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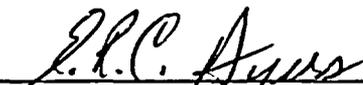
## QAP-01

Issue 2  
Revision 2

# QUALITY ASSURANCE MANUAL

Date of Issue: October 2002

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Quality Control Manager

2002-10-31  
Date

  
\_\_\_\_\_  
Vice President Operations

2002.10.31  
Date

  
\_\_\_\_\_  
President

2002.10.31  
Date

  
\_\_\_\_\_  
CEO

2002-10-31  
Date

## ***Quality Policy***

*Stern Laboratories is dedicated to providing quality products and services which meet or exceed the expectations and contractual requirements of our customers and are consistent with professional standards and ethics.*

*We employ experienced engineers, technologists and technicians who are committed to a professional team approach to quality that stimulates continuous improvement in the products and services provided to our customers.*

## Record of Revisions

<u>Issue</u>	<u>Revision</u>	<u>Section</u>	<u>Changes</u>	<u>Date</u>
2	0	All	Complete rewrite in format compatible with ISO 9000	2002/04
2	1	4.5	Minor changes to sections 4.5.3, 4.5.4, 4.5.8, 4.5.9	2002/05
		5.3	Minor wording changes.	
		6.1	Minor wording changes.	
		9.2	Minor wording changes.	
		15.2	Minor wording changes.	
		17.1	Minor wording changes.	
		20.3	Minor wording changes	
		22.	Minor wording changes	
		23.	Minor wording changes	
		Forms	Issue date added to all forms.	
2	2	1.	Specified 1994 edition of ISO 9001, . added CAN3-Z299	2002/10
		3.	Controlled copy added	
		5.1	Specified 1994 edition and CAN3-Z299	
		5.3	Wording changes.	
		9.2	Section was renamed and the guidelines were added for selection of control and inspection levels.	
		9.10	New levels "N" added.	
		13.1	Inspection & Test plan added	
		13.2	Added packing slip	
		15.1	Inspection & Test plan added	
		15.4	Inspection & Test plan added	

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## **1. INTRODUCTION**

Stern Laboratories Inc. (SL) is a Canadian owned private corporation which designs and conducts experiments for development and validation of modelling codes, determination of Critical Heat Flux (or DNB) limits, reliability and safety of equipment and processes, as well as equipment qualification. Experiments are conducted under contract to utilities, reactor and fuel designers and vendors, government agencies and other laboratories. SL is also engaged in data analyses, construction of experimental equipment, and design and manufacture of special devices for energy industries.

SL employs engineers, technologists and technicians who are experienced in laboratory processes to perform work which is highly specialized in nature, rather than production oriented. Emphasis is placed on providing quality services and products in priority over schedules or productivity.

Management is committed to the quality system documented in this manual to meet the applicable requirements of customer contracts which specify the implementation of a quality program. The overall quality system is intended to meet the applicable requirements of standard CAN/CSA-ISO-9001, 1994.

The manual is supplemented by standard quality procedures and various other documents which are generated as needed. The applicable quality requirements of specific customer contracts, such as requirements for other quality standards (e.g. CAN/CSA N286.0, CAN3-Z299 series, 10CFR50 Appendix B, 10CFR Part 21, or ASME-NQA-1), are documented in Quality Plans which are prepared, as appropriate, for each contract.

A list of the standard quality procedures which have been generated to supplement the quality program, at the time of issuing of the latest revision of this manual, is given in Section 24. Examples of the various forms which are used in the quality program, at the time of issuing of the latest revision of this manual, are given in Section 25.

## 2. DEFINITIONS

- a) **Quality** is defined as the degree to which a service or product meets or exceeds the stated or implied requirements.
- b) **Supplier** is defined as an organization that provides a service or product to a Customer.
- c) **Customer** is defined as the recipient of a service or product.
- d) **Service** is defined as the results generated, by activities at the interface between the supplier and the customer and by supplier internal activities, to meet customer needs.
- e) **National Standards** are defined as the primary or secondary standards of the National Research Council of Canada (NRC), the U.S. National Institute of Standards and Technology (NIST), the National Physical Laboratories of Great Britain (NPL) or reference standards based on fundamental constants of nature.
- f) **Instrumentation** is defined as the complete system producing displays and hard copy of test parameters, including software. Instrumentation devices are components of the complete system.
- g) **Central File** refers to the collection of files and other information, normally stored in a central accessible location, which are related to quality activities and are generally administered by the Quality Control Assistant.
- h) **Project File** refers to the collection of files and other information related to activities for a specific contract or project administered by the applicable Project Engineer.

### **3. DISTRIBUTION**

This manual is distributed internally to applicable personnel with a record of transmittal signed by each recipient upon receipt of the manual. The transmittal record shall be retained with the original copy of the manual in the Central File by the Quality Control Assistant. When additional copies are issued internally, the record of transmittal shall be updated by the Quality Control Assistant. Distribution of copies to external recipients shall be listed on a separate transmittal sheet which is kept by the Quality Control Assistant with the original copy of the manual in the Central File. The transmittal sheet for external recipients shall specify if a copy is to be controlled.

The issue and revision number shall be identified at the top of each page of the manual. Each new issue shall cancel and replace all previous issues of the manual. Revisions may be made to individual sections of the manual and shall cancel and replace only the affected sections. Issues and revisions are identified in numerical sequence.

New issues and revisions shall be distributed internally to applicable personnel. The record of transmittal shall be signed by each recipient of the manual upon receipt and obsolete copies shall be retrieved by the Quality Control Assistant. New issues and revisions shall be distributed to applicable customers and jurisdictions, and where acceptance by the customer or jurisdiction is required, the changes shall be implemented in accordance with the manual upon that acceptance.

## **4. MANAGEMENT RESPONSIBILITY**

### **4.1 Quality Policy**

The quality policy of Stern Laboratories is placed at the beginning of this manual, in Section i, and shall be displayed in various locations on the company's premises. The policy, and its objectives, are discussed in management review meetings and with SL personnel to ensure the policy is understood, implemented and maintained at all levels within the organization and remains current. The ultimate authority within SL to resolve quality problems, without contravening the requirements of customer contracts or applicable jurisdictions, is the President / CEO.

### **4.2 Resources**

Adequate resources shall be provided and assigned for management and performance of the quality system and verification activities, including internal quality audits. Management shall ensure that personnel are appropriately trained, in accordance with Section 21 of this manual, for the work they perform.

### **4.3 Management Representative**

The Quality Control Manager shall represent the company on pertinent quality matters, as established by customer requirements, jurisdictional requirements, policies, procedures, drawings and specifications. The Quality Control Manager shall monitor the performance of the quality system and report directly to the President in these matters.

### **4.4 Management Review**

Regular reviews shall be conducted annually to assess the quality system for its adequacy and appropriateness and to ensure that a level of acceptable quality is being maintained. These reviews shall be attended by the Quality Control Manager, the CEO, the President, the Vice President Operations, and other personnel as required and appropriate. Minutes of these meetings shall be documented and copies of the minutes shall be retained in the Central File.

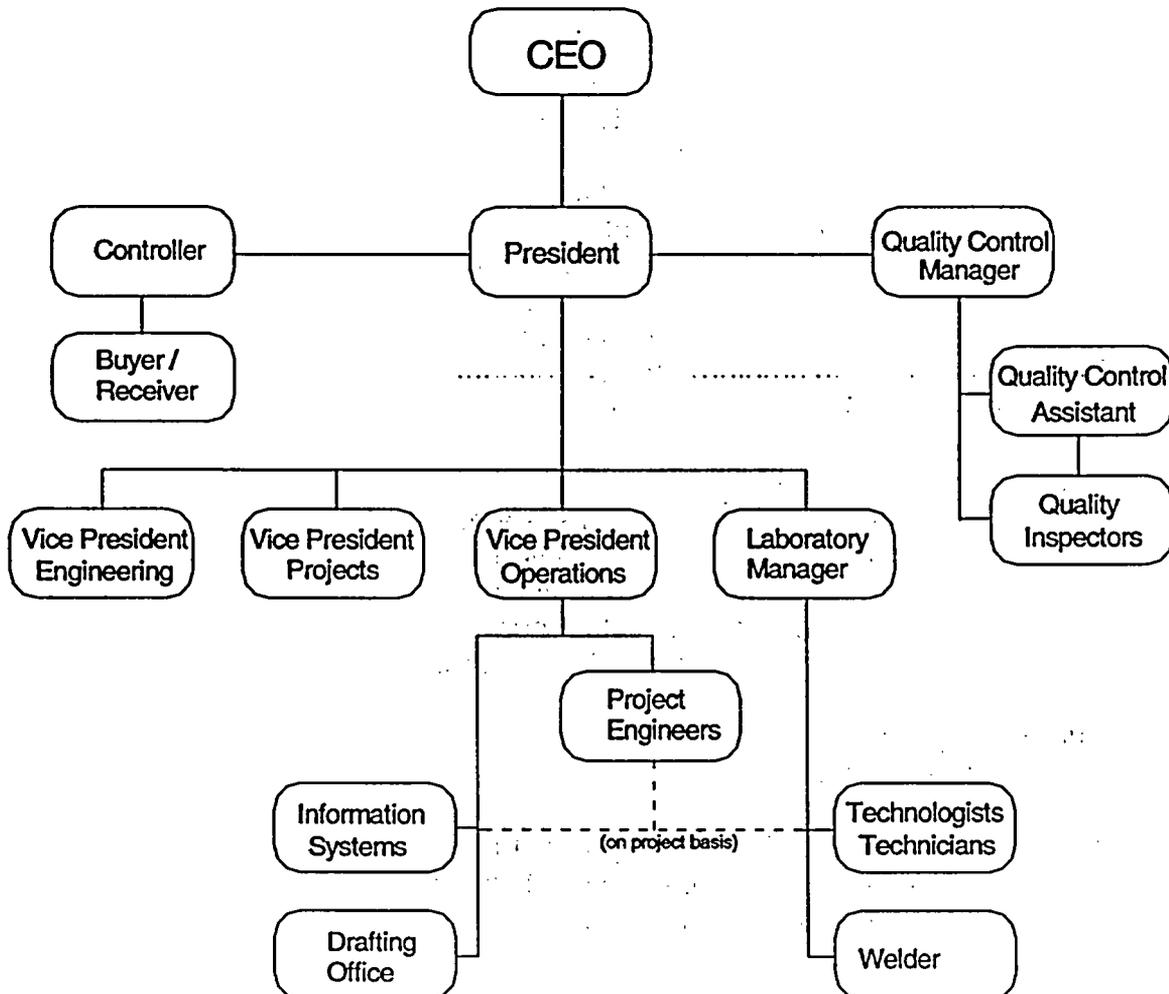
This manual shall be reviewed periodically by the Vice President Operations, and/or the Quality Control Manager, and revised as necessary. Revisions are subject to the same review and approvals as the original, and shall be distributed as specified in Section 3.

## 4.5 Responsibility and Authority

The Quality Control Manager shall designate personnel who do not have direct responsibility for performing the work, but are familiar with the processes involved, to conduct quality inspections. Personnel who perform quality inspections shall have the authority to identify and report any quality problems to the appropriate management and to prevent further processing or use of nonconforming products until the deficiency or unsatisfactory condition has been corrected. All personnel shall have the responsibility and authority to identify and report quality problems.

The responsibility and authority of the various functions to assure compliance with the procedures described in this manual are outlined below. At times, the person with the assigned responsibility for a given quality function may not be available, due to vacation, work assignment, etc. In this case, the responsibility for that quality function may be delegated to an appropriate, qualified person who does not have responsibility for performing the work.

### 4.5.1 Organization Chart



**4.5.2 CEO / President**

- ▶ Establish organizational direction and goals.
- ▶ Establish and support quality policy.
- ▶ Define management authorities and responsibilities for quality.
- ▶ Approve quality manuals and procedures.
- ▶ Assign Project Engineers
- ▶ Approve tenders and contracts and amendments or changes to contracts.
- ▶ Resolve contractual disputes.
- ▶ Respond to internal and external quality audits.

**4.5.3 Vice President Operations**

- ▶ Develop quality documents.
- ▶ Review quality plans.
- ▶ Review engineering specifications, procedures, inspection and test plans and other documents to ensure appropriate quality.
- ▶ Participates in review meetings to assess the quality program for adequacy and appropriateness and to ensure that a level of acceptable quality is maintained.

**4.5.4 Quality Control Manager**

- ▶ Operate and maintain quality system.
- ▶ Represent the company on quality matters.
- ▶ Review and approve quality documents.
- ▶ Assign Inspectors to perform quality inspections.
- ▶ Perform indoctrination and training of personnel.
- ▶ Maintain qualification records for quality personnel.
- ▶ Review nonconformance documents.
- ▶ Participate in liaison with customers for disposition of nonconforming items.
- ▶ Identify quality problems and recommend suitable corrective actions.
- ▶ Approve suppliers for inclusion in the List of Approved Suppliers.
- ▶ Review purchasing documents for conformance with quality requirements.
- ▶ Plan and supervise performance of internal quality audits.

**4.5.5 Quality Control Assistant**

- ▶ Administer the quality documentation system. (QA Index)
- ▶ Manage system for identification, collection and storage of quality records.
- ▶ Ensure that quality documents, and revisions, are authorized and distributed.
- ▶ Collect and record removal of obsolete quality documents from usage.
- ▶ Maintain up-to-date List of Approved Suppliers.

**4.5.6 Quality Inspector**

- ▶ Perform inspections.
- ▶ Verify inspections.
- ▶ Identify nonconforming items and prevent further processing, delivery or use of nonconforming items or services until satisfactory disposition.
- ▶ Verify disposition of nonconforming items.

**4.5.7 Vice President**

- ▶ Supervise and review work of Project Engineers.
- ▶ Review quality documentation to ensure conformance with requirements.
- ▶ Review technical documents to ensure contractual requirements are met.
- ▶ Participate in design reviews.

**4.5.8 Project Engineer**

- ▶ Review quality requirements of contracts and prepare quality plans.
- ▶ Define process and engineering specifications and procedures.
- ▶ Define inspection and calibration requirements and inspection and test plans.
- ▶ Initiate and participate in design reviews.
- ▶ Define requirements for purchased materials and services.
- ▶ Participate in supplier evaluations.
- ▶ Maintain material controls as required.
- ▶ Accept and sign off inspection and calibration documentation.
- ▶ Report incidences of equipment found out of calibration to Laboratory Manager.
- ▶ Perform process and testing operations in accordance with documented procedures using suitable personnel.
- ▶ Prepare written reports, when applicable, of results of experimental programs.
- ▶ Provide technical liaison with customer representatives.
- ▶ Initiate and/or recommend disposition of nonconforming items.
- ▶ Verify correction of nonconformances in cooperation with Quality Inspectors.

**4.5.9 Laboratory Manager**

- ▶ Review compliance with legislation for laboratory operations.
- ▶ Perform indoctrination and training of technical personnel.
- ▶ Maintain qualification records of technical personnel.
- ▶ Manage calibration system for inspection instruments and Laboratory Standards.
- ▶ Co-ordinate replacement, maintenance and repair of inspection and calibration equipment.
- ▶ Coordinate and provide maintenance of laboratory equipment.
- ▶ Prepare and/or review procedures for compliance with occupational health and radiation protection regulations and standards.
- ▶ Investigate consequences of faulty equipment and issue incidence reports.

**4.5.10 Drawing Office**

- ▶ Operate identification and storage system for drawings.
- ▶ Operate drawing office for preparation of drawings.
- ▶ Retain copies of signed drawings.
- ▶ Retain copies of drawings or sketches which are given drawing numbers.

**4.5.11 Information Systems**

- ▶ Operate data acquisition system for experimental programs.
- ▶ Prepare custom software for data acquisition system computer.
- ▶ Perform post-test data processing and archival.
- ▶ Control data acquisition system software.
- ▶ Perform software verification.

**4.5.12 Technologist/Technician/Welder**

- ▶ Perform specific tasks and projects in accordance with documented procedures under the direction of the Project Engineer.
- ▶ Perform process and testing operations in accordance with documented procedures and prepare written reports of results when applicable.

**4.5.13 Buyer**

- ▶ Purchase materials and services in accordance with written instructions.
- ▶ When an approved supplier is specified, ensure materials and services are purchased from suppliers selected from an up-to-date Approved Suppliers List.
- ▶ Establish and control traffic details of shipments.
- ▶ Coordinate Customs activities for imports.
- ▶ Maintain copies of documentation associated with purchased items and file information for easy retrieval.

**4.5.14 Receiver/Shipper**

- ▶ Identify and control incoming material until released.
- ▶ Establish and control traffic details for product shipments to subcontractors and customers.
- ▶ Coordinate all customs activities for exports.
- ▶ Assure compliance with legislation prior to transportation of goods.
- ▶ Responsible for prescribed substance and uranium accountability.

**4.5.15 Controller**

- ▶ Assign shop order numbers from master list.
- ▶ Initiate contract reviews and issue new orders.
- ▶ Maintain documentation records of contract details and reviews.
- ▶ Assign document numbers for technical reports and memoranda.

**4.6 Personnel Qualifications**

It is the intent of SL to have competent personnel at all levels of operations. SL employs engineers, technologists and technicians experienced in laboratory processes to perform work. The assessment of personnel qualifications is based on academic and work related experience and substantiated by satisfactory performance.

Inspection personnel shall be qualified and certified in accordance with documented procedures.

Personnel who perform quality audits shall be qualified and certified in accordance with documented procedures.

## **5. QUALITY SYSTEM**

### **5.1 General**

This manual describes the overall quality system in place to fulfil the requirements of customer contracts and is intended to meet the applicable requirements of standard CAN/CSA-ISO-9001 (1994) to assure that products and services conform to specified quality requirements. The applicable quality requirements of specific customer contracts, such as requirements for other quality standards (e.g. CAN/CSA N286.0, CAN3-Z299, 10CFR50 Appendix B, 10CFR Part 21, or ASME-NQA-1) are documented in Quality Plans which are prepared, as appropriate, for each contract.

Upon receipt of a customer contract, a unique Shop Order Number is assigned by the Controller from the SL master list before work commences. Documentation for each contract is identified by the Shop Order Number.

A Project Engineer is assigned by the President, or CEO, to have the primary responsibility for the work to be performed for each contract. It is intended that operations shall be undertaken in conditions which allow controls to be exercised. The extent and degree of control required for a given contract is defined by the Project Engineer, in consultation with the Quality Control Manager and the appropriate Vice President, and approved by the President or CEO.

Quality Inspectors, who do not have direct responsibility for performing the work involved, shall be assigned by the Quality Control Manager. Quality Inspectors have the primary responsibility for quality inspections and shall have sufficient authority to identify and report any quality problems, as well as to prevent further processing or use of nonconforming items or services, pending satisfactory disposition.

### **5.2 Quality System Procedures**

Quality system procedures shall be prepared to describe the implementation of applicable sections of this manual. The structure and level of detail of these procedures shall be appropriate to the type of activity and the experience and qualifications of the personnel who normally perform the work.

In general terms, the procedures shall specify the purpose and scope of the activity:

- ▶ What activity shall be done by whom.
- ▶ When, where, and how the activity shall be done.
- ▶ What materials, equipment and documents shall be used.
- ▶ How the activity shall be controlled and recorded.

A list of the quality procedures which have been generated at the time of issuing of the latest revision of this manual is given in Section 24.

### **5.3 Planning**

The Project Engineer shall review the specifications and requirements of the customer contract and, in consultation with the Quality Control Manager, prepare and issue a Quality Plan for the contract. This Quality Plan shall define the quality activities to be performed to fulfil the requirements of the contract. The Quality Plan shall describe the inspection requirements and personnel responsibilities for the activities.

The Quality Plan shall be reviewed and signed by the Quality Control Manager and a management representative, normally the President, and if required by contract, by the customer representative. The approved Quality Plan shall be distributed to personnel performing activities which may affect quality for that contract. Throughout the life of the contract, the Plan shall be updated as necessary to reflect any revisions. Revisions shall be distributed to applicable personnel. A copy of the Quality Plan shall be submitted to the customer representative.

### **5.4 Work Procedures**

Instructions, procedures and drawings shall be prepared, as appropriate, under the direction of the Project Engineer to describe the work to be performed for a given task or project. An inspection plan which includes appropriate checklists shall be prepared (or incorporated in the above instructions or procedures) to describe the required quality inspections.

These documents shall be reviewed and approved in accordance with the requirements of this manual and the specific Quality Plan for the contract. Documents shall be submitted, as required, to the customer representative and applicable jurisdiction for approval prior to proceeding with the work.

During the course of the work, the documents shall be updated and revised as necessary to reflect any changes or revisions which shall be processed and approved in the same manner as the original documents. Corrections to documents, minor changes and improvements in procedures which the customer representative is in agreement with, may be documented in a Change Notice. Such changes may be implemented as required and the Change Notice, with the customer representative's agreement, signed at a later convenient time by the customer representative.

## **6. CONTRACT REVIEW**

### **6.1 Contract Review**

Upon receipt of an order or contract, a review of the customer contract shall be performed to ensure that the technical and quality requirements are adequately defined, understood, and documented. If requirements differ from the proposal, were not included, or were otherwise not anticipated, the customer representative and, if appropriate, the customer's purchasing agent shall be notified and the differences shall be resolved to the satisfaction of the customer and SL prior to proceeding with the work.

The capabilities to meet the contractual requirements shall be reviewed by appropriate quality and production personnel. Checklists, or other suitable means shall be used to verify and record the reviews. The contract review shall be documented and contracts that are acceptable shall be approved by the President or CEO.

### **6.2 Contract Amendments**

Contract amendments shall be subjected to the same review processes as the original contracts and approved by the President or CEO. Notification shall be distributed to the same personnel, or designated functions, as the original contract. Minor changes that do not significantly affect the technical and quality aspects of a contract may be approved solely by the President or CEO, at their discretion.

### **6.3 Contract Records**

Copies of contract documents, including records of contract reviews, shall be retained by the Controller in the Contract Files.

## **7. DESIGN CONTROL**

### **7.1 General**

Design, when required for a contract, shall be suitably defined, controlled, reviewed and verified to assure the specified customer requirements are met. The details of the design and associated data, including reviews and verifications, shall be documented by the Project Engineer, or designate, and retained in the Project File.

### **7.2 Design Input**

Applicable design inputs, typically in the form of specifications or work descriptions from customers or jurisdictions, shall be identified, documented and reviewed for adequacy and appropriateness. Incomplete, ambiguous or conflicting requirements shall be resolved and documented.

The design inputs should identify design criteria, materials, and any processes that require development and analysis, including prototype testing to verify adequacy. Design input documents shall be prepared in a manner that facilitates periodic updating.

The design inputs shall be specified on a timely basis to the level of detail necessary to permit the design process to be carried out in a correct manner.

### **7.3 Design Output**

The design output shall be documented in terms that can be verified and validated against the design input requirements and contain or reference the acceptance criteria. Design outputs shall conform to appropriate regulatory requirements and identify characteristics that are crucial to safe and proper functioning. Design output documents, including calculations, procedures, drawings, and analyses, shall be reviewed and approved prior to release.

### **7.4 Design Review**

The adequacy of the design shall be reviewed to the extent appropriate for the application by competent persons other than those who performed the design. The design review shall be planned, with a defined scope, and shall involve the various functions concerned with the scope and aspects of the design being reviewed. Design review meetings shall be held in a timely manner dependant on the type and complexity of the design. The meetings should include the Project Engineer, applicable Vice Presidents, the personnel who performed design review or verification activities, and other personnel as necessary or appropriate. The proceedings shall be documented by the Project Engineer, or designate.

Recommendations for design changes or further calculations or verifications which arise from the design review shall be implemented by the Project Engineer.

## **7.5 Design Verification**

Design verification, if applicable, to ensure that the design output meets the input requirements shall be performed and documented by the Project Engineer and reviewed by the Quality Control Manager prior to the design being used. The design verification may include such activities as performing alternate calculations, comparison to similar proven designs, or undertaking tests and demonstrations. The appropriateness of the verification activity to the new design should be reviewed.

## **7.6 Design Validation**

Design validation, if applicable, shall be performed to ensure that the final product conforms to the specified requirements. The results of the design validation shall be documented by the Project Engineer, reviewed by the Quality Control Manager, and included in the design records. Design validation may include such activities as commissioning, testing, pressure test, etc.

## **7.7 Design Changes**

Any changes to the design inputs, including field changes, shall be identified, documented and subjected to the same review and approval as the original. Design changes shall be reviewed and evaluated as to their effects on other aspects of the design, and the verification and validation processes. The design changes shall be communicated to all concerned to ensure that authorized changes, and only those, are implemented.

## **8. DOCUMENT CONTROL**

### **8.1 Document Approval And Issue**

Documents which affect quality shall be reviewed for adequacy and approved prior to being issued. Where required, documents shall be submitted to the customer representative and/or applicable jurisdiction for approval prior to being released. The review and approval requirements for the various types of documents are generally specified in the corresponding sections of this manual and in supporting procedures. The Project Engineer shall be responsible to ensure that documents which are in use are approved, are the correct issue, and are available to assigned personnel at the required time and place.

### **8.2 Master List of QA Numbers**

Quality documents shall be assigned identification numbers from the Master List of QA Numbers, which is maintained by the Quality Control Assistant, to ensure that unique numbers are assigned for each document. The latest revision number and date of issue for each document shall be recorded in the Master List.

### **8.3 Document Distribution**

Quality documents shall be distributed, normally by the Quality Control Assistant, in accordance with a distribution list prepared by the issuer which records the name, date and signature of recipients. The original documents are stored with the corresponding distribution list in the Central File, except for certain types of documents, such as inspection reports, drawings and procurement documents, which are stored separately in accordance with specific instructions. Revisions to documents are also stored in the Central File with the corresponding distribution list and shall be issued to the same recipients as the original, unless otherwise justified.

### **8.4 Drawing Control**

Drawing numbers and their revision numbers shall be issued by the Drawing Office from the Drawing Master List. The original drawings, or hard copies of electronic drawings, shall be maintained in a central Drawing File. The records of approval of drawings shall be maintained by the Drawing Office.

### **8.5 Document Changes**

Revisions to documents shall be suitably identified and subjected to the same review and approval as the original, and submitted to the customer representative or applicable jurisdiction, where required. Minor changes to procedures and instructions may be documented in a Change Notice. The Project Engineer shall prepare and submit to the customer representative any requests for changes required to customer's documents. A record of any such transactions shall be maintained in the Project File.

## 9. PURCHASING

### 9.1 General

Materials and services shall be purchased in accordance with written instructions which assure that procured items are adequate to meet the requirements of customer contracts.

### 9.2 Selection of Control and Inspection Level

The quality requirements for purchased product shall be determined by the Project Engineer and reviewed by the Quality Control Manager in accordance with the applicable Quality Plan. The control and inspection levels shall be clearly indicated on procurement documents. The guidelines for determining the appropriate quality requirements for the control and inspection levels for purchased products are given in Section 9.10. The following factors shall be considered for determining the appropriate control and inspection levels to be assigned for purchased products.

- **Design process complexity** - The complexity of carrying out the design, analysis and development of the product or services should be evaluated.
- **Design maturity** - The availability of designs that are known and proven, either by performance testing or field experience, should be evaluated. Market availability and prospective supplier capabilities should also be considered.
- **Production process complexity** - The complexity of production, i.e the number of processes involved and the difficulty of each process, combined with the difficulty of achieving or verifying product or service characteristics, as well as the general state of the art in the field, should be evaluated. Market availability and prospective supplier capabilities should also be considered.
- **Product or service characteristics** - The inherent complexity of the products or services, such as the number of interrelated characteristics, the criticality of each characteristic for performance, the number of moving parts, strength, resistance to corrosion, creep, physical and chemical properties, etc. should be evaluated..
- **Economics** - Factors should be considered in terms of the probability of failure and the economic consequences of that failure.
- **Safety** - Factors should be considered in terms of the probability that failure will occur and the consequences of that failure. The safety impact must be considered for both operating personnel and the public, with greater weight assigned to public safety.

### **9.3 Supplier Evaluation**

The procurement documents shall indicate if there is a requirement for products to be purchased from an approved supplier. If an approved supplier is required, the supplier's capability to provide acceptable product shall be evaluated and only those suppliers which meet the requirements shall be considered. The Buyer shall have an up-to-date list of approved suppliers available for review.

Supplier evaluations shall be performed and documented in accordance with written procedures, based on source evaluations, inspections and surveys, previously demonstrated capability and performance, or third party approval by a recognized authority, as deemed necessary to assure that the supplier is suitable to provide materials and services which conform to appropriate procurement requirements. Supplier evaluations, which may be performed and documented by various personnel, shall be approved by the Quality Control Manager.

### **9.4 Instruction to Purchase**

An "Instruction to Purchase" (IP) document shall be prepared by the Project Engineer, or designate, to provide the relevant information and instructions, including technical and quality requirements, for the Buyer to procure the required product.

The information shall be entered into the purchasing system database by the Buyer and the final IP which is printed by the computer program from the database shall be signed by the Project Engineer, or designate, and reviewed by the Quality Control Manager for adequacy to meet the quality requirements, in accordance with the guidelines given in the applicable Quality Plan.

### **9.5 Purchase Order**

A "Purchase Order" (PO) shall be printed by the computer program using the same information from the database that was entered for the IP. The Buyer shall verify the information, sign the PO, and issue it to procure the required product. Unless specifically requested, the PO is not normally seen or reviewed by the Project Engineer or quality personnel.

### **9.6 Changes to Purchase Order**

Any changes to an IP shall be subject to the same review as the original. Revisions to a PO must be based on an approved change to the relevant IP.

**9.7 Documentation Provided by Supplier**

Copies of any documentation provided by suppliers, such as Material Test Reports, Certificates of Conformance, Calibration Certificates, etc. shall be identified by the PO number and placed in the relevant PO File for retrieval and reference.

**9.8 Review of Purchasing Documents**

Procurement documents and reference data shall be available for review by the customer representative and the applicable jurisdiction.

**9.9 Verification of Purchased Product**

When it is intended to verify purchased product at the supplier's premises, the planned arrangements and method of product release shall be specified in the purchase order.

When specified in the contract, the customer representative shall be afforded the right to verify, at the supplier's premises and at SL, that the purchased product conforms to the specified requirements. Such verification shall not be used as evidence of effective control of quality, nor absolve SL of the responsibility to provide acceptable product, nor preclude subsequent rejection by the customer.

**9.10 Control and Inspection Levels****CONTROL LEVEL**

- N** Items are standard commercial items and have no special controls.
- A** Items are of standard commercial quality and have no special controls. Manufacturing controls, material controls or controlled drawings are not required. Suppliers shall be approved unless otherwise justified.
- B** Items must be purchased with certificates of conformance that the applicable specifications (drawing, mil-spec, etc.) of the purchase order are met. During processing, products shall be positively identified by group (lot, component, part number, etc.) and lot traceability shall be maintained throughout processing. Suppliers shall be approved unless otherwise justified.
- C** Items must be purchased from approved suppliers with certificates of conformance that the applicable specifications of the purchase order are met. Copies of test data, material test reports, etc. are required. Lot control and traceability of products are required and documentation of such must be provided by the supplier. During processing, items shall be assigned individual identification (which shall distinguish those items otherwise identical) and traceability of items shall be maintained throughout processing from receipt to final inspection.

**INSPECTION LEVEL**

- N** Items are standard commercial items. A completed Receiving Inspection stamp is required, however, quality approval of procurement documents is not required.
- A** Standard inspection practices shall be followed to verify compliance to requirements. A Receiving Inspection stamp on a copy of the packing slip or Purchase Order shall be completed by the receiver. Inspection reports, if applicable, shall be filled in, signed and dated.
- B** Sample inspection shall be performed by an Inspector to verify compliance to approved specifications and drawings. An appropriate sampling plan for inspections shall be determined in accordance with an acceptable standard, such as MIL-STD-1916, or equivalent. Instrumentation used for inspections shall be in current calibration. Applicable inspection reports and checklists shall be dated and signed by the Quality Inspector.
- C** Full (100%) inspection shall be performed by an Inspector to verify compliance to approved specifications and drawings. Inspection documents must be retained and retrievable for reference. Instrumentation used for inspections shall be in current calibration. Applicable inspection reports and checklists shall be dated and signed by the Quality Inspector.

## **10. CUSTOMER SUPPLIED PRODUCT**

Upon receipt, customer supplied items shall be examined for completeness and proper type and to detect possible damage in transit. A Receiving Inspection Report stamp shall be placed on a copy of the packing slip which accompanies the item(s). The report shall be completed and signed by the Receiver to indicate that the items received match the items listed, including any required documentation. Further receiving inspection is not required unless actual characteristics are needed for subsequent work or unless specified in the contract. Examination may be deferred until further processing is scheduled if items are in sealed containers or have special preservation or packaging.

A copy of the packing slip with the Receiving Inspection Report and any incoming inspection reports shall be placed in the Customer Traffic Records, filed under the applicable shop order number by the Receiver.

The quality requirements of customer supplied items are the customer's responsibility. The Project Engineer has the responsibility to verify any customer certifications. Customer supplied items shall be controlled from receipt onwards in accordance with specified contractual requirements and the requirements of this manual. Items shall be suitably protected against damage or loss during storage and handling for the duration of the customer contract, or for the duration as specified in a customer contract.

Any items found damaged, lost, nonconforming or otherwise unsuitable for use, either on receipt or while in custody, shall be promptly identified, tagged and reported in writing to the customer representative.

## **11. PRODUCT IDENTIFICATION AND TRACEABILITY**

The Project Engineer shall specify suitable methods for product identification as appropriate. This may be done by marking, tagging, routing cards, or location of the product or its container, either individually or in batches, as required.

The Project Engineer, or designate, shall specify suitable methods to positively identify each item, or batch, to the applicable drawing, specification, other technical document, or the applicable purchase order number, from receipt through processing, to the final product.

Where traceability is required by contract or jurisdiction, or both, items shall be assigned a unique identification which shall distinguish those items which are otherwise identical but which have been produced in separate batches. This identification shall be recorded on process, inspection and test records where traceability is specified.

## **12. PROCESS CONTROL**

### **12.1 General**

Detailed plans, such as instructions, procedures and drawings, which adequately describe the processes to be performed shall be prepared to ensure work is carried out under controlled conditions. The plans shall be prepared under the direction of the Project Engineer and reviewed by the Quality Control Manager, or designated inspector, to assure that quality requirements are met.

### **12.2 Instructions and Procedures**

Instructions and procedures shall be prepared to include, as applicable, the following information suitably described and documented:

- ▶ Document reference number and shop order number (contract reference).
- ▶ Objective and scope.
- ▶ Any specific qualification requirements of personnel who perform the work.
- ▶ Instrumentation to be used and calibration requirements.
- ▶ Detailed description of work to be performed and personnel responsible.
- ▶ Detailed description of equipment to be inspected or tested.
- ▶ Description of measures to be taken to identify and control materials and components to ensure only correct and accepted items are used.
- ▶ Inspection and test points and procedures to be followed, indicating hold points which require witnessing or verification by customer or jurisdictional representative, beyond which the work shall not proceed.
- ▶ Identification of inspection and test points where a history of usage of measuring and test equipment shall be maintained.
- ▶ Reference to any sampling plans and indication of where they will be used.
- ▶ Acceptance criteria to be applied.
- ▶ Indication of what subcontractor's services will be employed and the specification of standards to be applied to subcontracts, including the definition of verification of quality of subcontractor's work.
- ▶ Definition of, or reference to, how verification of compliance to any special process procedures will be accomplished and documented.
- ▶ Reference to where lots or batches will be used.
- ▶ Suitable checklists to ensure that required operations have been performed satisfactorily and that unacceptable items are not used.
- ▶ Customer notification points as required by contract.

### 12.3 Drawings

Drawings and sketches shall be prepared to include, as applicable, the following information suitably described and documented:

- ▶ Document reference number and shop order number (contract reference).
- ▶ Detailed description of equipment to be fabricated and/or work to be performed.
- ▶ References to applicable inspection and test procedures to be followed.
- ▶ Signatures of personnel who performed preparation, review and approval of drawing.

Drawings or sketches which are issued shall be suitably stamped "Preliminary Only" or "Approved for Production". Only drawings or sketches which are stamped "Approved for Production" shall be used for performing work.

The term sketches in this manual refers to drawings prepared by other than Drawing Office personnel and which are uniquely identified and used for production work. Sketches or figures which are used for illustration purposes, such as figures in reports, are not included and do not require unique identification.

### 12.4 Special Processes

Special processes are those processes for which the results cannot be directly examined to establish full conformance, and assurance of satisfactory conformance depends on evidence obtained during the process.

In such cases the process shall be accomplished under controlled conditions by qualified personnel using approved, documented procedures and equipment in accordance with applicable codes, standards, specifications, criteria and contractual and jurisdictional requirements.

The Project Engineer shall define, and the Quality Control Manager shall review, the qualifications necessary for personnel, procedures or equipment for special processes where the requirements are not covered by existing codes or standards, or where the quality requirements of the item or service exceed the requirements of established codes or standards.

Documentation, which shall be controlled by the Project Engineer, shall indicate personnel responsible and methods to be applied for monitoring special processes.

Documentation shall be maintained by the Quality Control Manager for qualified personnel, processes or equipment.

## **13. INSPECTION AND TESTING**

### **13.1 General**

Inspections shall be performed on items purchased, in-process, or completed in accordance with instructions which may be specified in procedures, inspection plans or checklists to ensure that only acceptable items are used and that the final product or service meets customer contractual requirements. The Project Engineer shall issue approved instructions as necessary describing the inspection procedures to be followed and including acceptance criteria and hold points. These procedures shall include suitable checklists to ensure that only acceptable items with completed documentation are used.

Generally, an Inspection and Test Plan shall be prepared by the Project Engineer to define the inspections and/or tests to be performed for a contract, or phase of a contract. The inspection procedures and checklists to be used shall be referenced and any customer hold points shall be specified. The Plan shall be signed by the Quality Control Manager and by management and submitted to the customer representative for approval. A copy shall be maintained up to date and retained in the project files by the Project Engineer.

Quality Inspectors shall be assigned by the Quality Control Manager and shall not have responsibility for the work they are inspecting. Where inspection of an item is not feasible, the process methods shall be monitored as described in Section 12.4, "Special Processes".

Nonconforming items shall be positively identified as such wherever found and segregated to avoid unauthorized use. Nonconforming items shall be suitably dealt with and documented as per Section 16.

Inspection records shall be retained in the Project Files and available to the customer representative or applicable jurisdiction upon request.

### **13.2 Receiving Inspection**

The Receiver shall identify and control incoming items. A Receiving Inspection stamp shall be placed on a copy of the applicable packing slip or Purchase Order. The stamp shall be signed by the Receiver to indicate that the items received match the items ordered, including any required documentation.

### **13.3 Incoming Inspection**

Incoming items shall be identified and further inspected when required by the Purchase Order and/or the applicable inspection plan or checklist. Incoming inspection reports shall be verified by the Quality Inspector before items are released by the Project Engineer.

Objective evidence provided by the supplier shall be reviewed by the Project Engineer to determine that adequate quality verifications were exercised.

Where incoming material is released for urgent production purposes, that material shall be positively identified and recorded to permit immediate recall and replacement in the event of subsequent nonconformity to specified requirements.

#### **13.4 In-Process Inspection**

Items in process shall be identified and inspected as required by the applicable inspection plan or checklist and held from further processing until required inspections are completed and verified by the Quality Inspector.

Where material is released for urgent production purposes, that material shall be positively identified and recorded to permit immediate recall and replacement in the event of subsequent nonconformity to specified requirements. Where inspection is not feasible, the process methods shall be monitored as specified in Section 12.4.

Nonconforming items shall be identified and removed from the working area to avoid unauthorized use. Nonconforming items shall be suitably dealt with and documented in accordance with Section 16.

#### **13.5 Final Inspection**

Final items shall be identified and inspected as required by the applicable inspection plan or checklist. Records shall be reviewed and verified by the Quality Inspector.

Inspection records shall be made available to the customer representative and the applicable jurisdiction prior to submitting items for acceptance. Only those items which fully meet the contract requirements and for which the associated data and documentation are available and authorized shall be provided to the customer.

#### **13.6 Test Control**

The Project Engineer shall ensure that suitable test procedures are prepared and approved as necessary for experimental programs and that the tests are conducted in accordance with the appropriate test procedure. Suitable checklists shall be provided to record that the required loop, test equipment and instrumentation setups have been accomplished.

The Project Engineer shall assure, and the Quality Inspector shall verify, that test data and results are suitably documented and evaluated by responsible authority and that experimental requirements have been satisfied.

A log book shall be maintained by the Project Engineer during the performance of experiments. Test anomalies, deviations, or nonconformances to test procedures or of the equipment being tested shall be noted in the log book and reported to the Project Engineer. Nonconformances shall be fully documented in a Notice of Nonconformance, in accordance with Section 16.

### **13.7 Inspection and Test Records**

Documentation shall be generated and maintained by the Project Engineer, or designate, in Project Files to adequately support and substantiate inspections, calibrations, and tests performed. These records provide objective evidence of conformance to the contractual and jurisdictional requirements.

Records shall be retrievable and available upon request to the customer representative or applicable jurisdiction for analyses and review.

## 14. INSPECTION AND MEASURING EQUIPMENT

### 14.1 General

Inspection and measuring equipment shall be monitored and maintained at a level appropriate to the technology and operational requirements and shall be used in a manner which ensures that measurement uncertainties are known and are consistent with the required measurement accuracies.

The inspection and measuring equipment used as master gauge standards and the secondary standards used to calibrate other equipment and instrumentation in the laboratory shall be inspected and certified at regular, specified, intervals. Such certification shall show traceability to National Standards, or where such standards do not exist, the basis used for calibration shall be documented. The recommended frequency of calibration shall be specified.

The calibration records for the master gauge standards and secondary standards shall be maintained by the Laboratory Manager.

### 14.2 Control Procedure

It is the responsibility of the Project Engineer to identify the measurements to be made for a project and to select suitable measurement procedures and measuring equipment, including equipment used for special processes, for the accuracy required.

The inspection and measuring equipment shall be suitably calibrated in accordance with approved written procedures. Measuring equipment used shall be in **current calibration** and maintained to assure the required uncertainty of the measurements. Where practical, the calibration status of instruments shall be identified by means of a sticker or tag, otherwise an approved identification record shall be maintained.

The Project Engineer shall ensure that measurement verification records are maintained for calibrations pertinent to his project. Calibration records shall, as a minimum, include:

- ▶ Identification number.
- ▶ Type of device.
- ▶ Location (where practical).
- ▶ Date of calibration.
- ▶ Method of calibration referencing procedure used.
- ▶ Results of calibration including as-found condition.
- ▶ Recommended frequency of calibration.
- ▶ Acceptance criteria.
- ▶ Any corrective actions taken.

The Laboratory Manager, or designate, shall ensure that the handling and storage of inspection and measuring equipment are such that the accuracy and fitness for use are maintained. Where applicable, usage records of gauging equipment shall be maintained.

If measuring equipment is found to be out of calibration, the validity of previous inspection and test results which used that equipment shall be reviewed and documented by the Laboratory Manager. If the validity of previous inspection and test results may have been affected, the customer representative for the affected contract shall be notified.

The recommended frequency of calibration shall be included in the calibration procedures for the measuring instruments used for recording data during experimental programs. Typical uncertainty calculations should also be included in the calibration procedures.

### **14.3 Verification of Software**

The software used for data acquisition during calibrations and experiments is generally custom written by SL personnel. The Project Engineer is assigned the primary responsibility to ensure that the software used to acquire data and to process data into engineering units for display, printing, plotting and analyses meets the requirements of the experiment and that the calculations performed are accurate and complete and meet the specifications of the customer contract.

Unique software version numbers shall be assigned for the pertinent calculation subroutines. The software versions shall be documented and the coding shall be filed in a manner to permit retrieval for future reference or auditing.

Personnel who were not involved in coding the software shall independently perform such calculations as necessary to verify that the software produces the correct engineering values.

The verification process shall be documented in sufficient detail to provide the basic equations and functions used in the software for converting the signals to engineering values, for calculating derived values such as flow rate, thermodynamic quality, subcooling, etc. Commercial software programs such as MathCAD may be utilized for the verifications.

## **15. INSPECTION AND TEST STATUS**

### **15.1 General**

Means shall be provided for assuring that required inspections have been performed and that the acceptability status of items is known throughout the production process. The inspection status shall be maintained to ensure that only acceptable items are used in the final product. Generally, an Inspection and Test Plan shall be prepared and maintained for each project, or major phase of a project.

### **15.2 Inspections**

Inspection plans are prepared, as applicable, by the Project Engineer for each project, to describe in writing when and where inspections will be performed. The inspection plans, which are generally included as part of a Fabrication or Test Procedure, shall include checklists to provide objective evidence that specified requirements have been met. The checklists shall include, or reference as appropriate, instructions and procedures which describe the activities to be performed, the criteria for acceptance, etc., as specified by the contract. The checklists shall be updated as necessary to reflect any revisions to the inspections and the revisions shall be processed and approved in the same manner as the original.

The completion of inspections shall be recorded on the checklists and/or inspection and test plans. Data shall be recorded using the forms included or specified in the plan or checklist.

### **15.3 Status Indicators**

Tags, stamped impressions or other physical markings shall be placed on items or containers where practical to indicate the acceptance of items. Other suitable means may be employed as appropriate.

Only Quality Inspectors shall have the authority for controlling status indicators including tags, stamps or other means of indicating the inspection status. The identity of the inspector shall be shown on inspection records. Reject tags can be applied by any personnel performing the work if a defect or nonconformance is observed. Reject tags may be removed only by a Quality Inspector upon satisfactory disposition.

### **15.4 Quality Control Status**

When an Inspection and Test Plan is not used for a project, a Quality Control Status checklist that indicates the overall status of the relevant quality information about the work being performed shall be prepared and used for the contract. Quality Control Status checklists shall be updated monthly by the Project Engineer and retained in the Project Files with copies given to the Quality Control Manager.

## **16. NONCONFORMING ITEMS**

### **16.1 General**

A nonconformance is any condition found at any stage during inspection in materials, parts or documentation which fails to meet the applicable requirements or specifications.

### **16.2 Identification**

Nonconforming items shall be clearly marked as such and held for evaluation. The Project Engineer shall be promptly notified. Tagging, marking or other positive means of identification shall be used. The identification tag shall reference the nonconformance documentation, ie. the notice of nonconformance number. Holding areas or other suitable methods for segregating nonconforming items to prevent unauthorized use, shipment or mixing with conforming items shall be provided as much as practical.

### **16.3 Evaluation and Documentation**

Reports on nonconforming items shall be prepared by the person who discovers the nonconformance, and include, as a minimum, identification of the nonconforming item, detailed descriptions of the nature and extent of the nonconformance, and the proposed method of disposition. The Notice of Nonconformance shall be reviewed by the originator, the Project Engineer and the Quality Control Manager.

### **16.4 Disposition**

Disposition of nonconforming items shall be in one of the following ways:

- a) Reworked to meet the specified requirements.
- b) Accepted with repair, with customer approval.
- c) Accepted as is, without repair, with customer approval.
- d) Re-graded for alternative uses.
- e) Scrapped or returned to vendor.

Where nonconforming items can be reworked and/or repaired to meet the acceptance criteria, such items shall be subjected to the same inspections and tests as originally specified. For items accepted with repair, or as is, without repair, approval by the customer representative is required, where applicable. The disposition of nonconforming items shall be verified by the Quality Control Manager.

### **16.5 Notification**

Information regarding nonconforming items shall be provided to appropriate personnel so that suitable corrective and preventative action can be taken, as described in Section 17. The Project Engineer shall, where applicable, notify in writing the customer representative of nonconforming items and, upon written approval from the customer representative, shall conduct the disposition of nonconforming items.

## **17. CORRECTIVE AND PREVENTATIVE ACTION**

### **17.1 General**

Conditions adverse to quality, including failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances, shall be suitably identified and documented. Each condition shall be classified whether or not it is significant so that corrective and preventative action may be taken when appropriate. The degree of corrective or preventative action is dependant on the nature of the problem, the related risk, and its effect on quality.

In cases where the conditions adverse to quality are considered to be significant, the following information shall be documented in a Corrective Action Report. Such documentation may be initiated by any person, but shall be reviewed by the affected production personnel, the Quality Control Manager and the President.

- a) Identification
- b) Classification
- c) Cause analysis
- d) Corrective action
- e) Follow-up

The information concerning corrective and preventative actions shall be reviewed and taken into consideration during management reviews.

### **17.2 Identification**

Conditions adverse to quality are generally documented in an equipment incidence report or a notice of nonconformance, however, other types of conditions may occur. The extent to which other items or activities may be affected, the frequency of occurrence, and any other pertinent information shall be reviewed and the significance of the adverse conditions shall be classified by the Quality Control Manager, the designated quality inspector, or the Project Engineer, in accordance with Section 17.3. If the adverse condition is considered to be significant, a Corrective Action Report shall be prepared.

### **17.3 Classification**

Examples of conditions adverse to quality which may be classified as significant include:

- a) Deficiencies requiring substantial rework, repair or replacement.
- b) Damage to facilities requiring substantial repairs.
- c) Non-conservative errors in computer software which has been approved for use.
- d) Loss of essential data.
- e) Repeated failures of instrumentation devices.
- f) Repeated failures to implement portions of approved procedures.
- g) Health and/or safety hazard.

**17.4 Cause Analysis**

For conditions adverse to quality which are considered to be significant, the root cause shall be determined and documented. The impact of the adverse condition on other related ongoing or future activities shall be evaluated.

**17.5 Corrective Action**

The actions necessary to correct conditions adverse to quality shall be determined and implemented. For significant conditions, suitable preventative measures to preclude repetition shall be determined and implemented. Preventative action is not necessarily required for every occurrence or for isolated incidents of a minor nature.

**17.6 Follow-up**

The implementation of corrective and preventative actions for conditions adverse to quality that are considered significant shall be verified by the Quality Control Manager. The effectiveness of the actions shall be assessed by surveillance, follow-up reviews or audits. If the actions to prevent recurrence are not effective, further analysis shall be performed to determine and correct the cause.

## **18. HANDLING, STORAGE, PACKAGING AND DELIVERY**

### **18.1 General**

The specific requirements of individual customer contracts for handling, storage, packaging and delivery of products, both in-process and finished, shall be described in written documents issued by the Project Engineer. Where specific requirements are not given, standard practices as described in general terms below shall be followed. A Quality Inspector shall verify that work performed is satisfactory.

### **18.2 Handling**

Handling, including lifting, turning, transfer, etc., shall be performed using suitable equipment and in a manner that precludes damage, deterioration or contamination of the equipment being handled.

### **18.3 Storage**

Suitable storage may include cleaning, painting, enclosures and special protective environments. The extent of preservation methods shall preclude deterioration of the equipment under normal circumstances over a reasonable length of time. A suitable interval for inspection of items to detect any signs of deterioration shall be specified by the Project Engineer.

Items stored shall be suitably identified and protected to minimize loss or damage. Specific procedures or instructions shall be issued when storage requirements for a particular contract exceed normal requirements. Examples would be long term storage or adverse environments.

### **18.4 Packaging**

Items shall be packaged and identified in accordance with the specified requirements. The cleaning, preservation, packaging, and marking of items shall be inspected by the Quality Inspector, who shall sign a copy of the packing slip, to ensure that contract requirements are met.

### **18.5 Delivery**

Delivery shall be in accordance with customer and jurisdictional requirements. Where specific requirements are not given, standard practices shall be used. Satisfactory traffic details shall be established to ensure a safe arrival at the destination.

## **19. QUALITY RECORDS**

### **19.1 General**

Documentation as described in this manual shall be generated and maintained to adequately support and substantiate inspections, calibrations, and tests performed. These quality records provide objective evidence of conformance to contractual and jurisdictional requirements. Records shall be available upon request to the customer representative or applicable jurisdiction for analyses and review.

### **19.2 Quality Records**

Quality records shall be identified in a manner suitable to allow them to be traceable and retrievable. Records shall be maintained for pertinent elements, such as:

- ▶ Primary standard certifications.
- ▶ Calibrations performed in accordance with approved procedures.
- ▶ Acceptability checks of precision tools and gauges.
- ▶ Control and disposition of nonconforming items and test anomalies.
- ▶ Material certifications.
- ▶ Inspection records and checklists.
- ▶ Functional test reports and data.
- ▶ Tests, approvals and audits by contractors, customers and government agencies.
- ▶ Indoctrination and training records of test personnel.
- ▶ Personnel, procedures and equipment quality records for special processes.
- ▶ Selection and surveillance records of subcontractors.

### **19.3 Final Documents**

Final quality documents shall be completed in ink. Any corrections to final quality records shall be made by putting a single stroke through the incorrect text and entering the correction clearly in the nearest blank space with an initial and date.

### **19.4 Storage of Documents**

Records shall be stored in a suitable environment to minimize deterioration or damage and to prevent loss. They shall be identified by the SL shop order number and the customer contract reference and filed in a manner to facilitate retrieval. The records shall include suitable identification of items, date and signature of inspection or test personnel, type of observation, the results, the acceptability, and any actions taken in connection with deficiencies noted.

These records shall be maintained for the period specified in the customer's contract, as required by regulatory authority, or for five years minimum.

### 19.5 Date Format

To avoid confusion when specifying dates, the dates on quality documents shall be given using the ISO standard format, YYYY-MM-DD (eg. 2002-03-06), or the long form with the month written (eg. 2002 March 6 or Mar. 6, 2002, etc.). The year shall be specified using a four digit format.

### 19.6 Test Reports

Test Reports, if applicable, shall be prepared and include the following information:

- ▶ Customer purchase order number and SL shop order.
- ▶ Date of test and date of report.
- ▶ Identification of item(s) tested.
- ▶ Applicable test specifications and acceptance criteria.
- ▶ Applicable test instrumentation including calibration details.
- ▶ Detailed description of test(s) performed.
- ▶ Test data.
- ▶ List of failed items.
- ▶ Summary of test results, including statements concerning equipment acceptability, unusual or repeated failures, etc.
- ▶ Signature of responsible authority who has reviewed the report.

### 19.7 Test Logs

Test log books, if applicable, shall provide the following information as a minimum:

- ▶ Identification of applicable test specification.
- ▶ Date and signature of person performing the work.
- ▶ Identification of test personnel.
- ▶ Date and signature of responsible Project Engineer.
- ▶ Record of notable events, in particular, test item failures.
- ▶ Record of component or module changes.
- ▶ Record of test setup changes or references to such changes.
- ▶ List of test equipment used, including name of equipment, manufacturer, serial and model numbers, and calibration status.

## **20. INTERNAL AUDITS**

### **20.1 General**

Audits are undertaken periodically to monitor the effectiveness and implementation of the overall quality system.

### **20.2 Audits**

Internal audits shall be performed annually by personnel who are familiar with the processes involved but are not responsible for the work they are auditing. The personnel performing audits shall be trained and qualified in accordance with documented procedures.

Internal audits shall be planned by the Quality Control Manager to monitor all elements of the quality program and shall be performed in accordance with written procedures and checklists. The internal audit shall be documented and should include at least the following items.

- ▶ Record of procedures, processes and items audited and the results.
- ▶ Evaluation of the effectiveness of implementation of the quality program.
- ▶ Identification of deficiencies, recommendations and notification of personnel.
- ▶ Schedule of corrective actions.
- ▶ Verification of implementation of corrective actions.

### **20.3 Corrective Action**

Any deficiencies identified during the audit shall be discussed with the responsible person and documented in an Audit Finding Report (sample given in Section 25) with a response due date. The President shall review the Audit Finding Report and, in consultation with the appropriate personnel, prepare a suitable response by the specified due date.

The auditor and the Quality Control Manager shall review the response for acceptability. When the reply is satisfactory, the report shall be given to the Quality Control Assistant to be placed in the Central File. If the completed reply is not received by the due date, or is not considered acceptable, the Quality Control Manager shall request that the President/CEO expedite the response to the audit findings.

### **20.4 Follow-up**

The auditor shall perform the necessary follow-up to verify implementation of corrective actions. If the actions are not implemented and completed in a reasonable time, the auditor shall notify the Quality Control Manager and the President/CEO to request priority for implementation.

## **21. TRAINING**

### **21.1 General**

Personnel shall be given indoctrination and training commensurate with the scope, complexity, or special nature of the activities, as well as the education, experience and proficiency of the person.

### **21.2 Quality Personnel**

Personnel who perform activities affecting quality shall be given indoctrination and training by the Quality Control Manager in the implementation of the quality program as per the applicable sections of this manual and related documents.

Inspection personnel who are designated by the Quality Control Manager to perform quality inspections shall not have direct responsibility for performing the work that they inspect.

Indoctrination and training records for quality personnel shall be maintained by the Quality Control Manager. An up-to-date record of educational qualifications, company sponsored courses, etc. shall be maintained in the employee's personnel file retained by the Laboratory Manager.

### **21.3 Technical Personnel**

Technical staff shall be qualified for the work they perform, commensurate with the scope of their activities, as well as their education, experience and proficiency. They shall perform the required technical operations under the direction of Project Engineers.

Persons in training may be used to perform specific tasks under the supervision of a qualified person, in which case the work performed shall be the responsibility of the qualified person and documentation produced shall be signed by both persons.

Indoctrination and training records for technical personnel shall be maintained by the Laboratory Manager. An up-to-date record of educational qualifications, company sponsored courses, etc. shall be maintained in the employee's personnel file retained by the Laboratory Manager.

## 22. SERVICING

Servicing is not a normal requirement of the work performed to fulfill customer contracts. If servicing is specified in a contract, suitable procedures shall be prepared for performing, verifying and reporting to meet the specified requirements.

## **23. STATISTICAL TECHNIQUES**

Use of statistical techniques is not a normal requirement of the work performed to fulfill customer contracts. If such is specified in a contract, suitable procedures shall be prepared for performing, verifying and reporting to meet the specified requirements.

**24. LIST OF QUALITY PROCEDURES**

Reference Number	Rev	Title	Date
QAP-01 Issue 2	2	Quality Assurance Manual	2002-10
QAP-02	6	Qualification Testing	2002-07
QAP-03	3	Procedures for Compliance With NRC Regulations for Reporting of Defects and Nonconformance	2002-04
QAP-04	3	Evaluation of Subcontractors and Suppliers	2002-04
QAP-06	2	Verification of Data Acquisition Software	2002-04
QAP-07	4	Purchasing, Shipping and Receiving	2002-10
QAP-08	1	Qualification and Certification of Personnel	2002-04
QAP-09	2	Preparation of Quality Plans	2002-10
QAP-10	1	Internal Audits	2002-04
QAP-11	1	Drawing Control	2002-04
QAP-12	0	Contract Review	2002-04
QAP-13	0	Design Control	2002-07
QAP-14	3	Document Control	2002-10

## 25. SAMPLE FORMS

New Order

Order Change Notice

QA Plan Checklist

Qualification Certificate

Design Review Checklist

Document Review List

Document Distribution List

Supplier Approval

Instructions to Purchase

Purchase Order

Supplier Evaluation Report

Inspection Report

Quality Reviewer Certificate

Inspector Certificate

Notice of Nonconformance

Instrument Calibration Certificate

Instrument Transmittal for Calibration Services

Equipment Incidence Report

Equipment Incidence Report Checklist

Quality Control Status

Software Verification Certificate

Auditor Certificate

Internal Audit Report

Audit Finding Report

Corrective Action Report

- Stamps and Tags
- "Receiving Inspection" Stamp
  - "Accepted" Inspection Tag
  - "Rejected" Inspection Tag
  - "Calibration" Instrument Tag
  - "Due for Inspection" Instrument Tag
  - "Rejected" Instrument Tag
  - "Approved for Production" Drawing Stamp
  - "Preliminary" Drawing Stamp

# NEW ORDER

FORM: 2002.05.13

Stem Laboratories Inc.

General Order Number:	Date:	Firm Price <input type="checkbox"/>
Customer:	Customer Representative:	
Customer Order Number:	Project Engineer:	
Project Name:		Proposal Number:

### CONTRACT REVIEW CHECKLIST

Description	Yes/No/NA	Technical	Quality	Comments
Are quality requirements defined and specified in contract?				
Are quality requirements adequately understood?				
Is a QA Plan required?				
Are technical requirements adequately defined in customer order?				
Do requirements differ from proposal? If yes, attach details.				
Are there requirements that were not anticipated? If yes, attach details.				
Have differences been resolved adequately?				
Are technical requirements understood?				
Does SL have required capability to fulfill contract? If no, attach details.				

Comments:

Shop Number	Description	Value
<b>Total Value</b>		

Technical Review:	Date:	Distribution: F. Stem G.I. Hadaller R.C. Hayes C.F. Forrest K.S. Shin E.R.C. Ayers Project Engineer (above) Accounting Purchasing
Quality Review:	Date:	
Management Approval:	Date:	

# ORDER CHANGE NOTICE

FORM: 2002.05.13

Stern Laboratories Inc.

General Order Number:	Change Notice No.	Date:	Firm Price <input type="checkbox"/>
Customer:		Customer Representative:	
Customer Order Number:		Project Engineer:	
Project Name:			
Shop Number	Description of Changes	Value	
			Total Value <input style="width: 100px;" type="text"/>

## CONTRACT REVIEW CHECKLIST

Description	Yes/No/NA	Technical	Quality	Comments
Are quality requirements defined and specified in contract?				
Are quality requirements adequately understood?				
Is a QA Plan required?				
Are technical requirements adequately defined in customer order?				
Do requirements differ from proposal? If yes, attach details.				
Are there requirements that were not anticipated? If yes, attach details.				
Have differences been resolved adequately?				
Are technical requirements understood?				
Does SL have required capability to fulfill contract? If no, attach details.				

Comments:

Technical Review:	Date:	Distribution: F. Stern G.I. Hadaller R.C. Hayes C.F. Forrest K.S. Shin E.R.C. Ayers Project Engineer (above) Accounting Purchasing
Quality Review:	Date:	
Management Approval:	Date:	

# QA PLAN CHECKLIST

FORM: 2002.05.13

Stem Laboratories Inc.

QA Plan Number:		Shop Order Number:		
Description	Acceptable (Yes / No / NA)	Technical	Quality	Comments
Title Page				
Record of Revisions				
Introduction				
Description of Work				
Personnel Responsibility and Qualifications				
Design Control				
Document Control				
Purchasing				
Process Control and Special Processes				
Inspections and Final Acceptance				
Verification of Software				
Inspection, Measuring and Test Equipment				
Nonconforming Items				
Handling, Storage, Packaging and Delivery				
Quality Records				
Comments:				
Project Engineer:			Date:	
Quality Review:			Date:	

# QUALIFICATION CERTIFICATE

FORM: 2002.05.14

Stern Laboratories Inc.

Document Number:	Certification Date:	Re-Certification Due:
Person Certified:		Employment Designation:
Title:		
Relevant Experience:		
Scope of Activities:		
SL Shop Number (if applicable):		
Basis of Certification:		
Signature of Evaluated Person:		Date:
Evaluated by:		Date:
Reviewed by:		Date:

# DESIGN REVIEW CHECKLIST

FORM: 2002.05.14

Stern Laboratories Inc.

Project Name:		Date:
Project Engineer:		Shop Order Number:
Scope of Review		QA Plan Number
Description	Yes/No/NA	Comments
Technical requirements are specified and documented.		
Applicable design inputs are identified and suitably documented.		
Supporting calculations and analyses are documented and available.		
Applicable regulatory requirements are identified.		
Applicable safety requirements are identified.		
Acceptance criteria are specified.		
Design is documented and expressed in terms of procedures and/or drawings.		
Design output documents are suitably identified.		
Adequacy of design has been reviewed by competent person who did not perform work.		
Distribution and control of design documents have been identified and established.		
Comments		
Prepared by:		Date:
Reviewed by:		Date:
Design verification has been performed by competent person and documented. <input type="checkbox"/>		
Verified by:		Date:





# SUPPLIER APPROVAL

FORM: 2002.05.14

Stern Laboratories Inc.

Supplier Number:	Expiry Date:	Original <input type="checkbox"/>	Renewal <input type="checkbox"/>
<b>Supplier Evaluated:</b> ..... ..... ..... .....			
<b>Applicable Products and Services:</b> ..... ..... ..... .....			
<b>Supplier's Quality Assurance Program:</b> ..... ..... .....			
<b>Applicable to:</b> <input type="checkbox"/> All orders <input type="checkbox"/> Only when specified			
<b>Approved for Above Products and Services:</b> <input type="checkbox"/> YES			
<input type="checkbox"/> Supplier Evaluation Report Attached <input type="checkbox"/> No Restrictions			
<input type="checkbox"/> Requires Corrective Action <input type="checkbox"/> Restrictions as noted below			
<b>Comments:</b> ..... ..... ..... ..... .....			
Prepared by:	Approved by:		
Date:	Date:		

**Stern Laboratories Inc.**

1590 Burlington Street East  
Hamilton, Ontario, L8H 3L3

**INSTRUCTIONS TO PURCHASE  
NOT A PURCHASE ORDER**

PURCHASE ORDER NUMBER:	DATE:	PAGE	OF
------------------------	-------	------	----

SUPPLIER:	ATTENTION:
	PHONE:
	FAX:

FOB:	PST Exempt	DATE TO SHIP
------	------------	--------------

CARRIER & ROUTING:	PPD COLL	TERMS
--------------------	----------	-------

ITEM	QUANTITY	DESCRIPTION	UNIT PRICE

QA APPLIES: (Y/N) <input type="checkbox"/>	CONTROL LEVEL (A, B, C) <input type="checkbox"/>	ASME CODE APPLIES: (Y/N) <input type="checkbox"/>
APPROVED SUPPLIER: (Y/N) <input type="checkbox"/>	INSPECTION LEVEL (A, B, C) <input type="checkbox"/>	MATERIAL CERTIFICATIONS: (Y/N) <input type="checkbox"/>
QA APPROVAL	DATE:	INCOMING INSPECTION REPORT: (Y/N) <input type="checkbox"/>
		ASME CODES TO APPLY:

ITEM	CHARGE NUMBER	COST PER CHARGE	REMARKS

REQUESTED BY:	APPROVED BY:	PURCHASE AGENT:
DATE:	DATE:	DATE:

SEND INVOICE TO:

**Stern Laboratories Inc.**

1590 Burlington Street East  
Hamilton, Ontario, L8H 3L3, Canada

**PURCHASE ORDER**

PURCHASE ORDER      DATE      PAGE      OF

SUPPLIER

DELIVER TO:  
**Stern Laboratories Inc.**  
1590 Burlington Street East  
Hamilton, Ontario, Canada  
L8H 3L3

F.O.B.

PST EXEMPT      PST EXEMPTION NUMBER  
57416362

CARRIER AND ROUTING

FREIGHT  
PPD      COLL

DATE TO SHIP

TERMS / CONDITIONS

ITEM	QUANTITY	DESCRIPTION	UNIT PRICE

QA PROGRAM APPLIES: (Y/N)  
ASME CODE APPLIES: (Y/N)

CONTROL LEVEL:  
INSPECTION LEVEL:

MATERIAL TEST REPORTS/ MATERIAL  
CERTIFICATIONS REQ'D: (Y/N)

CHARGE NUMBER:

REQUESTED BY:  
DATE:

APPROVED BY:  
DATE:

**-- IMPORTANT --**

- ORDER NUMBER MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, BILLS OF LADING, CARRIER PROVIDED FORMS, PACKAGES, & CORRESPONDENCE.
- INVOICES FROM SUPPLIERS IN CANADA - MAIL THREE COPIES OF COMMERCIAL INVOICE.
- INVOICES FROM SUPPLIERS OUTSIDE CANADA - (A) IMMEDIATELY MAIL THREE COPIES OF COMMERCIAL INVOICE AND ONE COPY OF THE CANADA CUSTOMS INVOICE TO OUR ORDERING ADDRESS, UNLESS OTHERWISE SPECIFIED ON THIS ORDER (B) IN ADDITION, THREE COPIES OF THE CANADA CUSTOMS INVOICES ARE TO BE SUPPLIED.

ADDRESS CORRESPONDENCE TO:

**Al Grant**

PURCHASING AGENT

Phone: (905) 548-5311

FAX: (905) 545-5399

X \_\_\_\_\_

# PURCHASE ORDER CONDITIONS

1. **Acceptance or Acknowledgement.** This order becomes a contract when the purchaser receives an acceptance thereof or upon seller making shipment of the goods ordered hereunder. The term goods in these terms and conditions shall be understood to include materials, components, services and facilities. The seller by communicating its acceptance to the purchaser or by shipment aforesaid, shall be deemed to understand and agrees that the terms and conditions herein shall bind both parties and that any terms or conditions contained in the acceptance or otherwise stipulated shall be deemed to be null and void and of no effect and the seller further agrees that notwithstanding its acceptance is of later date, the terms and conditions of this order shall govern the contract. The contract constituted as hereinbefore provided contains the entire agreement between the parties and no other terms and conditions, whether oral or written and whether precedent or subsequent in time, shall have any force or effect and failure of either party to enforce its rights hereunder shall not constitute a waiver of such rights or any other rights hereunder.
2. **Sellers Quotation.** Reference in this order to seller's quotation does not imply acceptance of any terms and conditions in such quotation unless they are expressly adopted herein. Any terms and conditions in such quotation which are inconsistent with the terms and conditions contained in this order shall be deemed to be null and void and of no effect.
3. **Processing of Order.** The seller understands and agrees as follows:
  - (a) that this order must not be filled at higher prices than last quoted or charged without notice to and authorization by the purchaser;
  - (b) that no charge will be allowed for boxing, packing or crating unless expressly agreed to;
  - (c) that it will mail invoices and bills of lading to office of mailing, indicating on invoices cash discount terms for prompt payment;
  - (d) that it will render a separate invoice for each order or shipment;
  - (e) that it will show the purchase order and item number(s) on all invoices, packages, bills of lading, etc. and all communications in reference thereto;
  - (f) all goods must be shipped by the carrier and route designated by the purchaser and any additional freight or cartage costs incurred directly or indirectly through the seller failing to observe this condition will be charged to the seller's account.
4. **Inspection.** The purchaser shall have free access, at all reasonable times, to the premises of both the seller and its subcontractors to review the progress of the work and to ensure that the goods are being furnished in accordance with this order and, except as otherwise agreed in writing, all shipments shall be subject to final inspection by purchaser after receipt by purchaser at destination. Such inspections shall not release the seller from any obligation under this order or any contract following thereupon.
5. **Defects.** If at any time after delivery of the goods to the destination point any defect or deficiency should appear due to faulty workmanship, material or design or if the goods or any part thereof fail to meet the requirements of this order the purchaser shall have the right in addition to any rights it may have under warranties or otherwise, to reject and return such goods for either full credit or refund of monies paid, at its choice, all charges collect including incoming charges. Without limiting the foregoing right of rejection the purchaser shall have the right to require that the seller promptly replace, repair or restore any faulty workmanship, material or design at the seller's expense and risk. The seller shall pay all transportation costs, if any, both ways between its plant or repair depot and the destination point. If the seller is unable or unwilling to effect such prompt replacement, repair or restoration, the purchaser may do so by using its own facilities or by outside contract and shall be entitled to charge the seller for its expenses directly or indirectly occasioned thereby. The provisions of this paragraph shall not be deemed to diminish, restrict or exclude the operation of any warranty implied or imposed by law.
6. **Cancellation and Changes.** The right is reserved to either cancel this order in whole or in part or to change it at any time upon notice in writing to the seller. If cancellation takes place, delivery shall be accepted of all goods and the purchaser shall only be responsible for the reasonable costs of work and materials incurred prior to the notice of cancellation. The actual costs incurred in the production of uncompleted goods shall be paid following delivery of the uncompleted goods to the purchaser's plant. In the event of material change that affects delivery or price, the seller shall immediately notify the purchaser and negotiate an adjustment. The seller agrees that any claim for adjustment in its favour must be made within a reasonable time after the change is ordered. No charges for extras will be allowed unless they have been ordered in writing by the purchaser and the price agreed upon. The provisions of this clause are without prejudice to the rights of the purchaser if deliveries are in arrears.
7. **Delivery and Payment.** The seller shall be responsible for arranging its design, manufacturing and shipping schedules so that the goods shall arrive at the required destination point in accordance with the delivery schedule specified in this order. If the goods are delivered to the destination point early, they shall be deemed to have not been delivered until the scheduled delivery date for purposes of determining when payment is due. The time for making payments shall be calculated from the date the invoice is received by the purchaser or the date that satisfactory goods and any required documents are delivered to the destination point, whichever is later unless alternate terms are stated on the face of this order. If an invoice is held or returned for correction the time shall run from the date the corrected invoice is received by the purchaser. Drafts will not be honoured.
8. **Delay.** Time shall be of the essence of this order or any Contract following thereupon. The seller will not be liable for delay in delivery due to causes beyond its reasonable control providing it gives the purchaser immediate notice in writing and requests a reasonable extension of time. Subject to the foregoing, in event of delay in delivery, the purchaser shall be entitled to terminate the contract without liability on account thereof and seller shall be liable for any damages sustained by the purchaser as a result of such delay.
9. **Indemnity.** The seller covenants and agrees to indemnify and save harmless the purchaser from any and all claim, loss or damages, including special, indirect and consequential loss or profit and loss of use, arising directly or indirectly from delay in delivery, product defects, any breach of the terms and conditions of this contract or any contract following thereupon and from any claims, losses or damages of whatsoever nature and kind for injury, fatal or otherwise, to persons and the destruction of or damage to property arising directly or indirectly from the construction, installation and supply of goods to be furnished hereunder or from anything undertaken or done in fulfilling the provisions of this order or any contract following thereupon.
10. **Industrial Property.** The seller agrees to indemnify and save harmless the purchaser from any claim or action arising from the alleged infringement of any Patent or Trade Mark as a result of the use or sale of the goods. In the event that the goods or their use are held to constitute an infringement and their use is enjoined, the seller shall promptly secure for the purchaser the right to continue using the goods, replace the goods with non-infringing goods, or, if unable to do any of the foregoing, remove the infringing goods and refund all monies paid therefor.
11. **Proprietary Rights.** The seller understands and agrees that the benefits of the purchaser's designs and manufacturing information shall not extend beyond the scope and subject matter of this order.
12. **Advertising.** The seller shall not, except with the consent of the purchaser in writing, release information relating to this order for advertising, promotional or technical purposes or otherwise give it publicity in any fashion; nor shall the name of the purchaser be used for, or in connection with, any advertising or promotional purposes of the seller.
13. **Compliance with Laws.** The seller shall observe and comply with the purchaser's safety rules and all statutes, regulations and by-laws of any federal, provincial or municipal authority which may in any way affect this order and any contract following thereupon. This order and any contract following thereupon shall be governed and construed according to the laws of the Province where the purchaser's office issuing the order is located and the Courts of such Province shall have sole jurisdiction.
14. **Property Furnished by Purchaser.** Unless otherwise agreed in writing, all tools, equipment or material of every description furnished to the seller by the purchaser, or specifically paid for by the purchaser, and any replacement thereof, or any materials fixed or attached thereto, shall be and remain the personal property of the purchaser. Such property and whenever practical each individual item thereof shall be plainly marked or otherwise adequately identified by the seller as "Property of Stern Laboratories Inc." and shall be safely stored separate and apart from seller's property and shall remain free of liens and encumbrances. The seller shall not substitute any property for the purchaser's property and shall not use such property except in filling the purchaser's orders. Such property while in the seller's custody or control shall be held at the seller's risk, shall be kept insured by the seller at the seller's expense in an amount equal to the replacement cost with loss payable to the purchaser and shall be subject to removal at the purchaser's written request, in which event the seller shall prepare such property for shipment and shall deliver it to the purchaser in the same condition as originally received by the seller, reasonable wear and tear excepted. The purchaser shall have the right at all reasonable times upon prior request to enter the seller's premises to inspect any and all such property.
15. **Title on Progress Payments.** Upon any payment being made to the seller for or on account of materials, parts, work-in-process or finished work either by way of progress payments or accountable advances or otherwise, title in and to all materials, parts, work-in-process and finished work paid for by such payments or accountable advances or otherwise, shall vest and remain in the purchaser (but at the seller's risk) providing such vesting of title shall not constitute acceptance by the purchaser of such materials, parts, work-in-process and finished work and shall not relieve the seller of his obligation to perform the work or deliver the goods in conformity with the requirements of this order or any contract following thereupon. Any such progress payments or accountable advances shall be deemed trust funds in the hands of the seller pending delivery.
16. **Contractors and Subcontractors.** Contractor shall provide written proof of insurance coverage with the acceptance copy of this order. Contractor must comply with all safety standards by law and, where applicable, by contractor's industry association. Failure in compliance will be considered a breach of contract. Should an action for breach of safety regulations ensue against the contractor, contractor shall reimburse Stern Laboratories for costs incurred in connection with such action.

# SUPPLIER EVALUATION REPORT

FORM: 2002.05.24

Stern Laboratories Inc.

Page 1 of 3

Report Number:	Date:	New: <input type="checkbox"/>
		Follow-up: <input type="checkbox"/>
Evaluation Performed By:		
Supplier Evaluated:		
Services Supplied:		
Person(s) Contacted:		
<b>Instructions to Evaluator:</b> Complete the following checklist entering the appropriate symbol (S, U, NE or NA, as defined below). Note in the comments sections any areas where the supplier's program appears incomplete or deficient. At the conclusion of the evaluation, the results shall be discussed with the supplier and the evaluator must decide if the services supplied are satisfactory or if corrective action is required.  S - Satisfactory U - Unsatisfactory NE - Not Examined NA - Not Applicable		
<b>SUMMARY</b> Are services provided by supplier are considered satisfactory? .....		YES <input type="checkbox"/>
		NO <input type="checkbox"/>
Comments:		
Check if Additional Comments Attached <input type="checkbox"/>		
Signature of Evaluator:	Date:	

**1 ORGANIZATION**

Authority and responsibility of persons performing activities affecting quality clearly established \_\_\_\_\_

Verification of conformance to quality requirements performed by persons not having direct responsibility for performing the work. \_\_\_\_\_

Personnel performing activities affecting quality are given indoctrination and training as necessary \_\_\_\_\_

Comments \_\_\_\_\_

**2 INSTRUCTIONS AND PROCEDURES**

Activities affecting quality accomplished in accordance with documented procedures or drawings. \_\_\_\_\_

Procedures and drawings approved by responsible authority and available at the required time and place. \_\_\_\_\_

Procedures and drawings include criteria for determining that important activities have been satisfactorily completed. \_\_\_\_\_

Comments \_\_\_\_\_

**3 HANDLING, CLEANING, STORAGE AND SHIPPING**

Measures established to control handling, storage and shipping including cleaning and packaging to prevent damage or deterioration. \_\_\_\_\_

Comments \_\_\_\_\_

**4 CONTROL OF MEASURING AND TEST EQUIPMENT**

Measuring and test equipment have known valid relationship to nationally recognized standards. \_\_\_\_\_

Measuring and test equipment calibrated at specific intervals or prior to use in accordance with written procedures. \_\_\_\_\_

Measuring and test equipment suitably marked to indicate calibration status. \_\_\_\_\_

Calibration records maintained and include:

Equipment type and identification number \_\_\_\_\_

Date of Calibration and signature of calibrator. \_\_\_\_\_

Calibration procedure referenced. \_\_\_\_\_

Calibration data, including as found condition \_\_\_\_\_

Recommended frequency of calibration. \_\_\_\_\_

Corrective actions taken \_\_\_\_\_

When equipment found out of tolerance, consequences are investigated. \_\_\_\_\_

Comments:

**5 QUALITY ASSURANCE RECORDS**

Sufficient records prepared and maintained to document evidence of the quality of items or activities. \_\_\_\_\_

Inspection and test records identify date, inspector, type of observation, results and acceptability, and any actions taken. \_\_\_\_\_

Records are identifiable and retrievable. \_\_\_\_\_

Records are reviewed and approved as appropriate by responsible authority. \_\_\_\_\_

Comments:

# INSPECTION REPORT

FORM: 2002.05.14

Date: \_\_\_\_\_

Stern Laboratories Inc.

Page: \_\_\_\_\_ of \_\_\_\_\_

INCOMING     IN-PROCESS     FINAL     OTHER  Specify: \_\_\_\_\_

Project Title: _____  Control Level <input type="checkbox"/> Inspection Level <input type="checkbox"/>	Report Number: _____ <hr/> Shop Order Number: _____ <hr/> Purchase Order: _____
--	---

### ITEMS INSPECTED

Item	Quantity	Description	Reference Drawing, Specification, etc.	Results	Accept (Y/N)

### INSTRUMENTATION USED FOR INSPECTION

Item	Measuring Instrument (Model, Range, etc.)	Range / Uncertainty	Remarks	Calib. Due

QA Plan Number: _____	Inspection Procedure / Checklist: _____	
Inspected by: _____	Project Engineer: _____	Quality Review: _____
Date: _____	Date: _____	Date: _____

Support data stored:  in Project File     in Central File     in Clean Room     in PO File     \_\_\_\_\_

# QUALITY REVIEWER CERTIFICATE

Stern Laboratories Inc.

FORM: 2002.10.31

Document Number:	Certification Date:	Re-Certification Due:
Reviewer Certified:	Employment Designation:	
Title:		
Relevant Experience:		
Scope of Activities:		
SL Shop Number (if applicable):		
Basis of Certification:		
Signature of Evaluated Reviewer:	Date:	
Quality Control Manager:	Date:	
Management:	Date:	

# INSPECTOR CERTIFICATE

Stern Laboratories Inc.

FORM: 2002.10.24

Document Number:	Certification Date:	Re-Certification Due:
Inspector Certified:		Employment Designation:
Title:		
Relevant Experience:		
Scope of Activities:		
SL Shop Number (if applicable):		
Basis of Certification:		
Signature of Evaluated Inspector:	Date:	
Evaluated by:	Date:	
Management:	Date:	



# INSTRUMENT CALIBRATION CERTIFICATE

Stern Laboratories Inc.

FORM: 2002.05.14

ICC Number:	Job No.	Page of	Date:
-------------	---------	---------	-------

## A - ITEMS CALIBRATED

Device Make / Type	Model	Serial Number	Range Calibrated	Results	Accept (Y/N)

## B - CALIBRATION PROCEDURE

Calibration Procedure	Date	Source	Uncertainty

## C - CALIBRATION EQUIPMENT

Device Make / Type	Model	Serial Number	Range	Uncertainty	Cal'n Due

It is certified that the above instruments [Item A] have been calibrated in accordance with the indicated procedure [Item B] and are traceable to National Standards or equivalent through the calibration equipment described [Item C].

'As Found' data are attached: Yes  No  Calibration data attached: \_\_\_\_\_ pages

Certified by:	Date:
Reviewed by:	Date:
Quality Control Review:	Date:

FROM:

**Stern Laboratories Inc.**  
1590 Burlington Street East  
Hamilton, Ontario, Canada  
L8H 3L3

## INSTRUMENT TRANSMITTAL FOR CALIBRATION SERVICES

Document Number:

Date:

Page

of

Supplier:

Purchase Order Number:

Charge Number:

Device Make / Type	Model	Manufacturer	Serial Number	Procedure to be used

We request that the following be observed for secondary standards and test equipment used to calibrate the instruments listed above:

- a) Documented and approved performance check and calibration procedures be maintained and used.
- b) Equipment used, including 'Calibration Due Date' and accuracy (if applicable), shall be listed on the certificate supplied.
- c) If equipment used is subsequently found to be out of tolerance, notify us immediately if our equipment is affected.

As Found data required. Yes  No

Calibration data required. Yes  No

Issued by:

Date:

Accepted by:

Date:

# EQUIPMENT INCIDENCE REPORT

Stern Laboratories Inc.

FORM: 2002.05.14

REPORT NUMBER:	DATE:
<b>ITEM IDENTIFICATION:</b> Include manufacturer, model, serial number, etc., as appropriate.	
Corrective Action Report recommended? (Yes/No):	
<b>OBSERVED FAULT AND CAUSE:</b>	
<b>ACTIONS TAKEN:</b> Actions are: tagging, recalibration, notification of personnel, etc.	
Reported by:	Date:
Acknowledged by:	Date:
Quality Review:	Date:



# QUALITY CONTROL STATUS

Stern Laboratories Inc.

FORM: 2002.05.14

Shop Order		Date	QA Plan		Project Engineer
Item	Description	Current Status	Signature	Date	Comments
1	Contract Review	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
2	QA Plan	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
3	Design Review	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
4	Design Documentation	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
5	Indoctrination & Training Records	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
6	Fabrication Procedures	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
7	Test Procedures	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
8	Inspection Procedures	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
9	Drawings	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
10	Drawing Lists	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
11	Document Distribution	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
12	Inspection Records	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
13	Instrument Calibrations	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
14	Software Verification	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
15	QA Records	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
16	TSSA Requirements	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
17	Nonconformance Items	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
18	Reports	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			
19	Customer Requirements	In progress <input type="checkbox"/> Complete <input type="checkbox"/> Acceptable? Y <input type="checkbox"/> N <input type="checkbox"/>			

# SOFTWARE VERIFICATION CERTIFICATE

Stern Laboratories Inc.

FORM: 2002.05.14

Date:	Verification Test Point:	SVC Number:
Charge Number:	QA Plan Number:	
Software Name:		
Experimental Program:		
Test Series:		
Description of Software / Changes:		
Comments:		
Software Written by:	Date:	
Software Verified by:	Date:	
Project Engineer:	Date:	
Quality Control:	Date:	

# AUDITOR CERTIFICATE

Stem Laboratories Inc.

FORM: 2002.05.14

Document Number:	Certification Date:	Re-Certification Due:
Person Certified:	Employment Designation:	
Title:		
Relevant Experience:		
Scope of Activities:		
Basis of Certification:		
Signature of Evaluated Auditor:	Date:	
Evaluated by:	Date:	
Quality Control Manager:	Date:	

# INTERNAL AUDIT REPORT

Stern Laboratories Inc.

FORM: 2002.05.14

Audit Report Number:	Date:	Audit Performed by:
Scope of Audit:	Personnel Contacted:	
Audit Conclusions:	Quality Program Acceptable: <input type="checkbox"/> Quality Program NOT Acceptable: <input type="checkbox"/> Corrective Actions Necessary: <input type="checkbox"/>  Number of Findings:	
Summary of Findings:		
Observations:		
Recommendations:		
Auditor:	Date:	
Quality Control Manager:	Date:	
Vice President Operations:	Date:	
President:	Date:	

# AUDIT FINDING REPORT

Stern Laboratories Inc.

FORM: 2002.05.14

Audit Number:	Finding Number:	Date:
Issued by:	Assessment: Major _____ Minor _____	
Issued To:	Response Date:	
Description of Finding:		
Received by:	Date:	
Quality Control Manager:	Date:	
Corrective Action:		
Vice President Operations:	Date:	
President:	Date:	
Corrections Verified:		
Quality Control Manager:	Date:	

# CORRECTIVE ACTION REPORT

Stern Laboratories Inc.

FORM: 2002.05.14

C.A.R. Number:	Date:
Issued By:	Assessment: Major _____ Minor _____
Issued To:	Response Date:
Description of Issue:	
Cause:	
Corrective Action:	
Quality Review:	Date:
Management Review:	Date:
Preventative Action:	
Verification of Preventative Action:	
Signature:	Date:



**ACCEPTED**

CUSTOMER \_\_\_\_\_

W.O. NO. \_\_\_\_\_ DATE \_\_\_\_\_

NO. PCS. \_\_\_\_\_ MATERIAL \_\_\_\_\_

P.O. NO. \_\_\_\_\_ SER. NO. \_\_\_\_\_

PART NAME \_\_\_\_\_

INSPECTOR \_\_\_\_\_

Item Accepted Tag

**REJECTED**

W.O. NO. \_\_\_\_\_ P.O. NO. \_\_\_\_\_

PART NO. \_\_\_\_\_ SERIAL NO. \_\_\_\_\_

PART NAME \_\_\_\_\_

NO. OF PIECES REJECTED \_\_\_\_\_

REASON \_\_\_\_\_

DISPOSITION \_\_\_\_\_

INSPECTOR \_\_\_\_\_ DATE \_\_\_\_\_

Item Rejected Tag

**CALIBRATION**  
BY \_\_\_\_\_ DATE \_\_\_\_\_  
DUE \_\_\_\_\_

Instrumentation "Calibration" Sticker

**DUE FOR INSPECTION**  
DO NOT REMOVE

Instrument "Due for Inspection" Sticker

**REJECTED** DATE \_\_\_\_\_  
REASON \_\_\_\_\_ BY \_\_\_\_\_

Instrument or Device "Rejected" Sticker

<b>APPROVED FOR PRODUCTION</b>	
ENG'G _____	DATE _____
Q.C. _____	DATE _____
PROD. _____	DATE _____

Approved for Production Drawing Stamp

<b>PRELIMINARY</b>
THIS PRINT IS FOR DESIGN, ESTIMATING OR APPROVAL PURPOSES ONLY AND IS NOT TO BE USED FOR CONSTRUCTION.

Preliminary Drawing Stamp