FERTILIZER CANADA

Anhydrous Ammonia Code of Practice

JANUARY 2022

GENERAL COMMENTS

DISCLAIMER

The Fertilizer Canada Anhydrous Ammonia Code of Practice (Ammonia Code) provides uniform safety and security practices for the safe handling and storage of anhydrous ammonia at ag-retail facilities across Canada. The Ammonia Code and the associated User Guide are intended to be used by Fertilizer Canada and member companies for the purpose of Compliance Audits and the issuance of Certificates of Compliance. The Code is not in any way intended to supersede or detract from any requirements contained in municipal, provincial or federal by-laws, regulations or legislation. Neither Fertilizer Canada, it's members or agents (including the Agrichemical Warehouse Standards Association (AWSA) and CropLife Canada), nor their employees and or agents, have made or hereby purport to make any representations, warranties, or covenants with respect to the specifications or information contained in the Anhydrous Ammonia Code's protocols or the results generated by their use, nor will they be liable for any damage, injury, loss or claims, direct or indirect, including those of an incidental or consequential nature, arising from or in relation to reliance upon the Code of Practice or any Compliance Audit conducted by Fertilizer Canada, or the issuance or non-issuance of a Certificate of Compliance.

HOW TO USE THIS GUIDE

This guide has been written in three sections. The first section contains Policies and Processes followed by a set of Protocols with which ammonia storage facilities must comply and against which auditors will check compliance.

The third section is a User Guide (in a separate document) designed to assist facilities in interpreting the protocols. This section is indexed to correspond with the Protocol numbering in the second section. Please consult the User Guide when reviewing the protocols.

TECHNICAL QUESTIONS

Technical questions or questions about interpretation of the Ammonia Code may be addressed to the Ammonia Code Program Manager at 1-866-311-0444 number or by e-mail at manager@awsa.ca. Fertilizer Canada's Ammonia Working Group and/or Safety and Security Committee will review any issues as necessary.

For general questions about the Ammonia Code, please contact Fertilizer Canada at 1-613-230-2600 or by email at info@fertilizercanada.ca.

REVISION HISTORY

Date	Change Detail
Jan 1, 2022	2022 (Version 4) of the Anhydrous Ammonia Code of Practice in effect
Jan 1, 2017	Version 3
Jan 1, 2012	Version 2
June 2008	Version 1

ANHYDROUS AMMONIA CODE OF PRACTICE

Company Name: _____

Name of Auditor: _____

Phone Number: _____

Audit Date: _____

Effective January 1, 2022

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ANHYDROUS AMMONIA CODE PREFACE

1 ANHYDROUS AMMONIA CODE PREFACE

Fertilizer Canada created the Anhydrous Ammonia Code of Practice (Ammonia Code) to provide uniform safety and security practices for the handling and storage of anhydrous ammonia at ag-retail facilities in Canada. The Ammonia Code outlines best practices applicable to the transportation, distribution, storage, and handling of anhydrous ammonia associated with these facilities. The Ammonia Code was written by fertilizer manufacturers, distributors and ag-retailers, with input from government agencies, and the first responder community.

The intent of the Ammonia Code is to assist operators of anhydrous ammonia storage and handling operations to assess their risk and take action to mitigate those risks and to protect employees and workers. It is imperative that proper precautions are taken to ensure that agricultural anhydrous ammonia is handled and stored correctly. While municipal, provincial and federal regulatory requirements, safety programs and training have greatly reduced incidents involving anhydrous ammonia, implementation of the standards, training and controls of this Code will further reduce the risks of accidental ammonia releases.

The Ammonia Code originally came into force in 2009 and was updated in 2012, 2017 and 2022. It is the first industry-led program of this magnitude for the safe and secure handling of anhydrous ammonia.

To ensure uniform safety and security practices in ag-retail sector, Fertilizer of Canada members have unilaterally committed to only ship anhydrous ammonia to retailers who are certified for compliance with the Ammonia Code.

The Ammonia Code cites existing regulations where they have been identified, however, the Ammonia Code is not intended as a comprehensive compilation of regulatory requirements applicable to anhydrous ammonia operations. The Owner / Operator of each anhydrous ammonia operation is individually responsible for compliance with regulatory requirements.

Many Protocols in the Ammonia Code reference a best practice. Best practices are benchmarks based on industry expertise, experience and practice. When benchmarks are listed in the code, they are provided as a reference to assist ag-retailers improve their operations. Best practice compliance is not assessed, nor scored, as part of the audit process.

The Ammonia Code and its User Guide apply to the following segments of the ammonia fertilizer industry associated with ag-retail facilities and operations:

- Road transportation
- Rail transportation
- Storage (including fixed storage vessels, delivery units, and nurse wagons) and handling operations
- Transloading of anhydrous ammonia
- On-farm end use (voluntary basis unless fixed storage vessels)

This Ammonia Code is not intended to apply to manufacturing, repair shops, industrial end use or refrigeration facilities.

In order to understand which facilities require certification and subsequent audits under the Ammonia Code, the path of ammonia from manufacturer to end user must be followed.

Manufacturer: Manufacturers who produce ammonia and store it on-site in large refrigerated tanks are not required to be audited or certified in accordance with the Ammonia Code.

Manufacturer to Retailer Site: Ammonia may be shipped directly from the manufacturer to an Ag-Retailer. The ag-retail site receiving the product is required to be audited and certified under the Ammonia Code.

Manufacturer to Distributor: Some companies that manufacture ammonia will ship to other companies that will store and resell the product or distribute the product for them. The associated facilities, known as Distribution Terminals, may consist of large refrigerated tanks for receiving and storing ammonia from a manufacturer or be set up to store ammonia in smaller storage vessels or railcars prior to reloading into transport units that deliver product to the Ag-Retailers.

Distribution Terminals: Distribution Terminals are not required by Fertilizer Canada to be certified under the Ammonia Code. However, there may be certification requirements by select provincial governments (e.g. Manitoba Environment) that have adopted the Code.

Ag Retailer: Ag-Retailers that receive ammonia into fixed storage vessels and subsequently transfer ammonia from these vessels into nurse wagons or field delivery units are required to be audited and certified and complete under the Ammonia Code.

Ag-Retailers that contract with third parties for the transport of anhydrous ammonia are responsible for ensuring that their contractors comply with all requirements of the Ammonia Code.

Retail Transload: The Ammonia Code applies to storage and handling operations, including fixed and temporary facilities, which includes transloads. The two acceptable scenarios for product transfer by the retail sector include:

1. transfer at sites certified under the Ammonia Code; and
2. transfer to end-users in-field / on-farm**.**

End User: End users include growers or farmers and their employees. Compliance with the Ammonia Code is voluntary for on-farm end use with the exception of end users that also have fixed ammonia storage vessels.

End User Storage: If end users receive product into a fixed storage vessel on the farm, they must be certified under the Ammonia Code of Practice. All sections of the Code apply to these farm sites.

For farm sites (end users) certified **prior to January 1, 2022:**

a. All **fixed storage vessels** must be secured in accordance with Protocol A4.1 as written in the 2022 edition.

b. **Protocol C8.4 – Security for Anhydrous Ammonia Transport Vessels** – applies as follows:

   Anhydrous ammonia transport vessels must have liquid valves secured while they are in storage unless they are stored inside a locked, fenced compound that complies with A4.1; or they have been emptied and de-pressurized. For sake of clarity, storage in this case includes vehicles left on farm over-night. Storing ammonia vessels inside a roofed structure is prohibited unless they have been emptied and de-pressurized.

c. **Protocol C16.4 – Securing of Nurse and Applicator Tanks at Farm Locations** – applies as follows:

   Anhydrous ammonia nurse and applicator tanks must have liquid valves secured while they are in storage unless they are stored inside a locked, fenced compound that complies with A4.1; or they have been emptied and de-pressurized. For sake of clarity, storage in this case includes vehicles left on farm over-night. Storing ammonia vessels inside a roofed structure is prohibited unless they have been emptied and de-pressurized.

For farm sites (end users) certified **after January 1, 2022:**

- All **fixed storage vessels** containing ammonia must be secured in accordance with Protocol A4.1. The only acceptable means of securement being a security fence (6’ chain link with a barbed wire top) with lockable security gates.

- All **transport vessels** containing product must be secured in accordance with Protocol A4.1. The only acceptable means of securement being a security fence (6’ chain link with a barbed wire top) with lockable security gates.

- All **Nurse and Applicator Tanks** must be secured in accordance with Protocol A4.1. The only acceptable means of securement being a security fence (6’ chain link with a barbed wire top) with lockable security gates.

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ANHYDROUS AMMONIA CODE PROCEDURES

2. ANHYDROUS AMMONIA CODE PROCEDURES

2.1. Anhydrous Ammonia Code Audit Procedures

2.1.1 Audit Process:

The audit of a site will involve five distinct steps as follows:

1. **Understanding Site Management Systems and Procedures**

   The auditor will review the various site management systems, procedures and standard practices that have been established to assist in achieving the desired performance of facility operations with the owner / operator.

2. **Gathering Audit Evidence**

   The auditor will perform a visual inspection of the site and site-related records to gather information for the audit to assess compliance of each protocol as outlined in the Ammonia Code. The audit protocols are designed to produce a "yes" or "no" answer. Compliance with all protocol items is required for certification.
   Depending on the scope of the ag-retail location, some protocols may be scored as Not Applicable (N/A) which defaults to a “yes” for scoring purposes.

3. **Evaluating Audit Findings and Exceptions**

   The auditor will assimilate all audit data and observations into a coherent and complete audit report, documenting compliance with protocol requirements.

4. **Reporting Audit Findings and Exceptions to Site Management**

   Deficiencies (corrective actions) will be reported to the facility owner / operator when identified, formally reviewed with management during the exit meeting and summarized on the audit report.

5. **Submission of Successfully Completed Audits**

   The auditor will submit the completed audit report and confirmation of insurance coverage to the Ammonia Code Program Manager for review. Once the successful completion of the audit is verified, the Ammonia Code Program Manager will issue site certification on behalf of Fertilizer Canada.

2.1.2 Re-Audit Cycle:

After certification, the frequency of re-auditing is every two years. For example, if a site was audited any time during 2022, it is required to be re-audited before December 31, 2024 and each successive second year thereafter.

If a site chooses to advance its re-audit date to an earlier year, the subsequent re-audit cycle will then correspond to the new re-audit date. For example, if a site was first audited on May 1, 2022, it will be due for a re-audit any time during the calendar year 2024, with a deadline of December 31, 2024. However, if the site chooses to have a re-audit completed in an earlier year, for example on June 15, 2023, then the subsequent re-audit will be due prior to December 31, 2025.

The timing of the audit will be at the discretion of each site operator / owner, provided that the site is re-audited within the specified two-year time frame. It is up to the site's management to co-ordinate the audit/re-audit not less than 60 days prior to any audit deadline in order to ensure the availability of an auditor.

2.2. Audit Preparation

To assist the auditor in conducting an effective and efficient audit of an ammonia site, the following guidance is provided to sites to save time prior to and during the day of the audit and ensure that sites are fully prepared for their audits.

2.2.1. Scheduling an audit:

Audits should be scheduled before the end of the third quarter to avoid a shortage of auditing services. Booking the audit with the auditor is the owner / operator's responsibility. Auditors can be selected from the approved list of auditors found on the Fertilizer Canada website at www.fertilizercanada.ca or on the AWSA website at www.awsa.ca. Each company/location will be invoiced for the audit directly by the auditor.

2.2.2. Prior to the audit:

1. Owners / operators should ensure that the people involved in storing and handling anhydrous ammonia understand the objective of the audit and have read the audit preparation process.
2. Referencing the Ammonia Code Protocols, the site supervisor or operator should conduct a self-audit of the facility prior to the third-party audit to ensure that all areas meet standards.
3. If this is a first-time audit, the site may want to consider a pre-audit by one of the certified auditors to assist with audit preparation.
4. All employees should be advised of the audit date in advance of the audit.

2.2.3. Day of the audit:

1. Owners / operators will ensure their availability including adequate time to discuss the audit process and the results.
2. Allocate time for the owner / operator or a designated facility person to accompany the auditor.
3. Allocate a location at the site for the auditor to examine documents and prepare the audit report.
4. Encourage all employees handling anhydrous ammonia to communicate with the auditor in a candid manner.
5. Ensure that all relevant documentation is readily available for review by the auditor, i.e. operating procedures, check lists, emergency response plan, plot plan, training files, etc.

To verify written operating procedures of the facility, the auditor may ask for certain operational activities performed.

2.2.4. Off-season audits:

The nature of the audit process requires accessibility to all equipment used for the storage, transport and handling of anhydrous ammonia. Consequently, clear and un-impeded access to all equipment is necessary. Sites having audits done when snow is on the ground will need to have snow sufficiently cleared to allow access to storage and transport equipment. If equipment has been removed for the season, clear documentation will be required to ensure compliance with all protocols. Insufficient documentation or impeded access to storage and transport equipment will result in a failed audit. Any equipment removed from service during the off season must be available for inspection during an audit. **All facilities are strongly encouraged not to book audits during the winter months.**

2.2.5. Nurse tanks and mobile equipment:

All tanks containing ammonia, including nurse tanks and mobile equipment, are required to be in compliance with the Ammonia Code. Equipment that is out of service for inspection, maintenance, repair etc. at the time of the audit is exempt from the audit. Such equipment must be tagged out of service prior to the date of the audit according to a written tag-out program.

2.2.6. Primary and satellite sites:

Within the retail distribution chain, storage sites for anhydrous ammonia have an array of storage capabilities including fixed tanks, delivery units and nurse tanks. For issuing certification numbers, primary sites will be identified as the main location where the majority of staff are based, records are maintained and in most cases ammonia tanks and/or equipment is stored.

Satellite sites are locations which have limited storage facilities (i.e. a standalone fixed tank, nurse tank compounds or transload locations) and in many cases, no offices or on-site staff. These satellite sites are linked (through ownership) to a primary site.

All primary and satellite sites must be in compliance with the Ammonia Code, unless all ammonia vessels at the site have been emptied and de-pressured at a site. Each primary and satellite site will be assigned a unique certification number.

2.3. Quality Assurance Audits

To ensure compliance with the Ammonia Code and to help identify opportunities for continuous improvement, quality assurance audits are conducted. At the discretion of Fertilizer Canada, auditors will visit certified sites, unannounced, to complete these audits. These audits are at no cost to the certified site. A quality assurance report will be provided. If deficiencies are noted, corrective action steps, within defined timeframes, will be prescribed (reference Code Enforcement Policy and Appeals Process).

2.4 Compliance Audit and Certification Terms & Conditions

Prior to the issuance of a certificate of compliance, sites will be required to electronically review and agree to the following terms and conditions of the compliance audit and certification.

Operator hereby applies to Fertilizer Canada for a Compliance Certificate in respect of the Site. In making this application, the Operator acknowledges and agrees to the following:

(a) Operator accepts the Anhydrous Ammonia Code of Practice established by Fertilizer Canada and as updated from time to time (the "Code"), and agrees to the appeal process established by Fertilizer Canada for the resolution of disputes arising with respect to the Site's compliance with the Ammonia Code;

(b) Operator understands and agrees that in order to obtain a Compliance Certificate for the Site, Operator must obtain independent certification by an independent auditor ("Auditor") on the list approved by Fertilizer Canada, confirming that the Site is in compliance with the Ammonia Code. Operator is solely responsible for compliance with the Ammonia Code;

(c) Operator will permit access to the Site at all reasonable times for the purposes of the audit of the Site in connection with this application, and for any re-inspection of the Site in accordance with Fertilizer Canada's Ammonia Code Policies in effect. Operator agrees that the results of any audit may be disclosed to Fertilizer Canada, the Agrichemical Warehousing Standards Association (AWSA), CropLife Canada, Funnel Communications Inc. or to such other Code manager or administrator as Fertilizer Canada may designate from time to time;

(d) Subject to the appeal process established by Fertilizer Canada and updated from time to time, Operator agrees to be bound by the Auditor's findings with respect to the Site;

(e) Operator agrees to pay any costs and expenses arising in connection with the certification of the Site, including the Auditor's fees and expenses;

(f) Operator understands that non-compliance with the Ammonia Code will result in the suspension of sales and shipments to Operator by manufacturers or distributors of anhydrous ammonia until such time as certification is obtained;

(g) Operator releases any and all claims it has or may in future have against Fertilizer Canada, the AWSA, CropLife Canada, Funnel Communications Inc. or such other Code manager or administrator as Fertilizer Canada may designate from time to time and their respective members, directors, officers and employees and any auditor or senior auditor in connection with this application, the suspension of sales or shipments by manufacturers and distributors anhydrous ammonia, any audits conducted at the Site and any failure by the Operator to obtain a Compliance Certificate;

(h) If Operator obtains a Compliance Certificate in respect of the Site, Operator understands that the obligation to maintain the site according to the Ammonia Code is ongoing and Operator must continue to comply with the Ammonia Code in order to maintain its Compliance Certificate.

(i) Operator agrees to share data for the purposes of seeking and maintaining certification. All data collected will be maintained in compliance with AWSA's data collection policy. Visit www.awsa.ca for a copy of AWSA's privacy and data collection policy.

(j) For Ammonia Code of Practice certification, ag-retailers submit data biennially for compliance with Protocols C18. All data is held securely by AWSA. Operator agrees that any data provided by ag-retailers on behalf of their customers contains no specific customer identifiers. The aggregate data from the ammonia tank database will be used by Fertilizer Canada to strategically support industry positions and advocacy and understand the dynamics of the ammonia tank fleet better inform industry positions and advocacy, at the discretion of Fertilizer Canada members. The ammonia tank database will not be used as a means of tracking tank regulatory compliance. Fertilizer Canada does not hold authority or responsibility to report non-compliant ammonia tanks. No data will be shared between certified sites or their customers, and certified sites and their customers will not have access to the contents of the database.

3

ANHYDROUS AMMONIA CODE POLICIES

3. ANHYDROUS AMMONIA CODE POLICIES

3.1 Anhydrous Ammonia Code Enforcement Policy

Only sites certified as compliant with Fertilizer Canada's Ammonia Code of Practice are eligible to receive shipments of anhydrous ammonia in Canada. Ammonia Code non-compliance identified in the course of biennial facility audits are managed through corrective actions identified in the completed audit report.

Outside of a biennial sites audit that is a prerequisite to maintaining certification under the Ammonia Code, certified sites must remain in compliance with the Ammonia Code at all times.

Potential or suspected contraventions of the Ammonia Code are brought to Fertilizer Canada's attention. The identification and investigation of potential non-compliance, the determination that a contravention of the Ammonia Code has occurred, and the enforcement measures that may be taken will be governed by this Ammonia Code Enforcement Policy.

3.1.1 Identification

Alleged non-compliance with the Ammonia Code (outside of biennial site audits) may be brought to the attention of Fertilizer Canada in various ways, including:

a. from the general public (e.g. through "whistle blowers"); and
b. from an auditor in the course of an investigation (e.g. due to a reported incident) or a random facility inspection taking place under the AWSA Quality Assurance program.

Disclosures of alleged non-compliance with the Ammonia Code must be submitted in writing to the Ammonia Code Program Manager via e-mail at manager@awsa.ca. Such disclosures must set out the details of the alleged non-compliance (including time, date, place, facility, nature of alleged non-compliance).

The Ammonia Code Program Manager will not disclose and will protect the identity of disclosures made pursuant to the paragraph above.

3.1.2 Investigation and Determination by Auditor

Within three (3) business days of receiving a written disclosure of alleged non-compliance with the Ammonia Code pursuant to the paragraph above, or as soon thereafter as possible, the Ammonia Code Program Manager will send an auditor to the site named in the disclosure. However, if sufficient photographic evidence is provided in the initial written disclosure, a physical third-party visit by an auditor may not be required.

The auditor will determine whether the site named in the disclosure has contravened the Ammonia Code.

The auditor will set out his/her determination in a written report submitted to Fertilizer Canada. Where the auditor determines that a site named in a disclosure has contravened the Ammonia Code, the report will name the facility and the Section and

specific Protocol of the Ammonia Code that the facility has contravened ("Contravention Report").

Contravention Reports will remain on file with Fertilizer Canada for two years (730 days) from the date of the report.

3.1.3 Enforcement Measures

Upon receipt of a Contravention Report, Fertilizer Canada may apply the following measures.

Fertilizer Canada may cause the Ammonia Code Program Manager to issue a Notice of Violation to the site. The Notice of Violation will name the site, the Section and specific Protocol of the Ammonia Code that has been contravened and the details of the contravention. The Notice of Violation will identify the corrective action, if any, to be taken by the site, including a prescribed timeline within which the corrective action must be taken.

Where a Notice of Violation requires corrective action, the site operator must advise the Ammonia Code Program Manager, in writing, once corrective action has been implemented.

Fertilizer Canada may dispatch an auditor to the site to confirm that corrective action has been implemented and the contravention of the Ammonia Code has been corrected.

If corrective action has not been implemented within prescribed timelines, the site's certification will be suspended, and manufacturers and distributors will be notified of the suspension. To lift the suspension, the facility must undergo a site audit at the full cost and expense of the facility.

Fertilizer Canada may dispatch auditors to perform random follow-up inspections to a site named in a Notice of Violation, at Fertilizer Canada's expense.

Where a site is the subject of two or more Notices of Violation within two-years, all random follow-up inspections will be at the expense of the facility. Manufacturers and distributors will be notified of the Notices of Violation issued against the site.

Additional enforcement measures apply in the case of Notices of Violation issued in relation to the following two safety / security Protocols of the Ammonia Code (hereinafter the "Safety/Security Protocols"):

a. Protocol **A4.1**– The anhydrous ammonia storage and handling operation must incorporate measures to prevent unauthorized access to the product through fencing, tank securement or other physical means. Mobile equipment must be adequately stored within locked fenced compounds as per requirements referenced in Protocols **C8.4** and **C16**.
b. Personal Protective Equipment (PPE) – as specified in Protocols **B7** and **C6** – Each employee working with ammonia at an anhydrous ammonia operation must have and use the following: respirator, one- or two-piece ammonia-resistant suit, gloves, boots, individual water bottle.

If, within a 730-day period of a Notice of Violation issued against a site in respect of a Safety/Security Protocol, a site is the subject of one or more subsequent Notices of Violation in respect of the same Safety/Security Protocol, the site will be liable to monetary penalties issued by Fertilizer Canada, as follows:

a. Second Notice of Violation: $5,000

b. Third Notice of Violation: $10,000

c. For a fourth Notice of Violation issued against a site in respect of the same Safety Protocol within a 730-day period of the first-referenced Notice of Violation, the site's certification is revoked. The site will not be eligible to apply for re-certification for 547 days (1.5 years) from the date of revocation. To apply for re-certification, the site must undergo a site audit at the full cost and expense of the site.

Where this Enforcement Policy applies, the monetary penalties payable will be set out in the relevant Notice of Violation. The Notice of Violation will stipulate that monetary penalties are to be paid within 30 days of the Notice of Violation. If the site that is the subject of a monetary penalty fails to pay the monetary penalty within the stipulated timeline, the site's Anhydrous Ammonia Code certification is revoked and the provisions regarding eligibility to apply for re-certification apply.

3.2 Anhydrous Ammonia Code Appeals Policy

The Appeals Policy identifies potential areas where appeals may be made, and outlines the procedures to identify, qualify and adjudicate.

3.2.1 Part A: Appeals for Code Audit/Compliance Interpretation

Part A applies to:

a) Ammonia Code interpretation discrepancies between owner / operators and auditors during the pre-audit or audit process;
b) Appeals related to corrective action requirements issued to owner / operators related to Quality Assurance audits; and/or
c) Appeals related to issuance of notices of violations to audited sites.

Steps to appeal:

1. Owners or operators of audited sites are encouraged to resolve any uncertainties or disagreements with their auditor during the audit process, or in the case of a notice of violation, with the Program Manager. A Senior Auditor and/or the Program Manager should be consulted for assistance in the interpretation and application of the Ammonia Code prior to an appeal being submitted. This is a pre-requisite to a formal appeal being considered by the Fertilizer Canada Committee responsible for Ammonia Code appeals.
2. If notification that the certification will be declined or withdrawn has been issued, Operators ("Appellant") may launch a formal appeal by submitting a written brief

to the Program Manager explaining the circumstances and rationale for appeal and include supporting documentation.

3. The Program Manager in consultation with the Senior Auditor will also prepare a brief explaining the circumstances and their rationale.
4. In the event of an appeal being launched the withdrawal of certification will not proceed until the appeal has been adjudicated.
5. These briefs will be forwarded to the Fertilizer Canada Committee .
6. The Fertilizer Canada Committee:
    a. Shall be formed by Fertilizer Canada;
    b. Shall consist of a Fertilizer Canada staff member familiar with the Ammonia Code of Practice, the Chair / Vice-Chair of Ammonia Working Group, the AWSA Program Manager and may include additional representatives at the discretion of Fertilizer Canada;
    c. Shall be screened to ensure conflicts of interests do not exist;
    d. Shall invite, if necessary, the Senior Auditor and the Appellant to submit any further information within five working days of receiving the appeal;
    e. May review the relevant matter with the Senior Auditor and the Appellant either in person, via telephone or in writing;
    f. May seek out additional regulatory or professional opinions to consider as part of the appeals process;
    g. Shall render a decision on the appeal as expeditiously as possible while respecting the principles of procedural fairness and public safety;
    h. Shall report back to the Appellant on the status of the appeal every ten business days until a final decision is rendered;
    i. The Committee will provide a final decision to the Program Manager for furtherance to the Appellant.
7. In the event that the withdrawal or declination of certification is confirmed upon appeal, the withdrawal of certification will be in effect at such a time as the operator receives formal correspondence from the Program Manager. Recertification will be accordance with established Ammonia Code of Practice policies.

3.2.2 Part B: Appeals for Protocol Variance

Periodically Audited Operations (Operators) may appeal for consideration for a variance to a specific Code protocol, either for a period of time or indefinitely. The decision for Protocol Variance lies with the responsible Fertilizer Canada Committee. The process to request a protocol variance is as follows:

1. Contact the Program Manager to complete the Variance Request Form to identify the following:
    a. The specific protocol(s) within the Code that the variance request is applicable to;
    b. The current operational situation as it relates to the specific protocol(s) identified;
    c. Changes to the operational situation that are anticipated or planned with relative time required to complete;

d. Rationale for the variance request (such as financial hardship, construction scheduling, technological change, operational efficiency, timeline extensions, etc.);
e. Ruling from local building inspector, fire chief or other regulatory authority of relevance to the specific protocol(s) identified;
f. Additional information that the operator's site management feel would aid in the decision-making process;
g. The operator and auditor may choose to consult the Program Manager for assistance in the interpretation and application of the Code;
h. The Fertilizer Canada Committee shall render a decision as expeditiously as possible while respecting the principles of procedural fairness and public safety.
i. Formal correspondence of the variance request decision will be provided by the Program Manager to the operator seeking variance consideration within ten working days of receipt. If a decision has not be finalized after the initial ten business days a status update will be issued every ten business days until a final decision is rendered.

3.3 Lapsed Certification Policy

Lapsed certification is defined as a withdrawal of certification resulting from:

- Voluntary decertification;
- Failure to successfully re-audit before the site certification expiry date; or
- Withdrawal of certification in accordance with the Ammonia Code Enforcement Policy and Appeals Policy.

All sites require a full re-audit every two years to maintain certification status. All facilities are required to coordinate their re-audits within the required time frame. The onus on coordinating and booking the audit lies with the site. Details on the re-audit process and frequency can be found in section 2.1.

If a site is not re-audited before the due date, its certification will be withdrawn until the site has successfully completed an audit. The Ammonia Code Program Manager will notify all anhydrous ammonia manufacturers/distributors of the site's certification lapse. The facility will not be eligible to receive shipments of anhydrous ammonia.

In addition, an administration fee of five hundred dollars ($500.00) will be required to re-activate certification status of the lapsed facility. Delaying re-certification to the following year will not extend the normal re-audit period. For example, locations due for re-certification in 2022, will have to be re-certified again in 2024. If the facility lapses and has their re-audit completed in 2023, this facility will still be due for a re-audit in the year 2024.

Once a lapsed facility has been successfully re-audited, all ammonia manufacturers / distributors will be notified and the suspension of shipments of ammonia will be removed.

Please note that failure to maintain certification may affect your insurance coverage.

3.4 Grandfathered Facility Policy

Notwithstanding the foregoing or any other provision of the Ammonia Code, for any facility certified prior to January 1, 2017 and "grandfathered" under Protocol A1 of the Ammonia Code (as being closer than 1.5 kilometres from a border of a city, town, village or hamlet, or from evacuation-sensitive facilities such as hospitals, schools, residential developments or senior citizens homes and 500 metres from any occupancy and 50 metres from an environmentally sensitive area) where such certification has been permitted to lapse for any reason for a period of greater than twelve (12) consecutive months, the grandfather exemption will be withdrawn and such site will be ineligible for future recertification under the grandfather provision or must demonstrate compliance with the current version of the Ammonia Code.

3.5 Certification Extension Policy

Certified facilities that are challenged with scheduling a re-audit before the expiry of their current certification due to unforeseen issues or renovation plans may be eligible to extend their certification for a determined period of time not to exceed six (6) months following the formal date of audit.

Certification extension allows a facility to avoid a lapse in certification. The facility during this extended period will be considered "in suspension" and will be ineligible to receive any product during this time. The facility must successfully complete a full audit prior to the end of the extended period. Failure to successfully complete an audit will result in a lapse in certification in accordance with the Lapsed Certification Policy.

The decision to grant a certification extension, and conditions thereof, is at the sole discretion of Fertilizer Canada and shall be considered based on a demonstration of reasonable conditions.

Examples of reasonable conditions may include but are not limited to:

- Planned site renovations;
- Emergency repairs;
- Staff turnover and training.

Extension requests must be submitted in writing to the Ammonia Code Program Manager no later than thirty (30) days **before** the facility's re-audit due date. Rationale for the extension must be clearly stated and include a date by when the site will be re-audited*.

*Note that the original certification cycle will not change as a result of the certification extension. Please see the Audit Process Section **2.1.1** for details.

3.6 Renovation of Certified Facilities Policy

3.6.1 Renovations

Periodically it is expected that facilities certified under the Ammonia Code of Practice (Code) may make changes to their sites. Any renovations made to the site must comply with the Code and sites must be compliant with the Code at all times. If significant renovations or replacements are performed, such as movement, replacement, expansion or addition of fixed storage vessels, such renovations must be re-audited for compliance with Section A, B and G of the Code before using brought into service. The full site will still be subject to a full re-audit by their next scheduled re-audit date.

Prior to a renovation of a fixed storage vessel, preapproval from Fertilizer Canada should be obtained. Please contact the Ammonia Code Manager at manager@awsa.ca for a copy of the pre-approval package.

3.6.2 Expanded Storage Capacity at Encroached Sites

Notwithstanding the foregoing or any other provision of the Ammonia Code, for sites
a) certified under the Ammonia Code prior to January 1, 2011 and "grandfathered" under Section A1.1 of the Code (as being closer than 1.5 km from a border of a city, town, village or hamlet, or from evacuation sensitive facilities such as hospitals, schools, residential developments or senior citizens homes and 500 meters from any occupancy and 50m from an environmentally sensitive area); or,
b) that originally met the requirements of Section A1.1 of the Code but were subsequently encroached upon by municipal development within the setback distances; any renovations to fixed storage at these sites **may not** increase the capacity for product storage, or install additional fixed storage vessels, **unless the following conditions (1-3) are satisfied:**

1. Each fixed ammonia storage vessel at the site is equipped as follows:
a. Engineered break-away devices, that are designed to separate and provide positive closure to both sides of the separation, are installed at each bulkhead liquid and vapour line between a mechanically secure point and the transfer hose connection. The mechanically secure point shall be designed to withstand at a minimum two times the maximum shear force required to separate the breakaway.
b. Internal Self Closing (ISC) Valves are installed on all liquid and vapour tank openings except when product flow is only into the tank, when a back-check valve may be used.
c. Emergency Shutoff Valves (ESV) or ISC valves are installed on each liquid and vapour line as close as practical to each transfer bulkhead on the vessel side prior to the last manual valve.
d. An Emergency Shutdown System is installed that incorporates all of the following:
I. A pull-away event at any bulkhead point will activate a full system shutdown without human intervention;

II. Closure of all ISC's installed on the storage vessel(s) when a shutdown event is triggered;
III. Closure of all ESV's installed in the piping system when a shutdown event is triggered;
IV. A monitoring feature that will trigger a shutdown event if no input is received from the operator every five (5) minutes when the system is active;
V. Wireless transmitter (with a minimum workable distance of 46 metres (150 feet)) capable of triggering a shut down of the system remotely; and
VI. Pump power/energy source "kill switch", that is triggered by a shutdown event.

2. Damage protection is installed around all storage vessel(s) and piping systems to prevent contact from motorized vehicles.

3. A documented visual inspection and leakage test is performed on all storage vessel(s) annually.

Sites must meet all of the above conditions (1-3) to be approved under the Renovation Policy. Sites must undergo a Pre-Approval application prior to the renovation(s).

Pre-Approval will require submission of design drawings and equipment specifications to meet the conditions of the Policy, and an indication of approval from the authorities having jurisdiction. The Pre-Approval package will be reviewed by an appointed technical working group to assess if the plans meet the conditions stated in the Renovation Policy. After renovations have been completed, site compliance will be audited by the Senior Auditor or designate prior to the vessel being brought into service.

Please contact the Ammonia Code Manager at manager@awsa.ca for a copy of the Renovation at Encroached Sites Submission Requirements Package.

3.7 Change in Ownership Policy

If a facility changes ownership, the facility owner / operator is to notify the Ammonia Code Program Manager of ownership change upon closing of purchase agreement. The facility owner / operator is to forward the confirmation of insurance coverage as outlined in Protocol I1.

Upon receipt of ownership change notification, the Ammonia Code Program Manager will forward an “Application to Audit” form to be signed and returned within thirty (30) days of transfer to new ownership. The facility must be re-audited within ninety (90) days of transfer to new ownership, regardless of the date of the last audit. The new audit date would set the audit timelines thereafter. If the ownership change does not involve a change of site personnel, the facility owner / operator may apply for a waiver from these changes of ownership requirements.

Sites originally certified prior to January 1, 2017 and grandfathered under Section A1.1 will maintain their grandfathered status provided that the site is in continued use. Please refer to Lapsed Certification Policy (Section 3.3)) and the Expanded Storage Capacity at Encroached Sites Policy (Section 3.6).

4

ACRONYMS

4. DEFINITIONS AND ACRONYMS

4.1 Acronyms

AHJ	Authority Having Jurisdiction
ASME	The American Society of Mechanical Engineers
AWSA	Agrichemical Warehouse Standards Association
CAN	Calcium Ammonium Nitrate
CGL	Comprehensive General Liability
CPR	Cardiopulmonary Resuscitation
CRN	Canadian Registration Number
CSA	Canadian Standard Association
CVSA	Commercial Vehicle Safety Alliance
E2 Regs	Canadian Environmental Emergency Regulations
EIL	Environmental Impairment Liability
FSSC	Fertilizer Safety and Security Committee
GFI	Ground Fault Interrupters
ISC	Internal Safety Control Valve
LEL	Lower Explosion Limit
MAWP	Maximum Allowable Working Pressure
MSDS	Material Safety Data Sheets
NH3	Anhydrous Ammonia
PPE	Personal Protective Equipment
SCBA	Self-contained Breathing Apparatus
SDS	Safety Data Sheets (formerly MSDS)
TDG	Transportation of Dangerous Goods
TCRN	Transport Canada Registration Number
UEL	Upper Explosion Limit
ULC	Underwriters Laboratories Canada
USWG	United States Water Gallons
WHMIS	Workplace Hazardous Materials Information System

5

ANHYDROUS AMMONIA CODE OF PRACTICE PROTOCOLS

5 ANHYDROUS AMMONIA CODE OF PRACTICE PROTOCOLS

SECTION A – SITING AND EXTERIOR REQUIREMENTS

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A.2 Distance from Anhydrous Ammonia Storage and Handling Operation to Roadway or Railway
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B.6 Bleed-off Vapour Containment
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C.5 Vessel Labels and Markings
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C.7 Transport Vehicle Certification
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PART 2 – APPLICATION EQUIPMENT

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C.15 Lighting Requirements for Towing
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D.2 Safe Operating Procedures Training
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I.1 Insurance

SECTION J – EXPAND STORAGE CAPACITY AT ENCROACHED SITES

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FERTILIZER CANADA

2022 ANHYDROUS AMMONIA CODE OF PRACTICE –

SECTION A – SITING AND EXTERIOR REQUIREMENTS

This section applies to the following ammonia storage and handling operations:

- **Fixed Storage Operations –** are defined as a storage vessel supported on the ground by a foundation system. The foundation system can be permanent or temporary in nature.
- **Anhydrous Ammonia Equipment Storage Operations –** are defined as an area where mobile anhydrous ammonia vessels are stored. Storage areas where all the vessels have been emptied and de-pressured will be exempt from inclusion in this definition.
- **Railcar Transload Operations –** are defined as anhydrous ammonia operations utilized for the loading and off-loading of railcars.

A.1	**A.1 Siting requirements – distance from people**
A.1.1	**A.1.1 NEW AND EXPANDED ANHYDROUS AMMONIA STORAGE AND HANDLING OPERATIONS** **A.1.1.1 NEW SITES** The minimum distances from occupancies for siting an anhydrous ammonia storage and handling operation certified under the Ammonia Code of Practice on or after January 1, 2011 are: (a) 1.5 kilometers from the border of a City, Town, Village or Hamlet, or from Evacuation-Sensitive facilities such as hospitals, schools, residential developments or senior citizens homes; and (b) 500 meters from any occupancy (e.g. a rural residence or a small business, occupancy is defined in Section A1 of the User Guide); and (c) 50 meters from an environmentally sensitive area (lake, stream, wetland etc.); and Approval from the local authority having jurisdiction is also required. *Compliance will be indicated by documentation such as dated facility plans demonstrating the required distances, and local authority approval documentation.* Recommended Best Practices: Locate new anhydrous ammonia storage and handling operations a minimum of 3.0 kilometers from the boundary of a city, town, village, hamlet or evacuation sensitive facilities.

A.1.1.1 Audit Requirements	**Y/N/NA***
Meets or exceeds Minimum Distance from community	
Meets or exceeds Minimum Distance from residence	
Meets or exceeds Minimum Distance from environmentally sensitive areas	
Documentation showing approval from local authority	

Meets Best Practices Requirements – Anhydrous ammonia operations are over 3 km from the boundary of a city, town, village, hamlet or evacuation sensitive facilities	
Comments	

* for re-audits score NA

A.1.1.2 EXPANSION AT EXISTING SITES

Capacity expansion at existing certified ammonia sites that are within the setback distances outlined in A.1.1.1 (grandfathered or municipally encroached sites) are required to meet additional protocols as defined in SECTION J – EXPANDED STORAGE CAPACITY AT ENCROACHED SITES. These requirements include:

a) Preapproval by Fertilizer Canada

b) Equipment and measures as outlined in the Anhydrous Ammonia Code of Practice Renovation Policy 3.6.2 Expanded Storage Capacity at Encroached Sites.

c) Approval from the local authority having jurisdiction

d) Compliance with SECTION J – EXPANDED STORAGE CAPACITY AT ENCROACHED SITES

Compliance will be indicated by documentation such as dated facility plans and approvals demonstrating the required equipment, and local authority approval documentation.

A.1.1.2 Audit Requirements	**Y/N/NA**
Preapproval Documentation	
Documentation showing approval from local authority	
Meets equipment and best practice requirements as specified in the Anhydrous Ammonia Code of Practice Renovation Policy 3.6.2 Expanded Storage Capacity at Encroached Sites	
Comments	

A.1.2

A.1.2 All Operations Less Than 500 Metres From Population Concentrations Or Less Than 100 Metres From Any Occupancy

All anhydrous ammonia storage and handling operations located less than 500 metres from the boundary of a city, town, village, hamlet or from an evacuation-sensitive facility (e.g. hospital, school or senior citizens home), or less than 100 metres from any occupancy (e.g. rural residence).

In order to minimize the risk to people from an accidental release of anhydrous ammonia, the following measures are required:

(a) Where loading and unloading is conducted at the operation, pull-away protection shall be installed on liquid and vapour hose connections (both in load and out load).

All sites are required to have pull-away protection installed on both liquid and vapour hose connections (both in load and out load).

Compliance will be indicated by inspection of the equipment and demonstration of functionality.

A.1.2 Audit Requirements	**Y/N**
Pull-away protection installed (in load and out load)	
Comments	

A.1.3

A.1.3 COMMUNICATION WITH LOCAL PEOPLE

This protocol applies to all ammonia operations covered by Section A of this Anhydrous Ammonia Code.

To ensure that members of the public located near ammonia operations are adequately informed and aware of emergency procedure, the following measures are required:

(a) Annual contact with people within 3.0 kilometers:

- Communication must inform people of the presence of an ammonia operation, and the communication process to be used in the event of an emergency.
- Communication shall be in writing.

Compliance will be indicated by inspection of the list of local stakeholders and dated copies of the required written materials.

(b) Annual contact with people within 1.5 kilometers:

- Communication must include information on the nature and hazards of ammonia.
- Communication must include information on basic emergency response procedures including contact numbers, and both shelter-in-place and evacuation procedures.

Compliance will be indicated by inspection of the list of local stakeholders and dated copies of the required written materials.

(c) Review of emergency response plan with people within 500 metres:

- Local people within 500 metres must be invited annually to a review session of the emergency response plan as it applies to those people.

Compliance will be indicated by inspection of the list of local stakeholders and dated copies of the required written materials.

A.1.3 Audit Requirements	Y/N
Dated copies of communication showing people within 3.0 km were informed of the presence of an ammonia operation and the communication to be used in the event of an emergency	
Dated copies of communication showing people within 1.5 km were informed on the nature and hazards of ammonia and on basic emergency response procedures	
Communications included all local stakeholders (within 3.0 and 1.5 km)	
List of stakeholders within 500 m that were invited to attend the annual review of the emergency response plan and copies of written materials presented	
Comments	

A.2

A.2 DISTANCE FROM ANHYDROUS AMMONIA STORAGE AND HANDLING OPERATION TO ROADWAY OR RAILWAY

The anhydrous ammonia storage and handling operation complies with the setback distances as prescribed by Provincial or Federal regulations. Consult Federal and/or Provincial regulations regarding setback distances.

Compliance will be indicated by an appropriate licence or permit from the authority having jurisdiction or evidence of compliance presented by the Owner / Operator or person responsible (refer to the User Guide for examples of acceptable evidence).

A.2 Audit Requirements	Y/N
Current licence from the authority having jurisdiction or evidence of compliance presented by the Owner / Operator or person responsible	
Comments	

A.3

A.3 DISTANCE FROM ANHYDROUS AMMONIA STORAGE AND HANDLING OPERATIONS TO ENVIRONMENTALLY SENSITIVE AREAS

Anhydrous ammonia operations must have measures in place to prevent contamination of environmentally sensitive areas such as rivers, lakes, streams and wetlands.

If the anhydrous ammonia storage and handling operation is located closer than 100 meters from environmentally sensitive areas, means of containment must be present to control and contain emergency run-off water. This may be achieved by utilizing sandbags to plug a culvert in a drainage ditch around the operation in emergency situations.

Compliance will be indicated by the examination of a runoff containment plan.

	A.3 Audit Requirements (for sites within 100 m of an environmentally sensitive area)	**Y/N**
	If yes: There is a means of containment present to control and contain emergency run-off water	
	Comments	
A.4	**A.4 SECURITY FOR ANHYDROUS AMMONIA STORAGE AND HANDLING OPERATIONS** The anhydrous ammonia storage and handling operation complies with the applicable requirements of the site security protocol.	
A.4.1	**A.4.1 Anhydrous Ammonia Storage and Handling Security Fencing:** The anhydrous ammonia storage and handling operation must incorporate measures to prevent unauthorized access to the product. All ammonia pressure vessels (stationary and/or mobile) and piping systems are secured within a full perimeter security fence with lockable security gates. The minimum requirements for fencing of new sites, commissioned after January 1, 2019, is 6' chain link with a 3-strand barbed wire top. Existing ammonia Code-compliant sites using fencing, as the primary means of site security / compliance with this Protocol, can continue to use either a 5-foot wire fence topped with three-strand barb wire or 6-foot chain link, with or without three strands of barbed wire. All gates must be fully secured when the site is un-attended. *Compliance will be indicated through site inspection to verify the presence of required security measures.*	
	A.4.1 Audit Requirements	**Y/N**
	Full security perimeter fencing and lockable gates in place	
	Site commissioned before January 1, 2019 – has 5-foot wire fencing with three-strand barbed wire or 6-foot chain link fencing with or without three strands of barbed wire.	
	Site commissioned after January 1, 2019 – has 6-foot chain link fencing with a three-strand barbed wire top	
	All vessels containing products are stored within the fenced area	
	Comments	
A.4.2	**A.4.2 Unattended Storage Site Inspections** Unattended sites must be inspected every two weeks while unattended. *Compliance will be indicated by examination of completed inspection check sheets*.	
	A.4.2 Audit Requirements	**Y/N/NA**
	Check sheets show inspections every two weeks while unattended	
	Comments	

A.5

A.5 OPERATIONAL LIGHTING

The anhydrous ammonia storage and handling operation is equipped with sufficient lighting to allow for the safe transfer of anhydrous ammonia during night-time operations.

All points around operation where anhydrous ammonia is transferred require dedicated lighting sufficient for work to be done safely.

Compliance will be indicated through the presence of required operational lighting.

A.5 Audit Requirements	Y/N
Lighting is operational and is directed at all points around the storage vessels where ammonia transfer is required	
Comments	

A.6

A.6 EMERGENCY EXITS

The fenced storage area is constructed in a manner to provide adequate emergency exits for personnel in case of a release of ammonia. This also applies to sites that just store mobile equipment and as it reads now, could be construed as just sites with fixed storage vessels.

There must be at least two escape exits located to provide options for escape regardless of wind direction. An exit route with a minimum width of one (1) metre leading to exits in the fence must be functional and kept clear of obstructions at all time. The main gate may function as one of these exits.

Compliance will be indicated through a visual inspection of the means of emergency exit.

A.6 Audit Requirements	Y/N
Two escape exits each at least 1 m width provide options for escape from within security fence around storage vessel(s) regardless of wind direction	
Exits are clear of obstructions and are tested to be functional	
Comments	

A.7

A.7 FACILITY SIGNAGE

The anhydrous ammonia storage and handling operation is equipped with required warnings and emergency response signage.

The following information must be located at the entrance to the site:

A.7.1 Caution/Danger Anhydrous Ammonia

A.7.2 Authorized Personnel Only

A.7.3 No Smoking or Open Flames (both statements or both pictograms are required)

A.7.4 After hours and daytime emergency contact numbers including company and emergency services

A.7.5 Signs must be equipped with letters on a contrasting background that makes the sign legible to approaching emergency services.

Compliance will be indicated through a visual inspection of the signage.

	A.7 Audit Requirements	Y/N
	Required signage present at entrance to site	
	Comments	

A.8

A.8 HOUSEKEEPING INSPECTIONS

The ammonia operation shall have a written housekeeping inspection process (see examples in the User Guide). The process shall include all of the following elements:

(a) A list of locations and areas to be inspected

(b) Who is responsible for performing housekeeping inspections

(c) Inspection frequency; and

(d) A system for recording the results of inspections and for following up on corrective actions

Compliance will be indicated by examination of the written procedure and records of completed housekeeping inspections.

A.8 Audit Requirements	Y/N
Written housekeeping process has required elements	
Housekeeping process includes records showing date of inspections and who conducted the inspection	
Comments	

SUMMARY FOR SECTION A - TO BE COMPLETED BY THE AUDITOR

SECTION A	Yes/No
All Mandatory Items Are Present	
Meets Best Practices	**/1**

SECTION B – STORAGE VESSEL AND EQUIPMENT

This section contains the standards for managing risks associated with an anhydrous ammonia storage vessel. Storage vessels are defined as fixed tanks designed according to Federal and/or Provincial regulations used for permanent or temporary storage of anhydrous ammonia (excluding units covered by Transportation of Dangerous Goods requirements).

B.1

B.1 STORAGE VESSEL DESIGN AND CONSTRUCTION

All anhydrous ammonia storage vessels have been designed, constructed, operated and maintained in accordance with Federal and/or Provincial Boiler and Pressure Vessel Regulations/ Standards.

B.1.1

B.1.1 Storage Vessel Construction:

The storage vessel at the anhydrous ammonia operation has been designed and constructed in accordance with the applicable Codes and has a Canadian Registration Number (CRN) or a National Board (NB) number. Consult Provincial Boiler and Pressure Vessel Regulations for applicable Code requirements.

Compliance will be indicated by inspection of the Metal Identification Plate affixed to the vessel.

B.1.1 Audit Requirements	Y/N
Anhydrous storage vessels have been designed and constructed in accordance with the applicable Codes and has a Canadian Registration Number (CRN) or a National Board (NB) number.	
The Metal I.D. Plate on the vessel is legible and shows the CRN or NB number.	
Comments	

B.1.2

B.1.2 Storage Vessel Supports:

The supports for the anhydrous ammonia storage vessel and piping are constructed of non-combustible materials. Foundation systems shall not pose a fire hazard.

Compliance will be indicated by a visual inspection of the foundation and support structure to determine if it is constructed of non-combustible construction (concrete or steel).

B.1.2 Audit Requirements	Y/N
Anhydrous ammonia storage vessel(s) and piping supports are constructed of non-combustible materials	
Foundation systems do not pose a fire hazard	
Comments	

B.1.3

B.1.3 Storage Vessel Maintenance & Testing:

Regular and scheduled maintenance and testing is performed as required by Provincial Codes and Regulations.

Compliance will be indicated through a visual inspection of inspection, testing and repair documentation. When documentation is kept elsewhere, a signed and dated letter from the person responsible for maintenance and testing will be sufficient.

A.1.3 Audit Requirements	**Y/N**
Visual inspection, testing and repairs are completed and documented as required by Provincial Codes and Regulations	
Comments -	

B.2

B.2 STORAGE VESSEL VALVES, PIPING AND GAUGES

All valves, piping and gauges at the anhydrous ammonia storage and handling operation have been designed, constructed, operated and maintained in accordance with Federal and/or Provincial Boiler and Pressure Vessel Regulations/ Standards.

B.2.1

B.2.1 Storage Vessel Emergency Shut-off Valves

All storage vessels must be equipped with a positive emergency shut-off valve to stop the flow of product from the vessel in an emergency on all liquid lines except inlet lines equipped with check valves.

- The emergency shut off must be able to be operated from both opposing ends of the storage vessel
- Mechanical activating levers or devices for the emergency shut-off must be colour-coded blue
- If an Electronic/Wireless Emergency Shut-off system activation device is used, it shall be a red button with either a blue or yellow background labeled Emergency Stop

Compliance will be indicated through a visual inspection of the vessel to determine the presence of an emergency shut-off system.

Recommended Best Practices: The emergency shut-off should be able to be operated from multiple locations to ensure access in case of a release. Recommended best practice is to use an Internal Safety Control Valve (ISC) as the emergency shut-off.

B.2.1 Audit Requirements	**Y/N**
All liquid lines except inlet lines equipped with check valves have a positive emergency shut-off valve	
Emergency shut-off valves must be able to be operated from both opposing ends of the storage vessel	
Emergency Shut-off activation devices appropriately colour-coded	
Meets Best Practices Requirements - Internal Safety Control Valve (ISC) is used for the emergency shut-off	
Comments	

B.2.2

B.2.2 Storage Vessel Excess Flow Valves:

All storage vessels are equipped with excess flow valves for changes in pipe diameter.

Compliance will be indicated through a visual inspection of inspection, testing and repair documentation. When documentation is kept elsewhere, a signed and dated letter from the Owner indicating that excess flow valves are correctly sized will be sufficient.

B.2.2 Audit Requirements	Y/N
All storage vessels are equipped with excess flow valves for changes in pipe diameter	
The excess flow valves on outlet lines have been correctly sized in accordance with the restriction of the piping system to ensure effective operation	
Comments	

B.2.3

B.2.3 Storage Vessel Piping Systems, Valves & Fittings

All piping systems, valves and fittings are suitable for anhydrous ammonia service.

Compliance will be indicated through a visual inspection of inspection, testing and repair documentation. When documentation is kept elsewhere, a signed and dated letter from the Owner indicating all piping systems, valves and fittings at the anhydrous ammonia operation are suitable for anhydrous ammonia service will be sufficient.

B.2.3 Audit Requirements	Y/N
Documentation indicating all piping systems, valves, and fittings are suitable for anhydrous ammonia service	
Comments	

B.2.4

B.2.4 Storage Vessel Hose-end Valves

Hose-end valves have been constructed to prevent accidental opening. This may include the configuration of the valve opening mechanism or the installation of a guard to prevent accidental opening.

Compliance will be indicated through a visual inspection of hose end valves.

B.2.4 Audit Requirements	Y/N
Hose-end valves are constructed to prevent accidental opening	
Comments	

B.2.5

B.2.5 Storage Vessel Safety Relief Valves

Safety relief valves shall conform to applicable Regulations.

Compliance will be indicated through a visual inspection of inspection, testing and repair documentation. When documentation is kept elsewhere, a signed and dated letter from the Owner indicating all Safety Relief Valves conform to the applicable Regulations with be sufficient.

B.2.5 Audit Requirements	Y/N
Safety relief valves conform to applicable Regulations	
Comments	

B.2.6

B.2.6 Storage Vessel Safety Valve Rain Caps

Safety relief valves shall be equipped with rain caps.

Compliance will be indicated through a visual inspection of the rain caps.

B.2.6 Audit Requirements	Y/N
Safety relief valves are equipped with rain caps	
Comments	

B.2.7

B.2.7 Storage Vessel Safety Relief Valve Certification

Safety relief valves must be changed at least every 5 years.

Compliance will be indicated through a visual inspection of inspection, testing and repair documentation. When documentation is kept elsewhere, a signed and dated letter from the Owner will be sufficient.

B.2.7 Audit Requirements	Y/N
Documentation available showing safety relief valves were changed at least every 5 years.	
Comments	

B.2.8

B.2.8 Storage Vessel Hydrostatic Relief Valves

Hydrostatic relief valves have been installed in accordance with applicable regulatory requirements. The service life for the hydrostatic relief valves has not been exceeded.

Compliance will be indicated through a) a visual inspection of positioning of hydrostatic relief valves in the piping system and b) review of documentary evidence that service life has not been exceeded.

Recommended Best Practices: Best Practice is to have hydrostatic relief valve directed away from the operator or tubed to a safe discharge location.

B.2.8 Audit Requirements	Y/N
Hydrostatic relief valves have been installed in accordance with the regulatory requirements	

	Documentation shows that the service life for the hydrostatic relief valves has not been exceeded	
	A visual inspection of positioning of hydrostatic relief valves in the piping system indicates compliance	
	Meets Best Practices Requirements - Hydrostatic relief valves directed away from the operator or tubed to a safe discharge location	
	Comments	

B.2.9

B.2.9 Storage Vessel Piping

Piping systems on anhydrous ammonia storage vessels have been designed and constructed with Schedule 40 and/or Schedule 80 steel or stainless-steel pipe. All schedule 40 pipe has been inspected to ensure no threaded connections were used. All threaded connections must be constructed with a minimum of Schedule 80 pipe.

Compliance will be indicated through a visual inspection of inspection, testing and repair documentation. When documentation is kept elsewhere, a signed and dated letter from the Owner indicating that all schedule 40 piping is welded and that all threaded connections are minimum schedule 80.

Recommended Best Practices: Best practice is to standardize all piping systems to a minimum of Schedule 80.

B.2.9 Audit Requirements	**Y/N**
Documentation indicating: • Piping systems are designed and constructed with Schedule 40 and/or Schedule 80 steel or stainless-steel pipe • all Schedule 40 pipe joints are welded • All threaded connections are constructed with a minimum of Schedule 80 pipe	
Meets Best Practices Requirements – All piping systems are a minimum of Schedule 80	
Comments	

B.2.10

B.2.10 Storage Vessel Fittings

Forged steel, stainless steel, or malleable iron fittings are allowed for anhydrous ammonia piping if they are rated for the correct design pressure. No brass, copper, galvanized or zinc fittings shall be used.

Compliance will be indicated through a visual inspection of inspection, testing and repair documentation. When documentation is kept elsewhere, a signed and dated letter from the Owner that all fittings have been sized and rated for pressures they will be exposed to in the piping system. The requirements list/letter will confirm that no brass, galvanized or zinc fittings have been used in the piping system.

B.2.10 Audit Requirements	**Y/N**
Documentation indicating forged steel, stainless steel or malleable iron fittings are rated for the correct design pressure.	

	Documentation indicating no brass, copper, or galvanized zinc materials are used	
	Comments	

B.2.11

B.2.11 Storage Vessel Colour Coding

All piping must be colour-coded yellow for vapour lines, orange for liquid lines and blue for emergency shut-off devices.

Compliance will be indicated through a visual inspection of lines and devices to ensure proper colour-coding.

B.2.11 Audit Requirements	**Y/N**
All piping is colour-coded yellow for vapour lines, orange for liquid lines and blue for emergency shut-off activation devices	
Comments	

B.2.12

B.2.12 Storage Vessel Liquid Piping System

The vessel liquid piping system is equipped with emergency positive shut-off valves that are designed and constructed to activate automatically in the event of a pull-away.

Compliance will be indicated through visual inspection of emergency shut-off devices for a pull-away. Owner / Operator will be asked to describe the activation of the system and demonstrate the functionality of activation devices.

B.2.12 Audit Requirements	**Y/N**
The vessel liquid piping system is equipped with emergency positive shut-off valves	
Explanation of proper function for each emergency activation point and demonstration of functionality	
Comments	

B.2.13

B.2.13 Storage Vessel Non-Stainless-Steel Flex Connectors:

Non-stainless-steel flex connectors when used for differential movement between components have been approved for anhydrous ammonia service and have been hydrostatically tested annually.

Compliance will be indicated through a visual inspection of connectors and of pressure testing documentation.

Recommended Best Practices: Best practice is to install braided stainless-steel flex pipe since it does not require an annual hydrostatic test.

B.2.13 Audit Requirements	**Y/N**
Non-stainless-steel flex connectors used for differential movement between components have been approved for anhydrous ammonia service	
Annual hydrostatic testing of non-stainless-steel flex connectors is documented	

	Meets Best Practices Requirements - Braided stainless-steel flex pipe |
	Comments
B.2.14	**B.2.14 Storage Vessel Gauges** All gauges on the storage vessel and piping system are suitable for anhydrous ammonia service. *Compliance will be indicated through a visual inspection of inspection, testing and repair documentation. When documentation is kept elsewhere, a signed and dated letter from the Owner indicating that the designs and materials of all gauges are appropriate for the service.*
	B.2.14 Audit Requirements | **Y/N** All gauges on the storage vessel and piping system are suitable for anhydrous ammonia service | Documentation indicating that the designs and materials of all gauges are appropriate for the service | Comments
B.2.15	**B.2.15 Storage Vessel Level Gauge** The storage vessel must be equipped with a level gauge to prevent over filling of the vessel. *Compliance will be indicated through a visual inspection of the storage vessel to determine the presence of an approved level gauge.*
	B.2.15 Audit Requirements | **Y/N** The storage vessel is equipped with an approved level gauge | Comments
B.2.16	**B.2.16 Storage Vessel Pressure Gauge** The vessel is equipped with an approved 0-400 psi (0-2,800 kPa) pressure gauge to monitor the pressure of product in the vessel. *Compliance will be indicated through a visual inspection of the storage vessel to determine the presence of an approved pressure gauge.*
	B.2.16 Audit Requirements | **Y/N** The vessel is equipped with an approved 0-400 psi (0-2,800 kPa) pressure gauge | Comments
B.3	**B.3 STORAGE VESSEL HOSES** All hoses at the anhydrous ammonia storage and handling operation have been installed and tested in accordance with Federal and/or Provincial Boiler and Pressure Vessel Regulations/ Standards.

B.3.1

B.3.1 Hoses

All hoses used on an anhydrous ammonia storage vessel are clearly marked as approved for anhydrous ammonia service.

Compliance will be indicated through visual inspection of all hoses on the vessel to ensure they have proper markings indicating approval for anhydrous ammonia service.

B.3.1 Audit Requirements	Y/N
All hoses used on the anhydrous ammonia storage vessel are clearly marked as approved for anhydrous ammonia service	
Comments	

B.3.2

B.3.2 MAWP Storage Vessel Hose Marking

All hoses are marked with their Maximum Allowable Working Pressure (MAWP).

Compliance will be indicated through a visual inspection of all hoses on the vessel to ensure they have proper markings indicating Maximum Allowable Working Pressure.

B.3.2 Audit Requirements	Y/N
All hoses have proper markings indicating Maximum Allowable Working Pressure (MAWP)	
Comments	

B.3.3

B.3.3 Storage Vessel Hose Expiry

All hoses have not exceeded their manufacturer's "remove from service" date.

Compliance will be indicated through a visual inspection of all hoses on the vessel to ensure manufacturer's labelled "remove from service" date has not been exceeded.

B.3.3 Audit Requirements	Y/N
All hoses do not exceed the manufacturer's "remove from service" date	
Comments	

B.3.4

B.3.4 Storage Vessel Hose Couplings

All hoses have been equipped with crimp-on or bolt-on hose couplings designed for anhydrous ammonia service.

Compliance will be indicated through visual inspection of all hoses on the vessel to ensure all hose couplings are either of the bolt-on or crimp-on type.

B.3.4 Audit Requirements	Y/N
All hoses are equipped with crimp-on or bolt-on hose couplings designed for anhydrous ammonia service	
Comments	

B.3.5

B.3.5 STORAGE VESSEL HOSE TESTING

All hoses have been annually inspected, tested and marked in accordance with the CGA 2.1 current version standards.

Compliance will be indicated in two parts. First, all hoses on the vessel will be visually inspected to determine if they have been marked in accordance with standards. Second, the hose testing records will be reviewed to ensure hose testing has been conducted and documented at the appropriate frequency. When documentation is kept elsewhere, a signed and dated letter from the Owner will be sufficient.

B.3.5 Audit Requirements	Y/N
All hoses have been annually inspected, tested and marked in accordance with the CGA 2.1 standards	
Documentation indicates hose testing has been conducted at the appropriate frequency	
Comments	

B.4

B.4 STORAGE VESSEL TRANSFER PUMPS AND COMPRESSORS

The transfer pump or compressor on the anhydrous ammonia storage vessel has been designed and approved for use with anhydrous ammonia.

B.4.1

B.4.1 Storage Vessel Transfer Pump / Compressor

The transfer pump(s) and compressor(s) on the anhydrous ammonia storage vessel must be approved by the manufacturer for anhydrous ammonia service.

Compliance will be based on documentation of the transfer pump or compressor type.

B.4.1 Audit Requirements	Y/N
Documentation shows that the transfer pump(s) and compressor(s) are approved by the manufacturer for anhydrous ammonia service	
Comments	

B.4.2

B.4.2 Storage Vessel Transfer Pump and Compressor Guards

The transfer pump(s) and compressor(s) on the anhydrous ammonia storage vessel have been equipped with guards to protect people from contact with drive pulleys and belts.

Compliance will be indicated through a visual inspection of all transfer pumps or compressors to ensure they are equipped with guards to prevent contact with drive pulleys and belts.

B.4.1 Audit Requirements	Y/N
The transfer pump(s) and compressor(s) on the anhydrous ammonia storage vessel are equipped with guards to protect people from contact with drive pulleys and belts	
Comments	

B.4.3

B.4.3 Storage Vessel Transfer Pump and Compressor Mounting

The transfer pump(s) and compressor(s) must be secured to a mount constructed of non-combustible material.

Compliance will be indicated through a visual inspection of the transfer pump mount or compressor mount to ensure it is constructed of non-combustible materials.

B.4.3 Audit Requirements	Y/N
The transfer pump(s) or compressor(s) are securely mounted on a non-combustible base	
Comments	

B.5

B.5 STORAGE VESSEL LABELS AND MARKINGS

The anhydrous ammonia storage vessel has the required labels and markings.

B.5.1

B.5.1 Storage Vessel Labels

The anhydrous ammonia storage vessel has been clearly labelled with "ANHYDROUS AMMONIA INHALATION HAZARD" in a colour contrasting from the white background of the pressure vessel. Letters must be a minimum of two (2) inches (50 mm) inches in height. Labelling must appear on the two long sides of the vessel.

Compliance will be indicated through a visual inspection of signage on storage vessel to ensure meets requirements.

Recommended Best Practices: Best Practice is 4 inch lettering.

B.5.1 Audit Requirements	Y/N
The anhydrous ammonia storage vessel is clearly labelled with "ANHYDROUS AMMONIA INHALATION HAZARD" in a colour contrasting from the white background of the pressure vessel.	
Letters are a minimum of two inches (2") in height	
Labelling appears on the two long sides of the vessel	
Meets Best Practices Requirements - Letters are a minimum of four inches (4") in height	
Comments	

B.5.2

B.5.2 Storage Vessel Placards:

Current Transportation of Dangerous Goods placards must be mounted on the two long sides of the vessel.

Compliance will be indicated through a visual inspection of signage on storage vessels to ensure signage meets requirements.

Recommended Best Practices: Placards are mounted on the two long sides of the vessel and near the vessel head.

	B.5.2 Audit Requirements	**Y/N**
	Current Transport of Dangerous Goods (TDG) placards are mounted on the two long sides of the vessel	
	Meets Best Practices Requirements - Placards are mounted on the two long sides of the vessel and near the vessel head	
	Comments	

B.5.3

B.5.3 Storage Vessel WHMIS Labels

Current WHMIS labels must be affixed or located everywhere where transfer operations take place.

Compliance will be indicated through a visual inspection of placards on storage vessel to ensure meets requirements.

B.5.3 Audit Requirements	**Y/N**
Current WHMIS labels are affixed where transfer operations take place	
Comments	

B.5.4

B.5.4 Storage Vessel Safe Handling

Safe handling procedures must be located at all transfer points.

Compliance will be indicated through a visual inspection of the label on or near the vessel to ensure the label meets requirements.

B.5.4 Audit Requirements	**Y/N**
Safe handling procedures are located at transfer points	
Comments	

B.5.5

B.5.5 Storage Vessel Emergency First Aid Signage

Emergency first aid procedures must be located at all product transfer points on the vessel.

Compliance will be indicated through a visual inspection of the signage or labelling on or near the vessel to ensure the signage meets requirements.

B.5.5 Audit Requirements	**Y/N**
Emergency first aid procedures are located at all product transfer points on the vessel	
Emergency first aid signage or labelling meets requirements as per User Guide	
Comments	

B6	**B.6 STORAGE VESSEL BLEED-OFF CONTAINMENT** A system for containing anhydrous ammonia (vapour and liquid) produced during uncoupling and bleed-off operations has been installed on the anhydrous ammonia storage vessel.
B.6.1	**B.6.1 Storage Vessel Bleed-off Containment:** A containment tank for bleed-off vapour/liquid is required. *Compliance will be indicated through a visual inspection of the required containment tank and bleed off lines. Bleed off lines must be directed into containment tank.*

B.6.1 Audit Requirements	**Y/N**
System has a bleed-off containment tank and bleed off lines must be directed into containment tank	
Comments	

B.6.2	**B.6.2 Storage Vessel Bleed-off Containment Tank Label** The containment tank for the bleed-off vapour/ liquid containment system has been labelled as bleed-off water or tank in a contrasting colour and with lettering a minimum of two (2) inches in height. *Compliance will be indicated through a visual inspection of the containment tank to ensure the proper labelling.*

B.6.2 Audit Requirements	**Y/N**
The containment tank for the bleed-off vapour / liquid containment system is labelled as bleed-off water or tank in a contrasting colour	
Bleed-off tank label lettering is a minimum of two inches (2”) in height	
Comments	

B.6.3	**B.6.3 Storage Vessel Bleed-off Disposal** A program is in place for the proper disposal of contaminated bleed-off water. *Compliance will be indicated through the presence of a written procedure in the safe operating procedure manual.*

B.6.3 Audit Requirements	**Y/N**
There is a written procedure for the proper disposal of contaminated bleed-off water in the Safe Operating Procedure Manual	
Comments	

B.6.4	**B.6.4 Storage Vessel Bleed-off Containment Tank Venting** The bleed-off containment tank is vented to atmosphere to prevent pressure accumulation. Openings in the tank are no larger than 12 inches in diameter. *Compliance will be indicated through a visual inspection of the containment tank.*

	B.6.4 Audit Requirements	**Y/N**
	Tank openings are no larger than 12 inches in diameter	
	Tank is vented	
	Comments	

B.7

B.7 PERSONAL PROTECTIVE EQUIPMENT

The anhydrous ammonia storage and handling operation is equipped with the required personal protective equipment.

When handling, transferring and or repairing equipment that has potential for release that could cause injury from anhydrous ammonia, all required Personal Protective Equipment (PPE) must be worn. Examples where PPE is required to be worn include:

- While connecting and disconnecting hoses for transfer (Note: when transfer operations are being completed (i.e. pumping is taking place) the operator can remove the PPE when in a safe area).
- While bleeding equipment for transfer and after transfer operations are completed.
- While personnel are performing maintenance, until all anhydrous ammonia has been evacuated from the equipment that is being maintained.

Each employee working with ammonia at an anhydrous ammonia operation must have the following:

B.7.1 Full-face cartridge style respirator complete with extra cartridges.

B.7.2 One- or two-piece anhydrous ammonia resistant suit (for example, neoprene).

B.7.3 Gauntlet style anhydrous ammonia resistant gloves (for example, neoprene).

B.7.4 CSA approved safety boot with a minimum six inch upper.

B.7.5 Individual emergency water bottle filled with clean, fresh water.

Compliance will be indicated through a visual inspection of the safety equipment and interviews with operators to ensure that the proper type and quantity is available on site and used. See User Guide.

B.7 Audit Requirements	**Y/N**
All required personal protective equipment (PPE) is worn when handling, transferring, and or repairing equipment that has potential for release that could cause injury from anhydrous ammonia. Confirmed through observation or interviews with operators	
Each employee working with ammonia at an anhydrous ammonia operation has all the required PPE. Proper type and quantity of PPE is on site	
Comments	

B.8

B.8 EMERGENCY EQUIPMENT

The anhydrous ammonia storage and handling operation is equipped with the required emergency equipment that is accessible and identifiable by all personnel.

In addition to all personal protective equipment, specified in Section B7, the following designated emergency equipment is required:

B.8.1 Two anhydrous ammonia full-face respirators complete with spare canisters/cartridges.

B.8.2 If required by provincial regulations, two self-contained breathing apparatuses (SCBA).

B.8.3 Two one- or two-piece anhydrous ammonia resistant suits.

B.8.4 First Aid kit of a size appropriate for the number of employees at the site.

B.8.5 At minimum, a 10-pound charged ABC fire extinguisher (one located near each anhydrous ammonia transfer point).

B.8.6 Two water supplies are required for emergency requirements. Water supplies may be either safety showers or 200-gallon water troughs filled with clean, fresh water and labelled with a white cross on a green background to designate emergency response water. Troughs must be located within 10 metres of anhydrous ammonia transfer points. Water troughs must be located opposite to each other on either side of the storage vessel, considering the prevailing wind direction. Water must be heated to prevent freezing when transfer operations are occurring.

B.8.7 Emergency eyewash capability.

B.8.8 Two wind indicators must be located at the anhydrous ammonia storage operation in order to determine the wind direction for emergency response purposes.

Compliance will be indicated through a visual inspection of all required emergency response equipment.

B.8 Audit Requirements	**Y/N**
In addition to the PPE as specified in Section B7, the anhydrous ammonia storage and handling operation is equipped with:	
• Two canisters type respirators, or SCBA if required by provincial regulations	
• Ammonia resistant suits	
• First Aid kit	
• Fire extinguisher	
• Two water supplies	
• Emergency eyewash capability	
• Two wind indicators	

	The required emergency equipment is accessible and identifiable by all personnel. |
	Comments

B.9 **B.9 ELECTRICAL CODE COMPLIANCE**

The anhydrous ammonia storage and handling operation's electrical system complies with the requirements of applicable regulations.

B.9.1 **B.9.1 Storage Vessel Grounding**

The anhydrous ammonia vessel has been grounded to mitigate damage from lightning strikes

Compliance will be indicated through a visual inspection of grounding system of the vessel.

B.9.1 Audit Requirements	Y/N
The anhydrous ammonia vessel is grounded	
Comments	

B.9.2 **B.9.2 Electric Motors**

Electric motors must comply with applicable regulatory requirements.

Compliance will be indicated through a signed and dated letter from the current Owner / Operator or person responsible indicating compliance of motors with applicable regulations.

B.9.2 Audit Requirements	Y/N
A signed and dated letter from the current Owner / Operator / person responsible of motors indicates compliance with applicable regulations	
Comments	

B.9.3 **B.9.3 Electrical Enclosures**

Weather-tight electrical enclosures are required for all exterior mounted electrical switches and controls.

Compliance will be indicated through a visual inspection of all enclosures for exterior switches and controls to ensure they are weather-tight.

B.9.3 Audit Requirements	Y/N
A visual inspection of all enclosures for exterior switches and controls to ensure they are weather-tight indicates compliance	
Comments	

B.9.4 **B.9.4 Emergency Heaters GFI**

Heaters for emergency water tanks must be protected by Ground Fault Interrupters (GFI).

Compliance will be indicated through a visual inspection.

B.9.4 Audit Requirements	Y/N
Heaters for emergency water tanks must be protected by Ground Fault Interrupters (GFI)	
Comments	

SUMMARY FOR SECTION B - TO BE COMPLETED BY THE AUDITOR

SECTION B	Yes/No
All Mandatory Items Are Present	
Meets Best Practices	**/6**

SECTION C – TRANSPORT AND APPLICATION EQUIPMENT

This section contains the standards for managing risks associated with anhydrous ammonia mobile transport and application equipment.

Section C – Part 1

Section C – Part 1: Transport Equipment

Highway Transport Vessel or Delivery Vessel – is defined as a highway tank or delivery vessel designed to be used to transport anhydrous ammonia from the manufacturer to the retailer or from the retailer to the farm, excluding nurse wagons and applicator equipment.

C.1

C.1 TRANSPORT VESSEL DESIGN AND CONSTRUCTION

All anhydrous ammonia transport vessels have been designed, constructed, operated, and maintained in accordance with Federal and/or Provincial Boiler and Pressure Vessel Regulations/Standards.

C.1.1

C.1.1 Transport Vessel Design, Construction, Operation and Maintenance

The transport vessels have been designed, constructed, operated and maintained in accordance with the applicable Codes (CSA B620 / B622).

Compliance will be indicated by a visual inspection of the data plate for ASME certification or Transport Canada registration number or proven through documentation. Data plate must be present and legible on all transport vessels.

C.1.1 Audit Requirements	Y/N
Transport vessels are designed, constructed, operated and maintained in accordance with the applicable Code based on ASME and/or Transport Canada certification on the data plate or documentation	
Dataplate is present and legible on all transport vessels.	
Comments	

C.1.2

C.1.2 Metal Identification Plate Affixed to Transport Vessels

Every pressure vessel must have a Metal Identification Plate (Metal I.D.) affixed to the tank.

The Metal I.D. plate must be legible and must have the following information:

- Manufacturer
- Serial Number
- A Canadian Registration Number (CRN), National Board (NB) or Transport Canada Registration Number (TCRN) number

If the Metal I.D. plate is not legible or the information above is not listed on the plate, the tank must be taken out of service until a replacement metal I.D. plate has been made. To make the new Metal I.D. plate the U1A Manufacturer's Data report may have to be consulted and the tank must be able to be proven to be used for anhydrous ammonia service.

Compliance will be indicated through a visual inspection of the Metal I.D. plate.

	C.1.2 Audit Requirements	**Y/N**
	Manufacturer, serial number, and CRN/NB/TCRN number is legible and present on the Metal I.D. plate affixed to the vessel.	
	Comments	

C.1.3

C.1.3 Transport Vessel Maintenance and Testing

Regular scheduled maintenance and testing is required and can be verified through documentation and visual inspection.

Compliance will be indicated through a visual inspection of the markings on the vessel and testing documentation. Inspection frequency is determined as per current B620 standard Table 7.1. Tank pressure and leak testing is determined as per B620 requirements.

C.1.3 Audit Requirements	**Y/N**
Regular scheduled maintenance and testing can be verified through visual inspection of the markings on the vessel and testing documentation	
Comments	

C.2

C.2 TRANSPORT VESSEL VALVES, PIPING AND GAUGES

All valves, piping and gauges on the anhydrous ammonia transport vessels have been designed and constructed in accordance with Federal and/or Provincial Boiler and Pressure Vessel Regulations/Standards.

C.2.1

C.2.1 Valves on Transport Vessel Liquid and Vapour Lines

All liquid and vapour lines must be equipped with an emergency shutoff valve to stop the flow of product in an emergency. Emergency shutoff valves must be operable automatically or remotely.

The activating lever or device on the emergency shut-off must be colour-coded blue or affixed on a blue background.

Compliance will be indicated through a visual inspection of the vessel markings for CSA B620 compliance and through documentation.

C2.1 Audit Requirements	**Y/N**
All liquid and vapour lines are equipped with an emergency shutoff valve to stop the flow of product in an emergency	
Emergency shutoff valves are operable automatically or remotely	
The activating lever or device on the emergency shut-off is colour-coded blue, or affixed on blue background	
Vessel has markings for CSA B620 and documentation showing compliance	
Comments	

C.2.2

C.2.2 Transport Vessel Excess Flow Valves

All transport vessels shall be equipped with excess flow valves on outlet lines that have been correctly sized in accordance with the restriction of the piping system to ensure effective operation of the excess flow valve.

Compliance will be indicated through a visual inspection of the vessel markings for CSA B620 compliance and through documentation.

C2.2 Audit Requirements	**Y/N**
All transport vessels are equipped with excess flow valves on outlet lines	
The excess flow valves on outlet lines have been correctly sized in accordance with the restriction of the piping system to ensure effective operation of the excess flow valve	
Vessel has markings for CSA B620 and documentation showing compliance	
Comments	

C.2.3

C.2.3 Transport Vessel Valves

All valves are suitable for anhydrous ammonia service.

Compliance will be indicated through a visual inspection of the vessel markings for CSA B620 compliance and through documentation.

C.2.3 Audit Requirements	**Y/N**
All valves are suitable for anhydrous ammonia service as indicated by vessel markings for CSA B620 compliance and through documentation	
Comments	

C.2.4

C.2.4 Transport Vessel Hose-end Valves

Hose-end valves have been constructed to prevent accidental opening. This may include the configuration of the valve opening mechanism or the installation of a guard to prevent accidental opening.

Compliance will be indicated through a visual inspection of hose-end valves.

C.2.4 Audit Requirements	**Y/N**
Hose-end valves are constructed to prevent accidental opening	
Comments	

C.2.5

C.2.5 Transport Vessel Safety Relief Valves

Safety relief valves shall conform to applicable regulations. The service life on safety relief valves must not be exceeded.

Compliance will be indicated through a visual inspection of the vessel markings for CSA B620 compliance and through documentation.

C.2.5 Audit Requirements	Y/N
Safety relief valves meet the applicable regulation	
The service life on safety relief valves has not been exceeded	
Vessel has markings for CSA B620 compliance and documentation showing compliance	
Comments	

C.2.6

C.2.6 Transport Vessel Hydrostatic Relief Valves

Hydrostatic relief valves are installed in accordance with applicable regulatory requirements. The service life for the hydrostatic relief valves has not been exceeded.

Compliance will be indicated through a visual inspection of positioning of hydrostatic relief valves in the piping system and a visual inspection of documentary evidence to determine if their service life has been exceeded.

Recommended Best Practices: Best practice is to direct the hydrostatic relief valves away from the operator or tube to a safe discharge location.

C.2.6 Audit Requirements	Y/N
Hydrostatic relief valves have been installed in accordance with the regulatory requirements	
Documentation shows that the service life for the hydrostatic relief valves has not been exceeded	
A visual inspection of positioning of hydrostatic relief valves in the piping system indicates compliance	
Meets Best Practices Requirements – Hydrostatic relief valve is directed away from the operator or tubed to a safe discharge location	
Comments	

C.2.7

C.2.7 Transport Vessel Piping

Piping systems on the transport vessel have been designed and constructed with Schedule 40 and/or Schedule 80 steel or stainless-steel pipe. All Schedule 40 pipe has been inspected to ensure no threaded connections were made. All threaded connections must be constructed with a minimum of Schedule 80 pipe.

Compliance will be indicated through a visual inspection of the vessel markings for CSA B620 compliance and through documentation.

Recommended Best Practices: Best practice is to standardize all piping systems to a minimum of Schedule 80.

C.2.7 Audit Requirements	**Y/N**
Documentary evidence that • piping on the transport vessel has been designed and constructed with Schedule 40 and/or Schedule 80 steel or stainless-steel pipe • Schedule 40 pipe has been inspected to ensure no threaded connections were made • All threaded connections are constructed with a minimum of Schedule 80 pipe.	
A visual inspection and documentary evidence that the vessel markings meet requirements (CSA B620)	
Meets Best Practices Requirements - All piping systems are a minimum of Schedule 80	
Comments	

C.2.8

C.2.8 Transport Vessel Fittings

Forged steel, stainless steel or malleable iron fittings are allowed for anhydrous ammonia piping if they are rated for the correct design pressure. No brass, copper, or galvanized zinc materials shall be used.

Compliance will be indicated through a visual inspection of the vessel markings for CSA B620 compliance and through documentation.

C.2.8 Audit Requirements	**Y/N**
Forged steel, stainless steel or malleable iron fittings are rated for the correct design pressure.	
No brass, copper, or galvanized zinc materials are used	
Vessel has markings for CSA B620 and documentation showing compliance	
Comments	

C.2.9

C.2.9 Transport Vessel Colour Coding

All piping must be colour coded yellow for vapour lines, orange for liquid lines and blue for emergency shut-off activation devices.

Compliance will be indicated through a visual inspection of pipes and devices to ensure proper colour-coding

C.2.9 Audit Requirements	**Y/N**
All piping is colour-coded yellow for vapour lines, orange for liquid lines and blue for emergency shut-of activation devices	
Comments	

C.2.10

C.2.10 Transport Vessel Flex Connector

Hose used as flex connectors for differential movement between components shall be approved for anhydrous ammonia service and must be inspected annually and hydrostatically tested at the required intervals.

Compliance will be indicated by inspection of hose testing records.

C.2.10 Audit Requirements	**Y/N**
Hose used as flex connectors for differential movement between components have been approved for anhydrous ammonia service	
All hoses have been inspected annually and hydrostatically tested at the required intervals	
Inspection of hose testing records indicates compliance	
Comments	

C.2.11

C.2.11 Gauges on Transport Vessel

All gauges on the transport vessel and piping system are suitable for anhydrous ammonia service.

Compliance will be indicated through a visual inspection of the vessel markings for CSA B620 compliance and through documentation.

C.2.11 Audit Requirements	**Y/N**
All gauges on the transport vessel and piping system are suitable for anhydrous ammonia service as indicated by vessel markings for CSA B620 and documentation showing compliance	
Comments	

C.2.12

C.2.12 Transport Vessel Level Gauge

The transport vessel must be equipped with a level gauge to prevent over filling of the vessel.

Compliance will be indicated through a visual inspection of the transport vessel to determine the presence of an approved level gauge.

	C.2.12 Audit Requirements	**Y/N**
	The transport vessel is equipped with an approved level gauge to prevent over filling of the vessel	
	Comments	

C.2.13

C.2.13 Transport Vessel Pressure Gauge

The transport vessel is equipped with an approved 0-400 psi (0-2,800 kPa) pressure gauge to monitor the pressure of product in the vessel.

Compliance will be indicated through a visual inspection of the transport vessel to determine the presence of an approved pressure gauge.

C.2.13 Audit Requirements	**Y/N**
The transport vessel is equipped with an approved 0-400 psi (0-2,800 kPa) pressure gauge	
Comments	

C.3

C.3 TRANSPORT VESSEL HOSES

All hoses on the transport vessel have been installed and tested in accordance with CSA B620 Vessel Regulations.

C.3.1

C.3.1 Transport Vessel Hoses

All hoses used on an anhydrous ammonia transport vessel are clearly marked as approved for anhydrous ammonia service.

Compliance will be indicated through a visual inspection of all hoses on the vessel to ensure proper markings indicating approval for anhydrous ammonia service.

C.3.1 Audit Requirements	**Y/N**
All hoses used on an anhydrous ammonia transport vessel are clearly marked as approved for anhydrous ammonia service	
Comments	

C.3.2

C.3.2 MAWP Transport Vessel Hose Marking

All hoses are marked with Maximum Allowable Working Pressure (MAWP).

Compliance will be indicated through a visual inspection of all hoses on the vessel to ensure proper markings indicating Maximum Allowable Working Pressure.

C.3.2 Audit Requirements	**Y/N**
All hoses are marked with Maximum Allowable Working Pressure (MAWP)	
Comments	

C.3.3

C.3.3 Transport Vessel Hose Expiry

All hoses have not exceeded their manufacturer's "remove from service" date.

Compliance will be indicated through a visual inspection of all hoses on the vessel to ensure manufacturer's labeled "remove from service" date on the hoses has not been exceeded.

C.3.3 Audit Requirements	Y/N
All hoses have not exceeded the manufacturer's labeled "remove from service" date	
Comments	

C.3.4

C.3.4 Transport Vessel Hose Couplings

All hoses have been equipped with crimp-on or bolt-on hose couplings designed for anhydrous ammonia service.

Compliance will be indicated through a visual inspection of all hoses on the vessel to ensure all hose couplings are either of the bolt-on or crimp-on type.

C.3.4 Audit Requirements	Y/N
All hoses are equipped with crimp-on or bolt-on hose couplings which have been designed for anhydrous ammonia service	
Comments	

C.3.5

C.3.5 Transport Vessel Hose Testing

All hoses have been annually inspected, tested and marked in accordance with the CSA B620 current version standards.

Compliance will be indicated in two parts. First, all hoses on the vessel will be visually inspected to determine if they have been marked in accordance with CSA B620 standards. Second, the hose testing records will be reviewed to ensure hose testing has been documented and conducted at the appropriate frequency.

C.3.5 Audit Requirements	Y/N
All hoses are marked in accordance with the CSA B620 standards	
Documentation showing all hoses have been annually inspected and tested	
Comments	

C.4

C.4 TRANSPORT VESSEL TRANSFER PUMPS

The transfer pump on the anhydrous ammonia transport vessel has been designed and approved for use with anhydrous ammonia.

C.4.1

C.4.1 Transport Vessel Transfer Pump for Anhydrous Ammonia

The transfer pump must be approved by the manufacturer for anhydrous ammonia service.

Compliance will be based on documentation of the transfer pump type.

	C.4.1 Audit Requirements	**Y/N**
	Documentation shows that transfer pumps are approved by the manufacturer for anhydrous ammonia service	
	Comments	
C.4.2	**C.4.2 Transport Vessel Transfer Pump Guards** The transfer pump on the anhydrous ammonia transport vessel has been equipped with guards to prevent contact with drive pulleys and belts. *Compliance will be indicated through a visual inspection of all transfer pumps to ensure they are equipped with guards to prevent contact with drive pulleys and belts.*	
	C.4.2 Audit Requirements	**Y/N**
	The transfer pump on the anhydrous ammonia transport vessel is equipped with guards to prevent contact with drive pulleys and belts	
	Comments	
C.4.3	**C.4.3 Transport Vessel Transfer Pump Mounting** The transfer pump must be securely mounted. *Compliance will be indicated through a visual inspection of the transfer pump mount.*	
	C.4.3 Audit Requirements	**Y/N**
	The transfer pump is securely mounted	
	Comments	
C.5	**C.5 TRANSPORT VESSEL LABELS AND MARKINGS** The anhydrous ammonia transport vessel has the required labels and markings.	
C.5.1	**C.5.1 Transport Vessel Labelling** The anhydrous ammonia transport vessel must be clearly marked "ANHYDROUS AMMONIA INHALATION HAZARD" with the required labelling for ammonia in a colour distinct from the white background of the pressure vessel. Letters must be a minimum of two (2) inches (50 mm) inches in height. Labelling must appear on the two long sides of the vessel. <u>Recommended Best Practices:</u> Best Practice is 4-inch lettering. *Compliance will be indicated through a visual inspection of signage on storage vessel to ensure meets requirements.*	
	C.5.1 Audit Requirements	**Y/N**
	The anhydrous ammonia transport vessel is clearly labelled with "ANHYDROUS AMMONIA INHALATION HAZARD" in a colour contrasting from the white background of the pressure vessel.	
	Letters are a minimum of two inches (2") in height.	

	Labelling appears on the two long sides of the vessel	
	Meets Best Practices Requirements - Letters are a minimum of four inches (4”) in height	
	Comments	

C.5.2

C.5.2 Transport Vessel Placards

Transport vessels must display proper placards as per Transport Canada’s Transportation of Dangerous Goods Regulations.

Compliance will be indicated through a visual inspection of signage on transport vessels to ensure signage meets requirements.

C.5.2 Audit Requirements	**Y/N**
Current Transportation of Dangerous Goods (TDG) placards are mounted on all four sides of the units as required by regulations	
Comments	

C.5.3

C.5.3 Transport Vessel Pressure Test Labels

CSA B620 Pressure test dates are on the vessel and match documentation.

Compliance will be indicated through a visual inspection of pressure test labelling on transport vessels.

C5.3 Audit Requirements	**Y/N**
Pressure test dates are on the vessel	
Comments	

C.5.4

C.5.4 Transport Vessel Safe Handling Procedures

Safe handling procedures must be located on the vessel.

Compliance will be indicated through a visual inspection of the label on the vessel to ensure the label meets requirements.

C.5.4 Audit Requirements	**Y/N**
Safe handling procedures are located on the vessel	
Comments	

C.5.5

C.5.5 Transport Vessel Emergency First Aid Procedures

Emergency first aid procedures must be located on the vessel.

Compliance will be indicated through a visual inspection of the labelling on the vessel to ensure the labelling meets requirements.

C.5.5 Audit Requirements	**Y/N**
Emergency first aid procedures are located on the vessel	
Emergency first aid labelling meets requirements as per User Guide	
Comments	

C.5.6	**C.5.6 Transport Vessel Emergency Contact** Emergency contact phone number must be legible from both sides of the tank and in a contrasting colour from the vessel. *Compliance will be indicated through a visual inspection of labels and markings on the vessel to ensure they meet requirements.*

C.5.6 Audit Requirements	**Y/N**
Emergency contact phone number is legible from both sides of the tank and in a contrasting colour from the vessel	
Comments	

C.6

C.6 TRANSPORT VEHICLE EMERGENCY AND PERSONAL PROTECTIVE EQUIPMENT

The anhydrous ammonia transport vessel is equipped with the required emergency and personal protective equipment.

(a) Each transport vehicle must have the following:

C.6.1 First Aid kit

C.6.2 At minimum, 3A 10BC (5 lb) fire extinguisher with nozzle

C.6.3 Minimum of 20 liters (5 gallons) of clean, fresh emergency water

C.6.4 Roadside emergency kit

C.6.5 Communication device (e.g. cell phone or two-way radio)

(b) Each transport operator must be supplied their own Personal Protective Equipment (PPE) as follows and be instructed on its use, limitations, inspection, and maintenance.

C.6.6 Full-face cartridge style respirator complete with extra cartridges

C.6.7 One- or two-piece anhydrous ammonia resistant suit (for example, neoprene)

C.6.8 Gauntlet style anhydrous ammonia resistant gloves (for example, neoprene)

C.6.9 CSA approved safety boot with a minimum six inch upper

C..6.10 Individual emergency water bottle filled with clean, fresh water

(c) Transport Operators are required to wear PPE when handling, transferring and or repairing equipment that has potential for ammonia release that could cause injury from anhydrous ammonia. PPE is required to be worn

- Any time a valve is being actuated (being turned on or off)
- When a hose is being handled
- When performing a connection or disconnection and/or performing any bleed down of connections
- When troubleshooting or conducting maintenance operations on pressurized or potentially pressurized equipment such as meters or flow meters on application equipment.

(Note: After connection and while filling there is no requirement for the operator to be fully dressed, for example while monitoring the transferring process, completing an inspection of the unit being filled, or updating documentation.)

Compliance will be indicated through a visual inspection of transport vehicle emergency equipment and transport operator personal protective equipment and actions to ensure proper type, quantity, and usage of PPE.

C.6 Audit Requirements	**Y/N**
Each transport vehicle has at a minimum the following emergency response equipment: First Aid kit, 3A 10BC 5 lb fire extinguisher, 20 L (5 gallons) clean water, road-side emergency kit, and a communication device (Items 0-0)	
PPE as specified in Section 0 - 0 (Full-face respirator, spare respirator cartridge/cannister, anhydrous ammonia resistant suit, anhydrous ammonia resistant gauntlet gloves, CSA approved safety boots with a minimum 6” upper, and a water bottle containing clean, fresh water)	
Full PPE worn when valves being turned on or off; during connections/disconnections or connection bleed downs; and when conducting maintenance operations on pressurized or potentially pressurized equipment	
Comments	

C.7

C.7 TRANSPORT VEHICLE CERTIFICATION

Commercial licenced vehicles transporting anhydrous ammonia requiring Commercial Vehicle Safety Alliance (CVSA) inspection must have current certification. Other vehicles must pass an annual safety inspection.

Compliance will be indicated through an examination of the current CVSA safety sticker on vehicles or trailers requiring that inspection and maintenance records that indicate that other vehicles transporting anhydrous ammonia at the operation and not requiring CVSA certification have passed a current annual safety inspection.

C.7 Audit Requirements	**Y/N**
Commercial licenced vehicles transporting anhydrous ammonia have current Commercial Vehicle Safety Alliance (CVSA) certification as required	
Based on maintenance records vehicles transporting anhydrous ammonia and not requiring CVSA certification have passed a current annual safety inspection	
Comments	

C.8	C.8 SECURITY FOR ANHYDROUS AMMONIA TRANSPORT VESSELS

The anhydrous ammonia transport vessel is secured in accordance with the security protocol.

All transport vessels at the anhydrous ammonia operation comply with the following measures to prevent unauthorized access to the product:

C.8.1 Securing While in Transport

Drivers responsible for the transportation of anhydrous ammonia can stop for short break periods (less than one (1) hour). However, main access valves on anhydrous ammonia transport vessels must be secured if the driver is out of visual contact with the vessel for more than 30 minutes.

C.8.2 Parking Near Evacuation-Sensitive Occupancies

Anhydrous ammonia transport vessels must not be parked within 500 metres of high occupancy facilities such as hospitals, schools, shopping malls, daycare centres and senior care homes, unless the vessel has been emptied and de-pressured.

C.8.3 Storage of Transport Vessels for Maintenance

In addition to the requirements defined in C8.2 in this section, transport vessels cannot be stored, other than for maintenance periods not exceeding 72 hours, unless at an Ammonia Code compliant site, or the vessels have been emptied and de-pressurized.

C.8.4 Mobile Ammonia Vessels

Delivery units must be stored at a certified site within a locked, fenced area that complies with the Code fencing requirements (see Section A.4.1) or they have been emptied and de-pressurized. Storing vessels inside a roofed structure is prohibited unless the vessel has been emptied and depressurized.

Compliance will be indicated by examination of a signed and dated standard operating procedures.

C.8 Audit Requirements	Y/N
All transport vessels at the anhydrous ammonia operation comply with the following measures to prevent unauthorized access to the product: C.8.1 - Securing while in transport C.8.2 - Parking near evacuation-sensitive occupancies C.8.3 - Off-site storage of transport vessels C.8.4 - Mobile ammonia vessels must be stored at a certified site within a fenced area when pressurized	
There is proof of signed and dated standard operating procedures	
Comments	

SECTION C - Part 2	**SECTION C – PART 2: APPLICATION EQUIPMENT** For the purposes of this section, the following equipment must comply with the standards defined in this section: **Nurse or Applicator Tank** – nurse tanks or applicator tanks are anhydrous ammonia tanks that are mounted on a farm wagon or agricultural implement and are designed to be used in the field for applying anhydrous ammonia. This section applies only to nurse or applicator tanks.
C.9	**C.9 NURSE AND APPLICATOR TANK DESIGN AND CONSTRUCTION** All anhydrous ammonia nurse tanks and applicator tanks have been designed, constructed, operated and maintained in accordance with Federal and/or Provincial Boiler and Pressure Vessel Regulations/Standards.
C.9.1	**C.9.1 Nurse and Applicator Tanks** The nurse tanks and applicator tanks have been designed, constructed, operated and maintained in accordance with the applicable Codes (CSA B620 / B622). *Compliance will be indicated by visual inspection of data plate for ASME / Transport Canada certification and through documentation.*

C.9.1 Audit Requirements	**Y/N**
The nurse tanks and applicator tanks are designed and constructed in accordance with the applicable Codes	
A visual inspection of data plate for ASME certification and through documentation showing tanks meet requirements	
Comments	

C.9.2	**C.9.2 Metal Identification Plate Affixed to Nurse and Applicator Tanks** Every pressure vessel must have a Metal Identification Plate (Metal I.D.) affixed to the tank. The Metal I.D. plate must be legible and must have the following information: • Manufacturer • Serial Number • A Canadian Registration Number (CRN), National Board (NB) or Transport Canada Registration Number (TCRN) number If the Metal I.D. plate is not legible or the information above is not listed on the plate, the tank must be taken out of service until a replacement Metal I.D. plate has been made. To make the new Metal I.D. plate the U1A Manufacturer's Data report may have to be consulted and the tank must be able to be proven to be used for anhydrous ammonia service. *Compliance will be indicated through a visual inspection of the Metal I.D. plate.*

C.9.2 Audit Requirements	**Y/N**
Manufacturer, serial number, and CRN/NB/TCRN number is legible and present on the Metal I.D. plate affixed to the vessel.	
Comments	

C.9.3

C.9.3 Nurse and Applicator Tank Maintenance and Testing

All nurse and applicator tanks have received scheduled maintenance and testing in accordance with regulatory requirements.

Compliance will be indicated through a visual inspection of vessel markings and through documentation. Inspection frequency is determined by CSA B620 Table 7.1. Tank pressure and leak testing is determined as per B620 requirements.

C.9.3 Audit Requirements	Y/N
All nurse and applicator tanks have received scheduled maintenance and testing in accordance with regulatory requirements	
A visual inspection of the vessel markings and documentation has met requirements	
Comments	

C.10

C.10 NURSE AND APPLICATOR TANKS VALVES, PIPING, AND GAUGES

All valves, piping and gauges on the anhydrous ammonia nurse and applicator tanks have been designed and constructed in accordance with Federal and/or Provincial Boiler and Pressure Vessel Regulations/Standards.

C.10.1

C.10.1 Nurse and Applicator Tank Withdrawal Valve

All nurse and applicator tanks are equipped with fill or withdrawal valves that incorporate excess flow valves that are correctly sized.

Compliance will be indicated through a visual inspection of vessel markings for CSA B260 compliance and through documentation.

C.10.1 Audit Requirements	Y/N
All nurse and applicator tanks are equipped with fill or withdrawal valves that incorporate excess flow valves that are correctly sized	
The excess flow valves on outlet lines have been correctly sized in accordance with the restriction of the piping system to ensure effective operation of the excess flow valve	
Vessel has markings for CSA B620 and documentation showing compliance	
Comments	

C.10.2

C.10.2 Nurse Tank and Applicator Tank Valves

All valves are suitable for anhydrous ammonia service.

Compliance will be indicated through a visual inspection of the vessel markings for CSA B620 compliance and through documentation.

C.10.2 Audit Requirements	Y/N
All valves are suitable for anhydrous ammonia service as indicated by vessel markings for CSA B620 compliance and through documentation	
Comments	

C.10.3

C.10.3 Nurse and Applicator Tank Safety Relief Valve

Safety relief valves shall conform to applicable regulations. Valves shall be rated in accordance with tank design pressure. The service life on safety relief valves must not be exceeded.

Compliance will be indicated through a visual inspection of the vessel markings for CSA B620 compliance and through documentation.

C.10.3 Audit Requirements	**Y/N**
Safety relief valves meet the applicable regulation	
Vessel has markings for CSA B620 compliance and documentation showing compliance	
The service life on safety relief valves has not been exceeded	
Comments	

C.10.4

C.10.4 Nurse and Applicator Tank Hydrostatic Relief

Hydrostatic relief valves are installed in accordance with applicable regulatory requirements. The service life for the hydrostatic relief valves has not been exceeded.

Compliance will be indicated through a visual inspection of the positioning of the hydrostatic relief valves in the piping system, and a visual inspection of documentary evidence to determine if their service life has been exceeded.

Recommended Best Practices: Best practice is to direct the hydrostatic relief valves away from the operator or tubed to a safe discharge location.

C.10.4 Audit Requirements	**Y/N**
Hydrostatic relief valves have been installed in accordance with the regulatory requirements	
Documentation shows that the service life for the hydrostatic relief valves has not been exceeded	
A visual inspection of positioning of hydrostatic relief valves in the piping system indicates compliance	
Meets Best Practices Requirements – Hydrostatic relief valve is directed away from the operator or tubed to a safe discharge location	
Comments	

C.10.5

C.10.5 Nurse Tank Emergency Discharge Control

a) All single nurse tanks with a capacity of 10,000 litres (2,642 USWG) or more, and
b) all multiple nurse tank configurations, and
c) all tanks manufactured on or after January 12, 2018, must be equipped with emergency discharge control as per CSA B620.

Compliance will be indicated by inspection of the equipment and demonstration of functionality. Documentation Certificate of Compliance must be referenced for compliance.

Recommended Best Practices: Best practice is all tanks are equipped with emergency discharge control

C.10.5 Audit Requirements	**Y/N**
All single nurse tanks with a capacity of 10,000 liters (2,642 USWG) or more, any multiple nurse tanks configurations, and tanks manufactured after January 12, 2018, are equipped with emergency discharge control as per CSA B620.	
An inspection of the equipment and documentation, and a demonstration that functionality has met requirements.	
Meets Best Practices Requirements - All tanks are equipped with emergency discharge control	
Comments	

C.10.6

C.10.6 Nurse and Applicator Tank Piping

Any piping on nurse or applicator tanks has been designed and constructed with Schedule 40 and/or Schedule 80 steel or stainless steel pipe. All Schedule 40 pipe has been inspected to ensure no threaded connections were made. All threaded connections must be constructed with a minimum of Schedule 80 pipe.

Compliance will be indicated through a visual inspection of the vessel markings for CSA B620 compliance and through documentation.

Recommended Best Practices: Best practice is to standardize all the piping systems to a minimum of Schedule 80.

C.10.6 Audit Requirements	**Y/N**
Documentary evidence that • piping on nurse of applicator tanks has been designed and constructed with Schedule 40 and/or Schedule 80 steel or stainless steel pipe • Schedule 40 pipe has been inspected to ensure no threaded connections were made • All threaded connections are constructed with a minimum of Schedule 80 pipe	

	A visual inspection and documentary evidence that the vessel markings meet requirements (CSA B620)	
	Meets Best Practices Requirements - all piping systems are a minimum of Schedule 80	
	Comments	

C.10.7

C.10.7 Nurse and Applicator Tank Fittings

Forged steel, stainless steel, or malleable iron fittings are allowed for anhydrous ammonia piping if they are rated for the correct design pressure. No brass, copper, galvanized or zinc fittings shall be used.

Compliance will be indicated through a visual inspection of the vessel markings for CSA B620 compliance and through documentation.

C.10.7 Audit Requirements	**Y/N**
Forged steel, stainless steel or malleable iron fittings are rated for the correct design pressure	
No brass, copper, or galvanized zinc materials are used	
Vessel has markings for CSA B620 and documentation showing compliance	
Comments	

C.10.8

C.10.8 Nurse and Applicator Tank Colour Coding

All piping must be colour-coded yellow for vapour lines, orange for liquid lines and blue for emergency shut-off activation devices.

Compliance will be indicated through a visual inspection of lines and devices to ensure proper colour coding.

C.10.8 Audit Requirements	**Y/N**
All piping is color-coded yellow for vapour lines, orange for liquid lines and blue for emergency shut-off activation devices	
Comments	

C.10.9

C.10.9 Nurse and Applicator Tank Hose Used for Piping

All hoses used as part of the piping system on nurse tanks are suitable for ammonia service, have not exceeded their “remove from service” date, shall be inspected annually and shall be pressure tested at the required intervals.

Compliance will be indicated by inspection of hoses on nurse tanks and/or hose test records.

C.10.9 Audit Requirements	**Y/N**
All hoses have not exceeded their “remove from service” date	
All hoses have been inspected annually and have been pressure tested at the required intervals	

	An inspection of hoses on nurse tanks and/or hose test records displays requirements are met
C.10.10	**C.10.10 Nurse and Applicator Tank Gauges** All gauges on the nurse and applicator tanks and piping system are suitable for anhydrous ammonia service. *Compliance will be indicated through a visual inspection of the vessel markings for B620 compliance or through documentation.*

C.10.10 Audit Requirements	**Y/N**
All gauges on the nurse and applicator tanks and piping system are suitable for anhydrous ammonia service	
Documentation / visual inspection of the vessel markings has determined requirements (B620) has been met	
Comments	

C10.11	**C.10.11 Nurse and Applicator Tank Liquid Level** The nurse and applicator tanks are equipped with a means of determining the liquid level in the vessel. The vessel must be equipped with a magnetic float gauge and a fixed liquid level gauge. *Compliance will be indicated through a visual inspection of the nurse and applicator tanks to determine the presence of an approved level gauge.*

C.10.11 Audit Requirements	**Y/N**
The vessel is equipped with an approved magnetic float gauge and a fixed liquid level gauge on the nurse and applicator tanks	
Comments	

C10.12	**C.10.12 Nurse and Applicator Tank Pressure Gauge** The nurse and applicator tanks are equipped with an approved 0-400 psi (0-2,800 kPa) pressure gauge to monitor the pressure of the product in the tank. *Compliance will be indicated through a visual inspection of nurse and applicator tanks to determine the presence of an approved pressure gauge.*

C.10.12 Audit Requirements	**Y/N**
The nurse and applicator tanks are equipped with an approved 0-400 psi (0-2,800 kPa) pressure gauge	
Comments	

C.11	**C.11 NURSE AND APPLICATOR TANK HOSES** **ALL HOSES ON THE ANHYDROUS AMMONIA NURSE AND APPLICATOR TANKS HAVE BEEN INSTALLED AND TESTED IN ACCORDANCE WITH CSA 620 VESSEL REGULATIONS**

C.11.1

C.11.1 Nurse and Applicator Tank Approved Hose

All hoses used on anhydrous ammonia nurse and applicator tanks are clearly marked as approved for anhydrous ammonia service.

Compliance will be indicated through a visual inspection of all hoses on the vessel to ensure they have proper markings indicating approval for anhydrous ammonia service.

C11.1 Audit Requirements	**Y/N**
All hoses used on anhydrous ammonia nurse and applicator tanks are clearly marked as approved for anhydrous ammonia service	
Comments	

C.11.2

C.11.2 Nurse and Applicator Tank MAWP Transport Vessel Hose Marking

All hoses are marked with their Maximum Allowable Working Pressure (MAWP).

Compliance will be indicated through a visual inspection of all hoses on the vessel to ensure they have proper markings indicating the Maximum Allowable Working Pressure.

C.11.2 Audit Requirements	**Y/N**
All hoses are marked with their Maximum Allowable Working Pressure (MAWP)	
Comments	

C.11.3

C.11.3 Nurse Tank and Applicator Tank Hose Expiry

All hoses have not exceeded their manufacturer's "remove from service" date.

Compliance will be indicated through a visual inspection of all hoses to ensure manufacturer's labelled "remove from service" date on the hoses has not been exceeded.

C.11.3 Audit Requirements	**Y/N**
All hoses have not exceeded their manufacturer's "remove from service" date	
Comments	

C.11.4

C.11.4 NURSE AND APPLICATOR TANK HOSE-END VALVE

Hose-end valves have been constructed and/or guarded to prevent accidental opening. This may include the configuration of the valve opening mechanism or the installation of a guard.

Compliance will be indicated by a visual inspection of hose-end valves.

C.11.4 Audit Requirements	**Y/N**
Hose-end valves have been constructed and/or guarded to prevent accidental opening	
Comments	

C.11.5

C.11.5 NURSE AND APPLICATOR TANK HOSE COUPLINGS

All hoses have been equipped with crimp-on or bolt-on hose couplings designed for anhydrous ammonia service.

Compliance will be indicated through a visual inspection of all hoses on the vessel to ensure all hose couplings are either of the bolt-on or crimp-on type

C.11.5 Audit Requirements	Y/N
All hoses have been equipped with crimp-on or bolt-on hose couplings designed for anhydrous ammonia service	
Comments	

C.11.6

C.11.6 Nurse and Applicator Tank Hose Testing

All hoses on nurse tanks and applicators have been annually tested and marked in accordance with the CSA B620 current version standards.

Compliance will be indicated in two parts. First, all nurse and applicator tank hoses will be visually inspected to determine if they have been marked in accordance with CSA B620 standards. Second, the hose testing records will be reviewed to ensure hose testing has been documented and conducted at the appropriate frequency.

C.11.6 Audit Requirements	Y/N
All hoses are marked in accordance with the CSA B620 standards	
Documentation showing all hoses have been annually inspected and tested	
Comments	

C.11.7

C.11.7 Nurse and Applicator Tank Breakaway Coupler

Breakaway couplers must be installed on all applicators that are equipped to tow a nurse tank.

Compliance will be indicated through a visual inspection of applicators equipped for towing of nurse tanks to determine if they are equipped with a breakaway coupler.

C.11.7 Audit Requirements	Y/N
Breakaway couplers are installed on all applicators that are equipped to tow a nurse tank	
Comments	

C.12

C.12 NURSE TANK AND APPLICATOR TANK VESSEL LABELS AND MARKINGS

Anhydrous ammonia nurse and applicator tanks have the labels and markings as designated by regulatory requirements.

C.12.1

C.12.1 Nurse and Applicator Tank Labels and Markings

Nurse and applicator tanks must be clearly marked “ANHYDROUS AMMONIA INHALATION HAZARD” with the required labelling for ammonia in a colour distinct from the white background of the pressure vessel. Letters must be a minimum of two (2) inches (50 mm) in height. Labelling must appear on the two long sides of the vessel.

Compliance will be indicated through a visual inspection of signage on nurse or applicator tanks to ensure signage meets requirements.

Recommended Best Practices - Letters on ammonia nurse and applicator tanks are a minimum of four (4) inches in height.

C.12.1 Audit Requirements	**Y/N**
The nurse and applicator tanks is clearly labelled with "ANHYDROUS AMMONIA INHALATION HAZARD" in a colour contrasting from the white background of the pressure vessel.	
Letters are a minimum of two inches (2") (50 mm) in height	
Labelling appears on the two long sides of the vessel	
Meets Best Practices Requirements - Letters are a minimum of four inches (4") in height	
Comments	

C.12.2

C.12.2 Nurse and Applicator Tank Placards

Nurse and applicator tanks must display proper placards as per Transport Canada's *Transportation of Dangerous Goods Regulations.*

Compliance will be indicated through a visual inspection of signage on nurse or applicator tanks to ensure signage meets requirements.

C.12.2 Audit Requirements	**Y/N**
Current Transportation of Dangerous Goods (TDG) placards are mounted on all four sides of the units as required by regulations	
Comments	

C.12.3

C.12.3 Nurse and Applicator Tank Pressure Testing Labels

The CSA B620 inspection and testing decals on the vessel match the documentation.

Compliance will be indicated through a visual inspection of pressure test labelling on nurse or applicator tanks.

C.12.3 Audit Requirements	**Y/N**
Inspection and testing decals on the vessel match the documentation.	
Comments	

C.12.4

C.12.4 Nurse and Applicator Tank Safe Handling and Emergency First Aid Procedures

Safe handling procedures and emergency first aid procedures must be located on the tank.

Compliance will be indicated through a visual inspection of label on the tank to ensure the label meets requirements as per User Guide.

	C.12.4 Audit Requirements	**Y/N**
	Safe handling procedures and emergency first aid procedures are located on the tank	
	Comments	
C.12.5	**C.12.5 Nurse and Applicator Tank Slow Moving Vehicle Signage** Slow moving vehicle sign on the rear of the tank. *Compliance will be indicated through a visual inspection of signage on nurse or applicator tanks to ensure signage meets requirements.*	
	C.12.5 Audit Requirements	**Y/N**
	Slow moving vehicle sign located on rear of the vessel	
	Comments	
C.12.6	**C.12.6 Nurse and Applicator Tank Emergency Contact Phone Numbers** Emergency contact phone numbers must be located on both sides of the tank and in a contrasting colour from the vessel. *Compliance will be indicated through a visual inspection of labels and markings on the tanks to ensure they meet requirements.*	
	C.12.6 Audit Requirements	**Y/N**
	Emergency contact phone number is legible from both sides of the tank and in a contrasting colour from the vessel	
	Comments	
C.13	**C.13 NURSE AND APPLICATOR TANK PERSONAL PROTECTIVE EQUIPMENT** Anhydrous ammonia nurse and applicator tanks are equipped with the required personal protective equipment for use by the farmer and their employees. Each nurse and applicator unit must have the following: C.13.1 Indirect or non-vented goggles C.13.2 Anhydrous ammonia resistant gloves C.13.3 Individual water bottle with clean, fresh water C.13.4 Minimum of five (5) gallons of clean, fresh emergency water. Twin nurse tank units must have as a minimum, two five (5) gallon water tanks, one on each side. *Compliance will be indicated through a visual inspection of safety equipment to ensure proper type and quantity.* Recommended Best Practices - Best practice is to have a minimum of 10 gallons of emergency water.	

	C.13 Audit Requirements	**Y/N**
	Compliance has been indicated through a visual inspection of each nurse/applicator tank safety equipment to ensure proper type and quantity	
	Meets Best Practices Requirements - Minimum of 10 gallons of emergency water	
	Comments	

C.14

C.14 NURSE AND APPLICATOR TANK TOW VEHICLE REQUIREMENTS

All vehicles used for towing anhydrous ammonia nurse wagons to and from the point of application of the product must meet minimum capacity requirements in accordance with the size of nurse tank they are towing.

In addition to regulatory requirements, tow vehicles used for transporting anhydrous ammonia nurse wagons must be rated for the size and weight of the nurse tank they are towing. Refer to requirements specified in the applicable Highway Traffic Act.

Commercial licenced vehicles transporting anhydrous ammonia requiring Commercial Vehicle Safety Alliance (CVSA) inspection must have current certification. Other vehicles must pass an annual safety inspection.

Compliance will be indicated through a signed and dated requirements list/letter from the current Owner / Operator or person responsible indicating that all tow vehicles have met minimum requirements in accordance with the size of the nurse tank they are towing, or through inspection of corporate policies/training records.

Compliance will be indicated through a visual examination of the current CVSA safety sticker on commercially licenced vehicles transporting ammonia and through documentary evidence of inspection and maintenance records to indicate that other vehicles transporting anhydrous ammonia at the operation and not requiring CVSA certification have passed a current annual safety inspection.

C.14 Audit Requirements	**Y/N**
The Owner / Operator / person responsible has displayed a signed and dated requirements list/letter indicating that all tow vehicles have met minimum requirements which are in accordance with the size of the nurse tank being towed, or through inspection of corporate policies / training records	
A visual inspection that CVSA safety stickers appear on commercially licenced vehicles transporting anhydrous ammonia and documentary evidence that all other vehicles transporting anhydrous ammonia at the operation not requiring CVSA certification have passed a current annual safety inspection	
Comments	

C.15	**C.15 LIGHTING REQUIREMENTS FOR TOWING NURSE AND APPLICATOR TANKS** All anhydrous ammonia tanks or applicators being towed by licenced vehicles on roads must be equipped with lighting in accordance with the applicable Highway Traffic Act or Transport Regulation. If the size or configuration of the tanks or applicators being towed prevents following drivers from seeing the signal and/or brake lights of the towing vehicle, the tank or applicator must have the following equipment to provide warning to following drivers (either permanently or temporarily mounted): (a) Stop lights (b) Turn signal lights (c) Tail lights (d) Reflectors *Compliance will be indicated through visual inspection and functional demonstration of the equipment by the current Owner / Operator or person responsible indicating that all tow vehicles have been equipped with lighting (stop lights, turn signal lights, taillights) if following drivers cannot see tow vehicle signal and brake lights.*

C.15 Audit Requirements	**Y/N**
Installation of brake, signal and tail lights, as well as function demonstration of these lights whether temporarily or permanently mounted on the tank or applicator	
Comments	

C.16	**C.16 SECURITY FOR ANHYDROUS AMMONIA NURSE AND APPLICATOR TANKS** All anhydrous ammonia nurse and applicator tanks are secured in accordance with the security protocol. **C.16 Nurse and Applicator Tanks Security Protocol** Nurse and applicator tanks at the anhydrous ammonia operation comply with the following measures to prevent unauthorized access to anhydrous ammonia:
C.16.1	**C.16.1 Securing Nurse and Applicator Tanks While in Transport** Drivers responsible for the transportation of anhydrous ammonia nurse and applicator tanks can stop for short break periods (less than one (1) hour). However, main access valves on anhydrous ammonia nurse and applicator tanks must be secured if the driver is out of visual contact for more than 30 minutes. *Compliance is demonstrated through review of Safe Operating Procedure.*

C.16.1 Audit Requirements	**Y/N**
An examination of standard operating procedures indicates compliance	
Comments	

C.16.2

C.16.2 Nurse and Applicator Tank Parking near Evacuation-Sensitive Occupancies

Anhydrous ammonia nurse and applicator tanks must not be parked within 500 metres of high occupancy facilities such as hospitals, schools, shopping malls, daycare centres and senior care homes unless the vessels have been emptied and de-pressured.

Compliance will be indicated through an examination of Standard Operating Procedures.

C.16.2 Audit Requirements	**Y/N**
An examination of standard operating procedures indicates compliance	
Comments	

C.16.3

C.16.3 Storage of Nurse and Applicator Tanks

a) In addition to the requirements defined in 0 in this section, nurse and applicator tanks cannot be stored, other than for maintenance periods not exceeding 72 hours, wunless they are stored at an Ammonia Code-compliant site or the tanks have been emptied and de-pressurized.

b) In addition, nurse and applicator tanks must be secured against unauthorized access based on requirements in section A.4.1, or they have been emptied and de-pressurized.

Compliance will be indicated through an examination of Standard Operating Procedures.

C.16.3 Audit Requirements	**Y/N**
An examination of standard operating procedures indicates compliance	
Comments	

C.16.4

C.16.4 Securing of Nurse and Applicator Tanks at Farm Locations

Farmers must be instructed on the proper measures to take to secure nurse and applicator tanks at farm locations. These instructions must include:

a) Nurse or applicator tanks must have their main access valves secured while they are being stored overnight at a farm location or in the field. Storing the vessels inside a roofed structure is prohibited unless the vessel has been emptied and de-pressurized.

b) Nurse or applicator tanks that remain in the field overnight should be positioned to discourage tampering.

Note: For Farm sites with fixed storage and certified under the Ammonia Code of Practice, reference specific requirement on pages 9 and 10.

Compliance will be indicated through an examination of Standard Operating Procedures and training records.

	C.16.4 Audit Requirements | **Y/N** An examination of standard operating procedures or end user training records indicates compliance | Comments
C.17	**C.17 NURSE AND APPLICATOR RUNNING GEAR INSPECTION AND MAINTENANCE PROTOCOL** All nurse and applicator running gear shall be inspected and maintained to prevent running gear failures.
C.17.1	**C.17.1 Nurse and Applicator Running Gear Inspection** Nurse and applicator running gear shall be visually inspected daily during operational periods and documented. *Compliance will be indicated through a review of the preventive maintenance program and records.* **C.17.1 Audit Requirements** | **Y/N** Nurse and applicator running gear has been visually inspected daily during operational periods as evidenced by written inspection records | Comments
C.17.2	**C.17.2 Nurse and Applicator Running Gear Preventative Maintenance Program** A preventive maintenance program shall be in place for nurse and applicator running gear. Preventive maintenance programs shall include detailed visual inspection of tires, wheel bearings, frames, reaches, hitches and tank mountings. Inspections shall be completed seasonally, and records kept. *Compliance will be indicated through a review of the preventive maintenance program and records.* **C.17.2 Audit Requirements** | **Y/N** Preventive maintenance programs include detailed visual inspection of tires, wheel bearings, frames, reaches, hitches and tank mountings | Inspections have been completed seasonally and records kept | Comments
C.17.3	**C.17.3 Physical Inspection of Undercarriage** A preventive maintenance program shall include a physical inspection including disassembly of wheel bearings, kingpins, frames, reaches, hitches and tank mountings. Inspections shall be completed every five (5) years and records kept. *Compliance will be indicated through a review of the preventive maintenance program and records.*

	C.17.3 Audit Requirements	**Y/N**
	A preventative maintenance program includes a physical inspection including disassembly of wheel bearings, kingpins, frames, reaches, hitches, and tank mountings.	
	Inspections have been completed every five (5) years and records kept	
	Comments	

C.18

C.18 MOBILE TANK DATABASE PROTOCOL

All sites are required to submit data electronically to Fertilizer Canada on all nurse and applicator tanks and transport delivery unit tanks owned by the retail site and for all producer-owned nurse and applicator tanks. Data is to be submitted every two years in advance of being audited/re-audited for certification under the Ammonia Code of Practice.

Please contact manager@awsa.ca for a copy of the data reporting template.

C.18.1

C.18.1 Retail-Owned Nurse Tanks/Applicator Tanks

Data has been submitted to Fertilizer Canada for all retail-owned nurse tanks/applicator tanks within the current calendar year.

Compliance will be verified by checking the online reporting system for a submission by the site within the current calendar year.

C.18.1 Audit Requirements	**Y/N**
Retail-owned nurse and applicator tanks data has been submitted to Fertilizer Canada within the current calendar year.	
Comments	

C.18.2

C.18.2 Producer-Owned Nurse Tanks/Applicator Tanks

Data has been submitted to Fertilizer Canada for all producer owned nurse tanks/applicator tanks within the current calendar year.

Compliance will be verified by checking the online reporting system for a submission by the site within the current calendar year.

C.18.2 Audit Requirements	**Y/N**
Producer-Owned nurse and applicator tanks data has been submitted to Fertilizer Canada within the current calendar year.	
Comments	

C.18.3

C.18.3 Retail-Owned Transport Delivery Tanks

Data has been submitted to Fertilizer Canada for all retail-owned Transport Delivery tanks within the current calendar year.

Compliance will be verified by checking the online reporting system for a submission by the site within the current calendar year.

C.18.2 Audit Requirements	Y/N
Retail-Owned Transport Delivery tanks data has been submitted to Fertilizer Canada within the current calendar year.	
Comments	

SUMMARY FOR SECTION C - TO BE COMPLETED BY THE AUDITOR

SECTION C	Yes/No
All Mandatory Items Are Present	
Best Management Practices	**/8**

SECTION D - TRAINING

This section contains the safety training requirements for an anhydrous ammonia operation.

D.1

D.1 FACILITY GENERAL SAFETY RULES

The management of the facility has developed, issued and reviewed the facility general safety rules with all employees of the facility. During discussion and observation, it appears that these rules are known and enforced.

Compliance will be indicated through observation and discussion with the person responsible.

D.1 Audit Requirements	Y/N
The management of the facility has developed, issued, and reviewed the facility general safety rules with all employees of the facility	
At the time of discussion and observation, it appears that these rules are known and enforced	
Comments	

D.2

D.2 SAFE OPERATING PROCEDURES TRAINING

Training has been provided to all employees on the operating procedures applicable to their job function. Training must consist of procedural and supervised “hands on” application of the procedures to verify comprehension.

Training has been provided to all employees on the safe operating procedures for each of their jobs.

Compliance will be indicated through an examination of training records to indicate safe operating procedures training has been provided to all employees.

D.2 Audit Requirements	Y/N
Training is consistent with procedural and supervised “hands on” application of the procedures to verify comprehension	
An examination of training records indicating safe operating procedures training has been provided to all employees	
Comments	

D.3

D.3 TRANSPORTATION OF DANGEROUS GOODS TRAINING

All employees involved in the handling, offering for transport or transport of anhydrous ammonia have had training on the *Transportation of Dangerous Goods Act* and *Regulations*, specific to anhydrous ammonia, and have valid training certificates. This may include clerical staff involved in the handling, offering to transport and transporting administration process. Training is refreshed at a minimum of every three years as per TDG regulation.

Compliance will be indicated through an examination of training records and training certificates to indicate Transportation of Dangerous Goods training has been provided to all affected employees.

D.3 Audit Requirements	Y/N
All employees involved in the handling, offering for transport or transport of anhydrous ammonia have a valid certificate for the Transportation of Dangerous Goods Act and Regulations	
Comments	

D.4

D.4 DRIVER CERTIFICATION

Employees who operate transport units have received the required driver licence certification in accordance with the applicable Provincial Highway Traffic Act or Transport Regulation.

D.4.1

D.4.1 Driver License:

Driver licensing in accordance with applicable Provincial regulations is mandatory.

Compliance will be indicated through an examination of driver licenses to indicate that staff required to operate transport vehicles have a current and appropriate license as required by provincial authorities.

D.4.1 Audit Requirements	Y/N
An examination of driver licenses to indicate the appropriate staff required to operate transport vehicles have a current appropriate licensing as required by Provincial authorities.	
Comments	

D.4.2

D.4.2 Drivers Abstract:

Employers must keep driver's abstracts on file and review annually.

Compliance will be indicated by a letter from the current Owner / Operator or person responsible that this requirement has been met for the year.

D.4.2 Audit Requirements	Y/N
A letter from the Owner / Operator / person responsible indicates that the employer has verified annually that driver abstracts are current.	
Comments	

D.5

D.5 WHMIS TRAINING

All employees at the anhydrous ammonia operation have been trained on the Workplace Hazardous Materials Information System (WHMIS).

WHMIS training has been provided for all employees who work at the anhydrous ammonia operation as per Federal and Provincial regulations.

Compliance will be indicated through an examination of training records to indicate WHMIS training has been provided to all employees.

D.5 Audit Requirements	Y/N
WHMIS training has been provided for all employees who work at the anhydrous ammonia operation	
Comments	

D.6

D.6 OCCUPATIONAL HEALTH AND SAFETY TRAINING PROGRAMS

The ammonia operation has developed and implemented an Occupational Health and Safety training program for all employees working with anhydrous ammonia including:

D.6.1 Isolation and lock-out procedures, safe work permit system for confined workspace entry, hot work (cutting and welding), and elevated work

D.6.2 Information on the rights of employees to refuse unsafe work

D.6.3 Responsibilities of management and employees under the appropriate labour legislation

Compliance will be indicated through the presence of an Occupational Health and Safety program and an examination of training records to indicate Occupational Health and Safety training has been provided to all employees as required.

D.6 Audit Requirements	Y/N
The ammonia operation has developed and implemented an Occupational Health and Safety training program for all employees working with anhydrous ammonia including: • Isolation and lock-out procedures, safe work permit system for confined workspace entry, hot work (cutting and welding), and elevated work • information on the rights of employees to refuse unsafe work, and • responsibilities of management and employees under the appropriate labor legislation	
Comments	

D.7	D.7 EMERGENCY TRAINING
D.7.1	**D.7.1 First Aid** **First Aid Training has been provided to appropriate personnel.** *Compliance will be indicated through an examination of training records to indicate the appropriate number of staff, as required by provincial regulatory requirements, have been trained in first aid.*

D.7.1 Audit Requirements	Y/N
Examination of training records to indicate the appropriate number of staff have been trained in first aid as required by provincial regulatory authorities and that certification is current	
Comments	

D.7.2	**D.7.2 Cardiopulmonary Resuscitation (CPR)** **CPR Training has been provided to appropriate personnel.** *Compliance will be indicated through an examination of training records to indicate that the appropriate number of staff at retail locations have been trained in CPR as required by regulatory authorities.*

D.7.2 Audit Requirements	Y/N
Examination of training records to indicate the appropriate number of staff have been trained in CPR as required by regulatory authorities and that certification is current	
Comments	

D.7.3	**D.7.3 Fire Extinguisher Training** **Hands on/discharge fire extinguisher training has been provided to appropriate personnel.** *Compliance will be indicated through an examination of training records to indicate the appropriate number of staff have been trained on the proper use of fire extinguishers as required by regulatory authorities.*

D.7.3 Audit Requirements	Y/ N
Examination of training records to indicate the appropriate number of staff have been trained in fire extinguisher use as required by regulatory authorities and that certification is current	
Comments	

D.7.4

D.7.4 Respiratory Protection

Respiratory protection training for all personnel required to wear a respirator including those handling ammonia day-to-day and emergency responders.

Compliance will be indicated through an examination of training records to indicate respiratory protection training has been provided to all affected staff.

D.7.4 Audit Requirements	Y/N
Examination of training records to indicate the appropriate number of staff have completed respiratory protection training as required by regulatory authorities or manufacturer and that certification is current	
Comments	

D.7.5

D.7.5 Respirator Fit Testing

Respirator fit testing frequency is determined by CSA Z94.4 requirements or more frequently if required by the respirator protection manufacturer. As per CSA requirements, fit testing is required at least every 24 months.

Compliance will be indicated through an examination of training records to indicate that a respirator fit test was conducted within the last 24 months. Fit testing frequency is determined by CSA Z94.4 requirements, or more frequently if required by the respiratory protection manufacturer.

D.7.5 Audit Requirements	Y/N
Training records document that all personnel required to wear a respirator have been fit tested within the past 24 months	
Comments	

D.8 EMERGENCY RESPONSE TRAINING

D.8.1

D.8.1 Employee Emergency Response Training

All employees have been trained on the emergency response procedures for the site.

Compliance will be indicated through an examination of training records to indicate that all staff has been trained on the emergency response procedures.

D.8.1 Audit Requirements	Y/N
An examination of training records indicate that all staff have been trained on the emergency response procedures	
Comments	

D.8.2

D.8.2 Emergency Responder Training

Employees who are involved in responding to emergencies at the anhydrous ammonia operation have received the appropriate training.

Compliance will be indicated through an examination of training records to indicate that all staff has been trained on the emergency response procedures appropriate for their role.

	D.8.2 Audit Requirements	**Y/N**
	An examination of training records indicate that all staff involved in responding to emergencies have been trained in appropriate procedures.	
	Comments	
D.8.3	**D.8.3 Transportation Emergency** Employees involved in the transportation of anhydrous ammonia have been trained in the proper procedures for their role in responding to a transportation emergency. *Compliance will be indicated by an examination of training records to verify that employees have been trained.*	
	D.8.3 Audit Requirements	**Y/N**
	An examination of training records verifies that employees have been trained in the proper procedures for responding to a transportation emergency.	
	Comments	
D.9	**D.9 SECURITY** All employees at the anhydrous ammonia operation have received training on security measures to prevent unauthorized access to anhydrous ammonia, and on how to respond to a security incident. *Compliance will be indicated through an examination of training records to verify that all staff have been trained on the security procedures.*	
	D.9 Audit Requirements	**Y/N**
	All employees at the anhydrous ammonia operation have received training on security measures to prevent unauthorized access to anhydrous ammonia and on security incidence response.	
	Comments	
D.10	**D.10 CONTRACTOR SAFETY** All contractors providing services on or in close proximity to anhydrous ammonia equipment shall be made aware of the hazards associated with ammonia through training or orientation. *Compliance will be indicated through documentation from the current person responsible indicating all contractors have either received appropriate training or orientation or are directly supervised by a competent person with the appropriate training.*	
	D.10 Audit Requirements	**Y/N**
	Documented verification from the current person responsible indicating all contractors providing services on or in close proximity to anhydrous ammonia equipment have either received appropriate training or orientation or are directly supervised by a competent person with appropriate training	
	Comments	

D.11	D.11 END USER EDUCATION

End users transporting and using anhydrous ammonia have been instructed on the proper safety and emergency response procedures every three years at minimum.

Compliance will be indicated through inspection of documentation demonstrating end users transporting and using anhydrous ammonia have been instructed on the proper safety and emergency response procedures at least every three years.

D.11 Audit Requirements	Y/N
Inspection of documentation that demonstrates end users have received safety and emergency response procedure training within 3 years	
Comments	

SUMMARY FOR SECTION D - TO BE COMPLETED BY THE AUDITOR

SECTION D	YES/NO
All Mandatory Items Are Present	
Meets Best Practices	**0/0**

SECTION E - DOCUMENTATION

This section contains the documentation requirements for an anhydrous ammonia operation.

E.1

E.1 EMPLOYEE TRAINING RECORDS

The anhydrous ammonia operation has training records for all employees.

Training records are available for all employees to show compliance with Section D.

Compliance will be indicated through examination of the training records for employees at the operation.

E.1 Audit Requirements	Y/N
Training records are available for all employees	
Comments	

E.2

E.2 CRITICAL SAFE OPERATING PROCEDURES

The anhydrous ammonia operation has written procedures for critical tasks at the operation.

The anhydrous ammonia operation has written safe operating procedures (SOP):

E.2.1 Describing the correct process for safely and effectively performing all anhydrous ammonia transfer operations.

E.2.2 Describing (where applicable) the correct process for safely and effectively performing all confined workspace entry (i.e. internal tank inspections), lock-out, hot work and elevated work (if applicable).

E.2.3 For the proper use and maintenance of personal protection equipment.

Compliance will be indicated through an examination of the written safe operating procedures.

E.2 Audit Requirements		Y/N
E.2.1	The anhydrous ammonia operation has written safe operating procedures describing the correct process for • safely and effectively performing all anhydrous ammonia transfer operations • safely and effectively performing, if applicable, all confined workspace entry (i.e. internal tank inspections), lock-out, hot work and elevated work	
E.2.2	If any of the following work was performed by Ag-Retailer personnel, a written procedure is available: • confined space entry work • lock-out (energy isolation) work • hot work • elevated work	

	E.2.3	The anhydrous ammonia operation has written safe operating procedures for the proper use and maintenance of personal protection equipment	
		Comments	

E.3 **E.3 MAINTENANCE RECORDS**

The anhydrous ammonia operation has maintenance records indicating the completion of appropriate scheduled inspection and maintenance plans on anhydrous ammonia related equipment.

E.3.1 **E.3.1 Annual Safety Inspection Records**

Records are available for the annual safety inspection of all regulated vehicles transporting anhydrous ammonia.

Compliance will be verified through an examination of the maintenance records indicating that all vehicles transporting anhydrous ammonia at the operation have had a safety inspection within the last 12 months.
Recommended Best Practices: Recommended best practice is to have all vehicles transporting anhydrous ammonia pass an annual inspection as certified by the Commercial Vehicle Safety Alliance (CVSA).

E.3.1 Audit Requirements	**Y/N**
Records are available indicating that all regulated vehicles transporting anhydrous ammonia at the operation have had a safety inspection within the last 12 months (see Section 0)	
Meets Best Practices Requirements - All vehicles transporting anhydrous ammonia pass an annual inspection as certified by the Commercial Vehicle Safety Alliance (CVSA)	
Comments	

E.3.2 **E.3.2 Hydrostatic Pressure Test**

Records are available for the annual hydrostatic pressure test of all hoses used in anhydrous ammonia transfers.

Compliance will be verified through an examination of the hose test records indicating that all hoses have had a pressure test within the last 12 months. When documentation is kept elsewhere, a signed and dated letter from the person responsible for maintenance and testing will be sufficient.

E.3.2 Audit Requirements	**Y/N**
Records or a signed and dated letter from the person responsible for maintenance and testing stating the hoses have been tested within the last 12 months	
Comments	

E3.3

E.3.3 Running Gear Maintenance

Records are available for the seasonal visual inspections and a 5-year physical inspection of all running gear on nurse wagons.

Compliance will be verified through an examination of the maintenance records indicating that all nurse wagons have had a seasonal visual safety inspection(s) within the last 12 months and a physical safety inspection completed in the last 60 months (as applicable).

E.3.3 Audit Requirements	Y/N
Records indicating that all nurse wagon running gear has had a seasonal visual safety inspection(s) within the last 12 months (see Section 0), and	
A physical safety inspection completed in the last 60 months (see Section 0)	
Comments	

E.3.4

E.3.4 Pressure Vessel

Records are available for all pressure vessels for inspections, tests and certifications in accordance with regulatory requirements.

Compliance will be indicated through an examination of the maintenance records that indicate that all anhydrous ammonia vessels at the operation have been inspected and tested as defined by regulatory requirements. When documentation is kept elsewhere, a signed and dated letter from the person responsible for maintenance and testing will be sufficient.

E3.4 Audit Requirements	Y/N
Records or a signed and dated letter from the person responsible for maintenance and testing stating that all pressure vessels have been inspected and tested in compliance with the authority having jurisdiction	
Comments	

E.4

E.4 TRANSFERS OF PRODUCT TO CERTIFIED SITES

All facilities receiving anhydrous ammonia shall be Ammonia Code Certified.

Compliance will be indicated through examination of shipping records which shall clearly show the receiver's Ammonia Code certification number.

E.4 Audit Requirements	Y/N
An examination of shipping records which clearly show the receiver's Ammonia Code certification number	
Comments	

SUMMARY FOR SECTION E - TO BE COMPLETED BY THE AUDITOR

SECTION E	Yes/No
All Mandatory Items Are Present	
Meets Best Practices	/1

SECTION F - EMPLOYEE KNOWLEDGE

This section contains the standards for employee knowledge of the required safe practices for handling anhydrous ammonia.

F.1

F.1 CRITICAL SAFE OPERATING PROCEDURES

The employees at the anhydrous ammonia operation must be knowledgeable of the procedures for conducting critical tasks safely.

Compliance for Section F.1 will be indicated through conducting individual employee interviews (a minimum of 2 employees should be interviewed).

F.1.1

F.1.1 Employee Knowledge - Hazards

The employees at the anhydrous ammonia operation can explain the hazards associated with anhydrous ammonia.

F.1.1 Audit Requirements	Y/N
Employees are knowledgeable of the hazards associated with anhydrous ammonia	
Comments	

F.1.2

F.1.2 Employee Knowledge - Transfers

The employees at the anhydrous ammonia operation can explain the critical steps in completing anhydrous ammonia transfer operations.

F.1.2 Audit Requirements	Y/N
Employees can explain the critical steps in completing anhydrous ammonia transfer operations	
Comments	

F.1.3

F.1.3 Employee Knowledge – Operating Limits and Emergency Procedures

The employees at the anhydrous ammonia operation can demonstrate an understanding of the critical operating limits and emergency procedures for equipment.

F.1.3 Audit Requirements	Y/N
Employees can explain their understanding of the critical operating limits for vessel filling and emergency procedures for equipment shut off	
Comments	

F.2

F.2 KNOWLEDGE OF TRANSPORTATION OF DANGEROUS GOODS ACT AND REGULATIONS

The employees at the anhydrous ammonia operation are knowledgeable about the *Transportation of Dangerous Goods Act* and *Regulations*.

F.2.1

F.2.1 Knowledge of Transportation of Dangerous Goods (TDG) Act

Employees can explain the Transportation of Dangerous Goods placard classification system as it pertains to anhydrous ammonia.

Compliance will be indicated through conducting individual employee interviews (a minimum of 2 employees should be interviewed).

F.2.1 Audit Requirements	**Y/N**
Employees can explain the Transportation of Dangerous Goods placard classification system as it pertains to Anhydrous Ammonia	
Comments	

F.2.2

F.2.2 Knowledge of Transportation of Dangerous Goods - Responsibilities

Employees can explain their responsibilities under Transportation of Dangerous Goods Act.

Compliance will be indicated through conducting individual employee interviews (a minimum of 2 employees should be interviewed).

F.2.2 Audit Requirements	**Y/N**
Employees are aware of their responsibilities under the TDG Act	
Comments	

F.2.3

F.2.3 Knowledge of Transportation of Dangerous Goods - Documentation

Employees can explain the documentation requirements as defined by the Transportation of Dangerous Goods Act and Regulations.

Compliance will be indicated through correct responses from a selection of employees (a minimum of two employees).

F.2.3 Audit Requirements	**Y/N**
Employees are capable of explaining the documentation requirements as defined by the Transportation of Dangerous Goods Act and Regulations	
Comments	

F.3

F.3 KNOWLEDGE OF SITE EMERGENCY RESPONSE PLAN

Employees at the anhydrous ammonia operation are aware of the contents of the emergency response plan and their role within it.

Compliance for Section 0 will be indicated through correct responses from a selection of employees (a minimum of two employees).

F.3.1

F.3.1 Site Emergency Response Plan – Emergencies Addressed

Employees can explain the emergencies addressed in the site emergency response plan.

	F.3.1 Audit Requirements	**Y/N**
	Employees can explain the emergencies addressed in the site emergency response plan	
	Comments	
F.3.2	**F.3.2 Site Emergency Response Plan - Roles** Employees can explain their role (specific duties) in the event of various types of site emergencies.	
	F.3.2 Audit Requirements	**Y/N**
	Employees can explain their role in the event of various types of emergencies	
	Comments	
F.3.3	**F.3.3 Emergency Response Plan - Activation of Plan** Employees can explain the procedures for activating the site emergency response plan.	
	F.3.3 Audit Requirements	**Y/N**
	Employees can explain the procedures for activating the site Emergency Response Plan	
	Comments	
F.3.4	**F.3.4 Site Emergency Response Plan – First Aid - Exposure** Employees at the anhydrous ammonia operation are knowledgeable of the correct procedures for treating skin or eye contact with anhydrous ammonia.	
	F.3.4 Audit Requirements	**Y/N**
	Employees are knowledgeable of the correct procedures for treating skin or eye contact with anhydrous ammonia	
	Comments	
F.3.5	**F.3.5 Site Emergency Response Plan - First Aid - Inhalation** Employees at the anhydrous ammonia operation are knowledgeable of the procedures for treating inhalation of anhydrous ammonia.	
	F.3.5 Audit Requirements	**Y/N**
	Employees are knowledgeable of the procedures for treating inhalation of anhydrous ammonia	
	Comments	

F.4

F.4 CARE OF EMERGENCY EQUIPMENT

Employees who are involved in the handling of Anhydrous Ammonia can explain the proper procedure for inspecting, maintaining and storing emergency equipment such as:

(a) Full-face respirators

(b) Anhydrous ammonia resistant suits, gloves, boots

(c) Fire extinguishers

(d) Self-contained breathing apparatus

(e) Emergency water stations.

Compliance will be indicated through correct responses from a selection of employees (a minimum of two employees) from the anhydrous ammonia operation.

F.4 Audit Requirements	Y/N
Through interviews employees can explain maintenance, inspection and storage for full face respirators, anhydrous ammonia resistant suits, gloves boots, fire extinguishers, self-contained breathing apparatus, emergency water stations	
Comments	

F.5

F.5 KNOWLEDGE OF WHMIS

The employees at the anhydrous ammonia operation are knowledgeable of the Workplace Hazardous Materials Information System (WHMIS).

Utilizing information contained in WHMIS, employees at the anhydrous ammonia operation can identify the hazards of the product, interpret labels, and Safety Data Sheets.

Compliance will be indicated through correct responses from a selection of employees (a minimum of two employees) from the anhydrous ammonia operation.

F.5 Audit Requirements	Y/N
Utilizing information contained in WHMIS, employees can identify the hazards of the product, interpret labels, and Safety Data Sheets	
Comments	

F.6

F.6 CRITICAL SECURITY PROCEDURES

The employees at the anhydrous ammonia operation are knowledgeable of critical security procedures.

Compliance for Section F.6 will be indicated through correct responses from a selection of employees (a minimum of two employees) from the anhydrous ammonia operation.

F.6.1

F.6.1 Security Procedure – Suspicious Activity

Employees can explain the procedure for responding to suspicious activity.

	F.6.1 Audit Requirements	**Y/N**
	Employees can explain the procedure for responding to suspicious activity	
	Comments	
F.6.2	**F.6.2 Security Procedure – Secure Operation** Employees can explain the procedure for locking and securing the anhydrous ammonia operation.	
	F.6.2 Audit Requirements	**Y/N**
	Employees can explain the procedure for locking and securing the anhydrous ammonia operation	
	Comments	
F.7	**F.7 INSPECTION OF EQUIPMENT** The employees at the anhydrous ammonia operation are knowledgeable of the procedures and intervals for inspecting anhydrous ammonia equipment specific to their job requirements. *Compliance will be indicated through correct responses from a selection of employees (a minimum of two employees) from the anhydrous ammonia operation.*	
	F.7 Audit Requirements	**Y/N**
	Employees are knowledgeable of the procedures and intervals for inspecting anhydrous ammonia equipment specific to their job requirement	
	Comments	

SUMMARY FOR SECTION F - TO BE COMPLETED BY THE AUDITOR

SECTION F	Yes/No
All Mandatory Items Are Present	
Meets Best Practices	**0/0**

SECTION G – EMERGENCY RESPONSE

This section contains the requirements for emergency response planning required for an anhydrous ammonia operation.

G.1

G.1 WRITTEN EMERGENCY RESPONSE PLAN

The anhydrous ammonia operation has a written emergency response plan containing:

- An index, dated and with page numbers, and containing a list of plan holders and plan locations.
- Roles and Responsibilities for the key emergency response roles that are described in the emergency response plan including specific names and contact numbers.
- Telephone numbers of all emergency responders.
- Telephone numbers of outside resources.
- Telephone numbers of neighbouring businesses, residences and other affected occupancies.
- Grid map indicating the location of businesses, residences and other affected occupancies relative to the anhydrous ammonia operation.
- A site plan indicating emergency equipment locations.
- The list of events that trigger the emergency response plan.
- Annual risk assessment or review identifying significant risks.
- Emergency shut-off locations for electricity, gas, and ammonia.
- Management plan for contaminated run-off *water* resulting from an emergency *(See Protocol A3*).

Compliance will be indicated through examination of the completed emergency response plan to ensure it complies with the listed requirements.

G.1 Audit Requirements	**Y/N**
Written emergency response plan containing:	
• An index, be dated, have page numbers, and contain a list of plan holders and plan locations	
• Roles and Responsibilities for the key emergency response roles that are described in the emergency response plan including specific names or position titles and contact numbers	
• Telephone numbers of emergency responders	
• Telephone numbers of identified outside resources	
• Telephone numbers of neighbouring businesses, residences, and other affected occupancies	
• Grid map indicating the location of businesses, residences, and other affected occupancies relative to the anhydrous ammonia operation	
• A site plan indicating emergency equipment locations	

	• List of events that trigger the emergency response plan	
	• The risk assessment identifies significant risks and has been reviewed within the last twelve months	
	• Emergency shut-off locations for electricity, gas, and ammonia	
	• Management plan for contaminated run-off water resulting from an emergency (See Protocol 0)	
	Comments	

G.2

G.2 COMMUNICATION OF EMERGENCY RESPONSE PLAN

The contents of the emergency response plan have been reviewed annually with emergency responders and any other person involved in or affected by execution of the plan.

There is documentation of contact with local emergency responders to discuss and review the updated emergency response plan within the last 12 months.

Compliance will be indicated by an appropriately dated and signed letter from the person responsible inviting emergency services to the site.

G.2 Audit Requirements	Y/N
There is documentation of contact with local emergency responders to discuss and review the updated emergency response plan within the last 12 months	
Comments	

G.3

G.3 RISK ASSESSMENT

The ammonia operation must prepare and annually review and update a risk assessment.

The ammonia operation has conducted a risk assessment of the operation that identifies significant risks and has reviewed it within the last twelve months.

Compliance will be indicated by inspection of a copy of the risk assessment.

G.3 Audit Requirements	Y/N
There is documentation of a risk assessment of the operation that identifies significant risks and that has been reviewed within the last 12 months	
Comments	

G.4

G.4 COPIES OF EMERGENCY RESPONSE PLAN

Copies of the updated emergency response plan for the anhydrous ammonia operation are kept at on-site and off-site locations.

G.4.1

G.4.1 Emergency Response Plan Location

A copy of the emergency response plan is kept at the anhydrous ammonia operation.

Compliance will be indicated if Emergency response plan is accessible on-site, in hardcopy format, to all personnel at the site.

G.4.1 Audit Requirements	Y/N
A hard copy of the updated emergency response plan is kept on-site	
Comments	

G.4.2

G.4.2 Emergency Response Plan Location

A copy of the emergency response plan is kept at a secure off-site location.

Compliance will be indicated if the emergency response plan is available off-site, in either hardcopy or electronic format.

G.4.2 Audit Requirements	Y/N
A copy of the emergency response plan is kept at an off-site location	
Comments	

G.4.3

G.4.3 Emergency Response Plan Container

A current hard copy of the emergency response plan must be in a blue weather-proof container near the entrance to the ammonia operation.

Compliance will be indicated by the presence of a current hard copy of the emergency response plan in a blue weather-proof container near the entrance to the Site.

G.4.3 Audit Requirements	Y/N
A current copy of the emergency response plan is in a blue weather-proof container near the entrance to the ammonia operation site	
Comments	

G.5

G.5 ANNUAL REVIEW AND UPDATE OF EMERGENCY RESPONSE PLAN

The emergency response plan for the anhydrous ammonia operation has been reviewed, had its contents verified and updated within the past 12 months.

Compliance will be indicated through examination of the emergency response plan to verify that the last review date has not exceeded 12 months.

G.5 Audit Requirements	Y/N
The emergency response plan for the anhydrous ammonia operation has been reviewed and had its contents verified and updated within the past 12 months	
Comments	

G.6

G.6 EMERGENCY CONTACTS LIST

A current list of emergency contact numbers for local emergency responders, operation management and employees has been prepared and is located at:

- All land line phones throughout the Site.

Compliance will be indicated through examination of the posted emergency response contact list at the operation.

- Each vehicle that transports anhydrous ammonia.

Compliance will be indicated through examination of the emergency response contact list in each anhydrous ammonia transport vehicle.

Within the last 12 months the emergency contacts phone lists have been verified and updated.

Compliance will be indicated by examination of emergency contact lists.

G.6 Audit Requirements	**Y/N**
A list of emergency contact number for local emergency responders, operation management and employees has been prepared and posted at: • All land line phones throughout the Site. • Each vehicle that transports anhydrous ammonia	
Emergency contacts phone lists have been verified and updated within the past 12 months	
Comments	

G.7 **G.7 EMERGENCY RESPONSE DRILL**

The anhydrous ammonia operation has conducted at least one simulation exercise of the emergency response plan annually.

G.7.1 **G.7.1 Emergency Response Drill Exercise**

An exercise has been conducted on the emergency response plan in order to enhance the plan, familiarize participants with their duties and identify any gaps in the plan within the past 12 months.

Compliance will be indicated through examination of records of the emergency response exercises for the operation to determine that an emergency response drill has been done.

G.7.1 Audit Requirements	**Y/N**
An exercise has been conducted on the emergency response plan within the past 12 months	
Comments	

G.8

G.8 CONTAMINATED RUN-OFF WATER

The anhydrous ammonia operation has developed a plan for the containment of contaminated run-off water produced from emergency response activities.

Contaminated run-off water plan must include the following:

- An analysis of the topography of the operation to identify run-off direction
- Identification of potential at-risk water sources within one (1) kilometer of the operation.
- Identification of measures to be taken in advance of an incident (e.g. construction of retention berm)
- Identification of measures to be taken at the time of an incident (e.g. plugging of culverts with sandbags)

Compliance will be indicated by a verification of elements in the emergency plan.

G.8 Audit Requirements	Y/N
Contaminated run-off water plan must include the following:	
• An analysis of the topography of the operation to identify run-off direction	
• Identification of potential at-risk water sources within one (1) kilometer of the operation	
• Identification of measures to be taken in advance of an incident (e.g. construction of retention berm)	
• Identification of measures to be taken at the time of an incident (e.g. plugging of culverts with sandbags)	
Comments	

G.9

G.9 INCIDENT REPORTING

The anhydrous ammonia operation has an incident reporting system.

G.9.1

G.9.1 Incident Reporting Program

The operation has an active incident reporting program including a written procedure and record keeping for:

- Internal notifications
- External notifications

Compliance will be indicated by an examination of the written procedure and records of incidents.

Recommended Best Practices: Best practice includes reporting of near-misses.

G.9.1 Audit Requirements	Y/N
There is an active incident reporting program including a written procedure and record keeping for: • Internal notifications	

	• External notifications
	Meets Best Practices Requirements: Near-misses are reported as part of Incident Reporting
	Comments
G.10	**G.10 ENVIRONMENTAL EMERGENCY REQUIREMENTS**
G.10.1	G.10.1 Environmental Emergency (E2) Plan Protocol All Retail Anhydrous Ammonia sites with fixed storage facilities in quantities of 4.5 tonnes or more must have a process to comply with the Environmental Emergency (E2) Regulations of the Canadian Environmental Protection Act. E2 plans and procedures will be written and current with documentation maintained for a minimum of 7 years. Plan preparations, registrations and schedule submissions must be completed by required deadlines. Annual E2 Plan practice is required (could be a table-top exercise). A full E2 Plan practice simulation exercise is required every 5 years. *Compliance will be indicated by an examination of written procedures, and on-site documentation.*

G.10.1 Audit Requirements	**Y/N**
There is a written and current E2 Plan for the site	
Site Managers are aware of Aug 24, 2020 deadline for E2 plan registration	
Site Managers can demonstrate that E2 Plan schedules have been completed	
Site Managers can demonstrate that an annual E2 Plan Practice has been completed and that at least once every 5 years a full simulation exercise is implemented	
Documentation of the E2 plan and procedures is maintained for a minimum of 7 years	
Comments	

G.10.2	G.10.2 Emergency Response Assistance Plan (ERAP) All Anhydrous Ammonia Sites/Locations that have Delivery Units with tanks in excess of 3,000 L must apply for and have a valid Transport Canada Approved Emergency Response Assistance Plan (ERAP). All Anhydrous Ammonia Sites/Locations that have Nurse Wagons that exceed 10,000 litres in capacity must apply for and have a valid Transport Canada Approved Emergency Response Assistance Plan (ERAP). (Note: ERAP number will be the same for locations with Delivery Units and Nurse Wagons.) *Compliance will be indicated by visual examination of the site/location ERAP Number documentation. Auditor will record site ERAP number.*

G.10.2 Audit Requirements	**Y/N**
There is a Transport Canada approved Emergency Response Assistance Plan for the site/location and associated ERAP number.	
Comments	

SUMMARY FOR SECTION G - TO BE COMPLETED BY THE AUDITOR

SECTION G	Yes/No
All Mandatory Items Are Present	
Meets Best Practices	/1

SECTION H - RAILCARS AND EQUIPMENT

This section contains the standards for managing risks associated with anhydrous ammonia railcars.

H.1

H.1 RAILCAR DESIGN AND CONSTRUCTION

All anhydrous ammonia transport railcars are constructed, operated and maintained in accordance with Federal and/or Provincial Boiler and Pressure Vessel Regulations.

H.1 Railcar:

Railcars have been designed and constructed accordance with the applicable Canadian Codes and Standards.

Compliance will be indicated through a visual inspection of the nameplate or markings.

H.1 Audit Requirements	Y/N
A visual inspection of the nameplate or markings indicates compliance by having a CRN number	
Comments	

H.2

H.2 RAILCAR LOADING AND UNLOADING OPERATIONS

Railcar loading and unloading operations comply with applicable Federal and/or Provincial Regulations.

H.2.1

H.2.1 Railcar Loading / Unloading:

Railcar loading and unloading must have emergency shut-off capability located at both ends of the railcar (at ground level) and the filling/ unloading point. Emergency shut-off capability may be provided by excess flow valves, check valves, control valves or emergency shut-off valves.

The activating lever on cable-operated emergency shut-off systems must be colour-coded blue.

Compliance will be indicated through a visual inspection of the equipment.

Recommended Best Practices: Best practice is to use an emergency shut-off valve (ESV) or equivalent at the railcar to stop the flow from the railcar in the event of an emergency.

H.2.1 Audit Requirements	Y/N
Railcar loading and unloading piping must have emergency shut-off capability located at: • both ends of the railcar (at ground level); and • the filling/ unloading point • the activating lever on emergency shut-off systems	
Meets Best Practices Requirements - An emergency shut-off valve (ESV) or equivalent is used at the railcar to stop the flow from the railcar in the event of an emergency	
Comments	

H.2.2

H.2.2 Hose Valves:

All valves are suitable for anhydrous ammonia service.

Compliance will be indicated through a signed and dated requirements list/ letter from the current Owner / Operator or person responsible indicating all valves at the anhydrous ammonia operation are suitable for anhydrous ammonia service.

H.2.2 Audit Requirements	Y/N
Signed and dated requirements list/ letter indicating all valves are suitable for anhydrous ammonia service	
Comments	

H.2.3

H.2.3 Hose-end Valve:

Hose-end valves have been constructed and/or guarded to prevent accidental opening. This may include the configuration of the valve opening mechanism or the installation of a guard.

Compliance will be indicated through a visual inspection of hose-end valves.

H.2.3 Audit Requirements	Y/N
Hose-end valves are constructed/guarded to prevent accidental opening	
Comments	

H.2.4

H.2.4 Fall Protection System

Fall protection system must be provided for personnel working at the top of the railcar.

Compliance will be indicated through a visual inspection of fall protection system and training records.

H.2.4 Audit Requirements	Y/N
Fall protection system is provided for personnel working at the top of the railcar	
Comments	

H.3

H.3 RAILCAR VESSEL HOSES

All hoses used with railcars have been installed and tested in accordance with Federal and/or Provincial Boiler and Pressure Vessel Regulations.

H.3.1

H.3.1 Hose

All hoses used with railcars are clearly marked as approved for anhydrous ammonia service.

Compliance will be indicated through a visual inspection of all hoses to ensure proper markings indicating approval for anhydrous ammonia service.

H.3.1 Audit Requirements	Y/N
All hoses used with railcars are clearly marked as approved for anhydrous ammonia service	
Comments	

H.3.2

H.3.2 Hose Maximum Allowable Working Pressure

All hoses are marked with their Maximum Allowable Working Pressure (MAWP).

Compliance will be indicated through a visual inspection of all hoses to ensure proper markings indicating the Maximum Allowable Working Pressure.

H.3.2 Audit Requirements	Y/N
All hoses have proper markings indicating Maximum Allowable Working Pressure (MAWP)	
Comments	

H.3.3

H.3.3 Hose Expiry

All hoses have not exceeded their manufacturer's "remove from service" date.

Compliance will be indicated through a visual inspection of all hoses on the vessel to ensure the manufacturer's labelled "remove from service" date on hoses has not been exceeded.

H.3.2 Audit Requirements	Y/N
All hoses have not exceeded their manufacturers "remove from service" date	
Comments	

H.3.4

H.3.4 Hose Couplings

All hoses have been equipped with crimp-on or bolt-on hose couplings designed for anhydrous ammonia service.

Compliance will be indicated through a visual inspection of all hoses on the vessel to ensure all hose couplings are either of the bolt-on or crimp-on type.

H.3.4 Audit Requirements	Y/N
All hoses have been equipped with crimp-on or bolt-on hose couplings designed for anhydrous ammonia service	
Comments	

H.3.5

H.3.5 Hose Testing

All hoses have been annually inspected, tested and marked in accordance with CGA Standards.

Compliance will be indicated in two parts. First, all hoses on the vessel will be visually inspected to determine if they have been marked in accordance with CGA standards. Second, the hose testing records will be reviewed to ensure hose testing has been documented and conducted at the appropriate frequency. When documentation is kept elsewhere, a signed and dated letter from the person responsible for maintenance and testing will be sufficient.

H.3.5 Audit Requirements	Y/N
All hoses have been annually inspected, tested and marked in accordance with the CGA standards	
Signed and dated hose testing records/ letter indicate hose testing has been conducted at the appropriate frequency	
Comments	

H.4

H.4 TRANSFER PUMPS OR COMPRESSORS

The transfer pump(s) or compressor(s) used with the railcar(s) have been designed and approved for use with anhydrous ammonia.

H.4.1

H.4.1 Transfer Pump

The transfer pump or compressor must be approved by the manufacturer for anhydrous ammonia service.

Compliance will be indicated through documentation.

H.4.1 Audit Requirements	Y/N
Documentation shows that the transfer pump(s) and compressor(s) are approved by the manufacturer for anhydrous ammonia service	
Comments	

H.4.2

H.4.2 Transfer Pump Guards

The transfer pump or compressor used with the railcar has been equipped with guards to prevent contact with drive pulleys and belts.

Compliance will be indicated through a visual inspection of all transfer pumps or compressors to ensure they are equipped with guards to prevent contact with drive pulleys and belts.

H.4.2 Audit Requirements	Y/N
The transfer pump or compressor used with the railcar is equipped with guards to prevent contact with drive pulleys and belts.	
Comments	

H.4.3

H.4.3 TRANSFER PUMP OR COMPRESSOR MOUNTS

The transfer pump or compressor must be securely mounted on a non-combustible base.

Compliance will be indicated through a visual inspection of the transfer pump or compressor mount to ensure it is constructed of non-combustible materials.

H.4.3 Audit Requirements	Y/N
The transfer pump(s) or compressor(s) are securely mounted on a non-combustible base	
Comments	

H.5

H.5 TDG RAILCAR LABELS AND MARKINGS

Railcars have the required TDG labels and markings as designated by regulatory requirements.

H.5.1

H.5.1 Railcar Marking

The railcar must be clearly marked with “ANHYDROUS AMMONIA” in a contrasting colour Signage must appear on two long sides of the railcar.

H.5.1 Audit Requirements	Y/N
The railcar is clearly marked with “ANHYDROUS AMMONIA” in a contrasting colour	
Signage appears on two long sides of the railcar	
Comments	

H.5.2

H.5.2 Railcar Marking Size

The railcar must be clearly marked with the words “INHALATION HAZARD” on the two long sides of the railcar in a contrasting colour and according to TDG regulations.

H.5.2 Audit Requirements	Y/N
The railcar is clearly marked with the words “INHALATION HAZARD” on the two long sides of the railcar in a contrasting colour	
Comments	

H.5.3

H.5.3 TDG Placards

Transportation of Dangerous Goods placards must be mounted on all four sides of the railcars as required by the TDG regulation.

H.5.3 Audit Requirements	Y/N
Current TDG placards are mounted on all four sides of the railcar	
Comments	

H.5.4

H.5.4 Pressure test and Retest

Pressure test dates are on the railcar.

Compliance will be indicated through a visual inspection of labels and markings on the vessel to ensure it meets requirements.

	H.5.4 Audit Requirements	**Y/N**
	Pressure test dates are on the railcar	
	Comments	
H.6	**H.6 PERSONAL PROTECTIVE EQUIPMENT** The anhydrous ammonia railcar transfer operation is equipped with the required personal protective equipment. Operators handling, transferring and or repairing equipment that has potential for release that could cause injury from anhydrous ammonia are required to wear PPE as specified in Section B7. Examples of instances where PPE is required to be worn: • While connecting and disconnecting hoses for transfer (Note: when transfer operations are being completed (i.e. pumping is taking place) the operator can remove PPE when in a safe area). • While bleeding equipment for transfer and after transfer operations are completed. • While personnel are performing maintenance, until all anhydrous ammonia has been evacuated from the equipment that is being maintained. *Compliance will be indicated through a visual inspection of safety equipment to ensure proper type ~~of~~ and quantity for personnel at the operation.*	
	H.6 Audit Requirements	**Y/N**
	Required PPE as specified in Section B7	
	Comments	
H.7	**H.7 EMERGENCY EQUIPMENT** The anhydrous ammonia railcar transfer operation is equipped with the required emergency equipment that is accessible and identifiable by all personnel. In addition to all personal protective equipment specified in Section 0, the following additional equipment is required: H.7.1 Two canister type anhydrous ammonia full-face respirators complete with spare canisters/cartridges. H.7.2 If required by provincial regulations, two Self-Contained Breathing Apparatuses (SCBA). H.7.3 Two one- or two-piece anhydrous ammonia resistant suits (protected from the weather). H.7.4 First Aid kit of a size appropriate for the number of employees at the operation. H.7.5 At minimum, a 5 lb. ABC fire extinguisher (one located near each anhydrous ammonia transfer point). H.7.6 Two water supplies are required for emergency requirements. Water supplies may be either a safety shower or a minimum of two	

200-gallon water troughs filled with clean, fresh water and labelled with a red cross to designate it as emergency response water. Troughs must be located within 10 metres of the anhydrous ammonia transfer points. Water troughs must be located opposite to each other considering prevailing wind direction. Water must be heated when transfer operations are occurring at sub-zero Celsius temperatures.

H.7.7 The transfer operation has emergency eyewash capability at the water troughs.

H.7.8 A wind indicator must be located at the anhydrous ammonia transfer operation in order to determine wind direction for emergency response purposes.

Compliance will be indicated through a visual inspection of all required emergency response equipment.

H.7 Audit Requirements	**Y/N**
In addition to all personal protective equipment specified in Section 0, the following additional equipment is required:	
• Two canisters type respirators or SCBA if required by provincial regulations	
• Resistant suits	
• First Aid kit	
• Fire extinguisher	
• Two water supplies	
• Emergency eyewash capability	
The equipment is accessible and identifiable by all personnel	
Comments	

H.8

H.8 RAILCAR SECURITY

All anhydrous ammonia railcars must comply with the requirements of the anhydrous ammonia railcar security standard.

H.8.1

H.8.1 Railcar Seals

Railcars must be sealed while in transit, both to and from the destination, using a steel cable type seal.

Compliance will be indicated through a visual inspection of devices used for securing the railcar.

H.8.1 Audit Requirements	**Y/N**
Railcars are sealed while in transit, both to and from the destination, using a steel cable type seal	
Comments	

H.8.2	**H.8.2 Pre-release Inspection** Pre-release inspection is to be completed prior to shipping, and a receiving inspection must be conducted on receipt of the rail car. *Compliance will be indicated through a visual inspection of completed pre-release and receiving inspection forms.*

H.8.2 Audit Requirements	**Y/N**
Pre-release inspection has been completed prior to shipping, and receiving inspection has been conducted in receipt of the rail car	
Comments	

SUMMARY FOR SECTION H TO BE COMPLETED BY THE AUDITOR

SECTION H	Yes/No
All Mandatory Items Are Present	
Meets Best Practices	**/1**

SECTION I - INSURANCE

This section contains the insurance requirements for an anhydrous ammonia handling operation.

I.1

I.1 INSURANCE

The ammonia operation has documentation of insurance coverage.

The facility has documentation that gives evidence of current policies of insurance covering the following areas of risk exposure:

1. Environmental impairment liability (EIL) in the minimum amount of $1 million covering third party bodily injury and property damage and off-premises clean up expenses with $1 million policy aggregate for all occurrences; and $1 million covering on-premises clean up with $1 million policy aggregate for all occurrences.
2. Owned automobile liability (applicable to any and all vehicles that are owned or leased or operated by the facility in connection with the facility's business) covering bodily injury or property damage to third party interests in the minimum amount of $5 million per loss occurrence.
3. Non-owned automobile liability in the minimum amount of $5 million per loss occurrence.
4. Comprehensive General Liability (CGL) in the minimum amount of $5 million per loss occurrence.

Note:

a) Any endorsement or other policy wording that directly or indirectly selects fertilizers as specifically excluded from coverage, or that selects fertilizers for diminished coverage, is NOT acceptable.

b) No deductibles more than $25,000 are permitted.

Compliance will be indicated through examination of the confirmation of coverage form.*

*Note: A copy of the Insurance confirmation form can be found at the back of this book.

I.1 Audit Requirements	**Y/N**
An examination of the confirmation of coverage form indicates all required insurance coverage is: • Within the current policy period • All limits and deductibles meet the requirements as specified on the form	
Comments	

SUMMARY FOR SECTION I - TO BE COMPLETED BY THE AUDITOR

SECTION I	Yes/No
All Mandatory Items Are Present	
Meets Best Practices	0/0

SECTION J – EXPANDED STORAGE CAPACITY AT ENCROACHED SITES

This section contains audit protocols that are **only** required for grandfathered or encroached sites that undergo renovations to expand storage capacity. This section does not apply to renovations on sites that meet the minimum setback requirements as set out in Section A.1.1. Reference 3.6.2 Expanded Storage Capacity at Encroached Sites (page 22)

Encroached sites are defined as operations certified as compliant with the Anhydrous Ammonia Code of Practice which are

a) less than 1.5 kilometres from the border of a city, town, village or hamlet, or from evacuation-sensitive facilities such as hospitals, schools, residential developments or senior citizens homes; or
b) less than 500 metres from any occupancy (e.g. rural residence or a small business); or
c) less than 50 metres from an environmentally sensitive area (lake, stream, wetland etc.)

because they were grandfathered upon initial certification or have been encroached upon since initial certification by expanded municipal borders or by neighbouring property development.

J.1 SAFETY DEVICES

J.1.1 Break-Away Devices

Engineered break-away devices, that are designed to separate and provide positive closure to both sides of the separation, are installed at each bulkhead liquid and vapour line between a mechanically secure point and the transfer hose connection. The mechanically secure point shall be designed to withstand at a minimum two times the maximum shear force required to separate the breakaway.

J.1.1 Audit Requirements	Y/N
Engineered break-away devices are installed at all transfer bulkheads on both liquid and vapour lines	
Comments	

J.1.2 ISC Valves

Internal Self Closing (ISC) Valves are installed on all liquid and vapour tank openings except when product flow is only into the tank, when a back-check valve may be used.

J.1.2 Audit Requirements	Y/N
ISC valves are installed on all liquid and vapour tank openings	
Comments	

J.1.3	**J.1.3 Emergency Shutoff Valves** Emergency Shutoff Valves (ESV) or ISC valves are installed on each liquid and vapour line as close as practical to each transfer bulkhead on the vessel side prior to the last manual valve.

J.1.3 Audit Requirements	**Y/N**
Emergency Shutoff Valves (ESV) or ISC valves are installed on each liquid and vapour lines	
Comments	

J.2	**J.2 EMERGENCY SHUTDOWN SYSTEM**
J.2.1	**J.2.1 Pull-Away Event Activation** A pull-away event at any bulkhead point will activate a full system shutdown without human intervention

J.2.1 Audit Requirements	**Y/N**
Demonstration of the functionality of each pull-away station	
Comments	

J.2.2	**J.2.2 ISC Valve Closure** Closure of all ISC valves installed on the storage vessel(s) when a shutdown event is triggered

J.2.2 Audit Requirements	**Y/N**
Demonstration of the functionality of the system to close all ISC valves installed within the piping system	
Comments	

J.2.3	**J.2.3 ESV Closure** Closure of all ESV's installed in the piping system when a shutdown event is triggered

J.2.3 Audit Requirements	**Y/N**
Demonstration of the functionality of the system to close all ESV valves installed within the piping system	
Comments	

J.2.4	**J.2.4 Monitoring Feature** A monitoring feature that will trigger a shutdown event if no input is received from the operator every five (5) minutes when the system is active

J.2.4 Audit Requirements	**Y/N**
Demonstration of the monitoring feature functionality to shut down the system when no input is received from the operator every five minutes	
Comments	

J.2.5	**J.2.5 Wireless Transmitter** Wireless transmitter (with a minimum workable distance of 46 metres (150 feet)) capable of triggering a shut down of the system remotely

J.2.5 Audit Requirements	**Y/N**
Demonstration of the wireless transmitter functionality to shut down the system from the distance of 46 metres (150 feet)	
Comments	

J.2.6	**J.2.6 Kill Switch** Pump power/energy source “kill switch”, that is triggered by a shutdown event.

J.2.6 Audit Requirements	**Y/N**
Demonstration of the system shutting off the pump power/energy source resulting from a shutdown event	
Comments	

J.3	**J.3 DAMAGE PROTECTION** Damage protection is installed around all storage vessel(s) and piping systems to prevent contact from motorized vehicles.

J.3 Audit Requirements	**Y/N**
Damage protection is installed around all storage vessel(s) and piping systems to prevent contact from motorized vehicles.	
Comments	

J.4	J.4 ANNUAL INSPECTION A documented visual inspection and leakage test is performed on all storage vesse annually.

J.4 Audit Requirements	Y/N
A documented visual inspection and leakage test is performed on all storage vessel(s) annually.	
Comments	

SUMMARY FOR SECTION J - TO BE COMPLETED BY THE AUDITOR

SECTION J	Yes/No
All Mandatory Items Are Present	
Meets Best Practices	0/0