.3 Nuclear orders shall be packed in accordance with LTI Procedure *LTI-2.2, which is in accordance with NQA-1, Subpart 2.2, when referenced.

14.2.3 Specific instructions about handling / storage of certain materials shall be put into working procedures, **or the work order** when specified by contract.

14.3 Direct Shipments.

14.3.1 Shipments to other parties shall be done in accordance with the instructions given by our customer.

*See Section 20 for Procedure Number and Title.

SECTION 15

TEST REPORTS AND CERTIFICATIONS

15.1 Scope.

15.1.1 This section describes the requirements for Test Reports and **Calibration** Certificates completed at LTI.

15.2 Certificates and Test Reports.

15.2.1 Test reports and certificates shall be prepared by the QA Department upon completion and review of all testing, dimensional inspection and calibration results.

15.2.2 Certifications and Test Reports shall be signed or equivalent identification of the person(s) as designated by the President.

15.2.3 Certifications and Test Reports retained by LTI and / or supplied to customers shall comply with the following:

15.2.3.1 Certification and Test Reports shall be legible, reproducible and in good condition.

15.2.3.2 The legibility and contrast of records shall be such that every line, number, letter and character of data shall be clearly legible and readable.

15.2.3.3 The certifications and test reports shall have such clarity as to be capable of providing a second generation copy which shall meet the legibility requirements as stated in 15.2.3.2 above.

15.2.3.4 The certification and test report shall accurately describe the item to which they are certifying.

15.2.4 Each certification or report shall meet the requirements as stated in LTI Procedure ***LTI-CERT/REPORT and include customer's required information.**

15.2.5 Where the certificate or report contains results of tests performed by subcontractors, these results shall be clearly identified.

15.2.6 Changes to a Test Report or Calibration Certificate after issue shall be made only in the form of a revised document, or data transfer including an "Amended" or "Corrected" statement.

15.2.6.1 An "Amended" Test Report or Calibration Certificate identifies the change was at the request of the customer.

15.2.6.2 A "Corrected" Test Report or Calibration Certificate identifies the change was due to an error by LTI.

***See Section 20 for Procedure Number and Title.**

- 15.2.7 When opinions and interpretations are included, LTI shall document the basis upon which the opinions and interpretations have been made. Opinions and interpretations shall be clearly marked as such in a test report.
- 15.2.8 In case of transmission of test or calibration results by telephone, email, facsimile or other electronic or electromagnetic means, the requirements of ISO / IEC 17025 shall be met.
- 15.2.9 The format shall be designated to accommodate each type of test or calibration carried out to minimize the possibility of misunderstanding or misuse. Each type of test or calibration shall be separated with heading standardized as much as possible.
- 15.2.10 The use of assessment body logos, such as A2LA and PRI / Nadcap, shall be in accordance with the policies and guidelines for their use.

SECTION 16

CONTROL OF RECORDS

16.1 Scope.

16.1.1 This section describes the requirements for the control of Quality Records which may be in any media, such as hardcopy or electronic media.

16.2 Quality Records.

16.2.1 **Definition** – Quality Records are those completed records which furnish documentary evidence of the quality of items and of activities affecting quality.

16.2.1.1 Quality Records include, but are not limited to **Work Orders**, Calibration Records, Personnel Qualifications and Certifications, Examination Procedures, Internal Audits, Corrective Action, Nonconformance Reports, Management Reviews and Reports, Vendor Audits, Customer Complaints, completed certifications and any records or original observations derived from data and sufficient information to establish an audit trail.

16.2.2 Quality records **and specimen remnants** shall be controlled in accordance with LTI Procedure *LTI-QR-1.

16.2.3 All quality records shall be legible and stored so as to preclude deterioration, to promote retrievability, prevent loss and traceability to the items to which they apply.

16.2.4 ***All quality records shall be stored for a minimum of ten (10) years. The customer shall specify any records requiring retention for longer than this retention time or if notification is required prior to disposal of specified records. In such cases, the specified records shall be provided to the customer upon completion of the order and will become the responsibility of the customer for retention.***

16.2.5 Sample materials / remnants, in the absence of **regulatory and / or** contractual requirements, shall be kept for a minimum of thirty (30) days.

16.2.6 The President shall be responsible for adequate storage and retrieval of all records.

16.2.7 Errors shall be crossed out with a single line, not erased or whited out, made illegible or deleted, and the correct value entered alongside. All such alterations to records shall be signed or initialed and dated by the person making the correction. The use of correction fluid on any of the Quality Records is strictly prohibited. In the case of records stored electronically, equivalent measures shall be taken to avoid loss or change of original data.

***See Section 20 for Procedure Number and Title.**

SECTION 17

VENDOR EVALUATION

17.1 Scope.

17.1.1 This section details the requirements for the selection and approval of vendors for supplying materials and services, including calibration and testing.

17.2 Approved Vendors.

17.2.1 Vendors supplying material or subcontracted services that effect quality shall be approved prior to procurement.

17.3 Selection.

17.3.1 Vendors shall be selected and placed on the Approved Vendors List (AVL), based on at least one of the following criteria:

- a. Accredited to ANSI/ISO/IEC 17025 and/or ANSI/NCSL Z540-1 by a recognized accreditation body.
- b. On-site audit and approval as being competent and compliance with the quality system standard applicable to the items and services that are being supplied.
(*LTI-EXT-AUD)
- c. Vendor is qualified at LTI for services performed at LTI based on acceptance of the following:
 - Vendor's Quality Manual or program description.
 - Procedure for the specific work being performed.
 - Personnel Qualification records.
 - Calibration certificates for the equipment or standards used.
- d. Vendor is a National Metrology Institute (Ex: NIST).
- e. Review and approval of vendors' QA Program and/or satisfactory performance. Such vendors are designated on the AVL as "Commercial Use Only" and shall not be used when compliance to ANSI/ISO/IEC 17025 or nuclear standards such as 10CFR50 Appendix B, 10CFR21, ASME Section III NCA-3800 and/or ASME NQA-1 is required.

17.3.2 For nuclear customers requiring compliance to 10CFR50, Appendix B and/or ASME Section III, NCA-3800, LTI shall perform an audit of the vendors' quality program. The audit shall be performed by a qualified representative of LTI, using a checklist for detailing applicable requirements. Objective evidence shall be reviewed during the audit and documented. Any non-conformances shall be noted on a Corrective Action Request form.

17.3.2.1 *Personnel conducting audits of vendors shall be qualified in accordance with LTI Procedure *PQ-AUD-1.*

17.3.2.2 All audit reports, including any corrective action request responses and follow-ups, shall be reviewed and approved by the Quality Assurance Manager, Lead Auditor or the President of LTI.

17.3.3 As an alternate to the audit of suppliers of subcontracted calibration services, LTI may accept accreditations by NVLAP, A2LA or other accreditation bodies recognized by NVLAP through the ILAC Mutual Recognition Arrangement (MRA), provided the following criteria are met:

- a. The Laboratory is accredited to ANSI/ISO/IEC 17025.
- b. The published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges and uncertainties.
- c. The procurement documentations shall specify that the calibration certificate / report shall identify the laboratory equipment / standards used and shall include the as-found and as-left data.
- d. QA reviews objective evidence for compliance with the procurement documents.

This alternative shall be performed in accordance with LTI Procedure ***LTI-SCS-RAL**.

17.3.4 Upon approval, the vendor shall be placed on LTI's Approved Vendors List for three years or until the accreditation expiration date. Once a year, Approved Vendors, other than those accredited, are contacted to confirm organizational structure and quality program status as well as to verify address, responsible party, etc. or to note any significant company change.

17.3.4.1 If the vendors' performance becomes unsatisfactory, or if their services are no longer needed, vendors may be removed from the Approved Vendors List by the Quality Assurance Manager or designated representative.

17.3.4.2 The list shall be updated as required and be available to personnel of the respective areas who would be responsible for purchase materials or services for their departments.

***See Section 20 for Procedure Number and Title.**

SECTION 18

PROCUREMENT DOCUMENT CONTROL

18.1 Scope.

18.1.1 This section details the requirements for the control of procurement documents to assure the inclusion of applicable quality requirements for materials purchased to perform testing, calibration and for subcontracted services.

18.2 Requirements.

18.2.1 All purchase orders for materials and services shall be documented and controlled in accordance with the latest revision of LTI Procedure ***PI-1**.

18.2.1.1 Purchase Orders to vendors for materials or services shall include applicable quality and technical requirements as required for the subject procurement.

18.2.1.2 *Prior to release, the above stated purchase orders will be reviewed and approved by the Quality Assurance Manager or his delegated representative.*

18.2.1.3 Changes to purchase orders (***other than for quantity, price or delivery***) will ***require the same*** approvals as ***the*** originals.

18.2.2 Upon receipt of materials and services, the Quality Assurance Manager or his designated representative shall review and approve certifications verifying that what was purchased complies with the requirements of the purchase order.

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18.2.3 LTI shall be responsible for the subcontractors work, except where the customer specifies which subcontractor is to be used.

18.2.4 When LTI subcontracts any testing or calibration requiring compliance to ANSI / ISO / IEC 17025, the customer shall be notified in writing and, when appropriate, gain the approval of the customer.

***See Section 20 for Procedure Number and Title.**

SECTION 19

CORRECTIVE ACTION PREVENTATIVE ACTION CONTINUOUS IMPROVEMENT

19.1 Scope.

19.1.1 This section describes the requirements for corrective action for conditions that have an adverse affect on quality, preventative action and continuous improvement.

19.2 General Requirements.

19.2.1 Corrective action and prevention of recurrence shall be accomplished in accordance with LTI Procedure ***LTI-CAR**.

19.2.2 The corrective action and / or prevention of recurrence shall be recorded on the Corrective Action Request form.

19.2.3 The need for corrective action and prevention of recurrence shall be determined by nonconformances, formal or informal audit results, customer complaints, **management reviews** or other **conditions** adverse to quality.

19.2.3.1 Formal audit results could be generated through customer audits of our facility, internal audit of Quality System or Management Review by the President.

19.2.3.2 Informal audit results could be generated through spot checks of any area at any time.

19.2.3.3 Initiation of a corrective action is the responsibility of any LTI employee.

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19.3 Corrective Action.

19.3.1 The procedure for Corrective Action, ***LTI-CAR** shall include:

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- a) investigation of the root cause of non-conformities relating to product, process and the quality system and recording the results of the investigation;
- b) determination of the corrective action needed to eliminate the cause of nonconformities;
- c) application of controls to ensure that the corrective action is taken and that it is effective.

***See Section 20 for Procedure Number and Title.**

19.4 Preventative Action / Continuous Improvement.

19.4.1 Preventative Action and Continuous Improvement shall be in accordance with LTI Procedure ***LTI-PACI**. Preventative action is a pro-active process to identify opportunities for improvement rather than reactive to problems and complaints.

19.5 Customer Complaints and Feedback.

19.5.1 Customer complaints shall be processed and resolved in accordance with LTI Procedure ***LTI-COMP** and are documented on a Customer Complaint Form. Customer complaints are generated based on the Customer's verbal or written notification.

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19.5.2 Feedback, both positive and negative is sought from customers in the following manner:

- a. Customer Satisfaction Questionnaires
- b. Marketing Department contacting customers and prospective customers.
- c. Customer Service Department daily contact with customers.
- d. Participation in trade shows.

Such information is analyzed and used to improve our systems, testing and calibration activities and customer service.

19.6 Vendor Corrective Action and Prevention of Recurrence.

19.6.1 LTI shall require Corrective Action and / or Prevention of Recurrence from its vendors whenever material or services are received which are non-conforming, or upon deficiencies noted during audit of vendors quality system. (***PI-1**)

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19.7 Records.

19.7.1 All Corrective Action Requests shall be kept on file by the Quality Assurance Department.

19.8 Monitoring of Corrective Actions.

19.8.1 LTI will monitor the results of corrective actions and prevention of recurrence actions to ensure that the corrective actions taken have been effective.

19.8.2 When identification of nonconformances or departures cast doubt as to LTI complying with procedures and policies, **ISO / IEC 17025** or this Quality Manual, LTI shall audit the areas of nonconformances within 15 working days.

19.8.3 The results of these processes shall be considered during the annual Management Review.

SECTION 20
REFERENCED PROCEDURES AND DOCUMENTS

PROCEDURE NUMBER	MANUAL SECTION	PROCEDURE TITLE	WHERE REFERENCED
LTI-QPOLICY	POLICY STATEMENT	Quality Policy	Section i
LTI-C&P RIGHTS	POLICY STATEMENT	Protection of Confidentiality & Proprietary Rights of LTI Customers	Section I
LTI-MAN-CTRL	SECTION 3	Control of Quality System Program Manual	3.2.4
PQ-NDT-1	SECTION 4 SECTION 12	Personnel Qualification and Certifications – NDT	4.8.2 12.2.1
PQ-2132-1	SECTION 4 SECTION 12	Personnel Qualification to MIL-STD-2132 and NSTR-99	4.8.2 12.2.1
PQ-410-1	SECTION 4 SECTION 12	NDT Personnel Qualification & Certification in accordance with NAS 410	4.8.2 12.2.1
PQ-MAS-1	SECTION 4 SECTION 12	Procedure for Personnel Qualification of Material Analysis Services	4.8.2 12.3.1, 12.4.1, 12.5.1
PQ-AUD-1	SECTION 4 SECTION 5 SECTION 17	Qualification and Certification of Auditors and Lead Auditors in accordance with ASME / ANSI N45.2.23 and ASME / ANSI NQA-1	4.8.2 5.2.2 17.3.2.1
LTI-INT-1	SECTION 5	Procedure for Performance of Internal Audits	5.2.3
RI-1	SECTION 6 SECTION 8	Procedure for Receiving and Order Entry	6.2.1 8.2.1
LTI-DOC	SECTION 7 SECTION 12	Document Control of Internal Procedures, Customer, Government and International Standards & Specifications	7.1.3, 7.3.1 12.2.3, 12.3.2, 12.4.2
ADDENDA DOCSTAR-PROC	SECTION 7	Control of Procedures using the docSTAR System	7.1.3
LTI-PROCEDURE	SECTION 7 SECTION 12	Preparation of Documents	7.3.1 12.2.3, 12.3.2, 12.4.2
85-CP-1	SECTION 9 SECTION 11	Calibration Procedure in accordance with MIL-STD-45662A, ANSI/NCSL Z540-1, ISO-10012-1 & ISO-17025	9.2.2.1, 9.2.4 11.2.1
85-CP-1, Addenda A	SECTION 10	Calibration Frequency List	10.2.2
85-CP-1, Addenda B		Scope of Calibrations for A2LA Accreditation	
LTI- NONCONFORMANCE	SECTION 10 SECTION 13	Reporting and Control of Nonconforming Testing and/or Calibration Items	10.2.5 13.3.1, 13.3.1
10CFR21 COMPLIANCE	SECTION 13	Reporting of Defects and Nonconformances in accordance with 10CFR21	13.4.2
LTI-2.2	SECTION 14	Packing, Shipping and Marking in accordance with ASME NQA-1	14.2.2.3
LTI-CERT / REPORT	SECTION 12 SECTION 15	Procedure for Compiling Certificate or Test Report	12.6.1 15.2.4
LTI-QR-1	SECTION 16	Procedure for the Control of Quality Records	16.2.2, 16.2.4
PI-1	SECTION 18 SECTION 19	Purchasing Instructions for Materials and Services	18.2.1 19.6.1
LTI-CAR	SECTION 19	Procedure for Corrective Action	19.2.1, 19.3.1
LTI-COMP	SECTION 19	Resolution of Customer Complaints	19.5.1

REFERENCED PROCEDURES AND DOCUMENTS
(continued...)

PROCEDURE NUMBER	MANUAL SECTION	PROCEDURE TITLE	WHERE REFERENCED
EMPLOYEE HANDBOOK	SECTION 4	LTI Employee Handbook	4.2.10
LTI-SWQA-1	SECTION 10	Validation of Computer Software	10.2.1
CP-17025-FIELD	SECTION 9 SECTION 10	Calibration Procedure of ISO / IEC 17025 Field Calibrations	9.2.8 10.2.6
LTI-AQMR	SECTION 10 SECTION 12	Assuring Quality of Metrology Results	10.4.1 12.10.1
LTI-SCS-RAL	SECTION 17	Subcontracted Calibration Services from Recognized Accredited Laboratories	17.3.3
MAS-RETEST	SECTION 12	Material Analysis Services Procedure for Retests and Replacement Tests	12.11.1
LTI-PACI	SECTION 19	Preventative Action and Continuous Improvement Plan	19.4.1
PQ-2132-AQP	SECTION 4	NDT Personnel Qualification to the Requirements of MIL-STD-2132 and NSTR-99, Rev. 4 Utilizing the Alternate Qualification Program	4.8.2
LTI-VT-TO	SECTION 4	Training Outline for Visual Inspection	4.8.2
LTI-UT-TO	SECTION 4	Training Outline for Ultrasonic Inspection	4.8.2
LTI-RT-TO	SECTION 4	Training Outline for Radiographic Testing	4.8.2
LTI-QUAL-NQA-1	SECTION 4	Qualification and Certification of Inspection and Testing Personnel	4.8.2
LTI-MP-TO	SECTION 4	Training Outline for Magnetic Particle Testing	4.8.2
LTI-LP-TO	SECTION 4	Training Outline for Liquid Penetrant Testing	4.8.2
LTI-MACH-1	SECTION 12	Machining Services	12.5.2
LTI-AQTR	SECTION 12	Assuring Quality of Test Results	12.10.1
LTI-EXT-AUD	SECTION 17	Procedure for Performance of External Audits and Surveys	17.3.1b