Nurse Tank Safety Council of Canada

Anhydrous Ammonia Nurse Tank Quality Control Manual

For the inspection, test, and retest of nurse tanks and applicator tanks for the Transportation of Dangerous Goods (TDG) in accordance with CSA B620-20.

Revision 8.0

Published 2021

IMPORTANT

Introductory Note:

Quality Control Manual for

- □ Manufacture [M]
- □ Modification [Mod]
- □ Repair [R]
- □ Assembly [A]
- ■ Inspection, Test, and Retest [IT] as per Section 7, CSA B620-20

Of TC 51 Portable Tanks for the Transportation of Dangerous Goods by Road in accordance with CSA B620-20

Control Number: _____

Revision Number: **8.0**

Approved By: _____

Date: April 2021

Disclaimer: This Quality Control manual is provided as a template that in part satisfies the requirements to become a Transport Canada Registered Facility for the inspection, test, and retest of TC51 portable tanks for use with anhydrous ammonia in accordance with clause 8.1.4 of CSA B620-20. Facilities seeking registration with Transport Canada are responsible for meeting all of the requirements outlined in clause 8.1.4, ensuring their registration is current and this template is customized to meet the specific requirements at each facility.

Every effort has been made to ensure the accuracy of the information published in this manual. However, due to the constant change in regulations, it is impossible to guarantee the absolute accuracy of the information contained within this manual. The publisher accepts no liability for any errors, omissions, inaccurate information, or consequences arising therefrom. The users of this manual must satisfy themselves that the information is appropriate and suitable for their intended use.

Please ensure you have obtained the most recent edition of this manual. Published 2021.

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Sections Required by
Appendix B 1 of B620-20CSA B620-20

1.1 - Scope of the quality Control Manual

This manual will describe the protocol and procedures for inspecting, testing, marking and maintaining nurse tanks, applicator tanks and TC51 tanks used strictly for anhydrous ammonia in accordance with the CSA B620-20 and CSA B622-20 standards. This will include:

- **ANNUAL** External Visual Inspections as per the CSA B620 requirements;
- Hydrostatically testing the pressure vessel as per the CSA B620 requirements; and
- Annual hose testing as per the CSA B620 requirements
- Describe where these activities will take place.

1.2 - Tank Owner Participation

In order to utilize this Quality Control manual, the participating tank owner / dealership must:

- Employ or contract qualified personnel to perform the testing, inspections, marking and maintenance of the anhydrous ammonia nurse, applicator tanks and hoses.
- Be a member in good standing of the Canadian Association of Agri-Retailers (CAAR);
- Purchase inspection/test markings from the Nurse Tank Safety Council of Canada (NTSCC);
- Permit inspection/test findings to be shared with the NTSCC, CAAR, Fertilizer Canada and/or Transport Canada upon request;
- Maintain detailed records on all inspections and tests for the time interval required by CSA B620-20;
- Personnel performing the work for the tank owner must hold a valid certificate of training from the NTSSC, have the required experience as per CSA B620-20, and hold a valid TDG training certificate;
- Possess a current and valid copy of both CSA B620-20 and CSA B622-20 standards. These are essential reference documents and must be readily available at the testing location.

1.3 - Eligibility of Pressure Vessels

All nurse and applicator tanks inspected / tested under the protocol established by the NTSCC must be owned by a member company of CAAR or a farmer customer of a CAAR member company.

- The specific requirements for selecting nurse and applicator tanks can be found in CSA B622-20 titled *"Selection and use of highway tanks, TC portable tanks, and ton containers for the Transportation of Dangerous Goods, Class 2".*
- The pertinent section in CSA B622-20 is 6.2 Requirements for specific dangerous goods and 6.3, Specific Requirements, #55. *Tanks to be inspected must meet these criteria.*
- Copies of this important standard can be ordered from the Canadian Standards Association. www.shop.csa.ca or phone 416-747-2233.

1.4 - Nurse Tank Safety Council of Canada

The Nurse Tank Safety Council of Canada is a technical committee operating under the supervision and authority of the Canadian Association of Agri-Retailers. It is staffed with representatives from the anhydrous ammonia industry who are responsible for managing the operations of the Program. Positions on the NTSCC are two year terms, and the members are appointed by the CAAR Board. The Chairman is elected by the members of the NTSCC.

The NTSCC administration office is located in the CAAR office at:
205 – 1 Wesley Ave.
Winnipeg, MB R3C 4C6
Tel: (204) 989-9303
Fax: (204) 989-9306

Committee Members:

Mark Coppicus
Federated Co-operatives Ltd.

Ken Cram
Redfern Farm Services

Glenn Dickson
CAAR Consultant

Brian Downie
Shur - Gro Farm Services

1.5 - Provincial Boiler Branch (or Equivalent) Contacts

British Columbia
Safety Engineering Services Division -Boiler, Gas, and Railway Branch Field Operations, Boiler and Pressure Vessel Safety
505 6th St., Suite 200
New Westminster, BC V3L 0E1
Phone: (604) 660-6243 Fax: (604) 660-3460

Alberta
Alberta Boilers Safety Association
9410 20th Ave.
Edmonton, AB T6N 0A4
Phone: (780) 437-9100 Fax: (780) 437-7787

Saskatchewan
Saskatchewan Corrections and Public Safety Boiler and Pressure Vessel Safety
2202 2nd Ave.
Regina, SK S4R 1K3
Phone: (306) 798-7111 Fax: (306) 787-9273

Manitoba
Department of Labour Inspection and Technical Services Manitoba
Manitoba Office of the Fire Commissioner
508- 401 York Ave.
Winnipeg, MB R3C 0P8
Phone: (204) 945-3373 Fax: (204) 948-2309

Ontario
Technical Standards and Safety Authority Boilers and Pressure Vessel Safety
345 Carlingview Drive, Toronto, ON M9W 6N9
Phone: (416) 325-2000 Fax: (416) 973-9907

Québec
Régie du bâtiment du Québec
545, boul. Crémazie Est, 4e étage Montréal, PQ H2M 2V2
Phone: (514) 873-0976 Fax: (514) 864-2903

2.1 - Abbreviations

ASME – American Society of Mechanical Engineers

CSA B620-20 – CSA Standard for "Highway tanks and TC portable tanks for the transportation of dangerous goods." 2020 Edition.

CSA B622-20 – CSA Standard for "Selection and use of highway tanks, TC portable tanks, and ton containers for the transportation of dangerous goods, Class 2". 2020 Edition.

CAAR – Canadian Association of Agri-Retailers

CRN – Canadian Registration Number *CSA* – Canadian Standards Association

EDC – Emergency discharge control

EFV – Excess Flow Valve

EVI – External Visual Inspection required on an Annual Basis

HRV – Hydrostatic Relief Valve

HT – Heat Treated or Stress Relieved

KPA – Kilopascals

MAWP – Maximum Allowable Working Pressure

NB – National Board of Boiler and Pressure Vessel Testers

NQT – Non-quenched and tempered tank

NTSCC – Nurse Tank Safety Council of Canada

P – Marking on a tank to denote a hydrostatic pressure test

PRV – Pressure Relief Valve *PSI* – Pounds per square inch *QC* – Quality Control

QT – Quenched and tempered tank

TC – Transport Canada

TDG – Transportation of Dangerous Goods

TSF – Tombstone File

UN – United Nations

V – External Visual Inspection required on an Annual Basis

2.2 - Definitions

Anhydrous Ammonia Code of Practice (The Code): industry stewardship program administered by Fertilizer Canada that outlines best practices applicable to the distribution, storage and handling of anhydrous ammonia to ensure safety and security. All anhydrous ammonia agri-retail sites in Canada must be fully compliant with the standards outlined in the Ammonia Code of Practice. The Code applies to agricultural ammonia including road and rail transportation, storage and handling of products. Available online at www.fertilizercanada.ca.

Applicator Tank: see definition of nurse tank.

ASME: The engineering manufacturing standard to which non TC specification tanks are manufactured. These tanks must have a CRN number to be tested and inspected in this NTSCC program. Tanks made in the USA may also have a NB number but must still have a CRN number.

Baffle: a non-liquid tight transverse partitioning device welded into the tank that deflects, checks, or regulates fluid motion in a tank.

Bung: A threaded plug that is used to block off an unused threaded coupling in a tank.

Bleeder Valve: Installed on all hose valve ends, bleed valves are small valves used to remove liquid and / or vapour that is trapped between two valves.

Bulge: A localized swelling of the tank. A bulge can be identified by looking for variations in the original symmetry of the tank shell and head. Tanks with visible bulges must be IMMEDIATELY removed from service.

Corrosion: Results in the deterioration of the tank exterior. The root cause can be from several different sources but it is most often caused by deteriorating paint letting rust corrode the surface of the steel shell or head of the tank. If any area of the tank wall exhibits corrosion then the minimum remaining wall thickness must be checked to be sure it remains in compliance with CSA B620-20CSA B620-20.

Canadian Registration Number (CRN): Indicates that the design has been reviewed and approved by one or more of the provincial Boiler and Pressure Vessel Authorities.

Data Plate: A plate affixed to the tank at the time of manufacture that lists all data pertinent to the construction of the tank. Also known as an **identification plate**.

Dent: A localized depression in the tank shell. It is normally caused by a direct impact with another object. Dents are frequently associated with a gouge. Dents must be checked for depth and dimensions with the requirements of the CSA B620-20CSA B620-20 standard to ensure the tank can continued to be used.

Emergency Discharge Control

Section 6.2.9.2 of CSA B620-20 specifies that portable tanks must meet the same requirements as TC331 highway tanks under section 5.3.2.5 of B620. That clause specifies that highway tanks under 13,250 litres or 3500 U.S. gallons in volumetric capacity must be equipped with an off truck emergency shutdown system. Nurse tanks are exempt from this requirement ***if the tank is equipped with a remote means of closure operable from the tractor and incorporates a passive emergency shutdown system, and each discharge line shall be equipped with a remotely activated ISC valve.***

Emergency Water Tank: The water tank mounted on the ammonia tank for first aid usage. It must contain a minimum of 20 litres of clean, fresh water.

Excess Flow Valve: are built into the liquid withdrawal valve. The excess flow valve is designed to close and shut off the flow of product if there is a sudden and unexpected outflow of product.

External Visual Inspection: new annual requirement for visual inspections. A "V" inspection that involves a detailed and thorough examination of the exterior surface, welds, attachments, couplings, guards and any other features permanently attached to a nurse tank. The inspection is used to determine paint quality and to look for corrosion, dents, bulges, gouges, welding defects, pinhole leaks, cracks etc.

External Visual Inspection Decal: Signifies enrolment in the NTSCC program and month and year of the most recent visual inspection of the tank.

Fixed Liquid Level Gauge: will show when the tank has reached 85% capacity. A fixed liquid level gauge will discharge vapour up to the point the tank being filled reaches 85% capacity. Once liquid ammonia has reached the 85% level, the valve will begin to discharge small amounts of liquid ammonia.

Float Gauge: Shows the amount of ammonia remaining in the tank as a percentage of the tank's capacity. These gauges are not known to be very accurate and should not be relied on when filling a tank.

Gouge: An elongated depression that penetrates the shell where material has been removed by a sharp object. Gouges can reduce the thickness of the pressure vessel wall (i.e. a deep scratch) and are frequently associated with a dent.

Hose Assembly Working Pressure (HAWP): The anticipated working pressure of the hose assembly at normal operating conditions. The HAWP does not exceed the maximum allowable working pressure.

Hydrostatic Relief Valve (HRV): A replaceable valve that will release a buildup of pressure caused by the expansion of ammonia trapped in a hose or piping system between two closed valves. These HRVs must be replaced if they have vented ammonia.

Hydrostatic Test: a "P" test that Involves pressurizing the primary pressure envelope, all closures, and fittings (i.e. up to the first valve exiting the tank) with water to 150% of the maximum allowable working pressure as indicated on the tank data plate. All piping and accessories must also be tested at a

pressure not less than 80% of the tank's MAWP. See the permit in Appendix P for further information on whether a 3 year or 5 year hydrostatic testing schedule is required.

Identification Plate: A plate affixed to the tank at the time of manufacture that lists all of the manufacturing data, specifications, dates etc. that are pertinent to the construction of the tank. Also known as a **data plate**.

Inspection Assistant: An employee who is assisting with the testing and inspection procedures. An inspection assistant must always be under the close direct visual supervision of a trained and certified tank inspector who is ultimately responsible for the test and inspection procedures and results. Inspection assistants are not qualified to work on their own.

Kilopascals (KPA): Unit of measurement for pressure.

Leakage Test: Conducted as per Clause 7.2.5 with reference to Table 7.2. Tabe 7.2 says in note #9 *"A TC 51 portable tank and/or a tank described in CSA B622, Clause 6.3, Specific Requirement 55 that is loaded and unloaded without being removed from the vehicle shall be inspected and tested according to the requirements for TC 331 tanks specified in this Table."* This brings in the 1 year requirement for a leakage test.

Leak: An improper seal between the interior of the tank or piping system and the atmosphere. A leak can develop in the pressure envelope (normally near a weld or junction in the metal) or around an appurtenance (i.e. pressure relief valve) or through a worn valve or closure.

Maximum Allowable Working Pressure (MAWP): The maximum gauge pressure permissible at the top of a completed vessel in its normal operating position at the designated coincident temperature for that pressure.

Non Quenched and Tempered (NQT): Refers to a method of preparing steel for use in TC51 specification tanks.

Nurse Tank: A pressure vessel with a capacity of 11,365 litres (3,000 US gallons, or 2,500 Imperial Gallons) or less, which is used to contain ammonia under pressure and operated exclusively for agricultural purposes. It is normally mounted on a four-wheeled wagon or on a cultivator or applicator. A nurse or applicator tank is different from a TC51 specification tank. Nurse or applicator tanks are allowed under CSA B622-20, Section 6.2 Requirements for specific dangerous goods, and 6.3, Specific Requirements, Specific requirement #55.

Nurse Tank "A" End: When a vessel is mounted on a farm wagon the end of the vessel closest to the wagon hitch is the "A" end.

Nurse Tank Safety Council of Canada: A council of members structured to implement and manage the CAAR-QC inspection/test program.

Overlay patch: material (other than weld material) that has been added either internally or externally

over the parent material without removing the defective material during the process of repair. The intent is to reinforce the repaired area. This does not include mounting pads (i.e. leg pads) intentionally installed at the time of manufacture or modification for the installation ofcomponents.

Pressure Relief Valve (PRV): Devices that will relieve excess pressure and thus protect the integrity of the tank. Typically, they are either rated for 250 or 265 PSI. The pressure rating of the PRV must match the design pressure rating of the tank.

Pound per square inch (PSI): Unit of measurement forpressure.

Program Participant: A company or legal entity that is registered to inspect and test applicator or nurse tanks pursuant to the CSA B620-20 standard using the NTSCC program for their nurse tank inspection/test procedures.

Quenched and Tempered (QT): Refers to a method of preparing steel for use in TC51 specification tanks.

Stress Relieved: Denoted on tank data plates usually as an HT. Stress relieving is normally a heat treatment applied to the manufactured tank to remove internal residual stresses generated by prior manufacturing processes such as machining, cold rolling and welding. The treatment is not intended to produce significant changes in material structures or mechanical properties, and is therefore normally restricted to relatively low temperatures. Stress relieved tanks can continue to be hydrostatically tested on a 5 year cycle.

Tank ID: A unique number assigned to every tank at a Program Participant's site. This number ties each Tombstone File to the individual tank (i.e. tank #45).

TC51 Specification Tanks (See CSA B620-20 for a complete definition)**:** Portable tanks for liquefied compressed gases such as NH_3 that have a water capacity greater than or equal to 450 L (119 US gal) and a design pressure of at least 100 psi and no more than 500 psi. Portable tanks are intended for the transport of dangerous goods by different modes of transportation for the handling of dangerous goods. TC51 portable tanks are designed to be loaded into or onto and temporarily attached to a transportation vehicle. TC51 tanks may be equipped with skids, mountings, or accessories to facilitate such mechanical handling while fully loaded. Regulations differ for TC51 tanks that are filled and emptied without being physically removed from the means of transport.

Specific Requirement # 55 (SR55): Found in CSA B622-20, Section 6.3 Specific Requirements, SR #55. This Specific requirement #55 authorizes the use of applicator or nurse tanks provided that the applicator or nurse tanks are periodically inspected and tested in accordance with the requirements for TC 51 tanks under CSA B620-20.Please read SR#55 for the complete list of qualifications required to be met for nurse tanks in order to comply with CSA B620.

Spray Fill: A valve that handles liquid product, but is attached to the vapour space of the tank is called a "spray fill" valve. It must be labelled "Spray Fill" and either labelled "Vapour Valve", or colour-coded accordingly.

Tank Inspector: An individual who meets ALL of the qualifications required for a Tank Inspector under

CSA B620-20 Section 8.1.6.1 Tank Inspector qualifications. CSA B620-20 defines a tank inspector as: "a person who inspects tanks in accordance with Clauses 5, 6, and 7 and who is qualified in accordance with Clause 8." Responsible for all inspections, tank and hose testing, tank maintenance and for staying on top of changes in the rules and regulations of the NTSCC program and the current CSA B620-20 and B622-20 standards. Training available to Tank Inspectors through the NTSCC program on the Quality Control manual is valid for a period of three years from the training date.

Tank Tester: An individual who meets all of the qualifications listed under *CSA B620 Section 8.1.6.3 Tester*. CSA B620-20 defines a tank tester as: "a person who is responsible for performing a test required by Clause 7 of this Standard and who is qualified in accordance with Clause 8, Tank Testers must work under the supervision of a fully qualified tank inspector. For the purposes of the NTSP testing and inspection program, tank testers are permitted to conduct hydrostatic tests of anhydrous ammonia nurse tanks and hoses to the CSA B620 specification for TC51 spec tanks including non-spec nurse or applicator tanks.

Transportation of Dangerous Goods (TDG): The federal regulations governing the handling, offering for transport, and transport of dangerous goods on the public roadways. These regulations are commonly referred to as the TDG Clear Language Regulations. Copies are available at www.tc.gc.ca/tdg.

Tombstone File: A file that contains all records, pertinent data, out of service reports and inspection and repair records for ammonia vessels that are inspected / tested under the NTSCC program.

3.1 - Qualified Individuals to Conduct Inspections and Testing

The following individual(s) are qualified as ***TANK INSPECTORS or TESTERS*** to conduct inspections and tests in accordance with the protocol outlined by the NTSCC and in accordance with all of the qualifications outlined by CSA B620-20 under *Section 8.1.6 Tank Inspector and Tank Tester qualification*.

Tank Inspectors and Testers

Name	Inspection Standard	Testing Standards	Training Expires (dd/mm/yy)	Quality Control Duties (Check Appropriate)			
				K	V	P	Internal Auditor
John Brown	TC51	TC51	February 16, 2019	x	x	x	x

Records of Tank Inspector and Tank Tester Qualifications:

A detailed record of education, training and years of relevant experience must be kept available and ready for review by Transport Canada inspectors. It is recommended that these records be kept at the office location where the tank tombstone files are kept. Photocopies of relevant degrees, diplomas and training courses should be kept in the file as well as a detailed record of work experience with ammonia and tank testing work.

3.2 - Employer Verification of Qualifications

I,_____, (print Employer's or Owners name) hereby verify that the above noted individuals have the authority, training, qualifications and responsibility to conduct the designated tests, inspections, and audits (as indicated above) on my nurse tank fleet in accordance with the NTSCC protocol and the CSA B620-20 standard. These individuals have the authority to remove any tanks from service that do not pass inspection and testing until a decision is made on having those tanks repaired at a TC Registered repair facility, tanks repainted or the tanks are permanently removed from service.

Employer's or Owner's Signature:_____

Title: _____

Date (dd/mm/yy): _____

4.1 - Overview

The general organizational structure for quality control for individuals/Program Participants using the NTSCC inspection/test protocol is shown below. This is an example only and your organizational chart could differ slightly.

CanadianAssociation of Agri-Retailers (CAAR)

↓

Nurse Tank Safety Council of Canada

↓

Fertilizer Dealership Name: _____

↓

Tank Inspector's Names (print): _____

_____

↓

Tank Tester's Names (print): _____

_____

5.1 - Organization Responsible for Issuance of the Quality Control Manual

The application and distribution of this manual is the responsibility of the Nurse Tank Safety Council of Canada. The NTSCC will obtain approval for all of the procedures contained therein and be responsible for printing and distributing the document from the office location listed in Section 1.4.

5.2 - Maintenance of the Quality Control Manual

The NTSCC is responsible for informing all Program Participants of the necessary changes required for the existing QC manual. A written notification of any upcoming change will be sent immediately upon the NTSCC learning of a necessary revision. Following that, the NTSCC will revise the current manual, and distribute the new information to all users so that they can amend their existing NTSCC-QCmanual.

The NTSCC administration office will make every effort to forward NTSCC-QC manual revisions to each registered facility in a timely manner and to the most current mailing address. However, it is the responsibility of the registered facility to inform the NTSCC administration office of any address changes.

Upon receiving the updated information, the Program Participant and the Tank Inspector must update the Revision Control Section of this QC manual. This confirms that the updated information has been incorporated into the existing NTSCC-QC manual housed at the tank site, that the previous information has been destroyed, and that all Tank Inspector(s) and Tank Tester(s) understand the necessary changes and have incorporated the amendments into their testing and inspection routine.

A completed Revision Control Sheet from the Revision Control Section must be returned to the NTSCC administration office at the address in Section 1.4. A copy of the Revision Control Sheet must also be signed and placed in the manual in Section 22.3

N/A Sections		Sections 6.0-11.0
Drawing and Design Control	Section 6.0	N/A
Manufacture	Section 7.0	N/A
Assembly of Tanks	Section 8.0	N/A
Modification	Section 9.0	N/A
Repairs	Section 10.0	N/A
Material Control	Section 11.0	N/A

B620 Requirement for Section 12.0:

Step-by-step written procedures, reports, and criteria to be used when inspecting, testing, and retesting new or in-service tanks shall be described. These procedures and reporting requirements shall be applicable to all activities and tank types identified in the scope and shall be included in the manual or in separate identifiable documents referenced in the manual.

12.1 - Tank Specifications to be Inspected or Tested:

- TC51 anhydrous ammonia nurse tanks and non-spec anhydrous ammonia nurse tanks as per B620-20 and CSA B622-20 Section 6.2 and 6.3.

From CSA B-622-20, 6.3 Specific Requirements

SR 55.

A nurse tank shall not have to meet the specification requirements for a TC 51 tank or the requirements for:

i. Tank mounting in accordance with Clause 5.1 (l);
ii. Tank protection in accordance with Clause 5.2.5 (b)(i),(ii);
iii. Highway and portable tanks in compressed liquefied gas service (see Clause 5.2.6); and
iv. Nurse Tank Piping (see Clause 5.2.7)

if it was manufactured prior to 12 January 2018 and

(a) it is periodically inspected and tested in accordance with the requirements for TC 51 tanks in Clause 7 of CSA B620-20, except that the external ~~visual~~ inspection shall be conducted annually and the pressure test shall be conducted every 3 years, except it shall be 5 years if it can be demonstrated that:

i. it has been Post Weld Heat Treated and a MAWP 265 psi.
ii. it has been Post Weld Heat Treated and a MAWP 250 psi and can be demonstrated to have been designed for NH_3 use;

(b) it has a MAWP greater than or equal to 1725 kPa, gauge (250 psi), and meets the requirements of the ASME *Code,* Section VIII Division 1, under which it was built and is marked accordingly;
(c) it is equipped with safety relief valves meeting the requirements of CGA S-1.2;
(d) it is painted white or aluminum;
(e) it has a volumetric capacity of 11 365 L (3000 US gal; 2500 Imp. gal) or less;
(f) it is loaded to a filling ratio no greater than 56;
(g) it is securely mounted on a farm wagon or a farm implement; and
(h) any repairs made after the enforcement date of this Standard have been made in compliance with the requirements for TC 51 tanks in Clause 7.5 of CSA B620-20
(i) after January 1, 2022, for interconnected Nurse Tanks or Nurse Tanks with a capacity of 10,000 liters or greater, it is equipped with an appropriate emergency discharge control as specified in Clause 6.2.9.3 of CSA B620-20.

12.1.0 – Annual Leakage test (K) and External Visual Inspections (V)

Both must be conducted ***annually***. There must always be a visual inspection and a leakage test every year with one set of them occurring concurrently with the required hydrostatic pressure test which will be either every 3 or 5 years.

Conduct the leakage test FIRST before the tank is emptied and the vapour is bled off through water. The procedures to conduct a leakage test are listed below. All external visual inspections (V) must be conducted prior to the tank being sandblasted and painted. External visual inspections must be performed under direct high intensity lighting, or outdoor sunlight, to ensure any and all possible

defects are identified.

12.1.1 – **Annual Leakage test – Mandatory**

The requirements for the Annual Leakage test are found in Section 7.2.5 of CSA B620-20. This section is brought into force for annual Leakage tests for nurse tanks and TC51 tanks used for ammonia by Table 7.2, Note #9.

CSA B620 – 20, Section 7.2.5 says
7.2.5.1
The leakage test shall ensure that the tank closures, piping, valves, and gaskets are in good condition and do not leak within the piping or to the exterior. ***The leakage test shall be performed in conjunction with the external inspection (see Clause 7.2.1.1)*** in accordance with the following:

a) Any venting devices set to relieve at less than the test pressure shall be removed or rendered inoperative.

b) Product piping and all associated valves and accessories shall be in place and operative.

c) Each valve and closure shall be tested in sequence.

d) A combination of test methods may be used to test tank components and accessories, provided that all requirements of this Clause are met.

e) One of the following shall be used as the test medium:
i) The normal lading of the tank;

f) When air or other gas is used as the test medium,
i) A soapy water mixture or other material that will foam or bubble to indicate the presence of leaks shall be used to locate leaks; or
ii) Another method that is at least as sensitive as the method specified in Item f) i) shall be used to locate leaks.

g) During the test, precautions shall be taken to prevent over pressurization of the tank

h) The test pressure shall be
i) for MC 330, MC 331, or TC 331 highway tanks used in dedicated liquefied petroleum gas or dedicated anhydrous ammonia service, not less than 414 kPa (60 psi);
ii) The test pressure shall be maintained for at least 5 min.
All leaks shall be repaired before the tank is marked as specified in Clause 7.4. A report shall be completed as specified in Clause 7.3.

Test and Inspection reporting requirements are found in Section 7.3 of CSA B620-20. Test and Inspection Marking requirements are noted in Section 7.4 of CSA B620-20. Both of these

requirements are summarized later in this QC Manual and are outlined on the sample forms in the Appendices of this document.

Recommendation:

The lading of the tank is the correct medium to use to check for leaks on an anhydrous ammonia tank. Using Ammonia as the test medium is the ONLY test medium that this QC Manual will address. Leak testing should be done in the warm summer months on tanks that are filled to 85%. This should mean that your test pressure will be at or higher than the minimum 60 psi that is a requirement.

If ammonia has to be pumped into the tank to raise the pressure then you must use a certified pressure gauge between the fill valves to monitor tank pressure. Do not exceed the rated pressure of the tank.

You will need make up an adapter coupling to enable you to install and use a calibrated pressure gauge to ensure that you get an accurate pressure reading for the required 5 minutes. This pressure gauge will have to fitting to one of the valves in order to install it safely.

Summary

- An annual leakage test must be performed as per Clause 7.2.5 with reference to Table 7.2. Details for this are included on the Annual Leakage test and Annual Visual Inspection form found in the Appendices
- A leakage test is conducted with NH3 in the tank at no less than 60 psi for a minimum of 5 minutes. Further details on the procedure are found in Clause 7.2.5 of CSA B620
- Leaks are readily identified by sound, sight and smell. Many times leaks will result in rusted areas of the tank or rust streaks on the paint.
- At any time a leak in the head or shell of the tank is discovered, the tank must be immediately removed from service for further inspection and/or repair by a Registered Repair Facility. Leaks found in valves, pipes etc. is to be noted on the form. These will need to be repaired or replaced before the hydrostatic test is conducted or before the tank is used in service between hydrostatic test intervals.
- NOTE: Compliance with the NTSCC program and this Quality Control Manual does not authorize a facility to perform structural repairs on the head or shell of nurse tanks.

12.1.2 – Annual Visual Inspection – Mandatory

Once the tester has finished the Annual Leakage test, the inspector can start the Annual Visual Inspection. The tank inspector shall closely examine the following items in a visual inspection. Details on each component follow in Section 12.1.3.

- Tank shell and head surfaces
- Tank shell and head welds
- Tank markings
- Support legs, mounting repads, mounting brackets, rollover and other protective guards

such as rear bumper protection.

- Couplings factory welded into the tank for liquid, vapour valves, PRVs, HRVs etc.
- All piping, valves, hose(s) and hose assemblies
- All hard line piping, couplings, valves and fittings
- All date coded items such as hoses, HRVs, PRVs

To successfully conduct an External Visual Inspection on a nurse tank, the following tools are required.

- Straight edge and measuring tape;
- Ruler and depth gauge;
- Knife / thin blade screwdriver;
- Wire brush / scraper;
- Mechanic's mirror and flashlight;
- Step ladder;
- Magnifying glass.

INSPECTION TIP: Should it be necessary to assess the degree of damage to a tank head (either the A or B end), a physical template of an undamaged head will need to be developed. Use cardboard or another suitable material to fabricate this template.

12.1.3 - Procedures for Conducting an External Visual Inspection (V)

There are seven (7) steps listed below that must be completed when conducting an External Visual Inspection. Each step must be completed in full. If any of the steps below are skipped or missed, the inspection is considered incomplete and void. Reference CSA B620-20 clause 7.2.1.1

Step 1 - Pre-Inspection and External Visual Inspection (V) Preparation

- Remove all attached equipment (i.e. emergency water container, safety kit, etc. so that the entire surface of the tank is visible for close inspection.
- Clean the exterior surface of the tank to remove any dirt, debris or scaling paint. It may be necessary to use a scraper or wire brush.

Step 2 - Documenting Pertinent Tank Data on the Inspection Form

- Obtain and legibly complete an External Visual Inspection form (provided in Appendix 1 of this manual).

- Part 1 (a) contains information on the:

  a. Name and address of the registered facility and inspector conducting the test/inspection;
  b. Individual Transport Canada facility registration number; and
  c. Inspection date.

INSPECTION TIP: If the tank owner and individual conducting the inspection are the same, the wording "same as above" can be included under the NAME, ADDRESS, and PHONE category for this section.

- Part 1 (b) contains information on the:

a. Name, address, and telephone number of the nurse tank owner.

Figure 12.1 an example of a manufacturer's data plate on a nurse tank (non TC51)

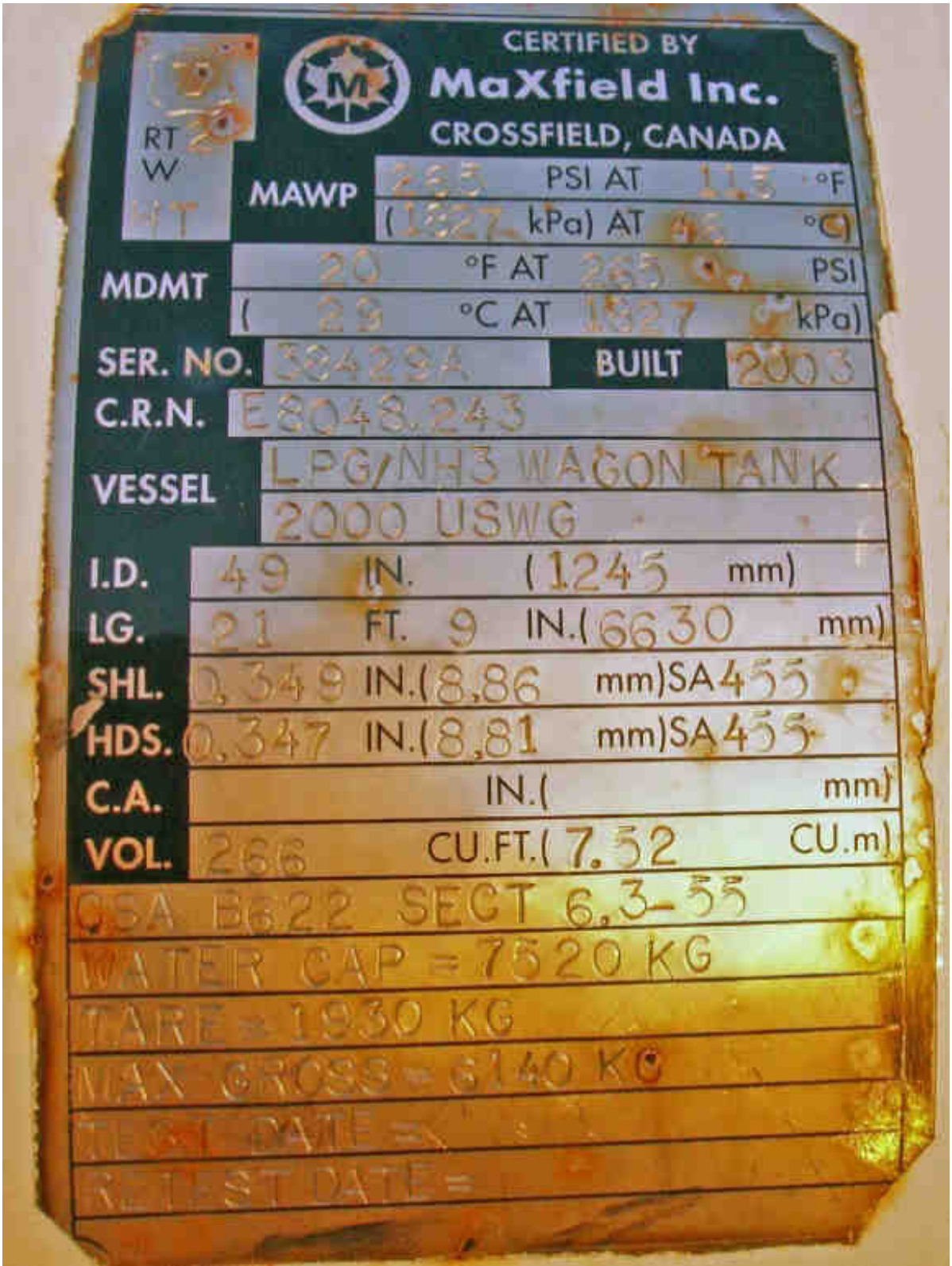


Figure 12.1a TC51 data plates

- Part 1 (c) contains all pertinent tank data for a TC51 specification tank as per Section 6.1.4.7 in CSA B620 - 20. This includes:

(a) tank manufacturer (Tank mfr.);
(b) date of tank manufacture — month and year (Date of mfr.);
(c) assembler where applicable;
(d) completion and certification date — month and year (Cert. date);
(e) original test date — month and year (Orig. Test Date);
(f) TC Specification (TC Spec);
(g) Manufacturer's Design Identification Number (MDIN);[1]
(h) Transport Canada Registration Number (TCRN);[2]
(i) tank serial number (Ser. No. or S/N);
(j) tare weight in kg;
(k) tank maximum allowable working pressure in kPa (MAWP);
(l) original tank test pressure in kPa (Test P);
(m) tank design temperature range — ___°C to ___°C (Design temp. range);[1]
(n) maximum design density of lading — in kilograms per litre (Max. lading density);[1]
(o) vessel material specification number — all numbers to be marked where the material for the shell is different from the material for the heads (Shell & Head Matl. yyy zzz or Shell Matl. yyy zzz and Head Matl. yyy zzz, where "yyy" is replaced by the alloy designation and "zzz" by the alloy type);
(p) tank seam weld material (Weld Matl.);
(q) minimum allowable thickness of shell — in millimetres (Min. shell thick.). When minimum shell thicknesses are not the same for different areas, mark variances (Top ..... Side..... Bottom.....);
(r) minimum allowable thickness of heads — in millimetres (Min. head thick.);
(s) manufactured thickness of shell — in millimetres (Mfd. shell thick.);[3]
(t) manufactured thickness of heads — in millimetres (Mfd. head thick.);[3]
(u) exposed surface area — in square metres;[1]

(v) volumetric capacity — in litres (Cap. Litres);
(w) maximum product load — in kilograms (Max. payload);[1]
(x) maximum loading rate — in litres per minute and optionally in US gallons per minute [Max load. rate, L/min (US GPM) at maximum loading pressure XX kPa (psi)];[1]
(y) maximum unloading rate — in litres per minute and optionally in US gallons per minute [Max. unload. rate, L/min (US GPM) at maximum unloading pressure XX kPa (psi)];[1] and
(z) lining material — if lined (Lining).
(aa) tank design pressure in kPa (TDP);[4]
(bb) periodic tank retest pressure in kPa (Retest P)[5]

INSPECTION TIP: The above information can be obtained from:

- the unit's data plate,
- previous inspection forms
- U-1A Manufacturers Affidavit form that may be contained in the tank's associated Tombstone File.

Contact your Provincial Boiler and Pressure Vessel Branch, the National Boilers Association (see contact list in Section 1.0) or the tank manufacturer to request a copy of the U-1A Manufacturers Affidavit form if you do not have all of the required information.

Pursuant to Clause 7.3.1 k) of CSA B620-20, you will need to document on the form if this tank is used for service carrying a lading that is corrosive to the tank or is it in dedicated service. Check off Yes or NO and if the answer is YES please the lading that is in dedicated service for, which will most likely be anhydrous ammonia.

Step 3 - Examination of Tank Shell, Heads and Appurtenances

(Refer to Section 7.2.1 of CSA B620-20 for further details)

Refer to the following descriptions to assess the "accept" or "reject / action" criteria. Mark any and all findings from the assessment of the tank in Part 2 of the external visual inspection (V) form with either an "accept" or "reject". Use the associated diagrams provided on the external visual inspection (V) form to identify any areas with a deficiency. This will assist with locating the deficient area if and when repairs may be made.

Figure 12.2 Side view of an anhydrous ammonia nurse tank

- Check for corroded areas, dents, distortions, defects in welds, and any other condition, including leakage, that indicates weakness in the tank that might render it unsafe for transportation. Begin the external visual inspection (V) by inspecting the entire tank shell (see Figure 12.2). The entire tank barrel shell and both head surfaces must all be closely examined

looking for bulges, dents, gouges, corroded areas, paint quality, pinhole leaks, cracks or any other deficiency.

- A **Bulge** will appear as a localized swelling of the tank. A bulge can be identified by looking for variations in the original symmetry of the tank shell and head. Tanks with visible bulges must be removed from service.
- Welds between the tank shell and head and welds holding sections of the barrel together must all be closely examined looking for undercuts, voids, cracks, pinholes and other weld defects.
-

    i. **WELD QUALITY** - Variations in weld width, profile height or uniformity are a serious cause for concern and should be discussed with a professional pressure vessel engineer or your provincial boiler and pressure vessel authority. This is to ensure that the welds are of acceptable quality. There have been instances of tank being made, sold and used that had unacceptable weld quality. **Sample photographs of unacceptable welds are found in Appendix W.**

- Support legs, mounting repads, mounting brackets, rollover and other protective guards that are welded directly to the exterior shell of the pressure envelope of the tank (or repad), must be checked for any damage, cracks, pinhole leaks in or around the welds attaching them to the tank. Tank legs without a supporting repad are a frequent source of cracks in the welds that can extend into the pressure envelope of the tank.
- Welds securing couplings into the tank shell for gauges, valves and fittings must be checked for damage, cracks, pinhole leaks etc. in or around the welds attaching them to the tank.
- Ensure the proper functioning of all valves, vents, gauges and emergency devices such as excess-flow valves, HRVs, PRVs, remote closure devices etc. are free of corrosion, distortion, or any other damage that would prevent their normal operation. This check ensures that these items are tight and that any mounting gaskets are in good condition. Any gauges must be fully operational and legible.

- All hard line piping, hose(s), hose assemblies, associated valves, emergency discharge systems, remote means of closure etc. must be carefully examined for any cracks, leaks, abrasions, pinhole leaks, loose fittings, damaged fittings or bolts and that they are properly secured and mounted to prevent damage while in use.
- All hard line piping, couplings, valves, gauges and fittings must be examined to ensure that they are made from acceptable materials to be used in pressure service for anhydrous ammonia. Refer to CSA B620-20 if you are unsure. Example: Common water pipe, valves, couplings and fittings are **NOT ACCEPTABLE** for use with anhydrous ammonia. The same applies to materials made of plastic, brass, copper, bronze and non-anodized aluminum.
- All Pressure Relief Valves (PRV) (see Figure 12.4) and Hydrostatic Relief Valves (HRV) (see Figure 12.5) must be inspected to ensure:
    i. The service life has not expired;
    ii. Rain cap is in place;
    iii. Corrosion/obstructions/signs of leaks are not present;
    iv. All markings such as the expiry date, manufacturer, design pressure rating,

ammonia service approval are legible

- Tank markings must all be closely examined to ensure that all required safety and informational markings are present, in clear and legible condition and that their condition is sufficiently good to last until the next scheduled visual inspection.
- Examine all decals for any bubbles or breaks in the decal surface that could indicate a potential leak in the tank shell under the decal. Decals should not be placed across welds.
- Ensuring that specification and identification plates and other markings on the tank are legible. If a metal identification plate is missing or illegible, the requirements for the tank owner to replace the plate as per Clause 7.7 of CSA B620-20will apply.
- Other attachments such as tank safety kit, emergency water container, metering equipment are not damaged or corroded and that their attachment points are in good condition and not damaged or corroded.
- **Corrosion** results in the deterioration of the tank exterior. Any area of the tank that exhibits corrosion that penetrates deeper than 10% of the wall thickness must cause the tank to be removed from service until a thickness test can be performed by a registered facility for thickness testing.
- Ensuring that hose assemblies mounted on or accompanying the tank do not display any defects listed in Clause 7.2.10.4 of CSA B620-20 and that they have the legible markings meeting the requirements of Clause 7.2.10.6 of CSA B620-20CSA and, where applicable, Clause 7.2.10.of CSA B620-20 indicating that they were pressure tested within the required time period. All hoses must be rated and marked for Anhydrous Ammonia Service with an MAWP rating of 350 psi.

- Annual hose pressure testing may or may not occur with the external visual inspection (V) depending on your schedule for visual inspections. Refer to the Hydrostatic Hose testing **Section 12.3** for all details required for annual hose testing.

Step 4 - Rejection criteria for defects found in external inspections (7.2.1.8 of CSA B-620-20)

Tanks must be rejected when any of the following defects are found during an external inspection:

- less than the minimum thickness remaining under a cut, dig, or gouge;
- any dent with a depth of more than 12.7 mm (0.5 in) where it includes a weld;
- any dent with a depth of greater than 10% of the length of the dent;
- any weld defect, including a crack, pinhole, or incomplete fusion of the weld;
- any structural defect;
- Any repairs made to the tank shell using overlay patches or any welding to the tank shell made by a non-approved repair facility.
- Defective valves, gauges or hoses
- Leakage of any amount regardless of location. Upon discovery of a leak in the pressure envelope:
    i. The tank inspector must immediately inform the NTSCC about the issue.
    ii. The tank must be removed from service for follow up investigation and testing to ensure structural integrity;
    iii. Upon inspection, the tank will be either:
        a. Repaired in accordance with Section 7.5 of CSA B620-20. All work must

be documented on the “Repair Report” and submitted to the NTSCC (CAAR), with details on the source and cause of the leak; or

b. Permanently removed from service in which case an “Out of Service” form must then be completed and forwarded to the NTSCC office (CAAR) along with a diagram showing where the deficiency is located and digital photographs of any visible deficiency

iv. Should a product leak occur at any time, the tank inspector must follow the Accidental Release and Imminent Accidental Release Report Requirements found in Section 8.0 of the TDG Regulations.
Contact CAAR for a copy of this document.

Reference 7.2.6.2 (c) for minimum thickness in CSA B620-20.

Figure 12.3 Surface rust surrounding a tank weld

This type of rusting near a weld of a head to tank barrel
Can sometimes indicate a crack or pinholes that have formed
In the head material or in the weld

Figure 12.4 Pressure Relief Valve

Figure 12.5 Hydrostatic Relief Valve

INSPECTION TIP: Occasionally a tank may be filled with product, however, the service life of the PRV has expired, and an inspection is not immediately due. In lieu of depressurizing and purging the tank, the year, rather than the month may be used as the replacement guideline. However, the decision to do so is entirely the responsibility of the Tank Inspector, and the valve must be replaced by the end of that calendar year. It should also be noted that, should the tank be involved in an accident, the insurance company may revert to the manufacturer's replacement date (i.e. month and year), which may render the insurance null and void, and all liability may accrue to the tank owner. It is essential for the Tank Inspector to check with their insurance carrier prior to employing this clause if necessary.

Step 5 - Placing the Annual external visual inspection (V) and Annual Leakage test (K) Markings on the Tank

The appropriate inspection markings (Section 13) must be placed on the tank once it has successfully passed the external visual inspection (V) and the **Annual Leakage test (K)**. The inspection decal:

- Indicates the date of the inspection;
- Includes the letter "V" which denotes that an external visual inspection (V) was completed;
- "K" would indicate that the tank has passed the leakage test.
- Must be displayed on the driver's side of the "A" end or hitch end of the tank;
- Has letters that must be a MINIMUM of 32 mm in height;
- Has letters must be in a contrasting color to the tank;
- Includes the last 3 digits of the company's TC registration number, affixed to the tank next to the V marking under the "FAC" heading.

Figure 12.6 Example of an *External Visual Inspection* marking. The test was conducted in July, 2016 by a facility with the last three digits of their Transport Canada registration number being 999.

Step 6 - Completing the Annual External Visual (V) Inspection Form

- The tank inspector must satisfy the information requirements in Part 3 of the annual external visual inspection (V) after affixing the V and K markings to the nurse tank.

- The tank inspector signs off in Part 4 that, at the time the annual external visual inspection (V) was conducted as well as the leakage test, the pressure vessel's markings, and all of its appurtenances, are certified for anhydrous ammonia service.

- The tank inspector would indicate that the nurse tank must be removed from service for

repair based on any reasons listed on the annual leakage test (K) or the external visual inspection (V), if any deficiencies were identified during the annual external visual inspection and leakage test.

- The tank inspector would conduct a second follow up annual external visual inspection and leakage test (V & K) once all corrective action or repairs are performed and documented (see Section 20.0). At this time, the tank would either be deemed certified for continued anhydrous ammonia service, or require further corrective action and remain out of service.

- The tank inspector must sign and date the inspection form.

Step 7 - Record-Keeping Requirements

The External Visual forms must:

- be retained by the test facility, at minimum until the next V inspection and K test is performed;
- be placed in the associated tank's Tombstone File; and
- given to the tank's owner by the tank inspector. *

At all times, the Tombstone File must be well-organized, and contain all pertinent information on the previous year's inspections, tank history, etc. All forms must be complete and legible. See **Section 20.2** for complete information on Tombstone File requirements.

> ***INSPECTION TIP**: if the Tank inspector is an employee of the tank owner's company, or the actual tank owner, one copy contained in the Tombstone File will suffice for the above requirements.

12.2 - Tank Specifications to be Hydrostatically Tested:

- TC51 and non-spec ASME portable or nurse tanks as per CSA B622-20 Section 6.2 and 6.3, SR55 used in anhydrous ammonia service.
- NTSCC and Fertilizer Canada's Ammonia Code of Practice requirement is that tanks to be inspected and tested must have CRN numbers or recognized equivalent specifications.

12.2.1 - General Requirements

Tank testers must hydrostatically pressure test each tank a minimum of once every 3 years or 5 years depending on whether the tank was post weld heat treated. This is commonly referred to as stress relieving. Full details are in the CSA B620-20. The hydrostatic pressure test is conducted in accordance with the testing requirements for TC51 vessels set out in CSA B620-20 Section 7.2.7 Pressure tests. Section 7.2.7.2 requires each tank of multi tank unit, to be tested separately. The hydrostatic test shall be conducted as follows: ***WARNING: Do not conduct a hydrostatic test on any tank suspected of having a weakness***.

- Complete the annual external visual inspection and the annual leakage test BEFORE conducting the hydrostatic pressure test.
- All relief devices that are set to operate at or below the hydrostatic test pressure must be clamped, plugged, or otherwise rendered inoperative; and all closures must be in place.
- All relief devices shall be returned to operating condition immediately after the test is completed.
- The tank, including its domes, shall be completely filled with water, or other liquid having similar properties, at a temperature not exceeding 38 °C (100°F).
- Precautions shall be taken during the test to prevent over pressurization of the tank.
- Pressure shall be gauged at the top of the tank.
- Tank test pressure shall be established in accordance with Table 7.4 of CSA B620-20. This will be 150% of the Maximum Allowable Working Pressure (MAWP) as indicated on the tank data plate.
- All piping and accessories shall be pressure tested at not less than 80% of the tank's MAWP. This includes permanently mounted piping, hoses and accessories (i.e. excess flow valves) that are frequently used to twin two (2) tanks together on one wagon.
- a written report shall be completed following the test, by the tank inspector or tester in accordance with Clause 7.3 of CSA B620-20.

The tank, and associated components, are accepted or rejected for continued ammonia service, based on the ability to retain the necessary pressure for a minimum of 10 minutes without rupturing, bulging, leaking, etc. as per Section 7.2.7.4 of CSA B620-20

12.2.2 - Mandatory Inspection Equipment and Tools

To successfully conduct a hydrostatic pressure test on a nurse tank, the following tools are required:

- Two pressure gauges with a minimum rating of 420 PSI (they must be calibrated annually by a certified calibration facility or replaced)

Manual shutoff valve capable of isolating the pump and pressure vessel during the

- testing procedure;
- Pump capable of generating minimum of 420 PSI;

A pressure regulator set at 10 PSI higher than the test pressure (150% of tank MAWP) to prevent excessive pressure build up in the tank and possible structural damage.

- Clean fresh water and a water container with a capacity that equals or exceeds the largest tank in the fleet. Water temperature must not exceed 38º C or 100ºF.
- Thermometer
- Towel – for drying

12.2.3 - Procedures for Conducting a Hydrostatic Test

There are nine (9) steps to complete when conducting a Hydrostatic Test. Each step must be conducted in order. If any of the above steps are skipped or missed, the hydrostatic pressure test is considered void.

12.2.4 - Pre-Inspection and Hydrostatic Test Preparation

Step 1 - Cleaning the External Surface

- The exterior surface of the tank and frame must be clean, free of dirt and any debris such as scaling paint that could interfere with the hydrostatic test process.

Step 2 - Conduct the External Visual Inspection (V) and the Annual Leakage test (K)

- See Section 12.1.1 for procedures on how to conduct an external visual inspection (V) and the Annual Leakage test (K) and to document all of the tank specification data onto the form.

Step 3 - Documenting Pertinent Tank Data on the Inspection Form

Obtain the Tank Pressure Test (Hydrostatic) Form from Appendix 1 at the end of this manual. Document all mandatory information in the appropriate slot. The information must be complete, and legible, at all times.

- Part 1 (a) contains information on the:
  - Name and address of the registered facility and inspector or tester conducting the test or inspection.
  - Individual Transport Canada facility registration number; and
  - Inspection date

INSPECTION TIP: If the tank owner and individual conducting the inspection are the same, the wording “same as above” can be included under the NAME, ADDRESS, and PHONE category for this section.

- Part 1 (b) contains information on the:

- Name, address, and telephone number of the nurse tank owner.

Figure 12.1 a.) An example of a manufacturer's data plate

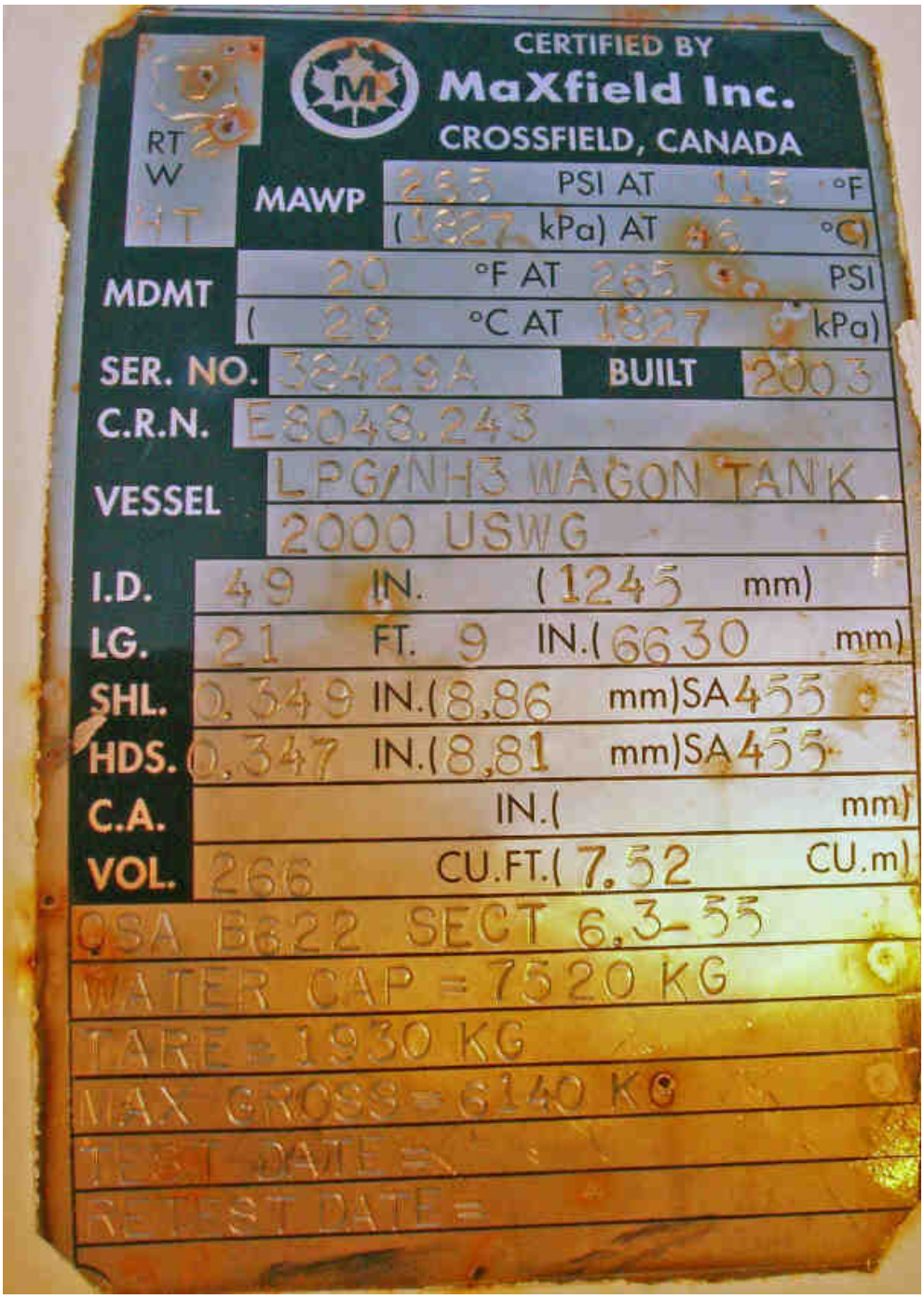


Figure 12.1 b.) An example of a manufacturer's data plate on a TC51 tank

INSPECTION TIP: The above information can be obtained from:

- the unit's data plate,
- previous inspection forms
- UA1 Manufacturers Affidavit form that may be contained in the tank's associated Tombstone File.

Contact your Provincial Boiler and Pressure Vessel Branch, the National Boilers Association (see contact list in Section 1.0) or the tank manufacturer to request a copy of the UA1 Manufacturers Affidavit form if you do not have all of the required information.

- Part 1 (c) contains all pertinent tank data for a TC51 specification tank as per Section 6.1.4.7 in CSA B620 - 20. This includes:

(a) tank manufacturer (Tank mfr.);
(b) date of tank manufacture — month and year (Date of mfr.);
(c) assembler where applicable[(1)];
(d) completion and certification date — month and year (Cert. date);
(e) original test date — month and year (Orig. Test Date);
(f) TC Specification (TC Spec);
(g) Manufacturer's Design Identification Number (MDIN);[(1)]
(h) Transport Canada Registration Number (TCRN);[(2)]
(i) tank serial number (Ser. No. or S/N);
(j) tare weight in kg;
(k) tank maximum allowable working pressure in kPa (MAWP);
(l) original tank test pressure in kPa (Test P);
(m) tank design temperature range — ___°C to ___°C (Design temp. range);[(1)]
(n) maximum design density of lading — in kilograms per litre (Max. lading density);[(1)]
(o) vessel material specification number — all numbers to be marked where the material for the shell is different from the material for the heads (Shell & Head Matl. yyy zzz or Shell Matl. yyy zzz and Head Matl. yyy zzz, where "yyy" is replaced by the alloy designation and "zzz" by the alloy type);
(p) tank seam weld material (Weld Matl.);
(q) minimum allowable thickness of shell — in millimetres (Min. shell thick.). When minimum shell thicknesses are not the same for different areas, mark variances (Top ..... Side..... Bottom.....);
(r) minimum allowable thickness of heads — in millimetres (Min. head thick.);
(s) manufactured thickness of shell — in millimetres (Mfd. shell thick.);[(3)]
(t) manufactured thickness of heads — in millimetres (Mfd. head thick.);[(3)]
(u) exposed surface area — in square metres;[(1)]
(v) volumetric capacity — in litres (Cap. Litres);
(w) maximum product load — in kilograms (Max. payload);[(1)]
(x) maximum loading rate — in litres per minute and optionally in US gallons per minute [Max load. rate, L/min (US GPM) at maximum loading pressure XX kPa (psi)];[(1)]
(y) maximum unloading rate — in litres per minute and optionally in US gallons per minute [Max. unload. rate, L/min (US GPM) at maximum unloading pressure XX kPa (psi)];[(1)] and
(z) lining material — if lined (Lining).
(aa) tank design pressure in kPa (TDP);[(4)]
(bb) periodic tank retest pressure in kPa (Retest P)[(5)]

Pursuant to Clause 7.3.1 k) of CSA B620-20, you will need to document on the form if this tank is used for service carrying a lading that is corrosive to the tank or is it in dedicated service. Check off Yes or NO. If the answer is YES please note the lading that is in dedicated service for, which will be anhydrous ammonia if you are using this QC Manual.

Step 4 - Removal of all Non-Essential Tank Appurtenances

During the hydrostatic test the following items must be removed:

- Pressure relief valve(s);
- Transfer hose; and
- All other equipment not subject to the pressure test (i.e. emergency water container, safety kit, etc.) so that the surface of the tank is visible for inspection. This is both for the external visual inspection as well as detecting the source of any water leakage during the hydrostatic test.

Valve closures can remain in place. All accessory piping used for plumbing twin tank units together must be hydrostatically tested to not less than 80% of the tanks MAWP in accordance with CSA B620-20 clause 7.2.7.7 e)

All empty threaded tank openings must be sealed with an appropriately sized bung unit for the pressure test to proceed.

Step 5 - Venting the Nurse Tank

The tank must be vented and cleaned prior to beginning the hydrostatic pressure test. Anhydrous ammonia vessels must always be bled off into a water bath – not into the atmosphere. To properly vent the tank in a safe manner:

- Put on your personal protective equipment and always work from the upwinddirection;
- Place the nurse tank transfer hose into the site's "Ammonia Bleed Off Water" container;
- Ensure the hose is secured so that it will not move when the valve isopened;
- Slowly open the liquid valve on the hose end unit – watch forleaks;
- If no leaks are present, slowly open the liquid withdrawal valve on the nurse tank. Opening it too quickly may cause a violent reaction between the vapours and the water, or trip theexcess flow valve on the nurse tank;
- As the ammonia vapours escape into the water bath, the hose may begin to vibrate or move slightly – do not open the valve so far that the hose moves or whips uncontrollably;
- Wait until the hose stops vibrating and no ammonia vapour is flowing into the water bath;
- Remove the transfer hose from the bleed off tank and drain any water that may have entered the valve body or hose;
- Close the hose end valve and the nurse tank liquid withdrawal valve at this time;

- Disconnect transfer hose from the nurse tank so a hydrostatic test can be performed on the hose unit.

Step 6 - Preparing the Pump and Water Source

In order to fill the nurse unit for the hydrotest:

- Attach the hoses from the water supply to the entrance port of choice on the nurse tank;
- Install one pressure gauge to an orifice on the top of the tank. The other gauge can also be inserted into the top, or placed at a secondary location that facilitates easy monitoring;
- Ensure a pressure relief safety valve is included in the test system plumbing. It should be rated for 10 psi higher than the test pressure to be used on the tank and must always be open to pressure in the tank.

Step 7 - Performing the Actual Hydrostatic Test

Mark any and all findings from the hydrostatic test of the tank in Part 2 of the Tank Pressure Test (Hydrostatic) Form. Each inspection item should be assessed using an “accept” or “reject” criteria basis. Part 3 allows the tank tester to document any defective areas (leaks) found on the tank, and the repair deadlines and measures, on the hydrostatic test form.

To successfully complete a Hydrostatic Test (i.e. a pressure test of the tank and associated piping) the following steps must be followed:

1. Inspect the mechanical operation of the float gauge. Ensure the arm/gears move freely, and the gauge is not cracked or clouded, impairing the visibility of the needle;
2. Reinstall the float gauge using a new gasket;
3. Connect the pump and hose to the orifice used to fill the tank with water;
4. Fill the entire tank with water. Leave the highest opening on the tank open to allow air to escape during filling;
5. The pressure gauges should be placed in the top of the tank at the highest possible point in the tank shell. This is usually where the Pressure relief valves are installed into the tank. Face the valves towards the water pressure pump shut off so that you can monitor them easily from the position you will need to be in to shut off the pump. CSA B620 Clause 7.2.7.7 [c]

   Once water begins to leak out the highest opening that you left open for air to escape, stop the pump;
6. Ensure the tank is full of water and that no air pockets have accumulated inside the tank. This may require the tank to be jostled back and forth if the tank is not sitting perfectly level.
7. Close off the highest opening with an appropriately sized tank bung;
8. Ensure the fitting is well sealed and tight;
9. Remove any excess water on the exterior of the tank so that it is not mistaken for leakage during the test.

10. Ensure all other openings in the tank are sealed tightly;
11. Begin to slowly pressurize the tank while watching for leaks
12. As the pressure begins to rise, monitor both pressure gauges. They should read within

    2% of each other as you approach the target test pressure.

> **INSPECTION TIP**: If a substantial difference in readings between both gauges is found, stop the test, depressurize the system, and disconnect the gauges. Check if there is a blockage in the hoses, or a defect in either gauge.

13. Slowly increase the pressure until the pressure in the tank reaches 150% of the MAWP listed on the data plate;
14. Once the maximum test pressure is reached close the water inlet valve and stop the pressure pump;
15. Depressurize the pump and unhook the pump from the tank;
16. Monitor the test gauges, and the tank for any signs of a decrease in tank pressure, leaks, bulges etc. A tank pressure of 150% of the MAWP must be maintained for a minimum of 10 minutes as per CSA B620-20;
17. Inspect the welds, threads/orifice of each appurtenance, etc. looking for leaks – exercise extreme caution at all times as the tank is pressurized. You are looking for beads of water or perhaps a small trickle of water;
18. Monitor the head and shell for any signs of visible bulges or other symptoms of distress during the test;
19. Once the pressure has been sustained for a minimum of 10 minutes; document the end pressure (should be the same as starting pressure) and the finish time in Part 2 of the Tank Pressure Test (Hydrostatic) Form;
20. If a pressure drop is exhibited between the start and end pressure, this indicates that a problem may exist and further investigation is warranted. Closely examine the tank welds, around welds on fittings, welds on tank legs etc. for beads or trickles of water. You may find a leaking valve or bung which you may be able to reseal or tighten to eliminate the leak. Re-pressurize the tank once this is done and check for leaks again.
21. Should you choose to test piping systems separately from the tank, reduce tank pressure to the desired piping test pressure which must be a minimum of 80% of the tanks MAWP and no more than the tank test pressure.
22. Open the liquid valve feeding the piping with the last piping valve completely closed.
23. Monitor piping for any leaks. Document the test pressure, time as required and the test results.
24. If there are no leaks then the next step is to test the excess flow valve for mechanical operation;
25. Bring the tank pressure down from the hydrostatic test pressure, to the rated MAWP for the tank.

26. Monitor the pressure gauges until the internal pressure of the tank matches the tank's design pressure. This will be either 250 psi or 265 psi
27. In sequence, one at a time open the following valves rapidly and listen for the excess flow valve to click indicating that it has been actuated and seated. The high pressure flow of water should stop from that valve if the excess flow valve is functioning properly.
    - Rapidly open the Liquid withdrawal valve;
    - Rapidly open the Liquid fill valve;
    - Rapidly open the Vapour fill valve; and
    - Rapidly open the Spray fill valve (if applicable).
28. The excess flow valve is functioning properly if water stops flowing through the valve. A loud click or a thunk is heard when the valve snaps shut.
29. If no sound is evident, close the excess flow valve and repeat the process one more time. Ensure the pressure registered on the calibrated test gauges on the tank stay at the tank's MAWP. This may require you to add water if you found a non functioning excess flow valve and you lost some or most of your tanks MAWP pressure.
30. If after a second test is performed and the excess flow valve continues to malfunction, then it must be removed and repaired or replaced in accordance with Section 15.0 of this manual;
31. Once ALL excess flow valves, remote closure systems operated from a tractor and any emergency discharge control systems have all been tested, depressurize the tank to normal atmospheric pressures;
32. Remove all test gauges from the system;
33. Drain the water from the tank back into the storage tank and document the results of the tank hydrostatic test;
34. Replace all Pressure Relief Valves with new valves that correspond to the tank's design pressure and product use. Ensure that they do not expire for a full five (5) years;
35. Reattach the nurse tank safety kit, and the emergency water container.

INSPECTION TIP: **Tanks that Fail a Hydrostatic Test**
An Out of Service form must be completed and forwarded to the NTSCC office (CAAR) along with a diagram showing where the deficiency is located and digital photographs of any visible deficiency.

Step 8 - Place the Hydrostatic Inspection Markings on the Tank

When a tank successfully passed the Hydrostatic Test, the appropriate inspection markings must be placed on the side wall of the tank. The inspection decal indicates the date of the inspection, and the letter "P" denotes that a pressure test or a hydrostatic test was completed.

The testing decal is displayed on the driver's side, on the "A" end or hitch end of the tank. The lettering must be a minimum of 32 mm in height, and be of a contrasting colour to the tank. The last 4 digits of the company's TC registration number must also be affixed to the tank next to the P marking under the heading "FAC".

- The tank inspector or tester must satisfy the information requirements in Part 4 of the Hydrostatic Inspection Form after affixing the Pressure test marking to the nurse tank.
- The tank inspector or tester would indicate that the nurse tank must be removed from service for repair based on any reasons listed on the Hydrostatic Inspection Form if any deficiencies were identified during the hydrostatic pressure test inspection.
- The tank inspector or tester would conduct a follow up Hydrostatic Inspection form once all corrective action or repairs are performed and documented (see Section 20.0). At this time, the tank would either be deemed certified for continued anhydrous ammonia service, or require further corrective action and remain out of service.
- The tank inspector or tester must sign and date the Hydrostatic inspection form, and include their certification number at the completion of each Hydrostatic pressure test inspection.
- The tank inspector or tester signs off in Part 5 that, at the time the hydrostatic test was conducted, the pressure vessel, its markings, and all of its appurtenances, are certified for anhydrous ammonia service and that the vessel was inspected as per the requirements of CSA B620-20.

Step 9 - Record-Keeping Requirements

The Hydrostatic Test (P) forms must:

- be retained by the test facility, at minimum until the next hydrostatic inspection is performed;
- be placed in the associated tank's Tombstone File; and
- given to the tank's owner by the tank inspector or tester. *

***INSPECTION TIP**: if the Tank inspector or tester is an employee of the tank owner's company, or the actual tank owner, one copy contained in the Tombstone File will suffice for the above requirements.

At all times, the Tombstone File must be well-organized, and contain all pertinent information on the previous year's inspections, tank history, etc. All forms must be complete and legible.

See Section 21 for complete information on Tombstone File requirements.

12.3 - Hydrostatic Test of Nurse Tank Pressure Hose

Personnel hydrostatically testing hoses must be trained in product and hose safety, inspection and test procedures, and rejection criteria. A record of this training shall be kept in the employment files of those personnel.

In accordance with the Canadian Standards Association (CSA) CSA B620-20 standard Section 7.2.10.4, all pressurized hoses must be inspected for:

a. damage to the hose cover that exposes the reinforcement braiding;
b. kinked, flattened, or permanently deformed hose or wire braid;
c. soft spots when not under pressure, bulging under pressure, or loose outer covering;
d. damaged, slipping, or excessively worn hose couplings;
e. loose or missing bolts or fastenings on bolted hose coupling assemblies; and
f. Deteriorated legibility or absence of the serial or identification number and HAWP.
g. Anhydrous Ammonia Service is usually marked on the side of hose which is selected for use with anhydrous ammonia in accordance with Section 5.1.2.6 of CSA B620-20
h. MAWP rating of 350 psi must be marked on the side of the hose
i. expiry date of the hose must be marked on the side of the hose

Hoses must be replaced as per the manufacturer's recommended expiry date or upon signs of any of the deficiencies noted above, or if they fail a hydrostatic pressure test.

All new hoses manufactured with bolt on clamps or repaired on site (i.e. shortened to eliminate a bad spot) must be pressure tested before being put into service and marked in accordance with the marking requirements listed in the next section.

The hose must be tested at 120% of the maximum allowable working pressure. The hose must sustain this pressure for a minimum of 5 minutes.

All hose couplings attached to the hose must be rated for the same pressure as the hose unit. To ensure integrity, verify that:

- The coupling bolts are tight;
- The unit is free of corrosion; and
- The pressure rating is equal to, or greater than, the pressure rating of the entire hose system.

Further details regarding hydrostatically testing hoses can be found in Section 7.2.10 Hose Assembly inspection and testing in the CSA B-620-20 standard.

All hydrostatic hose testing information must be documented on the Hose Assembly Annual Inspection and Testing Form found in Appendix 1 at the end of this manual. Hose testing records must be kept for a minimum of two (2) years as per CSA B620-20 Clause 7.2.10.7.

Step 1 - Preparations for a Hydrostatic Hose Test

To successfully perform a hydrostatic test on a hose, the testing personnel must ensure that:

- Two gauges are available with a maximum pressure of 600 PSI
- The gauges have been calibrated at a qualified test facility within the past twelve months or that they are new gauges;
- The variance in pressure readings between the gauges does not exceed 2% at test pressure during calibration;
- The maximum pressure range of either gauge does not exceed 1000 PSI;
- The test will not be performed under conditions where there is a possibility of freezing;
- The initial water temperature ranges between 15° C and 38° C; and

The test must not be conducted in the rain. Make sure the hoses will not get wet during testing from other water sources

Step 2 - Conducting a Hydrostatic Hose Test

To begin the hydrostatic hose test:

1. Ensure the hose has been properly drained and is empty of anhydrous ammonia.
2. Remove the hydrostatic relief valves and plug the holes with bungs.
3. Lay the hose out in a straight line and check for any kinking.
4. Using your hands and eyes, examine the entire hose for visible defects or defects that you can feel. Pay particular attention for leaks, cuts exposing reinforcement fabric, soft spots, bulging, blistering, loose outer covering, kinking, flattening, or slippage at any coupling.
5. Visually inspect hose fittings and clamps. Test clamp bolts with a wrench to ensure they are tight.
6. Ensure all unnecessary personnel are out of the test area prior to pressurizing the hose in case the hose or a coupling fails during the procedure.
7. Fill the hose with water. Ensure all air is expelled.
8. Hook the hose up to the testing apparatus.
9. Begin to slowly pressurize the hose up to 120% of the maximum working pressure of the hose. Pay attention for leaks at all times.
10. Once the 120% limit is reached, isolate the hose(s). Monitor the pressure gauges to ensure the hose(s) retain this pressure for 5 minutes.
11. During this time, examine the hose for visible damage, distortion, or leakage. Pay attention for leaks at all times.
12. After a minimum of 5 minutes, relieve the pressure and drain the water from the hose(s).

13. Remove the bungs and replace the Hydrostatic Relief Valves into the valve bodies.

INSPECTION TIP: A metal tag attached to the hose may be used to mark the unit. It is recommended that the information be stamped or engraved into the metal tag to provide durability for the markings.

Any hose that fails to retain the test pressure, or that leaks during the testing procedure, may not be returned to service.

Step 3 - Marking Hoses

1. Ensure the acceptable hoses are securely marked as per CSA B620-20 in Section 7.2.10.6 and 7.2.10.11 with the:
    a. date the hose was hydrostatically tested;
    b. the HAWP; and
    c. A unique hose identifier. I.e. a serial number you can tie to your test records.
    d. A copy of a sample hose testing record and the retention requirements are outlined in Section 21, “Hose Assembly Annual Inspection andTesting Form”.

Step 4 - Record Keeping

Following a hydrostatic hose test, a hose testing report outlining the results must be prepared by the facility performing the hose testing and inspection. The report must be retained for at least two years by the testing facility and by the hose assembly owner.

The report shall identify:

- the name and address of the facility responsible for the hydrostatic test hose inspection
- the hose assembly serial or identification number,
- the HAWP
- the date
- the nature of the inspection or test.

A copy of a sample hose testing record is found in Section 21 and is called “Hose Assembly Annual Inspection andTesting Form”.

B620 Requirement for Section 13.0:

Describe the markings to be used by the facility when it is satisfied that the registered activities have been completed in compliance with CSA B620. List the test and inspection markings and indicate who applies them, and how and when they are applied.

13.0 - Periodic Test and Inspection Markings

13.1 - Overview

The tank inspector or tester must complete the necessary documentation, and affix the appropriate inspection marking to the nurse tank upon successful completion of an external visual inspection, or a successful hydrostatic test. The marking indicates the date (i.e. month and year) when the current inspection was completed. Based on this information:

- The Annual External visual Inspection must be completed yearly indicated by the month on the V marking; and
- The Annual Leakage test must be completed yearly indicated by the month on the K marking; and
- A Hydrostatic Test must be performed no later than 3 or 5 years after the date indicated on the P marking. Ther time requirement for the hydrostatic test is detailed in CSA B622, Section 6.3 Specific Requirement #55 and depends on whether the tank was post weld stress relieved

All anhydrous ammonia nurse tanks must bear the following decals and markings. They must be in contrasting colour to the tank, in good condition, and legible at all times. The condition of decals and markings must be good enough for them to reach the next inspection and still be legible. The list of mandatory decals includes:

Location	Decal/Marking	(M)andatory or (O)ptional
Front of Tank	Maximum 40 km/hr UN 1005 Placard[4]	M
Left side "A" end	External Visual Inspection Decal (V)	M
	Leakage Test (K)	M
	Hydrostatic Test Marking (P)	M
	Transport Canada Facility Registration Number	M
	Tank Code	O
Each Long Side of Tank	UN1005 Placard	M
	Safety/First Aid Procedures	M
	Transfer Procedures	O
	Nurse Wagon Instructions	O
	Anhydrous Ammonia, Inhalation Hazard	M
	Owner's Name	M
	Town and Province of Owner	O
	Tank Safety Kit[3]	O
	Dealership / Emergency Response Phone Number	O
	Slow Moving Vehicle Sign	M
Rear of Tank	Caution Ammonia[1]	M
Various Locations	Data plate	M

1: Marking must be a minimum of 5 inches in height.

2: Alternative wording (e.g. Danger Ammonia) may be required, if necessary. Check with your local regulations.

3: If the safety kit is not mounted to the unit, all contents must be provided directly to the farmer with each nurse tank. This includes: goggles, gloves, pocket eyewash bottle, and reference manual.

4: Regulation requirement: 250 mm square, reduced to no less than 100 mm square. Smaller sizes are only permitted in the event that there is not enough space for the 250 mm size.

See the decal placement chart (Figure B) on the next page for more information.

Note: Inspection of the data plate must be included in the EVI. Location of the data plate will vary with the type of tank and design specifications.

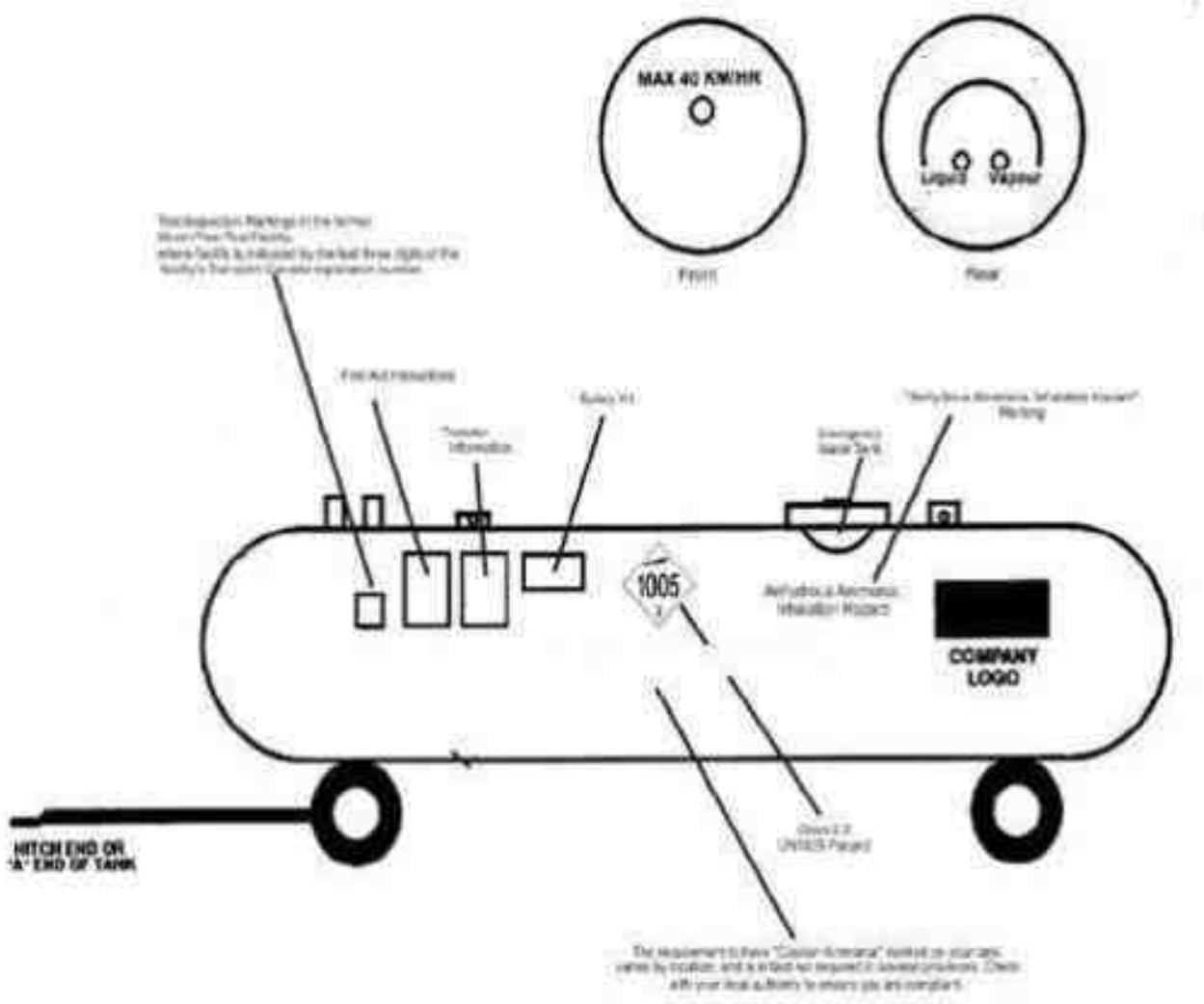


Figure B Decal Placement Chart

13.2 - Markings for an Annual Leakage test and External Visual Inspection

Once the unit has successfully passed the Annual Leakage test and External Visual Inspection, the appropriate inspection markings must be placed on the tank. The inspection decal indicates the date of the inspection, and the letter "V" denotes that an Annual External Visual Inspection was completed. The letter "K" denotes that the required Annual Leakage test was performed.

The CSA B620-20 testing and inspection markings are always displayed on the driver's side of the tank, near the front of the tank. The text displayed must be a minimum of 32 mm (1.25") in height, and of contrasting colour to the tank. The last 4 digits of the company's TC registration number must also be affixed to the

tank next to the KV marking under “FAC”.

The following is a sample of the approved NTSCC / CAAR decal.

Figure 13.1 Example of a B620-20 marking indicating an External Visual Inspection. The test was conducted in July, 2019 by a facility with the last four (4) digits of their Transport Canada registration number being 0999.

Following completion of the external visual inspection, the tank inspector will place the letter “V” immediately below the “TEST” heading. After completion of the Annual Leakage test, the tank tester will place the letter “K” immediately below the “TEST” heading. The last 4 digits of the facility registration number are placed under the “FAC” header.

13.3 - Hydrostatic Test Marking

Once the unit has successfully passed the Hydrostatic Test, the appropriate inspection markings must be placed on the tank.

Figure 13.2 Example of a B620-20 marking indicating the performance of an External Visual Inspection and a Hydrostatic Pressure Test. The test was conducted in July, 2019 by a facility with the last four (4) digits of their Transport Canada registration number being 999.

Following completion of the P test, the tank inspector or tester will place the letter "P" immediately below the "TEST" heading and place the last 4 digits of his facility registration number under the "FAC" header.

13.4 - Annual Facility Registration/Tests and Marking Tracking

The following page displays the Annual Facility Registration form, which is also to be used to track testing and marking data for your fleet. Use this sheet to track the basic information on each tank in your fleet for each year. At the end of each year, submit this information to the NTSCC administration office. The information will be used to determine the number of tanks in the program, as well as for preparation for each coming ammonia season.

Add a column that says" Tank Specification". Under it separate into two columns. One should say "Nurse" and the other "TC51"

Annual Facility Registration Form for _____ (Year)

Part 1 - Company Information

Name of Registered Facility/Individual

Address:

Town: Province:

Postal Code: Phone Number:

Fax: Email:

Safety Officer Certificate Number:

TDG Registration Number: Expiry (dd/mm/yy):

Part 2 - Tanks Currently in Ammonia Service

Current Tank Code	Manufacturer	Serial Number	CRN	Type? HT	Year Built	Water Capacity	Design Pressure	Inspection Due (mm/yy)	Type? V	K	P

B620 Requirement for Section 14.0:

Facilities registered to perform tests and inspections shall describe the internal procedures in place to ensure that Tank Testers and Tank Inspectors are periodically trained and qualified for the job functions they perform. Identify whether training will be provided in-house or from an outside provider.

If the facility is registered as a Training Organization, then details of the training program shall be provided (e.g., learning modules, guides, written tests). Details of the training program shall describe the objectives and learning outcomes, pass/fail criteria, type of learning (i.e. online, classroom, on the job) the frequency of retraining, who will be performing training, and how training records will be maintained.

CAAR members

Provide details on your procedures to track the training requirements, dates of training, training expiry dates, qualifications etc. of your tank testers and tank inspectors to maintain compliance with CSA B620-20

CAAR as a training organization:

See attached documents detailing the requirements of a Training organization.

B620 Requirement for Section 15.0:

Describe the action to be taken in the event that a quality control problem is discovered during production or during an audit. This description should include an account of the process used to determine the appropriate course of action for the current problem (e.g., scrap or rework parts, change the design) and the changes that will be made to prevent recurrences of the problem (e.g., changes to quality control procedures).

15.0 - Overview – Nonconformities

This section describes the actions to be taken in the event that a faulty or defective part is discovered during an inspection or test. Non conformities can also include a deficient audit process, training deficiencies etc. See section 17 on the Audit process. All deficiencies must be noted on the EVI and/or HT inspection forms. Describe in detail the process to be used to prevent a reoccurrence of the nonconformity that was found.

15.1 - Defects of a Pressure Vessel

Defects noted in the pressure vessel must be assessed according to criteria in Section 12 of this manual.

This will include an examination of the tank for:

a. Dents;
b. Gouges;
c. Bulges;
d. Corrosion;
e. Leaks;
f. Defective welds;
g. Pinholes, cracks;
h. Missing or unreadable data or I.D. plates;
i. Unsatisfactory paint condition;
j. Deficient tank test markings

All repairs made to metal on the pressure vessel, or components that directly contact the pressure vessel envelope, must be conducted by a Transport Canada approved certified repair facility.

Any tanks taken out of service must be documented on an Out of Service form **(Appendix 1).** Once the form is completed it must then be forwarded to the NTSCC (CAAR) office along with a diagram showing where the deficiency is located and digital photographs of any visible deficiency.

15.2.0 - Physical tank defects

a. cracks or pinholes
b. weld defects
c. dents, gouges, bulges
d. corrosion
e. missing or unreadable data plates

All tank defects must be assessed according to the criteria outlined in Section 12.1.3 Step 4.

15.2.1 - Tank Appurtenances

The following actions can be taken to remedy deficiencies in the equipment listed below.

- Safety Relief Valves
  Valve leaks around the threads may be corrected by tightening the valve or applying a thread sealant. If a leak results anywhere else on the valve, then the valve must be replaced. This criteria applies to both PRVs and HRVs.

- Float Gauges
  If a leak occurs around the gauge, the mounting bolts can be checked to ensure that they are tight. If this fails to correct the problem, depressurize the tank and remove the gauge. Replace the gasket. If the gauge or needle fails to function, try replacing the dial first. If this does not rectify the situation, depressurize the tank, and replace the entire gauge.

- Pressure Gauge
  If the gauge does not work properly or cannot be easily read, depressurize the tank (if the gauge cannot be isolated), and replace the gauge.

- Excess Flow Valves
  Malfunctioning excess flow valves can be rebuilt. Depressurize the tank, remove the fill valve that the excess flow valve is attached to, and install a rebuild kit or replace the excess flow valve.

- Accessory piping / hosing on twin tank units
  A thorough examination and hydrostatic test of the piping / hosing plumbing tanks together will determine if there are any leaks. You also need to carefully inspect the piping / hosing for any cuts, cracks, abrasions, bulges, leaking threads or damaged couplers in the piping / hosing system. All damaged components must be replaced and then the system must be hydrostatically tested again.

- Manual Shutoff Valves
  Should signs of corrosion be present near the threaded openings of the valve, attempt to tighten the valve. If this fails to solve the problem, remove the valve and clean the threads and reinstall the valve. If the leak persists then replace the valve. Thread sealant may also be required.

- Remote means of closure and or off truck emergency shutdown system
  If either type of system is not functioning properly when tested then it must be repaired or replaced before the nurse tank or TC51 tank goes back into service. Repair or service procedures will depend on the type of system you have installed. Contact your NH3 parts dealer for service and or the appropriate repair parts.

- Paint quality
  Tanks may be spot painted to repair localized areas of poor paint after removing all loose and peeling paint. This is only recommended provided there is no corrosion of the tank shell in that area. If there is corrosion of the tank shell, then sandblasting, priming and painting is recommended to best protect the shell of the tank. Badly corroded areas will need to be checked for thickness to ensure that the tank still meets the thickness requirements of the CSA B620-20

- Tank Markings and Labels
  All mandatory markings and labels (see Section 13) that are of poor integrity, fading, peeling illegible, must be replaced immediately.

- Transfer Hoses
  Nurse tank transfer hoses must be tested annually in accordance with Section 12.3. Any transfer hose failing a hydrostatic test, or exhibiting any of the following signs must be discarded:
  - Leaks or cuts exposing reinforcement fabric;
  - Soft spots, bulging or blistering;
  - Loose outer covering, kinking or flattening; or
  - Slippage at any coupling.

- Non-Conformities of staff training and experience – please document any training or experience shortfalls that are discovered, how they will be corrected and what measures will be taken to prevent a reoccurrence

- Non-Conformities in the Audit process – please document any oversights in the audit process that are discovered, how they will be corrected and what measures will be taken to prevent a reoccurrence. This would include revising audit forms and informing all affected staff.

- Non-Conformities of the QC Manual to CSA B620-20 Standards
  Any deficiencies or discrepancies that are discovered in the course of the inspection and testing of nurse tanks, TC51 tanks, accessory piping systems, emergency discharge control systems or nurse tank hoses or valves will immediately be reported to the NTSCC (CAAR) office so that the QC Manual can be updated.

- Non-Conformities of staff training and experience

- Non-Conformities in the Audit process

The CSA B620-20 standard requirements must always take precedence for any repair or testing standards over what is contained in this QC Manual, should any differences or discrepancies be discovered.

Welding control	Section 16.0	N/A

B620 Requirement for Section 17.0:

Describe the quality control procedures for ensuring that instruments used to check the requirements of CSA B620-20 are maintained and calibrated, and that they operate within suitable parameters. For each instrument, a record shall be kept, identifying each instrument, the method of calibration, its calibration frequency, and the date of its last calibration. The action to be taken if an instrument is found to be out of calibration during use shall be described.

17.1 - Overview – Equipment Calibration

Each site utilizing the NTSCC inspection/test protocol must ensure that all gauges used to conduct their nurse tank/hose tests are properly calibrated.

17.2 - Equipment Calibration Requirements

All pressure gauges used to hydrostatically test nurse tanks and/or transfer hoses must:

a. Be calibrated by a qualified test facility within the last 12 months;
b. Have pressure readings that do not differ by more than 2% at test pressure during the calibration process; and
c. Not exceed a maximum pressure reading of 1,000 PSI
d. Clause 7.1.4 provides the requirements for selecting pressure gauge and calibration

17.3 - Corrective Action for Non-Conforming Equipment

If a gauge is found to be out of calibration, the tank inspector or tank tester shall have the equipment repaired by a certified calibration facility prior to testing the tank, or appurtenances. If this does not result in the gauge being properly calibrated, the equipment must be replaced. All tests performed using the defective gauge must be redone with the new equipment.

17.4 - Calibration Record

Use the following chart to track the test gauge calibration history for the fleet.

Gauge	Serial Number	Calibration Date (dd/mm/yy)	Pass/Fail	Next Calibration (dd/mm/yy)	Calibration Notes

B620 Requirement for Section 18.0:

Describe the internal procedures in place to check that the quality control program is performing as intended. These can include internal audits and periodic reviews of the manual to ensure that it is consistent with procedures followed.

18.1 - Overview – Quality Audits

Companies and individuals inspecting their nurse tanks according to the NTSCC protocol must be in compliance with the program at all times. To ensure compliance, an annual internal audit MUST be performed.

A sample audit form is found in the Appendix 1

Please note that a Transport Canada inspector may perform an audit at any time. Transport Canada Inspectors will be looking for the aforementioned documents, as well as a copy of CSA B620-20 and CSA B622-20 with all current updates, and any applicable Equivalent Level of Safety permits.

18.2 - Authorized Inspection Organizations

Compliance with the operational protocol outlined in this QC manual will be verified by:

a. Internal audits conducted by the facility manager, or designate;
b. Transport Canada inspectors

18.3 - Internal Self-Audits

The facility manager will assign a company employee, who is not the primary tank inspector conducting the inspections / tests, to act as the internal auditor. Internal self-audits must be conducted on an annual basis. Audit reports should be completed and kept on file.

The internal audit will list all deficiencies and those deficiencies must be reported to the primary tank inspector, and the facility manager, in writing. All three individuals will then work to remedy the issues as soon as possible. The onus will be on the facility manager to demonstrate that any issues arising from an internal audit were remedied, should a Transport Canada Inspector find any deficiencies in the testing and inspection process. A written record of each Internal Self Audit should be kept with noted deficiencies and how those deficiencies were resolved. Records should be kept for at least 5 years.

This person assigned to complete the internal audit must have taken and passed the NTSCC training course, hold a valid TDG training certificate [for class 2.3(8) NH3] and be very familiar with anhydrous ammonia equipment in order to evaluate the following criteria:

Quality and completeness of V,K and P inspection reports in accordance with Section 12 of this manual (check several random tanks against reports). This would include all inspection items including;

a. paint quality, markings and corrosion on tanks;
b. Bulges, gouges, dents, weld issues, leaks, condition of appurtenances etc.;
c. Proper organization and legibility of records in the Tombstone Files;
d. Verification of training, experience and educational records for the tank inspectors and tank testers;
e. Incident reporting has been documented;
f. Out of Service & Repair reports are properly filed and copies have been sent to the NTSCC Office

B620 Requirement for Section 19.0:

Provide details of the registered facility and the qualifications and experience of authorized personnel as required in CSA B620-20, and describe the policy for keeping these records up to date. Records providing evidence of the qualifications of all staff involved with the testing or inspecting of ammonia nurse tanks or TC51 tanks, shall be kept on file while the workers are so employed These records must be kept for at least five years after the end of that person's employment. That date shall be clearly indicated in the file.

NOTE: Please review the required qualifications for inspectors and testers found in CSA B620-20 Section 8.1.6.

19.0 - Overview of the Registered Facility

Describe your facility where the testing will occur. Are there sensitive occupancies nearby? Is a water source readily available? What tools that are available to use? Will you test the tanks inside or outside?

19.1 - Overview of tank inspectors, tank testers and their qualifications

Each site utilizing the NTSCC inspection/test protocol must have a qualified tank inspector, (with a valid NTSCC certificate of training) sign off that all inspections. have been performed according to Section 12.0 of this manual. Tank testers will sign off on the hydrostatic pressure test. All inspectors and testers are be listed in Section 3. Provide a summary of their qualifications in this section. The details of their training and copies of all training certificates, diplomas, degrees and a detailed summary of their work history with anhydrous ammonia, NH_3 equipment inspections and maintenance, should be kept in a file folder ready for inspection.

Accurate records of tanks visually inspected or hydrostatically tested MUST BE KEPT. This is now the basis of qualifying as a tester or inspector.

Inspector or Tester Name	Certificates	# of tanks inspected and year	# of tanks tested and year	Yrs of NH_3 Experience

19.2 - Duration of NTSCC tank inspector or tester training

The certificate of NTSCC training issued to tank inspectors and testers is valid for a period of 36-months, after which, retraining is required to re-certify the training certificate.

19.3 - Retention of Proof of Training

Proof of the certificate of training shall be kept with the tank inspector or tester at all times when performing inspections/tests, or supervising other individuals who are assisting with the testing and inspection work. A copy of the certificate must also be retained in the tank inspector or tester's personnel file for a minimum of 5 years from the date of training.

The site manager/owner will designate an individual to ensure all personnel records are maintained. Training certificates must be retained by the employer for a minimum of 5 years after an employee terminates their employment.

See Section 4.0 for information on the site Organizational Structure.

19.4 - Tank Inspector qualifications Each site utilizing the NTSCC inspection/test protocol, must have a certified **tank inspector** in accordance with all of the qualifications outlined in CSA B620-20 under *Section 8.1.6 Tank Inspector qualification* and who holds a valid certificate of NTSCC training.

Tank inspector qualifications permit them to perform the visual external examination of TC51 tanks and ASME non-spec ammonia nurse tanks.

The tank inspector must sign off that all inspections have been performed according to Section 12.0 of this manual.

19.5 - Tank tester qualifications

Tank testers are responsible for conducting Annual Leakage tests, hydrostatic tank tests and annual hydrostatic hose tests.

Tank testers must meet the qualifications outlined in CSA B620-20 under *Section 8.1.6 tank tester qualification*, and also hold a valid certificate of NTSCC training.

19.6 - Tank inspector and tank tester qualification files

Each tank inspector and tester should have an individual employee file that contains:

a. Photocopies of all training certificates (including NTSCC), diplomas and degrees
b. Records of employment and ammonia related work
c. A detailed summary of the number of CSA B620 tank inspections and or tank hydrostatic tests and hose hydrostatic tests. This summary should indicate the owner of the tank or hose inspected or tested, the date and the location.

NOTE: An employee of Dealership A can carry his or her qualifications for testing or inspecting with him or her if he or she becomes employed by Dealership B.

CSA B620-20 Details of qualifications are found in Clause 8.1.6. These qualification files will be required for both internal audits as well as audits by Transport Canada and can result in the application for facility registration or renewal being denied. Retailers are strongly encouraged to be diligent in maintaining complete records for tank inspectors and testers.

NOTE: Inadequate documentation of the training and experience of tank inspectors and tank testers is one of the most common areas of deficiency found by Transport Canada inspectors these records should be kept in a convenient file ready for a Transport Canada audit.

B620 Requirement for Section 20.0:

Provide a description of the mobile units, including the number of units and list of equipment carried the address from which the mobile units are controlled, where all documentation and reports are stored and retained, and a description of customer equipment and services in the field necessary for the mobile unit to function.

20.0 - Mobile Testing Units

Provide a detailed listing and description of the mobile units including but not limited to:

- CSA B620-20 explicitly requires that testing and inspection of tanks must be completed onsite at the location listed on the facility registration. If a retailer has multiple sites where tanks are located, they must carefully consider how fleet testing will be managed. Options include:
  - Register a single facility for all testing and inspection and transport all tanks to that facility;
  - Register multiple or register every facility as a testing and inspection site, and conduct testing and inspection at multiple sites.
  - Register a single site for pressure testing and inspection, and register other sites for only annual visual inspections.
  - Register a single site for testing and inspection, and also register a mobile testing unit that will conduct testing and inspection off-site.

  Retailers are encouraged to contact the NTSCC or Transport Canada to discuss the best option.

- Home base address and description where the mobile units operate from and where all documentation and reports are stored and retained
- Who in the organizational structure (Section 4.0) is responsible to check, inspect and maintain all of the tools and equipment on the mobile units
- the number of mobile units being used
- a DETAILED list of all equipment carried on each unit. If there are differences between units then each unit must be listed separately and those differences detailed.
- a description of customer equipment and services provided in the field necessary for the mobile unit to function; i.e. air compressor;
- Any local equipment or tools provided at a satellite location to assist with inspection and testing

B620 Requirement for Section 21.0:

Describe the procedures in place and the person(s) responsible for ensuring that documents required by CSA B620-20 and applicable codes, and those used to assure quality control, are properly circulated and retained for the required periods. These documents should be listed, their flow described, and storage locations indicated.

21.1 - Overview – Record Keeping Requirements

Tank Inspectors who inspect nurse tanks or tank testers who are testing tanks according to the NTSCC QC Manual, are required to keep detailed records of each inspection and test conducted. All inspection/test reports must be retained by the facility conducting the inspection and the tank owner. Copies of all records must also be included in the individual tank Tombstone File at the inspection site. Testing and Inspection records for ammonia nurse tanks must be kept at least 5 years until after the next pressure test is completed, recorded and filed. Hose testing and inspection records must be kept for a minimum of two (2) years by your facility and by the owner of the hose assembly if that owner is someone other than the testing and inspection facility.

A Tombstone File is considered a “cradle to grave” file. This means that the file must follow the tank for its entire lifespan. Should the unit be sold, all master documents in the Tombstone File must be transferred to, and kept by, the new tank owner.

The original owner must keep a copy of the contents of the Tombstone File for at least one year after the sale.

21.2 - Contents of a Tombstone File

A Tombstone File must be opened and maintained at each site. Each pressure vessel is considered one unit (i.e. Twin tanks on one wagon require separate Tombstone Files).

The Tank Inspector or tester must ensure that, at all times, the Tombstone File is complete and accurate. In addition, all information must be legible.

All available information about the tank must be kept in the Tombstone File. This includes:

- U-1A form or a Manufacturer’s data sheet;
- Photograph of the data plate and tank (optional);
- Annual Leakage Test and Visual Inspection forms
- Hydrostatic pressure testing forms;
- Hydrostatic hose testing forms;
- Repair Forms and Information if applicable;
- Out of Service report forms;
- Return to Service forms;
- Transfer of Ownership forms and Bills of Sale detailing make, model, size, serial number etc. A statement on the Transfer of Ownership form is also required certifying that tank that the tank meets the applicable CSA B620-20 and CSA B622-20 standards.

RECORD-KEEPING TIP: A minimum of five years of information on the tank's history can be retained in the active Tombstone File. Tank reports and other information prior to this can be filed separately on site. However, it must be organized, and easily accessible should a Transport Canada inspector request to see the data.

21.3 - Forms and Reports and Circulation Required

The list of forms and reports included in the NTSCC protocol include:

- Annual Leakage Test and Visual Inspection forms – keep in the tombstone file
- Tank Hydrostatic Test (P) Form – keep in the tombstone file
- Annual Hydrostatic Hose Assembly Inspection and Testing Form – keep in the tombstone file
- Nurse Tank Waiver Agreement (3rd Party Inspection) – keep in the tombstone file
- Out of Service Report – keep in the tombstone file ***and send a copy to the NTSCC office***
- Repair Forms and Information if applicable - keep in the tombstone file
- Return to Service forms - keep in the tombstone file ***and send a copy to the NTSCC office***
- Transfer of Ownership forms - keep in the tombstone file
- Revision Control sheet – keep in your NTSCC manual ***and send a copy to the NTSCC office whenever revisions are made.***

21.4 - NTSCC Inspection, Test, and Reporting Forms

Blank copies of all test and inspection forms are included in Appendix 2 at the back of this manual.

Requirements:
Attach samples of actual completed documents used for quality control. Include samples of inspection and test reports and decals, nameplates, Certificates of Compliance, material data reports, etc.

B620-20 Requirement for Section 22.0 - Exhibits:

Attach samples of actual completed documents used for quality control. Include samples of inspection and test reports and decals, nameplates, Certificates of Compliance, material data reports, etc.

22.0 - Exhibits – Sample Inspection, Test, and Service Forms

The Appendix 1 section contains samples of completed inspection and test forms, required under the NTSCC protocol.

CSA B620-20 Requirement for Section 23.0:

Provide a list showing the latest issue date and number for each page in the manual (page revision numbers for the original document should consist of the page in question and a revision number starting with 0 (e.g., page 2, revision 0). The original of this list shall be signed by the person responsible for the manual.

23.0 - Revision Control Sheet

23.1 - Revision Control of the Quality Control Manual

Revisions to this QC manual are the responsibility of the Nurse Tank Safety Council of Canada.
All distribution will occur from the NTSCC administration office located at:

205 -1 Wesley Ave. Winnipeg, MB R3C 4C6
Fax: 204-989-9306
Email: info@caar.org

23.2 - Revision Updates to the Quality Control Manual

The NTSCC is responsible for informing all Program Participants of any changes to the QC manual. NTSCC will periodically revise the current manual, and distribute the new information to all users to amend their NTSCC-QC manual.

The program participants are responsible for ensuring their contact information is current at NTSCC, The NTSCC makes every effort to provide timely updates to program participants and will not be held responsible if program participants are unable to receive program updates due to outdated contact information.

Upon receiving the manual revisions, the Program Participant must complete Section 23.3 of this QC manual. This certifies that the updated information has been incorporated into the existing NTSCC-QC manual housed at the tank site, the previous information has been destroyed, and that the individual(s) understand the necessary changes and have incorporated the amendments into their fleet.

A completed Revision Control Sheet from Section 23.3 must be returned to the NTSCC administration office at the address above. A copy of the Revision Control Sheet must also be signed and placed in the manual.

23.3 - Revision Control History –

NOTE: This list must be signed by the person responsible for keeping the manual updated.

Version 8 NTSCC QC Manual Issued: April, 2020

Page (s)	Revision	Issued	Comments

Signature: _____

Appendices:

Appendix 1: Completed sample forms

Appendix 2: Blank forms for testing, inspection, and record keeping

Appendix 3: Sample application documents for a Facility Registration application with Transport Canada

Appendix W: Illustrations of deficient welds, pinholes, and poor paint quality on nurse tanks

Date: June 30/21 Tank ID Code 49

ANNUAL LEAKAGE TEST and EXTERNAL VISUAL INSPECTION

Current Inspection Date: June 30/21 Last Inspection Date: July 7/20

Part 1 (a): Information on Registered Facility	
Name of Registered Facility:	FYZ Nutrients ltd.
Address:	Box 123
Town: East Overshot	Province: SK.
Postal Code: S0A 1B6	Phone Number: 306-555-1212
Tank Inspector: Fred Smith	Tank Tester: Fred Smith
Transport Canada Facility Registration Number:	0999

Tank Owner Data	
Name of Tank Owner:	FYZ
Address:	above.
Telephone Number:	

Step 1 : Tank Data		
Is the data plate legible?	☑ Yes ☐ No	Tank Spec to be inspected:
Photo taken of data plate or copy on file?	☑ Yes ☐ No	☐ TC51
U-1A form on file?	☑ Yes ☐ No	☑ Non-spec with CRN

Data Plate Information:	Note: Copy data as displayed on plate. Do NOT convert units!	
a) Tank Manufacturer	Western Rock Bit	
b Manufacture Serial Number		
c) Assembler (if applicable)		
d) Completion and Certification Date		
e) Original Test Date		
f) Specification of tank	☐ Nurse	☐ TC51
g) Manufacturers Design Identification # (MDIN)		Copy everything from the data plate
h) TCRN (CRN for Nurse tanks)		
i) Tank Serial Number		
j) Tare Weight in kgs		
k) Maximum allowable working pressure (MAWP)		
l) Original tank test pressure in kpa (test P)		
m) Tank design temp range (deg C to deg C)		

n) Max design density of lading (kgs per L)		
o) vessel material spec number	Head:	Shell
p) tank seam weld material (weld matl)		
q) minimum allowable shell thickness in mm		
r) minimum allowable head thickness in mm		
s) manufactured thickness of shell in mm		
t) manufactured thickness of heads in mm		
u) exposed surface area in square metres		
v) volumetric capacity in litres (USWG for old nurse Tanks)		
w) maximum product load in kgs		
x) max loading rate, litres or USWG per min		
y) max unloading rate, litres or USWG per min		
z) lining material	Not applicable	
aa) tank design pressure in kpa or psi		
bb) periodic tank retest pressure in kpa		
cc) Post weld stress relieved	☑ Yes ☐ No	
dd) Hydrostatic Test Cycle	☑ 5 years ☐ 3 years	
Pursuant to Clause 7.3.1 k) of CSA B620-20, is this tank used for service carrying a lading corrosive to the tank or is it in dedicated service?	**Yes** ✓ **No** ___ If yes, specify the product NH3	

Part 1 – Annual Leakage Test

Step 2 : Tank Preparation for LEAKAGE TEST	
Tank Surface is clean and dry	☑ Yes ☐ No
Loose and scaling paint have been removed	☑ Yes ☐ No
Loose or damaged decals have been removed	☑ Yes ☐ No
Tank valves, closures and piping are clean and dry	☑ Yes ☐ No
Calibrated (with in last 12 months) pressure gauges are in place and safely sensing tank pressure	☑ Yes ☐ No Calibrated March/21

Step 3 & 4 : **Tank Leakage Test using Anhydrous Ammonia**	
Tank Test Pressure (minimum of 60 psi)	105 psi
Tank Shell Inspection ☑ Accept ☐ Reject	All product valves and associated piping and accessories are in place and operative
Comments:	
☑ Accept ☐ Reject	Test each valve and closure in sequence examining each for any leakage using a mixture of soapy water for the all valves, closures and piping. Attach a list to the back of this form as there are a wide variety of valve, piping and accessory configurations.
Comments:	

Step 5 : Marking the Tank
If the tank has successfully passed the Annual Leakage Test, the following information shall be durably and legibly marked in letters no less than 32 mm (1.25 in) high on the tank shell near the metal identification plate or anywhere on the front head where it will be clearly visible from the ground: Tank test markings should be placed on the A end (hitch end) of the tank on the driver's side. 1. Month and year of inspection. 2. The letter "K".

3. The last four (4) digits of your facility registration number given by Transport Canada. The markings should appear as follows: 06 20 K 0999 (where "0999" is the TC registered facility number). **Markings applied as follows:**	
Month/Year of Visual Inspection (MM/DD/YY)	06/30/21
"K" marking affixed	☑ Yes ☐ No
Tank Status After Annual Leakage Test	
Tank removed from service for repairs	☐ Yes ☑ No Reason:
Tank returned to service as NO DEFECTS OR DAMAGE was found.	☑ Yes ☐ No
Tank to be scrapped	☐ Yes ☑ No

NOTE: Facilities must be registered for repair work with Transport Canada (TC) in order to conduct any repairs to the structural integrity of the tank i.e. welding.

If any repairs have been performed directly on the tank body, please indicate the TC registered facility that conducted the repairs and attach the report.

For tanks that are TC51, or DOT51 only	
Tank constructed of (choose one)	☐ Quench Tempered (QT) Steel ☑ Non-quenched Tempered Steel
For QT Tanks: Since the last inspection, has each shipment of NH3 contained at least 0.2% water by weight?	☐ Yes ☐ No
Tank stress relieved after manufacture? *Verify with information recorded on certificate of compliance issued by manufacturer? U – IA or data plate	☑ Yes ☐ No

Step 6 : Tester Certification	
I certify that I have leak tested the tank identified in this report in accordance with CSA B620 – 20	
Name of Tank Tester	Fred Smith
Signature of Tank Tester	
Date Inspection Completed	June 30/21

Part 2 - Annual External Visual Inspection

Step 2 : Tank Preparation	
All accessories have been removed	☑ Yes ☐ No
Tank Surface is clean	☑ Yes ☐ No
Loose and scaling paint has been removed	☑ Yes ☐ No
Loose or damaged decals have been removed	☑ Yes ☒ No
Comments or observations made during cleaning and tank preparations:	

Record mark – up on the tank: List out all the decals	
SMV	☑ Accept ☐ Reject
UN 1005 4 Sides	☑ Accept ☐ Reject
Ammonia Inhalation Hazard decals, long sides	☑ Accept ☐ Reject
40 kmh speed - front	☑ Accept ☐ Reject
Emergency Phone #	☑ Accept ☐ Reject
Dealers Name and Location	☑ Accept ☐ Reject
B620 decals - dates, P & V test, facility #, tank code	☑ Accept ☐ Reject
Valve labels for liquid, vapour, spray fill	☑ Accept ☐ Reject
Transfer Procedures decal	☑ Accept ☐ Reject
Safety and First Aid decal	☑ Accept ☐ Reject

Step 3 & 4 : Tank Inspection	
Tank Shell Inspection ☑ Accept ☐ Reject	Inspect entire area of tank for dents, scrapes, distortions, gouges, bulges, cracks, signs of leakage or any other condition that might render it unsafe for transport (7.2.1.1 [a]). Refer to section 12.1 and section 14 of the NTSCC Manual and CSA B620-20 7.2.1.1 External Inspection. **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☑ Accept ☒ Reject	Inspect entire area of tank for: corrosion, abrasions, and signs of leakage or any other conditions that might render it unsafe for transport (7.2.1.1 [a]). Refer to section 12.1 and section 14 of the NTSCC Manual and CSA B620-20 7.2.1.1 External Inspection. **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	

☑ Accept ☐ Reject	Inspect entire surface area of tank for deteriorated paint. Refer to Appendix on paint quality. Minor paint deterioration can be touched up. Significant paint deterioration may require sandblasting and repainting. Refer to section 12.1 and section 14 of the NTSCC Manual and CSA B620-20 7.2.1.1 External Inspection. **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☑ Accept ☐ Reject	Ensure all appurtenances (any tank part or accessory that has no product containment function and provides no structural support to tank [i.e. PRV guards, weld pad]) and attachments, support structures, or connecting structures are not damaged or corroded so as to affect safe operation of the tank (7.2.1.1[f]). Refer to section 12.1 and section 14 of the NTSCC Manual and CSA B620 7.2.1.1 External Inspection. **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☑ Accept ☐ Reject	Inspect every weld on all appurtenances (any tank part or accessory that has no product containment function and provides no structural support to tank i.e. PRV guards, weld pad) for cracks, defects, or signs of leakage (7.2.1.1). Refer to Appendix W on weld quality. **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☑ Accept ☐ Reject	Inspect every tank head circumference weld (front, mid tank and rear) for cracks, defects, or signs of leakage (7.2.1.1). Refer to Appendix W on weld quality. **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☑ Accept ☐ Reject	Inspect every longitudinal (horizontal) tank weld for cracks, defects, or signs of leakage (7.2.1.1). Refer to Appendix W on weld quality. **List defects and locations below or use additional sheets if required. Diagrams**

	and photos are helpful.
Comments:	
☑ Accept ☐ Reject	Inspect all valves and welds around threaded coupling including self-closing stop valves, excess flow valves, emergency discharge control systems, remote from tractor means of closure and pressure relief valves for corrosion, distortion, wear, signs of leakage, or any other damage that would prevent their normal operation (7.2.1.1). Refer to Appendix W on weld quality. **Ensure PRV rating matches the data plate rating and record PRV expiry date!** **PRV 1 PSI rating:** 265 **PRV 1 expiry date:** 10/21 **PRV 2 PSI rating:** _____ **PRV 2 expiry date:** _____ **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☑ Accept ☐ Reject	For Twin Tank Wagons: Ensure all bolts or nuts on any flanged connection or blank flange are in place and properly tightened (7.2.1.1 (d)) **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☑ Accept ☐ Reject	Ensure that hose assemblies mounted on or accompanying match the requirements of the CSA B620-20. Section 7 **List defects and locations below or use additional sheets if required.**
Comments:	
☑ Accept ☐ Reject	Hose markings are displayed as follows (7.2.10.6): • The month and year of test and inspection are either stamped on an end fitting or securely attached metal tag or washer • Ensure that letters on tag are not less than 5 mm (0.2 in.) high and depth and location of stamping shall not degrade the pressure rating of the hose • Serial number or identification number and the HAWP

	List defects and locations below or use additional sheets if required.
Comments:	
☑ Accept ☐ Reject	Corroded or abraded area of the tank wall shall have their thickness tested in accordance with Clause 7.2.1.3 **NOTE: Testing facility must be registered with Transport Canada (TC) to conduct thickness testing.** **If thickness testing is performed, please indicate the TC registered facility that conducted the thickness testing and attach the report.** **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☑ Accept ☐ Reject	Inspect all re-closing pressure relief valves of any corrosion or damage that could prevent their safe operation. **List defects and locations below or use additional sheets if required**
Comments:	

☑ Accept ☐ Reject	Inspect all gauges (pressure gauge, float gauges, etc.) for corrosion, distortion, wear, signs of leakage, or any other damage that would prevent their normal operation. **List defects and locations below or use additional sheets if required**

Step 5 : Marking the Tank

If the tank has successfully passed the external visual (v) inspection, the following information shall be durably and legibly marked in letters no less than 32 mm (1.25 in) high on the tank shell near the metal identification plate or anywhere on the front head where it will be clearly visible from the ground:

Tank test markings should be placed on the A end (hitch end) of the tank on the driver's side.

1. Month and year of inspection.
2. The letter "V".
3. The last four (4) digits of your facility registration number given by Transport Canada.

The markings should appear as follows: 06 08 V 0123 (where "0123" is the TC registered facility number).

Markings applied as follows:

Month/Year of Visual Inspection (MM/DD/YY)	06/30/21
"V" marking affixed	☑ Yes ☐ No

Tank Status After External Visual Inspection	
Tank removed from service for repairs	☐ Yes ☑ No Reason:
Tank returned to service Tank returned to service as NO DEFECTS OR DAMAGE was found.	☑ Yes ☐ No
Tank to be scrapped	☐ Yes ☑ No

NOTE: Facilities must be registered with Transport Canada (TC) to conduct any repairs to the structural integrity of the tank i.e. welding.

If any repairs have been performed directly on the tank body, please indicate the TC registered facility that conducted the repairs and attach the report.

For tanks that are TC51, or DOT51 only	
Tank constructed of (choose one)	☐ Quench Tempered (QT) Steel ☑ Non-quenched Tempered Steel
For QT Tanks: Since the last inspection, has each shipment of NH3 contained at least 0.2% water by weight?	☑ Yes ☐ No Standard practice for ammonia manufacturers.
Tank stress relieved after manufacture? *Verify with information recorded on certificate of compliance issued by manufacturer? U – IA or data plate	☑ Yes ☐ No

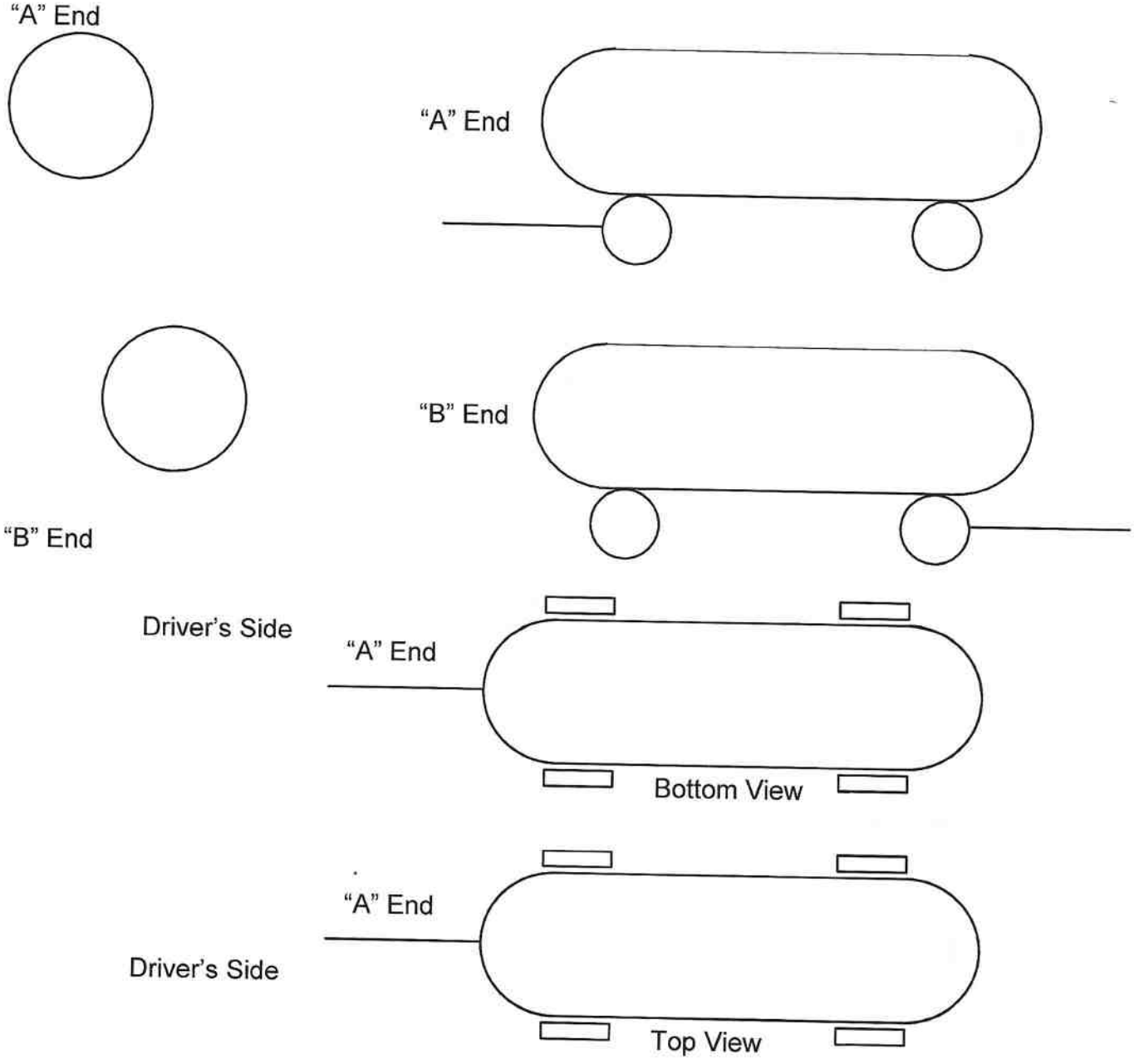
Step 6 : Inspector Certification	
I certify that I have inspected the tank identified in this report in accordance with CSA B620 – 20	
Name of Tank Inspector	Fred Smith
Signature of Tank Inspector	
Date Inspection Completed	June 30/21
Filed in Tombstone file	☑ Yes ☐ No

Date June 30/21

Tank ID Code 49

TANK DIAGRAM – **Annual Leak Testing**

Location of Tank Deficiencies discovered during annual leak testing:



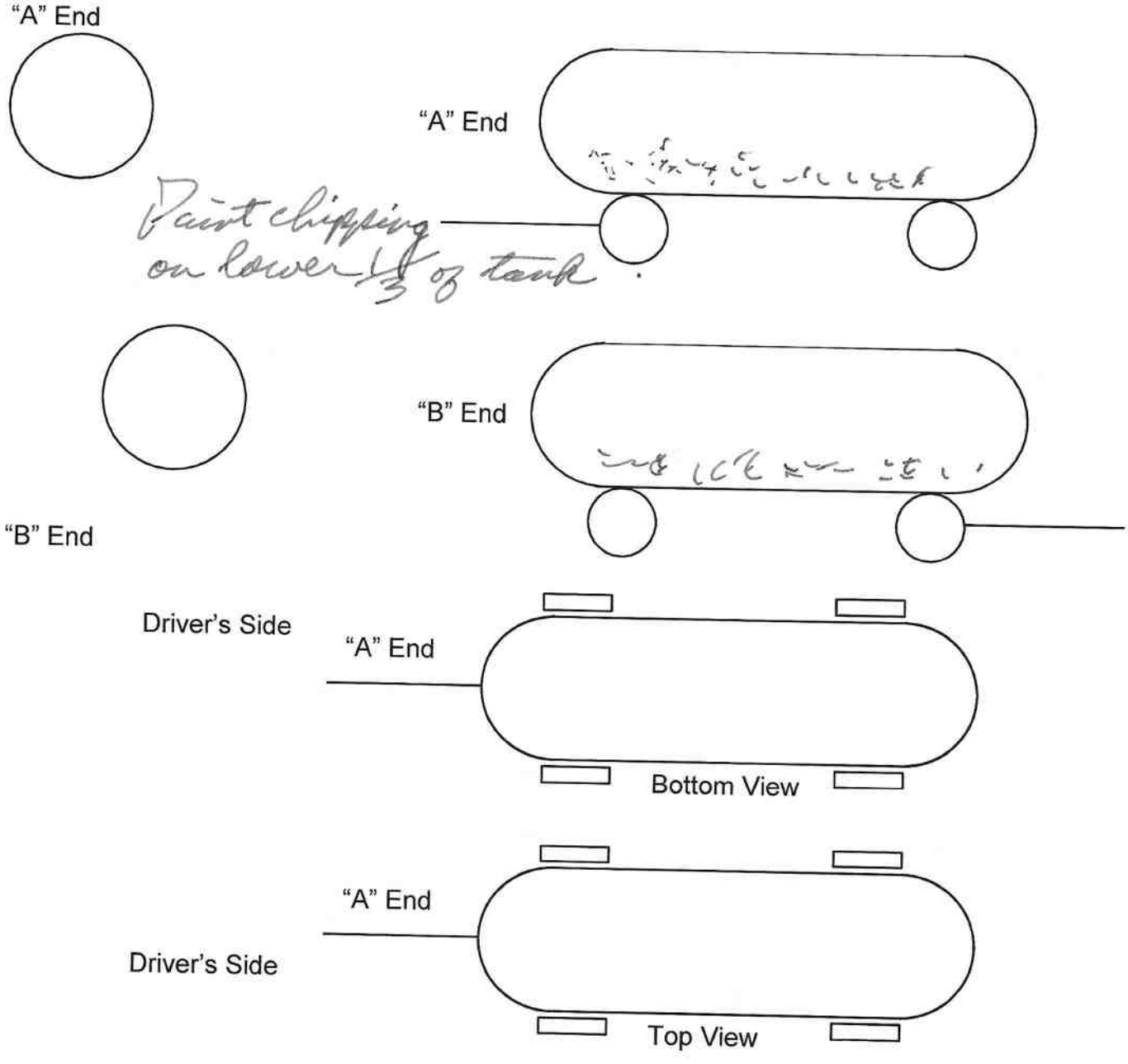
No leaks.

Date June 30/21

Tank ID Code 49

TANK DIAGRAM – Annual **External Visual Inspection**

Location of Tank Leaks discovered during the annual external visual inspection



Audit QC Program

---------- SAMPLE ONLY ----------

NTSCC Audit Quality Control Form	
This form is to be completed annually by the facility quality control auditor as described in the NTSCC Manual. The purpose of the audit is to ensure that the tank inspector(s) and tank tester(s) are performing the inspections and tests as per the NTSCC manual and as per CSA B620-20. Any deviations from the NTSCC manual or CSA B620-20 must be noted on this form and then corrected immediately. The complete Quality Control Audit forms must be maintained for a minimum of 5 years and be available for inspection by Transport Canada.	
QC Auditor: Daniel Smith	Date: Sept 10/21
Position: Accountant	
Version of the NTSCC Manual:	Ver 8 - April 2021
Tank Specification Inspector / tester is Qualified to Inspect / test the tanks: Yes	Date of the NTSCC Manual: April 2021
Does the NTSCC Manual: a. Contain a signed Statement of Authority b. Organizational Chart	☑ Yes ☐ No ☐ Yes ☐ No
Manual Control a. Name of Person designated to maintain the NTSCC Manual b. Is the manual up to date? c. Is the revision control sheet (Section 22) signed and up to date?	_____ ☑ Yes ☐ No ☑ Yes ☐ No
Tombstone File Examination a. Are the files well organized? b. Are the inspection sheets: i. Legible ii. Complete iii. Visual Inspection, Leak testing and Hydrostatic Test Reports are signed	☑ Yes ☐ No ☑ Yes ☐ No ☑ Yes ☐ No ☑ Yes ☐ No
Nonconformities and corrective action a. deficiencies noted on inspection reports are accompanied by Out of Service and Return to Service reports b. check Tombstone file and tank to verify that the return to service report is accurate	☑ Yes ☐ No ☑ Yes ☐ No
Take a random 10% (minimum) of the Tombstone files to the Ammonia nurse tank storage compound. Record Tank numbers to be checked below. a. Tank I.D. # 54, Tank Specification NH3 i. Does the data plate information in the tombstone file match the tank? ii. Is the date plate information complete? iii. Do the tank markings appear to be complete, in good condition and match the inspection report? iv. Is the paint in acceptable condition and match the inspection report? v. Examine tank for weld issues, leaks, dents, gouges or any other defects. Does the condition of the tank match what is recorded on the inspection sheet? vi. Hose examination. Check the hose for condition and inspect the hose testing tag,	☑ Yes ☐ No ☑ Yes ☐ No ☑ Yes ☐ No ☑ Yes ☐ No ☑ Yes ☐ No ☑ Yes ☐ No

Does the hose testing tag and hose ID number match the hose testing report form?	☑ Yes ☐ No
b. Tank I.D. # 63 Tank Specification _____	☑ Yes ☐ No
i. Does the data plate information in the tombstone file match the tank?	☑ Yes ☐ No
ii. Is the date plate information complete?	☑ Yes ☐ No
iii. Do the tank markings appear to be complete, in good condition and match the inspection report?	☑ Yes ☐ No
iv. Is the paint in acceptable condition and match the inspection report?	☑ Yes ☐ No
v. Examine tank for weld issues, leaks, dents, gouges or any other defects. Does the condition of the tank match what is recorded on the inspection sheet?	☑ Yes ☐ No
vi. Hose examination. Check the hose for condition and inspect the hose testing tag, Does the hose testing tag and hose ID number match the hose testing report form?	☑ Yes ☐ No
Use additional forms as required	
Calibration of Gauges a. Were the gauges used for hydrostatically and leak testing nurse tanks and hoses calibrated as per the NTSCC Manual and CSA B620-20 or were the gauges purchased brand new. Verify with receipts.	☑ Yes ☐ No
Quality Control Audits a. Date of last QC Audit (must be with the last 12 months)	Sept 12, 2020
Mobile Units a. Are mobile units part of this operation?	☑ Yes ☐ No
b. Are there equipment inventories for mobile units and descriptions of the units?	☑ Yes ☐ No
c. Verify that the inventory and description matches with the equipment on 1 mobile unit.	☑ Yes ☐ No
Record Retention a. Do the Tombstone files meet the requirements of the record retention section in the NTSCC Manual and the CSA B620-20?	☑ Yes ☐ No
Are there complete records, qualifications, work history, references, copies of training or educational certificates etc. on file for the tank inspectors and tank testers that meet the requirements listed in NTSCC Manual and the CSA B620-20?	☑ Yes ☐ No

Audit Process Issues:
Describe any audit process issues, gaps, problems that were discovered during the audit process.

There is an occasional delay in filing reports to the tombstone files.

QC Audit RESULTS:

- 100% YES answers and this report can be filed in the QC Audit folder.
- **Any NO answers, will require documented corrective action.**

Signed by QC Auditor: W L Smith

Date: Sept 10/21

Hose ID Code #49

HYDROSTATIC HOSE ASSEMBLY ANNUAL INSPECTION AND TESTING FORM

Current Inspection Date: July 3/21 Last Inspection Date: July 10/20

Information on Registered Facility	
Name of Registered Facility: FYZ Nutrients	
Address: Box 123	
Town: East Overshot	Province: SK
Postal Code: S0A 1B8	Phone Number: 306-555-1212
Tank Inspector / tester: Fred Smith	
Transport Canada Facility Registration Number: 0999	

Step 1 : Hose Assembly Inspection and Test (Refer to CSA B620-20 Section 7.2.10.4 and NTSCC Section 12.3)	
Hose Preparation	Remove hose from tank and ensure hose assembly is free of any dirt or debris that would otherwise hinder any observations to hose and valve.
☑ Accept ☐ Reject	Ensure the hose assembly's hose cover is free of any damage that exposes the reinforcement
Comments:	
☑ Accept ☐ Reject	The hose assembly does not show signs of being kinked, flattened, or permanently deformed wire braid
Comments:	
☑ Accept ☐ Reject	▪ The assembly does not exhibit signs of soft spots when not under pressure, bulging under pressure, or loose outer covering ▪ The hose assembly does not have damaged, slipping, or excessively worn hose couplings ▪ There are no loose or missing bolts or fastenings on bolted hose couplings assemblies ▪ The hose shall not exhibit signs of deterioration of legibility or absence of the serial or identification number and HAWP (hose assembly working pressure) ▪ A hose assembly having any damage shall be taken out of service and not pressure tested until repaired
Comments:	
Test Medium	Water Temperature 23 °C

Step 2 : Hose Test Pressure

Hose Test Pressure 120% of marked HAWP (7.2.10.5[b]) e.g. 1.2 x 350 psi = 420 psi	Test Pressure 420
☑ Accept ☐ Reject	The hose assembly shall hold the pressure without bulging, distortion, or leaks for at least 5 (five) minutes when isolated from pressure

Step 3 : Hose Markings

Hose ID	H49		
HAWP	350 psi	☑ PSI ☐ kPa	
Manufacturer	Goodall	Manufacture Date	2018
Record Expiry Date Displayed on Hose	Remove hose before July 25 (Goodall) Expiry date: 2025 Replace hose by _____ Expiry date _____		
Hose Length	Feet: 10' Inches: 8" **For Twin Wagons:** The annual hose inspection and pressure testing does NOT apply to hose assemblies less than 5 feet in length that are part of the piping system **AND** are pressure tested in accordance with clause 7.2.7.7 during the hydrostatic pressure test.		
Hose Markings ☑ Accept ☐ Reject	Hose markings are displayed as follows: • The month and year of test and inspection are either stamped on an end fitting or securely attached metal tag or washer • Ensure that letters on tag are not less than 5 mm (0.2 in.) high and depth and location of stamping shall not degrade the pressure rating of the hose • Serial number or identification number and the HAWP		
Comments			

Step 4 : Tester Certification

I certify that I have inspected, hydrostatically tested and marked the hose identified in this report in accordance with CSA B620 – 20

Name of Hose Tester	Fred Smith
Signature of Hose Tester	
Date Test Completed	July 3/21
Filed in Tombstone File	☑ Yes ☐ No

Out of Service Report

Tank ID Code 39

Part 1 - General Information			
Company/Tank Owner Name:	FYZ Nutrients Ltd.		
Tank Inspector Name	Fred Smith	Address	Box 127
Signature		Location / Prov.	East Overshoe
Certificate #	CAAR # 33	Postal Code	SOA 1B8
Date (dd/mm/yy)	April 23/21	Company ID	0999

Part 2 — Tank Information			
Serial Number		Design Pressure (PSI or KPA)	
CRN or NB #	Fill in data from plate.	Water Capacity (USWG or L)	
Manufacturer		Shell Thickness / Material	
Manufacture Date		Head Thickness / Material	
Post weld stress relieved	☒ Yes ☐ No	Tank Specification	
Hydrostatic Test Cycle	☒ 5 years ☐ 3 years		

Part 3 — Reason for tank being removed from service			
Tank being removed from service (select one)	X Temporarily ___ Permanently	Tank deficiency Occurred?	X During inspection ___ During field application

Reason (select all applicable)	Comments
___ The tank has failed the most recent annual EVI or leakage test	
___ The tank has failed the most recent Hydrostatic test	
___ Tank has been lost or stolen	
___ Tank has broken internal components	
___ The pressure envelope has physical damage	
___ The pressure envelop is exhibiting leaks	
___ Tank does not have a data plate	
___ Tank was sold, moved to other service, or not in active service (i.e. out of business)	
X Tank has excessive corrosion/paint required	Will sandblast and repaint
Other	

Part 4 - Important Notes (i.e. identify location of deficiency on tank using Diagram from Appendix 1). Digital photographs are also requested for visible defects.

Tank ID Code 34

TANK PRESSURE TEST (HYDROSTATIC) FORM

Current Test Date: June 30/21 Last Test Date: July 10/20

Information on Registered Facility

Name of Registered Facility: FYZ Nutrients	
Address: Box 123	
Town: East Overshoe	Province: SK.
Postal Code: S0A 1B8	Phone Number: 306-555-1212.
Tank Inspector or tester: Fred Smith	
Transport Canada Facility Registration Number: 0999	

Tank Owner Data

Name of Tank Owner:	
Address: Same as above.	
Telephone Number:	

Step 1 : Tank Preparation

All accessories have been removed	☒ Yes ☐ No
Tank Surface is clean	☒ Yes ☐ No
Loose and scaling paint have been removed	☒ Yes ☐ No
Loose or damaged decals have been removed	☒ Yes ☐ No
Comments or observations made during cleaning and tank preparations	
Record mark-up on the tank: List out all the decals	
SMV	☒ Accept ☐ Reject
UN 1005 4 Sides	☒ Accept ☐ Reject
Ammonia Inhalation Hazard decals, long sides	☒ Accept ☐ Reject
40 Kmh Speed - front	☒ Accept ☐ Reject
Emergency Phone #	☒ Accept ☐ Reject
Dealers Name and Location	☒ Accept ☐ Reject
B620 decals - dates, P & V test, facility #, tank code	☒ Accept ☐ Reject
Valve labels for liquid, vapour, spray fill	☒ Accept ☐ Reject
Transfer Procedures decal	☒ Accept ☐ Reject
Safety and First Aid decal	☒ Accept ☐ Reject

Step 2 a) : External Visual

☒ Accept ☐ Reject	

Comments:	

Step 2 b) : Annual Leakage Test

☒ Accept ☐ Reject **Comments:**	

Step 3 : Tank Data

Is the data plate legible?	☒ Yes ☐ No
Photo taken of data plate or copy on file?	☒ Yes ☐ No Rejection Criteria - Failure to meet the minimum standard requirement under CSA B620-20 where the data plate shall be maintained in legible condition and as required during an external inspection

Data Plate Information:	Note: Copy data as displayed on plate. Do NOT convert units!
a) Tank Manufacturer	
b Manufacture Serial Number	
c) Assembler (if applicable)	
d) Completion and Certification Date	
e) Original Test Date	
f) Specification of tank	☒ Nurse ☐ TC51
g) Manufacturers Design Identification # (MDIN)	
h) TCRN (CRN for Nurse tanks)	
i) Tank Serial Number	
j) Tare Weight in kgs	
k) Maximum allowable working pressure (MAWP)	
l) Original tank test pressure in kpa (test P)	
m) Tank design temp range (deg C to deg C)	
n) Max design density of lading (kgs per L)	
o) vessel material spec number	Head: Shell:
p) tank seam weld material (weld material)	
q) minimum allowable shell thickness, mm	

I fill in from data plate as much as possible.

r) minimum allowable head thickness, mm	
s) manufactured thickness of shell, mm	
t) manufactured thickness of heads, mm	
u) exposed surface area in square metres	
v) volumetric capacity in litres (USWG old nurse Tanks)	
w) maximum product load in kgs	
x) max loading rate, litres or USWG per min	
y) max unloading rate, litres or USWG per min	
z) lining material	Not applicable
aa) tank design pressure in kpa or psi	
bb) periodic tank retest pressure in kpa	
cc) Post weld stress relieved	☐ Yes ☐ No
dd) Hydrostatic Test Cycle	☐ 5 years ☐ 3 years
Pursuant to Clause 7.3.1 k) of CSA B620-20, is this tank used for service carrying a lading corrosive to the tank or is it in dedicated service?	Yes X **No**___ If yes, specify the product NH_3

Step 4 : Removal of All External Accessories

☒ Accept ☐ Reject	Removal of all non-essential tank appurtenance or accessories
Comments	

Step 5 : Venting the Nurse Tank

☒ Accept ☐ Reject	Venting the Nurse Tank as per NTSCC 12.2.4 and in compliance with Ammonia code of Practice and the TDG Regulations
Comments	

Step 6 : Prepare Pump & Water Source

Pressure relief valve in place	☒ Yes ☐ No

Calibrated gauges (2) in place	☒ Yes ☐ No
Water supply, pump and hoses in place	☒ Yes ☐ No

Step 7 :

Tank filled with water no warmer than 38° C	☒ Yes ☐ No Temperature 24 ° C
☒ Accept ☐ Reject	The tank shall be pressurized to 1.5 times its MAWP (maximum allowable working pressure). See CSA B620 7.2.7.7(d) and Table 7.3. ☒ 400 PSI (265 psi rated tank x 1.5) Start Time: 10:15 End Time: 10:25 ☐ 375 PSI (250 psi rated tank x 1.5) _____ Start Time: End Time: _____ For Twin Tank Wagons: • Pressure test each tank individually before pressure testing piping between tanks. • The annual hose inspection and pressure testing does NOT apply to hose assemblies less than 5 feet in length that are part of the piping system AND are pressure tested in accordance with clause 7.2.7.7 (e) during the hydrostatic pressure test. A tank has successfully completed the pressure test if : a) The test pressure is retained for at least 10 (ten) minutes when isolated from the pressure supply. b) A visual examination of all external surfaces reveals no leakage, defects, or deformation.
Comments	
☒ Accept ☐ Reject	The tank excess or flow valves shall be tested for mechanical operation: Refer to NTSCC Manual Section 12.2.4 Step 7. a) Liquid withdrawal valve b) Liquid fill valve c) Vapour fill valve d) Emergency discharge control systems or remote from tractor means of closure
Comments	

Defects and Repair Data (if applicable)

Defects (if any)	Description	Remove	Repair	Method of Repair	Date of Repair (dd/mm/yyyy)	Tank Tester Initials
	none.					

Replace PRV
Ensure PRV rating matches the data plate rating and record PRV expiry date.
PRV 1 PSI rating: 265 **PRV 1 expiry date:** 2026
PRV 2 PSI rating: **PRV 2 expiry date:**

Comments:

Tank Status After Hydrostatic & Visual Test

Tank removed from service for repairs	☐	
Tank was returned to service as no defects or damage was found	☒	
Tank to be scrapped	☐	

NOTE: Must be registered with Transport Canada (TC) to conduct any repairs to the structural integrity of the tank i.e. welding.

If any repairs have been performed directly on the tank body, please indicate the TC registered facility that conducted the repairs and attach the report.

Step 8 : Marking the Tank

If the tank has successfully passed the hydrostatic test, the following information shall be durably and legibly marked in
letters no less than 32 mm (1.25 in) high on the tank shell near the metal identification plate or anywhere on the front
head where it will be clearly visible from the ground:

1. Month and year of inspection.
2. The letter "P" (reflecting a Pressure test).
3. The last three digits of your facility registration number given by Transport Canada.
4. Optional designation for heat treated tanks on the 5 year hydrostatic testing schedule.

The markings should appear as follows: MM YY PVK 123 (where "123" is the TC registered facility number).

Since an annual external visual inspection and the annual leakage test is always done prior to a hydrostatic test, a 'V" and a "K" will also be placed on the tank if it passes the hydrostatic test and inspection.

Markings applied as follows:

Month/Year of Hydrostatic Test	07/21
"P" marking affixed	☒ Yes

Step 9 : Tester Certification

I certify that I have inspected and hydrostatically tested the tank identified in this report in accordance with CSA B620 – 20

Name of Tank Tester	Fred Smith
Signature of Tank Tester	
Date Hydrostatic test Completed	July 1/21
Filed in Tombstone File	☒ Yes ☐ No

For Tanks That Are TC 51, or DOT51 only

Tank Constructed of (choose one)	☐ Quench Tempered (QT) Steel ☒ Non-quenched Tempered Steel
For QT Tanks: Since the last inspection, has each shipment of NH^3 contained at least 0.2% water by weight?	☑ Yes ☐ No Std for NH_3 manufacturers.
Tank stress relieved after manufacture? ☒ Yes ☐ No	Tank stress relieved after repair? ☐ Yes, see attached repair report ☒ No, not required as no repairs done.
*Verify with information recorded on certificate of compliance issued by manufacturer.	

Sample Registration Form

Annex F (informative)
Sample application form

Note: *This Annex is not a mandatory part of this Standard.*
Refer to the Highway Tanks (tank trucks) and TC Portable Tanks section of the Transport Canada website to download an electronic copy of the application form.

Application for Registration as a Facility for the Manufacture, Modification, Assembly, Repair, Testing, or Inspection of Tanks Built in Accordance with the Specifications Included in CSA B620

Section A: *Application information* (Please indicate whether this is a new or renewal application or a change of scope. For a renewal application or a change of scope, please indicate your facility registration number with Transport Canada.)

☒ New ☐ Renewal ☐ Scope Change Facility Registration Number: 25- _____

Section B: *Contact and Facility Information*

1) Facility Information

Company Name	Company Telephone	Company Fax
FYZ Nutrients	306-555-1212	
Company Street Address	**Company Mailing Address**	
35 Railway St.	Box 123 East Overshot, Sk.	

2) Local Contact

Local Contact	Title
Fred Smith	Owner.
Business Mailing Address	**Telephone**
same.	**Fax**

3) Corporate Contact

Corporate Officer	Title
Fred Smith	Owner.
Business Mailing Address	**Telephone**
see above	**Fax**

(Continued)

Section B: *Contact and Facility Information (continued)*

4) Tank Specifications (Please check those functions for which you are applying, indicating with an "M" those functions that are mobile.)

		Inspection				Test/retest								
		External	Internal	Lining	Upper coupler	Hydrostatic	Pneumatic	Leak test	Fluorescent test	Thickness test	Repair	Manufacture	Assembly	Modification
Highway tanks	TC 406													
	TC 406 Crude													
	TC 406 FRP													
	TC 407													
	TC 407 FRP													
	TC 412													
	TC 412 FRP													
	TC 423													
	TC 306													
	TC 306 Crude													
	TC 307													
	TC 312													
	TC 350													
	TC 350 Crude													
	TC 331													
	TC 338													
	TC 341													
	Other (specify)													
Portable tanks	TC 11													
	TC 44													
	TC 51	X				X		X						
	TC 60													
	Other (specify) Nurse tank	X				X		X						

(Continued)

Indicate the material submitted with this application by checking "Yes" or "N/A" (Not Applicable):

Section C: *Required Certificates/Legal Information*

Yes	N/A	
☒	☐	**1)** Letter of Incorporation, Letters Patent, evidence of registration as a company
☐	☒	**2)** Certificate of Authorization for the ASME "U" stamp
☐	☒	**3)** Certificate of Authorization from a provincial pressure vessel jurisdiction for manufacture or repair
☐	☒	**4)** National Board of Boiler and Pressure Vessel Inspectors Certificate of Authorization for the "R" stamp
☐	☒	**5)** Certificate of Authorization from a provincial pressure vessel jurisdiction for the manufacture, modification, or repair of piping in accordance with CSA B51 or ASME B31.3

Section D: *Facility Details*

Yes	N/A	
☒	☐	**1)** Workshop area description: approximate area (square metres/feet), number of bays, maximum tank size accommodation, address if different from company address
☒	☐	**2)** Mobile unit information: a) address of control location, location of documentation, and number of units; b) complete description of units; c) description of equipment carried in each unit; and d) description of customer equipment and services in the field necessary for the mobile unit to function.

Section E: *Statements*

a) The quality control manual required by Clause 8.1.1(d) of CSA B620, including the inspection and testing procedures, reports, and certificates of compliance, is in compliance with the version of CSA B620 and its revisions that are in force under the TDG Regulations.

b) All design engineers, tank inspectors, testers, and welders are qualified and experienced in accordance with Clauses 8.1.5.1, 8.1.6, 8.1.7, and 4.4, respectively, of CSA B620. Evidence of this qualification is on file as described in the quality control manual.

c) The quality control program described in the quality control manual is in place and operating as required by CSA B620.

Signed: _____ (Corporate Officer named in Part 3 of Section A)

Date: April 10/21

Date: July 4/21 Tank ID Code ID#1

TRANSFER OF OWNERSHIP STATEMENT

This document is to be used when ownership of a nurse tank is being transferred from one company to another. The original copy of this document along with the original tombstone file contents should accompany the sale of the tank, and one copy should be retained along with a copy of the contents of the tombstone file.

Part 1 : General Information – Current Tank Owner

Current Company/Tank Owner's Name:	John Doe		
Address:	RR#1		
Town:	East Overshoe	Province:	Sk.
Postal Code:	S0A 1B8	Phone Number:	306-555-1213
Tank Inspector:	FYZ		

Part 2 : Tank Information

Serial Number			
TCRN or CRN			
Manufacturer	Fill in from data plate.		
Manufacture Date			
Tank Specification	☐ Nurse tank	☐ TC51 tank	
Design Pressure		☐ PSI	☐ kPa
Water Capacity		☐Gallons	☐ Litres
Post weld stress relieved	☐ Yes	☐ No	
Hydrostatic Test Cycle	☐ 5 years	☐ 3 years	

Part 3 : General Information – New Tank Owner

New Company/Tank Owner's Name:	FYZ Nutrients Ltd.		
Address:	Box 123		
Town:	East Overshoe	Province:	Sk.
Postal Code:	S0A 1B8	Phone Number:	306-555-1212
Date:			

Part 4 : Important Notes

On the date of transfer of ownership, the tank was up-to-date with all required CSA B620-20 tests and inspections	☑ Yes	☐ No
This tank meets the requirements of CSA B-620-20 and CSA B622-20	☑ Yes	☐ No

Comments:

Date: July 4, 2021 Tank ID Code ID#1

NURSE TANK WAIVER AGREEMENT (3RD PARTY INSPECTION)

This document is to be used when a nurse tank is inspected by a third party inspection company, or the Safety Officer is inspecting tanks that they do not own, or are not the property of their employer.

Part 1 : General Information – Current Tank Owner

Current Company/Tank Owner's Name:	John Doe		
Address:	RR#1		
Town:	East Overshoe	Province:	SK.
Postal Code:	S0A 1B8	Phone Number:	306-555-1213
Tank Inspector:	FYZ Nutrients – Fred Smith		

Part 2 : Tank Information

Serial Number			
TCRN or CRN			
Manufacturer	From data plate.		
Manufacture Date			
Tank Specification	☐ Nurse tank	☐ TC51 tank	
Design Pressure		☐ PSI	☐ kPa
Water Capacity		☐ Gallons	☐ Litres
Post weld stress relieved	☐ Yes	☐ No	
Hydrostatic Test Cycle	☐ 5 years	☐ 3 years	

Part 3 : Disclaimer

The tank owner acknowledges that the nurse tank (listed in Part 2) has been inspected/tested under the protocol of the

NTSCC. The tank owner John Doe (print name) will hereby save harmless the Tank Inspector FYZ (print name) and their employer Fred Smith (print name) from and against any and all liability of whatsoever kind and nature, for damages to property and loss thereof, for any act or omission of the tank owner, their employees, or agent in our about the tank owner's equipment or in the operation of equipment therein, or in the exercise of any right of obligation under this agreement.

Date of next External Visual Inspection (mm/yy): July 4, 2022

Date of next leak test (mm/yy): July 4, 2022

Date of next Hydrostatic Test (mm/yy): July 4, 2027

Part 4 : Important Notes

Name of Tank Owner	John Doe
Company Name (if different from	
Signature of Tank Owner	John Doe

Hose ID Code _____

HYDROSTATIC HOSE ASSEMBLY ANNUAL INSPECTION AND TESTING FORM

Current Inspection Date: _____ Last Inspection Date: _____

Information on Registered Facility	
Name of Registered Facility:	
Address:	
Town:	Province:
Postal Code:	Phone Number:
Tank Inspector / tester:	
Transport Canada Facility Registration Number:	

Step 1 : Hose Assembly Inspection and Test (Refer to CSA B620-20 Section 7.2.10.4 and NTSCC Section 12.3)	
Hose Preparation	Remove hose from tank and ensure hose assembly is free of any dirt or debris that would otherwise hinder any observations to hose and valve.
☐ Accept ☐ Reject	Ensure the hose assembly's hose cover is free of any damage that exposes the reinforcement
Comments:	
☐ Accept ☐ Reject	The hose assembly does not show signs of being kinked, flattened, or permanently deformed wire braid
Comments:	
☐ Accept ☐ Reject	▪ The assembly does not exhibit signs of soft spots when not under pressure, bulging under pressure, or loose outer covering ▪ The hose assembly does not have damaged, slipping, or excessively worn hose couplings ▪ There are no loose or missing bolts or fastenings on bolted hose couplings assemblies ▪ The hose shall not exhibit signs of deterioration of legibility or absence of the serial or identification number and HAWP (hose assembly working pressure) ▪ A hose assembly having any damage shall be taken out of service and not pressure tested until repaired
Comments:	
Test Medium	Water Temperature _____ºC

Hose ID Code _____

Step 2 : Hose Test Pressure

Hose Test Pressure 120% of marked HAWP (7.2.10.5[b]) e.g. 1.2 x 350 psi = 420 psi	Test Pressure _____
☐ Accept ☐ Reject	The hose assembly shall hold the pressure without bulging, distortion, or leaks for at least 5 (five) minutes when isolated from pressure

Step 3 : Hose Markings

Hose ID			
HAWP	☐ PSI ☐ kPa		
Manufacturer		Manufacture Date	

Record Expiry Date Displayed on Hose	Remove hose before _____(Goodall) Expiry date: _____ Replace hose by _____ Expiry date _____
Hose Length	Feet: ___Inches: ___ **For Twin Wagons:** The annual hose inspection and pressure testing does NOT apply to hose assemblies less than 5 feet in length that are part of the piping system **AND** are pressure tested in accordance with clause 7.2.7.7 during the hydrostatic pressure test.
Hose Markings ☐ Accept ☐ Reject	Hose markings are displayed as follows: • The month and year of test and inspection are either stamped on an end fitting or securely attached metal tag or washer • Ensure that letters on tag are not less than 5 mm (0.2 in.) high and depth and location of stamping shall not degrade the pressure rating of the hose • Serial number or identification number and the HAWP
Comments	

Step 4 : Tester Certification

I certify that I have inspected, hydrostatically tested and marked the hose identified in this report in accordance with CSA B620 – 20

Name of Hose Tester	
Signature of Hose Tester	
Date Test Completed	
Filed in Tombstone File	☐ Yes ☐ No

Tank ID Code _____

TANK PRESSURE TEST (HYDROSTATIC) FORM

Current Test Date: _____ Last Test Date: _____

Information on Registered Facility	
Name of Registered Facility:	
Address:	
Town:	Province:
Postal Code:	Phone Number:
Tank Inspector or tester:	
Transport Canada Facility Registration Number:	

Tank Owner Data
Name of Tank Owner:
Address:
Telephone Number:

Step 1 : Tank Preparation	
All accessories have been removed	☐ Yes ☐ No
Tank Surface is clean	☐ Yes ☐ No
Loose and scaling paint have been removed	☐ Yes ☐ No
Loose or damaged decals have been removed	☐ Yes ☐ No
Comments or observations made during cleaning and tank preparations	
Record mark-up on the tank: List out all the decals	
SMV	☐ Accept ☐ Reject
UN 1005 4 Sides	☐ Accept ☐ Reject
Ammonia Inhalation Hazard decals, long sides	☐ Accept ☐ Reject
40 Kmh Speed – front	☐ Accept ☐ Reject
Emergency Phone #	☐ Accept ☐ Reject
Dealers Name and Location	☐ Accept ☐ Reject
B620 decals - dates, P & V test, facility #, tank code	☐ Accept ☐ Reject
Valve labels for liquid, vapour, spray fill	☐ Accept ☐ Reject

Transfer Procedures decal Safety and First Aid decal	☐ Accept ☐ Reject ☐ Accept ☐ Reject

Step 2 a) : External Visual	
☒ Accept ☐ Reject **Comments:**	

Step 2 b) : Annual Leakage Test	
☒ Accept ☐ Reject **Comments:**	

Step 3 : Tank Data	
Is the data plate legible? Photo taken of data plate or copy on file?	☐ Yes ☐ No ☐ Yes ☐ No Rejection Criteria - Failure to meet the minimum standard requirement under CSA B620-20 where the data plate shall be maintained in legible condition and as required during an external inspection
Data Plate Information:	Note: Copy data as displayed on plate. Do NOT convert units!
a) Tank Manufacturer	
b Manufacture Serial Number	
c) Assembler (if applicable)	
d) Completion and Certification Date	
e) Original Test Date	
f) Specification of tank	☐ Nurse ☐ TC51
g) Manufacturers Design Identification # (MDIN)	
h) TCRN (CRN for Nurse tanks)	
i) Tank Serial Number	
j) Tare Weight in kgs	
k) Maximum allowable working pressure (MAWP)	
l) Original tank test pressure in kpa (test P)	

m) Tank design temp range (deg C to deg C)	
n) Max design density of lading (kgs per L)	
o) vessel material spec number	Head: Shell:
p) tank seam weld material (weld material)	
q) minimum allowable shell thickness, mm	
r) minimum allowable head thickness, mm	
s) manufactured thickness of shell, mm	
t) manufactured thickness of heads, mm	
u) exposed surface area in square metres	
v) volumetric capacity in litres (USWG old nurse Tanks)	
w) maximum product load in kgs	
x) max loading rate, litres or USWG per min	
y) max unloading rate, litres or USWG per min	
z) lining material	Not applicable
aa) tank design pressure in kpa or psi	
bb) periodic tank retest pressure in kpa	
cc) Post weld stress relieved	☐ Yes ☐ No
dd) Hydrostatic Test Cycle	☐ 5 years ☐ 3 years
Pursuant to Clause 7.3.1 k) of CSA B620-20, is this tank used for service carrying a lading corrosive to the tank or is it in dedicated service?	Yes___ **No**___ If yes, specify the product_____

Step 4 : Removal of All External Accessories

☐ Accept ☐ Reject	Removal of all non-essential tank appurtenance or accessories
Comments	

Step 5 : Venting the Nurse Tank

☐ Accept ☐ Reject	Venting the Nurse Tank as per NTSCC 12.2.4 and in compliance with Ammonia code of Practice and the TDG Regulations

Comments	

Step 6 : Prepare Pump & Water Source	
Pressure relief valve in place	☐ Yes ☐ No
Calibrated gauges (2) in place	☐ Yes ☐ No
Water supply, pump and hoses in place	☐ Yes ☐ No

Step 7 :	
Tank filled with water no warmer than 38º C	☐ Yes ☐ No Temperature _____ º C
☐ Accept ☐ Reject	The tank shall be pressurized to 1.5 times its MAWP (maximum allowable working pressure). See CSA B620 7.2.7.7(d) and Table 7.3. ***Minimum 10 minutes.*** ☐ 400 PSI (265 psi rated tank x 1.5) _____Start Time: End Time: _____ ☐ 375 PSI (250 psi rated tank x 1.5) _____ Start Time: End Time: _____ For Twin Tank Wagons: • Pressure test each tank individually before pressure testing piping between tanks. • The annual hose inspection and pressure testing does NOT apply to hose assemblies less than 5 feet in length that are part of the piping system AND are pressure tested in accordance with clause 7.2.7.7 (e) during the hydrostatic pressure test. A tank has successfully completed the pressure test if : a) The test pressure is retained for at least 10 (ten) minutes when isolated from the pressure supply. b) A visual examination of all external surfaces reveals no leakage, defects, or deformation.
Comments	
☐ Accept ☐ Reject	The tank excess or flow valves shall be tested for mechanical operation: Refer to NTSCC Manual Section 12.2.4 Step 7. a) Liquid withdrawal valve b) Liquid fill valve c) Vapour fill valve d) Emergency discharge control systems or remote from tractor means of closure
Comments	

Defects and Repair Data (if applicable)

Defects (if any)	Description	Remove	Repair	Method of Repair	Date of Repair (dd/mm/yyyy)	Tank Tester Initials

Replace PRV
Ensure PRV rating matches the data plate rating and record PRV expiry date.
PRV 1 PSI rating: **PRV 1 expiry date:**
PRV 2 PSI rating: **PRV 2 expiry date:**

Comments:

Tank Status After Hydrostatic & Visual Test

Tank removed from service for repairs ☐ Tank was returned to service as no defects or damage was found ☐ Tank to be scrapped ☐	

NOTE: Must be registered with Transport Canada (TC) to conduct any repairs to the structural integrity of the tank i.e. welding.

If any repairs have been performed directly on the tank body, please indicate the TC registered facility that conducted the repairs and attach the report.

Step 8 : Marking the Tank

If the tank has successfully passed the hydrostatic test, the following information shall be durably and legibly marked in
letters no less than 32 mm (1.25 in) high on the tank shell near the metal identification plate or anywhere on the front
head where it will be clearly visible from the ground:

1. Month and year of inspection.
2. The letter “P” (reflecting a Pressure test).
3. The last three digits of your facility registration number given by Transport Canada.
4. Optional designation for heat treated tanks on the 5 year hydrostatic testing schedule.

The markings should appear as follows: MM YY PVK 123 (where “123” is the TC registered facility number).

Since an annual external visual inspection and the annual leakage test is always done prior to a hydrostatic test, a ‘V” and a “K” will also be placed on the tank if it passes the hydrostatic test and inspection.

Markings applied as follows:	
Month/Year of Hydrostatic Test	
"P" marking affixed	☐ Yes

Step 9 : Tester Certification

I certify that I have inspected and hydrostatically tested the tank identified in this report in accordance with CSA B620 – 20

Name of Tank Tester	
Signature of Tank Tester	
Date Hydrostatic test Completed	
Filed in Tombstone File	☐ Yes ☐ No

For Tanks That Are TC 51, or DOT51 only

Tank Constructed of (choose one)	☐ Quench Tempered (QT) Steel ☐ Non-quenched Tempered Steel
For QT Tanks: Since the last inspection, has each shipment of NH^3 contained at least 0.2% water by weight?	☐ Yes ☐ No
Tank stress relieved after manufacture? ☐ Yes ☐ No *Verify with information recorded on certificate of compliance issued by manufacturer.	Tank stress relieved after repair? ☐ Yes, see attached repair report ☐ No, not required as no repairs done.

Out of Service Report

Tank ID Code _____

Part 1 - General Information			
Company/Tank Owner Name:			
Tank Inspector Name		Address	
Signature		Location / Prov.	
Inspector's Certificate #		Postal Code	
Date (dd/mm/yy)		Company ID	

Part 2 — Tank Information			
Serial Number		Design Pressure (PSI or KPA)	
CRN or NB #		Water Capacity (USWG or L)	
Manufacturer		Shell Thickness / Material	
Manufacture Date		Head Thickness / Material	
Post weld stress relieved	☐ Yes ☐ No	Tank Specification	
Hydrostatic Test Cycle	☐ 5 years ☐ 3 years		

Part 3 — Reason for tank being removed from service			
Tank being removed from service (select one)	___Temporarily ___ Permanently	Tank deficiency Occurred?	___ During inspection ___ During field application

Reason (select all applicable)	Comments
___ The tank has failed the most recent annual EVI or leakage test	
___The tank has failed the most recent Hydrostatic test	
___ Tank has been lost or stolen	
___ Tank has broken internal components	
___ The pressure envelope has physical damage	
___ The pressure envelop is exhibiting leaks	
___ Tank does not have a data plate	
___ Tank was sold, moved to other service, or not in active service (i.e. out of business)	
___ Tank has excessive corrosion/paint required	
Other	

Part 4 - Important Notes (i.e. identify location of deficiency on tank using Diagram from Appendix 1). Digital photographs are also requested for visible defects.

Audit QC Program

---------- SAMPLE ONLY ----------

NTSCC Audit Quality Control Form	
This form is to be completed annually by the facility quality control auditor as described in the NTSCC Manual. The purpose of the audit is to ensure that the tank inspector(s) and tank tester(s) are performing the inspections and tests as per the NTSCC manual and as per CSA B620-20. Any deviations from the NTSCC manual or CSA B620-20 must be noted on this form and then corrected immediately. The complete Quality Control Audit forms must be maintained for a minimum of 5 years and be available for inspection by Transport Canada.	
QC Auditor:	Date:
Position:	
Version of the NTSCC Manual:	
Tank Specification Inspector / tester is Qualified to Inspect / test the tanks:	Date of the NTSCC Manual:
Does the NTSCC Manual: a. Contain a signed Statement of Authority b. Organizational Chart	 ☐ Yes ☐ No ☐ Yes ☐ No
Manual Control a. Name of Person designated to maintain the NTSCC Manual b. Is the manual up to date? c. Is the revision control sheet (Section 22) signed and up to date?	 _____ ☐ Yes ☐ No ☐ Yes ☐ No
Tombstone File Examination a. Are the files well organized? b. Are the inspection sheets: i. Legible ii. Complete iii. Visual Inspection, Leak testing and Hydrostatic Test Reports are signed	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No
Nonconformities and corrective action a. deficiencies noted on inspection reports are accompanied by Out of Service and Return to Service reports b. check Tombstone file and tank to verify that the return to service report is accurate	 ☐ Yes ☐ No ☐ Yes ☐ No
Take a random 10% (minimum) of the Tombstone files to the Ammonia nurse tank storage compound. Record Tank numbers to be checked below. a. Tank I.D. # _____ Tank Specification_____ i. Does the data plate information in the tombstone file match the tank? ii. Is the date plate information complete? iii. Do the tank markings appear to be complete, in good condition and match the inspection report? iv. Is the paint in acceptable condition and match the inspection report? v. Examine tank for weld issues, leaks, dents, gouges or any other defects. Does the condition of the tank match what is recorded on the inspection sheet? vi. Hose examination. Check the hose for	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No

condition and inspect the hose testing tag, Does the hose testing tag and hose ID number match the hose testing report form? b. Tank I.D. # _____ Tank Specification_____ i. Does the data plate information in the tombstone file match the tank? ii. Is the date plate information complete? iii. Do the tank markings appear to be complete, in good condition and match the inspection report? iv. Is the paint in acceptable condition and match the inspection report? v. Examine tank for weld issues, leaks, dents, gouges or any other defects. Does the condition of the tank match what is recorded on the inspection sheet? vi. Hose examination. Check the hose for condition and inspect the hose testing tag, Does the hose testing tag and hose ID number match the hose testing report form? ***Use additional forms as required***	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No
Calibration of Gauges a. Were the gauges used for hydrostatically and leak testing nurse tanks and hoses calibrated as per the NTSCC Manual and CSA B620-20 or were the gauges purchased brand new. Verify with receipts.	☐ Yes ☐ No
Quality Control Audits a. Date of last QC Audit (must be with the last 12 months)	
Mobile Units a. Are mobile units part of this operation? b. Are there equipment inventories for mobile units and descriptions of the units? c. Verify that the inventory and description matches with the equipment on 1 mobile unit.	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No
Record Retention a. Do the Tombstone files meet the requirements of the record retention section in the NTSCC Manual and the CSA B620-20?	☐ Yes ☐ No
Are there complete records, qualifications, work history, references, copies of training or educational certificates etc. on file for the tank inspectors and tank testers that meet the requirements listed in NTSCC Manual and the CSA B620-20?	☐ Yes ☐ No
Audit Process Issues: Describe any audit process issues, gaps, problems that were discovered during the audit process.	

QC Audit RESULTS:

- 100% YES answers and this report can be filed in the QC Audit folder.
- **<u>Any NO answers,</u> will require documented corrective action.**

Signed by QC Auditor: _____

Date: _____

Sample Registration Form

Annex F (informative)
Sample application form

Note: *This Annex is not a mandatory part of this Standard.*
Refer to the Highway Tanks (tank trucks) and TC Portable Tanks section of the Transport Canada website to download an electronic copy of the application form.

Application for Registration as a Facility for the Manufacture, Modification, Assembly, Repair, Testing, or Inspection of Tanks Built in Accordance with the Specifications Included in CSA B620

Section A: *Application information* (Please indicate whether this is a new or renewal application or a change of scope. For a renewal application or a change of scope, please indicate your facility registration number with Transport Canada.)

☐ New ☐ Renewal ☐ Scope Change Facility Registration Number: 25- _____

Section B: *Contact and Facility Information*

1) Facility Information

Company Name	Company Telephone	Company Fax
Company Street Address	Company Mailing Address	

2) Local Contact

Local Contact	Title
Business Mailing Address	Telephone
	Fax

3) Corporate Contact

Corporate Officer	Title
Business Mailing Address	Telephone
	Fax

(Continued)

Section B: *Contact and Facility Information (continued)*

4) Tank Specifications (Please check those functions for which you are applying, indicating with an "M" those functions that are mobile.)

		Inspection				Test/retest								
		External	Internal	Lining	Upper coupler	Hydrostatic	Pneumatic	Leak test	Fluorescent test	Thickness test	Repair	Manufacture	Assembly	Modification
Highway tanks	TC 406													
	TC 406 Crude													
	TC 406 FRP													
	TC 407													
	TC 407 FRP													
	TC 412													
	TC 412 FRP													
	TC 423													
	TC 306													
	TC 306 Crude													
	TC 307													
	TC 312													
	TC 350													
	TC 350 Crude													
	TC 331													
	TC 338													
	TC 341													
	Other (specify)													
Portable tanks	TC 11													
	TC 44													
	TC 51													
	TC 60													
	Other (specify)													

(Continued)

Indicate the material submitted with this application by checking "Yes" or "N/A" (Not Applicable):

Section C: *Required Certificates/Legal Information*

Yes	N/A	
☐	☐	**1)** Letter of Incorporation, Letters Patent, evidence of registration as a company
☐	☐	**2)** Certificate of Authorization for the ASME "U" stamp
☐	☐	**3)** Certificate of Authorization from a provincial pressure vessel jurisdiction for manufacture or repair
☐	☐	**4)** National Board of Boiler and Pressure Vessel Inspectors Certificate of Authorization for the "R" stamp
☐	☐	**5)** Certificate of Authorization from a provincial pressure vessel jurisdiction for the manufacture, modification, or repair of piping in accordance with CSA B51 or ASME B31.3

Section D: *Facility Details*

Yes	N/A	
☐	☐	**1)** Workshop area description: approximate area (square metres/feet), number of bays, maximum tank size accommodation, address if different from company address
☐	☐	**2)** Mobile unit information: a) address of control location, location of documentation, and number of units; b) complete description of units; c) description of equipment carried in each unit; and d) description of customer equipment and services in the field necessary for the mobile unit to function.

Section E: *Statements*

a) The quality control manual required by Clause 8.1.1(d) of CSA B620, including the inspection and testing procedures, reports, and certificates of compliance, is in compliance with the version of CSA B620 and its revisions that are in force under the TDG Regulations.

b) All design engineers, tank inspectors, testers, and welders are qualified and experienced in accordance with Clauses 8.1.5.1, 8.1.6, 8.1.7, and 4.4, respectively, of CSA B620. Evidence of this qualification is on file as described in the quality control manual.

c) The quality control program described in the quality control manual is in place and operating as required by CSA B620.

Signed: _____ (Corporate Officer named in Part 3 of Section A)

Date: _____

Date: _____ Tank ID Code _____

TRANSFER OF OWNERSHIP STATEMENT

This document is to be used when ownership of a nurse tank is being transferred from one company to another. The original copy of this document along with the original tombstone file contents should accompany the sale of the tank, and one copy should be retained along with a copy of the contents of the tombstone file.

Part 1 : General Information – Current Tank Owner

Current Company/Tank Owner's Name:	
Address:	
Town:	Province:
Postal Code:	Phone Number:
Tank Inspector:	

Part 2 : Tank Information

Serial Number			
TCRN or CRN			
Manufacturer			
Manufacture Date			
Tank Specification	☐ Nurse tank	☐ TC51 tank	
Design Pressure		☐ PSI	☐ kPa
Water Capacity		☐Gallons	☐ Litres
Post weld stress relieved	☐ Yes	☐ No	
Hydrostatic Test Cycle	☐ 5 years	☐ 3 years	

Part 3 : General Information – New Tank Owner

New Company/Tank Owner's Name:	
Address:	
Town:	Province:
Postal Code:	Phone Number:
Date:	

Part 4 : Important Notes

On the date of transfer of ownership, the tank was up-to-date with all required CSA B620-20 tests and inspections	☐ Yes ☐ No

This tank meets the requirements of CSA B-620-20 and CSA B622-20 ☐ Yes ☐ No

Comments:

Date: _____ Tank ID Code _____

ANNUAL LEAKAGE TEST and EXTERNAL VISUAL INSPECTION

Current Inspection Date: _____ Last Inspection Date: _____

Part 1 (a): Information on Registered Facility	
Name of Registered Facility:	
Address:	
Town:	Province:
Postal Code:	Phone Number:
Tank Inspector:	Tank Tester:
Transport Canada Facility Registration Number:	

Tank Owner Data
Name of Tank Owner:
Address:
Telephone Number:

Step 1 : Tank Data		
Is the data plate legible?	☐ Yes ☐ No	Tank Spec to be inspected:
Photo taken of data plate or copy on file?	☐ Yes ☐ No	☐ TC51
U-1A form on file?	☐ Yes ☐ No	☐ Non-spec with CRN

Data Plate Information:	Note: Copy data as displayed on plate. Do NOT convert units!
a) Tank Manufacturer	
b Manufacture Serial Number	
c) Assembler (if applicable)	
d) Completion and Certification Date	
e) Original Test Date	
f) Specification of tank	☐ Nurse ☐ TC51
g) Manufacturers Design Identification # (MDIN)	
h) TCRN (CRN for Nurse tanks)	
i) Tank Serial Number	
j) Tare Weight in kgs	
k) Maximum allowable working pressure (MAWP)	
l) Original tank test pressure in kpa (test P)	
m) Tank design temp range (deg C to deg C)	

n) Max design density of lading (kgs per L)	
o) vessel material spec number	Head: Shell
p) tank seam weld material (weld matl)	
q) minimum allowable shell thickness in mm	
r) minimum allowable head thickness in mm	
s) manufactured thickness of shell in mm	
t) manufactured thickness of heads in mm	
u) exposed surface area in square metres	
v) volumetric capacity in litres (USWG for old nurse Tanks)	
w) maximum product load in kgs	
x) max loading rate, litres or USWG per min	
y) max unloading rate, litres or USWG per min	
z) lining material	Not applicable
aa) tank design pressure in kpa or psi	
bb) periodic tank retest pressure in kpa	
cc) Post weld stress relieved	☐ Yes ☐ No
dd) Hydrostatic Test Cycle	☐ 5 years ☐ 3 years
Pursuant to Clause 7.3.1 k) of CSA B620-20, is this tank used for service carrying a lading corrosive to the tank or is it in dedicated service?	**Yes___ No___** If yes, specify the product_____

Part 1 – Annual Leakage Test

Step 2 : Tank Preparation for LEAKAGE TEST	
Tank Surface is clean and dry	☐ Yes ☐ No
Loose and scaling paint have been removed	☐ Yes ☐ No
Loose or damaged decals have been removed	☐ Yes ☐ No
Tank valves, closures and piping are clean and dry	☐ Yes ☐ No
Calibrated (with in last 12 months) pressure gauges are in place and safely sensing tank pressure	☐ Yes ☐ No

Step 3 & 4 : **Tank Leakage Test using Anhydrous Ammonia**	
Tank Test Pressure (minimum of 60 psi)	_____ psi
Tank Shell Inspection ☐ Accept ☐ Reject	All product valves and associated piping and accessories are in place and operative
Comments:	
☐ Accept ☐ Reject	Test each valve and closure in sequence examining each for any leakage using a mixture of soapy water for the all valves, closures and piping. Attach a list to the back of this form as there are a wide variety of valve, piping and accessory configurations.
Comments:	

Step 5 : Marking the Tank

If the tank has successfully passed the Annual Leakage Test, the following information shall be durably and legibly marked in letters no less than 32 mm (1.25 in) high on the tank shell near the metal identification plate or anywhere on the front head where it will be clearly visible from the ground:

Tank test markings should be placed on the A end (hitch end) of the tank on the driver's side.

1. Month and year of inspection.
2. The letter "K".

3. The last four (4) digits of your facility registration number given by Transport Canada. The markings should appear as follows: 06 20 K 0999 (where "0999" is the TC registered facility number). **Markings applied as follows:**	
Month/Year of Visual Inspection (MM/DD/YY)	
"K" marking affixed	☐ Yes ☐ No

Tank Status After Annual Leakage Test

Tank removed from service for repairs	☐ Yes ☐ No Reason:
Tank returned to service as NO DEFECTS OR DAMAGE was found.	☐ Yes ☐ No
Tank to be scrapped	☐ Yes ☐ No

NOTE: Facilities must be registered for repair work with Transport Canada (TC) in order to conduct any repairs to the structural integrity of the tank i.e. welding.

If any repairs have been performed directly on the tank body, please indicate the TC registered facility that conducted the repairs and attach the report.

For tanks that are TC51, or DOT51 only

Tank constructed of (choose one)	☐ Quench Tempered (QT) Steel ☐ Non-quenched Tempered Steel
For QT Tanks: Since the last inspection, has each shipment of NH3 contained at least 0.2% water by weight?	☐ Yes ☐ No
Tank stress relieved after manufacture? *Verify with information recorded on certificate of compliance issued by manufacturer? U – IA or data plate	☐ Yes ☐ No

Step 6 : Tester Certification

I certify that I have leak tested the tank identified in this report in accordance with CSA B620 – 20

Name of Tank Tester	
Signature of Tank Tester	
Date Inspection Completed	

Part 2 - Annual External Visual Inspection

Step 2 : Tank Preparation	
All accessories have been removed	☐ Yes ☐ No
Tank Surface is clean	☐ Yes ☐ No
Loose and scaling paint has been removed	☐ Yes ☐ No
Loose or damaged decals have been removed	☐ Yes ☒ No
Comments or observations made during cleaning and tank preparations:	

Record mark – up on the tank: List out all the decals	
SMV	☐ Accept ☐ Reject
UN 1005 4 Sides	☐ Accept ☐ Reject
Ammonia Inhalation Hazard decals, long sides	☐ Accept ☐ Reject
40 kmh speed – front	☐ Accept ☐ Reject
Emergency Phone #	☐ Accept ☐ Reject
Dealers Name and Location	☐ Accept ☐ Reject
B620 decals - dates, P & V test, facility #, tank code	☐ Accept ☐ Reject
Valve labels for liquid, vapour, spray fill	☐ Accept ☐ Reject
Transfer Procedures decal	☐ Accept ☐ Reject
Safety and First Aid decal	☐ Accept ☐ Reject

Step 3 & 4 : Tank Inspection	
Tank Shell Inspection ☐ Accept ☐ Reject	Inspect entire area of tank for dents, scrapes, distortions, gouges, bulges, cracks, signs of leakage or any other condition that might render it unsafe for transport (7.2.1.1 [a]). Refer to section 12.1 and section 14 of the NTSCC Manual and CSA B620-20 7.2.1.1 External Inspection. **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☐ Accept ☒ Reject	Inspect entire area of tank for: corrosion, abrasions, and signs of leakage or any other conditions that might render it unsafe for transport (7.2.1.1 [a]). Refer to section 12.1 and section 14 of the NTSCC Manual and CSA B620-20 7.2.1.1

	External Inspection. **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	

☐ Accept ☐ Reject	Inspect entire surface area of tank for deteriorated paint. Refer to Appendix on paint quality. Minor paint deterioration can be touched up. Significant paint deterioration may require sandblasting and repainting. Refer to section 12.1 and section 14 of the NTSCC Manual and CSA B620-20 7.2.1.1 External Inspection. **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☐ Accept ☐ Reject	Ensure all appurtenances (any tank part or accessory that has no product containment function and provides no structural support to tank [i.e. PRV guards, weld pad]) and attachments, support structures, or connecting structures are not damaged or corroded so as to affect safe operation of the tank (7.2.1.1[f]). Refer to section 12.1 and section 14 of the NTSCC Manual and CSA B620 7.2.1.1 External Inspection. **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☐ Accept ☐ Reject	Inspect every weld on all appurtenances (any tank part or accessory that has no product containment function and provides no structural support to tank i.e. PRV guards, weld pad) for cracks, defects, or signs of leakage (7.2.1.1). Refer to Appendix W on weld quality. **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☐ Accept ☐ Reject	Inspect every tank head circumference weld (front, mid tank and rear) for cracks, defects, or signs of leakage (7.2.1.1). Refer to Appendix W on weld quality. **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**

Comments:	
☐ Accept ☐ Reject	Inspect every longitudinal (horizontal) tank weld for cracks, defects, or signs of leakage (7.2.1.1). Refer to Appendix W on weld quality. **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☐ Accept ☐ Reject	Inspect all valves and welds around threaded coupling including self-closing stop valves, excess flow valves, emergency discharge control systems, remote from tractor means of closure and pressure relief valves for corrosion, distortion, wear, signs of leakage, or any other damage that would prevent their normal operation (7.2.1.1). Refer to Appendix W on weld quality. **Ensure PRV rating matches the data plate rating and record PRV expiry date!** **PRV 1 PSI rating:_____PRV 1 expiry date: _____** **PRV 2 PSI rating:_____PRV 2 expiry date: _____** **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☐ Accept ☐ Reject	For Twin Tank Wagons: Ensure all bolts or nuts on any flanged connection or blank flange are in place and properly tightened (7.2.1.1 (d)) **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	

☐ Accept ☐ Reject	Ensure that hose assemblies mounted on or accompanying match the requirements of the CSA B620-20. Section 7 **List defects and locations below or use additional sheets if required.**
Comments:	

☒ Accept ☐ Reject	Hose markings are displayed as follows (7.2.10.6): • The month and year of test and inspection are either stamped on an end fitting or securely attached metal tag or washer • Ensure that letters on tag are not less than 5 mm (0.2 in.) high and depth and location of stamping shall not degrade the pressure rating of the hose • Serial number or identification number and the HAWP **List defects and locations below or use additional sheets if required.**
Comments:	
☐ Accept ☐ Reject	Corroded or abraded area of the tank wall shall have their thickness tested in accordance with Clause 7.2.1.3 **NOTE: Testing facility must be registered with Transport Canada (TC) to conduct thickness testing.** **If thickness testing is performed, please indicate the TC registered facility that conducted the thickness testing and attach the report.** **List defects and locations below or use additional sheets if required. Diagrams and photos are helpful.**
Comments:	
☐ Accept ☐ Reject	Inspect all re-closing pressure relief valves of any corrosion or damage that could prevent their safe operation. **List defects and locations below or use additional sheets if required**
Comments:	

☐ Accept ☐ Reject	Inspect all gauges (pressure gauge, float gauges, etc.) for corrosion, distortion, wear, signs of leakage, or any other damage that would prevent their normal operation. **List defects and locations below or use additional sheets if required**

Step 5 : Marking the Tank

If the tank has successfully passed the external visual (v) inspection, the following information shall be durably and legibly marked in letters no less than 32 mm (1.25 in) high on the tank shell near the metal identification plate or anywhere on the front head where it will be clearly visible from the ground:

Tank test markings should be placed on the A end (hitch end) of the tank on the driver's side.

1. Month and year of inspection.
2. The letter “V”.
3. The last four (4) digits of your facility registration number given by Transport Canada.

The markings should appear as follows: 06 08 V 0123 (where “0123” is the TC registered facility number).

Markings applied as follows:

Month/Year of Visual Inspection (MM/DD/YY)	
“V” marking affixed	☐ Yes ☐ No

Tank Status After External Visual Inspection

Tank removed from service for repairs	☐ Yes ☐ No Reason:
Tank returned to service Tank returned to service as NO DEFECTS OR DAMAGE was found.	☐ Yes ☐ No
Tank to be scrapped	☐ Yes ☐ No

NOTE: Facilities must be registered with Transport Canada (TC) to conduct any repairs to the structural integrity of the tank i.e. welding.

If any repairs have been performed directly on the tank body, please indicate the TC registered facility that conducted the repairs and attach the report.

For tanks that are TC51, or DOT51 only

Tank constructed of (choose one)	☐ Quench Tempered (QT) Steel ☐ Non-quenched Tempered Steel
For QT Tanks: Since the last inspection, has each shipment of NH3 contained at least 0.2% water by weight?	☐ Yes ☐ No
Tank stress relieved after manufacture? *Verify with information recorded on certificate of compliance issued by manufacturer? U – IA or data plate	☐ Yes ☐ No

Step 6 : Inspector Certification

I certify that I have inspected the tank identified in this report in accordance with CSA B620 – 20

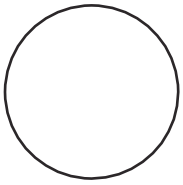
Name of Tank Inspector	
Signature of Tank Inspector	
Date Inspection Completed	
Filed in Tombstone file	☐ Yes ☐ No

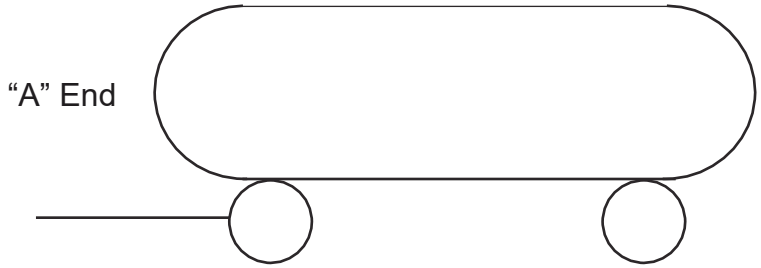
Date _____ Tank ID Code _____

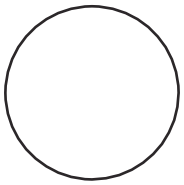
TANK DIAGRAM – **Annual Leak Testing**

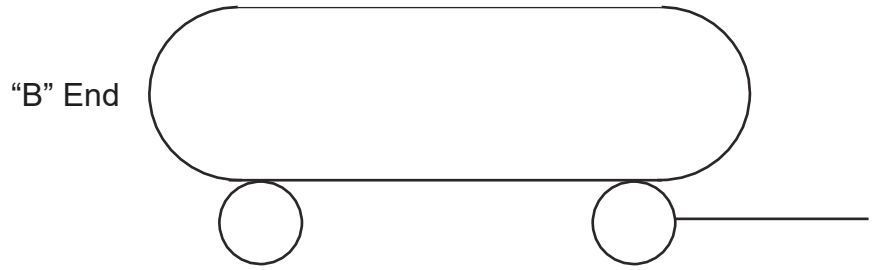
Location of Tank Deficiencies discovered during annual leak testing:

“A” End

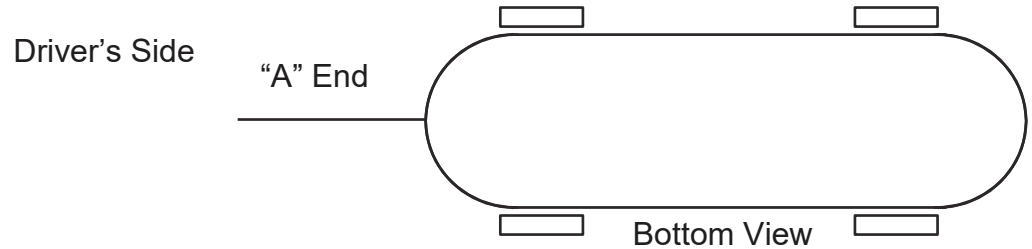


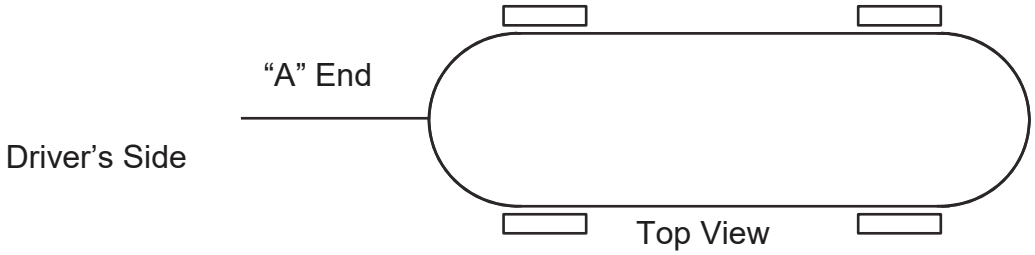






“B” End

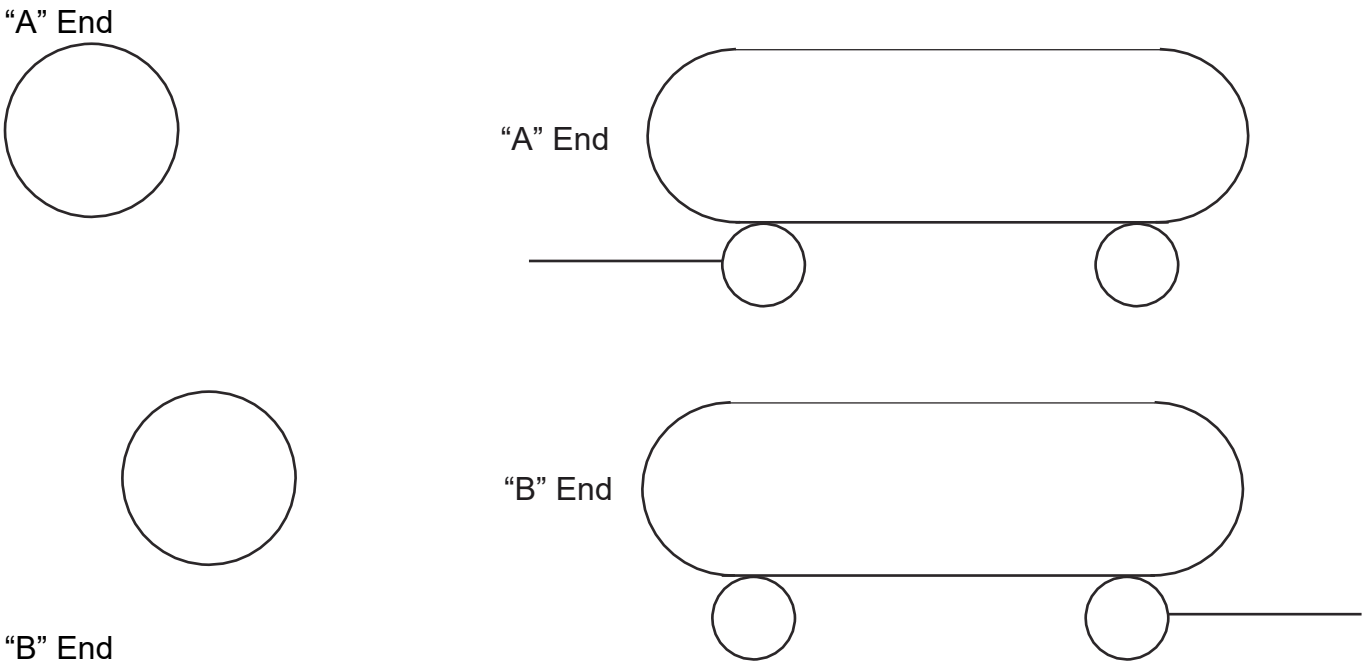


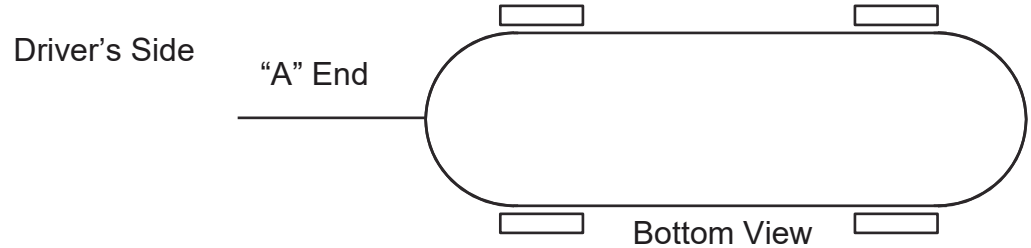


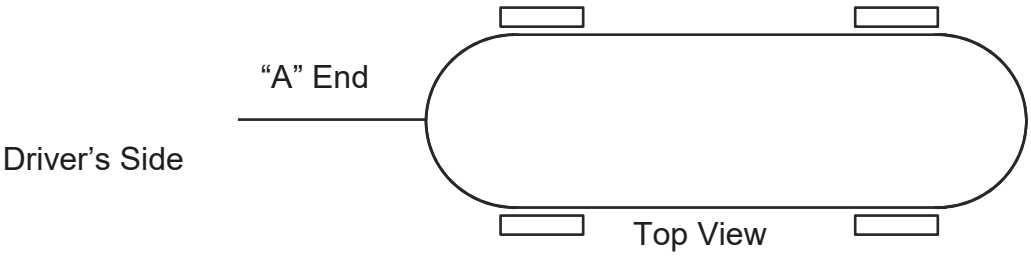
Date _____ Tank ID Code _____

TANK DIAGRAM – Annual External Visual Inspection

Location of Tank Leaks discovered during the annual external visual inspection







Date:_____ Tank ID Code _____

NURSE TANK WAIVER AGREEMENT (3RD PARTY INSPECTION)

This document is to be used when a nurse tank is inspected by a third party inspection company, or the Safety Officer is inspecting tanks that they do not own, or are not the property of their employer.

Part 1 : General Information – Current Tank Owner

Current Company/Tank Owner's Name:	
Address:	
Town:	Province:
Postal Code:	Phone Number:
Tank Inspector:	

Part 2 : Tank Information

Serial Number			
TCRN or CRN			
Manufacturer			
Manufacture Date			
Tank Specification	☐ Nurse tank	☐ TC51 tank	
Design Pressure		☐ PSI	☐ kPa
Water Capacity		☐ Gallons	☐ Litres
Post weld stress relieved	☐ Yes	☐ No	
Hydrostatic Test Cycle	☐ 5 years	☐ 3 years	

Part 3 : Disclaimer

The tank owner acknowledges that the nurse tank (listed in Part 2) has been inspected/tested under the protocol of the

NTSCC. The tank owner _____ (print name) will hereby save harmless the Tank Inspector _____ (print name) and their employer _____ (print name) from and against any and all liability of whatsoever kind and nature, for damages to property and loss thereof, for any act or omission of the tank owner, their employees, or agent in our about the tank owner's equipment or in the operation of equipment therein, or in the exercise of any right of obligation under this agreement.

Date of next External Visual Inspection (mm/yy): _____

Date of next leak test (mm/yy): _____

Date of next Hydrostatic Test (mm/yy): _____

Part 4 : Important Notes

Name of Tank Owner	
Company Name (if different from above)	
Signature of Tank Owner	

ILLUSTRATIONS OF DEFICIENT WELDS, PINHOLES, AND POOR PAINT QUALITY ON NURSE TANKS

Figure W1: Internal image of an incomplete shell weld on a poorly welded tank.

Figure W2: Welding inconsistency on the inside of a poorly welded tank. Note the inconsistent finish on the weld and poor penetration on the far right end of the weld.

Appendix W: Deficient Welds, Pinholes, and Poor Paint Quality on Nurse Tanks

Figure W3: Illegal weld on head of tank. Tank head had been removed and welded back on.

Figure W4: Close up of illegal weld on tank head.

Appendix W: Deficient Welds, Pinholes, and Poor Paint Quality on Nurse Tanks

Figure W5: Inappropriately lapped weld.

Figure W6: Pinhole leak in head to shell weld.

Appendix W: Deficient Welds, Pinholes, and Poor Paint Quality on Nurse Tanks

Figure W7: Pinhole void in very poor weld at head to shell.

Figure W8: Poor weld with pinhole leak.

Appendix W: Deficient Welds, Pinholes, and Poor Paint Quality on Nurse Tanks

Figure W9: Poor welding example with varying weld height and width and a long overlap.

Figure W10: Poor welding example with varying weld width.

Appendix W: Deficient Welds, Pinholes, and Poor Paint Quality on Nurse Tanks

Figure W11: Poor welding example with varying weld width.

Figure W12: Poor attempt at repair where tank and weld have clearly been worked.

Appendix W: Deficient Welds, Pinholes, and Poor Paint Quality on Nurse Tanks

Figure W13: Examples of rusted tanks in need of potential repair and repainting.

Figure W14: Example of severe corrosion due to years of bad paint and leaking valves.

Appendix W: Deficient Welds, Pinholes, and Poor Paint Quality on Nurse Tanks

Figure W15: Example of a well-maintained nurse tank that has been freshly sandblasted and repainted with good quality welds.

March 1, 2021

Transport Canada
Dangerous Goods Directorate
Attn: Facilities Registration
Place de Ville, 9th Floor
Ottawa, ON K1A 0N5

Dear Sir,

Enclosed please find our application to perform inspections, tests, and retests of non-specification nurse tanks and applicator tanks for agricultural anhydrous ammonia to the TC51 standard..

Our facility will be using the NTSCC Quality Control Manual as prepared by CAAR and updated from time to time for all our inspection and testing procedures. A copy of this manual is available at our facility for your inspection.

Please find the following documents accompanying this letter:

- A completed application form for registration in the format prescribed by the
- A description of our workshop facility.
- A list of testing and inspection equipment which is owned by our facility. The procedure for using this equipment are contained in the NTSCC manual.
- A list of staff credentials.
- A copy of the NTSCC Training Certificate for each qualified Safety Officer.

Our facility will be using the NTSCC Quality Control Manual (Version __) as prepared by CAAR and updated from time to time for all our inspection and testing procedures. A copy of this manual is available at our facility for your inspection.

Thank you for your assistance in this matter. If you have any questions regarding this application, please contact me at 1-555-555-5555.

Sincerely,

John Smith
Chief Maintenance Supervisor, Smith's Fertilizers
Tank Inspector, NTSCC

CERTIFICATE OF INCORPORATION

Corporation Name: Smith's Fertilizers

Corporation Number: 000000000001
Date of Incorporation: August 5, 1976

Registrar of Companies
For Province of Manitoba
August 5, 1976

COMPANY BACKGROUND

Smith's Fertilizers was established in 1976 by John Smith as a local fertilizer dealer specializing in anhydrous ammonia…

Since then, Smith's has expanded to include 5 sites that deliver anhydrous ammonia to farmer customers across the province of Manitoba and also eastern Saskatchewan. These 5 sites are situated at…

Smith's Fertilizers main office is located outside of Brandon, Manitoba and has a workshop capable of conducting hydrostatic pressure tests for anhydrous ammonia nurse tanks and applicator tanks. Tanks will be brought to this shop from each of the other 4 satellite locations to be tested in accordance with CSA B620-20 CSA …….

Etc……..

FACILITY DETAILS:

Workshop Description: Brandon Office Vehicle Shop

- Two Double Bay Truck Shop, approximately 4,800 sq. ft.
- Can readily accommodate four 2,000 US gal. Nurse Wagons.
- Outside yard is fenced along the perimeter with a closing, lockable gate.

Equipment List for Testing and Inspection of Tanks, Accessories and Safety Devices:

- Nurse Trucks and/or storage facility pumps/compressors to evacuate liquid anhydrous ammonia from Nurse Tanks.
- Water storage tanks with capable volume to flood two 2,000 US gal. Nurse Tanks, and hold anhydrous ammonia-contaminated water (on transport trailer).
- High-capacity pumps to transfer water and waste water.
- High pressure pumps and pressure manifolds to conduct hydrostatic tests on vessels and hoses.
- Annually dead weight tested pressure gauges rated for maximum pressure of 1,000 psi (three pairs with manifolds).
- Ladders, sufficient lighting, hand tools (scrapers, wire brushes, straight edges, depth gauges, measuring tapes, touch up paint for valve color coding, adaptors for fill plugs and manifolds, new tags for hose test identification and marking.)

Regarding tank cleaning and decontamination:

No confined space entry certification will be necessary for this application for testing and inspecting only non-specification applicator or nurse tanks. Recapture of contaminated waste water is pumped from tested vessels into holding tanks and sprayed onto agricultural land before reaching approximately maximum 35% ammonia, where Ammonia Solution UN 2672 will be applied to the water transport unit.

Tank Inspector Qualifications:

- Each **Tank Inspector** meets or exceeds the minimum qualifications for both Sections 8.1.6 and 8.1.7 of the CSA B620 standard. Details of their training and experience are kept in their personnel files.

Tank Tester Qualifications:

- Each tank tester meets or exceeds the minimum qualifications for Section 8.1.7 of the CSA B620 standard. Details of their training and experience are kept in their personnel files.

Mobile Equipment (if applicable)

- 1 ton truck with 5 wheel trailer
- List tools
- List pumps
- List spare parts carried
- hose testing manifolds
- List water source, tank capacity etc.
- list any tools or equipment that must be provided by the customer or the outlet where the
- Mobile testing will be performed.

STAFF CREDENTIALS – SMITH'S FERTILIZERS

Staff Details:
List the main employees who will be involved, what their job titles are ie Maintenance Supervisor etc and whether they are a tank inspector or a tank tester as per Section 8.1.6 from CSA B620-20

It is recommended that you also list their major qualifications, training and ammonia inspection and or testing experience that meets the requirements of Section 8.1.6 from CSA B620-20

This will eliminate much of the confusion that currently arises on TDG inspections relating to whether your staff are fully qualified.

CAAR (**NTSCC) TRAINING CERTIFICATE**

FOR TANK TESTER

CAAR

and the Nurse Tank Safety Council of Canada

THIS CERTIFIES THAT

Name

Has successfully completed the CSA B620 ***TESTERS*** course for Category C,
Portable TC51 tanks and nurse tanks for handling Anhydrous Ammonia
and has been awarded this

CERTIFICATE

Date: Given this 22nd Day of April, 2021
In the province of Manitoba

Expires:_____
This certificate expires three (3) years from the date of issuance or at the implementation date of a newer CSA B620 standard taking effect, should that occur before the three year expiry period.

Registered Trainers Name: _____

Registered Trainers Signature: _____

CAAR representative Name: _____

CAAR representative Signature: _____

CSA B620 Edition: 2020

Annual Leak Testing: _____

Hydrostatic Testing_____

Certificate # _____

and TANK INSPECTOR

CAAR

and the Nurse Tank Safety Council of Canada

THIS CERTIFIES THAT

Name

Has successfully completed the CSA B620 ***INSPECTORS*** course for Category C,
Portable TC51 tanks and nurse tanks for handling Anhydrous Ammonia
and has been awarded this

CERTIFICATE

Date: Given this 22nd Day of April, 2021
In the province of Manitoba

Expires:_____
This certificate expires three (3) years from the date of issuance or at the implementation date of a newer CSA B620 standard taking effect, should that occur before the three year expiry period.

Registered Trainers Name: _____

Registered Trainers Signature: _____

CAAR representative Name: _____

CAAR representative Signature: _____

CSA B620 Edition: 2020

Annual Visual Inspection: _____

Certificate # _____