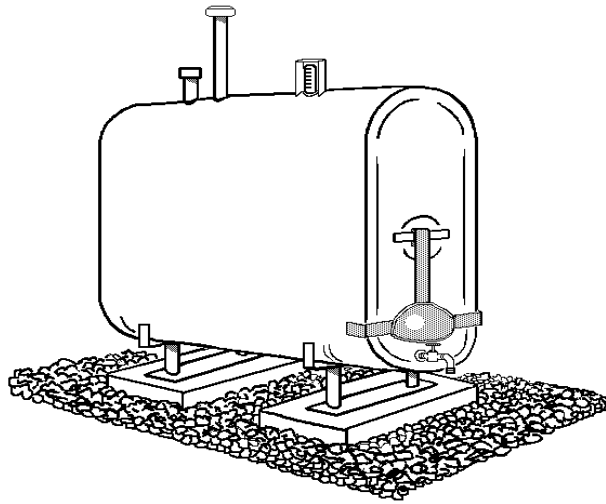


**SYSTEM INSTALLATION
AND INSPECTION MANUAL
HEATING OIL STORAGE TANK SYSTEMS**



GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

POLLUTION PREVENTION DIVISION
PETROLEUM STORAGE AND MANAGEMENT SECTION

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AND INSPECTION MANUAL
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INTRODUCTION

This manual has been prepared in an effort to clarify existing requirements and further define additional requirements. The implementation of the requirements of this manual, including those described in the Annexes, is being done to safeguard the quality of the environment in which all such heating oil storage tank systems must exist. This manual will provide guidance to a person installing or altering a heating oil storage tank system. Adherence to these, and other, requirements is a necessity to both protect the environment from preventable heating oil leaks and to obtain and maintain the registration of a system. Although anyone is permitted to conduct installation and alteration activities, including those described in this manual, it should be understood that a subsequent inspection of the work, by a licensed inspector, will be required. It is recommended that installation and alteration activities be conducted by Licensed Inspectors.

1) Requirements for Installation of Heating Oil Storage Tank Systems

1.1) Aboveground:

1.1.1) A steel aboveground heating oil storage tank shall be installed:

- a) bearing a metal label in accordance with Section 6 of CAN/ULC-S602, "Standard for Aboveground Steel Tanks for the Storage of Combustible Liquids Intended to be Used as Heating and/or Generator Fuels" as amended; or
- b) bearing a metal label in accordance with Section 3 or 4, as applicable, of CAN/ULC-S643, "Standard for Shop Fabricated Steel Aboveground Utility Tanks for Flammable and Combustible Liquids," as amended; or
- c) bearing a label indicating certification under such other standard or testing organization's evaluation regime as may be acceptable to the Administrator; and
- d) such that the label of the certifying agency is clearly visible.

1.1.2) The nominal steel sheet used in the fabrication of steel aboveground heating oil storage tanks shall be at least 14 gauge thick however their use is not recommended. Steel tanks made from thicker materials, 12 gauge, are available and their use is strongly encouraged. This is reflected in the regulations which provide for an additional five years of use for a steel tank of a particular type in a location when that tank is constructed with the heavier 12 gauge steel.

1.1.3) A non-metallic aboveground heating oil storage tank shall be installed:

- a) bearing a label in accordance with Section 5 of ULC/ORD-C80.1-2000 "Aboveground Non-Metallic Tanks for Fuel Oil," as amended; or
- b) bearing a label indicating certification under such other standard or testing organization's evaluation regime as may be acceptable to the Administrator; and
- c) such that the label of the certifying agency is clearly visible.

1.1.4) All aboveground heating oil storage tanks shall:

- a) be installed on a prepared bedding, designed to bear the gross weight of the tank filled with product;
- b) be installed on a solid base such as a concrete floor or a poured concrete pad when the installation is a new one. A poured concrete pad is recommended for the installation of replacement tanks. The concrete pad shall be suitably sized for the purpose extending beyond the perimeter of the tank and shall be at least 150mm (6 in.) thick;
- c) be supported by, when used, tank legs which are a minimum of schedule 40;
- d) not be installed directly, or indirectly (eg. concrete blocks on a wooden floor), on a wooden floor. Any tank installed in this manner cannot be registered;
- e) not be permitted to use tank legs which are higher than 300 mm (12 in.) unless they are shown to meet the requirements of Clause 6.3.8 of CSA-B139-04;
- f) use tank leg support brackets where the tank legs are more than 200 mm (8 in.) high, however their use is recommended in all situations; and
- g) where concrete blocks are used, be supported on blocks which are at least 600 mm × 300 mm × 50 mm (24 in × 12 in × 2 in) and be reinforced such that the blocks may crack but not break apart. A cracked reinforced concrete block shall be replaced as soon as possible. Cracked reinforced concrete blocks shall not be permitted to remain in place under a new, replacement or relocated tanks. (See Figure 1)

1.1.5) An outside aboveground heating oil storage tank system:

- a) shall not block doorways or windows, including basement windows;
- b) shall not have the tank placed in intimate contact with a wall or any other structure since leaves and other organic matter can accumulate and cause external corrosion of the tank. A minimum clearance of 50 mm (2 in) is required;
- c) shall be located such that there is a minimum clearance of 460 mm (18 in) from one side and one end of the tank to any nearby structure or wall;
- d) shall, for an end outlet tank, be provided with protection for the product supply valve by using a tank outlet protector;
- e) shall have the product lines protected from damage by running them along the edge of the wall and/or by placing a suitable impact resistant cover over them;
- f) shall, for a product line from an end outlet tank, incorporate provisions for expansion, contraction, jarring, vibration, settling, frost heaving and other movement of the line. Suitable arrangements include, but are not limited to, the use of a horizontal loop or an 'S' shape in the line between the tank and the wall or ground;
- g) should be located at least 1.5 m (5 feet) from a property line (see Annex A);
- h) should be protected from vehicular impact where the tank is located in or near a driveway or car-port;
- i) should not be located directly under the eave of a house where it may be subject to falling icicles or snow or increased external pitting from dripping water; and

- j) should be located a minimum of 30 m (100 ft.) from a well. Where this is not practical, an inside aboveground heating oil storage tank system and/or secondarily contained system should be considered.

1.1.6) An inside aboveground heating oil storage tank system:

- a) shall not exceed 230 L (50 gallon) capacity where the tank is located above the lowest storey, cellar or basement unless it is installed in a manner compliant with CSA-B139-04;
- b) shall not block doorways, windows or hallways;
- c) shall be located at least 600 mm (2 feet) from any fuel-fired appliance, unless it is completely shielded from the appliance by a wall of non-combustible construction;
- d) shall, for an end outlet tank, be provided with protection for the product supply valve;
- e) shall have the product lines protected from damage by running them along the edge of the wall and/or by placing a suitable impact resistant cover over them;
- f) shall not have the tank placed in intimate contact with a wall. A minimum clearance of 50 mm (2 in) is required;
- g) shall be located such that there is a minimum clearance of 460 mm (18 in) from one side and one end of the tank to any nearby structure or wall; and
- h) should be protected from vehicular impact if located in a garage.

1.1.7) A tank outlet protector:

- a) shall be of durable construction;
- b) shall attach/fasten to the tank with, if necessary, materials meeting (a);
- c) shall be readily removable to allow easy access for valve maintenance or repair;
- d) shall as viewed from above, completely cover an end outlet valve;
- e) should be of non-combustible material; and
- f) should not provide a step or surface to stand on.

1.2) Underground:

1.2.1) A steel underground heating oil storage tank shall be installed bearing a metal label in accordance with Section 4 of CAN/ULC-S603, "Standard for Steel Underground Tanks for Flammable and Combustible Liquids" and shall be corrosion protected in accordance with CAN/ULC-S603.1 "Standard for External Corrosion Protection Systems for Steel Underground Tanks for Flammable and Combustible Liquids" as amended.

1.2.2) A fibreglass underground heating oil storage tank shall be installed bearing a metal label in accordance with Section 6 of ULC-S615, "Standard for Reinforced Plastic Underground Tanks for Flammable and Combustible Liquids" as amended.

- 1.2.3) Only double walled, or otherwise secondarily contained, underground tanks shall be installed. The interstice of such tank installations shall be constantly monitored for the presence of hydrocarbons or water which may indicate a leak. The monitoring device shall be installed in such a manner that it visually or audibly alerts the tank owner of the presence of a leak.
- 1.2.4) Underground product lines shall be secondarily contained in accordance with the requirements of:
- a) ULC/ORD-C107.19, “Secondary Containment of Underground Piping for Flammable and Combustible Liquids”; or
 - b) ULC/ORD-C107.4, “Ducted Flexible Underground Piping Systems for Flammable and Combustible Liquids”.
- 1.2.5) Underground product lines shall also include a containment sump located at the lowest point in the run to help in the detection and removal of leaking heating oil. The sump must be accessible from ground level. This can also be accomplished by means of a containment sump located inside the building if the sump would be lower than the underground piping outside.
- 1.2.6) An underground heating oil storage tank system shall be at least:
- a) 1.5 m (5 feet) from a property line; and
 - b) 1 m (39 in) from a building.

2) Fill and Vent Piping for Heating Oil Storage Tank Systems

- 2.1) The fill and vent pipe material shall be:
- a) new;
 - b) either of steel or galvanized construction; and
 - c) a minimum of schedule 40.
- See Annex B for additional requirements on piping replacement.
- 2.2) The nominal inside diameter of a fill pipe shall not be less than 50 mm (2 in).
- 2.3) The height of a fill pipe of an outdoor tank shall not be less than 50 mm (2 in).
- 2.4) Cross-connected tanks provided with a single fill pipe, shall have the fill pipe connected to the first tank (see Figure 2).
- 2.5) The size of the cross-over pipe shall not be less than the size of the fill pipe (see Figure 2).

- 2.6) The inlet to the fill pipe shall, in the case of an indoor tank, be located at an elevation of at least 1 m (39 in).
- 2.7) The inlet to the fill pipe of a tank shall be at least 300 mm (12 in) above the elbow, in the event that an elbow is used in the fill pipe.
- 2.8) The inlet to the fill pipe shall be located outside buildings, not be less than 600 mm (2 ft.) from any building opening such as a doorway, window or intake duct and be provided with a tight metal cover.
- 2.9) Threaded joints in fill and vent piping shall be made fuel oil-tight using joint compound or tape conforming to CAN/ULC-S642-M, “Compounds and Tapes for Threaded Pipe Joints” or such other joint compounds which are recognized as suitable for the purpose of use in petroleum service.
- 2.10) Vent pipes shall not be less than:
 - a) 32 mm (1¼ in) nominal inside diameter; or
 - b) 50 mm (2 in) nominal inside diameter where two or more tanks share a cross-connected vent pipe.
- 2.11) A cross-connected vent pipe shall be connected to the tops of both tanks (see Figure 2).
- 2.12) The vent pipe shall:
 - a) be installed to drain toward the tank;
 - b) not extend into the tank more than 25 mm (1 in); and
 - c) be connected to a vent alarm.
- 2.13) The vent pipe shall be sized in accordance with the length used and the number and type of elbows necessary for its construction. Specific guidance on this topic can be found in Section 6.9, and Annex ‘F’, of CSA-B139-04.
- 2.14) The vent pipe outlet shall, in the case of an indoor tank, terminate to open air outside at an elevation of at least 1.15 m (45 in).
- 2.15) The vent pipe outlet of any tank shall:
 - a) terminate at an elevation which is at least 150 mm (6 in) above the inlet to the fill pipe;
 - b) not be less than 600 mm (2 ft.) from any opening such as a doorway, window or intake duct; and
 - c) be provided with a weatherproof vent cap.

2.16) Joints in vent and fill pipes should be kept to a minimum.

3) Product Piping for Heating Oil Storage Tank Systems

3.1) The product pipe material shall be:

- a) new;
- b) either of wrought iron, steel, or brass pipe: or brass, copper, or steel tubing; and
- c) if copper tubing, a minimum of type 'L'.

See Annex B for additional requirements on piping replacement.

3.2) Nipples used to attach the product delivery valve to a tank shall be a minimum of schedule 40 black iron and shall be a maximum of 75 mm (3 in) in length.

3.3) Valves used to control the delivery of product from a tank shall be of brass or stainless steel construction with a minimum rating of 850 kPa (125 PSI) and shall be either a gate or ball type, certified for use with oil, and be located as close as practicable to the tank shell. Information as to the rating and certification of the valve shall either be on the valve or the valve shall be otherwise suitably identified such that it's rating and certification can be verified.

3.4) All product lines are to include a fusible link installed in accordance with the manufacturer's instructions.

3.5) Threaded joints in the product piping shall be made fuel oil-tight using joint compound or tape conforming to CAN/ULC-S642-M, "Compounds and Tapes for Threaded Pipe Joints" or such other joint compounds which are recognized as suitable for the purpose of use in petroleum service.

3.6) All connections in copper piping and tubing shall be made fuel oil-tight using a flared joint. Compression fittings are not permitted.

3.7) A product filter assembly, where used, shall:

- a) be installed inside a building;
- b) have sufficient clearance to allow for maintenance, replacement or repair; and
- c) be replaced with a new unit, when a new or replacement tank is being installed, unless the filter assembly is 12 months old or less.

3.8) Burying a product line in concrete is not recommended. If unavoidable, the product line shall be placed in a continuous run of non-corrodible petroleum resistant tubing when buried under, or otherwise placed in direct contact with, a concrete floor. The flexible petroleum resistant tubing must protrude at least 50 mm (2 in) above the concrete floor.

- 3.9) A product line which is buried underground shall be installed in accordance with CSA-B139-04. Bare copper lines or coated lines such as Protek shall be additionally protected by being run through a suitable sleeve material for that part of the run which is underground.
- 3.10) Product lines shall not be less than 10 mm (3/8 in) outside diameter. If located outside, 13 mm (1/2 in) minimum outside diameter is recommended to reduce the potential for freezing.
- 3.11) Joints in product lines should be kept to a minimum.

4) Registration of Heating Oil Storage Tank Systems

- 4.1) The registration of a heating oil storage tank system requires that an inspection, by a licensed inspector, be conducted. Any deficiencies found shall be corrected prior to the storage tank system being registered.
- 4.2) The requirements, and the timing, for when a storage tank system shall be registered depends on whether the system is considered a new, existing or altered system. Annex C discusses in detail the registration of each such system.

5) Registration Tags and Electronic Submissions

- 5.1) Numbered brass tags are sold by the Department to Licensed Inspectors for the purpose of providing a visual indicator that a system has been registered. Once a Licensed Inspector has determined that a system is registerable a brass tag, identifying the system, will be fastened to the system's vent pipe using two rivets. The Licensed Inspector will also identify the useable lifetime of the particular system by placing four digits on the tag which will show the month and year by which the system must be replaced. These four digits shall be punched into the metal of the tag using numeric punches. For the purpose of registering an existing system the actual date of installation shall be used. If the actual installation date is unknown or cannot be shown to the satisfaction of the Licensed Inspector then an assumed installation month of June of the year that the tank was manufactured (as determined from the certifying agency label - such as ULC, Warnock Hersey, etc.) shall be used. If the month and year of manufacture is shown on the certifying agency label then that information shall be used as the assumed installation date. If the installation date is unknown and there is no certifying agency label then the system cannot be registered.
- 5.2) Once the system has been "tagged" as registered the Licensed Inspector shall provide the tank owner with the tank system's Certificate of Registration before leaving. If this is not possible then a completed Certificate of Registration for the tank system shall be delivered to the tank owner within seven (7) days of the inspection.

5.3) The information recorded by the Licensed Inspector during the inspection of each tank system is recorded on a checklist issued by the Department. In accordance with the regulations, this information shall be transferred into an electronic spreadsheet and submitted to the Administrator on a regular basis. If electronic submissions do not occur on a regular, or as requested, basis then further purchases of HOST tags will be delayed. Continual, or extended, problems in this area may result in the Licensed Inspector having the Licence cancelled.

6) Storage Tank Relocation, Removal and Replacement

6.1) When a storage tank system is being relocated from an inside to an outside location or from an outside to an inside location the duration of its life will need to be adjusted. Annex D provides an explanation of this adjustment.

6.2) When a storage tank is being removed from service most of the fuel may be pumped out and placed in another fuel storage tank for later use. The fuel shall be pumped out to a level no lower than 200mm (8 in) from the bottom of the tank. This should be done carefully to ensure that no contaminants from the sludge at the bottom of the tank are drawn into the suction line. The fuel then remaining in the tank shall be pumped off for appropriate disposal. Next, the residual sludge in the bottom of the tank shall be thoroughly removed for appropriate disposal. Finally, the tank itself shall be sent for appropriate disposal (usually recycling).

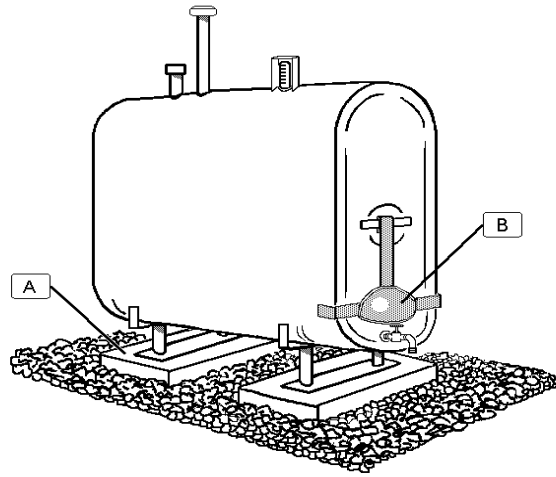
7) Updates & Contacts:

7.1) This second edition manual was produced on June 1, 2005 and replaces the first edition dated April 16, 2002. Given the nature of the information in the document and the fact that it may be appropriate, from time to time, to provide additional information or guidance on practical, technical or regulatory issues, any person using this document should check to see that they are referring to the latest version. That can be done by calling our 1-800 number. This manual is also available on the Department of Environment and Conservation's website - <http://www.gov.nl.ca/env/psm> -

For this information or for any other questions you may have concerning the Heating Oil Storage Tank System Regulations, 2003 you can call the toll-free number, 1-800-563-6181 or locally call 729-0948 or 729-2556.

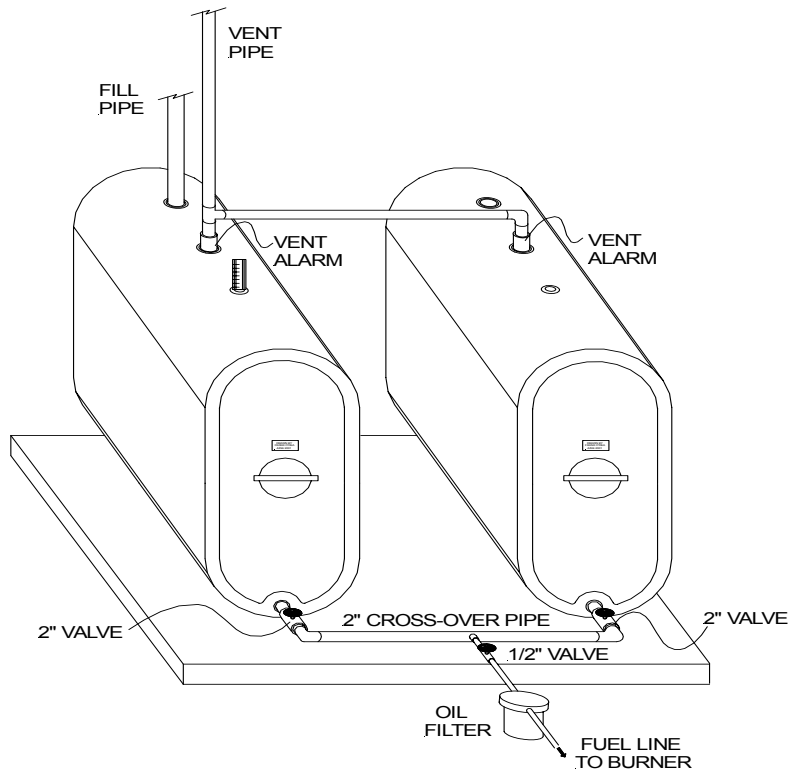
Please note that this manual now incorporates changes included in the 2004 version of the CSA-B139 Installation Code for Oil-Burning Equipment. That version of the Code is now to be followed for all heating oil storage tank system installations, alterations and registration inspections conducted from June 1, 2005 forward.

Figure 1. Aboveground Installation



- Notes:**
- A - Reinforced Concrete Block
(600mm × 300mm × 50mm)**
 - B - Tank Outlet Protector**

Figure 2: Cross-Connected Tanks



ANNEX A

DISTANCE TO PROPERTY LINE

Both CSA-B139-04 and this manual discuss the issue of distance to the property line. This manual states that a minimum distance of 1.5 m (5 feet) should be maintained. CSA-B139-04 states that a minimum distance of 1.5 m (5 feet) shall be maintained unless otherwise permitted by the regulatory authority.

Existing Storage Tank System Being Registered

With respect to an existing storage tank system being registered, the Department will accept the registration of such a storage tank system if all other requirements except this one are met. If there is another location on the property which would be suitable for a storage tank system to be located and which would meet all requirements including this one then, at the time the existing storage tank system is replaced, the replacement storage tank system shall be installed at the fully compliant location.

Existing Storage Tank System Being Replaced

With respect to an existing storage tank system being replaced, the Department will accept the registration of such a storage tank system if all other requirements except this one are met but only under the following two conditions:

- 1) there is no other location on the property which would be suitable for a storage tank system to be located and which would meet all requirements including this one; and
- 2) the municipality in which the property is located provides a written authorization for the location of the storage tank system, either specifically for each such storage tank system or generally for such storage tank systems in its jurisdiction.

If there is another location on the property which would meet all requirements including this one then the replacement storage tank system shall be installed at the fully compliant location.

ANNEX B

NEW PIPING

For a brand new installation:

Where a new (first time) heating oil storage tank system is being installed such as at new home construction or a heating source conversion (electric to oil heat) everything shall be new. This includes fill, vent and product piping. No old, recycled or used piping shall be used in such installations.

For an existing system being registered:

If the existing piping meets the requirements, then no new piping will be necessary.

If copper or some other unacceptable material is being used as vent or fill piping then that shall be replaced with appropriate new materials.

Where a vent or fill pipe is being changed to a required diameter the entire vent or fill pipe shall be replaced with new materials.

Where a vent or fill pipe is being extended to meet “height” or “distance to openings” requirements the fittings and piping being added shall be new materials.

Where a vent or fill pipe is in a deteriorated condition the entire vent or fill pipe shall be replaced with new materials.

Where product piping requires replacement then the replacement piping shall be new material.

If an unacceptable material is being used as product piping then that shall be replaced with appropriate new materials.

For an existing system being replaced:

If the existing product piping is of an unknown age or is an age that is equal to or greater than the useable lifetime which would be assigned to the attached existing tank then such product piping shall be replaced with new materials.

If the existing product piping is less than 10 years old, and is in good condition, then that product piping may be reused if it meets then current requirements.

If the existing product piping is more than 10 years old it must be replaced.

If the existing vent or fill pipe is in a deteriorated condition the entire vent or fill pipe shall be replaced with new materials.

If piping is intended to be reused, every accessible threaded joint in vent, fill or product piping shall be separated, the male and female threads cleaned and the joint shall then be remade using tape or compound conforming to ULC-S642 or such other joint compounds which are recognized as suitable for the purpose of use in petroleum service.

If piping is intended to be reused, threaded joints in vent, fill or product piping behind walls, in ceilings or otherwise hidden shall be accessed.

Any inaccessible joint in vent, fill or product piping shall have its integrity verified by the use of a hydraulic pressure test. A pressure of 350 kPa or 1.5 times the operating pressure of the pipe, whichever is greater, shall be applied to the applicable pipe and the pressure shall be held for a minimum of 2 hours. Any drop in pressure or volume loss after steady temperature conditions have been established and the source of pressure has been removed will indicate a leak and the vent, fill or product pipe shall be replaced with new materials. Precautions shall be taken to ensure that the tank is not subjected to such a pressure.

For a registered system being replaced:

If the registered system has reached, or is within 12 months of, its assigned useable lifetime then the tank and all product piping shall be replaced.

If the registered system's tank has leaked and is being replaced, the product piping, if installed with the registered tank, or since the tank was registered, and if less than 10 years old and in good condition, may be reused if it meets then current requirements.

Product piping that is of unknown age or is more than 10 years old shall be replaced with new materials.

If the existing vent or fill pipe is in a deteriorated condition the entire vent or fill pipe shall be replaced with new materials.

If existing vent, fill or product piping will be reused, every accessible threaded joint shall be separated, the male and female threads cleaned and the joint shall then be remade using tape or compound conforming to ULC-S642 or such other joint compounds which are recognized as suitable for the purpose of use in petroleum service.

Threaded joints in vent, fill or product piping behind walls, in ceilings or otherwise hidden shall be accessed.

Any inaccessible joint in vent, fill or product piping shall have its integrity verified by the use of a hydrostatic pressure test. A pressure of 350 kPa or 1.5 times the operating pressure of the pipe, whichever is greater, shall be applied to the applicable pipe and the pressure shall be held for a minimum of 2 hours. Any drop in pressure or volume loss after steady temperature conditions have been established and the source of pressure has been removed will indicate a leak and the vent, fill or product pipe shall be replaced with new materials. Precautions shall be taken to ensure that the tank is not subjected to such a pressure.

For all situations:

Under all circumstances discussed in this document it should be noted that:

- a) the nipple used to connect the required shutoff valve to a tank is considered to be part of the product piping. Accordingly, this nipple shall be replaced, or may be reused, in accordance with the requirements placed upon product piping in the particular circumstance.
- b) unions, elbows and other such fittings used in the construction of fill, vent and product piping shall also be replaced, or may be reused, in accordance with the requirements placed upon the vent, fill or product piping in the particular circumstance.
- c) the condition of fill, vent and product piping can be adversely affected by their location, installation, maintenance and other external considerations. The low age of such piping is no excuse for not replacing such piping when they are in poor condition. This is an issue left to the judgement of a Licensed Inspector. It would also be the responsibility and, perhaps, liability of the Licensed Inspector should he choose to leave piping which is in an obvious poor condition if a leak or spill were to occur from such a pipe.

ANNEX C

REGISTRATION AND ALTERATION - HEATING OIL STORAGE TANK SYTEMS

1. Sections 5 and 6 of the regulations require that new, altered and existing systems must be registered. Registration may mean different things depending upon the situation such as:
 - a) For a new or replacement system, registration can occur once the system has been inspected by a licensed inspector and found to comply with the regulations and the requirements of CSA-B139-04, the tank manufacturer's instructions and this manual. Any deficiencies found as a result of this inspection will have to be corrected before the registration can be completed. Deficiencies, for the purpose of registration, are technical issues which vary from the requirements of the regulations, CSA-B139-04, tank manufacturer's instructions and this manual.
 - b) For an existing system that is being registered, registration can occur once the system has been inspected by a licensed inspector and found to comply with the regulations and the requirements of CSA-B139-04, the tank manufacturer's instructions and this manual. Any deficiencies found as a result of this inspection will usually have to be corrected before the registration can be completed.
 - c) For a system that has already been registered and which has subsequently been altered, an actual registration will not occur however that part of the system that was altered will have to be inspected by a licensed inspector to determine whether the system still complies with the regulations and the requirements of CSA-B139-04, the tank manufacturer's instructions and this manual. Any deficiencies found as a result of this inspection will have to be corrected for the system to maintain its registration.
 - d) For an existing system that has not yet been registered, if such a system is altered then it will have to be registered. Registration can occur once the system has been inspected by a licensed inspector and found to comply with the regulations and the requirements of CSA-B139-04, the tank manufacturer's instructions and this manual. Any deficiencies found as a result of this inspection will usually have to be corrected before the registration can be completed.

There are some issues which can be looked at differently for existing tanks and these items may remain uncorrected if their correction is not feasible. Such items include the requirements of 1.1.5(b), 1.2.6 and 3.2.

2. To clarify the issue of timing, with respect to the four situations described in 1, one should note that:

- a) For the situation described in 1(a) although no time frame is specified within which the registration must occur, the registration of the system must normally be completed before any heating oil can be put into the heating oil storage tank system.
- b) For the situation described in 1(b) the registration of the system must be completed on or before March 31, 2007. If any deficiencies are present which have to be addressed and the correction of such deficiencies involves an alteration of the system, as described in 4(a), then all deficiencies must be corrected and the system must be registered at that time. Again, this must be completed on or before March 31, 2007 however if the deficiency is of a substantive nature then it should be corrected in short order.

It should be noted that an existing system that has a storage tank whose age is already at or beyond the age limit stated in Section 15 will not be registered. Such a storage tank can be removed and/or replaced at any time but must be removed and/or replaced by March 31, 2007.

- c) For the situation described in 1(c) that part of the system that has been altered must be inspected by a licensed inspector within 30 days of the alteration having taken place. If any deficiencies are present their correction shall be completed and the system reinspected by a licensed inspector within 30 days of the inspector's first deficiency report being presented to the system owner. If deficiencies are still found during this second inspection the system's registration shall be temporarily revoked, the registration tag shall be removed and the system shall be emptied and not refilled until such time as the system has been inspected and found to comply with the regulations and the requirements of CSA-B139-04, the tank manufacturer's instructions and this manual, and has its registration reinstated and its registration tag reapplied to the vent.
- d) For the situation described in 1(d) the registration of the system must normally be completed before any heating oil can again be put into the heating oil storage tank system. The entire system must be inspected by a licensed inspector within 30 days of the alteration and/or storage tank replacement having taken place. If any deficiencies are present their correction shall be completed and the system reinspected by a licensed inspector within 30 days of the inspector's first deficiency report being presented to the system owner. If deficiencies are still found during this second inspection the system shall be emptied and shall not be refilled until such time as the system has been inspected and found to comply with the regulations and the requirements of CSA-B139-04, the tank manufacturer's instructions and this manual, and has been registered. Again, the registration of the system must normally be completed before it can be filled (in the case of a replacement tank) or refilled (in the case of an existing tank).

It should be noted that an existing system that has a storage tank whose age is already at or beyond the age limit stated in Section 15 will not be registered. In such a situation, the storage tank shall be replaced.

3. For the purpose of dealing with potential problems which arise in 2(a),(c) and (d) and in accordance with Subsection 17(2) of the regulations, the administrator may vary the time period to meet the registration requirement. Such a variance could allow the system to be filled prior to it being registered which would still be required within a period of time specified by the administrator.

4. Since the word “alter” has a very inclusive definition it would be helpful to tank owners and inspectors to note a number of activities which, for the purpose of the regulation, would or would not be considered as “alterations”. An “alteration” is usually, although not always, characterized by the fact that the activity can be conducted at a scheduled, normal work day, time. Activities which are not considered “alterations” are usually, although not always, characterized by the fact that the activity is more often of an “emergency”, nights and weekends, nature requiring immediate fixing. The activities contained in the following lists are provided as examples. They do not exclude other activities which may or may not be considered “alterations”. The Administrator should be contacted to determine if other specific activities would be considered “alterations”.
 - a) The following activities would be regarded as “alterations” and would require registration and/or inspection by a licensed inspector:
 - (i) relocation of a tank;
 - (ii) upgrading of piping (vent, fill or product);
 - (iii) relocation of product piping [this includes all relocations of piping other than that described in item 4(b)(iii)];
 - (iv) upgrading, relocation or addition of a valve;
 - (v) upgrading or replacement of secondary containment; or
 - (vi) addition of a filter assembly.

 - b) The following activities would not be regarded as “alterations” and would not require registration:
 - (i) removal of a heating oil storage tank system;

 - (ii) replacement of vent, fill or product piping (same size, length, diameter and material);
 - (iii) replacement of under, or in, floor product piping with above floor product piping.
 - (iv) replacement of a valve;
 - (v) replacement of a filter assembly or parts thereof;
 - (vi) replacement of a gauge or vent alarm;
 - (vii) addition of a gauge protector or tank valve protector;
 - (viii) replacement of tank legs with new same size tank legs; or
 - (ix) any disconnection and reconnection of product piping to the burner assembly for the purpose of burner assembly repair or maintenance.

ANNEX D

HEATING OIL STORAGE TANK SYTEM RELOCATION

When a storage tank system is being relocated from an inside to an outside location or from an outside to an inside location it must be handled in a safe manner. Obviously, all possible heating oil must be drained from the tank so that it can be moved. The tank system will have to be registered after being moved to its new location. This is the case whether or not the tank system was previously registered in its original location since several different requirements will now apply due to the change in location.

In the case of an inside tank system being relocated to an outside location you must take into account the difference in useable lifetimes assigned to a tank system dependent upon its location. For example, if a tank system that has a useable lifetime inside of 20 years is moved outside it would have a maximum useable lifetime of only 15 years. However, the percentage of its original useable lifetime that has already been used must be taken into account. So if the tank system had been used inside for 8 years and 7 months then that would be 43% of its original useable lifetime. Therefore, it would have 11 years and 5 months or 57% of its useable lifetime remaining in its present inside location. However, since it is being moved outside it will have a remaining lifetime based upon what the same tank system would have if it had been located outside all its life. In this case it would have a remaining lifetime of 57% of 15 years which would be about 8 years and 7 months.

In the case of an outside tank system being relocated to an inside location you must again take into account the difference in useable lifetimes assigned to a tank system dependent upon its location. For example, if a tank system that has a useable lifetime outside of 15 years is moved inside it would have a maximum useable lifetime of 20 years. However, the percentage of its original useable lifetime that has already been used must be taken into account. So if the tank system had been used outside for 8 years and 7 months then that would be about 57% of its useable lifetime. Therefore, it would have 6 years and 5 months or about 43% of its useable lifetime remaining in its present outside location. However, since it is being moved inside it will have a remaining lifetime based upon what the same tank system would have if it had been located inside all its life. In this case it would have a remaining lifetime of 43% of 20 years which would be about 8 years and 7 months.

A Table has been provided on the next page to assist in determining remaining useable lifetimes for relocated tanks. Note that the Table shows numbers for tanks used for full years. Where a tank is used for less than a full year the calculation shall be as shown in the examples above and as shown in the first column of the Table. Rounding off of the "months in use" will likely be required however rounding off of the "years in use" shall not be permitted.

While moving a tank system from an outside location to an inside one, or the other way around, might seem worthwhile a person should consider the extra cost involved in doing such a thing.

Table of Remaining Useable Lifetimes for Relocated Tanks

Useable Life of Tank in Current Location	Outside Tank Going Inside			Inside Tank Going Outside			Years of Use In Current Location
	10	15	20	15	20	25	
Useable Lifetime for New Location (years:months)	13y:6m	18y:8m	23y:9m	9y:4m	14y:3m	19y:2m	1
	12y:0m	17y:4m	22y:6m	8y:8m	13y:6m	18y:5m	2
	10y:6m	16y:0m	21y:3m	8y:0m	12y:9m	17y:7m	3
	9y:0m	14y:8m	20y:0m	7y:4m	12y:0m	16y:10m	4
	7y:6m	11y:4m	18y:9m	6y:8m	11y:3m	16y:0m	5
	6y:0m	12y:0m	17y:6m	6y:0m	10y:6m	15y:2m	6
	4y:6m	10y:8m	16y:3m	5y:4m	9y:9m	14y:5m	7
	3y:0m	9y:4m	15y:0m	4y:8m	9y:0m	13y:7m	8
	1y:6m	8y:0m	13y:9m	4y:0m	8y:3m	12y:10m	9
	0y:0m	6y:8m	12y:6m	3y:4m	7y:6m	12y:0m	10
	0y:0m	5y:4m	11y:3m	2y:8m	6y:9m	11y:2m	11
	0y:0m	4y:0m	10y:0m	2y:0m	6y:0m	10y:5m	12
	0y:0m	2y:8m	8y:9m	1y:4m	5y:3m	9y:7m	13
	0y:0m	1y:4m	7y:6m	0y:8m	4y:6m	8y:10m	14
	0y:0m	0y:0m	6y:3m	0y:0m	3y:9m	8y:0m	15
	0y:0m	0y:0m	5y:0m	0y:0m	3y:0m	7y:2m	16
	0y:0m	0y:0m	3y:9m	0y:0m	2y:3m	6y:5m	17
	0y:0m	0y:0m	2y:6m	0y:0m	1y:6m	5y:7m	18
	0y:0m	0y:0m	1y:3m	0y:0m	0y:9m	4y:10m	19
	0y:0m	0y:0m	0y:0m	0y:0m	0y:0m	4y:0m	20
	0y:0m	0y:0m	0y:0m	0y:0m	0y:0m	3y:2m	21
	0y:0m	0y:0m	0y:0m	0y:0m	0y:0m	2y:5m	22
	0y:0m	0y:0m	0y:0m	0y:0m	0y:0m	1y:7m	23
	0y:0m	0y:0m	0y:0m	0y:0m	0y:0m	0y:10m	24
	0y:0m	0y:0m	0y:0m	0y:0m	0y:0m	0y:0m	25

The Table is based upon the following formulas:
 (Time in use/useable lifetime) X 100 = percentage of life used = L1
 Percentage of life remaining = 100 - L1 = L2
 Time that tank can be used in other location = (useable lifetime in other location) X L2

See worked examples in table on next page.

Sample Calculations for Relocated Tanks

Example #1:

12 gauge bottom outlet tank located outside (20 yrs or 240 months).

In use for 8 years and 5 months (or 101 months).

Being relocated inside.

$$L1 = 101/240 \times 100 = 42\%$$

$$L2 = 100\% - L1 = 100\% - 42\% = 58\%$$

Time tank can be used in inside location.

[12 gauge bottom outlet tank located inside (25 yrs or 300 months)]

$$= 300 \times L2 = 300 \times 58\% = 174 \text{ months or } 14 \text{ years and } 6 \text{ months.}$$

Example #2

14 gauge end outlet tank located inside (15 yrs or 180 months)

In use for 8 years (or 96 months)

Being relocated outside

$$L1 = 96/180 \times 100 = 53\%$$

$$L2 = 100\% - L1 = 100\% - 53\% = 47\%$$

Time tank can be used in outside location

[14 gauge end outlet tank located outside (10 yrs or 120 months)]

$$= 120 \times L2 = 120 \times 47\% = 56 \text{ months or } 4 \text{ years and } 8 \text{ months.}$$

Note: Where a tank has been used for, as an example, 8 years and 7 months, the calculations shown in Annex D shall be conducted using the actual number of months. Rounding off the years in use shall not be done.