



**CORROSION TESTING  
LABORATORIES, INC.**

PROCEDURE <i>Quality Assurance Manual</i>		
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**CORROSION TESTING LABORATORIES, Inc.**  
60 Blue Hen Drive, Blue Hen Business Park  
Newark, Delaware 19713

*A Subsidiary of*  
**CORROSION PROBE, Inc.**  
12 Industrial Park Road  
Centerbrook, CT 06409

***QUALITY ASSURANCE MANUAL***

Controlled Copy Number: \_\_\_\_\_  
Originally Issued:  
Revision 13 Issued:

Assigned to: \_\_\_\_\_  
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This Manual is the property of Corrosion Testing Laboratories ("CTL"), a Subsidiary of Corrosion Probe Inc., and incorporates procedures developed by CTL. Reproduction of any part thereof or use for purposes other than those expressly permitted by Corrosion Testing Laboratories, Inc., in writing, is strictly prohibited.

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**POLICY AND AUTHORITY STATEMENT**

It is the policy of Corrosion Testing Laboratories, Inc. ("CTL"), a **Subsidiary of Corrosion Probe, Inc. (CPI)**, to provide its clients with testing and examination services of the highest quality, consistent with nationally accepted practices and standards.

To accomplish this, CTL has developed and implemented the quality assurance program covered by this Manual. This Manual contains the organizational structures and practices required by the documents referred to herein.

This Quality Assurance Manual includes instructions for the preparation and review of written procedures, monitoring of all activities concerned with the control of operations and materials, conducting examinations and tests, calibration of measurement and test equipment, periodic auditing of the overall quality assurance program, required corrective action, **retention** of essential records, and the preparation of test and examination reports, **and the purchasing of materials and services to be able to perform all of the above activities.**

The authority and organizational freedom is hereby granted to the Quality Assurance Administrator to **implement and maintain the quality management systems, including the resources needed to implement and maintain the Quality Systems Program and the responsibilities described in Section 4.6 of this manual.**

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Robert A. Nixon, President  
CORROSION PROBE, Inc.  
22 June 2009



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**SECTION 1**

**REVISION RECORD, REVIEW, APPROVAL**

<u>Date</u>	<u>Section</u>	<u>Rev.</u>	<u>Scope of Revision</u>	<u>QA. Appr.</u>	<u>Corp. Appr.</u>
03-02-88	All	0	Original Issue		
08-01-88	8	1	Update Project Numbering Procedure		
11-23-88	All	2	Editorial Revision		
10-03-89	All	3	Editorial Revision		
12-15-89	1	4	Itemize Responsibilities Delete Personal Names		
12-15-89	4	4	Include Control in Accordance with ASME Section III		
12-15-89	7	4	Detail Purchase Order Requirements		
12-15-89	15	4	Detail Conformance Responsibilities		
12-15-89	17	4	Redefine Storage Conditions		
12-18-89	All	5	Editorial Revision		
01-08-93	All	6	Editorial Revision		
04-01-96	9	7	Expanded Definition of Non-Conforming		
04-01-96	All	7	Editorial Revisions		
04-10-98	3	8	Re-organization of Chart		
04-10-98	4	8	Added Field Personnel Responsibilities		



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<u>Date</u>	<u>Section</u>	<u>Rev.</u>	<u>Scope of Revision</u>	<u>QA. Approval</u>	<u>Corp. Approval</u>
09-27-99	1	9	Update		
05-27-01	9	9	Expand Definition of Non-Conforming		
01-11-05	All	10	Editorial Revisions		
03-14-05	All	11	Editorial Revisions and correction to conditions adverse to quality for activities supporting the Yucca Mountain Project		
06-23-05	2	12	Editorial Revisions as a result of an Internal Audit		
06-23-05	4	12	Editorial Revisions as a result of an Internal Audit		
06-23-05	6	12	Editorial Revisions as a result of an Internal Audit		
06-23-05	9	12	Editorial Revisions as a result of an Internal Audit		
06-23-05	12	12	Editorial Revisions as a result of an Internal Audit		
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6-22-09	3	11	Revisions to reflect change in company ownership to Corrosion Probe, Inc.		
6-22-09	4	12	Revisions to reflect change in company ownership to Corrosion Probe, Inc.		
6-22-09	6	11	Revision to allow use of A2LA and NAVLAP accredited calibration laboratories.		
6-22-09	17	10	Editorial Revision		

*Buddy D. King*

*Robert G. ...*



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**SECTION 2**

**MANUAL CONTROL**

- 2.1 This Manual shall apply to all testing and examination performed by CTL to the requirements of the codes, standards, specifications or regulations referenced in Paragraph 2.2. In addition, applicable sections of this Manual shall apply to work subcontracted by CTL to others.
- 2.2 This Manual and associated documents are written so as to comply with the requirements of the following:
- 2.2.1 ASME Boiler and Pressure Vessel Code, Section III, Division I, Subsection NCA 3800.
  - 2.2.2 10CFR50, Appendix B.
  - 2.2.3 ISO GUIDE 25, 1982.
- 2.3 This Manual shall be reviewed and revised, as necessary, by the President and/or the Quality Assurance Administrator periodically.
- 2.3.1 The Quality Assurance Administrator is responsible for obtaining all required approvals for this Manual from the President.
- 2.4 Controlled copies of this Manual, distributed to various facilities, shall be assigned a unique control number traceable to a master listing maintained in the Quality Assurance Files. Uncontrolled Manuals are not recorded, and are available on CTL website.
- 2.4.1 Controlled Manuals shall be distributed with a letter (see Exhibit A), to be signed and returned when the Manual is received and the conditions noted in the letter are met.
  - 2.4.2 Revised sections of this Manual, including a revised Table of Contents shall be distributed to each controlled Manual holder with a letter (see Exhibit B), to be signed and returned to Corrosion Testing Laboratories, Inc. within ten (10) days confirming receipt of the revision, review of the revision, that the revision has



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been inserted into the Manual, and that all conditions noted in the letter have been met.

- 2.4.3 If no acknowledgment is received within thirty days, Corrosion Testing Laboratories, Inc. may send notice decontrolling the Manual.

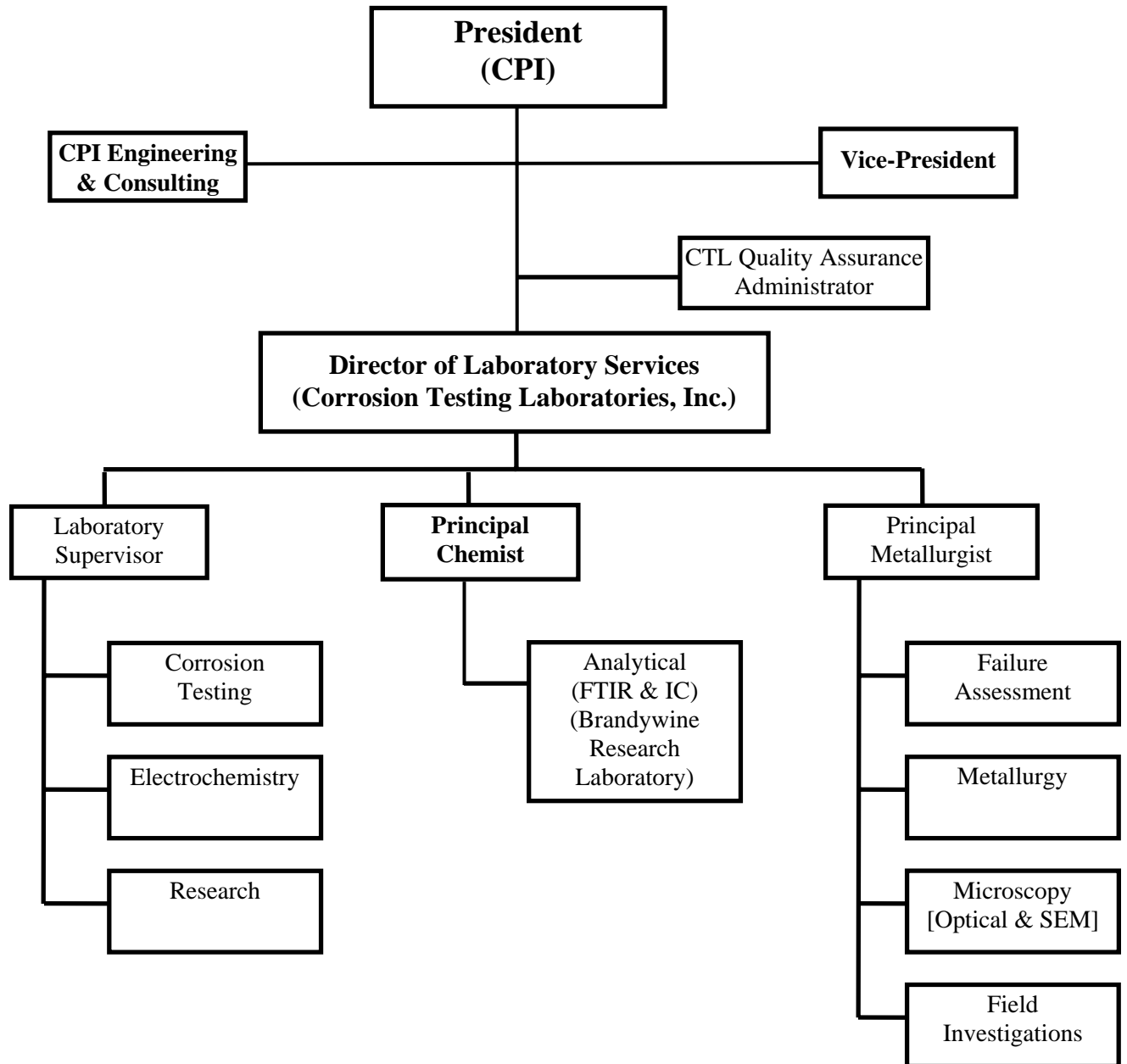




**SECTION 3**

**ORGANIZATIONAL CHART**

*CORROSION TESTING LABORATORIES, Inc.*  
*A Subsidiary of Corrosion Probe, Inc.*





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## SECTION 4

### **PERSONNEL: RESPONSIBILITIES, QUALIFICATIONS, CERTIFICATIONS**

- 4.1 It shall be the ultimate responsibility of the President, and/or the Quality Assurance Administrator to assure that all personnel performing functions within the scope of this Manual are qualified and/or certified for the work they perform. Personnel shall be trained to the implementing document for which they are responsible for implementing prior to the start of work. Periodic evaluations shall be performed to determine the need for additional training.
- 4.2 Independence - Personnel responsible for defining and measuring the overall effectiveness of the quality assurance program shall:
- 4.2.1 Be designated;
  - 4.2.2 Be sufficiently independent from the pressures of production;
  - 4.2.3 Have direct access to responsible management at a level where appropriate action can be initiated.
- 4.3 Responsibilities - All Personnel
- 4.3.1 Proper handling of materials to preclude damage or contact with detrimental materials.
  - 4.3.2 Maintenance of material traceability while in the possession of CTL.
  - 4.3.3 Notification to the President, and/or the Quality Assurance Administrator of the following:
    - a) Suspected loss of traceability.
    - b) Equipment malfunctions.
    - c) Procedural discrepancies.
    - d) Contaminated materials.
    - e) Suspected fraud or malpractice.



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- 4.3.4 Maintenance of controlled procedures issued to themselves, including revisions.
- 4.3.5 Preparation, maintenance and completion of a Job File for all work performed.
- 4.4 Responsibilities – President, except where job conflicts exist
- 4.4.1 Approval of any revision and control of this Manual.
- 4.4.2 Approval of purchase orders, including those with special quality requirements.
- 4.4.3 Assuring that the Quality Assurance Administrator has the authority and organizational freedom to perform the duties listed on Page i of this Manual.
- 4.4.4 Performance of a management audit of the Quality Assurance Manual once each year, except where job conflicts exists.
- 4.4.5 Storage of quality records.
- 4.4.6 Assuring that facilities, equipment and personnel are adequate to perform the required work, and those personnel are trained and qualified to perform their assigned jobs.
- 4.4.7 Reporting of applicable deficiencies in accordance with the requirements of 10CFR21.
- 4.4.8 Review and approval of final reports.
- 4.4.9 Approval of ASME Vendors.
- 4.5 **Responsibilities – Vice-President – Reports to the President**
- 4.5.1 **Reports to the President.**
- 4.5.2 **In the absence of the President, performs responsibilities as stated in Paragraphs 4.4.4 and 4.4.6.**
- 4.6 Responsibilities – Quality Assurance Administrator, except where job conflicts exist.
- 4.6.1 **Reports to the President.**



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- 4.6.2 Review and control of all quality assurance and test procedures, including customer submittals.
- 4.6.3 Control of non-conforming materials, equipment and services.
- 4.6.4 Performance of vendor quality evaluations, and if necessary audits, and preparation and control of approved vendor lists.
- 4.6.5 Control and documentation of calibration procedures.
- 4.6.6 Performance of internal audits, except where job conflicts exist.
- 4.6.7 Preparation and control of corrective action requests, as applicable.
- 4.6.8 Monitoring of the quality assurance program, and reporting regularly to management on its effectiveness.
- 4.6.9 Assuring that the policies in this Manual are followed for all work performed under the scope of this Manual.
- 4.6.10 Review of all purchase orders referencing ASME Section III requirements. This review may also be performed by the President and/or the Laboratory Supervisor when necessary.

**4.7 Responsibilities – Director of Laboratory Services (Laboratory Director)**

- 4.7.1 The Laboratory Director reports to the President.**
- 4.7.2 The Laboratory Director is responsible for formulating policies, managing daily operations and planning the use of materials and human resources.**
- 4.7.3 May perform final review and approve reports, and is designated by the President to do so.**
- 4.7.4 May approve of purchase orders, including those with special quality requirements, and is designated by the President to do so.**



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4.8 Responsibilities - Lab Supervisor, **Principal Chemist**, and Principal Metallurgist

- 4.8.1 Assuring that all work performed under their supervision is in accordance with the quality assurance requirements stated in this Manual.
- 4.8.2 Assuring that all personnel under their supervision are trained, qualified and certified, as applicable, for the work they perform.
- 4.8.3 May perform final review and approve reports, and is designated by the President to do so.
- 4.8.4 Assuring that all equipment under their control is properly maintained and calibrated.

4.9 Responsibilities - Metallurgical Staff

- 4.9.1 The Metallurgical Staff, which may include Engineers, Scientists, Technologists and Technicians, shall be trained and qualified for the work they perform.
- 4.9.2 Be responsible for overseeing the quality of work they perform.
- 4.9.3 Stay abreast of current technological advances in their area of technical responsibility.
- 4.9.4 Interface with the Laboratory Staff to insure quality of work performed.
- 4.9.5 Maintain the laboratory facilities and equipment in a neat, clean and orderly manner.**
- 4.9.6 Accurately maintain and record data in the laboratory Job File.**

4.10 Responsibilities - Laboratory Technical Staff

- 4.10.1 The Laboratory Staff, which **may** include Scientists, Technologists and Technicians, shall be trained and qualified for the work they perform.
- 4.10.2 Perform assigned tests according to approved standards and practices.



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- 4.10.3 Interface with the Metallurgical Staff to insure quality of work performed in the lab.
  - 4.10.4 Maintain the laboratory facilities and equipment in a neat, clean and orderly manner.
  - 4.10.5 Accurately maintain and record data in the laboratory Job File.
  - 4.10.6 Stay abreast of current technological advances in their area of technical responsibility.



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**SECTION 5**

**ORDER ENTRY / QUALITY REVIEW**

5.1 Scope

This Section details the requirements for order entry and quality review of orders for materials and services within the scope of this Manual.

5.2 Procedure

5.2.1 When an order is received, applicable information shall be entered in the job log file, the appropriate work request form (Exhibits C through G), the Job File Folder, and in the Alloy Heat Control log, if applicable.

5.2.2 Orders with standard requirements and specifications are released to the corrosion laboratory or metallurgical department. Other orders will be reviewed by either the Laboratory Supervisor or Principal Metallurgist for special quality considerations before being released.

5.3 Changes to Orders

5.3.1 The Laboratory Supervisor or Principal Metallurgist shall be notified, in writing, of any changes to orders affecting processing. The Laboratory Supervisor or Principal Metallurgist is responsible for up-dating the Job File to reflect the changes.



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**SECTION 6**

**PROCUREMENT**

6.1 Scope

6.1.1 This Section details the requirements for approval of vendors supplying materials and services, including calibration and testing.

6.2 Requirements

6.2.1 All vendors to be used for subcontract services shall meet CTL's standards for insuring the quality of work they perform. These vendors will submit to either an audit by CTL personnel or representative, or provide evidence that they have an on-going QA program [Subcontractor/Vendor Quality Evaluation Survey Questionnaire] that fulfills the basic requirements of a nationally and/or internationally recognized organization, such as ANSI/ASME.

**6.2.1.1 ASME Section III testing, examinations, and services shall be reviewed as having and implementing a quality assurance program that meets or exceeds the requirements of Corrosion Testing Laboratories **excepting for calibrations.****

**6.2.1.2 Calibration services may be obtained from vendors with a valid A2LA or NAVLAP certification for the services requested.**

6.2.2 The President and/or the Quality Assurance Administrator of Corrosion Testing Laboratories using the survey questionnaire or audit checklist, shall approve or reject the vendor.

6.2.3 For ASME Section III work, the vendor will be placed on an Approved ASME Vendors List. Approved vendors shall remain on this list for a period of three (3) years or until performance is unsatisfactory, whichever is earlier.

6.2.4 Purchase orders for materials and services shall include, as a minimum, appropriate technical and quality requirements. These requirements may take the form of a reference to an industry accepted standard or specific detailed requirements.





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- 6.2.5 The President, or the Quality Assurance Administrator, prior to transmittal to the vendor, shall approve all Purchase Orders for materials and services.
- 6.2.6 Upon receipt of materials or services affecting quality, the materials or services will be evaluated to determine if the requirements of the purchase order have been met. This acceptance will be documented prior to reliance on the purchased materials or services for further work.
- 6.2.7 Vendors providing general supplies will not fall under this quality assurance manual.



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**SECTION 7**

**MARKING AND TRACEABILITY**

- 7.1 Markings on materials shall be verified against the purchase order at the time of receipt. Discrepancies shall be reported to the President or Quality Assurance Administrator.
- 7.2 Markings on the material shall be maintained from the receipt of the material through final disposition. Markings on material shall not be removed unless required by the test or examination procedure. Marking shall be re-applied when required using either the customer's number or the Job File number, as appropriate.
- 7.3 Testing and examination results shall be recorded in the Job File, reviewed by the applicable supervisors, and submitted for formal report preparation. Job File reports shall not be signed by the preparer until reviewed and approved by the President, or his designee.



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**SECTION 8**

**EXAMINATION AND TESTING**

8.1 Corrosion Testing and Examination

- 8.1.1 All corrosion testing and examinations shall be performed by personnel qualified as specified in Section 4. Current personnel qualification records shall be kept on file for each person performing corrosion testing and examination.
- 8.1.2 All contractually required corrosion testing and examination shall be performed in accordance with written procedures, industry specifications, and/or ultimate customer instructions, and approved or reviewed by the President or Quality Assurance Administrator.
- 8.1.3 All corrosion testing and examination procedures shall be noted in the File.
- 8.1.4 When a corrosion test or examination is completed, a report shall be prepared showing the results, date, and signature and level of personnel performing the work.
- 8.1.5 When corrosion tests and examinations are performed by an outside source, the President or the Laboratory Supervisor shall review the results of the testing and/or examination for discrepancies.

8.2 Chemical and Metallurgical Tests

- 8.2.1 All chemical and metallurgical testing shall be performed by personnel qualified as specified in Section 4. Current personnel records shall be kept on file for each person performing the testing.
- 8.2.2 Chemical and metallurgical testing is performed by CTL or an approved outside source in accordance with written procedures, industry specifications, and/or equipment manufacturers' instructions.



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8.3 Records and Reports

8.3.1 Data included in reports shall be identified in a manner that facilitates traceability to the materials tested and any computer codes used to provide the results of analysis. Reports for all completed examinations and tests shall be reviewed and approved by the President, or his designee.

8.4 Procedure Availability

8.4.1 Specific examination and testing procedures are available for customer review when contractually required.

8.5 Customer "Hold" Points

8.5.1 Orders requiring customer witnessing of tests shall have the words "Hold Points" printed across the face of the associated Job File folder.

8.5.2 Work shall not proceed until appropriate instructions are received from the Lab Supervisor or Principal Metallurgist.

8.6 Software

8.6.1 When software is used to perform analysis that produces results that are not later verified, the software shall be identified, including version, and tested to a known benchmark to verify that the software is performing its intended function. The results of the software verification shall be documented.



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**SECTION 9**

**NON-CONFORMING MATERIAL**

9.1 Rejected Material

- 9.1.1 Material that has been ordered or purchased for use and subsequently rejected as a result of examination or test shall be painted, tagged, or stickered as "REJECTED" by the person performing the test.
- 9.1.2 Material that is suspected of having lost tractability at CTL shall be reported immediately, in writing, to the appropriate supervisor and quarantined until proper disposition is determined.

9.2 Discrepant Equipment or Processing

- 9.2.1 Any deficiency in equipment shall be reported to the President in writing on a **Non-Conformance Report** form. Orders involved shall not be moved until corrective action has been determined and taken, and a **QA Corrective Action Report** issued. Such equipment will be tagged as "*Non-Conforming*" and shall not be used for work without the explicit written authorization from the President. The President and/or the Quality Assurance Administrator shall review all previous jobs using the non-conforming piece of equipment to determine the impact on quality and what corrective action is to be implemented.
- 9.2.2 Any deficiency in processing or personnel, such that it potentially disqualifies the test results, changes the results, requires a repeat of the work, or affects QA records or reports, shall be reported to the President and/or Quality Assurance Administrator in writing on a **QA Discrepancy Report** form. The report shall address the deficiency, corrective action, and follow-up.

9.3 10CFR21 Compliance

- 9.3.1 For discrepant conditions reportable under the provisions of 10CFR21, the President shall be notified in writing. Established procedures for 10CFR21 compliance are posted adjacent to the CTL bulletin board in the back hallway.



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## SECTION 10

### TEST REPORT APPROVAL

- 10.1 Test reports shall be prepared by the person performing the test work. Upon completion, the report and associated Job File shall be reviewed, approved and signed by responsible management as designated in Section 4.



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**SECTION 11**

**HANDLING, STORAGE, PRESERVATION AND SHIPMENT**

- 11.1 All material shall be stored and moved in containers that are not detrimental to the material. In general, materials will be stored and moved in the container in which they were received, and shall not come in contact with detrimental materials while in CTL's possession.
- 11.2 Material shall be returned to the customer, as appropriate, in accordance with best commercial practice and Interstate Commerce rules.



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**SECTION 12**

**EQUIPMENT, TOOL AND INSTRUMENT CONTROL**

12.1 Scope

12.1.1 To cover the calibration of all equipment, tools and instruments used for inspection and examination.

12.2 Equipment, tool and instrument control is maintained in accordance with ANSI/NCSL Z540-94, which includes the following requirements:

- a) Serialization of all equipment, tools and instruments, except general hand tools.
- b) Calibrated equipment found out-of-calibration, the validity of previous results using that equipment since its last calibration shall be evaluated and the results documented.
- c) Positive identification and disposition of out-of-service equipment, tools and instruments.
- d) Acceptable standards for instrument calibration.
- e) Calibration intervals and adjustments.
- f) Record maintenance.
- g) Calibration standards traceable to national standards, where such standards exist, and have accuracy greater than required of the item under calibration.
- h) Control of material tested with equipment, tools or instruments discovered to be out of calibration.
- i) Calibrated equipment shall be labeled, tagged, or otherwise suitably marked to indicate the calibration status. (i.e., Date of Calibration, Calibration Due Date)
- j) The use of calibrated equipment shall be documented.
- k) Calibrated equipment shall be properly handled and stored to maintain accuracy.





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12.3 Calibration and control measures are not required for commercial equipment, such as rulers, tape measurers, etc., if such equipment provides the required accuracy.



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## SECTION 13

### PROCEDURE CONTROL

#### 13.1 Scope

3.1.1 This Section provides instructions for the preparation, review, issuance and maintenance of procedures covering systems, traceability, testing and examination.

#### 13.2 Preparation

13.2.1 Procedures shall be prepared and include or reference quantitative or qualitative acceptance criteria for determining that prescribed activities have been satisfactorily accomplished, where appropriate.

13.2.2 Technical procedures shall be prepared by someone technically competent in the subject area.

#### 13.3 Issuance

13.3.1 Controlled standard CTL laboratory procedures shall be issued to the Laboratory Supervisor and the Laboratory Bookshelf for access by laboratory personnel. Only the latest revision of the procedure shall be used.

13.3.2 A master copy of standard CTL laboratory procedures shall be maintained by the President. This master copy will be used for periodic audit of all controlled laboratory procedures issued to personnel.

#### 13.4 Review and Approval

13.4.1 All CTL procedures and revisions shall be reviewed for applicability, correctness, adequacy, completeness, accuracy, and compliance with established requirements, and approved by the President. The person performing the review or approval shall be independent of the preparer.



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**SECTION 14**

**INTERNAL AUDIT**

14.1 Scope

14.1.1 To furnish procedures for auditing all phases of CTL activities affecting quality.

14.2 Procedure

14.2.1 Personnel conducting internal quality assurance audits shall be qualified according to the **Procedure For Qualification and Certification of Auditors**, and have no direct line responsibility for the area or activity being audited.

14.2.2 Internal quality assurance audits shall be scheduled of each area contained within the scope of this Manual and shall be conducted at least once per year.

14.2.3 Follow-up audits of deficient areas shall be conducted within a reasonable time after the initial audit to confirm that corrective action has been taken. Sufficient time will be allowed for corrective action and shall be determined by CTL management based on seriousness and impact on product/service quality.

14.2.4 Areas showing repeated deficiencies shall be audited more frequently until the deficiencies are corrected.

14.2.5 Audits shall be conducted using an internal audit report form, checklists, or procedures by qualified personnel.

14.3 Distribution of Results

14.3.1 The original audit report shall be kept in the Quality Assurance files. Copies shall be routed to the President, Quality Assurance Administrator, Principal Metallurgist, and Laboratory Supervisor, with instructions as to corrective action to be taken.



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**SECTION 15**

**CORRECTIVE ACTION**

- 15.1 The extent of corrective action shall be determined from the formal or informal audit. Preparation of corrective action requests is the responsibility of the Quality Assurance Administrator, or his designee.
- 15.2 Evaluation of the corrective action and follow-up to corrective action shall be performed by personnel independent of the activity within the time noted on the corrective action request and documented on the follow-up report.
- 15.3 Corrective action requests and follow-up shall be distributed to the President, the Principal Metallurgist and/or the Laboratory Supervisor, and placed in the Quality Assurance File.
- 15.4 CTL may require corrective action from its vendors whenever material or services are received which are non-conforming. Failure of the vendor to take and document positive corrective action may result in their removal from the qualified vendors list.



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**SECTION 16**

**RECORD STORAGE AND RETENTION**

16.1 Definition

16.1.1 Quality records are those completed records that furnish documentary evidence of activities affecting quality.

16.1.2 Quality records include, but are not limited to; calibration records, personnel qualifications and certifications, examination procedures, internal audits, corrective action, non-conformance reports, management reports, vendor audits, and electronic copies of issued reports.

16.2 All quality records shall be stored in a manner to protect them from damage, deterioration, or loss, so as to promote retrievability and traceability.

16.3 All quality records, in the absence of contractual requirements, shall be stored for a minimum of ten years.

16.4 Sample materials, in the absence of contractual requirements, shall be kept for a minimum of thirty days.

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



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**SECTION 17**

**EXHIBITS**

		<u>Code</u>	<u>Rev.</u>	<u>Date</u>
A	Manual Control Letter	MCL	5	03-05
B	Revision Control Letter	RCL	5	03-05
C	Corrosion Test Request Form	CTRF	8	03-05
D	Chemical Analysis Request Form	CARF	3	02-05
E	Failure or Field Investigation Request Form	FARF	4	11-05
F	Metallurgical Examination Request Form	MERF	2	02-05



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**EXHIBIT A**

11 January 2005

Company Name  
Address Line 1  
City, State, Zip

Attention: Quality Assurance Administrator

**Re: CTL Quality Assurance Manual, Revision 11**

Enclosed is Controlled Copy No.   X   of Corrosion Testing Laboratories, Inc. ("CTL") current Quality Assurance Manual. This Manual is proprietary in nature and should not be released to any other party without the express written permission of Corrosion Testing Laboratories, Inc.

Revisions shall be made by section only and will be forwarded to you by CTL.

Please acknowledge receipt of this letter and acceptance of the above conditions by signing, dating, and returning a copy of this letter to the undersigned within thirty (30) days. If this acknowledgment is not received within that time, the Manual will be considered uncontrolled and no revisions will be forwarded.

Very truly yours,  
CORROSION TESTING LABORATORIES, INC.

Quality Assurance Administrator

\*\*\*\*\*

I hereby acknowledge receipt of the CTL Quality Assurance Manual, Revision 11.

Company: \_\_\_\_\_

Title: \_\_\_\_\_

Signed: \_\_\_\_\_

Printed: \_\_\_\_\_

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

MCL, revision 5, 3-14-2005



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**EXHIBIT B**

11 January 2005

Company Name  
Address Line 1  
City, State, Zip

ATTENTION: Quality Department

**Re: CTL Quality Assurance Manual, Revision 11**

To Whom It May Concern:

Enclosed are revised sections of Corrosion Testing Laboratories, Inc. ("CTL") controlled Quality Assurance Manual, Copy No.   X   in your possession. Also included is the revised Table of Contents page.

Please replace the existing sections in your manual with the revised sections. The obsolete sections should then be returned to the undersigned.

When the above has been accomplished, please sign, date and return this letter along with the obsolete sections. If no reply is made within ten (10) days, your copy of our Quality Assurance Manual will be considered uncontrolled and no further revisions will be forwarded.

Very truly yours,  
CORROSION TESTING LABORATORIES, INC.

Quality Assurance Administrator

\*\*\*\*\*

I hereby acknowledge receipt of revision   X   of the CTL Quality Assurance Manual and am returning obsolete pages.

Company: \_\_\_\_\_

Title: \_\_\_\_\_

Signed: \_\_\_\_\_

Printed Name: \_\_\_\_\_

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

RCL, revision 5, 3-14-2005





CORROSION TESTING LABORATORIES, INC.

Table with 3 columns: DATE (03/14/2005), REVISION (5), PAGE (EX.C). Title: PROCEDURE Quality Assurance Manual

EXHIBIT C

CORROSION TEST REQUEST

CLIENT \_\_\_\_\_ JOB# \_\_\_\_\_

LOCATION \_\_\_\_\_ DATE \_\_\_\_\_

CONTACT & TELEPHONE # \_\_\_\_\_

1. CTL PROCEDURE or TEST PROTOCOL: \_\_\_\_\_

2. TEST SOLUTION COMPOSITION: \_\_\_\_\_

3. TEMPERATURE: \_\_\_\_\_ °C ( \_\_\_\_\_ °F) PRESSURE: \_\_\_\_\_ AGITATION: \_\_\_\_\_
ATMOSPHERE: \_\_\_\_\_ AIR \_\_\_\_\_ NITROGEN \_\_\_\_\_ OTHER: \_\_\_\_\_

4. TEST SPECIMENS: \_\_\_\_\_
(use form TSDF) \_\_\_\_\_

5. SPECIMEN SHAPE: \_\_\_\_\_ FLAT \_\_\_\_\_ U-bend \_\_\_\_\_ WELDED \_\_\_\_\_ CREVICE
\_\_\_\_\_ OTHER \_\_\_\_\_

6. TEST DURATION: \_\_\_\_\_

7. TYPE OF TEST: \_\_\_\_\_ TOTAL IMMERSION \_\_\_\_\_ 3-PHASE \_\_\_\_\_ VAPOR PHASE
\_\_\_\_\_ HOT WALL \_\_\_\_\_ AUTOCLAVE \_\_\_\_\_ OTHER \_\_\_\_\_

8. TEST EQUIPMENT: FLASK \_\_\_\_\_ TEST TUBE \_\_\_\_\_
HOT WALL \_\_\_\_\_ AUTOCLAVE \_\_\_\_\_
RESIN KETTLE \_\_\_\_\_ ELECTROCHEMICAL \_\_\_\_\_
BEAKER \_\_\_\_\_ OTHER \_\_\_\_\_

9. REMARKS/COMMENTS: \_\_\_\_\_



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**EXHIBIT D**

CORROSION TESTING LABORATORIES, INC. (CTL)  
BRANDYWINE RESEARCH LABORATORY, INC. (BRL)

LEAD \_\_\_\_\_  
APPROVED BY \_\_\_\_\_

**CHEMICAL ANALYSIS REQUEST**

CLIENT \_\_\_\_\_ JOB # \_\_\_\_\_  
LOCATION \_\_\_\_\_ DATE \_\_\_\_\_  
CONTACT & TELEPHONE # \_\_\_\_\_



1. DESCRIPTION OF ITEM(S) \_\_\_\_\_

2. BACKGROUND INFORMATION \_\_\_\_\_

3. ANALYSES TO BE PERFORMED (Including Applicable Specification):

- Sample preparation \_\_\_\_\_
- pH \_\_\_\_\_
- IC \_\_\_\_\_
- FTIR \_\_\_\_\_
- Conductivity/Resistivity \_\_\_\_\_
- Alkalinity/Acidity \_\_\_\_\_
- Other (Specify) \_\_\_\_\_
- Other (Specify) \_\_\_\_\_
- Other (Specify) \_\_\_\_\_

4. IS ANY WORK TO BE CONTRACTED? \_\_\_\_\_

5. MUST SUBCONTRACTOR BE ASME QA APPROVED? \_\_\_\_\_

6. SUBCONTRACTOR INFORMATION (IF APPLICABLE) \_\_\_\_\_

CARF, REV 3, 2/17/05




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**EXHIBIT E**

Lead : \_\_\_\_\_  
Approved: \_\_\_\_\_

		<p align="center"><b>Corrosion Testing Laboratories, Inc.</b></p> <p align="center">Standard Estimate &amp; Request for Failure Investigation or Field Work</p>				
<b>CTL QUOTE #</b> <input type="text" value="Q"/>		<b>Contact</b> <input type="text"/>				
Date: <input type="text"/>		<b>Phone</b> <input type="text"/>				
Assigned to: <input type="text"/>		<b>email</b> <input type="text"/>				
<b>Description of Job</b>		<b>Company</b> <input type="text"/>				
<p align="center"><b>Breakdown of Costs</b></p>						
Item	Task	Description of Service	Quantity	Unit	Rate	Est. Cost
	Lab Investigation	Use of Standard Metallographic Techniques				
		As deemed necessary				0
1						0
2						0
3						0
4						0
5						0
6						0
				<b>Subtotal</b>		0
						0
						0
				<b>Subtotal</b>		0
<b>TOTAL ESTIMATED COST</b>		<p align="center"><b>Reporting Options</b></p> <input type="text"/> <input type="text"/> <input type="text"/>				
<p align="center">For reporting options see, <a href="http://www.corrosionlab.com/fa-report.htm">http://www.corrosionlab.com/fa-report.htm</a></p>						
<p>The estimated quote is based on our experience with similar jobs and includes time and materials. Failure Analysis/Investigations are by nature a discovery process and the evidence collected may alter the course of investigation and the associated costs, occasionally by a significant amount, either up or down. If the failure investigation is terminated early because of preliminary evidence is convincing, or any other reason, you will be billed at cost (time and materials). If during the course of our investigation, we realize the costs are going to exceed the estimate by more than 15%, we will advise you and give you the option to incur additional costs to meet the original objectives of the investigation, or the option of wrapping up the investigation with the understanding that some or all of the objectives of the investigation will not be met. See our website for standard rates, <a href="http://www.corrosionlab.com">www.corrosionlab.com</a>. Complexity of the problems investigated can vary greatly, significantly impacting the cost of service. Quote is valid for 30 days.</p>						<p><b>Corrosion Testing Laboratories</b>          60 Blue Hen Drive          Newark, DE 19713          302.454.8400          fax:302.454.8204  <a href="http://www.corrosionlab.com">www.corrosionlab.com</a></p>
<p align="center"><b>PLEASE REFERENCE THE ABOVE CTL QUOTE NUMBER IN THE PURCHASE ORDER.</b>  <b>STANDARD TERMS &amp; CONDITIONS ARE ATTACHED.</b></p>						



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## EXHIBIT F

CORROSION TESTING LABORATORIES, INC.

Lead: \_\_\_\_\_  
Approved By: \_\_\_\_\_

### METALLURGICAL EXAMINATION REQUEST

Company: \_\_\_\_\_ Job # \_\_\_\_\_  
 Location: \_\_\_\_\_ Date \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Work Phone: \_\_\_\_\_ Fax Number: \_\_\_\_\_  
 Mobile Phone: \_\_\_\_\_

1) JOB DESCRIPTION

2) ANALYSIS CHAIN OF CUSTODY

What area of the sample should the specimen be cut?

Which face of the specimen is of interest?

Are there any details related to corrosion or failure which must be included in this section?

Should the specimen be  
 Mounted  Ground to what grit size \_\_\_\_\_ Fine Polish   
 Etched  Which Etchant: \_\_\_\_\_

In the case of a cladding, plated, galvanized, etc. in the specimen, which structure is to be brought out by the etch?

Type of Photomicrographs: \_\_\_\_\_ What Magnification? \_\_\_\_\_

If polaroid, # of copies \_\_\_\_\_

Notes

3) GOALS / INTENTIONS OF WORK

8) REPORTING OPTIONS / COSTS  
 Reporting Option \_\_\_\_\_ Quote \_\_\_\_\_ PO# \_\_\_\_\_