



Maintenance Procedures

Propane Facility System Guidelines

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1. Introduction

New requirements for the establishment of procedures for operations and maintenance of propane equipment were introduced in CSA B149.2-15 Propane Storage and Handling Code. Owners of propane facilities must develop and document operating procedures for day to day operation, emergency procedures, and maintenance procedures including testing, inspection, monitoring and repair of facility propane equipment.

2. Purpose

The purpose of this manual is to provide facility owners and operators guidance and basic information to conform to Technical Safety BC's requirements for the development, implementation and documentation of an operations and maintenance program which meets the intent and requirements for CSA B149.2-15 Clause 7.22 Operations and Maintenance Procedures.

3. Scope

The requirements for operations and maintenance procedures apply to the following propane facilities within the jurisdiction of the Gas Safety Regulation:

- tank systems
- filling plants,
- container refill centers
- dispensing systems
- vaporizers and tank heaters
- other equipment where liquid propane is piped to a process

4. Definitions

Competency - the demonstrated ability to apply training, experience and knowledge in the execution of duties

Container refill centers – a facility, including a building, consisting of propane storage containers, piping and dispensing systems where liquid propane is transferred to containers

Dispensing systems - a system, consisting of tank, pump and motor, propane dispenser, and associated piping, for the storage, metering, and dispensing of liquid propane into containers or vehicle fuel containers

Filling plant – a facility for the distribution of liquid propane consisting of propane storage tanks and equipment for the transfer of liquid propane to or from rail cars, tank trucks or dispensing to containers or vehicle fuel containers

Tank heater - a form of vaporizer used to apply heat either directly to a portion of the container surface in contact with propane liquid or indirectly by circulating propane liquid from the container to the device and then back to the container

Tank system - a container or assembly of containers designed and fabricated in accordance with CSA B51 for the storage of propane including underground tanks

Vaporizer - a device for converting liquid propane to vapour by means other than atmospheric heat transfer through the surface of the container.

5. Owners and Operators Responsibility

Owners and operators of propane facilities shall develop and implement a management program that includes policies, processes and procedures for the operation and maintenance of the facility which:

- Comply with the *Safety Standards Act*, Safety Standards General Regulation, Gas Safety Regulation and CSA B149.2
- Set relevant company policies and performance objectives,
- Proactively identify hazards, evaluate risks, identify and implement risk mitigations measures, and conduct inspection, maintenance, and monitoring activities,
- Establish clear responsibilities and accountabilities,
- Provide sufficient trained and competent persons and other resources to manage the program and,
- Administer documentation, records reporting, evaluation and continual improvement.

6. Management Program Requirements

The operation and maintenance management program shall incorporate the following facets and document the program's policies, processes and procedures in a program management manual. As a minimum, each organization shall address the required facets relative to the size and complicity of the facility. Organizations shall explain their intent, capability and applicability for each facet outlined in this section. Work may be subcontracted provided controls are clearly defined for maintaining full responsibility for compliance with the *Safety Standards Act*, Safety Standards General Regulation, Gas Safety Regulation and CSA B149.2 by the facility owner/operator.

The management program manual should incorporate the following general requirements:

- bound in a manner that allows for easy revisions and updating
- company logo or letterhead on each page
- typed name and date after a signature
- typed (handwriting not permitted)
- each page must be identified with a page number, total number of pages in the manual and manual revision number and date

The manual should provide clear and simple instructions on the facility owner's/operator's policies and procedures for the management program. The manual may be brief or detailed depending on the program requirements based on the size and complicity of the propane facility. Propane facilities in British Columbia, cover a broad range of installations from large filling plants with multiple propane storage tanks holding thousands of liters of propane and equipment for the transfer of liquid propane to or from rail cars, tank trucks to small commercial facilities consisting of a single tank, pump and propane dispenser for the storage, and dispensing of liquid propane into portable cylinders or motor vehicles.

The extent of a program needed to achieve an effective and practical operation and maintenance program will therefore vary considerably and will also depend on the equipment that is at the facility.

The level of documentation detailed in should be appropriate for the size, scope, complexity, and level of risk for an operation and may range from a few paragraphs for small operations consisting of a small amount of equipment with a low level of risk through to several pages for large, complex facilities or operations with numerous types and large numbers of equipment with a much higher level of risk.

The following features are to be included in every manual:

- a) Title Page - The name and complete address of the facility owner/operator, the facility location, the number assigned to each “controlled” copy, the name of the person or group a controlled copy is issued and the date of issue shall be included on the title page of the manual.
- b) Contents Page - The manual should contain a page listing the contents of the manual by subject, reference number (if applicable), page number, and revision number of each document.
- c) Scope - The manual shall clearly identify the facilities, equipment and processes managed under the management program. The manual shall specify if it applies to third-party operated facility assets and have controls to ensure that third parties are fulfilling any contractual agreements with respect to facility operation or maintenance. Any facilities or equipment covered by other operation or maintenance programs shall be identified. Existing operating or maintenance programs can be referenced by the manual and do not have to be included in the manual provided they are documented. The scope should state the types of operations, inspection, maintenance, repairs or alterations the manual includes.
- d) Statement of Authority and Responsibility - A dated *Statement of Authority*, signed by the owner/operator or an authorized representative, shall be included in the manual.

Further, the *Statement of Authority* shall include:

- i) The owner’s commitment to provide resources for implementing and continually improving the management program
- ii) A statement that all regulated work carried out the facility shall meet the requirements of the *Safety Standards Act*, General Regulation, Gas Safety Regulation CSA B149.2 and applicable codes or standards;
- iii) A statement that if there is a disagreement in the implementation of the program, the matter is to be referred for resolution to a designated position in the organization with the authority to resolve the matter;
- iv) The title of the individual who is responsible for the management of the program and that the position has the authority to carry out the responsibility. The individual assigned responsibility and accountability for the operation and maintenance program shall ensure that:
 - Processes and procedures are developed, documented and implemented to support the execution of all the key components of the operation and maintenance program,
 - A process is defined to identify and ensure conformance with changes to regulatory requirements and new editions of standards and codes

- Resources (personnel and technical requirements) are planned and provided to develop, implement, and continually improve the operation and maintenance program
- e) Manual Control - The manual shall include the necessary provisions for revising and issuing documents to keep the manual current. The title of the individual authorized to approve revisions shall be included in the manual. There shall be provisions for signatures of the authorized individuals responsible for making changes and approving changes or revisions. Any manual changes shall be approved prior to issuance of any revisions to the manual and implementation of the program changes.
- f) Organization - An organizational chart shall be included in the manual. It shall include the title of the positions in all departments or divisions that perform functions that can affect the execution of the operation and maintenance program such as a facility's maintenance, operations, or engineering departments. It shall also show the relationship between each department and division.

The manual shall identify the title of those individuals responsible for preparation, implementation, or verification of the operation and maintenance program. The responsibilities shall be clearly defined and the individuals shall have the organizational freedom and authority to fulfill those responsibilities.

- g) Training and Competency - The operation and maintenance management program shall establish, implement and maintain a process for developing competency requirements and enabling training of employees or contractors responsible for administering and executing program activities, including operation, inspection, maintenance and repair. Training schedules and frequency must be maintained for all identified critical tasks. The procedures for the administration and maintenance of training records shall be documented in the manual.

The management program shall have a process for verifying that employees and other persons working with or on behalf of the owner are trained and competent to perform their duties in a safe manner. Where contractors are utilized for the maintenance of a facility, there must be a process to evaluate and select contractors on the basis of ability and qualifications to perform contracted duties. The evaluation process should include review of safety and environmental policies, procedures, past performance, ability and qualification check through audits, work-site inspections, and observations of performance as appropriate. There must also be a process in place to ensure that performance requirements and expectations are defined and communicated to the contractor. A process to monitor and assess a contractors' performance and ensure that identified deficiencies are resolved shall be developed.

Anyone performing regulated work on a gas system or gas equipment must hold a certificate of qualification which entitles them to carry out the work.

- h) Document and Records Administration - The management program shall establish, implement and maintain a process for administering documents and records needed for the effective implementation of operation and maintenance activities including but not limited to design, construction, operation, maintenance, and decommissioning. The document and record administration process shall encompass creation, security, updating, retention, retrieval and deletion of all information and records. Records may be in electronic or paper-based format.

Responsibilities for document approval shall be specified and shall identify appropriate controls to ensure that revisions and updates to procedural, process or other record documents are reviewed and approved.

The management processes for records shall address:

- Responsibilities and procedures for creating, gathering, updating, retaining, and deleting documents
- Records of past activities, events, changes, analyses and decisions
- An index describing the types, forms and locations of records
- Retention policy as required by regulations or codes and the owner's/operator's requirements.

As a minimum information related to location, construction, operating conditions, inspection, testing and maintenance and facility incidents shall be documented and maintained. Where records are incomplete due to change of ownership, asset transfers or other reasons, the management program shall have a process for ensuring safe operation and maintenance in the absence of these records and how the missing information is to be recovered.

- i) Normal Operation Procedures - The management program shall include procedures for the safe operation of each facility. The commissioning of new or modified facilities, normal operations including shutdown, start-up, operating limits and alarm management shall be addressed. These procedures shall be appropriate to the size and complexity of the facility and eliminate, mitigate or control the identified hazards.

As minimum operation procedures shall address:

- i) product transfer and handling procedures including the evacuation of propane from containers and the purging of containers;
 - ii) monitoring of essential functions and equipment;
 - iii) housekeeping and site maintenance;
 - iv) any manufacturer's operating instructions for equipment;
 - v) isolation, deactivation and identification of equipment not in use;
 - vi) maintaining clear spaces for access and housekeeping;
 - vii) maintaining clearances for cylinder storage, tanks and setbacks around the facility;
 - viii) personnel safety;
 - ix) site signage and markings as required by codes
 - x) personal protective equipment;
 - xi) control of ignition sources;
 - xii) grounding and bonding;
 - xiii) control of access, security, and lock-up;
 - xiv) vehicle movement and parking; and
 - xv) operator training and experience.
- j) Emergency Procedures - The management program shall develop and maintain an emergency response and preparedness plan which outlines the responses and procedures for when an incident that could cause an unintentional or uncontrolled release of propane or a potential safety or health hazard, such as a fire, explosion or chemical exposure occurs as identified by a hazard analysis.

This plan shall be designed to stop or mitigate the incidents such that the consequences are minimized. It should address both emergency actions of the facility operator and those of emergency responders from the municipality, township, or region as well as communications with the general public. The emergency plans for external responders are developed by the local emergency response providers, in consultation with the owner/operator.

The procedures in the emergency response plan shall be appropriate to the size and complexity of the facility and as a minimum address:

- i) evacuation from the danger area to a designated safe location when an emergency occurs
- ii) emergency escape routes, assembly points and shelter areas
- iii) responsibilities such as emergency response command, first aid, firefighting, evacuation wardens
- iv) emergency procedures to manage incidents including the use of emergency shut off devices, electrical isolation and fire suppression
- v) emergency response training for facility employees
- vi) contact information for facility emergency responders and other individuals who must be notified of an emergency situation
- vii) contact information for external emergency responders
- viii) facility data and contact information for external emergency responders and support agencies such as ambulance and police
- ix) information about chemical hazards and material data sheets
- x) site map (or site plan) that identifies the location of:
 - Fire protection systems
 - Emergency equipment
 - Indication of direction “north”
 - Off-site references to assist with facility orientation (e.g., adjacent roads)
 - Property lines
 - Fence lines
 - Gates for vehicles and personnel
 - Buildings and structures, identified by name and general function
 - Propane storage containers and their capacity
 - Propane transfer, loading and unloading facilities (including rail car or truck if applicable)
 - Site electrical system controls (i.e., switch gear, main panel, breaker box)
 - Emergency Shutoff Valves (location of valve and remote control device)
 - Fire monitoring, detection and suppression equipment, such as monitors, hydrants, sprinkler systems, fire extinguishers and other sources of water for emergency response
- k) Inspection and Monitoring - The management program shall document and maintain inspection and monitoring procedures that are appropriate for the gas systems, equipment and storage containers in the facility. The procedures should be designed to ensure safe operation and to mitigate risks identified by the hazard analysis. Inspection and monitoring activities should follow relevant regulations, standards, codes and equipment manufacturer’s instructions. These activities will from facility to facility depending on the type and complexity of the facility.

Planning, scheduling, and frequency of inspection and monitoring should consider parameters such as effectiveness of inspection method and technology, previous inspection results, incident history, insufficient documentation, evaluation of anomalies, time dependent consideration, current state of facility/equipment, and industry data such as standard damage mechanisms. The program shall document schedules and have controls to ensure that the planned activities are carried out.

If any irregularities, anomalies, damage or other unsafe conditions are identified, further inspections and investigations such as an engineering assessment, fitness for service evaluation, code guidelines for evaluation imperfections or anomalies or other means shall be used to evaluate if the equipment or facility can continue to be operated safely. The outcome of the evaluation could be to monitor the irregularity by increasing the inspection frequency, altering operational procedures, rerating or repairing equipment.

As a minimum the inspection and monitoring program shall include:

- i) Inspection of storage tanks and cylinders and their fittings such as safety relief valves, shut off valves
 - ii) Corrosion control for above ground containers including paint and localized corrosion at saddles and foundations
 - iii) Corrosion control for underground or mounded tanks including cathodic protection systems
 - iv) Pipe condition and piping supports
 - v) Requalification for cylinders
 - vi) Testing of emergency shut off valves and back check valves
 - vii) Hose inspection for damage and leakage
 - viii) Regulator operation and inspection
- l) Maintenance - Maintenance procedures shall be developed for gas systems and equipment based on codes, standards and manufacturer's instructions. Maintenance procedures shall be documented and reviewed whenever a change, including operational changes, in gas systems or equipment occurs. Written maintenance procedures provided by equipment manufacturers may be used as maintenance manuals. Maintenance work on regulated equipment shall be carried out by individuals holding the appropriate certificate of qualification who have been trained in the maintenance and testing procedures applicable to the systems or equipment on which they are working. Maintenance procedures shall be developed for all gas systems and equipment including:
- i) Propane storage containers, foundations, gauges, valves, pressure relief valves, emergency shut offs
 - ii) Piping, pipe fittings, supports, hydrostatic relief valves, shut off valves, gauges and protective coverings
 - iii) Pumps, pump supports, shut off valves, by pass valves, flexible connectors, drive components and lubrication
 - iv) Hoses
 - v) Dispensing equipment, supports, shut off valves, by pass valves and break away nozzles
 - vi) Compressor supports, shut off valves, by pass valves, back check valves, flexible connectors, strainers/filters, drive components and lubrication
 - vii) Vaporizers, ignition systems, strainers, burners, controls and cleaning of heavy ends

- viii) Fire protection equipment, portable extinguishers, hydrants, valves and hoses
- ix) Calibration of gauges, instruments and other monitoring equipment
- m) Installation, Repair and Alteration Methods - The manual shall include processes for installations, repairs and alterations, including mechanical assembly procedures, materials and nondestructive examination methods, as applicable. Where modifications or repairs are required, there shall be a process to identify and document relevant corrective actions that are acceptable and appropriate for the facility. Repair methodology must be documented to execute the repair. The processes shall include procedures for giving notice to Technical Safety BC before commencing any installation, repair or alteration and after completing any installation, repair or alteration.

Reference shall be made in the manual for inspections, examinations and tests required by the equipment manufacturer, codes or standards upon completion of the installation, repair or alteration including the pressure testing of pressure components upon completion of the work. A detailed description of the method for conducting the pressure test and acceptable test results will be included in this reference.

- n) Materials - The manual shall describe the method used to ensure that only certified components and acceptable materials are used for installations, repairs and alterations. The manual shall include a description of how new material, equipment or components are ordered, verified, and marked. The manual shall identify the title of the individual(s) responsible for each function and a brief description of how the function is to be performed.
- o) Incident and Near-miss Investigation - The management program shall document and implement a process to report and investigate any hazards, potential hazards, incidents or near misses affecting or having the potential to affect the safe operation of the facility. A process for reviewing incidents and near-misses within the facility and reports from across industry shall be developed. Lessons learned shall be incorporated into facility procedures and processes to improve the effectiveness of the operation and maintenance program. Procedures shall be reviewed and modified when necessary to prevent or mitigate future incidents.

Records of investigations shall be maintained for the life of the facility until it is decommissioned.

- p) Exhibits - Any forms referenced in the manual shall be included. The form may be a part of the referencing document or included as an appendix. For clarity, the forms may be completed and identified as examples. The name and accepted abbreviations of the owner/operator shall be included in the manual.
- q) Change Management - The management program shall have a systematic process for identifying, evaluating, controlling and documenting any change to facility design, specification, operations, standard, organization or activities and legal requirements to ensure that no unforeseen new hazards are introduced and that the risk of existing hazards to employees, public, or the environment are not unknowingly increased. This process should cover changes such as:
 - i) Ownership of a facility,
 - ii) The organization and personnel who operate and maintain the facility,

- iii) Equipment, process, process technology and control systems,
- iv) Operating status, such as idling, facility shutdown, or decommissioning which can introduce “temporary” hazards not expected during normal operations;
- v) Operating conditions,
- vi) Methods, practices, and procedures related to operation or maintenance of the facility
- vii) Standards and regulations related to facilities operation or maintenance,
- viii) Other installations (e.g., power lines) that cross piping and other equipment or facilities,
- ix) Changes to the facility made to account for environmental factors, such as flood, fire, ground movement, and
- x) Adjacent land use and development.

The management of change process should address:

- i) Identification of anticipated and actual changes,
 - ii) What constitutes a change (temporary or permanent) and what falls under replacement in kind, which is not subject to the management of change process,
 - iii) Responsibilities and authorities for approving and implementing changes,
 - iv) Analysis of implications of the changes,
 - v) Impact and risk of the changes,
 - vi) Training required as a result of changes
 - vii) Communication of the changes, their impact and required documentation,
 - viii) Timing of changes (approval and implementation)
- r) Internal Audits and Control of Program Non-conformances - The management program shall develop and implement a process for conducting internal audits to verify the implementation of the program. This process must define the responsibilities, scope, objectives, frequency, and schedule for internal audits. The process for completing corrective actions for non-conformances identified through internal audits shall be outlined. The process must also ensure auditor competency and independence.

The management program processes shall be regularly monitored to measure conformance to the requirements of the management program. A process to investigate identified non-conformances, initiating and completing corrective actions shall be implemented.

- s) Management Review - The facility owner or management shall review the adequacy, implementation and effectiveness of the facility’s operation and maintenance program on a regular basis. The review shall evaluate if the program’s goals have been met, compliance to facility and regulatory requirements and identification of actions for continual improvement of the operation and maintenance management program.

Appendix

Sample of a Program Management Manual

This guide is intended to assist in the development of a manual for a propane facility operation and maintenance program. This sample manual may not include all of the requirements for a propane facility operation and maintenance program, but rather details the primary aspects that are required for propane facility operation and maintenance program. The content and detail in a manual will be dependent on the type of operations, size and complexity of the propane facility.

Propane facilities in British Columbia, cover a broad range of installations from large filling plants with multiple propane storage tanks holding thousands of liters of propane and equipment for the transfer of liquid propane to or from rail cars, tank trucks to small commercial facilities consisting of a single tank, pump and propane dispenser for the storage, and dispensing of liquid propane into portable cylinders or motor vehicles. The extent of a program needed to achieve an effective and practical operation and maintenance program will therefore vary considerably and will also depend on the equipment that is at the facility. The manual must contain the description of the controls necessary for implementing the operation and maintenance program but, it does not have to contain all of the detailed program requirements which will be found in the program, such as written operating or maintenance procedures for specific equipment. Such requirements can be in separate documents that are referenced by the manual.

The manual must describe the actual system in use and cover all responsibilities for the work being performed. When preparing the manual input and support should be obtained from all facility staff including management, servicing and purchasing.

The manual is to be used as a working document for use by facility staff and may also be reviewed by Technical Safety BC safety officers. It therefore should give a clear understanding of the operations and maintenance program for the installation, operation, maintenance and repair of propane equipment and associated components.

The manual should state the title of persons responsible for each function or procedure. These titles must be the same as those shown on the organizational chart and be consistent throughout the manual.

The manual should be divided into separate sections for each item or topic in the conformity assessment program.

Explanatory or informative material is identified in this sample manual in *italics* and do not include requirements that must be incorporated. The purpose of explanatory or informative material accompanying a clause is to explain the intent of the manual section.

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	Title:	Revision 00 Date:

The facing or cover page must include the owner's or operator's full company name and address. The title of the manual must be included as well as the revision, control number for the manual and the person to whom the controlled copy is assigned as shown in the example below:

**Program Management Manual
 For The
 Operation and Maintenance of Propane Dispensing Facilities**

Company Name

Company Address

Controlled Manual No. _____

Assigned To: **Name**

Revision # _____ (Date)

Company Logo	<u>Company Name</u> Propane Facility Operation and Maintenance Program Manual	Section xx
	Title:	Revision 00 Date:

Approval and Revision History

Rev #	Date	Description of Revisio
0	Month XX, 20XX	Initial Issue

Manual Revisions
Reviewed by:

_____ Date: _____
Name Signature

Manual Revisions
Accepted by:

_____ Date: _____
Name Signature

Company Logo	<i>Company Name</i> Propane Facility Operation and Maintenance Program Manual	Section xx
	Title:	Revision 00 Date:

GLOSSARY OF TERMS

“CSA” means Canadian Standards Association

“Code” means CSA B149.2 Propane Storage and Handling Code

“Cylinder” means a container designed and manufactured in accordance with a cylinder specification authorized for the containment and transportation of propane under the Transportation of Dangerous Goods (TDG) Regulations of Transport Canada.

“SO” means Technical Safety BC Safety Officer

“Tank” means a container for the storage of propane, designed and fabricated in accordance with CSA B51

SAMPLE

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Scope of Work

Identify the facilities, equipment and processes managed under the management program and state the types of operations, inspection, maintenance, and repairs the management program includes:

- describe the scope of the activities to be undertaken; installation, inspection, maintenance and repair
- describe the code or standards work will conform to
- list the propane facility locations;

This manual describes the procedures that company name will use for the operations, inspection, maintenance, and repairs of propane dispensing equipment in accordance with CSA B149.2 Clause 7.22. This management program includes propane dispensing facilities located at:

1. address of dispensing facility
2. address of dispensing facility

The management program will be controlled from office address of the company.

For work not covered by this manual qualified gas contractors will be retained to do such work in accordance with the Gas Safety Regulations.

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Statement of Authority

The Statement of Authority shall include:

- The owner's commitment to provide resources for implementing and continually improving the management program
- A statement that all regulated work carried out the facility shall meet the requirements of the Safety Standards Act, General Regulation, Gas Safety Regulation CSA B149.2 and applicable codes or standards;
- A statement that if there is a disagreement in the implementation of the program, the matter is to be referred for resolution to a designated position in the organization with the authority to resolve the matter;
- The title of the individual who is responsible for the management of the program and that the position has the authority to carry out the responsibility.

The purpose of this manual is to implement the safety management program to be used by company name for the operations, inspection, maintenance, and repairs of propane dispensing equipment in accordance with the *Safety Standards Act*, Gas Safety Regulation, CSA B149.2 and any other applicable codes .

The name of company position (e.g. maintenance supervisor) is responsible for the implementation the safety management program and has the authority to ensure compliance with its requirements.

Personnel and technical resources will be provided to name of company position (egg. maintenance supervisor) to develop, implement, and continually improve the operation and maintenance program.

Any unresolved problems regarding compliance with this program, jurisdictional or code requirements shall be brought to the attention of name of company position for resolution within the jurisdictional, code or this manual's requirements.

Signature
Name of company management
Position

Date

Company Logo	<u>Company Name</u> Propane Facility Operation and Maintenance Program Manual	Section 1
	Title: Manual Control	Revision 00 Date:

1. Manual Control

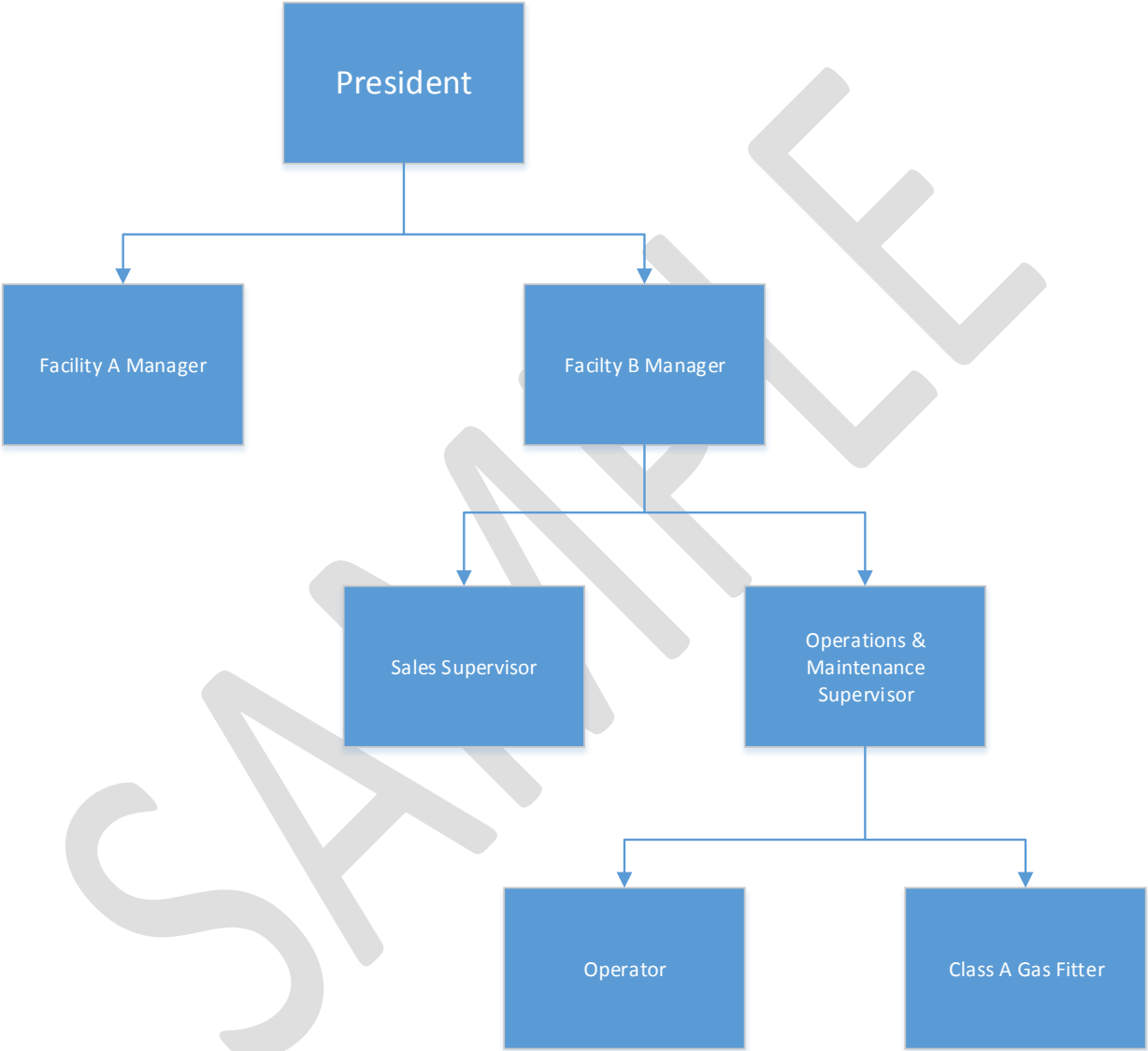
Detail the policies for revising and issuing documents to keep the manual current including the title of the individual authorized to approve revisions.

- 1.1. This section describes the system for preparing, revising and controlling the distribution of this Program Management Manual. The name of company position (e.g. maintenance supervisor) is responsible for implementing the safety management program and shall approve this manual as evidenced by the signature and date on the "Approval and Revision History" page.
- 1.2. The name of company position (e.g. maintenance supervisor) shall:
 - i. Approve all changes to the Program Management Manual, by signature and date on the Revision Summary page.
 - ii. Ensure that the Revision No. date and page number are shown on each page of the manual. Revised paragraphs will be indicated by a vertical line in each margin alongside the changed paragraph(s).
 - iii. Issue manual revisions to all persons who are assigned controlled manuals with instructions that superseded pages are to be destroyed.
- 1.3. If additional controlled manuals are issued, the name of company position (e.g. maintenance supervisor) will keep a list indicating manual numbers and who they are assigned to. Uncontrolled manuals may be issued for information but shall not be used for installation, operational, maintenance or repair work. "Uncontrolled" shall be indicated on the front page of these manuals.
- 1.4. A controlled copy of this manual must be available at all times, on sites where work under this safety management program is being performed. This copy must be made available to a Technical Safety BC Boiler Safety Officer upon request.

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2. Organization

Include an organizational chart with the title of the positions in all departments or divisions that are responsible for performing functions in the program.



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3. Training and Competency

Establish a process for the implementation and maintenance of competency requirements for employees or contractors responsible for operation, inspection, maintenance and repair.

- 3.1. The name of company position (e.g. maintenance supervisor) is responsible for the qualification and training of all personnel operating or maintaining equipment in company name's propane dispensing facilities.
- 3.2. Operators
 - 3.2.1. All individuals transferring or dispensing propane shall be qualified in accordance with Technical Safety BC Directive D-GA-2017-01 Recognized Certificates for Transfer of Propane. Name of company position (e.g. maintenance supervisor) is responsible for retaining a copy of certification and documentation of qualifications for each operator. Name of company position (e.g. maintenance supervisor) shall ensure that all certifications are renewed in accordance with the requirements of a recognized training provider.
 - 3.2.2. Operating personnel shall be trained in operating procedures applicable to the systems or equipment on which they are working to ensure that suitable proficiency is achieved and maintained.
 - 3.2.3. Operators shall receive training and indoctrination on the name of company procedures in Table 1.

Table 1 Operating Procedures

Procedure No.	Subject
OPS 001	Proper Use of Personal Protective Equipment
OPS 002	Facility Security, Vehicle Restrictions, Restricted Areas and Customer Access
OPS 003	Facility Signage, Markings and Warning Information
OPS 004	Control of Combustible Materials and Ignition Sources
OPS 005	Propane Pumps and their Operation
OPS 006	Parts and Devices Basic to Transfer Operations
OPS 007	Filling Propane Storage Containers
OPS 008	Emergency Shutdown and Control of LP-Gas Leaks
OPS 009	Steps to Take in the Event of an Accident Involving Propane
OPS 010	How to Handle LP-Gas Fires with Portable Fire Extinguisher
OPS 011	Emergency Response Guidelines

3.3. Maintenance personnel

- 3.3.1. All individuals installing, maintaining or repairing propane equipment shall conform to the requirements to perform regulated work in section 4 of the Gas Safety Regulation. Name of company position (e.g. maintenance supervisor) is responsible for retaining a

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copy of certification and documentation of qualifications for all individuals installing, maintaining or repairing propane equipment. Name of company position (e.g. maintenance supervisor) shall ensure that all certifications are renewed in accordance with section 2.3 of the Safety Standards Regulation.

- 3.3.2. All individuals installing, maintaining or repairing propane equipment shall be trained in procedures applicable to the systems or equipment on which they are working to ensure that suitable proficiency is achieved and maintained.
- 3.3.3. Maintenance personnel shall receive training and indoctrination on the name of company procedures in Table 2.

Table 2 Maintenance Procedures

Procedure No.	Subject
MAIN 001	Proper Use of Personal Protective Equipment
OPS 002	Facility Security, Vehicle Restrictions, Restricted Areas and Customer Access
OPS 003	Facility Signage, Markings and Warning Information
OPS 004	Control of Combustible Materials and Ignition Sources
MAIN 002	Proper Use of Tools and Equipment
MAIN 003	Pipe/Tube, Pipe/ Fittings, and Associated Tools for Transfer Systems Operations
MAIN 004	Identifying Propane Pumps and Their Operation
MAIN 005	the Standards for Sizing, Installing and Inspecting Pump Protective Devices
MAIN 006	Maintaining and Troubleshooting Propane Pumps and Metered Delivery Systems
MAIN 007	Operating Characteristics of Propane Vapor Regulators and Metering Systems
MAIN 008	Installing Propane Vapor Regulating and Metering Systems
MAIN 009	Sizing Pipe for Use in Low Pressure Propane Distribution Systems
MAIN 010	Steel/Wrought Iron Piping Materials and Installing Procedures
MAIN 011	Tubing Materials and Installing Procedures
MAIN 012	Sizing Propane Liquid Piping Systems
MAIN 013	Operating Characteristics of Pressure Relief Valves
MAIN 014	Installing Gauges in Propane Storage Containers
MAIN 015	Operating Characteristics of Service Valves
MAIN 016	Operating Characteristics of Check Valves
MAIN 017	Inspecting Servicing and Maintaining Container Valves
MAIN 018	Maintenance of Withdrawal Valves
MAIN 019	Operation and Maintenance of Bulkheads and Emergency Shutoff Valves (ESVs)
MAIN 020	Installing Propane Liquid Distribution and Vaporizer Systems
MAIN 021	Operation and Maintenance of Hoses, Hose End Valves, and Hose Reels
MAIN 022	Causes of Corrosion on Metal Surfaces Distribution Systems
MAIN 023	Methods and Procedures Used to Protect Metal Structures from Corrosion
MAIN 024	Procedures Basic to Installing Anodes and Testing Cathodic Protection Systems

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MAIN 025	Procedures Used to Pressure Test and Leak Check New Propane Distribution Systems
MAIN 026	Installing Valves in Propane Plant Operations
MAIN 027	Emergency Shutdown and Control of LP-Gas Leaks
MAIN 028	Steps to Take in the Event of an Accident Involving Propane
MAIN 029	How to Handle LP-Gas Fires with Portable Fire Extinguisher
MAIN 030	Emergency Response Guidelines

Operating or maintenance procedures can be referenced by the manual and do not have to be included in the manual provided they are documented and available for review. Equipment manufacturer's instructions and maintenance processes can be adopted as procedures.

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4. Document and Records Administration

Detail the process for the creation, security, updating, retention, retrieval and deletion of all information and records of operation and maintenance activities.

- 4.1. All changes to the program shall be controlled and the process for review and approval of changes are described in this section. All changes to the facility operation and maintenance program manual require prior review and acceptance by name of company position before implementation.
- 4.2. The name of company position is responsible for the review, revision, approval and issuance of changes to the manual for a propane facility operation and maintenance program and operating, maintenance or repair procedures. Any revisions shall be approved by name of company position by signing and dating the manual or procedures.
- 4.3. Name of company position is responsible for the administration and maintenance of the facility operation and maintenance program records. All records shall be maintained in a manner that prevents damage, deterioration and loss.
- 4.4. Records shall be maintained in a dedicated filing cabinet located at company address.
- 4.5. The following records will be maintained:
 - a) Approved versions of the operation and maintenance program manual, operating, maintenance and repair procedures
 - b) Qualification and Certification records for operators and maintenance personnel employed by company name and contractors
 - c) Training records for operators and maintenance personnel employed by company name and contractors
 - d) Installation, inspection, maintenance, and repair records
 - e) Records of incidents or near miss incidents and investigations
 - f) Audit documentation, including reports, checklists and corrective actions
- 4.6. All program records shall be retained for a minimum period of five years from date of issuance.
- 4.13. The personnel certification and qualification records shall be maintained while the individual is employed by company name and for a minimum of five years after the individual ceases to be employed by company name. Certification and qualification records for contractors providing services shall be maintained for a minimum of five years after the contractor ceases to provide services.
- 4.14. Installation, inspection, maintenance, and repair records shall be maintained for the life of the equipment.

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5. Normal Operation Procedures

Detail the process for the development, maintenance and revision of procedures for commissioning of new or modified facilities, normal operations including shutdown, start-up, operating limits and alarm management.

- 5.1. Operating procedures for the storage, handling, transfer of propane including startup, operation and shutdown of the transfer system and equipment shall be prepared and maintained for each facility. Name of company position is responsible for preparing operating procedures and ensuring that the operating procedures are updated, as appropriate, whenever a major change in the equipment or the company organization occurs and prior to the startup of a changed system.
- 5.2. Except where business activities dictate, customers and the general public must be restricted from areas where LP-Gas is stored, transferred and handled.
- 5.3. Signs and other forms of markings within the site or on the equipment should provide appropriate warnings and sufficient information for personnel onsite to work safely and perform duties consistent with operating procedures.
- 5.4. Combustible materials including weeds, long dry grass, tree limbs, planks, pallets and paper products shall be kept at a sufficient distance from propane storage containers in order to reduce the potential of a fire. Combustible materials must be maintained or stored such that they are no closer than 10 feet to the container.
- 5.5. No person, whether that person is an employee, contractor or site visitor, can be allowed to use or carry lighted smoking materials within 25 feet of a tank or vehicle that contains propane, of any point of liquid transfer or when delivering to or connecting to containers. Smoking shall be restricted to a designated smoking area.
- 5.6. Open flames and other ignition sources shall be controlled. Open flames and all other sources of ignition are prohibited in pump houses, cylinder filling rooms and other locations where the presence of propane vapors is likely. Cutting or welding tools, sparking hand tools, portable electric tools (including two-way radios and cell phones) and non-explosion proof electrical equipment prohibited within the classified electrical areas per CSA B149.2 Table 7.6
- 5.7. Open flames and other ignition sources are not prohibited where propane equipment has been purged of all liquid and vapor in accordance with CSA B149.1 Clause 6.23. When open flame or other ignition sources are used around purged equipment, the area shall be monitored to ensure that these locations remain below 1/5 of the lower explosive limit.

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- 5.8. Portable cylinders shall be stored in accordance with the requirements of CSA B149.2 Clause 6.5. Cylinder storage shall minimize exposure to excessive temperatures, physical or mechanical damage and tampering.
- 5.9. The individual(s) performing propane transfer operations, filling or evacuating, must be trained in LP-Gas handling procedures, procedures relevant and specific to the transfer operations, and emergency response procedures. During the transfer operation, from the time of original connection through the final disconnect, at least one qualified person must be in attendance. "In attendance" means that the individual must have line of sight of the transfer operation and be in a position to physically take action if required during the operation.
- 5.10. Compressed air, oxygen or any oxidizing gases cannot be injected into containers for the purpose of transferring LP-Gas liquid. These gases can create a flammable gas mixture within the container.

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6. Emergency Procedures

Detail the process for the development, maintenance and revision of an emergency response and preparedness plan for an incident that could cause an unintentional or uncontrolled release of propane, fire, explosion or chemical exposure.

6.1. Emergency procedures for incidents that could cause an unintentional or uncontrolled release of propane or a potential safety or health hazard, including fires, explosions or chemical exposures shall be prepared and maintained for each facility. These procedures shall consider the safety of emergency personnel, name of company workers and the public. Name of company position is responsible for preparing emergency procedures and ensuring that the emergency procedures are updated, as appropriate, whenever a major change in the equipment or the company organization occurs and prior to the startup of a changed system.

6.2. Employees must be immediately evacuated from the danger area when an emergency occurs, and employees are not permitted to assist in handling the emergency, unless they have received specialized training as detailed the following operating procedures:

OPS 008	Emergency Shutdown and Control of LP-Gas Leaks
OPS 009	Steps to Take in the Event of an Accident Involving Propane
OPS 010	How to Handle LP-Gas Fires with Portable Fire Extinguisher
OPS 011	Emergency Response Guidelines

6.3. The following facility data and contact information shall be documented and posted in the facility office for emergency response and support agencies:

- a) Type of Facility:
- b) Company Name:
- c) Facility Name (if different):
- d) Street Address:
- e) City, Province, Postal Code:
- f) Facility Telephone Number:
- g) Company Headquarters (city, province):
- h) Authorized/Responsible Facility Representative:
- i) Title/Position of Representative:
- j) Representative's Emergency Contact Telephone Number(s):

6.4. The following contact information shall be documented and posted in the facility office for name of company emergency response team:

Fire Department (name): Telephone Number:

Emergency Medical Responders (name): Telephone Number:

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Hospital/ Emergency Medical Facility (name): Telephone Number:

Police (name): Telephone Number:

Technical Safety BC Telephone Numbers:
Gas Safety Officer (name)
Incident or Hazard Reporting

6.5. Material Safety Data Sheets for hazardous chemicals shall be filed and maintained in a dedicated file cabinet in the facility office.

6.6. Name of company position is responsible for preparing and maintaining a facility site plan that identifies the location of fire protection systems and emergency equipment. The plan shall be posted in the facility office. The following information shall be included in the site plan:

- a) compass directions north/south
- b) Property lines, adjacent roads and adjacent properties
- c) Fence lines and vehicle or personnel gates
- d) Buildings and structures, identified by name and general function
- e) Locations of bulk storage tanks, capacity in water gallons
- f) Propane transfer equipment
- g) facility electrical system controls (i.e., switch gear, main panel, breaker box)
- h) Emergency Shutoff Valves (location of valve and remote control device)
- i) Fire monitoring, detection and suppression equipment
 - Monitors
 - Hydrants and hose stations
 - Sprinkler Systems
 - Extinguishers
 - Other sources of water for emergency response
- j) clearly defined emergency escape routes, assembly points, and shelter areas to be used in emergencies

6.7. Emergency equipment and controls shall be marked with signs. Lettering shall be a minimum of 4 in (100 mm) high and shall be red on a white background. Emergency equipment and controls shall be installed in locations that will be accessible in emergency situations.

6.8. name of company position is designated to take a head count of all workers after evacuation and inform emergency responders of any missing personnel

7. Inspection and Monitoring

Document inspection and monitoring procedures for the gas systems, equipment and storage containers in the facility. The procedures should be designed to ensure safe operation and to mitigate risks. Inspection and

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monitoring activities should follow relevant regulations, standards, codes and equipment manufacturer's instructions.

- 7.1. This section defines the responsibility and system for conducting inspection, testing and monitoring of propane dispensing facilities. Inspection and monitoring performed by company name at propane dispensing facilities will be completed in accordance with the current the *Safety Standards Act*, Gas Safety Regulations, CSA B149.2 and all other applicable codes.
- 7.2. Written procedures provided by equipment manufacturers may be used as manuals for the inspection and testing of propane dispensing equipment.
- 7.3. Name of company position will prepare inspection and testing procedures and ensure all procedures conform to name of company, work procedures and equipment manufacturer's procedures. Inspection and maintenance procedures shall include the frequency of inspection or testing. Equipment specific inspection plans and strategies for new equipment monitoring shall be developed and implemented within six months of installation. Existing inspection plans will be reviewed annually and updated as required based on inspection results advances in technology, and other information.
- 7.4. All inspection and testing will be carried out in accordance with the procedures prepared by name of company position.
- 7.5. Upon completion of the inspection and testing procedure, the name of company position will retain all documentation in the inspection and testing file while the equipment is in service with name of company. All documentation is subject to audit by the Technical Safety BC. Inspection and testing records provide the tracking and documented verification that the facility is being properly maintained and in a safe condition in accordance with CSA B149.2 and the *Safety Standards Act*. Inspection and testing records for all propane equipment used to store and transfer propane shall be kept at address of dispensing facility.
- 7.6. Individuals conducting the inspection and testing shall be trained in the hazards of propane dispensing systems and in inspection and testing procedures applicable to the systems or equipment on which they are working.
- 7.7. Emergency shutoff valves (ESVs) and backflow check valves shall be tested annually for their functionality. ESVs must be specifically tested for:
 - a) Automatic shutoff associated with thermal (fire) actuation.
 - b) Manual shutoff from a remote location.
 - c) Manual shutoff at the valve
- 7.8. Hose assemblies used for liquid transfer must be inspected prior to each use for:
 - a) Damage to the outer cover that exposes the reinforcement.

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- b) Kinked or flattened hose.
- c) Soft spots or bulges in the hose.
- d) Damaged couplings (including loose bolts, missing parts and slippage).
- e) Leakage

7.9. All hose assemblies shall be inspected at least annually.

7.10. Leaking or damaged hose assemblies must be immediately repaired or removed from service.

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8. Installation, Maintenance and Repair Methods

This section of the manual is intended to provide the administrative controls and information necessary to maintain the mechanical integrity of a propane facility compliance with CSA B149.2 through maintenance manuals and procedures. The manual may include detailed procedures for the work carryout refer to written maintenance procedures developed by the owner/operator or Written maintenance procedures provided by equipment manufacturers. The manual will identify the name and title of the individual responsible for the implementation of these procedures.

- 8.1. This section defines the responsibility and system for conducting installation, maintenance and repairs to propane dispensing facilities. Repairs and alterations performed by company name at propane dispensing facilities will be completed in accordance with the *Safety Standards Act*, Gas Safety Regulations, CSA B149.2 and all other applicable codes.
- 8.2. Repairs are defined as work necessary to restore propane equipment to a safe operating condition, provided there is no change from the original design. Name of company position is responsible for ensuring all installation and repair of equipment in propane dispensing facilities conforms to the procedures detailed in this manual and is responsible for the completion of any documentation required by this manual or the *Safety Standards Act*.
- 8.3. Written installation, maintenance and repair procedures provided by equipment manufacturers may be used as manuals for the installation or repair of propane dispensing equipment.
- 8.4. Name of company position will prepare installation, maintenance and repair procedures and ensure all procedures conform to name of company, work procedures and equipment manufacturer's procedures.
- 8.5. All work will be carried out in accordance with the installation, maintenance and repairs procedures prepared by name of company position.
- 8.6. Upon completion of the installation, maintenance and repair procedure, the name of company position will retain all documentation in the installation/repair file while the equipment is in service with name of company. All documentation is subject to audit by Technical Safety BC. Installation/repair records provide the tracking and documented verification that the facility is being properly maintained and in a safe condition in accordance with CSA B149.2 and the *Safety Standards Act*. Repair records for all propane equipment used to store and transfer propane shall be kept at address of dispensing facility.

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8.7. Individuals performing propane equipment installation/repairs shall be trained in the hazards of propane dispensing systems and in installation/repair and testing procedures applicable to the systems or equipment on which they are working. All contractors carrying out propane equipment installation/repairs must train the personnel under their supervision in the hazards of propane dispensing systems and in installation/repair and testing procedures applicable to the systems or equipment on which they are working or ensure that personnel working on propane equipment are under the supervision of a properly trained individual.

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9. Materials

- 9.1. The name of company position will by means of a Purchase Order (exhibit #1) purchase all pipe, tubing, gas equipment and fittings used in installation, maintenance or repair work.
- 9.2. The Purchase Order, as a minimum, will contain the Job identification and material specifications substitution of material may not be made without the approval of the name of company position.
- 9.3. Upon receiving the material the name of company position will check the material for obvious defects or any damage that may have occurred while the material was in transit. All material will be checked against the Purchase Order. If the material is found not to be in compliance with specifications in the purchase it is to be rejected. When it has been determined that the material meets the requirements of the applicable standard the material may be released for the installation, maintenance or repair job. Any material that is in non-compliance shall be identified and segregated until the non-compliance has been resolved.
- 9.4. A copy of the Purchase Order will be retained in the job file.

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10. Incident and Near-miss Investigation

Provide a description of the system used to ensure that accidents and unsafe conditions involving propane equipment are reported in accordance with regulatory requirements and establish a formalized process for internal reporting of accidents, incidents and near-miss events, determining the root cause, and taking appropriate action to prevent its recurrence.

- 10.1. An incident is a failure of a propane equipment resulting from work or operation that causes damage to property, personal injury or death or damage to safety features. Property damage or injury focuses on the impact that the failed equipment may have had to other equipment, property or individuals near or adjacent to the propane equipment. Damage to safety features relates to failures where the damage is limited to the failed propane equipment, does not render the propane equipment inoperative and impairs the safety feature's effectiveness. A safety feature is an aspect of a propane equipment's design, installation, maintenance or operation that is intended to prevent people or property from being exposed to a hazard.
- 10.2. A hazard is anything that is a potential harm to persons or potential property damage. All hazards will be immediately corrected. Hazards shall be immediately reported to Technical Safety BC if the hazard cannot be immediately corrected or the same or similar hazard has repeatedly occurred.
- 10.3. All incidents and hazards shall be reported to Technical Safety BC in accordance with the Safety Standards Act section 36, the Safety Standards General Regulation section 34, the Gas Safety Regulation section 54 and Information Bulletin IB-GA 2017-03. Name of company position is responsible for reporting to Technical Safety BC.
- 10.4. Incidents and hazards shall be reported Technical Safety BC using the link "Report an Incident or Hazard" on their website home page at www.technical safetybc.ca or their customer service line at 1-866-566-7233. Voicemail and email messages made to Technical Safety BC employees reporting incidents and hazards are not considered to have been reported to Technical Safety BC as required by regulation.
- 10.5. Incidents resulting in an injury, fatality, damage to propane equipment or property shall be reported as soon as practicable and not longer than 24 hours after the incident.
- 10.6. Unless it is necessary to rescue a person, prevent injury or to protect property no one shall remove, disturb or interfere with anything in, on or about the place where an incident has occurred.

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- 10.7. Any propane equipment beyond repair or in an unsafe condition must be taken out of service. Name of company position shall promptly notify Technical Safety BC about the equipment's condition and location.
- 10.8. Name of company position shall be immediately be notified of all incidents, hazards and any equipment in an unsafe condition. Name of company position shall ensure that the incident or hazard scene is secured and equipment is isolated.
- 10.9. Name of company position shall control the scene of an incident or hazard to ensure that the site is not disturbed by:
- establishing a physical perimeter around the incident/hazard site
 - assigning an individual to control the entry to the incident/hazard site
 - posting signs to ensure unauthorized persons do not enter the incident/hazard site
 - maintain a log to record the names and times of persons who enter/leave the incident/hazard site and any evidence found or moved at the site
- 10.10. Name of company position shall ensure the incident/hazard site is safe before entering. Name of company position shall determine what safety equipment is required to safely enter the incident/hazard site. All investigators entering the site shall use safety equipment.
- 10.11. Name of company position is responsible or incident/hazard investigation and shall collect evidence consisting of testimonies, records, documents, and objects including:
- the names of everyone involved, near, present or aware of the possible contributing factors or sequence of events.
 - information about the design and operation of the device or equipment involved, failures of equipment or safety devices and non-compliances to codes or standards.
 - the exact location, note all relevant facts, including lighting, weather, floor conditions at the time of the incident
 - the exact time, date, and other factors that may have contributed to the incident/hazard such as shift change, maintenance schedules, etc.
 - a description of the usual sequence of events and actual sequence of events before, during, and after the incident
 - test results or findings from examinations of the equipment involved in the incident
 - visual observations, photographs or sketches of the scene
- 10.12. Name of company position shall interview witnesses as soon as possible after the incident/hazard to maximize the accuracy of information being recollected, collect and reconstruct factual accounts of the incident/hazard. Witness statements shall be documented and signed by the witnesses.

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- 10.13. Incident investigators shall identify possible direct and indirect causes to determine the fundamental cause of the incident. If required external technical experts, shall be used to conduct specialized tests. Determine whether the incident occurred due to non-compliance or other safety issues with regulations or codes or standards.
- 10.14. Name of company position shall prepare a written incident/hazard report that documents:
- a) a summary of the incident/hazard investigation process which documents actions taken, witnesses, evidence collected and photographs
 - b) what, where, when, how, and why it happened.
 - c) who was involved
 - d) actual or potential fatalities, injuries, or extensive property damage.
 - e) any regulatory non-compliances or other safety issues that may have caused the incident or contributed to it.
 - f) any other non-compliances were observed during the investigation.
 - g) recommended corrective actions and follow-up inspection activities to ensure corrective action is completed and effective in preventing further incidents/hazards
- 10.15. All incident/hazards reports shall be reviewed and accepted by Name of company position.

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11. Change Management

Management of Change is a formal system to evaluate, authorize, and document changes before they are made and to ensure that the changes made do not adversely affect integrity or safety within the facility.

- 11.1. The management of change procedure applies to any permanent or temporary change during the design, construction, installation, operation, maintenance modification, and decommissioning of propane dispensing.
- 11.2. Name of company position is responsible to review changes and new editions of the Safety Standards Act, Gas Safety Regulation and CSA B149.2 Propane Storage and Handling Code to identify any required changes to the program manual as a result of the changes. This review shall be documented and maintained in the program records.
- 11.3. Whenever a change in equipment or the dispensing system occurs, the facility operation and maintenance program shall be reviewed and revised to address the new equipment. Any affected operation, emergency and maintenance procedure(s) shall be updated.
- 11.4. A change in facility ownership, organization or position responsibilities requires a review of the facility operation and maintenance program. Any section of the facility operation and maintenance program impacted by the changes shall be revised. Any affected operation, emergency and maintenance procedure(s) shall be updated.
- 11.5. If the property adjacent to a propane dispensing facility is rezoned, developed or the use of the property changes the facility operation and maintenance program shall be reviewed. Clearances shall be reviewed for conformance to CSA B149.2 Clause 7.16 and 7.19. Any affected operation, emergency and maintenance procedure(s) shall be updated.
- 11.6. Name of company position is responsible for conducting a pre-start up safety review prior to implementing any change. A checklist of requirements shall be developed for every change and to be signed off prior implementing a change.
- 11.7. Name of company position shall ensure that training is completed to ensure personnel are aware of any change to operating or maintenance procedures and its impact to their work.
- 11.8. Name of company position shall ensure records of all changes are maintained. The record of change shall include:
 - a) regulatory approvals
 - b) revision and updates to operating and or maintenance procedures

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- c) training provided and verification of staff competency for revised operating and or maintenance procedures

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12. Internal Audits and Control of Program Non-conformances

- 12.1. A system of planned and periodic audits of operation and maintenance activities shall be carried out to verify compliance with the applicable requirements of the propane facility operation and maintenance program. The audits are to determine to the program's effectiveness and identify areas for improvement. Name of company position is responsible to implement program audits and to ensure that at a minimum an annual audit is performed.
- 12.2. The audits shall be documented by the auditor and the results shall be reviewed by Name of company position. Follow-up actions, including re-audit of deficient areas shall be taken when indicated on the Corrective Action Request form (exhibit 5).
- 12.3. The Name of company position shall appoint the auditor to carry out the program audits. The auditor shall not have any direct responsibility in any areas being audited and shall have knowledge and skills in audit principles, procedures and techniques, requirements of the propane facility operation and maintenance program and the requirements of CSA B149.2.
- 12.4. The audits shall be performed using an audit checklist which will also serve as the audit report. Any non-conformances that are identified during the audit shall be addressed and the action taken documented. The auditor is responsible for following-up on the audit findings and ensuring that actions were completed.
- 12.5. Name of company position is responsible to maintain records of the audit documentation which shall be made available upon request to Technical Safety BC for review.
- 12.6. All Name of company personnel shall report conditions or activities which are not conducted in accordance with this propane facility operation and maintenance program. When such an activity or condition is identified, it shall be documented and submitted to Name of company position for action shall review the documentation to determine the corrective actions and preventive actions necessary to prevent reoccurrences. Records of the corrective actions shall be maintained.

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Management Review

- 13.1. Name of company position is responsible to review the overall adequacy and effectiveness of the propane facility operation and maintenance program at least annually. Audit reports, installation, inspection, maintenance and repair records and non-conformance documentation will be considered as part of the review.
- 13.2. The results of the review shall be documented and copies provided to the Name of company position.

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14. Nonconforming Items

- 14.1. A non-conformity is any condition which does not meet the requirements of this Quality Control Manual, Regulations or codes. This includes physical non-conformities found during receiving of materials, those found during fabrication and final testing, and it also includes errors and omissions in the form of documentation.
- 14.2. When it has been determined that a non-conformity exists, the items shall be marked hold and identified and segregated from the production area until resolution.
- 14.3. In respect to non-conformities with material the material will be rejected and discarded, returned to the supplier, repaired and used, subject to the acceptance of a safety officer or used as is, subject to the acceptance of a safety officer.
- 14.4. It is the responsibility of all employees to identify non-conformities. Name of company position (e.g. quality control manager) shall document and record all non-conformities on a nonconformance report which will be placed in the permanent job file. All non-conformities shall be resolved to the satisfaction of a safety officer.