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Lijun Wang
QA Specialist
Comstock Canada Ltd.

Prepared by: *Signature* *dd-mmm-yyyy*

Mike Krone
Quality Manager, Nuclear
Comstock Canada Ltd.

Reviewed by: *Signature* *dd-mmm-yyyy*

Pete Semmens
Executive Vice President
Nuclear and Thermal Power Facilities
Comstock Canada Ltd.

Owned by: *Signature* *dd-mmm-yyyy*

R. M. Quinn
President and Chief Operating Officer
Comstock Canada Ltd.

Approved by *Signature* *dd-mmm-yyyy*

Vaqar Raees
Authorized Nuclear Inspector Supervisor
TSSA

Accepted by: *Signature* *dd-mmm-yyyy*

REVISION HISTORY:

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Issue 2, Rev 1	13-Sep-2004	A. Sidaway	Section G6, NB Authorized Inspection Agency added; Section 1.0, Organization Section changed to reflect new structure; Section 7.0, Paragraph 7.9 minor wording; Paragraphs 7.12 to 7.15 reorganized to include conditional release
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Issue 2, Rev 2	23-May-2007	N.Laidlaw	Section 1 revised and updated.
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Issue 3 Rev 0	June 29, 2010	L.Wang	1. Approved and issued for use. 2. Rewrote the manual based on edition CSA N285-08, improvement were made from the feedbacks on the program during implementation from internal and external auditors, clients, project management, users of the program, etc. 3. Changed the format and numbering of the manual. 4. Incorporated comments on drafts provided by all reviewers listed on the front page and the next page. 5. Incorporated comments provided by ANIS from TSSA at the discussion meeting on June 22, 2010.

MULTIPLE REVIEWERS: (IF REQUIRED)

Robert Kilmartin VP Shared Services Comstock Canada Ltd.		
Reviewed by	*Signature*	*dd-mmm-yyyy*
Gilles Lemay QA Specialist Comstock Canada Ltd.		
Reviewed by	*Signature*	*dd-mmm-yyyy*
Bob Murphy (Procurement Sections) Purchasing Agent Comstock Canada Ltd.		
Reviewed by	*Signature*	*dd-mmm-yyyy*
Eugene Sokolov QA Specialist & Auditor Comstock Canada Ltd.		
Reviewed by	*Signature*	*dd-mmm-yyyy*

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1. POLICY AND AUTHORITY STATEMENT

1.1 Policy and Authority Statement

It is the policy of Comstock Canada Limited to perform Pressure Boundary activities at Nuclear Facility Sites in accordance with applicable requirements from Codes and Standards, regulatory or jurisdictional authority and Client. This Manual describes the Pressure Boundary Quality Assurance Program of Comstock Canada Limited to be complied with by all sites administrated and controlled by 3455 Landmark Road, Burlington, Ontario.

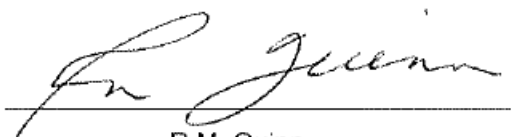
As *President and Chief Operating Officer*, I am accountable to the *Chief Executive Officer*, Comstock Canada Limited. I am further accountable for the implementation of Pressure Boundary Quality Assurance Program described in this Pressure Boundary Quality Assurance Manual.

This Pressure Boundary QA Manual accurately and adequately describes the Program used by Comstock Canada Limited to control the quality of pressure boundary activities specified in the Scope of this manual at all nuclear facility sites.

I have delegated the authority and responsibility for implementation and maintenance of the Pressure Boundary Quality Assurance Program to the Executive *Vice President, Nuclear and Thermal Power Facilities*, who may further delegate the responsibility to the *Project Manager* or similar position of each nuclear site, who is ultimately responsible for the performing functions of attaining quality objectives of work activities and the quality assurance program.

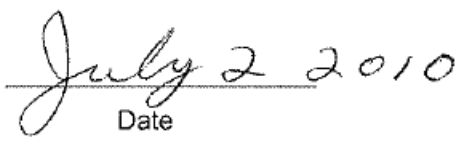
Quality Manager, Nuclear, is the *Quality Representative* of this quality program and all other programs employed at Nuclear Facility Sites. The *Quality Manager, Nuclear* and all *Quality Personnel* assuring the establishment of an appropriate quality program, as well as *Quality Control/Surveillance* personnel verifying that activities affecting quality have been correctly performed, have been given sufficient authority and organizational freedom, including sufficient independence from cost and schedule considerations, to identify quality problems and to initiate, recommend or provide solutions through designated channels, verify implementation of solutions, and control further processing, delivery, installation or use until proper disposition of a non-conformance, deficiency, or unsatisfactory condition has occurred.

Problems that cannot be resolved through organizational lines of communication are brought to my attention for final resolution without compromising codes and standards requirement, and the requirements of this Pressure Boundary Quality Assurance Manual.



R.M. Quinn

President and Chief Operating Officer
Comstock Canada Limited



Date

1.2 Scope and Applicability

This Pressure Boundary (PB) Quality Assurance (QA) Manual (hereinafter referred to as the Manual) complies with the applicable rules and quality requirements contained in the Canadian Standards Association (CSA) N285.0 and for Class 1, 1C, 2, 2C, 3, 3C, and 4 items, systems, structure and supports. In addition, the Quality Assurance Program complies with the requirements of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section III, Division 1, Article NCA-4000.

This document provides a description of the Quality Assurance Program implemented by Comstock Canada Limited to control the quality of pressure boundary activities at all field sites licensed by CNSC, administrated and controlled by 3455 Landmark Road, Burlington, Ontario. These activities include:

1) Fabrication, installation, examination, testing and inspection of Class 1, 1C, 2, 2C, 3, 3C and 4 item, system and structure without design responsibility in accordance with CSA Standard N285.0
2) Repairs, modifications or replacements of Class 1, 1C, 2, 2C, 3, 3C and 4 nuclear item, system and structure in accordance with CSA Standard N285.0
3) Fabrication and installation of Class 1, 1C, 2, 2C, 3, 3C and 4 welded and non-welded supports in accordance with CSA Standard N285.0.
4) Material organization supplying ferrous and non-ferrous material including: welding material; qualification of nonaccredited material organization; utilization of unqualified source material; approval and control of suppliers; shipment of material from qualified Material organizations other than the Qualified Accredited Material Organization, in accordance with CSA Standard N285.0.

1.3 Definitions and Acronyms

1.3.1 Definitions

Term	Definition
Act	The *Nuclear Safety and Control Act*, including the Regulations and other applicable regulatory documents of the Canadian Nuclear Safety Commission. (N285.0-08)
Agent	A person or organization that is authorized to act on behalf of the licensee. (N285.0-08)
Authorized Inspection Agency	An organization designated by the regulatory authority as authorized to register designs and procedures, perform inspections, and perform other defined functions. (N285.0-08)
Certificate of Compliance	A written statement attesting that the materials are in accordance with specified requirements. (NCA-9000)
Certificate of	A document signed or otherwise authenticated by an authorized

Term	Definition
Conformance	individual certifying the degree to which items or services meet specified requirements. (NQA-1-94)
Certified Material Test Report	A document that attests that the material is in accordance with specified requirements and that includes the actual results of all required chemical analysis, tests, and examinations. (N285.0-08)
Code	The ASME Boiler and Pressure Vessel Code Section III, Division 1 or any other referenced section of the ASME Boiler and Pressure Vessel Code.
Component	An item that retains pressure in a system. (N285.0-08) **Note:** (1) Components do not include items defined as materials. (2) Components include vessel, pumps and valves.
Comprehensive Work Package	A all-inclusive assembly of documents, include, but is not limited to procedures, work instructions, drawings, technical information, bill of material, forms to be completed during work, work permits, verification planning documents, which will be used by personnel during work execution. Upon completion of the work, the completed forms and other documents become records. It is also called Work Package, Field Work Package. This is a common work planning and control process used at various Nuclear Facility Sites.
Corrections	Action to eliminate a detected nonconformity. (ISO9000:2005) **Note 1**: A correction can be made in conjunction with a corrective action. **Note 2**: A correction can be, for example, repair, and return back to suppliers or scrap.
Corrective Actions	Action to eliminate the cause of a detected nonconformity or other undesirable situation. (ISO9000:2005) **Note 1:** There can be more than one cause for nonconformity. **Note 2:** Corrective action is taken to prevent recurrence whereas preventive action is taken to prevent occurrence.
Data Report	The report certified by the fabricator, contractor, or installer and signed by the authorized inspector or licensee's verifier, stating that the item in question conforms to the requirements of this standard. (N285.0-08)
Fabrication	Those actions required to manufacture components, parts, fittings, piping assemblies and supports. (N285.0-08) **Note:** (1) These actions may include forming, machining, assembling, welding, brazing, heat treatment, examination, testing, inspection, and certification. (2) Fabrication does not include design.

Term	Definition
Hold Point	A designated stopping place during or following a specific activity at which inspection or examination is required before further work can be performed. (NCA-9000)
Inspection	Examination, measurement or testing to determine if the specified requirements are met. (N285.0-08)
Item	An all-inclusive term used in place of the following: components, material, parts and piping assemblies, and component and piping supports. (N285.0-08)
Jonas	A comprehensive and fully integrated accounting and service work order Software used by Comstock Canada Limited.
Licensee	The holder of a license issued pursuant to the Act for the construction of operation of a nuclear facility. Alternatively, the term can refer to the organization having overall responsibility for the proposed nuclear facility prior to the issuing of a construction license. (N285.0-08)
Material	A product form that conforms to a material specification permitted by this Standard. (N285.0-08)
Material Organization	An organization or person that performs, or contracts to perform, for its own use or for that of another, activities associated with the manufacture or supply of materials for use in Class 1, 1C, 2, 2C, 3, 3c or 4 systems or components. (N285.0-08)
Modification	A physical change to the system pressure boundary, excluding repairs and replacements, or a change in the system design requirements affection the pressure boundary. (N285.0-08)
Nuclear Facility	As defined in the Act. (N285.0-08)
Permanent Records	Records that meet one or more of the following criteria: ▪ Records of value in demonstrating capability for safe operation; ▪ Records required to maintain, rework, repair, replace or modify a structure, system, or component; ▪ Records of value in determining the cause of an accident, malfunction, or unscheduled occurrence; ▪ Records required to provide baseline data for periodic inspection; and ▪ Records that would be of value in decommissioning a system, component, or structure. (N286-05)
Procurement Document	Purchase requisitions, purchase orders, drawings, contracts, specifications, or instructions used to define requirements for purchase (NQA-1-1994).
Repair	The process of physically restoring an item to a condition such that the

Term	Definition
	item complies with the registered design. (N285.0-08)
Rework	See repair.
Small Products	Material NPS3/4 (DN 20) and less (pipe, fittings, flanges, materials for valves and tubes except heat exchanger tubes), bolting 1 in. (25mm) and less, and other products where the largest space available for marking is less than 1" in any direction. (NCA-3800)
Standards	Standards, codes, code cases, and issued revisions thereto such as addenda, amendments, and supplements. (N285.0-08)

1.3.2 Acronyms

Term	Definition
A2LA	American Association for Laboratory Accreditation
AIA	Authorized Inspection Agency
ALARA	As Low As Reasonably Achievable
ANI	Authorized Nuclear Inspector
ANIS	Authorized Nuclear Inspector Supervisor
ASL	Approved Suppliers List
BPS	Brazing Procedure Specification (BPS)
C of C	Certificate of Compliance or Certificate of Conformance
CAR	Corrective Action Request or Corrective Action Report
CAT ID	Catalogue Identification
CCL	Comstock Canada Ltd.
CGSB	Canadian General Standards Board
CMTR	Certified Material Test Report
CNSC	Canadian Nuclear Safety Commission
CWP	Comprehensive Work Package
DBOM	Design Bill of Material
EQR	Engineering Quotation Request or Employee Qualification Registry
ITP	Inspection and Test Plan
M&TE	Measuring and Test Equipment
NDE	Non Destructive Examination
NVLAP	National Voluntary Laboratory Accreditation Program
PAR	Preventive Action Report

Term	Definition
PB	Pressure Boundary
PO	Purchase Order
PQR	Procedure Qualification Record
PWHT	Post Weld Heat Treatment
QA	Quality Assurance
QC	Quality Control
QS	Quality Surveillance
SME	Subject Matter Expert
TSSA	Technical Standards and Safety Authority
WPS	Welding Procedure Specification (WPS) and

2. ORGANIZATION

2.1 Overview

Comstock Canada Limited (CCL), as one of the country's largest multi-disciplined contractors, understands that project management staffing and organization structure shall be established in accordance with the client's specific site and contractual requirements.

Comstock Canada Limited designs and tailors Project Management Organization Structure for each project at Nuclear Facilities to help client to control costs, while significantly increasing efficiency, without compromising mandatory code, standards and regulatory requirements.

For each project or Nuclear Facility Site, a specific Organization Chart shall be designed and prepared by Project Management, and supported with key roles, responsibility and authority statements for key positions, which will communicate to project personnel the detailed expectation of an individual position, line of communication, authority to make decision, and internal/external interfaces.

The project management shall as minimum establish the following three major functions:

(1) The implementation function of the *program and work activities*, which is normally executed by project management, site supervision and trades personnel at site, which also includes other associated work activities, for example, documentation control, work planning etc.

*Quality of work is achieved by this function***.**

(2) The establishment, monitoring and oversight function of the *program and its processes*, which is performed by quality assurance or quality management personnel.

Quality achievement is assured by this function.

(3) The verification function of *work activities*, which is conducted by quality control inspectors for site work execution. This function is also extended to other verification personnel, for example, reviewer of a document.

Achievement of quality is verified through this function.

2.2 Typical Organization Structure

Figure 2-1, illustrates a *CCL Typical Project Functional Organization Chart*, with focus on major organizational functions instead of positions for project staff, the actual reporting relationship or position titles may vary from site to site, as long as the

independence and authority of Quality Function is maintained, and the three major functions mentioned above are established and maintained.

Section 2.3 highlights the key functional roles, responsibilities, level of authority, lines of communication or reporting.

2.3 Key Roles and Responsibilities

2.3.1 Chief Executive Officer (CEO)

As senior manager, this position is responsible for:

- Overall performance of CCL and implementation of corporate management system and various quality assurance programs.
- Ensure that CCL policies, procedures and objectives are established.
- Delegate the responsibility and authority for CCL Management Systems and Programs.

2.3.2 President and Chief Operating Officer (COO)

Reporting to Chief Executive Officer, this position is responsible for:

- Overall operation of CCL.
- Overall implementation of the quality assurance program.
- Provision of qualified personnel to implement the program.
- Ensure that CCL policies, procedures and objectives are implemented.
- Ensure the continual adequacy and effectiveness of CCL Management Systems in meeting the requirements of CCL Policies and Objectives.
- Ensure that periodic reviews of the program are performed.
- Make final decision with regard to quality issues in the event of disagreement.
- Interface with the client's senior management to ensure that contractual requirements are understood and are being complied with.

2.3.3 Executive Vice President, Nuclear and Thermal Power Facilities

Reporting to President and COO, and as senior management for CCL, this position is responsible to:

- Establish project/site organization.
- Ensure that the office and project sites are properly equipped and staffed, and are capable of completing the committed work.

- Assign qualified personnel to manage the work, to perform the work, to establish management process and to verify the work.
- Implement quality assurance program at the project/site.
- Ensure the satisfactory performance of the project/site with respect to financial, quality, health, safety and client expectations.
- Ensure that the annual program review is conducted for each site working under this program and report the results to COO.

2.3.4 Vice President, Shared Service

Vice President, Shared Service, reporting to President and COO and is responsible to:

- Ensure that procurement activities across CCL are planned, executed in accordance with various projects need;
- Ensure that suppliers are selected, evaluated and monitored to ensure the quality of supplied products or services.
- Oversee Human Resource function, and ensure qualified personnel are provided in a timely manner to management and project team;
- Oversee Information Technology function, and ensure that CCL information system is maintained and information is provided to personnel on a need to know basis and essential information and data in CCL electronic library is backed up;
- Oversee the provision of CCL provided tools and equipment, and coordinate among various projects.
- Supervise the administration of all project or corporate related activities at Head Office.
- Establish site Procurement Function and Tools, Equipment and Materials Function and provide support and resources at site for procurement as necessary.

2.3.5 Quality Manager, Nuclear

Reporting to COO, this position is the *Quality Representative of CCL* at Nuclear Sites, and has been assigned through the Policy and Authority Statement the responsibility, authority, and organizational freedom to document, monitor, oversee the implementation of the Program and all other programs as they apply at Nuclear Project Sites.

This position is responsible to:

- Represent CCL on all matters pertaining to quality programs implemented at all Nuclear Sites.

- Liaise with AIA, clients and other external organizations with respect to all quality programs implemented at Nuclear Sites.
- In conjunction with VP, Nuclear/Thermal Power Facilities, design and document the Nuclear Quality Program, and monitor the implementation of the program.
- Establish systematic and governing management processes in support of quality program.
- Promote the awareness of the quality program requirements throughout CCL via training, indoctrination, meetings or other communication channels.
- Ensure contractual, applicable codes and standards, and regulatory requirements are met, and changes to them are monitored and incorporated in the Quality Program.
- Assign qualified QA/QC/QS personnel to project sites.
- Plan and organize internal audit and management review meetings to evaluate the adequacy and effectiveness of the quality program and make improvements.
- Ensure that activities related to quality are verified to the defined requirements by qualified, or as required, certified personnel.
- Ensure the required records are identified and maintained.

2.3.6 Project Management

Reporting to Vice President, Nuclear/Thermal Power Projects, and this position could be a Project Manager, Superintendent or other title, depending on the size and nature of project.

- Overall execution of project at or for a Nuclear Site.
- Design and documentation of Site-specific Organization Structure, and identify responsibilities, authority and accountability of key positions.
- Ensure the project is staffed by personnel who are qualified to perform the assigned work.
- Implementation of this quality program and site specific Quality Assurance Plan or processes, as applicable.
- Establishing and documenting site-specific project management processes.
- Ensure that construction equipment and resources are consistent with the requirements of, and the capabilities offered in, the contract.
- Liaise with the Client regarding the project and any contract revisions.
- Ensure the satisfactory performance of the project with regard to CCL policies and objectives.

2.3.7 Site Quality Function

The lead of the site quality function reports to the project management administratively, and to *Quality Manager, Nuclear* functionally, who is responsible for the site quality assurance, quality control and quality surveillance functions, the title of the position may be *QA/QC Manager*, here after refer to *Quality Manager, Site*.

Key responsibilities are:

- Preparation of supplementary Quality Assurance Plan as necessary to capture site specific requirements under the direction of Quality Manager, Nuclear.
- Establishing and documenting and implementing the site-specific processes in respect to Quality Assurance, Quality Control and Quality surveillance, and ensure these processes are in consistent with governing processes.
- Evaluation of this quality program, Quality Assurance Plan, and identification of the site-specific processes prior to commencement of the work and during the execution of work.
- Interfacing with AIA, clients or other organizations in respect to the implementation of this program and site-specific processes, when delegated by Quality Manager, Nuclear.
- Monitoring the implementation of the quality program and site-specific processes.
- Staffing Site Quality function with qualified personnel with the support of Quality Manager, Quality.
- Assure that further processing, delivery, installation or use is controlled until proper disposition of a non-conformance, deficiency or unsatisfactory items or condition has occurred.
- Operation of Quality Assurance, Quality Control/Quality Surveillance function at project site.
- Interface with client's quality function with respect to quality assurance and quality control matters.
- Establish work completion assurance process and review the final installation records before turnover to clients.

2.3.7.1 Quality Control/Quality Surveillance Function

The Quality Control/Quality Surveillance Function has the following functional responsibilities:

- Ensure that site-specific inspection and test plans are prepared, reviewed and approved in accordance with established procedure that they contain acceptance criteria for each inspection requirement and they are approved as applicable for each work package.

- Ensure that receiving, in-process, and final inspection activities as established on the inspection and test plan and work package, are conducted, and if acceptable, signed off.
- Ensure that hold points on the inspection and test plan are adhered to and signed off by the appropriate personnel.
- Prepare inspection report and clearly identify the results of inspection against established criteria.
- Ensure that work activities defined in procedures, work instructions or work packages are verified to ensure that correct equipment and parameters are used.
- Ensure that non-conforming items are identified, and segregated where possible, and reported on appropriate forms.
- Ensure that non-conforming items are identified, tagged and segregated, where possible until the deficiency or unsatisfactory condition has been corrected and verified in accordance with the approved disposition.
- Support the non-conformance data base and ensure that Qualified Quality Control Inspectors are assigned and trained to initiate and handle Non-conformance Reports.
- Interface with the AIA on matters relating to quality and with regard to requested quality verification points.
- Review sub-contractors inspection and test plan, establish verification points and attend the established witness or hold points.

2.3.7.2 Quality Assurance Function

The Quality Assurance Function has the following functional responsibilities:

- Prepare Quality Assurance Plan, as required, and identify and specify site-specific processes.
- Together with project management the Quality Manager, Site Quality Manager and Quality Manager Nuclear, design and establish the essential management processes at site based on the project nature and client's requirements.
- Prepare site-specific procedures covering the unique processes utilized by site, which is not covered in details by this Quality Assurance Manual.
- Promote the awareness of quality requirements, procedures, and processes.
- Monitor the adherence with applicable procedures and performance of the process and improve the process as necessary.
- Perform surveillance over CCL subcontractor in accordance with CCL written procedure, and prepare surveillance report.

- Interface with the client's quality surveillance personnel on matters related to quality program and processes.
- Review contract, PO or work package to ensure that the quality requirements are clear and correct prior to the execution of work.
- Ensure that as required, each work package is presented to Authorized Nuclear Inspector for their review and acceptance prior to issue to the field
- Ensure that work package documentation is complete and signed off prior to being presented to the Authorized Nuclear Inspector, and turned over to the client upon completion of work.

2.3.8 Field Supervision

Field supervision includes the following level: Field Superintendent, General Foreman or Foreman. The details of responsibilities are determined by Project Management for a specific project, collectively, their key responsibilities are to:

- Supervise portions of the fabrication and installation processes in accordance with documented requirements.
- Attain and verify all prerequisites, materials, tools and equipment (including Personnel Protection Equipment), technical information, i.e., drawings, technical work instructions etc. and forms to be used prior to the start of work.
- Verify staff's qualifications and ensure that they have the required qualification and training for the assigned tasks and provide on the job training to site construction personnel.
- Verify that health and safety hazards and precautions are made known to workers, and all necessary measures have been taken to ensure the risk and hazard is controlled as low as reasonably achievable.
- Ensure fieldwork is executed in accordance with applicable procedures, work instructions, and good practice, including Foreign Materials Exclusion procedure.
- Communicate and coordinate with inspection personnel so that required verification can be performed.
- Ensure that hold points established in Inspection and Test Plans or Checklist, etc, are adhered to.
- Maintain and retain all required records during execution.
- Report the daily progress of field work in accordance with established reporting methods.

2.3.9 Procurement Function

Note: *This function may be executed by personnel at Head Office or site personnel, depending on the contractual arrangement with the client.*

The Lead of Procurement Function may administratively report to the Project Manager, but functionally report to the Vice President - Shared Services, this position is responsible to:

- Establish, and document site-specific procurement processes in conjunction with Quality Personnel and implement them.
- Ensure the purchasing department is staffed by qualified personnel.
- Supervise the Purchasing Department.
- Maintain records of supplier performance, qualification and other procurement documents.
- Interface with Project Management and Quality Division with regards to the evaluation and selection of suppliers/subcontractor, and procurement document review.
- Prepare and maintain a list of approved suppliers in accordance with this manual.

2.3.10 Tools, Equipment and Materials

Note: *At most Nuclear Sites, client provides the permanent materials and essential tools. CCL may procure and provide items, tools and equipment if required.*

Tools, Equipment and Materials function at site should be responsible for handling, storage and distribution of items, tools and equipment from both sources.

The responsible individual for Tools, Equipment and Materials reports to Project Manager, and is responsible for:

- Establishing site-specific processes with respect to Tools, Equipment and Materials handling, the process shall be documented properly.
- Handling, storage, shipment, and distribution of tools, equipment and materials to CCL trades, sites or other organizations, as applicable.
- Safe storage of tools and equipment at the end of shift in allocated storage areas.
- Arranging for the calibration of tools and equipment, if required.
- Controlling and maintaining the allocated storage area.
- Maintaining all required records generated during handling and storage of tools, equipment and materials.

2.3.11 Training Function

Personnel responsible for training have the following key roles at site:

- Identifies training needs, in conjunction with Project Management, Site Quality Function and appropriate supervision level at site, in accordance with codes, standards and procedures requirements.
- Develops training courses with respect to the requirements in quality, safety and environmental, codes and standards or specific client's requirements, as necessary.
- Delivers the training course to identified CCL employees.
- Maintains training records either in hard copy or electronically.
- Makes the records available to management or supervision level.
- Coordinates with client, as required if some training is provided by client.

2.3.12 Documentation Control

Document Custodians, personnel responsible for Site Documentation Control (Including Record Control) are responsible to:

- Identify the controlled documents and records, in conjunction with quality and project management.
- Establish and document site-specific documents and records control process.
- Receive, store, and distribute controlled documents and records.
- Interface with client's documentation control or other organizations with respect to receiving and transferring of documentation.

2.3.13 Project Control/Planning

Depending on the scale of the project or client's requirement, Project Control/Planning function may undertake the following responsibilities:

- Developing various types and levels of schedules consistent with the scope of work.
- Incorporating verification activities during work planning and scheduling.
- Coordinating all inputs to weekly/monthly progress, critical path and variance reports including corrective actions, and overall schedule weekly/monthly reports.
- Facilitating project control meetings for resolving issues such as charging, over-spending, under-spending, etc.

2.3.14 Site Health and Safety Function

Site Health and Safety has the following functional responsibilities:

- Performs ALARA analyses, job safety analyses and physical demand analyses.
- Develops a health and safety program and associated Project Safety Plan addressing conventional (industrial) safety, radiation safety, and waste material handling.
- Ensures training is provided regarding: radiation protection qualifications, Occupational Health and Safety, Work Hazardous Material Information System, Environmental Protection, Emergency Preparedness, and Site work environment, as applicable.
- Interfaces with client's safety function or sub-contractor safety function, as applicable.

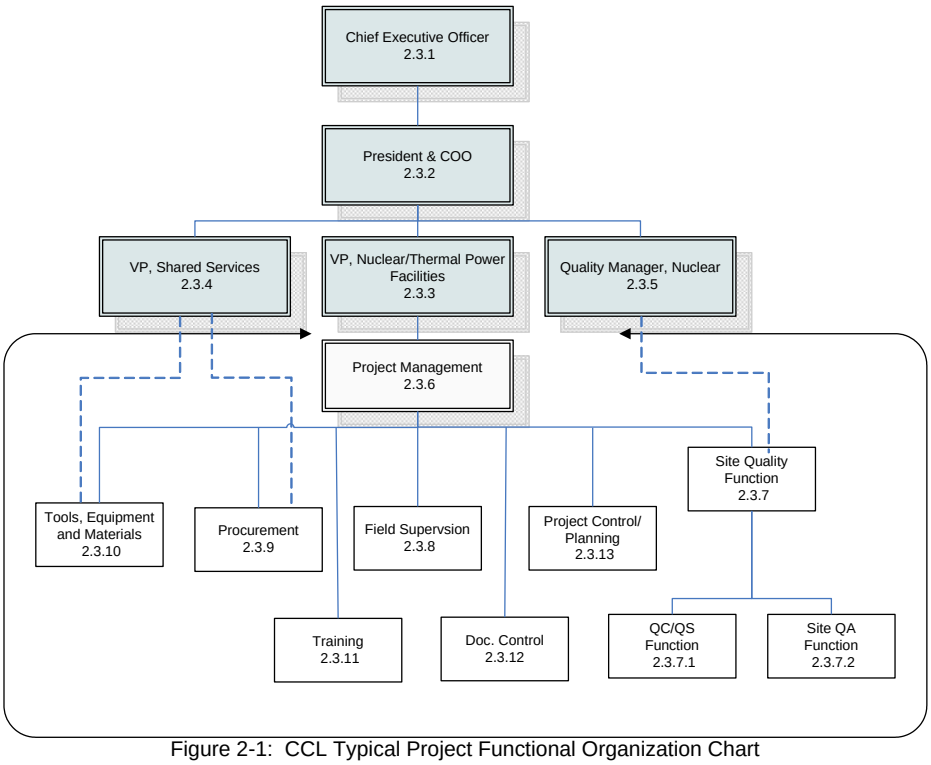


Figure 2-1: CCL Typical Project Functional Organization Chart

2.4 Delegation of Work

As stated in *Section 1.1, Policy and Authority Statement*, Project Management at various levels are responsible for executing and implementing this program. They may delegate a portion or all of the work or authority to others, but shall retain the responsibility.

2.5 Interface control

As demonstrated in *Section 2.2 and 2.3*, Project Management at each site shall establish a suitable organization chart with description of key roles responsibilities and accountabilities.

Internal/external interfaces shall be identified and controlled. Internal/external interfaces and any change thereto shall be communicated internally and externally.

Externally communication includes the following organizations, but not limited to, client, AIA, sub-contractors, regulator, external auditing organization, etc.

3. QUALITY PROGRAM

3.1 Quality Program Structure

This manual describes CCL nuclear pressure boundary quality program established in accordance with applicable requirements in N285.0. The quality program described in this manual complies with the applicable requirements of ASME Boiler and Pressure Vessel Code Section III, Division 1, Article NCA-3800 and NCA-4000.

CCL executes projects at various Nuclear Facilities sites. This manual establishes an overall quality program which focuses on governing processes. This manual may not cover site-specific processes or client requirements. When required, a site-specific Quality Assurance Plan (QAP) will be prepared to supplement this Manual. The Quality Assurance Plan shall be consistent with the requirements in this manual, and be limited to providing site-specific requirements only. The requirements in this manual will prevail in case of discrepancy between the Manual and QAP.

This manual focuses on the description of governing processes that shall be in place, instead of who and how the process will be established or implemented, which will be covered by procedures and work instructions.

Site-specific processes may be established at site, they shall be referred in the QAP, or in a documented format of a list or table, which summarizes all applicable governing procedures, procedures and work instructions for the specific site.

Derived documents from this manual (in the format of charts, forms, lists, reports, etc.) may be revised, without revising the Manual. The revision or cancellation of these derived documents shall be controlled. The forms or exhibits shall as a minimum capture Codes and Standards requirements and they shall be made available to ANIS upon request.

The hierarchy of the documents structures is as follows:

Tier 1: Quality Assurance Manual

Tier 2: Governing Procedures for all Nuclear Facility sites

Tier 3: QAP (as applicable)/ or Site Applicable Procedures/Work Instruction List

Tier 4: Site-Specific Procedures or Work Instructions

Tier 5: Derived Documents (Figures, Forms, Lists etc. derived from any tier of documents)

Note: *A complete list of above documents can be produced from CCL electronic library.*

3.2 Program Acceptance

This QA Program Manual is submitted to ANIS for acceptance prior to issuing for implementation within CCL for nuclear pressure boundary related work. TSSA is the Authorized Inspection Agency (AIA) in the Province of Ontario and similar jurisdictions exist in other provinces of Canada.

If a QAP is prepared for a specific site to address work site and contractual requirements, interfaces, organization structure, specific roles and responsibility etc. The QAP shall be accepted prior to the commencement of site work by ANIS as a supplement to this Manual.

Records of ANIS's acceptance shall be maintained.

3.3 Manual Approval, Change and Distribution Control

3.3.1 Review and Approval

As stipulated in the *Policy and Authority Statement*, the President, COO has assigned the VP, Nuclear/Thermal Power Projects as the owner of the Program who has the overall implementation and performance responsibility of the Program.

For a specific site QAP, the assigned Project Manager or other similar title will be the owner of the Program, and will implement the Site Specific Quality Program documented in this Manual with the supplementary QAP.

Quality Manager, Nuclear, shall be responsible for ensuring the Program is established and documented in accordance with Code and Standards requirements, and the Manual and QAP shall be reviewed by Quality Function and accepted by ANIS prior to be approved for implementation. Quality function shall monitor the implementation of these processes across all nuclear sites to ensure their compliance and adherence.

3.3.2 Manual Change Control

Any *major change* (refer to *Section 7.5* for definition) to the Manual or QAP is considered as a revision; it is subject to the same review and approval process as the original. Major revisions to manual shall be identified by adding a line to the revised section or summarizing the change in the revision history.

Quality Manager, Nuclear or delegate, shall advise ANIS of proposed major changes. The major changes shall be made through formal revision of the Manual, and shall be accepted by ANIS same as Section 3.3.1, prior to putting the changes into effect.

While *minor change* (refer to *Section 7.5* for definition) to the Manual is *not* considered as a change to the program or process, they shall be made in the following methods;

- Issue a minor revision sheet which clearly identifies where the corrections are made.
- Keep track of the minor revisions to the manual.

- File the minor revisions together with the manual;
- Issue a minor revision sheet to all recipients of controlled versions who do not have access to the electronic controlled copy of the Manual
- Any five minor revisions will warrant a revision to the manual.

Note: *Above minor revisions method is only applicable for PB Manual or QAP, for minor revisions of other type of documents, refer to Section 7.5.*

Revisions to the manual and records of the acceptance by ANIS shall be made available to ANI.

3.3.3 Manual Distribution Control

The official controlled version of the Manual and any minor revisions attached to it will be kept on CCL Library maintained by Head Office, and access to it will be provided to all employees who need to use it. All printed copies are not controlled.

Hard copy distribution of the Manual or QAP to external parties, i.e., ANI, clients, auditors are performed using transmittal, any revisions thereto are also distributed to them.

3.4 Management Review and Continuous Improvement

The program documented in this Manual is continually evaluated and updated in accordance with established process to ensure the adequacy and effectiveness of the program, and suitability to CCL overall business and quality objectives. Corrective actions are generated, as appropriate, to document identified issues, define corrective actions and to ensure their implementation and completion. Records of these reviews and any identified actions are retained.

In addition to the annual review of the program described in this Manual, Quality Manager, Nuclear also monitors the changes in applicable Codes, Code Addenda, standards, regulations or contractual requirements. Major changes to them are reviewed to assess the impact on the program.

The manual shall be revised to incorporate the change to the program, as necessary.

If the code changes impact a specific work process rather than the program, the responsible person of the function affected is notified of the changes, so that their impact can be further evaluated and addressed in sub-tier procedures/work instructions.

4. PERSONNEL COMPETENCE AND CAPABILITY

4.1 General

Personnel competence and capability is attained through the following process

- Identification of position requirements;
- Selection of candidates and evaluation of the qualification against the position requirements;
- Identify the gap between the selected employee's qualification and cover the gap, if any, through training, on the job training, or mentoring;
- Evaluation of employee's performance and continually improving their competence and capability.

4.2 Identification of Position Requirements

The manager or supervisor who is hiring shall identify the qualification requirements for vacant positions or new positions in a position disposition, email or in other format to the Human Resource (for non-union staff) or Trade Union, to clearly identify the required qualification requirements, education background, work experience, certification for special work, and physical requirements.

The hiring manager or supervisor shall attend interview or any necessary test of the candidates to evaluate their qualification, and make recommendation for the hiring decision.

The evaluation can be done through interview, reviewing the resume, confirming the work experience by checking references or employment records from Trade Union, and reviewing the original certification for special work, for example, welder's tickets, auditor's or inspection certificate etc.

4.3 Identification of Training Needs

Once the person is hired, the direct supervisor of the employee shall perform an evaluation based on the pre-defined and site-specific requirements, to identify any training needed to cover the gap. The supervisor will then notify the training coordinator or similar functional position to schedule and provide the required training.

All special qualification requirements identified in this section shall be satisfied before assigning the employee on a task that needs independent decision. Working under a qualified supervisor or personnel for a limited period of time is allowed prior to receiving the official training.

4.4 Provision of Training

Identified training shall be planned and provided in a timely fashion to ensure that individuals will have the required qualification or awareness for a specific job. Training covers: CCL internally designed and provided training, external training (for example, auditor's training), and client's site specific training. Training topics also encompasses all processes related to quality, occupational health and safety, security, information access, etc.

Training on procedures/work instructions to the personnel directly working under the process is mandatory. Designated Trainer, direct supervisor, procedure/work instruction writer, Field Engineer may conduct this training. Self study or reading of applicable procedures/instructions is also allowed provided that the interpretation or clarification is available should the need arise.

4.5 Indoctrination to Codes, Standards and CCL Quality Program

Personnel performing activities affecting quality within this program receive indoctrination and training in the requirements of this Manual, and applicable Codes and standards (N286, N285, ASME, CSA, etc.), as required. The level of training is established based on the scope, complexity and the nature of the assigned activities. Training is provided through official training, supervisor's orientation, rollout of procedures, as well as self-study. On-the-job training is provided by personnel experienced or qualified in the specific activity.

Indoctrination also covers the individual position's job responsibility, authority and, interface control and communication, access to required information, and expectation on performance.

Indoctrination to this Manual is required for all quality personnel (QA, QC and QS), management (Manager level and up), and appropriate field supervisors as determined by the Project Manager.

Indoctrination and training of procedures/work instructions to the personnel directly working under the process is mandatory.

4.6 Evaluation of Personnel Proficiency and Performance

Direct supervisor of an employee is responsible to evaluate or provide recommendation of an employee's performance to higher level of management, or to the associated trade Union.

If it is determined that the individual's capabilities do not meet specified requirements, and training in a reasonable timeframe cannot cover the gap in qualification, the individual shall be removed from the position.

4.7 Qualification Requirements for Auditors and Verification Personnel

4.7.1 Qualification of Audit Personnel

The Quality Manager, Nuclear or delegate is responsible for the qualification and certification of Audit Personnel for conducting external and internal audits. This qualification shall be in accordance with a written procedure.

The candidate for Lead Auditor shall pass an examination, which shall evaluate comprehension and application of Code requirements, and the process of auditing. Comstock Canada Ltd. may delegate the examination activity to an independent certifying agency. Objective evidence regarding the type and content of the examination shall be retained by Comstock Canada Ltd.

The certification for Lead Auditor also requires the candidate to have participated in a minimum of five audits over a period not to exceed three (3) years prior to the date of certification. One of these audits shall be a nuclear Quality Assurance audit within the year prior to certification.

CCL Certification of Auditors and Lead auditors is a two-fold process: one is the initial evaluation and certification; the other is the annual evaluation.

Lead Auditors who fail to maintain their proficiency for a period of two years or more shall require re-qualification.

Lead Auditor qualifications may be transferred from another Certificate of Authorization holder to Comstock Canada Ltd. Comstock Canada Ltd. may qualify and certify the Lead Auditor from another Certificate of Authorization holder provided that the certification, audit participation and examination results are maintained on file.

4.7.2 Qualification of Inspection and Test Personnel

Each person who verifies conformance of work activities for acceptance shall be qualified to perform the assigned inspection task.

Inspection and Test personnel shall be qualified and certified by the Quality Manager, Nuclear or designate in accordance with a written procedure. This procedure defines the minimum qualification requirements for inspection and test personnel.

Personnel that are on-the-job training may perform process inspection before attaining the above certification provided that they are under direct supervision of qualified personnel.

Personnel that are on-the-job are not allowed to perform the final inspection or verification of conformance until certification is achieved. This inspection shall be performed by fully qualified and certified inspection personnel.

4.7.3 Qualification of NDE Personnel

Comstock Canada Ltd. will subcontract NDE activities provided the activities are performed by an approved vendor on the Approved Vendor List (AVL).

NDE personnel performing Code required examinations should be qualified in accordance with CGSB Standards.

Records of qualified NDE personnel shall be verified and maintained by Quality Manager, Nuclear or delegate and shall be made available to the Authorized Nuclear Inspector upon request.

4.7.4 Certification of Qualification

The qualification of personnel shall be certified in writing in an appropriate form, including the following information:

- Employer's name.
- Employees name
- Identification of person being certified
- Activities certified to perform
- Basis used for certification, which includes such factors as:
    - Education, experience indoctrination, and training
    - Test results, where applicable
    - Results of capacity demonstration
- Results of periodic evaluation, if required
- Results of physical examinations when required
- Signature of employer's designated representative responsible for certification
- Date of certification and date of certification expiration.

For NDE personnel certified by other organizations, CCL quality personnel shall verify if the above applicable information is captured on the certificate.

4.8 Records

Personnel Qualification and Training Records are entered and maintained via CCL Employee Qualification Register (EQR). Training Division or other designated employees at various sites shall ensure that the register is updated based on qualification or training records, and the records are scanned and stored in the registration system. The training records include one or more of the following: attendance sheets, training logs, certificates, and other personnel qualification records demonstrating work experience, performance, skills etc.

Records for each Lead Auditor are maintained and updated annually.

5. PROCUREMENT DOCUMENT CONTROL

5.1 Type of Procurement Documents

CCL has the following types of procurement documents in place:

- Procurement requisition documents, i.e., Material Requisitions, Service Requisitions, NDE and Heat Treatment Service Requests etc.
- Purchase orders
- Contracts.

***Note**: The above procurement documents could be assembled as a procurement documents package with all supporting documents, for example, drawing, technical specifications, EQR, amendments etc.*

5.2 Preparation of Procurement Documents

For CCL purchased materials, items or services, the Field Supervision shall ensure that a *Material Requisition* is prepared and submitted to the Procurement Function.

The *Material Requisition* shall clearly identify the quality and quantity of required material with the accurate description of the materials/items provided on drawings, technical specifications, or Engineering Quotation Request (EQR) or other approved engineering/technical documents (such as DBOM, Passport CAT ID description, etc). Referenced technical documents shall be supplied or made available to the Procurement Function.

Based on the *Material Requisition* and as applicable, supporting information, the assigned Purchasing Agent shall prepare a PO or a Sub-contract in accordance with procurement process highlighted in *Section 8,* and issue it to selected supplier; The PO or contract shall include the following requirements:

1) A statement of the scope of work to be performed by the service provider or description of items and materials to be provided by the supplier, the activities, class of system, components, and support etc. shall be clearly identified, refer to section 5.3, the *"Activities" "Class of Items"* column in *Table 5-1*.
2) The technical requirements by referencing applicable ASME Code, standard, technical specification, or drawing requirements, including revisions thereto. Provide or make available to the supplier the technical specification or other technical information CCL received from client.
3) The test, inspection and acceptance requirements of CCL.

4) Quality Assurance Program requirements based on EQR requirements, as applicable or an appropriate program selected in accordance with *Table 5-1* for Nuclear PB Suppliers.

5) Provision of retention and disposition of QA records in accordance with applicable Code and standard requirements, as applicable.

6) A statement to the effect that a representative of CCL, AIA or CCL's Client has the right of access to the supplier and any sub-supplier facility with regard to the scope of supply.

7) The documentation required to be submitted for information, review or for approval by CCL as well as the documentation to be turned over by the supplier upon completion of work.

8) The need to have corrective action programs in accordance with required quality requirements.

9) The purchase order shall further stipulate the time that the submission shall be made.

10) A stipulation that any non-conformance with regard to the scope of supply be referred to CCL for approval and disposition.

11) A requirement that the supplier identify spare or replacement parts with regard to the scope of supply, and identifies the technical and quality assurance data required for ordering these parts.

12) For calibration certification service, the requirement that the calibration certification/report shall include as-found and as-left data.

5.3 Nuclear PB Supplier Quality Requirements Selection

When preparing *procurement requisition* document*,* the initiator shall identify the required quality program of the potential suppliers. The required quality program may have been specified in EQR or other technical information provided by client. Otherwise, the initiator, in conjunction with Quality Department shall identify the required Quality Assurance Program. Table 5.1 provides a reference when selecting quality assurance program requirement of PB Suppliers.

As illustrated in the table, quality program requirements are commensurate with the scope of work, i.e., the activities to be performed and the classification of system, components and supports.

For a limited scope of work, it may be determined that not all elements of the identified quality program are necessary to be satisfied by the supplier, in this case, the applicable elements shall be clearly identified in the procurement documents and their program will be assessed based on these requirements. The assigned Purchasing Agent, in conjunction with Quality Function, shall determine and document these requirements in procurement documentation.

5.4 Procurement Documents Review and Approval

Procurement documents shall be reviewed to ensure that the document to be transmitted to the supplier includes the appropriate provisions to assure that items or services will meet the specified requirements.

The procurement document shall be reviewed and approved by assigned personnel from procurement function, quality function, project management, and Client, if required. Refer to *Section 7* for details on review and approval requirements.

Assigned personnel from quality function shall perform the final review of the purchase order by comparing the document to the requisition and the requirements stated in *Section 5.2,* and also verify the Identified Quality Program requirements is in accordance with requirements Section 5.3 and 5.4. All pertinent information shall be provided or made available to all reviewers.

Reviews and approvals shall be documented.

5.5 Procurement Documents Change Control

Any change, modification or amendments to procurement documents to address the results of bid evaluation or negotiation shall be reviewed and approved *prior to* issue to supplier.

Amendments to procurement documents shall also be reviewed and approved *post* PO/contract award.

Review and approval of change, modification and amendments to the procurement documents shall be performed in the same way as for the original to verify

- the appropriate requirements specified *Section 5.2* are addressed;
- any additional or modified design criteria are addressed;
- any suggested changes to technical or quality requirements resulted from Supplier's request are evaluated and approved by CCL, Client or Design Agency that fully understand the intent of its original design.

5.6 Records

Procurement documents and all changes, modifications and amendments to them shall be filed and kept as non-permanent records in accordance with *Section 18*.

Un-priced copies of procurement documents shall be available for review by the Authorized Nuclear Inspector upon request.

Table 5-1 PB Suppliers' Quality Program Requirements

Supplier	Activities	Class of Items	Quality Program
Contractor	Procurement, fabrication, installation, modification, replacement or repair.	Class 1, 1C, 2, 2C, 3, 3C, or 4, system, component, and support	NCA-4000
Contractor	Fabrication	Class 1, 1C, 2, 2C, 3, 3C, or 4 supports for fittings without operations that change material property.	Same as Material Organization
Contractor	Procurement, fabrication, installation, modification, replacement or repair.	Unclassified and registered piping	CSA B51
Contractor	Procurement, fabrication, installation, modification, replacement or repair.	Class 6 piping	Section VIII, Division 1, Appendix 10
Contractor	Procurement, fabrication, installation, modification, replacement or repair.	Class 6 fittings, or instrumentation of Class 1, 1C, 2, 2C, 3, 3C, or 4, or 6 non-in-line instruments	CSA B51 Annex F, Z299.3 or ISO9001
Material Organization	Manufacture or Supplier of Materials	Class 1, 1C, 2, 2C, 3, 3C, or 4 system or components (include welding consumable)	NCA-3800 Or Z299.3, or ISO 9001, plus meeting the additional requirements of NCA-3855.2, 3856, 3859.1 (e), 3860.
Calibration Service	Calibration Laboratories	Calibration of Measuring and Testing and Equipment	Accreditation by NVLAP, A2LA or other recognized body by NVLA and the accreditation is to ANSI/ISO/IEC 17025:2005

6. INSTRUCTIONS, PROCEDURES AND DRAWINGS

6.1 General

Work activities affecting quality are carried out and verified in accordance with written procedures, work instructions, and drawings, as appropriate, to ensure the quality is achieved during execution by performer, and verified by inspectors or verifiers as per planned arrangement.

6.2 Governing Procedures

As highlighted in Section 3.1, there are governing procedures that describe the generic processes applicable to all Nuclear Sites for CCL, which are also referred to as standard operating procedures or generic procedures for nuclear projects.

Quality Assurance Manager, Nuclear shall be responsible for the identification and arranging the preparation of those procedures by qualified personnel.

6.3 Site-specific Procedures and Work Instructions

Project Management, in conjunction with Site Quality Function shall identify and arrange for the preparation of site-specific procedures or work instructions by qualified personnel prior to the start of the work.

The site-specific procedures, work instructions, and drawings include or reference appropriate quantitative or qualitative acceptance criteria for determining if the prescribed activities have been satisfactorily accomplished.

As required, site specific procedures / work instructions identify:

- Pre-requisites shall be met prior to the start of work;
- Precautions to be observed including those for conventional safety and radiation protection;
- Installation requirements;
- The sequence of actions to be followed, including coordination of construction and verification activities;
- Special equipment required for installation, including Personnel Protection Equipment.
- Reports, forms and records, where applicable;
- Reviews and approvals;
- Housekeeping requirements and foreign material exclusion requirements.

Client's Engineering Group may provide technical Instruction or requirements specified in engineering directives, code cases, or other appropriate documents on fabrication, modification or construction work at a specific site. In this case, personnel from quality function and construction shall review these technical instructions and decide if work instructions are to be prepared to address these requirements. Any ambiguity shall be clarified with all involving parties prior to issue them for use. The review may be performed together with the review of the work packages, procurement documents etc. or separately.

If the review is not conducted together with the work package or procurement process, an appropriate review and incorporation process shall be established to ensure that customer's requirements, especially engineering requirements are addressed and adhered during execution of site activities.

Refer to Section 7 for detailed requirements.

6.4 Drawings

CCL does *not* perform any design activities for Nuclear Projects. Client provides all design/engineering drawings. Quality personnel and execution personnel shall review the drawings prior to the commencement of work to verify if construction could be executed as required by drawings. Issues and ambiguity shall be clarified prior to the start of fieldwork.

Refer to Section 7 for detailed requirements.

6.5 Availability

Procedures, work instructions and drawings shall be available for the personnel at the point of use.

Procedures and work instructions shall be available for review by Authorized Nuclear Inspector upon request.

6.6 Records

Procedure, work instructions, drawings used to perform work, shall be kept as records either together with the completed work package or separately as non-permanent records.

7. DOCUMENT CONTROL

7.1 General

Documents that specify quality requirements or prescribe activities affecting quality are controlled. Controlled documents include:

- All quality management related documents, including the QA Manual, Governing procedures and work instructions.
- All project specific documents such as quality plans, site-specific procedures and work instructions.
- Document derived from the above, i.e. reports, forms, etc.
- External documents from client, suppliers, regulator, etc.
- Procurement Documents

The preparation, issue and change to these documents shall be controlled to assure that only correct documents are being used.

Table 7-1 identifies the preparation, review and approval responsibilities of Documents.

The preparation, review, approval, distribution or filing of derived documents shall be prescribed in the associated control documents.

7.2 Identification and Distribution of Controlled Documents

All controlled documents are maintained in CCL's electronic Library. A current controlled document list can be produced from the Library.

For a project, if not all controlled documents in Library are applicable, a site specific Controlled Document Index may be created for the project. Another way to identify those controlled documents is to identify them in the project specific Quality Assurance Plan.

Only the electronic version of the documents in the library is the controlled copy, all printed copies by individual user are not controlled.

Document availability and distribution is controlled as follows:

- Controlled access is provided to personnel who need to use the documents;
- For personnel who do not have access to CCL Library, a controlled electronic copy or hard copy will be made available to the personnel at the point of use in a controlled manner;

- For external parties who do not have access to CCL Library, documents will be issued with transmittal or (electronically via email) etc. to record the distribution, so that later revision or change could be provided to the recipients.
- Invalid and/or obsolete documents are promptly removed from all points of issue or use, or otherwise assured against unintended use; and
- Any obsolete documents retained for legal and/or knowledge preservation purposes are suitably identified.

7.3 Preparation of Documents

Documents shall be prepared by qualified personnel knowing the subject or the work, or with the help from the Subject Mater Expert (SME). Documents shall be prepared in accordance with applicable requirements from Code, standards, Client, technical specifications, drawings, or Client's references and CCL internal procedures.

Detailed procedures and work instructions shall be prepared by a subject matter expert, who has adequate knowledge and understanding of the process or requirements.

Documents shall be prepared using the established template, with the identification of document title, number, revision number, preparer, reviewer, approver, etc., as well as the revision or change made to the documents.

7.4 Documents Review and Approval

Documents shall be reviewed by the supervisor of the author, another SME or peers to ensure adequacy, completeness and correctness prior to approving and issuance for implementation.

Documents shall be approved by appropriate management position that is responsible for the implementation of the process or the work covered in the documents.

All controlled CCL generated documents shall be reviewed by quality personnel, to ensure that the requirements of the Code and standards are addressed adequately.

The person preparing the document shall ensure that the reviewer or approver has access to all pertinent information that was utilized during preparation of the documents.

7.5 Document Change Control

7.5.1 Minor Change

A minor change is defined as any change that does not have an impact on the technical intent or outcome of the document, and does not change the meaning of the document, following are examples of minor change:

- Correction of the typo errors;
- Editorial corrections;
- Make unit of measure conversions (e.g. change from 10 ft-lbs to 120 in-lbs of torque);
- Changes in the format or number of a document, as long as the traceability to previous documents are maintained in the document itself or other suitable methods.

When a document change meets the above *minor change* criteria, it does not require the same review and approval process as the original document.

7.5.2 Major Change

Major changes are the changes that do not meet the criteria of “minor change” defined in *Section 7.5.1.*

Major changes are subject the same level of review and approved same as the original document. The reviewer and approval shall be from the same organization as the ones for the original, unless another organization is designated to perform the function.

The author shall provide all pertinent background information or data to reviewers and approver.

7.6 Control of External Origin Documents

Client supplied documents, including procedures, instructions, and drawings provided as part of contractual documents, work packages or separately, shall be reviewed and incorporated into CCL internal documents in accordance with an established process.

Subcontractor supplied documents, including procedures, records, and all accompanying documents shall be reviewed and accepted as applicable in accordance with an established process.

New requirements and changes in applicable codes and standards, Code cases etc. shall be reviewed and assessed to evaluate the impact on CCL processes and activities, and to initiate proper actions to address those changes. Refer to Table 7-1.

7.7 Records

Records produced during document preparation, review and approval, and distribution process shall be maintained.

Approved and obsolete procedures, standards and work instructions shall be kept as non-permanent records by CCL in accordance with Code and Standards requirements.

***Table 7-1 Preparations, Review and Approval of Typical Documents**

Documents Type	Preparation	Review	Approval	Distribution
CCL Generated Documents				
PB QA Manual	Document Control	QA Manager, Nuclear Executive VP, Nuclear/Thermal Power Facilities ANIS	President and COO.	Document Control
Site PB QAP	QA Specialist	QA Manager, Nuclear QA Manager, Nuclear Site ANIS, if requested	Project Manager	Document Control
Material Requisition Service Requisition	User of Material/Service	Supervisor of the User QA Personnel	Manager/Supervisor of the User, or Client if required	User or Document Control
Purchase Orders/Contracts	Purchasing Agent	Procurement, QA, Project Management	Project Manager, Procurement Manager, or Client	Document Control
Inspection and Test Plan	Quality Control Personnel	QC Supervisor Representative from AIA, Client or Engineering Division, if required	QC Manager/Supervisor	Document Control
Visual Examination Procedures	QA/QC Specialist	QA Personnel	QA/QC Manager/Supervisor	Document Control
Welding Procedures	Welding Engineer /SME	Welding Supervisor/or SME ANIS, if required	Quality Manager, Nuclear or Site	Document Control
Governing Procedure/ Work Instructions	Quality Specialist/SME	Quality Personnel	Quality Manager, Nuclear	Document Control
Site Specific Procedures/Work Instructions	Site Quality Personnel/ SME	Quality Personnel/SME	Quality Manager, Site	Document Control

Documents Type	Preparation	Review	Approval	Distribution
Data Reports	Quality Personnel	Data report Certified Quality Personnel as per CCL's procedure	Data report Certified Quality Personnel as per CCL's procedure	Document control
Derived Documents associated with a control procedure, i.e. Audit Report, Self-assessment Report etc.	As identified in associated controlled document	As identified in associated controlled document	As identified in associated controlled document	As identified in associated controlled document
Externally Generated Documents				
NDE Procedures	** Prepared, reviewed, approved and distributed by Qualified Sub Contractor (All NDE, except some code required visual examination activities will be subcontracted)			
Heat Treatment Procedures	** Prepared, reviewed, approved and distributed by Qualified Sub Contractor (All Heat Treatment activities will be subcontracted.)			
Calibration Procedures	** Prepared, reviewed, approved and distributed by Qualified Sub Contractor (All Calibration activities will be subcontracted.)			
Other external documents from Clients, Regulator, Jurisdictional Authority, etc.	***Prepared, reviewed, approved and distributed by external organizations. Example: Contracts, PO, Tech-spec, Drawings, Work Packages, technical instructions, Code Cases, Code and Standard)			

Note:

1) Wherever a position title is used in this table, it means the responsibility only; the actual work could be delegated but not the accountability.

2) *This table is to be used for reference only, document type varies from project to project, and each project shall maintain a complete list of controlled documents.

3) ** These documents shall be reviewed by Quality personnel/SME to ensure sub-contractor's procedures meet applicable code and standards requirements.

4) ***These documents shall be reviewed by Quality personnel/SME to assess the impact of any new or changed requirements from external on CCL program, processes and associated procedures and work instructions, and to determine a proper way to address the changes.

8. CONTROL OF PROCURED ITEMS & SERVICES

8.1 General

Procurement of items and services shall be planned, documented and executed in a systematic approach to ensure that required items and services meets all applicable requirements and are provided to project on time.

This section highlights a generic procurement process being used by CCL; this section also provides its interrelation with other associated processes.

8.2 Procurement Planning

Once a contract or PO is awarded to CCL, Project Management, in conjunction with Procurement and Quality will seek to plan the foreseeable procurement activities based on requirements provided by Client. Such as, client's requirements on the scope of work, project schedule, technical information, suppliers. The planning shall consider the following activities and areas, but not limited to:

- Procurement document preparation, review, and change control process;
- Selection of procurement sources;
- Bid evaluation and award requirements, as applicable;
- Monitoring and controlling of supplier's performance;
- Planned verification, surveillance or audit on suppliers;
- Control of non-conformance;
- Acceptance of items or services;
- Quality Assurance records, and
- Interface and coordination with Client.

CCL's procurement process normally starts with a requisition prepared by field work execution personnel as discussed in Section 5. CCL does not procure long lead items for Nuclear Facility projects, as they are usually supplied by Client of Agency.

8.3 ASL-Nuclear and Selection of Suppliers

8.3.1 Maintenance of ASL- Nuclear

Procurement Function maintains a list of all vendors used by CCL for products or services. It is not necessary to request that all vendors to have a quality program, for

example, the suppliers of office supply, vehicles etc. Among all vendors, there are some critical suppliers who will supply code related items and services, or safety related items and services. They are listed separately in an *Approved Suppliers List-Nuclear (hereafter referred as ASL).* The vendors to be added to the *Approved Suppliers List* shall be evaluated in accordance with Section 8.4.1. Quality Organization shall assist procurement organization to qualify critical suppliers, while the overall responsibility for the selection of supplier lies with the Manager, Procurement, or designate.

Note: *All suppliers are used by CCL are entered into Jonas, within these, an ASL list is generated in accordance with CCL ISO program.*

An ASL-Nuclear is generated and maintained in accordance with this program and other nuclear site related programs.

The ASL shall specify the following, but is not limited to:

- Scope of material/work the supplier is qualified to provide;
- Qualifications, for example, their certificate and the expiry date of the qualification;
- The date they are qualified and expiry date, or any other conditions;
- The audits performed on them, and next scheduled audits, etc.

The ASL shall be reviewed by Quality Manager and approved by Manager, Procurement, or delegate.

8.3.2 Selection and Qualification of Suppliers

The selection of the supplier is based on evaluation of supplier's capability to provide items or services in accordance with the requirements of procurement documents, prior to contract award.

Suppliers may be selected from pre-qualified ones listed in the *Approved Supplier List*, *Nuclear* or from ones that has not been listed on the ASL. The supplier must be approved and added to the ASL prior to awarding PO or contract.

Qualifying process for new supplier includes one or more of the following:

- Evaluation of the supplier's history of providing identical or similar products (or service), which performs satisfactorily in actual use.
- Determination of supplier's technical and quality capability based on a formal audit to evaluate the facilities, personnel qualifications, and the implementation of the supplier's quality assurance program. Formal audit shall be performed in accordance with *Section 19, Audit.*
- For organizations that are registered or certified by AIA or ASME, CCL does not need to audit the organization as long as a valid certificate that covers the scope of work is available.

- For organizations providing calibration services which is accredited to ANSI/ISO/IEC 17025:2005, CCL does not need to survey or audit the supplier, but need to verify the published scope of accreditation for the calibration laboratory covered the needed measurement, ranges and uncertainties, and all other requirements listed in NCA-3855.3 (C).
- When ISO 9001 or Z299 program is required as per Section 5.3, CCL does not need to audit the organization as long as a valid certificate covering the scope of work is available, or only need to audit the additional requirements required by CCL outside of the scope of their certificate.

8.4 Bid Evaluation

Formal bid evaluation is not mandatory for all procurement. It may be required for large value contract or PO, or at the discretion of VP, Shared Service.

When bid evaluation is performed to determine the extent of conformance to the procurement documents, purchasing personnel, together with technical and quality personnel shall evaluate the following as applicable:

- Technical abilities;
- Commercial advantages;
- Quality program requirements compliance;
- Suppliers' personnel qualification;
- Suppliers' past performance, production capabilities, etc.

Purchasing personnel compares above elements among the bids received, and choose the most qualified one. If there are any unacceptable conditions that need supplier's commitment on fulfilling it during execution of contract or PO, it shall be specified in the contract or PO prior to award. These conditions shall be monitored and evaluated post contract award as further discussed in *Section 8.5.*

8.5 Supplier Performance Evaluation

8.5.1 Evaluation Methods and Extent of Verification

CCL shall verify supplier's activities to ensure the conformance with contractual requirements through quality surveillance at source, or at the site where the activities are being performed, or formal audit on the implementation of supplier' quality program.

The extent of verification activities and planning of the verification activities depends on the importance, complexity and performance of the suppliers.

Only personnel having the qualification in *Section 4* can perform the verification or audit on suppliers.

8.5.2 Post Contract Communication with Suppliers

Upon award of contract for materials/service supplier, assigned contract administrator or project management, together with quality personnel, will communicate with the suppliers the expectation from CCL and supplier's overall plan to meet the procurement document requirements in respect to the following subjects:

- Supplier's detailed plan to execute the contract/PO and processes to be utilized to ensure quality, safety and other contractual requirements are met.
- Interface between CCL and supplier;
- The information and documentation exchange channel between CCL and the supplier;
- CCL's requirements for quality surveillance and inspection;
- CCL's requirements for establishing verification points on their inspection and test plan, as well as the requirements for reviewing their documents during work execution;
- Identification of supplier generated documents and records that CCL need to review and accept;
- Change control during execution of contract/PO, both physical change to items and documents, including the approval of disposition of non-conformance.

8.5.3 Quality Surveillance and Supplier Performance Evaluation

Based on the importance, complexity of the services/items provided by the supplier, CCL might conduct quality surveillance in accordance with an established process. The results of surveillance shall be presented to supplier's management for proper action, as well as to CCL procurement function, so that the performance of supplier could be evaluated and their performance is monitored and trended as necessary.

Suppliers shall be accountable for the quality of their activities to CCL. The surveillance or verification activity carried out by CCL does not relieve supplier's responsibility to verify their own activities.

Other than direct verification of supplier's activities, CCL may conduct full audit on supplier's quality program during the execution of the contract to verify the effectiveness, efficiency and applicability of their quality program to the defined scope of work.

Review of supplier's procedures, work instructions, inspection reports, travelers, etc, is another method CCL will use to evaluate supplier's performance.

Procurement department or project management also monitors other aspects of supplier's performance, for example, compliance with health and safety requirements, timely delivery, commercial aspects etc.

8.6 Acceptance of Item or Service

8.6.1 Acceptance of CCL Procured Items

Items are accepted through receiving inspection. QC Inspector performs the receiving inspection in accordance with an established process to verify against objective evidence (records, physical measuring, photos etc.) the following as applicable, and to determine compliance with procurement requirements and applicable code and standard requirements.

- Item description, model number, part number, and unique identification number;
- The dimensional, physical, and other characteristic;
- Configuration;
- Identification and traceability of items;
- No damage during shipping and transportation;
- Cleanliness and special packing and protective environment is maintained;
- Review of supplier's documents, traceable to items and procurement documents;
- Certified Material Test Report or Certificate of Compliance.

Identification of received material and components is verified against the specified identification number and Code requirements, including verifying traceability to CMTR's, Data Reports and Certificate of Compliance's in accordance with *Section 9* of this Manual. Acceptance of identification and traceability is recorded. Nameplate rubbings or photographs taken during receiving inspection, when required, are identified with the item identification and PO number. Welding and brazing consumables must be accompanied by a CMTR, when required by Code.

CMTR's are verified by the Receiving QC Inspector for compliance with PO specified material requirements in accordance with Section 8.6.1. CMTR's clearly identify the manufacturer with a unique identification number, signature, stamp or printed label and date of inspection, or other suitable method.

The Receiving QC Inspector verifies that the Manufacturers Data Report has been signed and dated by the ANI or Licensee's authorized representative in accordance with N285.0 Table 1.

Receiving inspection shall be recorded.

8.6.2 Acceptance of Client's Supplied Items

Acceptance of client-supplied items shall be subject to the same inspection as would CCL purchased material or services of the same type. In addition, evidence of acceptance by the client shall be supplied to CCL.

8.6.3 Acceptance of Services

Completed service is verified by one or more of the following methods dependent on their scope and complexity, as reflected in the service contract or other procurement documentation:

- Verification of the documents/records produced by the service provider.
- Surveillance on the performance of the work activities and audit on their program and processes.
- Review of objective evidence of conformance to the procurement document requirements such as certifications, reports, etc.
- Witness or inspection of work at PO, surveillance plan, or ITP specified intervals.

8.6.4 Other Acceptance Methods

Source verification of items may be used by CCL. It shall be performed in accordance with an established process covering details on the planning, execution and documentation of this method.

Certificate of Conformance (it is also called Certification of Completion, Certification of Completion Assurance, etc.) is another method that may be used for acceptance of both items and services. CCL does not use this method for current projects, if in future this method is to be used, it shall be performed in accordance with an established certification program of CCL. Alternatively, the supplier may include this process in their procedures and work instructions to detail how to complete, review and approve the Certificate of Conformance

The Certificate of Conformance (or equivalent) may be prepared by CCL in accordance with CCL's written procedures, or by the supplier following their written procedures accepted by CCL. If latter, CCL shall verify the validity of supplier's certificate and the effectiveness of the Supplier's certification system through quality surveillance or audit at the interval commensurate with the scope of work, importance and complexity of the activities and past performance of their quality system.

The Certificate of Conformance shall meet the following minimum criteria:

- Identifies the purchased items or service by a unique identification number, i.e., CAT ID or PO number.
- Identify the specific procurement requirements for the provided items or services, such as code, standard and other specifications; this can be supported by procurement documents provided to them by CCL.
- Identifies any procurement requirements that have not been met, together with explanation and means of resolving any outstanding issues or non-conformance, for example, an incomplete item on the Punch list will be addressed after turnover and during commissioning for installation work.

- The certificate shall be signed or otherwise authenticated by CCL Quality Function (Quality Manager, Nuclear or delegate) or supplier's quality function;

8.6.5 Results of the Acceptance

The results of acceptance of items/services shall be recorded. Unacceptable items/services, or associated documents found during receiving inspection shall be handled in one of the following ways:

- Return back to suppliers with a Corrective Action Request, or documented in inspection report to detail the reason of rejection;
- Identify and quarantine items/completed work, if possible, and notify supplier to take proper action;
- Supplier shall take proper action to address the nonconformity following non-conformance process in accordance with Section 8.7, as applicable;
- Repaired or reworked items are subject to re-inspection.

8.7 Supplier Non-conformance

Supplier's non-conformance shall be reported, evaluated and dispositioned in accordance with established measures contained in provisions below as applicable, or just returned to supplier:

1) Evaluation of Non-conformance.
2) Submittal of the Non-conformance notice to CCL by the vendor as directed. The submittal shall include the vendor recommended disposition along with technical justification.
3) Non-conformance to the purchase order requirements, which consist of one or more of the following, shall be submitted to CCL for approval of the recommended disposition.
   - A technical or material requirement is violated.
   - A requirement in the supplier documents, which has been approved by CCL, is violated.
   - The non-conformance cannot be corrected by continuation of the original process or by re-work.
   - The item does not conform to the original requirement even though the item can be restored to a condition such that the capability of the item to function is unimpaired.
4) CCL disposition of vendor recommendations.
5) Verification of the implementation of the disposition.

6) Maintenance of records of vendor submitted non-conformances.

8.8 Unqualified Source Material

Utilization of unqualified source materials is allowed provided that the requirements in the following qualification process are met.

1) Verify that no welding with filler metal has been performed on the unqualified source material.
2) Product analysis to verify the chemical composition of each piece of unqualified source material.
3) Verify all other requirements of material specification on **each piece** of unqualified source material.

Note: *CCL will subcontract activities in above (2) and (3) to qualified suppliers.*

Where Certificate of Compliance is acceptable by NCA3800, testing of each piece is not required; alternatively, CCL will subcontract a supplier to verify all other requirements of material specification on *each heat* and *lot* of unqualified materials specified in above (3), provided that the following additional requirements are also met:

1) A CMTR is provided with the unqualified source material
2) The unqualified source material is traceable to the CMTR.
3) The requirement of having a written procedure about identification is included in CCL Procurement document to the supplier. The procedure shall provide a method that provides traceability of the unqualified material to CMTR.
4) CCL quality personnel reviews and accepts the supplier's identification and traceability procedure prior to the supply. CCL shall also verify the compliance with the procedure at a frequency commensurate with the schedule of production or procurement, but at least once every three years.
5) Upon receipt of the unqualified source material, CCL personnel verify by review of objective evidence that the requirements of the purchase order have been met.

Utilization of unqualified source material shall be conducted in accordance with established process.

8.9 Records

ASL-Nuclear, Supplier's Qualification, Supplier's Quality Manual, Quality Surveillance Reports, Corrective Action Requests, etc. all records generated during procurement and receiving process shall be controlled and retained in accordance with Section 18 of this manual.

9. IDENTIFICATION & CONTROL OF ITEMS

9.1 General

Processes are established to assure that only correct and accepted items are used or installed in Nuclear Facilities. Identification is maintained on the items or in documents traceable to the items, or in a manner that assures that identification is established and maintained when required by codes and standards.

Items include material, components, supports, parts and piping assemblies. The identification and marking of items shall be controlled and maintained throughout manufacturing, during the performance of fabrication, installation, testing and examination, repairs, and during receipt, storage, handling and shipment.

9.2 Nuclear Materials

Materials are in the as-supplied condition or have been formed by processes that do not include welding. Materials include, but are not limited to, pipe, plate, rods, bars, bolting material, flanges, material for component supports, bolts, and threaded rod.

Each piece of material is marked, as applicable, with the material specification, grade and class, material manufacturer's name or trademark, heat and slab number or heat code, and other markings required by the material specification and CCL PO

During subdividing, installation or fabrication, the identification and traceability shall be maintained by transferring the identification and marking method provided in *Section 9.6.*

When the applicable CSA or ASME Code material specification requires a CMTR, the required and actual test values and other information required by the material specification, or CCL purchase order are clearly identified by the supplier on the CMTR.

When NCA-3800 permits a C of C in lieu of a CMTR for "small product," the C of C is identified with the material specification, grade and class, and heat treatment status, as applicable, and other information required by the material specification and CCL purchase order. The C of C and material may be identified by a unique traceability code such as a symbol, provided the symbol or code is identified and explained on the C of C. Identification and traceability of small product to a C of C is further described in *Section 9.4* below

In case of conflict between special identification requirements or provisions of NCA 3800 with the requirements of the material specification, the provision of NCA 3800 prevails. The material specification and grade number on the material certification shall be followed with an asterisk (*) to indicate this provision.

Material defined by Code as "small product," is not required to be individually marked, as described in *Section 9.4* below.

9.3 Registered Components

Registered components include pumps, pressure vessels, valves, fittings, nuclear component supports, and nuclear pipe supports.

- Each registered component is identified with a nameplate stamped in accordance with the requirements of CSA N285.0.
- When size does not permit a nameplate, markings are applied directly to the component in accordance with *Section 9.6, Marking Method* below and Code requirements, the component specification, and client's requirements, as applicable.

9.4 Small Products

Small product as defined in section 1.3.1 are not required to be identified individually provided that they are securely packed in packages or containers which bear labels that clearly identify the material they contain, and is traceable to the supporting CMTR, or when permitted by a material specification, a C of C.

9.5 Welding and Brazing Consumables

Welding and brazing consumables for all classes of construction are clearly identified by legible markings on the package or container. Markings include: heat or lot number; material specification; material grade and classification number; supplier's name and trade designation; and other markings required by Code and the welding material specification.

Each covered electrode or welding rod is identified with the material designation, and its use controlled in accordance with this section of the Manual and supporting procedures.

A CMTR is required for each heat or lot number in accordance with the nuclear welding or brazing material specification and CCL purchase order requirements. The CMTR is traceable to the material with the markings identified in above paragraph 1).

9.6 Marking Methods

Materials and methods to apply marking directly on the items shall provide clear and legible identification and do not adversely affect the design, function, or service life of the item. Following are acceptable marking methods:

- Stamping with a blunt-nosed continuous or interrupted dot die stamp. Stamping on material below a certain thickness or on stainless steel and certain alloys is not permitted, as identified in material procurement document or specifications.

- Paints and inks specified in a technical specification or approved by Designer or client.
- Engraving and Embossing, allowable depth of marking penetration is defined in the material specification.
- Other marking materials and methods, which requires the documentation and approval of the Designer and acceptance of the ANI, prior to use.

9.7 Transfer of Identification

9.7.1 Materials, Items, and Welding Consumables

When materials or items are to be subdivided before being issued from stores or during PB work, the markings are transferred to each resulting piece by warehouse or trades personnel. For nuclear material or items, this shall be verified by a QC Inspector and documented on the ITP, prior to subdividing the material or items.

Markings of subdivided material and items are not obliterated or hidden by further processing, surface treatment, or coatings without another method of marking being established and documented on the ITP traceability record.

If the subdivided pieces are too small for physical marking, they shall be processed and identified as “small product” in accordance with *Section 9.4* above, except that any heat or batch number of the parent material will also be transferred to the labels of each subsequent package or container. Subdividing of the material is verified by the QC inspector and will document the verification on the subdivided packages

If welding wire is subdivided from a parent spool to smaller spools, each smaller spool is identified with the markings from the parent spool by warehouse or trades personnel. Transfer of identification is verified by a QC Inspector or Welding Supervisor. Verification is documented by signature and date on the smaller spool.

9.7.2 Nameplates

Only data acceptable to the licensee and AIA shall appear on the nameplates for class 1, 1C, 2, 2C, 3, 3C 4 vessel, fitting and support required by the ASME BPVC Section III, Division 1, NCA-8000 and N285.0. The following data, as a minimum, shall be given on each nameplate:

a) Name of CCL;

b) CRN;

c) Class and code effective date;

d) Design pressure at design temperature (pressure-temperature ratings when applicable, e.g., for valves);

e) Working fluid;

f) Serial Number (as applicable);

g) Year of assembly; and

h) For items required to be inspected by an ANI in accordance with Table 1 of N285.0, the ANI identification.

Note: For supports, items (d) and (e) shall not be required.

Nameplates that are required to be moved to permit PB work are controlled through the ITP for the work being performed. Nameplates are reattached in a location that does not adversely affect the design, function, or service of the component. Removal and reattachment of nameplates is witnessed by a QC Inspector and ANI, if requested. Acceptance is documented on the ITP. The ANI is consulted before removal of any nameplate.

9.8 Damaged or Lost Identification or Markings

A non-conformance report is raised and processed in accordance with *Section 16* of this Manual if required identification of items becomes lost, damaged, or is indeterminate at any time during handling, storage, shipment, fabrication, installation, etc. Traceability to previously accepted documentation must be re-established before permitting re-identification of items.

9.9 Records

Traceability records generated during receiving inspection and in-process of storage, handling, fabrication, installation, modification etc. activities shall be kept in accordance with CCL record control requirements or site specific requirements.

10. CONTROL OF PROCESSES

10.1 General

All processes affecting the quality of items or services are controlled and are performed in accordance with written instructions, procedures or drawings or technical requirements, and code and standards requirements.

10.2 Process Control

10.2.1 Requirement and Instructional Documents

Activities are performed in accordance with requirements and instructional documents, these documents include, but not limited to procedures, work instructions, drawings, bill of materials, codes and standards, etc, which provides various levels of instructions on the performance of work activities.

These also include procedures and instructions on work area cleanliness, occupational health and safety, environmental precautions and requirements.

10.2.2 Common Practice at Nuclear Site- CWP

Comprehensive work package, work package or other similar set of documents is commonly used at nuclear sites.

A Comprehensive Work Package includes or refers to all applicable requirements and instructional documents in *Section 10.2.1* and also the verification planning documents in *Section 11.3.1*, as well as other related information, for example, work permits, communications, forms etc, which provides all necessary information for performers to conduct work activities and for verifiers from CCL, Client, or AIA to perform and document the verification and acceptance status.

The CWP is assembled by CCL, Engineering, and Client as applicable. The preparation, review and handling process varies from site to site and from client to client. Site-specific procedures shall be prepared to detail this important work control process at Nuclear Site.

10.3 Special Processes

Where the results of processes cannot be fully verified by subsequent inspection and testing of the product and where processing deficiencies may become apparent only after the product is in use, these processes are referred to as special processes, for example welding, special mechanical joints (i.e., Swagelok), concrete pouring, painting etc.

Special process also includes the processes used to verify the quality of work, such as those used in welding, heat treatment, and non-destructive examination.

Special process shall be carried out by qualified personnel, using qualified procedures and in accordance with code specific requirements.

This section summarizes the controls in place within CCL with respect to welding, heat treatment, NDE and Swagelok connection. For any other special processes identified at a particular site, the Site Project Management shall ensure that qualified personnel perform them in accordance with written procedure.

10.3.1 Welding and Brazing

Welding and brazing of PB items and systems shall meet the applicable requirements of ASME Section IX and applicable Code of Construction.

The Project Management or welding supervisor ensures that welding and brazing is performed by qualified welders/welding operators and braziers/brazing operators using approved Welding Procedure Specification (WPS) and Brazing Procedure Specification (BPS) to ensure welding and brazing is performed to Code, ITP, and engineering requirements.

Control of welding and brazing focuses on: using qualified welding procedure, performed by qualified personnel, and using qualified and controlled equipment and materials.

1) WPS/BPS Preparation and Qualification

- SME (a Welding Engineer, Welding Technologist or other qualified personnel) prepares and issues a WPS or BPS for qualification. The WPS/BPS includes all essential variables, supplementary essential variables, and applicable non-essential variables in accordance with Code requirements. Each WPS/BPS is uniquely identified, its revision status controlled and formatted to accommodate information required by Code, acceptance criteria, and other information, including environmental conditions necessary to control the welding or brazing process. These conditions include identification of proper equipment type, controlled parameters of the process, and any applicable calibration requirements.
- The WPS/BPS is qualified in accordance with the ASME Code. The test specimen material is procured and documented as required by code and is then welded or brazed within the limits specified by the WPS/BPS. Welding and brazing is witnessed by the SME and, as required, the ANI. Actual weld parameters are recorded by the SME on the Procedure Qualification Record. Another SME, or Quality Manager, Nuclear or delegate, approves the PQR.
- The test specimen, test results, WPS/BPS, and PQR are then made available to the AIA for acceptance. Following the acceptance, the SME write down the PQR number on the WPS/BPS and then submits both to AIA for registration.

- Before releasing the WPS/BPS for use at a specific nuclear site, consult the Client, since some client/or licensee may request to accept the WPS/BPS to be used at the site.
- Subsequent WPS' derived from registered PQR by SME are reviewed and approved by Quality Manager, Nuclear or delegate, and accepted by Client, if required. Registration and acceptance by the AIA are not required.
- Changes to any essential variable or supplementary variable will require requalification of the WPS/BPS in accordance with the requirement in the first three bullets above. Changes to non-essential variables do not required re-qualification of the WPS/BPS, but the revised WPS/BPS shall be accepted by the Quality Manager, Nuclear or delegate.

2) Welder and Brazer Performance Qualification

Only welders/welding operators and brazers/brazing operators qualified in accordance with ASME Section IX and applicable Code of Construction are permitted to weld or braze on PB work.

- The welder or brazer produces a test specimen using the appropriate WPS/BPS, the test specimen is tested in accordance with Code requirements and the results documented on the Technical Standards and Safety Authority (TSSA) Welder/Welding Operator Certificate (for Ontario) or other similar record. Results are made available for acceptance by the ANI, as applicable.
- Each qualified welder or brazer is provided with a unique symbol or number used for identifying welds or brazes they produce for CCL, and a log of assigned symbol/number is maintained.
- Renewal of the qualification of a welder/welding operator and brazer/brazing operator is required when the individual has not used a process, within a 6-month period, in which he/she is qualified.
- Requalification may also be required when there is specific reason to question the individual's ability by CCL or ANI for just cause. Requalification of welder or brazer shall be conducted the same as the original qualification.

3) Welding Equipment and Consumables

Welding Equipment and consumables shall be controlled as follows:

- Welding equipment is maintained and validated and records are available at the project site.
- Welding and brazing consumables are procured to requirements established from Welding Material Specifications in accordance with *Section 8* of this Manual.

- Welding and brazing consumables are inspected upon receipt by Receiving QC Inspector in accordance with Section 8 of this Manual
- The work execution Supervisor at site is responsible for ensuring that only welding consumable packaging bearing an acceptance tag are placed in the work area stores, and that conditions of storage are in accordance with those specified in the written procedures.
- Portable heated canisters shall be provided for work that is not in the proximity of rod storage ovens.
- Welding gases shall be stored in designated areas, in approved containers. Gas cylinders shall be segregated by type and content, and shall be stored in an upright position secured by a safety chain.
- Mixed gases shall be purchased as required. Site mixing of gases is not permitted.

4) Welding/Brazing Process Control

- Welding/brazing shall be performed using the WPS/BPS identified on the requirements and instructional documents listed in *Section 10.*
- Welding Supervisor or Field Supervision ensures welding and brazing is performed by qualified welder/brazer following the identified WPS/BPS.
- Welders or brazers identify the welds and brazes they produce by stamping, engraving, tagging, marking, or as described in written procedures. If stamping is used, the stamp shall be low stress stamps, and applied on or adjacent to all permanent welds or series of welds on steel in accordance with Code and standard requirements.
- The Welding Supervisor or Field Supervision ensures a weld mapping record in the form of a tabulated record, marked-up drawing, or sketch is compiled for each ITP involving welding, and is verified by the ITP specified verifiers. The weld map provides documented traceability of the weld or braze to its drawing location, the welder or brazer, WPS/BPS, NDE method, and to the ITP controlling the work.
- Periodic verification of each welder, welding operator, brazer, and brazing operator is performed by Quality Function at site, to ensure and document ongoing compliance by the welder or brazer with requirements of this manual.
- Inspections and examinations of welds and brazes are performed in accordance with the ITP specified NDE method and written procedures. Control of inspection and examination is described in *Section 11, Inspection* of this Manual.
- Defective welds and brazes are reworked in accordance with approved weld repair procedure. Welds and brazes that cannot be repaired without a

change of procedure, or when base materials are to be replaced, are reported and processed in accordance with Section 16 of this Manual.

10.3.2 Post Weld Heat Treatment

CCL does not perform post weld heat treatment; when it is required, a qualified sub-contractor will perform the heat treatment for CCL onsite with a localized electrical resistance stress relieve unit or offsite in a furnace.

Field Welding Supervisor or delegate will complete *Post Weld Heat Treatment Instruction.* It serves as technical instruction to the supplier to provide details of the requested service, this could be provided to supplier together with procurement document (refer to Section 5), or prior to the start of the contracted work.

CCL Site Quality Function reviews subcontractor's procedures and personnel qualification records and final heat treatment records, or perform quality surveillance activities to verify:

- Heat treatment is performed and documented by qualified operators using calibrated heating and temperature recording equipment.
- Temperature recording charts and other temperature recording media are identified to the weld number and or to the controlling ITP. Calibration identification number of the chart recorder and its calibration status are also identified on the chart.

10.3.3 Non-Destructive Examination

NDE methods include: Radiography, Ultrasonic, Magnetic Particle, Liquid Penetrant, Eddy Current, Visual Examination and other acceptable new method.

Visual Examination activities performed by CCL personnel are further discussed in *Section 11*, Inspection.

Except visual examination, all other required NDE services are procured in accordance with the requirements of *Section 8* of this manual.

Site Quality Function ensures the contractor and their subcontractor submits their NDE Procedures, NDE technique sheets, and personnel qualifications for acceptance prior to start of work, in accordance with the purchase order requirements. NDE procedures are qualified in accordance with the requirements of the ASME Code Section V or alternate procedures that are acceptable to the ANI. They are demonstrated to the satisfaction of the ANI, when required

CCL Site Quality Function performs necessary quality surveillance and monitoring activities to verify:

- NDE Technicians performing non-destructive examination are certified, at a minimum to level II in accordance with the requirements of the Canadian General Standards Board (CGSB) standard 48.9712.

- Non-destructive examination procedures and technique sheets used to verify quality are developed to meet the requirements of the Code. Only a level III technician shall approve the procedures or technique sheets.
- NDE equipment is maintained and is within its current calibration period and is of the type qualified and specified in the NDE procedures.
- NDE Inspection Report satisfies the requirements of ASME Section V and the applicable Code of Construction. NDE reports shall show the examination results and cross-reference to the weld number, ITP, or Work Package, as applicable.

Records of non-destructive examination shall be prepared by the technician performing the work, shall be approved by a level II or level III technician, and shall be forwarded to the site Quality Function for review and acceptance.

Certified records of non-destructive examination including NDE technician's name and copy of certification record, examination results, and final radiographs, shall be provided to CCL.

10.3.4 Swagelok Fitting Installation and Assembly

Swagelok installation and assembly shall be performed and inspected by qualified personnel in accordance with written procedures.

At nuclear sites, the client provides training to CCL personnel in accordance with their procedure or manufacturer work instruction, but CCL will still be accountable for the qualification.

CCL Training coordinator at site will arrange necessary training with client, and keep a record of all qualified personnel. This record shall be available to field supervision.

Field supervision shall ensure that only qualified personnel will be assigned to perform Swagelok installation and assembly, the quality and performance of the Swagelok activities are verified and monitored. When the qualification of personnel trained by the Client is in doubt, Field Supervision coordinates with client for re-qualification of the personnel, since Client's training does not relieve CCL's responsibility for personnel qualification.

The qualification records, and Swagelok procedures, as applicable shall be filed together with the work performed in CWP or separately.

10.4 Records

Process control records used for verifying the work activities, for example ITP, Checklists etc. shall be kept as quality records.

Personnel, equipment, and process qualification records for each special process are forwarded to secure storage and controlled in accordance with *Section 18* of this Manual.

Test reports, Heat Treatment Report or Chart, NDE Examination Report, Films are kept as records.

All records are made available by Document Custodians to the ANI upon request.

11. INSPECTION

11.1 General

This section covers the requirements and process for inspection personnel, inspection methods, inspection planning, in-process inspection, final-inspection, final acceptance and fieldwork completion assurance and records for pressure retaining work activities performed by CCL at Nuclear Sites.

11.2 Inspection Personnel

Quality inspectors are independent from those who perform the work. They are also provided with organizational freedom and the authority to verify work activities and report nonconformity, hold or stop work without the restriction from schedule and cost until all unsatisfactory situations are dispositioned to meet codes and standards requirements.

Inspection and verification personnel shall meet the qualification requirements in *Section 4*.

11.3 Inspection Planning and Hold Points

11.3.1 Inspection Planning Documents

Process control documents also include work activities/items verification documents in various formats, i.e., checklists, inspection and test plans, traveler sheet etc.

CCL uses ITP and checklist as process verification planning documents at Nuclear Sites. The verification planning documents shall be prepared based on the requirements and instructional documents described in *Section 10.2.1*. The verification planning documents shall follow the working sequence, as applicable and address the following aspects:

- Identify the requirements and instructional documents which performance of activities shall comply with, includes, but not limited to procedures, work instructions, drawings, etc; the document number, title and revisions shall be clearly identified. They are the basis for verification and sometimes they serve as acceptance criteria.
- Identify inspection and verification methods, Measuring Tools and Equipments to be used, as applicable.
- Include space for reporting results at the checkpoints of installation; fabrication etc, if additional inspection reports are attached, cross-reference shall be given in the report.

- Include space for verification personnel from CCL, client, or AIA to put the verification indicator, i.e., signature, stamp, and date etc.

11.3.2 Hold Points

Inspections and tests are planned and documented in Inspection and Test Plan, Checklist, or other applicable method, as discussed above. This section will focus on ITP, similar requirements or principle will also apply to other inspection planning documents.

Inspection and Test Plan shall as a minimum address the aspects described in section 11.3.1, that is to identify the characteristics being inspected, the inspection methods, and the acceptance criteria, and also provide for recording objective evidence of inspection results. ITP shall be prepared, reviewed and approved in accordance with written procedure.

ITP shall also be reviewed and accepted by client or and/or ANI and shall leave space for them to set up verification points.

The approved ITP shall be issued to fieldwork group so that they can notify identified verifiers when work is approaching the established points. Work shall not proceed beyond the identified Hold Point without written consent from the authorized representative of the organization establishing the point.

11.4 In Process Inspection

1) In-process inspections and examinations are performed by qualified inspection personnel as at the verification points established in the ITP.
2) In process inspection shall cover verification of the following, but is not limited to:
   - Availability of and adherence to technical requirements, drawings, technical specifications;
   - Availability of and adherence to procedures and work instructions;
   - Personnel qualification;
   - Special equipment calibration;
   - Items and materials are of the right type as per design document;
3) Inspection and verification activities are recorded on the ITP. Inspection or test results are recorded in inspection reports specified by the ITP and its referenced procedures.
4) Identification of M&TE used to verify items, in inspection or examination reports, to facilitate repeating or evaluating inspections or examinations if out-of-tolerance values are found during the next calibration or use of the equipment.

5) Inspection personnel are responsible for notifying and coordinating ANI attendance at specified Hold Points and for recording their presence by having the ANI initial and date the ITP Hold Point sequence.

6) Inspection personnel initials and dates the ITP as each verification point is cleared and verifies that inspection and examination reports are completed, signed, and dated as required.

7) Non-conformance detected during in-process inspections and examinations are processed in accordance Section 16 of this Manual.

11.5 Final Inspection

11.5.1 Resolution of Non-conformance

Quality Control Inspector shall apply a NCR tag to the nonconforming items and issue a non-conformance report. Further work activities on the item shall be controlled until the non-conformance has been dispositioned satisfactorily.

Final inspection shall include verification of results and resolution of all nonconformities identified by prior inspections. The final inspection results shall be clearly recorded to indicate the conformance of the items or systems to the specified requirements.

The final inspection activities are performed to confirm that:

- Items, systems or completed work is in compliance with applicable requirements and that inspections and examinations identified in ITP have been completed, documented, initialled, and dated, prior to being released for code or operational pressure testing or other accepted method.
- Markings of a finished item or systems are verified against the identification on the material traceability record, if required.
- The location of each item and system is recorded against its identification on the material traceability record, if required. Alternatively, a drawing or sketch marked-up with the identification information by execution personnel and verified by the inspection personnel, can be used as the traceability record, i.e., weld map.
- Nameplates, or an alternate method of identification specified and acceptable to the ANI, are prepared and attached in accordance with Section 9.7.2 of this Manual. Stamping and attachment of a nameplate, or application of markings, are witnessed by inspection personnel and the ANI, as applicable.

Any modification, repair, or replacements processed by the Non-conformance process are completed and verified by re-inspection or testing.

When all final inspection activities are completed and acceptable, inspection personnel shall record the final inspection results or an inspection report or other acceptable document and releases the item or system for any required code or operational

pressure testing in accordance with *Section 12* of the manual, or other acceptable method.

11.6 Work Completion Assurance and Acceptance

Items, systems and completed work are subject to final acceptance by Client. The final completion assurance process and work turnover process varies from site to site, and from client to client.

Site project management shall interface with the client to understand their specific requirements for completion assurance. Site-specific procedures shall be prepared in accordance with client's requirements.

Certification of Conformance or Certificate of Completion may be designed and used, to officially document client's acceptance of completed work performed by CCL. Site Quality Function shall interface with Client's Quality Function to finalize and document a work completion and transfer process.

11.7 Records

The completed ITP, Pressure Test Report, Data Report, Inspection and Examination records, and other associated documents specified as permanent and non-permanent QA records shall be kept by CCL during execution of work and turned over to client as required.

Generally, Inspection planning documents (i.e. ITP) and radiograph films are non-permanent records. But any records showing the results of test and examination are permanent records. Refer to Section 18 for more details.

12. TEST CONTROL

12.1 General

Tests include, as applicable, material tests, construction tests, pressure tests and operational pressure tests.

CCL does not perform material tests. Material tests are subcontracted to a qualified service provider, as per *Section 8.8, Unqualified Source Materials*.

CCL performs pressure tests or assists in operational pressure tests if it applies in lieu of Code required pressure tests.

12.2 Test Procedures and Documents

All tests are controlled by documented procedures or appropriate sections of related design documents.

Test requirements and acceptance criteria are prepared and approved by qualified personnel. Client's engineering organization may request to review and accept CCL test procedures prior to being used at the site.

Test procedure shall be prepared in accordance with design documents and Code requirements. It shall identify the following aspects, as applicable:

- test requirements
- test objectives and acceptance criteria,
- prerequisites,
- instrumentation and appropriate equipment,
- suitable environmental conditions, and
- reporting method of test results etc.

Required tests and test procedures shall be planned and identified on ITP.

12.3 Pressure Test Inspection

Following the required hold time at pressure, the inspection personnel and ANI, when applicable, performs inspections of the item or system under test, including but not limited to:

- Verifying test pressure and temperature;
- Verifying all joints and equipment are free of leaks, or any detected leak is acceptable as per acceptance criteria specified in the Pressure Test Instruction.

- For an operational pressure test (OPT), recording the system operating pressure and temperature using existing system indicating devices if so provided;

12.4 Test Results and Content of Test Report

Test results are documented in a suitable test report identified in applicable test procedure, design documents or Code and evaluated by qualified personnel. The test reports shall include but are not limited to the following information: work package or work order number, items or systems tested, results and acceptability against acceptance criteria, the qualified person evaluating the test results, performer of the tests, etc.

Test results shall be available for the client, ANI for review and acceptance.

As a minimum, test reports shall identify:

- Items tested;
- Date of test;
- Tester or data recorder;
- Type of observation;
- Results and acceptability;
- Action taken in connection with any deviations noted;
- Person evaluating the test.

12.5 Post Pressure Test

Upon completion of the pressure test, the Field execution personnel shall return the item or system to its pre-test condition. All temporary connections, attachment welds shall be removed and inspected in accordance with code requirements.

The inspection personnel shall sign off on test reports or the ITP to confirm that a pre-test condition has been returned.

12.6 Record

Test reports and other documents resulting from performance of a pressure test or operational pressure test shall be maintained as records, together with CWP, as applicable, in accordance with *Section 18* of the manual.

13. CONTROL OF MEASURING & TEST EQUIPMENT

13.1 General

Measuring and test equipment may be owned by CCL or supplied by the client or an approved supplier.

CCL does not perform any calibration activities for M&TE; they will be performed by CCL qualified approved suppliers to nationally recognised standards.

For client's supplied M&TE tools, either from client or through clients approved supplier, CCL is not responsible for calibration activities, unless otherwise specified by the Client. CCL is responsible for verifying the calibration status, the condition of the M&TE upon receipt in accordance with *Section 8.6.2.*

Regardless of the source of the M&TE, CCL shall ensure that it is controlled as per the applicable requirement in this section.

This section describes the methods to assure that tools, gauges, instruments, and other measuring and testing equipment used for activities affecting quality are controlled. CCL provides controls over the measuring and testing equipment (M&TE) in the following areas:

- Identification of M&TE and calibration intervals
- Selection of M&TE
- Procurement of M&TE and calibration services
- Indication of Verification Status
- Verification of M&TE calibration prior to use
- Records of calibration

Calibration and control measures are not required for rulers, tape measures and optical levels. Those using this equipment shall replace them with new ones if it is found to be damaged, worn or not readable.

13.2 Identification of M&TE and Calibration Intervals

This section only applies to CCL owned calibration M&TE.

A list of *M&TE and the Calibration Intervals* is maintained at each site by Tools, Equipment and Material Function or other delegated division by the Project Manager.

Calibration intervals for M&TE. are established based on intended frequency and conditions of use, manufacturer's recommendations, history of similar equipment, equipment stability characteristics, required accuracy, and other conditions affecting measurement control.

13.3 Calibration Records and Status of M&TE

Each item of measuring and test equipment shall be identified with a unique serial number traceable to an equipment calibration record. Calibration records shall be provided by the Calibration Service supplier upon request, which shall identify the following, but not limited to:

- The equipment type.
- The equipment serial number.
- Identification of the comparison master used.
- Number of the calibration procedure used and revision number.
- As found result.
- Adjustments made and final result.
- The date of calibration.
- Signature and identity of the person performing the calibration.
- Date that the next calibration is due.

In addition, the calibration worker of Calibration Service provider shall affix a calibration label to a non-working surface clearly showing date of calibration, initials of the calibration worker, and the next calibration due date. If the label cannot be affixed to the equipment, it shall be affixed to the box or case used to house the equipment that is identified with the equipment calibration traceability.

Compliance with above requirement shall be verified by CCL quality inspectors or surveillance personnel upon receipt of calibrated M&TE from calibration service provider or during in process surveillance.

13.4 Selection of M&TE

The person making a measurement, examination, or test is responsible for selecting or verifying the selection of the correct type, range, accuracy, and tolerance of M&TE equipment. The selected M&TE shall be of the appropriate type that can accurately determine the conformance of work to specified requirements provided in technical specifications, instructions, procedures, work instructions, or code and standards.

13.5 Verification of M&TE Calibration and Usage Record

All persons verifying work are responsible for checking the equipment calibration label to ensure that calibration is still valid prior to use.

Verification of calibration may be necessary even thought the M&TE is still within valid calibration period. CCL has developed written procedures to describe this kind of verification activities.

Field supervision and verification personnel shall keep a record for the usage of M&TE in the CWP or other document, so that the last use of M&TE could be traced back when the accuracy of M&TE is in doubt.

M&TE that is found to be out of calibration or found damaged during service shall be tagged and withdrawn from service and segregated, and a non-conformance report shall be raised in accordance with *Section 16* of this manual.

If the calibration records provided by calibration service provider shows that M&TE found damaged or cannot be used anymore, the personnel receiving the calibration record shall raise a non-conformance report.

Field Supervision and verification personnel shall assess previous usage of the defective M&TE, and evaluate the results to determine their validity.

Out of calibration equipment shall *not* be used again until the out of calibration condition is rectified and the equipment has been re-calibrated satisfactorily.

13.6 Handling and Storage of M&TE

M&TE shall be handled and stored in a manner that will prevent damage, deterioration or unauthorized or inappropriate use.

For more information regarding this aspect, refer *Section 14* of the manual.

13.7 Records

Calibration Records are processed as non-permanent records in accordance with *Section 18* of this Manual.

14. HANDLING STORAGE & SHIPPING

14.1 General

Handling, storage, and shipping of items (in this section, where items are used, it can be replaced by tools and equipment as well) are conducted in accordance with established procedures, work instructions, drawings or specifications, to ensure these activities are performed in a manner to prevent damage or loss and minimize the deterioration of items. Same controls shall be applied when transferring items, tools and equipment form one job site to another, or shipping to and from supplier or Client facility, or to another on-site contractor.

14.2 Handling of Items

When required, movement of items using lifting and moving equipment is executed by qualified personnel.

Lifting equipment, hooks, slings, chains, and special lifting tooling are periodically inspected in accordance with written procedures, based on the Ontario Occupational Health and Safety Act and equipment manufacturer's requirements.

Comstock does not perform special handling (engineered lifting); it will be subcontracted to a qualified supplier selected in accordance with *Section 8.* CCL will perform quality surveillance during execution to ensure that special handling are performed by qualified trade's personnel and verified in accordance with the established lifting procedure(s) using specified equipment, tooling, and methods.

14.3 Storage and Monitor of Stored Items

Received items may be stored in warehouse or designated location at site prior to issuing them for site fabrication and installation use. The responsible warehouse personnel or delegate shall ensure that items are inspected prior to recording them on the warehouse log, or database.

For CCL procured items, if they have been verified by Quality Inspector during receiving inspection at another location, warehouse personnel do not need to request quality inspection personnel provided that:

- the inspection status is clearly identified either on the item, or on the documentation traceable to items by CCL quality inspection personnel
- all required documentation is accompanying the items.

In this case, warehouse personnel shall verify the item in accordance with applicable procedure, if required, to verify the items are free from apparent damage, all required documents match the identifications, etc.

Warehouse personnel shall ensure that items are stored in a manner allowing easy relocation, and the access to the storage area is controlled.

Storage areas will be organized to ensure that traceability identification is maintained.

For long-term stored items in a warehouse, general monitoring of storage areas my be performed and documented by assigned warehouse personnel to verify, as applicable, but is not limited to:

- Items are properly identified;
- Items are properly preserved;
- Items are located to prevent damage and deterioration;
- Special requirements are being complied with, as applicable;
- Inert gas pressures are being maintained, as applicable;
- Limited shelf life requirements are being maintained, as applicable.

14.4 Items Issued from Storage

Stored items are issued by warehouse personnel to Trade Personnel upon request. Items are matched, as applicable, by part number, model type, manufacturer, description, CAT ID, etc., against CWP, material request, or other applicable document provided by personnel requesting the items.

14.5 Items Handling During Installation

Trades personnel shall follow good practice during fabrication, installation, repair or modification activities with respect to items handling.

The identification and marking of items shall be maintained in accordance with *Section 9* of the manual. The items shall be further verified against drawings, BOM, shelf life requirements or any other documents before performing any work on them by trade's personnel and further verified by inspection personnel, as applicable in accordance with *Section 11.4*.

Any surplus items that need to be returned back to warehouse or storage area shall have proper identification or documentation with it.

14.6 Material Transfer and Shipping Requirements

In addition to general practices for handling of items, transfer of materials between CCL and clients or other subcontractors, or between different sites of CCL, additional instructions may be prepared at site. They may include, as applicable, packaging type, crate or package markings, special environmental packaging and inspection requirements, documentation requirements, including CMTR, Certification of Compliance, etc.

Transfer or off-site shipping of welding filler metal requires that a copy of the CMTR be included with the transfer or shipment.

14.7 RECORDS

Quality Assurance records produced as a result of this section and applicable procedures such as: storage monitoring records, personnel qualification records are to be in accordance with *Section 18* of this Manual.

15. INSPECTION AND TEST STATUS

15.1 General

This section describes the methods used to ensure that the status of inspection, examination and test activities are identified either on the items or in documents traceable to the items so that items which have not passed the required inspection, examination and tests are not inadvertently installed, used or operated.

15.2 Inspection and Test Status Control

Inspection and test status application and approval shall be conducted in a controlled method to assure that status is maintained through indicators, such as physical location, tags, markings, Inspection and Test Plans, inspection records, stamps or other suitable means.

The authority to apply or removed the indicators shall be specified.

15.2.1 Receiving Inspection and Warehousing

As discussed in *Section 8.6*, items (including welding consumables) received at site are subject to receiving inspection. The receiving inspection personnel will apply the inspections status in one or any combination of the following:

- Apply label or stickers on the items showing it passed inspection;
- Identify the inspection status on ITP, inspection report, other inspection record or suitable database;
- NCR tag and quarantine items until unsatisfactory situation is corrected, as applicable.

If labels or stickers are applied, they should stay on the item until identification has been verified to Code requirements prior to fabrication or installation, in accordance with ITP or other verification requirements.

15.2.2 In Process and Final Inspection &Test

Each step on the applicable verification planning documents, i.e., ITP or checklist is initialled and dated to indicate the status as work progresses. Each identified step is required to be completed in sequence before work can progress to the next step, unless they clearly indicate that the sequence is not critical on the verification planning documents.

Completion of inspection, examination, and tests that require a report documenting the status are identified by referencing the ITP, checklist and verification documents at the step controlling the verification activity.

Acceptance status of items subject to NDE is identified on an NDE Inspection Report and on the ITP.

Nonconforming items are identified by a NCR Tag attached to the item or system and by a Non-conformance Report. The NCR number is referenced on the hold tag and on the ITP or checklist. Control of nonconforming items is further described in *Section 16* of this Manual.

For items and systems subject to ANI acceptance, the ANI also signs and dates on ITP/Checklist etc. at the applicable steps.

15.2.3 Authority

Fabrication and installation personnel may remove the affixed label or sticker only after items have been verified as correct just prior to their fabrication or installation.

Qualified QC inspectors have the authority attach and remove Non-conformance Tags.

Only qualified QA/QC personnel have the authority to initial or sign ITP, Checklist etc. sequences to indicate inspection, examination and test status.

15.3 Records

Test status documented in accompanying documents shall be kept as records in accordance with *Section 18.*

16. CONTROL OF NON-CONFORMING ITEMS

16.1 General

Non-conformance is defined as a deficiency in a characteristic, documentation, or procedure that renders an item unacceptable.

This section describes the methods employed by CCL to ensure items that do not conform to the specified requirements are controlled to prevent their inadvertent installation or use. Controls provide for identification, documentation, segregation when practical, evaluation and disposition.

CCL also uses this process to identify and report non-conformance related activities, procedures, or processes, even though this section focuses on item related nonconformity.

16.2 Identification, Segregation and Reporting

The nonconforming items shall be identified by marking or tagging which does not adversely affect the end use of the item. The identification is legible and easily recognizable. If identification of each nonconforming item is not practical, identification may apply to the container, package that holds the nonconforming items.

As far as practical, non-conforming items shall be physically segregated from acceptable items by placing them in a segregated and controlled storage area. When segregation is not practical due to physical size of the item or due to lack of appropriate storage area, the item shall be clearly identified by marking or tagging. Further processing, delivery or use of the nonconforming items are not allowed prior to acceptance of the disposition.

Nonconforming items found during receiving inspection, work execution, in process and final inspections etc shall be reported. All CCL personnel including those employed by subcontractors have the responsibility of reporting non-conformance by initiating a Non-conformance Report, or to the supervisor/quality personnel at site, who will subsequently initiate a Non-conformance Report.

The initiator of NCR shall clearly describe the non-conformance with detailed identification of the items, for example, the system ID, item number, work order or work package number, associated ITP or checklist number etc. The NCR shall bear a unique NCR number obtained from assigned personnel maintaining the NCR log or an automatically generated number by electronic document management system.

16.3 Disposition

Quality Manager, Site or his delegate is authorized to evaluate or coordinate for the proper evaluation of Nonconforming items. Quality Manager, Site shall ensure that the personnel or parties performing the evaluation and disposition has demonstrated competence in the area under evaluation, with adequate understanding of requirements, and have access to pertinent background information.

Engineering input from the Client or client's designated Agency shall be sought for technical justification of nonconforming items so that the non-conformance to design requirements dispositioned "use as is" or "repair" are subject to design control commensurate to the original design.

If required, either CCL or the assigned engineering Agency will record the accepted deviations resulted from non-conformance on the as-built documentation.

Non-conformance dispositioned as "use as is" or "repair" shall be made available to ANI, and if required, provision shall be provided to them to insert any required verification points upon disposition.

The final disposition of "Repair" or "use-as-is" shall be concurred by the ANI, as required.

Rejected nonconforming items may be returned to suppliers (if found during receiving inspection) or scraped.

16.4 Repaired Items

Repaired items shall be re-examined in accordance the original acceptance criteria unless otherwise specified in the disposition of the nonconforming items.

16.5 Significant and Repeated Non-Conformance

Significant and repeated non-conformities may warrant corrective/preventive actions so that the causes of the non-conformities can be eliminated to avoid occurrence/recurrence of the non-conformance, for further details of corrective action, refer to *Section 17*.

Quality Manager, Nuclear, shall be informed of all non-conformance reports from all Nuclear Sites, so that a non-conformance that occurred at one site can be used as input to lessons learned or management review, and shared with other nuclear projects.

Trending of non-conformance may be performed by Nuclear Quality, Corporate or a delegate as part of the continuous improvement process, to capture the adverse trend and take appropriate actions.

16.6 Records

Completed NCR, and associated information shall be filed as quality records in accordance with *Section 18* of the manual. All records shall be made available for ANI upon request.

17. CORRECTIVE & PREVENTIVE ACTION

17.1 General

As discussed in Section 16, conditions adverse to quality shall be promptly reported and corrected as soon as practical via the Non-conformance process.

For a significant non-conformance, repeated non-conformance, or adverse trend found during trending process, in addition to the remedial actions/corrections identified during the disposition process, the cause of the conditions shall be determined and corrective/preventive actions shall be taken to prevent the recurrence/occurrence of the unacceptable conditions.

17.2 Input and Reporting of Corrective Actions

The following situations, but are not limited to, may warrant corrective actions:

- Significant non-conformance;
- Repeated nonconforming items/activities;
- Trending of non-conformance, corrective actions or actions;
- Monitoring and trending of processes;
- Monitoring of Supplier's performances;
- Client's complaints (or result of surveillance);
- Management review and lessons learned review meetings.

Corrective actions shall be reported and documented on a *Corrective Action Report.*

Quality Manager, Nuclear or delegate shall initiate a CAR when adverse condition to quality is found in the above-mentioned situations.

17.3 Determination of Causes and Corrective Actions

The CAR shall be forwarded to the responsible manager or supervisor of the department or group affected by the CAR.

The responsible party shall analyze processes, work operations, equipment and personnel requirements to detect the causes of the condition adverse to quality. These causes shall be recorded on the CAR and signed off by the person performing the analysis.

The responsible party shall determine the actions required to eliminate the causes. This shall be recorded on the CAR/PAR as the recommended corrective action.

17.4 Implementation and Verification of Corrective Actions

The required actions will be implemented by the identified personnel prior to the required due date.

Quality Function shall assign personnel to monitor and verify the corrective actions to ensure that required actions are taken.

If the CAR is as a result from client's complaint, or the client surveillance, Quality Function shall provide the completed CAR and associated information to client to put a closure of the complaint received, or to close out a corrective actions request from the client.

Trending of the CAR or the identified corrective actions may be performed by Quality Manager, Nuclear or delegate as part of the continuous improvement process, in order to capture the adverse trend and take appropriate actions.

CAR's or the status of the corrective actions shall be used as input of management review meetings, as well as audits so that the effectiveness of the implemented corrective actions could be evaluated together with other elements of the quality management system.

17.5 Supplier's Corrective Action Program

As discussed in *Section 5*, purchasing documents (contracts or PO) shall include the need for CCL suppliers and subcontractors of items and services, including both on-site and off-site contractors, to have corrective action programs in accordance with identified quality requirements.

CCL also has the right to issue a *Corrective Action Request* to suppliers or subcontractors as a result of audits, performance monitoring, quality surveillance etc.

Suppliers shall provide a response to detail the actions they will take to address the request.

The Quality department shall follow up those actions until the adverse conditions are addressed satisfactorily.

For more details, refer to *Section 19, Audits.*

17.6 Records

Corrective action, cause analysis records, and other associated information resulted from this section shall be kept as records in accordance with Section 18.

All CAR's are available to the ANI or client upon request.

18. QUALITY ASSURANCE RECORDS

18.1 General

This section describes the methods that assure records that furnish documentary evidence of quality are specified, prepared, and maintained. It also ensures records are legible, identifiable, retrievable, and are protected against damage, deterioration, or loss, and the requirements and responsibilities for record transmittal, distribution, retention, maintenance, and disposition are established and documented.

The requirements of this section apply to quality assurance records, which have been completed, signed or otherwise authenticated. The term records, used throughout this manual, and this section, refers to Quality Assurance Record, or quality records.

18.2 Record Types and Retention Periods

Records are classified as permanent or non-permanent records.

18.2.1 Permanent Records

Records pertaining to the systems, vessels, pumps, fittings or supports listed in Table 3 of CSA N285.0 are classified as permanent records. They meet one or more of the criteria provided in the definition of "*permanent records*" in *Section 1.3*.

> It is the licensee or designated agency's responsibility to maintain and store the permanent records. CCL will turn all permanent records to client at the end of the project or as requested by the client.

As the contractor, CCL is responsible to provide the client all permanent records generated during execution of all work activities within the scope of this Manual, and ensure good custody of permanent records before turning them over to client.

At nuclear project sites, the Client would identify the required permanent records in contractual documents, their procedures, or other suitable document and communicate the requirements to CCL.

> CCL shall prepare site-specific record control procedures to address these requirements and establish interfacing process with client.

Common practice at nuclear sites is to assemble all permanent and non-permanent records in CWP, and turn them over to the Client.

Permanent records related to CCL scope of work, as applicable, are identified in *Table 18-1,* which is based on CSA N285.0 Table-1 and Table 3 with exclusion of design and registration related permanent records, which are beyond CCL scope of work. It covers the required permanent records CCL may produce during fabrication, installation, examination, inspection and testing of new components and systems, modification and alternation of existing components, as well as repair and replacement.

18.2.2 Non-permanent Records

Non-permanent records are in hard copy, magnetic, or electronic format and are comprised of all records not classified as permanent and which are required to demonstrate that activities were executed in compliance with the requirements of code, standards, contractual documents etc.

Non-permanent records related to an item, system or structures are retained for a minimum period of 5 years after completion of the item. Electronic format is to be used as much as practical for easy maintenance and retrieval.

Non-permanent records of a general nature that apply to activities associated with the performance of PB activities, for example: PB QA Manual; governing procedures; and personnel qualification records, are retained for the periods identified in *Table 18-2*.

18.3 Generation and Identification of Records

18.3.1 Records

Records are generated during execution of site work activities on items, systems and structure and generic quality management and project management activities. Records shall be filed in accordance with established methods with a unique record identification number which can be traceable back to related activities, for example, work order number, work package number or client required system identification number and/or item identification number.

Project Management at Site shall ensure that site records numbering or identification methods are established in accordance with client's specific requirements, to provide traceability of a record to the item or activity to which it applies.

18.3.2 Generation of Records

The records, the originator, distribution and validation requirements are identified in various sections of this manual along with the applicable QAP, governing procedures, work instructions and site-specific procedures.

In general, originators of records are responsible for identifying each record in accordance with established methods in applicable procedures and work instructions. Originators are responsible for the content, accuracy, legibility, and for validating the record by signature and date.

Records are forwarded to their designated secured locations at head office or site document for storage in accordance with *Section 18.4.*

18.3.3 Supplier Records

History dockets, when required by the purchase order, and other supplier permanent records, are identified with the purchase order number and other identification requirements specified in the purchase order. Records are reviewed during source

surveillance or receiving inspection activities in accordance with *Section 7* of this Manual.

The history docket is received, indexed, and filed uniquely to provide traceability to the item.

18.4 Indexing, Filing and Storage of Records

The record originator forwards the completed records to assigned document custodian via transmittal or other suitable means to identify, as applicable, the storage requirements, records type, records classification (permanent or non-permanent), retention period, etc.

The Records Custodian shall verify that the record is legible and has been validated, and a unique number has been assigned to the records as discussed in 18.3.

18.4.1 Indexing and Filing

The Document Custodian shall file records as per the identified requirements in the transmittal and established records management process to ensure all records are properly indexed, and a file number is assigned to records. The records shall be filed and indexed in an easy to retrieve way.

18.4.2 Storage of Records during Execution of Projects

The Record originator shall ensure that essential records are stored in a secure way before forwarding the records to the Document Custodian, and forward to the assigned Custodian promptly upon completion of the work.

Project management shall ensure that a secure record control and storage facility or area is established. As a minimum, the area shall have access control and locked cabinets where only authorized personnel can access the records. Any records transferred in or out of the storage area shall be logged or otherwise controlled.

Custodians shall ensure that the following secure storage requirements, as applicable, are met:

- Records are secure and not accessible to unauthorized personnel. Visitors in the secure storage areas are monitored to limit the risk of larceny and vandalism. Maintain a list of designated people who have access to stored records.
- Ensuring that records are firmly attached in binders or placed in folders and stored in steel filing cabinets or on shelving. Cabinets and shelving are identified to the record index system for easy retrieval.
- Ensuring that records are not excessively stacked;
- Preventing radiographs, negatives, photographs, microfilm from exposure to excessive light and pressure;

- If duplication of records is required, duplicate records must be legible and reproducible.
- If only electronic files are required, verify the legibility of scanned copies prior to destroying the hard copies.

18.4.3 Storage of Records upon Completion of Projects

Permanent Records

CCL does not store permanent records; all permanent records are transferred to the client or licensee as requested by client. CCL will keep the transfer records, such as transmittal either in hard copy or electronic media.

Non-permanent Records

CCL stores and maintains non-permanent records upon completion of the project for the minimum required retention period or longer.

CCL uses qualified suppliers to store and maintain all records, as well as final disposition of the records at the end of retention period.

The supplier will index and file records as per instruction from CCL, or accepted vendor's procedure or instruction.

Depending or contractual requirements for a specific project, client's approval may be required prior to disposition of non-permanent records at the end of retention period. This requirement shall be clearly identified on the records or to the vendor's maintaining those records for that particular project.

18.5 Retrieval and Correction of Records

Retrieval of records from final storage for the purpose of information, correction, or revising by the originating organization, or for any other reason, shall be controlled. The custodian shall keep a record when releasing or receiving the records and put them back in storage.

Changes or corrections to a current record can only be made by the originating organization or authorized personnel, the person that made the correction shall sign and date and provide the reason for the correction, as applicable.

18.6 Distribution of Records

Records distribution or transferring back and forth from other organizations shall be recorded in transmittals or other suitable means. The location and retention responsibility shall be clearly identified and made known to the related organization at any given time during the full cycle of records management process.

18.7 Radiographic Reproduction

CCL does not normally conduct reproduction of radiographs. If the Licensee requires more than one copy of radiographs, the NDE subcontractor will be instructed to double load the film. Should the Licensee demand reproduction, a procedure shall be prepared that will address the requirements of NCA 4134.17c.

18.8 Records

Records generated during the records control process, for example, transmittals, indexing, records release from storage records, etc, shall be kept as records, and the retention period of those records shall be the same as the ones they are associated with.

All records shall be indexed electronically or in a hard copy of Records List, both the records and the index shall be available to ANI.

Table 18-1: Permanent Quality Assurance Records- History Docket

No	Record	*New/Mod	Repair	Replacement
1	Index of permanent records	X	X	X
2	Certified Material Test Reports (CMTR) and Certificates of Compliance (C of C),	X	X	X
3	Summary sheet of welding procedures and repair procedures, identifiable to the weld (tabulated list or weld map)	X	X	X
4	Certified NDE records including (a) NDE personnel names and qualifications (b) Reports of examination results (c) Final radiographs (for 10 years after completion), turn over them as if they are permanent records.	X	X	X
5	Welding, NDE and other Special Process procedures	X	X	X
6	Certified heat treatment records – such as heat treatment charts, reduced graphs, or a summary sheet describing heat treatment showing actual times and temperatures	X	X	X
7	Material Traceability Record (tabulated lists or as-constructed drawings)	X	X	X
8	Copies of non-conformance reports/repair records	X	X	X
9	Final Hydrostatic/Pneumatic Test Report	X	X	X
10	Validated nameplate data (rubbings, photographs or recorded data)	X	-	X
11	Source Surveillance records	X	-	X
12	Pressure Boundary Package Contents	X	X	X
13	Applicable Data Report	X	-	-
14	Manufacturers/Installers Data Report	X	X	X
15	Supplier History Docket containing the above applicable documents and Supplier History Docket Release Form	X	-	X
16	Turn-over documentation to client and History Docket Release form (either using CCL's or client's)	X	-	X

Note:

1) This table is to be used together with client's requirements for permanent records, for a specific project.

2) The first column of *Table 18-1* is applicable for new components, modification and alternation.

3) This table can also be used for the following activities performed by CCL:

4) When procures and furnished PB items.

- CCL procures and furnishes pressure boundary items.
- When identifies required permanent records for CCL's supplier, in conjunction with technical specifications provided from engineering organization.

Table 18-2 Non-Permanent Records

No.	Record	Minimum Retention Period
1	Records applicable to the material, item, component or system not covered in Table 1 (Ref: Paragraph 3.1.2 above) including: • Engineering records (including Procurement Engineering) • Procurement documentation • Documentation from PB work Contractor	5 years after completion or 2 years after the in-service date
2	QA Program Document	5 years after superseded or invalidated
3	Governing standards and procedures that control activities associated with pressure boundary	5 years after superseded or invalidated
4	Personnel qualification records	5 years after superseded or invalidated
5	Audit and survey reports, Surveillance reports	5 years after superseded or invalidated
6	Internal Audit reports and Corrective Action reports	5 years after superseded or invalidated
7	Calibration records	Until device is re-calibrated
8	NCR, not physical items and systems related	5 years after superseded or invalidated
9	Final radiographs (if not turned over to client)	10 years after superseded or invalidated
10	Inspection and Test Plans, if not turned over to client together with permanent records	5 years after superseded or invalidated
11	Records transfer records, i.e. transmittal	5 years after superseded or invalidated

19. AUDITS

19.1 General

Audits are scheduled to ensure that each element of this manual is audited at least once annually or at a frequency commensurate with the status and importance of the activity. The audit schedule is reviewed periodically and revised as necessary to assure planned audits coverage is still adequate. Regularly scheduled audits are supplemented by additional audits of specific subjects, when necessary, to provide adequate coverage.

Auditors are assigned who are independent of any direct responsibility for performing the activities being audited. The Audit personnel have sufficient authority and organizational freedom to make the audit process meaningful and effective.

Audit results are documented and reported to responsible management for review and are made available to the ANI upon request. Follow-up action is taken where indicated.

19.2 Audit Schedule

The Quality Manager, Nuclear or delegate shall prepare an overall Audit Schedule on all Nuclear Sites, and as applicable all nuclear items and services supplier as early in the life of an activity as practical, and continues at intervals consistent with the schedule for accomplishing the activity, and also commensurate with the status and importance of the activity.

In all cases each active project site shall be audited at least once in the duration of the project, providing the duration of the project is more than 3 months.

An Internal audit shall be conducted at least annually, or when the scope of work or the manual has been changed.

Approved suppliers shall be audited at a frequency commensurate with the schedule of production or activities being conducted, at least once triennially.

The audit schedule shall be reviewed periodically and revised as necessary.

19.3 Audit Preparation

19.3.1 Audit Personnel Selection

Lead auditors and auditors shall meet the qualification requirements identified in Section 4.

19.3.2 Audit Planning

An audit plan is prepared by the lead auditor. The audit plan includes but is not limited to:

Audit scope and activities to be audited;

a) Audit team leader and other auditors, as required;

b) Requirements for conducting the audit, such as any access requirements to restricted or controlled areas;

c) Areas or activities to be audited and organizations to be notified;

d) Applicable documents against which compliance will be measured;

e) Audit date and schedule;

f) Written procedures or checklists.

19.4 Audit Performance

19.4.1 Pre-Audit Meeting

Lead auditor conducts a pre-audit meeting with management and other representatives of the auditee to ensure that details of the audit are understood.

19.4.2 Conducting the Audit

Lead auditor and auditors perform the audit in accordance with the audit plan, written procedures, or audit checklists, the Lead auditor shall ensure that:

- objective evidence is collected by the audit team against the requirements for each element audited;
- Objective evidence is collected through interviews, document reviews, and observation of activities and is examined to the depth necessary to determine if the selected functions are being implemented effectively
- The auditor documents objective evidence of compliance and non-compliance on the audit checklist, written procedures or audit observation reports;
- Audit findings are documented by audit personnel and results are discussed with representatives of the audited organization during the course of the audit;
- During audit, if a condition requires prompt remedial action it shall be immediately reported to the appropriate management of auditee.

19.4.3 Post- Audit Meeting

The Lead auditor conducts a post-audit meeting with management representatives and others of the audited organization immediately following the audit to review the results. Summary of the findings shall be presented to the auditee at the meeting.

19.5 Audit Reporting

The Lead Auditor assembles the information gathered during the audit into the final audit package, prepares and signs an audit report, which includes, but is not limited to:

- Audit scope and objective;
- Organization audited and date of the audit;
- Names of the Lead Auditor and auditors, and any technical experts;
- Identification of persons contacted during the audit activities;
- Summary of audit results, and a statement of the implementation effectiveness the quality program;
- Description of each reported adverse audit finding in sufficient detail to enable actions to be established and taken by the audited organization;

For **internal audits** conducted on CCL internal organization or site, The Lead auditor or delegate may take either or both of the following actions in addition to issuing the audit report:

- Initiate NCR in accordance with Non-conformance Report procedure. The auditee will address only the corrections/remedial actions recorded in NCR.
- Initiate Corrective Action Report, for significant non-conformance in quality program, in this case, corrective actions are required, that is, the causes of the problem need to be eliminated.

For **external audits** conducted on the suppliers, the Lead Auditor or delegate shall issue Corrections/Corrective Actions Request to supplier, to request them to take proper actions to address the adverse findings.

The audit report and associated documentation are issued to the Quality Manager, Nuclear and Management of Auditee.

For audits on quality functions of CCL, the report shall be forwarded to the President or an assigned Vice President, Nuclear/Thermal Power Projects.

19.6 Audit Reponses

Management of Auditee shall ensure a timely response to Lead Auditor's in accordance with the requirements identified in the audit report and within the identified time frame. An extension of the response due date may be granted by the lead auditor, but not more than 30 days. Failure to respond on time may result in a further non-

conformance report or corrective actions reports, or result in delisting from the Approved Supplier List.

19.7 Follow Up Action

All PB audits require follow-up to determine that the corrections/corrective action is on schedule, satisfactory and effective.

Quality Manager, Lead Auditor or assignee follows-up on completed corrections/ corrective actions within two months or the time frame identified on audit documents.

The degree of follow-up actions is commensurate with the type and significance of the follow up action and includes one or more of the following:

- Review of documentation provided by the audited organization that clearly demonstrates activities are in compliance with the scheduled corrective action.
- Re-audit of the function or organization where the deficiency was identified, including audit of the corrective action;
- Audit of the corrective action;

19.8 Records

Records generated during audits include, but are not limited to

- Audit plan;
- Audit Report;
- Non-conformance Report, Corrective Action Report, Corrections/Corrective Action Request
- Follow-up details, written replies, and corrective action completion and acceptance records.

Audit records and auditor qualification records are processed and stored in accordance with section 18 of this Manual.

Audit records are available to the ANI upon request.

20. AUTHORIZED INSPECTION AGENCY

20.1 General

This section establishes the interfaces between CCL and the AIA authorized by the CNSC to conduct inspection and acceptance of PB activities at Nuclear Project Sites.

The ANI may accept all work that conforms to Code requirements. Non-conformances that cannot be brought into Code compliance are rejected or referred to the CCL client, which will further refer to CNSC for final disposition.

20.2 Authorized Nuclear Inspector

The AIA for nuclear in Ontario is the Technical Standards and Safety Authority (TSSA), and elsewhere in Canada, the AIA is the provincial Jurisdiction in which the Licensee's plant or facility is located.

The site representative for AIA is the Authorized Nuclear Inspector Supervisor (ANIS), Authorized Nuclear Inspector (ANI).

20.3 Access

20.3.1 CCL Access

The ANIS, ANI have free access to all CCL sites and locations where work activities are being performed and to quality records and other documentation, for the purpose of auditing the quality program or to perform work associated with inspection activities.

20.3.2 CCL Suppliers/ Subcontractors Access

Access extends to CCL suppliers and contractors/subcontractors engaged in the supply of items and services. Access is assured through right-of-access requirements stated in CCL procurement documents.

The Quality Manager, Site or delegate is responsible for coordinating requests by the ANIS, ANI, to access supplier/contractors location on site or premise off work sites, if required.

20.4 Hold Points

The ANI has the opportunity to assign ITP Hold Points prior to the release of the ITP for PB work. This opportunity is assured by written procedures controlling the preparation and release of the ITP as described in *Section 11* of this Manual.

The assigned verification personnel are responsible for coordinating ANI attendance at activities identified as Hold Points on the ITP, and for providing reasonable notice of upcoming Hold Points.

20.5 Access to Records

As identified throughout the manual, ANI has free access to quality assurance records upon request, includes to the certified reports of the results of all examination and tests performed in accordance with material specification and applicable requirement of ASME Section III.

20.6 Welding and Brazing Procedures

Only welding and brazing procedures qualified in accordance with the applicable ASME Code Section are used for PB welding and brazing.

Each PB welding/brazing Procedure Qualification Record is identified with AIA acceptance. Qualification and AIA acceptance of a PQR are controlled in accordance with *Section 10* of this Manual.

20.7 AIA Audits

The Quality Manager, Nuclear or designate is responsible for coordinating the availability CCL Management and Project Management associated with the execution of PB activities, to accompany the ANI and ANIS during audits of this program.

20.8 Re-Qualification

The ANI has the right to request re-qualification of a welder, welding procedure, NDE Technician, or NDE procedure for just cause.

The project management and quality function are responsible for coordinating ANI requests for requalification of an NDE Technician or NDE procedure. Requalification is conducted in accordance with the original or revised qualification requirements, as described in *Section 10* of this Manual.

20.9 Non-Conformance

The ANI is informed of all Code related non-conformances and his / her concurrence is obtained for disposition of the non-conformances involving dispositions “use-as-is” and “rework or repair”.

21. EXHIBITS

This section provides some important exhibits that may be used during implementation of this process.

- They are samples only.
- It is not the intention of the section to provide all forms, templates or reports that are being used or to be used by CCL.
- It is not the purpose of this manual to provide detailed instructions on how to prepare or use these exhibits. For detailed instructions on how to use these forms, refer to the associated procedures or work instructions.
- The exhibits are subject to change without revising this manual.
- Some of the exhibits are Bruce Power site specific and are not applicable to other project sites. Site-specific procedures and work instructions need to be prepared to introduce the process and derived documents.
- Some information displayed in the exhibits are mandatory Code and Standards requirements. To ensure the compliance, all changes to the exhibits must be reviewed and approved by Quality Manager, Nuclear or assignee.
- All exhibits shall be made available to ANI.

21.1 Exhibits for Section 4

21.1.1 G-005N Record of Training

Comstock Canada Ltd.
RECORD OF TRAINING

Comstock An EMCOR Company

Please fill out all sections accurately for entry into the Employee Training Record (ETR)

Project Name and Division		Page No.	
Contract No.		Date	

dd/mmm/yyyy

Start Time		Finish Time	
Subject			

	EMPLOYEE No.	PRINT NAME	TRADE / POSITION / TITLE	SIGNATURE
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

Trainer			
	(Print Name)	(Print Trade/Position or Title)	(Signature)

G-005N May 1, 2010

21.1.2 G-015N Auditor Certification – Initial Evaluation

Comstock Canada Ltd.

AUDITOR CERTIFICATION - INITIAL EVALUATION

Comstock An EMCOR Company

Part I : Certification and Scope of Auditing

Person Certified										Date Certified			
Certified As \ Scope of Certification		N286	N285	Z299	ASME Section III	ASME NQA-1	B51	ISO9001	ISO14001	OHSAS18001	BSI PAS 99	Other (Specify)
☐	Lead Auditor	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	Lead Auditor In Training	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	Auditor	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Part II : Evaluation of Education and Work Experience

☐ Undergraduate ☐ Graduate ☐ College

_____ years of related work experience.

Part III: Evaluation of Knowledge Skills and Personal Attributes (Communications Skills)

1	Generic Knowledge and Skills are adequate?	Yes ☐	No ☐
2	Specific Knowledge and Skills are adequate?	Yes ☐	No ☐
3	Personal Attributes and Communications Skills are satisfied?	Yes ☐	No ☐

Part IV: Auditor Training and Experience

A: Auditor Training Course

	Training Course Title	Total Hours
1		
2		
3		

B: Auditing Participation

	Location	Management System	Role	Date (dd/mm/yyyy)
1				
2				
3				
4				
5				

Part V: Qualification Examination (Mandatory for ASME Section III Lead Auditor)

Passed written examination:	Yes ☐	Date: (dd/mmm/yyyy)	

Part VI: Approval

This individual is hereby certified with auditor status and qualification as specified in Part I above, in accordance with CCL Procedure *QP-903N, Certification of Audit Personnel.*

Evaluated by: _____ (*Print Name*) _____ (*Signature*) **Date** _____ (*dd/mmm/yyyy*)

Approved by: _____ (*Print Name*) _____ (*Signature*) **Date** _____ (*dd/mmm/yyyy*)

G-015N May 1, 2010

21.1.3 G-015AN Auditor Certification – Annual Evaluation

Comstock Canada Ltd.
AUDITOR CERTIFICATION - ANNUAL EVALUATION

Comstock An EMCOR Company

Part I : Certification and Scope of Auditing

Person Certified									Date Certified			
Scope of Certification / Certified As		N286	N285	Z299	ASME Section III	ASME NQA-1	B51	ISO9001	ISO14001	OHSAS18001	BSI PAS 99	Other (Specify)
☐	Lead Auditor	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	Lead Auditor In Training	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	Auditor	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Part II : Maintenance of Proficiency

The proficiency of auditing knowledge and skills are maintained through at least one of the following ways in the past year :

A: Training or study in related codes, standards, and documents

	Training Course Title/ Document Studied/Prepared/Conference or Seminars	Date (dd/mm/yyyy)
1		
2		
3		

B: Work related training course

	Training Course Title	Total Hours
1		
2		
3		

C: Auditing Participation

	Location	Management System	Role	Date (dd/mm/yyyy)
1				
2				
3				
4				
5				

Part III: Re-evaluation Results Approval

In the past year, this individual has maintained the proficiency requirements specified in CCL *QP-903N, Certification of Audit Personnel*, and is hereby certified with auditor status and qualification as specified in Part I above.

Re-evaluated by: _____ (*Print Name*) _____ (*Signature*) Date _____ (*dd/mmm/yyyy*)

Approved by: _____ (*Print Name*) _____ (*Signature*) Date _____ (*dd/mmm/yyyy*)

G-015AN May 1, 2010

21.1.4 G-010N-BP Eye Examination Report

Comstock Canada Ltd.
EYE EXAMINATION REPORT

Comstock An EMCOR Company

Candidates Name		Identification No.	

Candidates shall meet the following vision requirements when examined by an oculist, optometrist, or other professional recognized person:

a)	Distant vision shall equal 20/30 or better in at least one eye, either corrected or uncorrected.
b)	Near vision shall permit reading of J-1 letters on a standard Jaeger test type chart for near vision, or equivalent test type, in at least one eye, either corrected or uncorrected.

VISION TEST RESULTS

Distant Vision			Near Vision		
Uncorrected	RE		Uncorrected	RE	
	LE			LE	
Corrected	RE		Corrected	RE	
	LE			LE	

The Candidate			The above noted requirements
	Meets	☐	
	Does not meet	☐	

Examiner.			Date	
	Print Name	*Signature*		*dd/mmm/yyyy*
Examiner Appointment or Title				

G-010N-BP May 1, 2010

21.1.5 G-028N Certification of Qualification QA/QC

Comstock Canada Ltd.
CERTIFICATION OF QUALIFICATION QA/QC

Comstock An EMCOR Company

Name		I.D. No.	

Check →	Level 1 ☐	Level 2 ☐	Initial Certification ☐	Re-Certification ☐

Method Certified	Check as Applicable	Method Certified	Check as Applicable
Receiving Inspection	☐	Welding Verification	☐
Documentation Review	☐	General Visual Inspection	☐
Metrology	☐	Pressure Test Witness	☐
Visual Weld Inspection	☐	Data Report Preparation	☐

EDUCATION & EXPERIENCE

ACCEPTED FOR QUALIFICATION AS DOCUMENTED ON FILE YES ☐ NO ☐

CAPABILITY DEMONSTRATION

Grade	Administered By:		Date:
	Print	*Signature*	*dd/mmm/yyyy*

RECERTIFICATION BY ANNUAL SATISFACTORY PERFORMANCE

☐ 2010	Verified By: Print Name & Initial		Title or Position:		Date: *dd/mmm/yyyy*	
☐ 2011	Verified By: Print Name & Initial		Title or Position:		Date: *dd/mmm/yyyy*	
☐ 2012	Verified By: Print Name & Initial		Title or Position:		Date: *dd/mmm/yyyy*	
☐ 2013	Verified By: Print Name & Initial		Title or Position:		Date: *dd/mmm/yyyy*	

RECORD OF ANNUAL PHYSICAL EXAMINATION

Date Administered	2010	2011	2012	2013	2014	2015	2016	2017
Corrective Lenses - Y or N								
Date Examination Performed *(dd/mmm/yyyy)*								
Recorded by: (Initial)								

CERTIFICATION

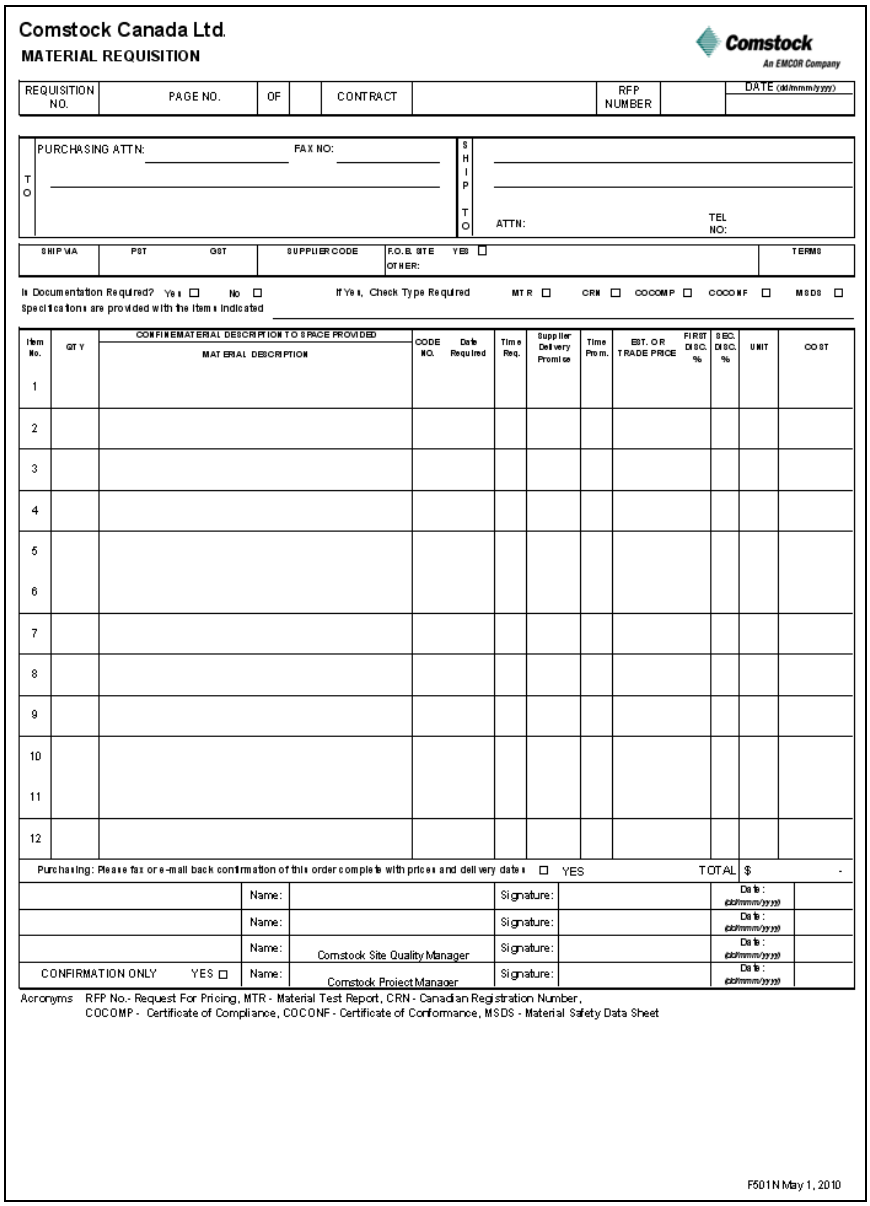
We certify that the above employee has satisfactorily completed the physical and practical examinations, meets the above requirements for education and experience and is qualified to perform the activites for the level stated above. Verification of the above is maintained on file and is available for audit on request.

Authorized by: (MQR or Delegate)			Date:	
	Print	*Signature*		*dd/mmm/yyyy*

G-028N May 1, 2010

21.2 Exhibits for Section 5

21.2.1 F-501N Material Requisition



Comstock Canada Ltd.
MATERIAL REQUISITION

Comstock An EMCOR Company

REQUISITION NO.	PAGE NO.	OF		CONTRACT		RFP NUMBER		DATE (dd/mmm/yyyy)

TO: PURCHASING ATTN: _____ FAX NO: _____

SHIP TO: _____ ATTN: _____ TEL NO: _____

SHIP VIA	PST	GST	SUPPLIER CODE	F.O.B. SITE / OTHER: YES ☐	TERMS

Is Documentation Required? Yes ☐ No ☐ If Yes, Check Type Required MTR ☐ CRN ☐ COCOMP ☐ COCONF ☐ MSDS ☐
Specifications are provided with the item indicated

Item No.	QTY	CONFIRM MATERIAL DESCRIPTION TO SPACE PROVIDED / MATERIAL DESCRIPTION	CODE NO.	Date Required	Time Req.	Supplier Delivery Promise	Time Prom.	EST. OR TRADE PRICE	FIRST DISC. %	SEC. DISC. %	UNIT	COST
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

Purchasing: Please fax or e-mail back confirmation of this order complete with prices and delivery dates ☐ YES TOTAL $ -

	Name:		Signature:	Date: dd/mmm/yyyy
	Name:		Signature:	Date: dd/mmm/yyyy
	Name:	Comstock Site Quality Manager	Signature:	Date: dd/mmm/yyyy
CONFIRMATION ONLY YES ☐	Name:	Comstock Project Manager	Signature:	Date: dd/mmm/yyyy

Acronyms RFP No.- Request For Pricing, MTR - Material Test Report, CRN - Canadian Registration Number,
COCOMP - Certificate of Compliance, COCONF - Certificate of Conformance, MSDS - Material Safety Data Sheet

F501N May 1, 2010

21.2.2 Q-021N-BP Post Weld Heat Treatment Instructions

Comstock Canada Ltd.

POST WELD HEAT TREAT INSTRUCTIONS

Comstock An EMCOR Company

Project Name		Page No.		of	
Project No.		Date	dd/mmm/yyyy		

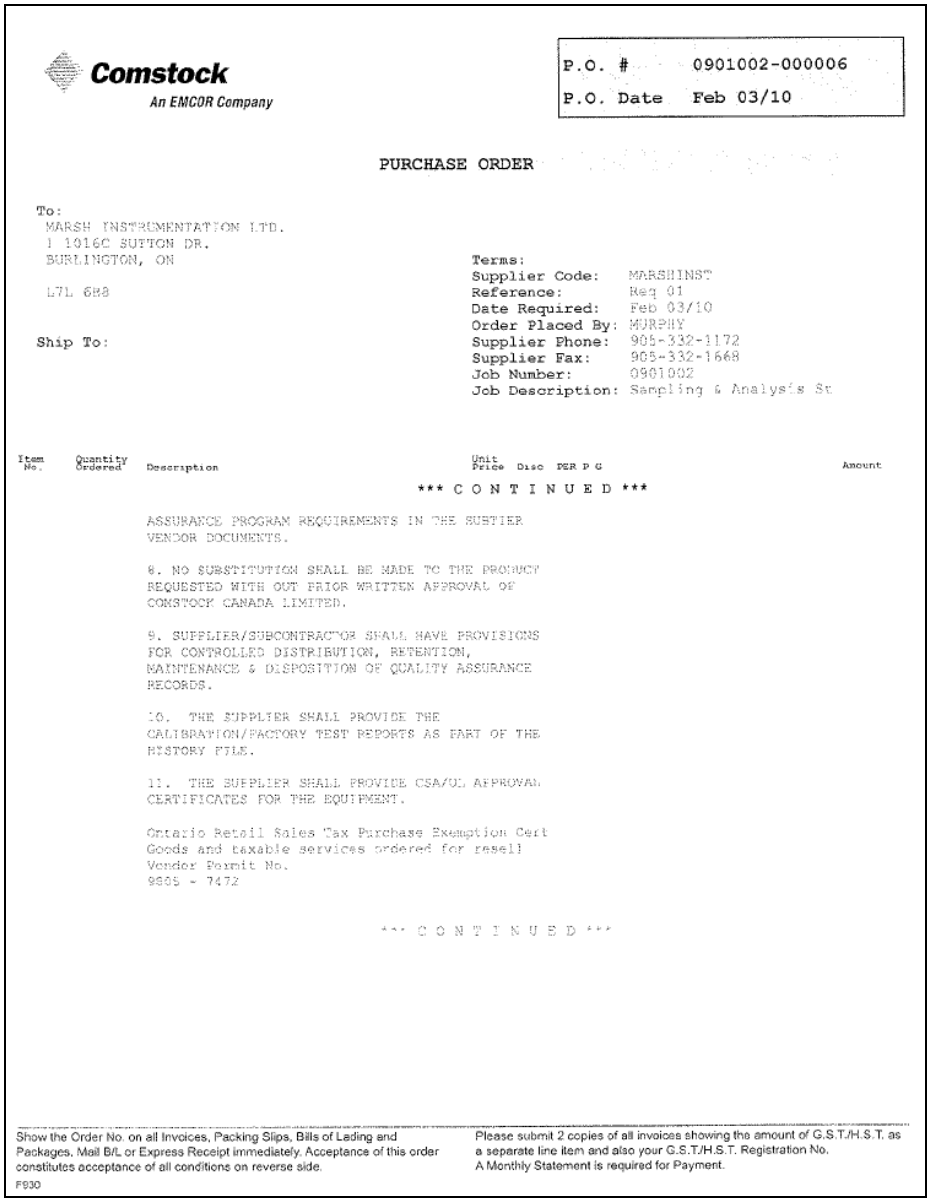
PWHT Instruction Number	
Equipment or Line Number	
Weld Number(s)	
Material Grade(s)	
ASME "P" Number(s)	
Applicable Code or Standard	

INSTRUCTIONS							
1	Raise temperature from ambient to			600	°F		
	at a rate of	800	°F per hour maximum				
2	Raise temperature from	600	°F to		°F		
	at a rate of	600	°F per hour maximum				
3	Hold at	0	°F for	15	minutes per inch of thickness		
	or for		Hour(s) minimum, whichever is greater.				
4	Lower temperature from	0	°F to	600	°F		
	at a rate of	600	°F per hour maximum				
5	Lower temperature from	600	°F to ambient temperature in air				
	Note: Cooling may be carried out in the furnace.						

Approved by			Date	
	Print Name	Signature		dd/mmm/yyyy

Q-021N-BP May 1, 2010

21.2.3 Completed PO – JONAS Generated Form



Comstock
An EMCOR Company

P.O. # 0901002-000006
P.O. Date Feb 03/10

PURCHASE ORDER

To:
MARSH INSTRUMENTATION LTD.
1 1016C SUTTON DR.
BURLINGTON, ON

L7L 6M8

Ship To:

Terms:
Supplier Code: MARSHINST
Reference: Req 01
Date Required: Feb 03/10
Order Placed By: MURPHY
Supplier Phone: 905-332-1172
Supplier Fax: 905-332-1668
Job Number: 0901002
Job Description: Sampling & Analysis Sy

Item No.	Quantity Ordered	Description	Unit Price	Disc	PER	P G	Amount

*** C O N T I N U E D ***

ASSURANCE PROGRAM REQUIREMENTS IN THE SUBTIER VENDOR DOCUMENTS.

8. NO SUBSTITUTION SHALL BE MADE TO THE PRODUCT REQUESTED WITH OUT PRIOR WRITTEN APPROVAL OF CONSTOCK CANADA LIMITED.

9. SUPPLIER/SUBCONTRACTOR SHALL HAVE PROVISIONS FOR CONTROLLED DISTRIBUTION, RETENTION, MAINTENANCE & DISPOSITION OF QUALITY ASSURANCE RECORDS.

10. THE SUPPLIER SHALL PROVIDE THE CALIBRATION/FACTORY TEST REPORTS AS PART OF THE HISTORY FILE.

11. THE SUPPLIER SHALL PROVIDE CSA/UL APPROVAL CERTIFICATES FOR THE EQUIPMENT.

Ontario Retail Sales Tax Purchase Exemption Cert
Goods and taxable services ordered for resell
Vendor Permit No.
9805 - 7472

*** C O N T I N U E D ***

Show the Order No. on all Invoices, Packing Slips, Bills of Lading and Packages. Mail B/L or Express Receipt immediately. Acceptance of this order constitutes acceptance of all conditions on reverse side.

Please submit 2 copies of all invoices showing the amount of G.S.T./H.S.T. as a separate line item and also your G.S.T./H.S.T. Registration No. A Monthly Statement is required for Payment.

F930

21.3 Exhibits for Section 8

21.3.1 Approved Supplier List - Nuclear

COMSTOCK CANADA LTD.

Approved Vendors List (Nuclear).

Approved: M Krone 19Apr2010

Revision 18, Date: April 6, 2010

M. Krone, MQR/CQC Nuclear

Name Of Vendor	Legal Address Of Vendor	Approved for the Supply of	Date of last Audit	Date Next Comstock Audit Due	Program Audit Conducted To	Expiration Date of ASME, TSSA or ISO Certs.	Current Status
BABCOCK & WILCOX Canada	55 Savage Dr Cambridge On N1T1S5	Material & calibration Supplier	April 08 TSSA	Not Required	CSA N285	March 2011 TSSA	Approved
CPUS Ltd	800 Kipling Ave Toronto ON M8Z6C4	Engineering Services	4-May-09 Comstock	4-May-12 Comstock	CSA N286.2	4-May-12	Approved
CRANE NUCLEAR Inc	2825 Cobb Int'nat Blvd Kennesaw Georgia US	Repairs to line valves & PRD's	20-Feb-09 TSSA	Not Required	CSA N285	July 2011 TSSA	Approved
TISI CANADA Inc	200 Hermann Dr Alvin Texas 77511	Non Destructive Examination (NDE)	21 Jan. 10 Comstock	15-Dec-12 Comstock	ISO 9001 2008 WCS	December 2011 WCS	Approved
BRUCE POWER	177Tie Rd PoBox1540 Tiverton On N0G2T0	Material Supplier	June 07 TSSA	Not Required	CSA N285	June 2010 TSSA	Approved
DUBOSE Nat'l Energy	900 Industrial Dr Clinton North CO US	Appurtenances & supports/Mat Org	April 08 ASME	Not Required	ASME SEC III	March 2011 ASME	Approved
ENERGY & PROCESS Corp	2146-b Flintstone Dr Tucker Geog US	Material Supplier QSC-332	April 08 ASME	Not Required	ASME SEC III	April 2011 ASME	Approved
ENERGY STEEL & SUPPLY Co	2715 Paldan Drive Auburn Hills Mic US	Material Supplier	June 08 ASME	Not Required	ASME SEC III	April 2011 ASME	Approved
LAKER ENERGY PRODUCTS Ltd	4325 Harvester Rd burlington On L7L5M4	Material Supplier	25 April 06 ASME	Not Required	ASME SEC III	April 2012 TSSA	Approved
FISHER / LAKESIDE	Suite#2 20Dewpew St Hamilton On L8L7H8	Repairs to Control Valves	April 07 ASME	Not Required	CSA N285 ISO CSA-Z299 3-1985	May 2010 - TSSA 1-Jan-11	Approved
MARSH METROLOGY	2-1016C Sutton Dr Burlington On L7L6B8	Calibration	2009 Comstock	2012 Comstock	COMSTOCK N285/ISO 17025 2005	May 2011 ISO 17025 2005	Approved
NIAGARA FASTENERS INC	6095 Progress St ON Niagara falls L2E 6S8	Material Supplier	July 07 TSSA	Not Required	CSA N285	July 2010 TSSA	Approved
NUMET ENGINEERING Ltd	678 Neal Dr Petbogh On K9J7X5	Material Supplier	June 08 TSSA	Not Required	CSA N285	July 2011 TSSA	Approved
SARNIA FLUID (SWAGELOCK)	29500 Solon Rd Solon Ohio 44139-3492	Swagelok Fitting	Sept 08 ASME	Not Required	ASME SEC III	October 2011 ASME	Approved
MARSH INSTRUMENTATION	1-1016C Sutton Dr Burlington On L7L6B8	Manufacture of Instrumentation	2010 Comstock	2013 Comstock	COMSTOCK N285/ISO 9001	March 2013 ISO 9001 2008	Approved
WELDSTAR COMPANY	1750 Mitchell Rd Aurora IL 60504 USA	Weld Consumables	Jan 09 ASME	Not Required	ASME SEC III	January 2012 ASME	Approved
CAMBRIDGE MATERIALS	1177 Franklin blvd Cambridge On	Testing of Materials	18-Nov-09 Comstock	August 2012 Comstock	COMSTOCK ASME SEC IX III ISO17025	June 2013 ISO 17025 2005	Approved

21.3.2 Q-034N History Docket Release/Acceptance

Comstock Canada Ltd.
History Docket Release/Acceptance

Comstock An EMCOR Company

☐ History Docket ☐ History File

Work Order No.		Equipment No.	

Reactor Unit No.	

Installer's Name	Installer's Address
Canadian Registration No.	

Work Order Description

This is to certify that the enclosed/attached documents have been examined and that they are complete, accurate and fully satisfy the History Docket/File requirements of the contract documents.

☐ Master ☐ Specific ☐ Yes ☐ No ☐ Final Docket/File of set

Volume _____ of _____ History Docket/Files

Supplier's Representative			
		Date	
Print Name	*Signature*		*dd/mmm/yyyy*
Name of Organization			

Owner's Representative			
		Date	
Print Name	*Signature*		*dd/mmm/yyyy*

Q-034N May 1, 2010

21.3.3 P-002N Receiving Deviation Log

Comstock Canada Ltd.
RECEIVING DEVIATION LOG

Comstock An EMCOR Company

Notify Comstock Purchasing Department in the event a Non-Conformance Report (NCR) must be issued to the supplier, or critical / multiple minor deviations have occurred that require formal corrective action to be taken with the supplier. Please provide a copy of the Receiving Deviation Log via e-mail or fax.

Project Name		Project No.		Page No.		of	
				Date			

dd/mmm/yyyy

Deviation Code (DC)

1 - Short-Shipment
2 - Over-shipment
3 - Billing Errors
4 - Late Delivery
5 - Shipped prior to release/approval
6 - Defective
7 - Damaged in transit
8 - Other

Seq. No.	Date (dd/mmm/yyyy)	Supplier	P.O. Number	Material Description	DC code	Disposition

P-002N May 1, 2010

21.3.4 P-003N-BP Material Receiving Report

Comstock Canada Ltd.

MATERIAL RECEIVING REPORT NO. _____ **Page** ___ **of** ___

Comstock An EMCOR Company

Req. No:		Scope/FWP:		Vendor:		Contract No.		P.O. Number		Date Rec.:	

dd/mmm/yyyy

Line	QTY	UOM	Description	Cat. ID.	Heat No.	Add'l Info.	QA Status	Location

Remarks:	

Inspected By:			Date Inspected:	
	Print Name	*Signature*		*dd/mmm/yyyy*
Received By:			**Date Received:**	
	Print Name	*Signature*		*dd/mmm/yyyy*

P-003N-BP May 1, 2010

21.3.5 P-006N-BP Material Receiving Report

Comstock Canada Ltd.
RECEIVING - MATERIAL/CMTR CHECKLIST

Comstock An EMCOR Company

Page 1 of 2

When receiving material, the following information shall be verified against the material specification and the purchase order or bill of material as applicable. For information such as size, schedule, etc. record the actuals. For information such as chemical composition or mechanical testing, verify the results by comparing them to the specification and marking them as acceptable or not acceptable.

Purchase Order or BOM number		Project Number	
Manufacturer's Name		Material Grade	
Heat Number		Lot Number	

Attribute	Material	CMTR	Comments
Name of certifying organization is shown on the CMTR			
Manufacturers name or trademark is marked on the material			
Number and expiration date of the organizations certificate of authorization is shown			
The revision and date of the written program under which the material is certified is shown.			
The purchase order or contract number is shown			
Material size and schedule or wall thickness			
Description of material identification marking is included			
Material identification marking is as specified in the CMTR			
Quantity received on this checklist			
Heat analysis has been checked against the material specification in ASME Section II			
Product analysis has been checked against the material specification in ASME Section II			
Tensile results have been checked against the material specification in ASME Section II			
Other test results have been checked against the material specification in ASME Section II			
Required NDE has been completed and accepted			
(PIPE ONLY) Is seamless or welded identified			
(FITTINGS ONLY) Is starting material identified			
(WELD CONSUMABLES) SFA Number			
(WELD CONSUMABLES) AWS Number			
Was weld repair performed? If yes, is the RT film included in the document package?			

P-006N-BP May 1, 2010

Comstock Canada Ltd.

RECEIVING - MATERIAL/CMTR CHECKLIST

Comstock An EMCOR Company

Page 2 of 2

Manufacturer's Name	0	Material Grade	0
Heat Number	0	Lot Number	0

Code Date of Supplied Material			Code Date for Construction	
Edition	Addenda		Edition	Addenda

If the above noted dates are different, the following three questions must be addressed as part of the material evaluation. If any answer is "no", the material is unacceptable and a non-conformance must be raised.

Question	Yes	No
The material meets the applicable requirements of the material specification permitted by paragraph 2121 of the applicable Subsection of Section III, Edition and Addenda as specified for construction.	☐	☐
The material meets all of the requirements of Article 2000 of the applicable Subsection of Section III, edition and addenda as specified for construction.	☐	☐
The material was produced under the provisions of a Quality System Program which had been accepted by the ASME or was qualified by a party other than the ASME, in accordance with the requirements of the latest Section III, Edition and Addenda issued at the time the material was produced.	☐	☐

Verified By			Date	
	Print Name	*Signature*		*dd/mm/yyyy*

P-006N-BP May 1, 2010

21.3.6 P-013N-BP Material Return Report

Comstock Canada Ltd.
MATERIAL RETURN REPORT

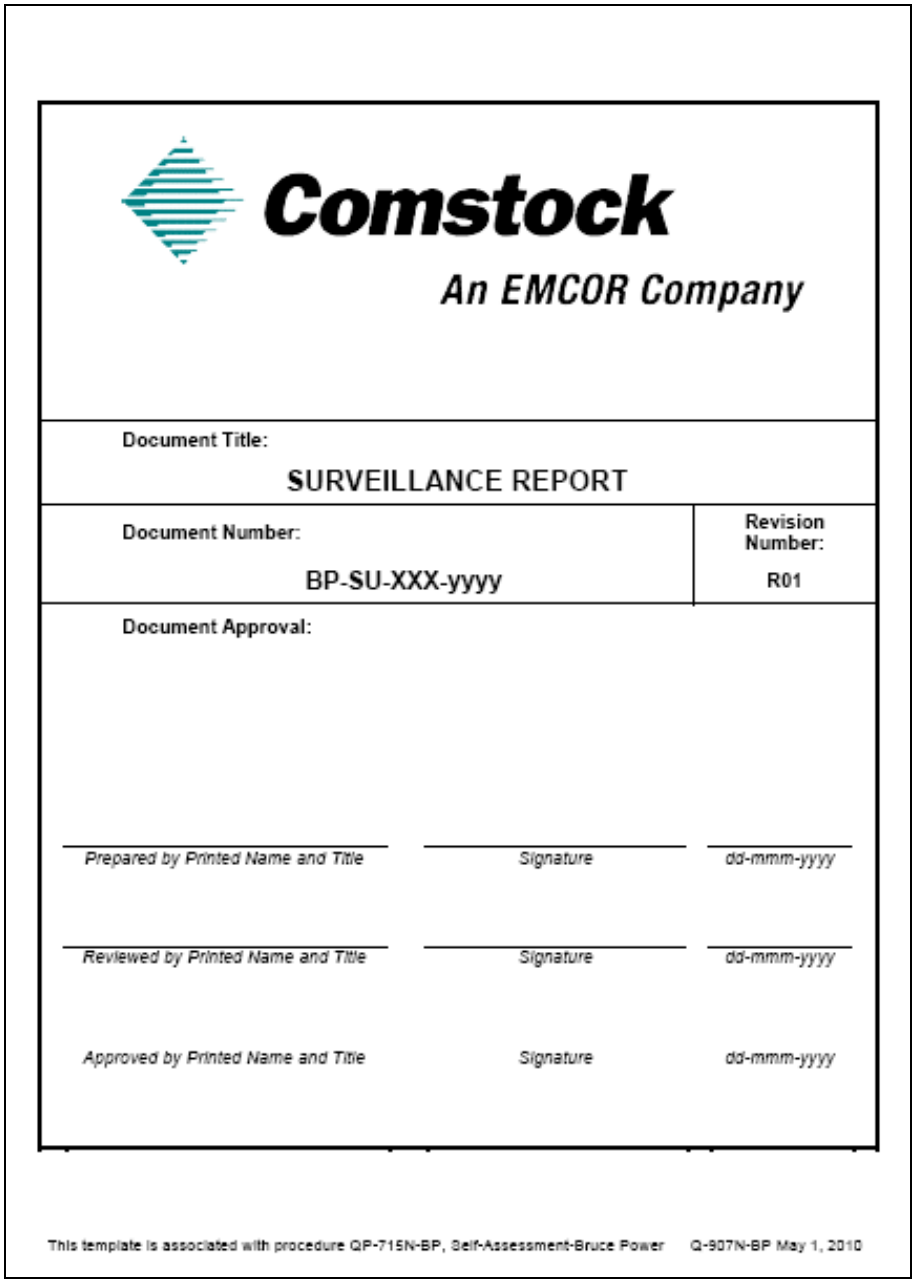
Comstock An EMCOR Company

Project Name							Project No.	
PITP/ITP No.							Date *(dd/mmm/yyyy)*	
W/O No.	MR No.	Quantity	Cat ID No.	UTC No.	Returned by*	Received by*	Required at Later Date	Condition
Comments								

* Provide Signature Sheet Q-903NBP for Sign Off Verification.

P-013N-BP May 1, 2010

21.3.7 Q-907N-BP Surveillance Report



Comstock
An EMCOR Company

Document Title:
SURVEILLANCE REPORT

Document Number:	Revision Number:
BP-SU-XXX-yyyy	R01

Document Approval:

Prepared by Printed Name and Title	*Signature*	*dd-mmm-yyyy*
Reviewed by Printed Name and Title	*Signature*	*dd-mmm-yyyy*
Approved by Printed Name and Title	*Signature*	*dd-mmm-yyyy*

This template is associated with procedure QP-715N-BP, Self-Assessment-Bruce Power Q-907N-BP May 1, 2010

Comstock An EMCOR Company	Documentation Control	SU No: BP-SU-xxx-yyyy	Page: 2 of 3
SURVEILLANCE REPORT		Revision Date: dd-mmm-yyyy	Rev. No: R01

1.0 SERVICE PROVIDER SURVEILLANCE

In this section put the name of the company, surveillance location address and date of the service provider surveillance.

2.0 CRITERIA FOR SURVEILLANCE

- In this area identify the service that is being monitored.
- Provide details of the contract or portion of the contract that is being looked into.
- Identify the procedures, instructions or process used by the contractor to complete their work.
- Refer to additional customer requirements if need be.

3.0 METHODS EMPLOYED:

In this section, briefly describe what methods were used for the assessment, document review, interview or observation? Are checklists use, or mark-up procedures? Attach them to the report.

4.0 SURVEILLANCE:

4.1 Summary of Findings:

1. Provide a summary of the principal findings, level of compliance
2. Number the findings so that section 7.0 can be used easily.

4.2 Suggestions for Improvements:

- Areas that may have been identified in need of minor changes to provide a better service but may still meet contract or code and standards requirements.

5.0 SURVEILLANCE DETAILS:

5.1 Details of Findings:

1. This area is used to provide the details including the procedure or instruction that is not being done satisfactorily.
2. May need to quote exact code and standard paragraphs.

5.2 Other Observations during Surveillance:

- This area is provided to describe general observations.

6.0 ACTION REQUESTED

- This area is to request a reply to the writer of the surveillance findings by a certain date.
- The requested reply date should be no more than a month away and is to be followed-up by the writer.
- Make a statement that the reply actions may be addressed in a table format or in a separate action plan.

Note: If corrective actions are required for severe issues, communicate with QA Manager.

This template is associated with procedure QP-715N-BP, Self-Assessment-Bruce Power Q-907N-BP May 1, 2010

Comstock An EMCOR Company	Documentation Control	SU No: BP-SU-xxx-yyyy	Page: 3 of 3
SURVEILLANCE REPORT		Revision Date: dd-mmm-yyyy	Rev. No: R01

The Next Sections Are For Comstock Use Only

7.0 ACTIONS AND OR NCR'S COMPLETED BY CONTRACTOR

Finding #	Description of issue	Disposition Proposed by contractor	Date Completed and Signature
1			
2			
3			

8.0 REVIEW OF COMPLETED ACTIONS RELATED TO SURVEILLANCE

Reviewed by:	Signature:	Date:

9.0 ALL ACTIONS AND NCR ARE CLOSED OUT

Closed by:	Signature:	Date:

This template is associated with procedure QP-715N-BP, Self-Assessment-Bruce Power Q-907N-BP May 1, 2010

21.4 Exhibits for Section 10

21.4.1 Q-002N-BP Inspection and Test Plan

Comstock Canada Ltd.
INSPECTION AND TEST PLAN

Prepared by

Signature / Date

Comstock An EMCOR Company

Approved			*dd/mmm/yyyy*
CCL QA/QC		Date	
PMC	Accepted By:	Date	
ANI / AI		Date	

NOTE: All Initials Must Be Backed Up With a Dedicated Q-903N-BP SIGNATURE LOG In Accordance With QP-826N-BP

Project Name		System Information	
Plan Number		Date	*dd/mmm/yyyy* →

LEGEND H = hold W = witness V = verify N = notify D = document

Seq. No.	Operation Performed by	Operation	Control Document	History Document	Comstock		PMC		ANI	
					Insp. Point	Initial / Date	Insp. Point	Initial / Date	Insp. Point	Initial / Date
Notes		These steps may be performed in any order or repeated as necessary, as directed by Job Supervision as long as Hold / Witness Points are not by-passed.								
1										
2										
3										
4										
5										
6										
Comments										

1 of 4 Q-002LN-BP May 1, 2010

21.4.2 Q-014N Welding Procedure Specification Data Sheet

Comstock Canada Ltd.

WELDING PROCEDURE SPECIFICATION

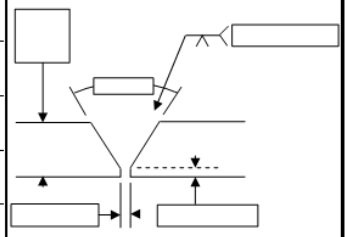
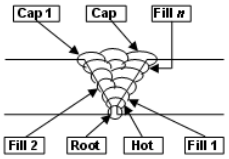
DATA SHEET

Comstock An EMCOR Company

Page 1 of 2

WPS Number		WPS Date		Supporting PQR Number	
		dd/mmm/yyyy			
Revision Number		Revision Date		Registration Number	
		dd/mmm/yyyy			
Welding Process				Type	

JOINT DESIGN

Joint	Typical Joint Preparation	Typical Pass Sequence
Type		
Backing Material		

BASE METALS

ASME P Number		Group Number		TO	ASME P Number		Group Number	
Unassigned Grade					Unassigned Grade			

THICKNESS RANGE

Groove Welds		Fillet Welds	
Base Metal (inches)		Base Metal (inches)	
Deposited Weld Metal (inches)		Deposited Weld Metal (inches)	

DIAMETER RANGE

Groove Weld		Fillet Weld	

FILLER METALS

Filler Metal "F" Number		Filler Metal "A" Number	
SFA Specification		AWS Specification	
Filler Metal Size		Electrode-Flux Class	
Consumable Insert		Flux Trade Name	

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Comstock Canada Ltd.

Comstock An EMCOR Company

WELDING PROCEDURE SPECIFICATION

DATA SHEET WPS NO. 0 Page 2 of 2

WELD POSITION		POST WELD HEAT TREATMENT	
Position of Groove		Temperature (°F)	
Position of Fillet		Time (Minutes)	
Welding Progression			

PREHEAT/INTERPASS TEMPERATURE (°F)		WELDING GASSES			
Minimum Pre-heat Temp			Gasses	Mixture	Flow rate
Maximum Inter-pass Temp		Shielding			
Preheat Main-tenance Temp		Backing			
		Trailing			

EQUIPMENT			
Tungsten Electrode Size & Type (GTAW)		Orifice or Gas Cup size	

TECHNIQUE			
Initial & Inter-pass Cleaning Method		Mode of Transfer (GMAW) Only	
Weld Bead - String or Weave		Oscillation	
Contact Tube to Work Distance		Multiple or Single Pass Per Side	
Multiple or Single Electrodes		Back Gouging Method	

PROCESS INFORMATION									
Side No.	Pass No.	Weld Process	Filler Metal Class	Filler Metal Size (inch)	Current Type & Polarity	Current Amperage Range (amps)	Volt Range (volts)	Arc Travel Speed (ipm)	Heat Input kJ/Inch max.

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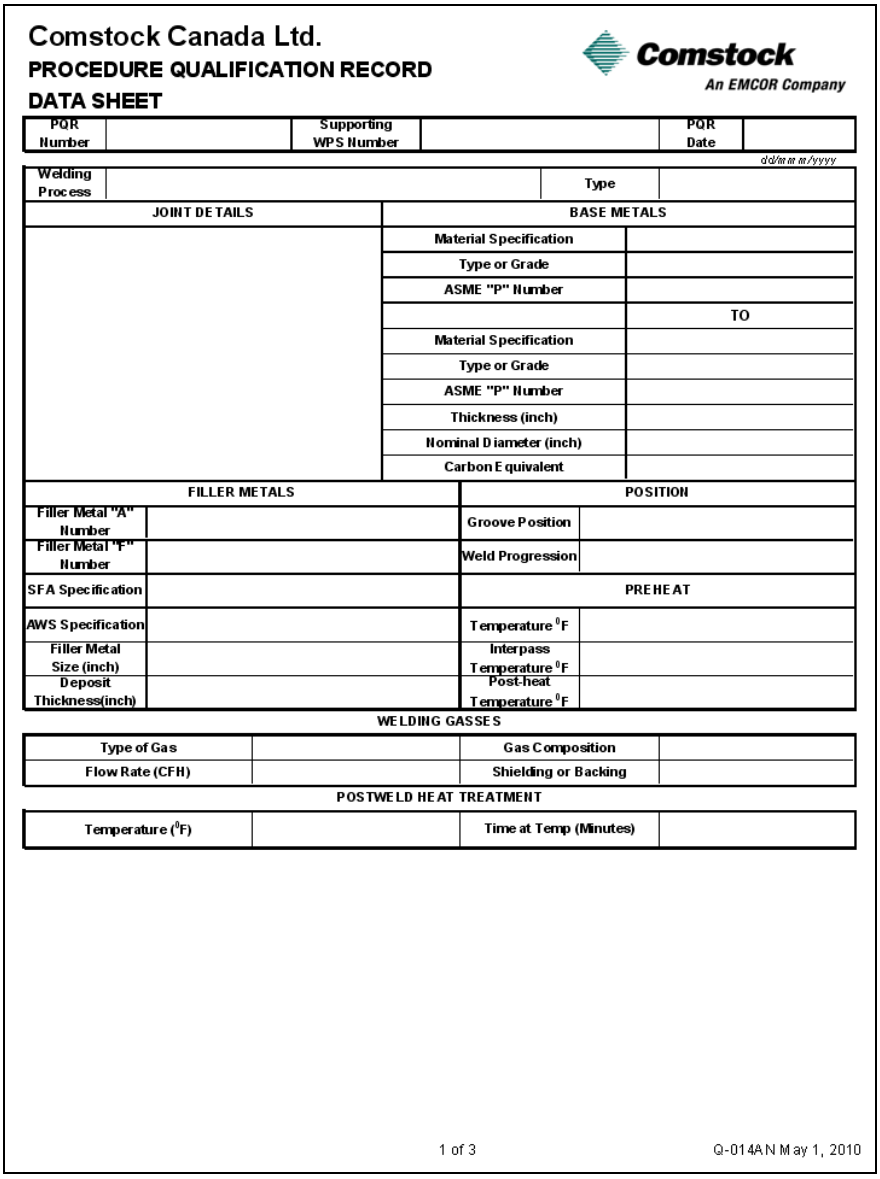
21.4.3 Q-014AN Procedure Qualification Record Data Sheet



Comstock Canada Ltd.
PROCEDURE QUALIFICATION RECORD
DATA SHEET

Comstock An EMCOR Company

PQR Number		Supporting WPS Number		PQR Date	

dd/mm m/yyyy

Welding Process		Type	

JOINT DETAILS	BASE METALS	
	Material Specification	
	Type or Grade	
	ASME "P" Number	
		TO
	Material Specification	
	Type or Grade	
	ASME "P" Number	
	Thickness (inch)	
	Nominal Diameter (inch)	
	Carbon Equivalent	

FILLER METALS		POSITION	
Filler Metal "A" Number		Groove Position	
Filler Metal "F" Number		Weld Progression	
SFA Specification		PREHEAT	
AWS Specification		Temperature ^{0}F	
Filler Metal Size (inch)		Interpass Temperature ^{0}F	
Deposit Thickness(inch)		Post-heat Temperature ^{0}F	

WELDING GASSES

Type of Gas		Gas Composition	
Flow Rate (CFH)		Shielding or Backing	

POSTWELD HEAT TREATMENT

Temperature (^{0}F)		Time at Temp (Minutes)	

1 of 3 Q-014AN May 1, 2010

Comstock Canada Ltd.

PROCEDURE QUALIFICATION RECORD

DATA SHEET

Comstock An EMCOR Company

PQR Number		Supporting WPS Number		PQR Date	
					dd/mmm/yyyy

PROCESS INFORMATION

Pass No.	Weld Process	String Weave	Up/ Down	Filler Metal		Current		Volts	Arc Speed Inches Minute	Heat Input kJ/Inch	Interpass Temp 0F
				Class	Size (inch)	Type Polarity	Amps				
										#DIV/0!	
										#DIV/0!	
										#DIV/0!	
										#DIV/0!	
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Comstock Canada Ltd.

PROCEDURE QUALIFICATION RECORD

DATA SHEET

Comstock An EMCOR Company

PQR Number		Supporting WPS Number		PQR Date	

dd/mmm/yyyy

TENSILE TEST

Specimen Number	Width (inch)	Thickness (inch)	Cross Sectional Area (inch2)	Ultimate Load (pounds)	Ultimate Stress (P.S.I.)	Nature and Location of Failure

GUIDED BEND TEST

Specimen Number	Type	Result	Comments

TOUGHNESS TEST

No.	Notch Location	Test temp °F	Impact Value ft.lbs	Lateral Expansion	Percent Shear	No.	Notch Location	Test temp °F	Impact Value ft.lbs	Lateral Expansion	Percent Shear

OTHER TESTING

Hardness Rockwell B		Base Metal 1		H.A.Z.		Weld Metal		H.A.Z.		Base Metal 2	
Test Type				Result							
Date Welded		Witnessed by									
dd/mmm/yyyy				please print				signature			
Testing Lab.				Lab No.							

We certify that the statements in this record are correct and the test welds were prepared, welded and tested in accordance with ASME Boiler and Pressure Vessel Code Section IX

For Comstock Canada Limited

Michael Krone; Director Quality Control Nulear

Procedure Qualification Test Welded by	
please print name	signature

3 of 3 Q-014AN May 1, 2010

21.4.4 Q-021N-BP Post Weld Heat Instruction

Comstock Canada Ltd.

POST WELD HEAT TREAT INSTRUCTIONS

Comstock An EMCOR Company

Project Name		Page No.		of	
Project No.		Date	dd/mmm/yyyy		

PWHT Instruction Number	
Equipment or Line Number	
Weld Number(s)	
Material Grade(s)	
ASME "P" Number(s)	
Applicable Code or Standard	

	INSTRUCTIONS						
1	Raise temperature from ambient to			600	°F		
	at a rate of	800	°F per hour maximum				
2	Raise temperature from		600	°F to		°F	
	at a rate of	600	°F per hour maximum				
3	Hold at	0	°F for	15	minutes per inch of thickness		
	or for		Hour(s) minimum, whichever is greater.				
4	Lower temperature from		0	°F to	600	°F	
	at a rate of	600	°F per hour maximum				
5	Lower temperature from		600	°F to ambient temperature in air			
	Note: Cooling may be carried out in the furnace.						

Approved by			Date	
	Print Name	Signature		dd/mmm/yyyy

Q-021N-BP May 1, 2010

21.4.5 Welder/Welding Operator Certificate

Technical Standards and Safety Authority
14th Floor - Centre Tower
3300 Bloor Street West
Toronto, Ontario M8X 2X4
Web site: www.tssa.org

Welder/Welding Operator Certificate
Technical Standards and Safety Act
Boilers and Pressure Vessels Regulation
No. 269411

Welder's Last Name | Initial | First Name | Signature | Stamp No.
Res. Address | Postal Code | Provincial Registration No.
Employer Name | Company POR No.
Street Address | Company WPS No.used
Postal Code
Welding Process(es) Used | Type(s) ☐ manual ☐ machine ☐ semi-automatic ☐ automatic
Base Material(s) | Thickness(es)

Variables for All Processes	Actual Values	Range Qualified
Backing material (with/without)		
ASME P or S No. to ASME P or S No.	____ to ____	
( ) Plate ( ) Pipe (enter diameter if pipe)		
Filler Metal Specification (SFA) Class (CW-404) (Informational Only)		
Consumable Insert for GTAW or PAW (QW-404)		
Welding Position (1G, 5G, etc.) (QW-405)		

Manual or Semi-automatic Variables (QW-350)	Actual Values	Range Qualified
Filler Metal F-No. (QW-404)		
Filler Metal Product Form for GTAW, PAW (QW-404)		
Weld deposit thickness for each welding process (QW-404)		
Process 1: ____ 3 layers minimum ☐ Yes ☐ No		
Process 2: ____ 3 layers minimum ☐ Yes ☐ No		
Vertical progression (uphill/downhill) (QW-405)		
GTAW, PAW or GMAW backing gas; or OFW fuel gas (QW-408)		
GMAW transfer mode (spray/globular or pulse to short circuit) (QW-409)		
GTAW welding current type & polarity (AC, DCEP, DCEN)(QW-408)		

Machine Welding Variables (QW-361.2)	Actual Values	Range Qualified
Direct or remote visual control		
Automatic arc voltage control (GTAW)		
Automatic joint tracking		
Multiple or single pass per side		

Automatic Welding Variables (QW-361.1)	Actual Values	Range Qualified
Filler metal (EBW or LBW)		
Laser type for LBW (CO_2 to YAG etc.)		
Continuous drive or inertia welding (FW)		
Vacuum or out of vacuum (EBW)		

Note: Values in "Range Qualified" are valid only when used with a Qualified Welding Procedure.

RESULTS

Visual Examination of Completed Weld (QW-302.4) ____
☐ Transverse root and face [QW-462.3(a)]; ☐ Longitudinal root and face [QW-462.3(b)]; ☐ Side (QW-462.2);
☐ Pipe bend specimen, corrosion-resistant overlay [QW-462.5(c)]; ☐ Plate bend specimen, corrosion-resistant overlay [QW-462.5(d)];
☐ Pipe specimen, macro test for fusion [QW-462.5(b)]; ☐ Plate specimen, macro test for fusion [QW-462.5(e)]

Type	Result	Type	Result	Type	Result	Type	Result

Alternative radiographic examination results (QW-191) ____
Fillet weld — fracture test (QW-181.2) ____ Length and percent of defects ____
☐ Fillet welds in plate [QW-462.4(b)] ☐ Fillet welds in pipe [QW-462.4(c)]
Macro examination (QW-184) ____ Fillet size (in.) ____ x ____ Concavity/convexity (in.) ____
Other tests ____
Film or specimens evaluated by ____ Company ____
Mechanical tests conducted by ____ Laboratory test no. ____
Welding supervised by ____
Test requested by (Print name) ____ Tested at (Print address) ____

We certify that the statements in this record are correct and that the test coupons were prepared, welded, and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

Organization ____ Signature ____ Date ____ (mm-dd-yyyy)

FOR TSSA INSPECTOR USE ONLY

The Welder named above has passed the welding test required under Ontario's ***Technical Standards and Safety Act,*** Boilers and Pressure Vessels Regulation and is hereby authorized, subject to the limitations of this certificate.

Check (✔) applicable box below:
☐ To weld for the Employer named above only.
☐ For seeking employment only.

This Certificate expires: ____ (mm-dd-yyyy)

Inspector Name and Number (Print) | Inspector Signature

PV-00987(11/05)

21.4.6 NDE Personnel Certificate

Natural Resources Canada / Ressources naturelles Canada
This card is proof of the certification of the individual as specified.
Cette carte est la preuve de la certification de l'individu comme indiquée.
Name/Nom: Zbigniew S. Wator
Reg. No./No. matricule: 4361
Issue Date/Date d'émission: 2008/02/01
Expiry Date/Expiration: 2010/12/31
Signature

Natural Resources Canada / Ressources naturelles Canada
Qualified to i) CAN/CGSB-48 9712 or/ou ii) ISO 20807 Qualifié selon

Method Méthode	Level Niveau	Sector Secteur	Cert. Date Date cert.	Recert. Date Date recert.	Expires Expiration
UT i	2	EMC	95/02/20		10/12/31
RT i	2	EMC	93/03/15		10/12/31
PT i	2	EMC	88/10/01		10/12/31
MT i	2	EMC	88/12/01		10/12/31

For proof of certification, visit website: http://nlt.nrcan.gc.ca/
Pour confirmer la certification, visitez le site web: http://nlt.nrcan.gc.ca/
Manager, Certifying Agency
Gestionnaire, Organisme de certification

Atomic Energy Control Board / Commission de contrôle de l'énergie atomique
This certifies that / La présente atteste que: Zbigniew S. Wator
has qualified pursuant to Section 18 of the Atomic Energy Control Regulations as a: / s'est qualifié en vertu de l'article 18 du Règlement sur le contrôle de l'énergie atomique comme étant un:
Qualified Operator / Opérateur qualifié
QUALIFICATION DATE / DATE DE QUALIFICATION: 1987/06/30
REG NO / NO MATRICULE: 4361
ISSUE DATE / DATE D'ÉMISSION: 1998/04/01
ISSUING OFFICER / AGENT RESPONSABLE

This card issued on behalf of AECB by: / Cette carte est émise au nom de la CCEA par:
Certifying Agency/NRCan/CANMET/MTL
l'Organisme de certification/RNCan/CANMET/LTM
Ottawa, ON K1A 0G1
THIS IS NOT A VALID CERTIFICATE UNLESS ACCOMPANIED BY THE CARDHOLDER'S PHOTO CARD BEARING THE SAME REGISTRATION NUMBER / CE CERTIFICAT EST VALIDE SEULEMENT SI ACCOMPAGNÉ DE LA CARTE D'IDENTITÉ DU TITULAIRE AYANT LE MÊME NUMÉRO MATRICULE
Qualified Operator
pursuant to Section 18 of the Atomic Energy Control Regulations, for the purpose of operating an exposure device containing a prescribed substance.
Opérateur qualifié
en vertu de l'article 18 du Règlement sur le contrôle de l'énergie atomique afin d'utiliser un dispositif d'exposition contenant une substance prescrite.
CARDHOLDER'S SIGNATURE / SIGNATURE DU TITULAIRE

CWB CANADIAN WELDING BUREAU
ZBIGNIEW WATOR
W178.2 LEVEL 3 CERTIFIED WELDING INSPECTOR
The Inspector named herein has complied with the requirements of CSA Standard W178.2 "Certification of Welding Inspectors".
1709 — REG. NO.
12/11/2009 — EXPIRY (MM/DD/YY)
AUTHORIZED SIGNATURE
CONDITIONS: Possession of this card does not imply that the holder represents an organization certified to CSA Standard W178.1, having personnel and procedures approved by the Canadian Welding Bureau.
This card is the property of the Canadian Welding Bureau and can be recalled at any time. Fraudulent use may involve permanent cancellation.

The certification of the person named on this card includes endorsements for the code(s) and standards(s) identified below. Code and Standard examinations must be rewritten every six (6) years from the date shown beside each code.
ASME B31.3: Chemical Plant and Petroleum Refinery Piping.......... 12/05
CANADIAN WELDING BUREAU

energy API
API 510
Certification Number: 22220
Original Certification Date: 31-Dec-2000
Expiration Date: 31-Dec-2012
This is to certify that Zbigniew Stanislaw Wator has successfully met the requirements to be certified as an **API Pressure Vessel Inspector** under the API 510 Pressure Vessel Inspector Certification Program.
Signature of Inspector
Authorized Signature
ICP

energy API
API 510
Pressure Vessel Inspector
This program is designed to assist users in identifying inspectors who have satisfied the minimum qualifications specified in API 510. API does not warrant or guarantee the competency of any inspector certified under this program.
ICP

21.4.7 Q-035N Welder/Welding Operator Performance Qualification

Comstock Canada Ltd.

Welder/Welding Operator Performance Qualification

Comstock An EMCOR Company

Welder Information				
Welders Last Name	Initial	First Name	Signature	Stamp No.
Residential Address			Phone Number	Postal Code

WPS/PQR Information		
WPS/PQR Registration No.	Comstock PQR No.	Comstock WPS No. used
Welding Process(es) Used		Type(s)
Base Material(s)		Thickness(es)

Manual or Semi-automatic Variables for each Proces	Actual Values	Range Qualified
Backing Material		
ASME P-No. to ASME P-No.	to	
Plate &/or Pipe (enter diameter if pipe)		
Filler Metal SFA Specification		
Filler Metal F-No.		
Filler Metal Product Form for PAW&/or GTAW		
Consumable Insert for PAW&/or GTAW		
Weld Deposit Thickness (for each welding process)		
Welding Position (1G,5G...ect.)		
Progression (uphill/downhill)		
GTAW, GMAW or PAW Backing Gas		
GMAW Transfer Mode		
GTAW Welding Current Type & Polarity		

Machine Welding Variables for Process used	Actual Values	Range Qualified
Direct Remote Visual Control		
Automatic Voltage Control (GTAW)		
Automatic Joint Tracking		
Welding Position (1G,5G...ect.)		
Consumable Insert		
Backing Material		
Multiple or Single Pass per side		
Change from Automatic to Machine		

Guided Bend or Radiographic Results				Comments
Specimen No.	Bend	Radiography	Results	

1 of 2 Q-035N May 1, 2010

Comstock Canada Ltd.

Welder/Welding Operator Performance

Qualification (condinued)

Comstock An EMCOR Company

Other Tests			
Type	Results		
Visual Examination results			
Fillet Weld Fracture Test		Length and % of defects	
Macro Test Fusion (Fillet leg size and Concavity/Convexity)			

Welding Test Conducted by _____ (Name) _____ Date (dd/mmm/yyyy)

Mechanical Tests Conducted by _____ (Lab. Name) _____ Lab. Test No.

We certify that the statements in this record are correct & that the test coupons were prepared, welded & tested in accordance with the requirements of Section IX of the ASME code.

Name (print)	Signature	Date (dd/mmm/yyyy)

2 of 2 Q-035N May 1, 2010

21.4.8 Q-017N-BP Filler Metal Record

Comstock Canada Ltd.
FILLER METAL RECORD

Comstock An EMCOR Company

Project Number		Page No.		of	
Project Name					

Filler Metal OUT			
Welder I.D.	Welder Name	Date Out	Time Out
	Print	*dd/mmm/yyyy*	*am/pm*

Issued by		
	Print	*Signature*

Filler Metal Type	Wire		Electrode			
Filler Metal Size	3/32	1/8	3/32	1/8	5/32	3/16
AWS Classification						
Heat Number						
Lot Number						
Quantity, Filler Metal Out						

Filler Metal IN			
Quantity, Filler Metal In			
Date In	Time In	Received By	
dd/mmm/yyyy	*am/pm*	*Print*	*Signature*

Welding Performed			
Weld Number	Weld Size and Type	WPS Number	Line/System Number

Q-017N-BP May 1, 2010

21.4.9 Q-015N-BP Weld Visual Inspection Report

Comstock Canada Ltd.
WELD VISUAL INSPECTION REPORT

Comstock An EMCOR Company

Project Name		Page No.		of	
Project No.		Line or Drawing Number			

Weld Number	Visual Inspections			Comments	Sign Off *	Date dd/mmm/yyyy
	Fit Up	Root	Final			

* Provide Signature Sheet Q-903NBP for Sign Off Verification.

Legend A = Acceptable U = Unacceptable R = Repaired

Q-015N-BP May 1, 2010

21.4.10 Q-020AN Pressure Piping Inspection Test Plan

Comstock Canada Ltd.
Pressure Piping Inspection Test Plan

Comstock An EMCOR Company

Prepared by	Accepted by				
	Comstock QC			Date	
Print	*Print*		*Signature*		
	OPG Rep.			Date	
Signature	*Print*		*Signature*		
	TSSA Site Inspect.			Date	
	Print		*Signature*		

Work Order		**Document #**		
Description		**Unit #, USI #**		Denotes 'Not Applicable'
Code & Effective Date		**Design Registration**		
Drawing # ('s)		**Design Press.**	**Design Temp.**	

LEGEND | H = Hold | W = Witness | V = Verify | N = Notify | D= Document

Attributes (as required)	History Document	Installer / Supervisor *	Comstock QC *	Customer *	TSSA *
Material is correct and quantities verified per B.O.M.; Traceablity has been maintained.					
Verify equipment labelling prior to work.					
Cut and remove existing piping / tubing and prepare for welding / brazing.					
Verify cleanliness / FME of piping / tubing.					
Piping / tubing shop fabrication as per design drawings.					
All welded joints complete and QC inspected.	Q-007N-BP, Q-015N-BP,				
All brazed joints complete and QC inspected.					
All bolted connections complete and QC inspected.	**As-Built/Weld Map**				
All threaded connections complete and QC inspected.	**As-Built/Weld Map**				
All Compression fitting connections complete and QC inspected; Installer's Certification Verified.	**As-Built Drawing**				
Valves / Specialty Items Orientation and Flow direction Correct per design drawings.					
Hydrostatic or Pneumatic testing is complete and acceptable.	**Q-008AN**				
All required NDE is complete and acceptable.	**Q-007N-BP PT-GP-02**				
Piping / tubing installed to design drawings.					
Pipe / Tube clearances and tolerances maintained; No visible damage to piping / tubing.					
Piping / tubing supports fabricated and installed as per Piping Support and Fabrication and Installation Checksheet.	P-FORM-10913-R0				
All Concrete Expansion Anchors installed as per CEA installation Checksheet.	P-FORM-10917-R0				
All Structural Connections, Welding as per Structural Connection Checksheet.	P-FORM-10901-R0				
All work is complete to Work Package Requirements; Welding forms are complete and to date. System Complete.	Q-007N-BP,Q-015N-BP, ,Weld Map,CQC-16				
Piping Systems Installation and Test Data Report Required and Complete.	TSSA Form PV 09052				

*** Provide Signature Log Q-903N-BP For Sign-off Verification**

Q-020AN May 1, 2010

21.4.11 Q-020BN Pressure Piping Examination Checklist

Comstock Canada Ltd.
PRESSURE PIPING EXAMINATION CHECKLIST

Comstock An EMCOR Company

Project No.			Page No.	1 of 3
Project Name			Date	
				dd/mmm/yyyy

Approved by:				
Comstock			Date	
	Print	Signature		dd/mmm/yyyy
Owners Rep.			Date	
	Print	Signature		dd/mmm/yyyy
Authorized Inspector			Date	
	Print	Signature		dd/mmm/yyyy
			Date	
	Print	Signature		dd/mmm/yyyy

1) EXAMINATION PRIOR TO TESTING	Sign Off *		
	AI	Customer	Comstock
Ensure that design has been registered with the A.I.A			
Drawings have been released to job sites.			
Pipe & pipe fittings are schedule/rating and material specification is correct.			
Valves - Pressure class and name plate information is correct.			
Valves are installed correctly, flow direction is correct, actuators are free and clear of obstruction, removal access is adequate			
Branch connections are oriented correctly.			
Bolts and Studs, length and material are correct. Stud ends are at a min. flush with the nut face and not more than 2-3 threads exposed.			
Gaskets are made from correct material, size is correct.			
WPS & PQR are registered, Welders have current tickets for process used.			
Fit up is correct and tack welds are acceptable.			
Final weld is complete & visually acceptable			
Seal welding is complete, threads are covered.			
Attachment welds are satisfactory.			
Welding satisfactory and traceable to welder.			
LEGEND	H = hold W = witness V = verify N = notify D = document		

* Provide Signature Log Q-903NBP For Sign-off Verification

Q-020BN May 1, 2010

21.4.12 Q-006N-BP Welders Log

Comstock Canada Ltd.
WELDER LOG

Comstock An EMCOR Company

Project Name		Page No.		of	
Project No.		Year →			

Welder's Name	Symbol	Process	Has welded with the process in the month of: (Enter Month in Row Below)												
To be verified and signed off by the welder supervisor each month →												Date:			
			Print Name			Signature							dd/mmm/yyyy		

Employee Terminated ☐

Q-006N-BP May 1, 2010

21.4.13 Q-007N-BP Piping Log Sheet

Comstock Canada Ltd.
PIPING LOG SHEET

Comstock An EMCOR Company

Project Name		Page No.		of	
Project No.		Date			
			dd/mmm/yyyy		
Piping Description					

Weld No.	Size	Type	WPS No.*	Welder ID	Insp. Date dd/mmm/yyyy	Insp. By *Print*	RT Comp.	Other NDE	NDE Date dd/mmm/yyyy	Comments

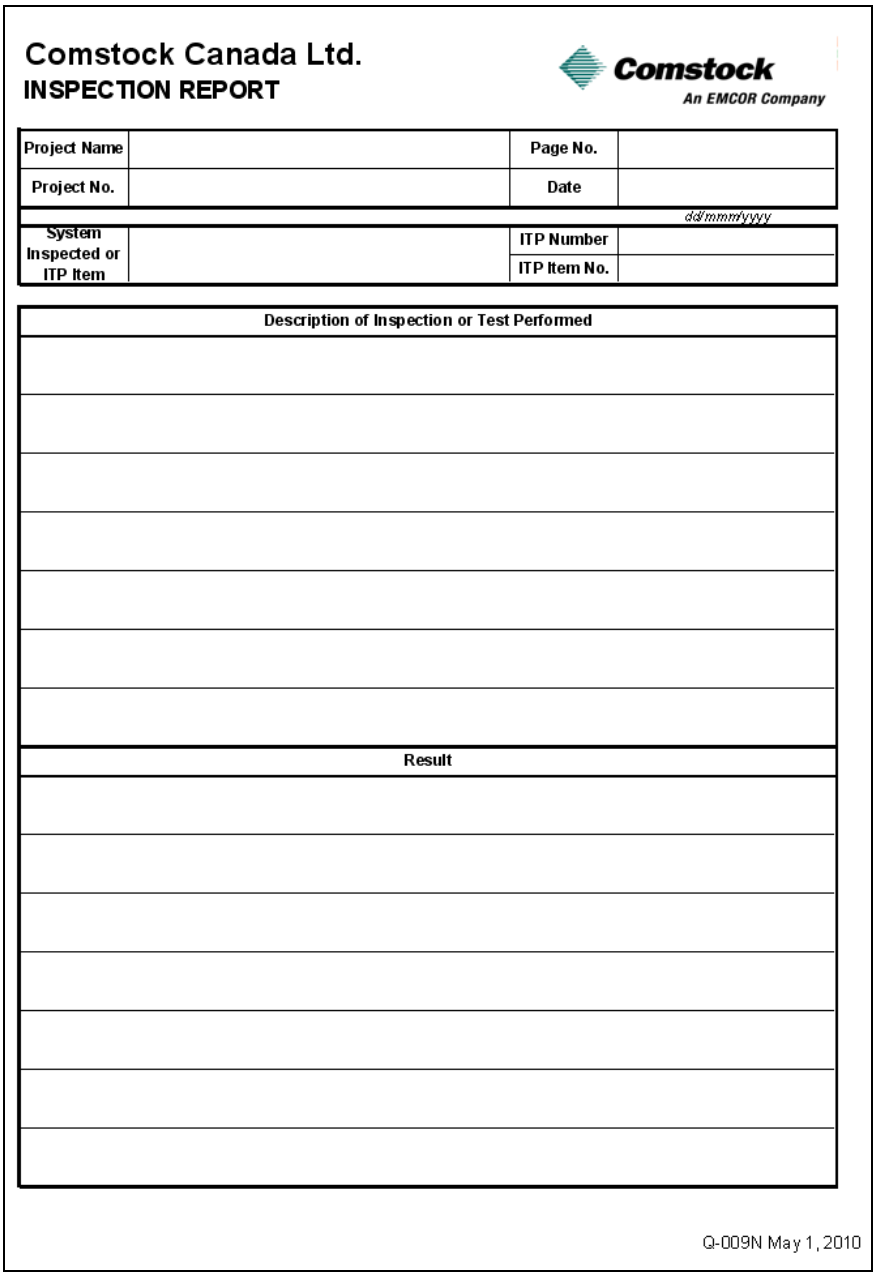
PRESSURE TEST RECORD	Report No.		Tested By			
	Test Date		Accept By	*Print Name*	*Signature*	
		dd/mmm/yyyy		*Print Name*	*Signature*	
COATING RECORD	Coating Type		Thickness MILS		Holiday Tested		Date Complete	*dd/mmm/yyyy*
SYSTEM RELEASE	Date		Released By			
		dd/mmm/yyyy		*Print Name*	*Signature*	

* The WPS numbering identifies the "P" Number of materials joined and the process used (see QP-608N)

Q-007N-BP May 1, 2010

21.5 Exhibits for Section 11

21.5.1 Q-009N Inspection Report



Comstock Canada Ltd.
INSPECTION REPORT

Comstock
An EMCOR Company

Project Name		Page No.	
Project No.		Date	

dd/mmm/yyyy

System Inspected or ITP Item		ITP Number	
		ITP Item No.	

Description of Inspection or Test Performed

Result

Q-009N May 1, 2010

21.5.2 Q-009BN-BP As Found Condition Report

Comstock Canada Ltd.
AS FOUND CONDITION REPORT

Comstock An EMCOR Company

Project Name	Bruce A Restart Valve Project 1 & 2	**Report No.**	
Project No.	251026	**W/O No.**	
ITP No.	123456	**ITP Item No.**	
Unit No.		**USI No.**	
Equip. No.		**Scope ID**	
Originator		**Date**	

dd/mmm/yyyy

Description of As Found (attach separate documentation as required)

u

Disposition (attach separate documentation as required)

|

As Found Disposition Approved			
Comstock QA			**Date**
	Print	*Signature*	*dd/mmm/yyyy*
CCL Engineering			**Date**
	Print	*Signature*	*dd/mmm/yyyy*
PMC Engineering			**Date**
	Print	*Signature*	*dd/mmm/yyyy*

As Found Disposition Results				
Check the Appropriate Box	**Acceptable** ☐		**Reject** ☐	
Comments / References (If results are Rejected state conditions)				
Final Acceptance QC Inspector			**Date**	
	Print	*Signature*		*dd/mmm/yyyy*

Q-009BN-BP May 1, 2010

21.5.3 Q-009CN-BP Installation Inspection Report

Comstock Canada Ltd.
INSTALLATION INSPECTION REPORT

Comstock An EMCOR Company

Project Name	Bruce "A" Restart Valve Project 1&2	Report No.	
Project No.	251026	W/O No.	
ITP No.		ITP Item No.	
Unit No.		USI No.	
Equip. No.		Valve No.	

Construction Complete

Trade Field Supervisor			Date	
	Print	*Signature*		*dd/mmm/yyyy*

Description of Installation Inspection (attach separate documentation as required)

Results Acceptable	Yes ☐ No ☐			Date	
		Print	*Signature*		*dd/mmm/yyyy*

Description of Installation Inspection Deficiencies (attach separate documentation as required)

q
q
q
q
q
q
q
q
q
q
q
q

Deficiencies Corrected by

Trade Field Supervisor			Date	
	Print	*Signature*		*dd/mmm/yyyy*

Deficiencies Cleared and Complete

CCL QA/QC			Date	
	Print	*Signature*		*dd/mmm/yyyy*

Q-009CN-BP May 1, 2010

21.5.4 Q-026AN Piping Systems Installation and Test Data Report

Technical Standards and Safety Authority
4th Floor-West Tower
3300 Bloor Street West
Toronto, ON, M8X 2X4

Comstock Canada Ltd.

PIPING SYSTEMS INSTALLATION AND TEST DATA REPORT

Comstock An EMCOR Company

Page 1 of 2

Note: This report shall be completed and signed by the person responsible, in whole or in part, for the construction, installation, testing and inspection of the pressure piping system forwarded to the Chief Inspector.

Project Number		Shop fabricated	☐	Partial	☐

Owner of Plant (name and address)	
Piping System Installer (Name and Address)	
Type of Plant	
Location of Plant	
Description of Pressure Piping System(s)) or Identification	

Design Code	Registration Number	Maximum Allowable Pressure
Design Temperature	WPS Registration No.	Total Length of Pipe in Feet

Line No. and/or Drawing No.	Pipe Diameter NPS Inches	Pipe Schedule	Material Specification	Length in Feet	Welded, brazed, or Screwed	N.D.E.	P.W.H.T.

Welders Used						
Name of welder	Symbol	Employer	Expiry Date (*dd/mmm/yyyy*)	Process	Thickness Range	Diameter Range
Alternatively the contractors list of welders may be attached hereto.						

Q-026AN May 1, 2010

Comstock Canada Ltd.

PIPING SYSTEMS INSTALLATION AND TEST DATA REPORT

Comstock An EMCOR Company

Project Number		Registration Number	

Pressure Test(s)

Line Number or Description	Medium and Temp. of medium	Final Test Pressure	Duration	Remarks

Remarks

Certificate of Compliance

I, the undersigned, declare that the described pressure piping system approved under design registration number [ ] complies in all respects with the regulations for construction, installation, testing and inspection as required by the Boilers and Pressure Vessels Act, C.S.A. B51, B52 and the applicable Pressure Piping Code of Construction.
Valves, piping and fittings in this installation have been visually inspected to ensure that they comply with Code requirements for identification. All valves and fittings have been duly registered, are of correct schedule and/or ANSI service rating and compatible with the required service condition

Signature	Title	Date
Company	**Address**	*dd/mmm/yyyy*

Certificate of Inspection

I, the undersigned, a duly authorized Boiler and Pressure Vessel Inspector employed by the province of [ ] have inspected the above piping system and state that to the best of my knowledge and belief, the contractor/installer has constructed the piping system in accordance with the Provincial registration P No. [ ] and the requirements of C.S.A. B51. B52.
By signing this certificate, neither the Inspector nor his employer makes any warranty expressed or implied, concerning the piping described in this data report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising form or connected with this inspection.

Date *dd/mmm/yyyy*	Inspector	Number

Q-026AN May 1, 2010

21.6 Exhibits for Section 12

21.6.1 Q-008AN Pressure Test Report

Comstock Canada Ltd.
PRESSURE TEST REPORT

Comstock An EMCOR Company

Project Name		Page No.	
Project No.		Test Date	
			dd/mmm/yyyy
System ID		Test Fluid	
Test Pressure		Design Pressure	
Pressure Gauge No.		Chart Recorder No.	

Test Type >	Hydrostatic ☐	Pneumatic ☐	Helium ☐	Soap ☐			
Ambient Temperature		Start Time		Finish Time			

Test Boundaries		
Line or Equipment Number	From	To

Test Conducted By:			Comstock
Witnessed By:	Print	Signature	Comstock
Witnessed By:	Print	Signature	Customer
Witnessed By:	Print	Signature	Authorized Inspector
	Print	Signature	

Q-008AN May 1, 2010

21.7 Exhibits for Section 13

21.7.1 Q-004N Project Measuring & Test Equipment Log

Comstock Canada Ltd.
PROJECT MEASURING & TEST EQUIPMENT LOG

Comstock An EMCOR Company

Project Name		Project Number		Page Number	

Equipment Number	Date Calibrated	Next Calibration Due Date	Date Returned	Comments

Q-004N May 1, 2010

21.7.2 Q-004AN Project Pressure Gauge Calibration Log

Comstock Canada Ltd.
PROJECT PRESSURE GAUGE CALIBRATION LOG

Comstock An EMCOR Company

Project Name.		Project No.	

Gauge Serial No.		Graduation	0	to	

Date Calibrated (dd/mmm/yyyy)	Next Calibration Due Date (6 months max.)	Calibrated by		Comments
		Print Name Below	Provide Signature Below	

Q-004AN May 1, 2010

21.8 Exhibits for Section 16

21.8.1 Q-010N-BP Non-Conformance Report

Comstock Canada Ltd.
NON-CONFORMANCE REPORT

Comstock An EMCOR Company

SECTION A	NCR Number		Date dd/mmm/yyyy	
Project Name			Project No.	
System ID		Part or Item Number		
Description of the Non-conformance				

SECTION B	Disposition			
Check the Appropriate Box	Repair ☐	Re-Work ☐	Use As Is ☐	Reject / Return ☐

Disposition Approval				
	Please Print Name Below:	Please Sign Below:		dd/mmm/yyyy
Comstock			Date	
Customer			Date	
Authorized Inspector			Date	
Disposition Comp. By			Date	

SECTION C	Re-Inspection Results			
Check the Appropriate Box	Acceptable ☐		Reject ☐	
Inspected By			Date	
	Print	Signature		dd/mmm/yyyy
Comments				

Final Acceptance				
	Please Print Name Below:	Please Sign Below:		dd/mmm/yyyy
Comstock			Date	
Customer			Date	
Authorized Inspector			Date	
NCR Clear and Comp.			Date	

Distribution List for completed reports		
One copy to		Project files (on site)
One copy to		Project Controller or Project Manager
One copy to		Department Manager
One copy to		Management Quality Representative (Burlington)
One copy to	(Safety Related DR)	Corporate Safety Manager

Q-010N-BP May 1, 2010

21.8.2 Q-011N Non-Conformance Log

Comstock Canada Ltd.
NON-CONFORMANCE LOG

Comstock An EMCOR Company

Project Name		Page No.		of	
Project No.			Date		

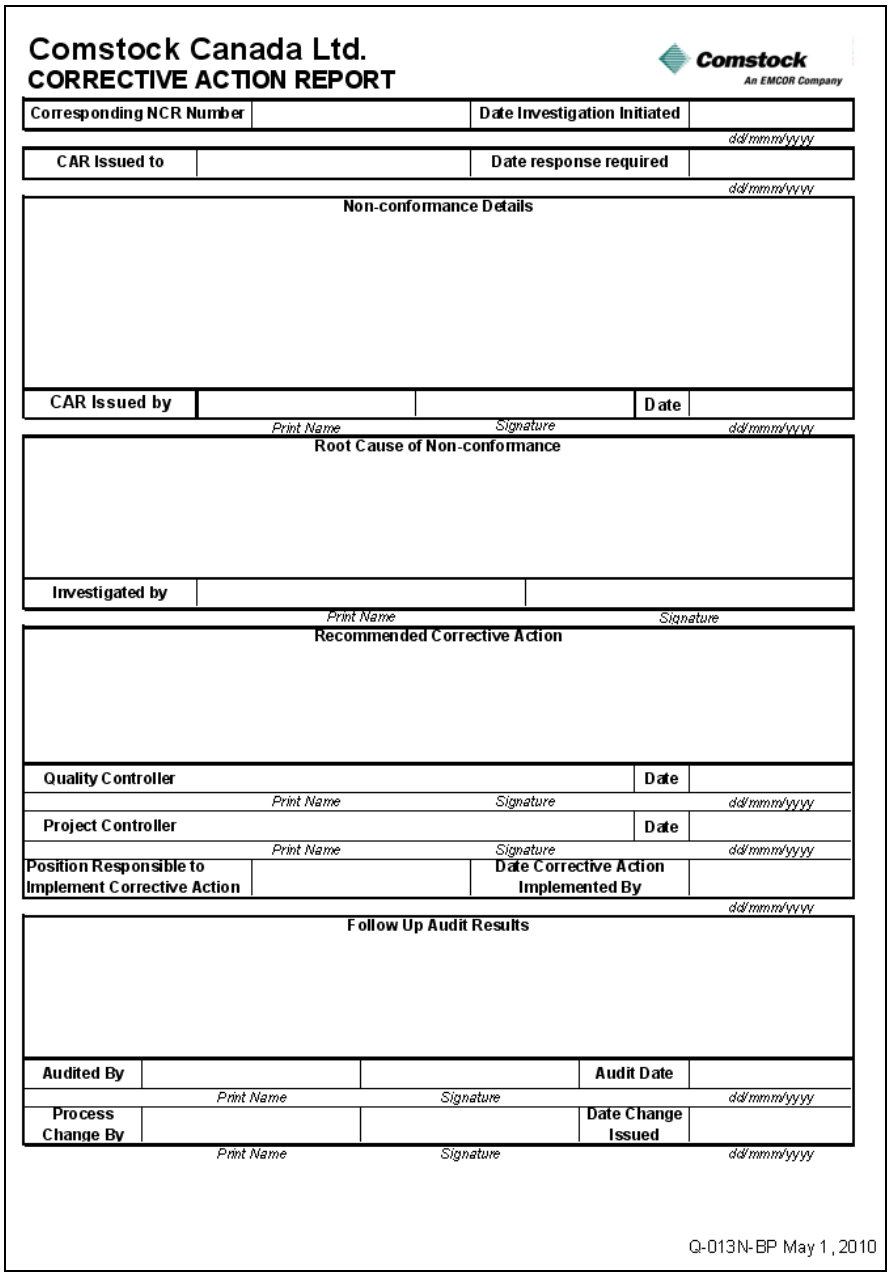
NCR Number	NCR Date (dd/mmm/yyyy)	Description	Disposition	Date Cleared (dd/mmm/yyyy)

Q-011N May 1, 2010

21.8.3 NCR and Hold Tags

21.9 Exhibits for Section 17

21.9.1 Q-013N-BP Corrective Action Report



Comstock Canada Ltd.
CORRECTIVE ACTION REPORT

Comstock An EMCOR Company

Corresponding NCR Number		Date Investigation Initiated	
			dd/mmm/yyyy
CAR Issued to		Date response required	
			dd/mmm/yyyy

Non-conformance Details

CAR Issued by			Date	
	Print Name	Signature		dd/mmm/yyyy

Root Cause of Non-conformance

Investigated by		
	Print Name	Signature

Recommended Corrective Action

Quality Controller			Date	
	Print Name	Signature		dd/mmm/yyyy
Project Controller			Date	
	Print Name	Signature		dd/mmm/yyyy

Position Responsible to Implement Corrective Action		Date Corrective Action Implemented By	
			dd/mmm/yyyy

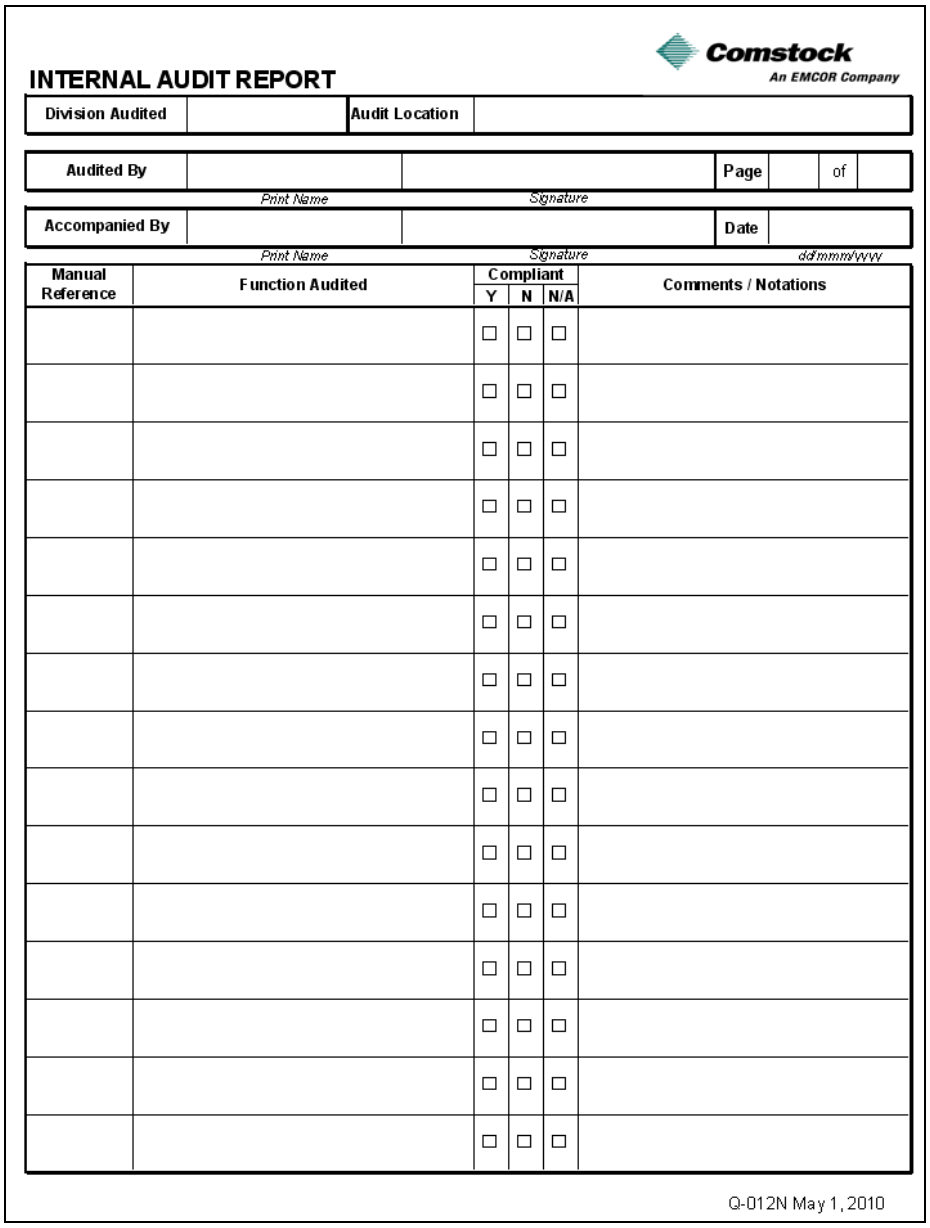
Follow Up Audit Results

Audited By			Audit Date	
	Print Name	Signature		dd/mmm/yyyy
Process Change By			Date Change Issued	
	Print Name	Signature		dd/mmm/yyyy

Q-013N-BP May 1, 2010

21.10 Exhibits for Section 19

21.10.1 Q-012N Internal Audit Report



Comstock
An EMCOR Company

INTERNAL AUDIT REPORT

Division Audited		Audit Location	

Audited By			Page		of	
	Print Name	*Signature*				
Accompanied By			**Date**			
	Print Name	*Signature*		*dd/mmm/yyyy*		

Manual Reference	Function Audited	Compliant Y	Compliant N	Compliant N/A	Comments / Notations
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
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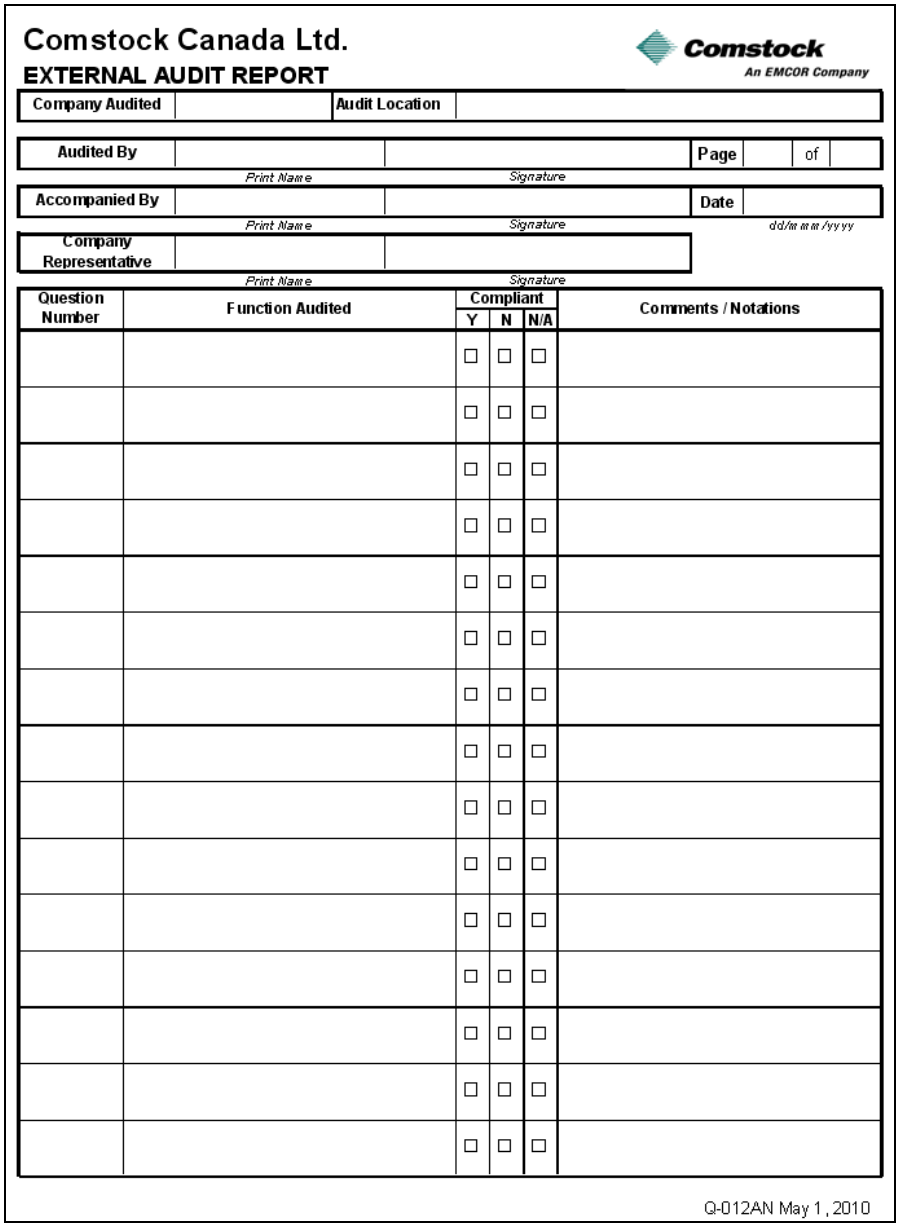
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	

Q-012N May 1, 2010

21.10.2 Q-012AN External Audit Report



Comstock Canada Ltd.

EXTERNAL AUDIT REPORT

Comstock An EMCOR Company

Company Audited		Audit Location	

Audited By			Page		of	
	Print Name	*Signature*				
Accompanied By			**Date**			
	Print Name	*Signature*		*dd/mmm/yyyy*		
Company Representative						
	Print Name	*Signature*				

Question Number	Function Audited	Compliant Y	Compliant N	Compliant N/A	Comments / Notations
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
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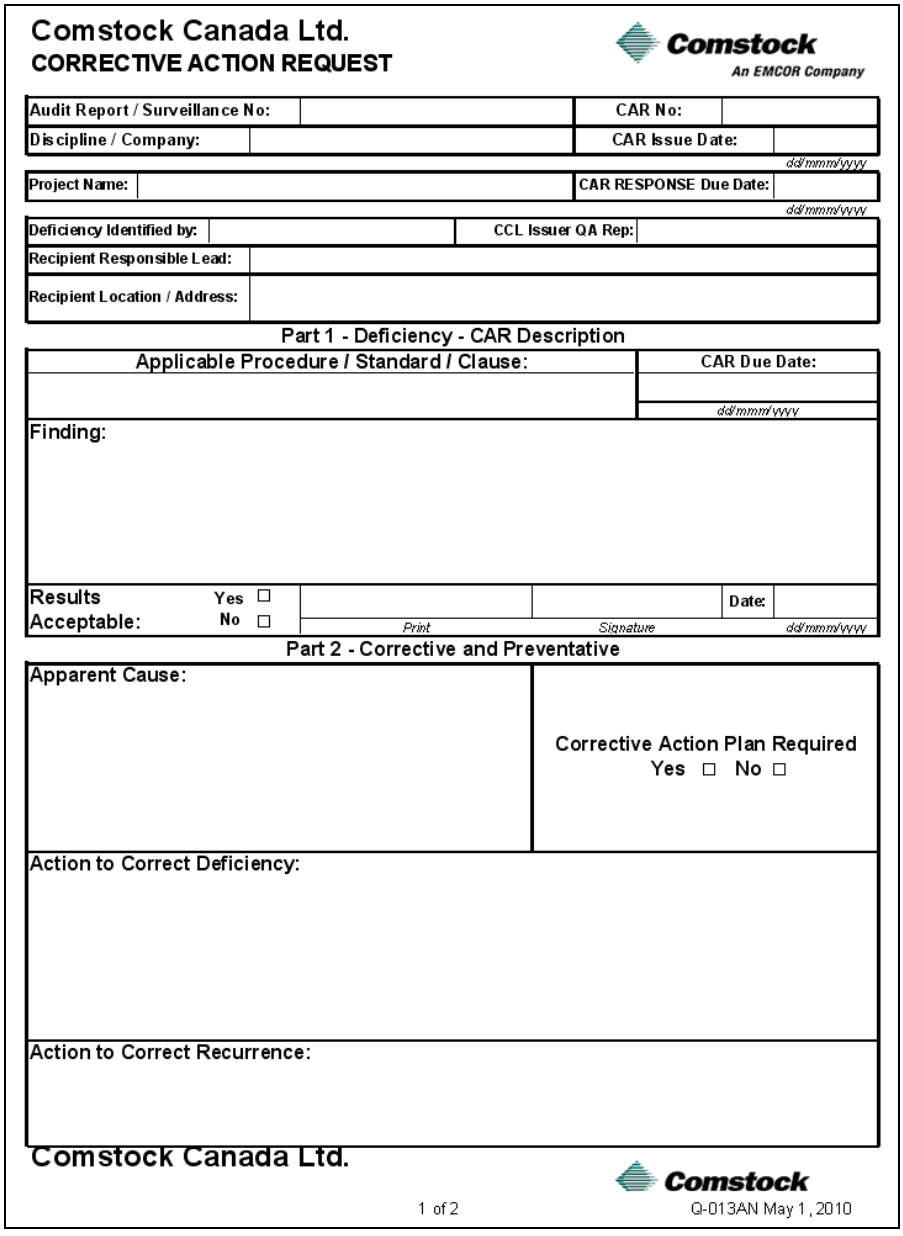
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	

Q-012AN May 1, 2010

21.10.3 Q-013AN Corrective Action Request



Comstock Canada Ltd.
CORRECTIVE ACTION REQUEST

Comstock An EMCOR Company

Audit Report / Surveillance No:		CAR No:	
Discipline / Company:		CAR Issue Date:	dd/mmm/yyyy
Project Name:		CAR RESPONSE Due Date:	dd/mmm/yyyy
Deficiency Identified by:		CCL Issuer QA Rep:	
Recipient Responsible Lead:			
Recipient Location / Address:			

Part 1 - Deficiency - CAR Description

Applicable Procedure / Standard / Clause:	CAR Due Date: dd/mmm/yyyy
Finding:	

Results Acceptable:	Yes ☐ No ☐	Print	Signature	Date: dd/mmm/yyyy

Part 2 - Corrective and Preventative

Apparent Cause:	Corrective Action Plan Required Yes ☐ No ☐
Action to Correct Deficiency:	
Action to Correct Recurrence:	

Comstock Canada Ltd.

Comstock

1 of 2 Q-013AN May 1, 2010

CORRECTIVE ACTION REQUEST

Comstock An EMCOR Company

Acknowledgement from Recipient:				
			Date:	
Position / Title	*Print*	*Signature*		*dd/mmm/yyyy*

Part 3 - Implementation

Completed Actions:				
Supporting Evidence Attached:	Yes ☐ No ☐			
Responsible Manager / Lead:			Date:	
	Print	*Signature*		*dd/mmm/yyyy*

Part 4 - CCL Verification and Close Out

CCL QA Representative Verification Supporting Evidence Acceptable: Yes ☐ No ☐				
CCL Comments: 1.11111E+75				
CCL QA Representative:			Date:	
	Print	*Signature*		*dd/mmm/yyyy*
CCL QA Management:			Date:	
	Print	*Signature*		*dd/mmm/yyyy*

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