NUNAVUT HOUSING CORPORATION

Heating Oil Tank Replacement Program

(HOTRP)

October 2014

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OBJECTIVE

- To provide assistance to Nunavut homeowners to replace their heating oil tanks which are in poor condition and/or do not meet current standards.
- To reduce the risk of environmental contamination and associated costs caused by faulty or substandard heating oil tanks or installations which could result in fuel spills.

SUMMARY

- The Heating Oil Tank Replacement Program (HOTRP) provides assistance to homeowners to replace their heating oil tank or associated components, as well as installation, in the form of a grant of up to $7,500 per unit
- Where it can be demonstrated that a client does not have access to local skilled labour in their community, and where no other options exist for the delivery of the program, the NHC may cover the travel costs to bring in a contractor to complete the job.

USE OF OTHER PROGRAMS

The preferred method for the NHC is to process all applications for fuel tank repair or replacement under HOTRP. In the case of a bona-fide emergency, the Emergency Repair Program can be used.

ENABLING LEGISLATION

- *The Nunavut Housing Corporation Act*:

  Under Section 10 (General Powers) – the NHC may:

  "Administer, manage, and maintain properties; and make grants or loans to individuals, municipalities and other corporate bodies for the purpose of acquiring, constructing or improving housing."

APPLICATION DEADLINE

- A formal deadline of April 30 of each year has been established for applications. A submission of application before deadline does not guarantee funding. All applications post marked on or before April 30 will be considered at the same time.

ELIGIBLE CLIENTS

- The applicant(s) must be at least 19 years of age.
- This program follows income eligibility limits as set by the Homeownership Program Income Eligibility (HPIE) numbers (See NHC VOI Guidelines.)
- The applicant(s) must possess title (or leasehold title) to the property.

  Note: Existing NHC homeowner clients who do not possess leasehold title to the property, but occupy the unit under an Occupancy Agreement are eligible for HOTRP provided that all other eligibility requirements are met.
- Because of the risk of environmental contamination, all client(s) are encouraged to apply for fuel spill supplementary coverage as part of their homeowner insurance.
- Applicants with arrears (i.e. NHC mortgage arrears) will be eligible for HOTRP.

PRIORITY OF APPLICANTS

- The annual allocation of HOTRP projects for each community is limited based upon available funding. Eligible HOTRP applicants will therefore be prioritized according to the condition of the tank and by financial need (see Appendix I: HOTRP Priority Allocation Criteria).

DECLINED APPLICATIONS

- Only ineligible applications will be permanently declined (i.e. the applicant is not using the home as their principal residence and thus is ineligible under the program guidelines).
- For any application from an eligible applicant that is declined, a letter should be sent to the applicant explaining the reason(s). The primary reasons would be:

  1. Because applications are prioritized based on the condition of the tank and the applicant's financial need.
  2. Because funding for the program is limited. Their application will be reconsidered if additional funds become available. Declined applicants should be made aware that priority will still be given to applicants based on income and condition of the tank.

ELIGIBLE UNITS

- All homes must be located within municipal boundaries in Nunavut.
- All homes must be used by the client(s) as their principal residence.

ELIGIBLE TANKS

Heating oil system eligibility will be based on the following order:

- Installations that present an environmental hazard
- Installations that do not meet current code
- Tanks that have reached the end of their serviceable life

CONTRIBUTION

- The NHC will provide on a one-time-only basis, a contribution in the form of a grant to cover the cost of materials, freight and labour for a heating oil tank replacement or the cost of bringing an existing heating oil tank to an acceptable standard.
- The maximum contribution amount under HOTRP is for $7,500.
- At the discretion of the District Director, and where it can be demonstrated that a client does not have access to local skilled labour in their community, and where no other options exist for the delivery of the program, the NHC (in addition to the $7,500 grant amount) may cover the travel costs to bring in a contractor to complete the job. The logistics and conditions of the travel will be pre-determined through the procurement process.
- Where practical, the District offices should obtain 3 quotations for the work, and the NHC District Technical should also review to determine if the quotations are reasonable and represent value for the work to be done.
- If surplus tanks are available from the LHO, then consideration should be given to use them to reduce costs.

BUDGET

- HOTRP is currently funded out of the general District Homeownership budget. Once the initial round of delivery has occurred, enquiry will be made as to whether or not additional funds dedicated to this initiative can be accessed for the current year or the next.
- The District will set their own internal HOTRP targets based on their overall allocations for all programs.

ELIGIBLE COSTS

- Heating oil tank
- Tank stand
- Related piping
- Gravel
- Pressure-treated cribbing
- Labour costs
- Inspections
- Freight
- Disposal of replaced oil tank

CLEAN-UP COSTS – FUELS SPILLS

- Clean-up costs for fuel spills will be considered eligible for funding under HOTRP provided that the spill is a non-reportable spill not exceeding 100 liters (20 gallons) of fuel.
- All spills must be cleaned up. Spills exceeding 100 liters must be reported to the Nunavut Dept. of Environment (Wildlife Officer, in most communities) or the Northwest Territories – Nunavut 24 Hour Spill Report Line (Phone 867-920-8130, Fax 867-873-6924, Email spills@gov.nu.ca).

INELIGIBLE COSTS

- Purchases or work undertaken prior to approval of the contribution are ineligible.
- Owner labour is not an eligible cost.

INSPECTIONS

- The tanks will be inspected (by an NHC approved inspector) prior to the commencement of the work in order to confirm eligibility, to note any specific site conditions, and to assist with the prioritization of heating oil tanks requiring repairs and/or replacement.
- Technical Staff/Inspectors are to ensure that the scope of work (including stands and piping) will bring the unit to code.

- After the work is completed an inspection by the NHC approved inspector is required prior to any payment. Deficiencies must also be corrected prior to issuance of final payment
- Inspection reports must be acknowledged and signed by the client(s) and by the NHC Technical staff.

TANK DISPOSAL

Once an oil tank has been removed from service, the tank, piping, and any potential contaminants shall be disposed of in accordance with the authority having jurisdiction (in most cases this will be the Hamlet or local Wildlife Officer).

APPENDICES

Appendix I – Priority Allocation Criteria

Appendix II – Technical Standards

Appendix III – Oil Tank & Stand Installation Manual

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APPENDIX I – Priority Allocation Criteria

Section A - Priority of Repairs	Max Points	Points Given
Installations that present an environmental hazard	**25**	
Installations that do not meet current code	**10**	
Tanks that have reached the end of their serviceable life	**5**	
Total Points from Section A		

Section B - Other Criteria (One category only)	Points	Points Given
Adjusted Income 0% - 60% of HPIE	**30**	
Adjusted Income >60% - 80% of HPIE	**15**	
Adjusted Income >80% - 100% of HPIE	**5**	
Total Points from Section B		

Total Points Section A and B		
Maximum Points:	**55**	

APPENDIX II – Technical Standards
- Standard of Acceptance -

GENERAL

Scope of Work:

1. Remove old oil tank, stand, piping, and any contaminated soil, and dispose in accordance with the authority having jurisdiction.
2. Install new oil tank, steel stand, piping, and any grade work to conform to current NHC Oil Tank and Stand Installation Manual.

MATERIALS

The NHC recommends as a minimum the following Oil Tank Specification:

1. 200 imperial gallon capacity horizontal fuel oil tank(s) for outside building installation. Tank(s) is/are to be ULC labeled.
2. Standard of acceptance: 200 imperial gallon capacity fuel oil tank for outside building installation c/w 2" diameter fill opening, 2" vent opening, 1 ½" fuel gauge opening and 2" diameter bottom outlet opposite end from fill opening, shop prime and paint with a minimum one coat of rust resistant paint.

The NHC recommends as a minimum the following Oil Tank Stand Specification:

1. Manufacturer to design stand to resist all applied loads, including tank and contents, snow, wind rain, etc.
2. All steel sections and plates to be constructed in accordance with the latest edition of CSA G40.21-M, type 300 W.
3. Metal grate shall be hot dipped galvanized, 13 gauge, cold formed, one piece metal. Standard of acceptance: "Safety-Grip Channel", 10" side x 1 ½" high as manufactured by ISG Safety Grating Products Ltd. or approved alternate.
4. Structural bolts and nuts shall be A307, galvanized structural grade to sizes indicated on the drawings forming part of this specification.
5. All welding to conform to the latest edition of CSA W59.
6. Do all cutting, boring and welding prior to shop priming. Shop prime and paint with a minimum one coat of rust resistant paint.

The NHC recommends as a minimum the following Oil Tank Piping Standard:

1. For piping from the oil tank to the inside heated space of the dwelling, a minimum of schedule 40 black iron pipe and fittings are to be used. All fittings are to be "Oil Approved" and made oil tight using an approved thread sealing compound.
2. For piping in the mechanical room, a minimum of 3/8" poly coated copper tubing with flare fittings. Threaded fittings are to be made oil tight using an approved thread sealing compound.

EXECUTION

On completion of work, the Contractor will leave the site in a neat and tidy condition. Site will be graded and restored to the original existing condition. All rutting and depressions are to be filled and bladed to ensure adequate drainage away from, and from underneath the buildings.

The contractor shall be responsible for all costs, labour, material and equipment necessary to ensure compliance under this section.

APPENDIX III – Oil Tank & Stand Installation Manual

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SCOPE

This section applies only to the installation and management of domestic, aboveground fuel oil tanks constructed to CAN/ULC-S602, Standard for Aboveground Steel Tanks for the Storage of Combustible Liquids Intended to be used as Heating and/or Generator Fuels. These tanks must be installed in accordance with CSA B139, Installation Code for Oil-Burning Equipment, manufacturer's instructions and the authority having jurisdiction.

This document applies only to tanks used to store fuel oil for space heating purposes. Tank installations must also comply with any applicable local codes. The tanks covered by this document are designed for stationary installation and are not meant to transport any product over roads and highways.

Maximum obround tank capacities are limited to one tank of 260 gal (1200 L) or multiple tanks to a maximum total capacity of 520 gal (2400 L).

INTRODUCTION

Domestic fuel oil storage tanks have been in use for more than fifty years. Properly installed and maintained they can offer decades of safe fuel oil storage. Improper tank installation practices may cause tanks to fail before their potential life expectancy has been reached. Following the practices recommended in this document will ensure that the oil storage system will perform properly.

MECHANISM OF FAILURE

An understanding of the causes of oil tank failure can significantly reduce the occurrence of such failures. There are three modes of failure applicable to domestic oil storage tanks. They are: a) manufacturing defects, b) physical damage and c) corrosion.

MANUFACTURING DEFECTS

Manufacturing defects are possible for all tank designs and methods of construction. Competent manufacturers strive to reduce manufacturing defects through the application of quality assurance and quality control systems.

Testing is required by all construction codes and some manufacturers exceed the minimum requirements. It is the responsibility of the tank manufacturer to reduce the number and seriousness of manufacturing defects.

PHYSICAL DAMAGE

All tank designs are susceptible to physical damage. Placement of the tank (see Section 6.0) is one of the major factors in reducing exposure to mechanical damage. An adequate base must be provided for any tank to provide stability.

Vulnerable areas of the tank such as the gauge, the valve and the oil line must be protected (see section 6.2.5 for more details). Improper filling and emptying procedures can also cause physical damage to the tank.

CORROSION

Steel tanks are susceptible to corrosion. However, the likelihood of corrosion failure can be greatly reduced if the corrosion process is understood.

Metals corrode because they are trying to release energy bound into them from the refining process. Electrochemical corrosion requires an anode, a cathode and an electrolyte. The anode has more stored energy and will therefore corrode to attain a lower energy level.

The cathode has lower stored energy and will not corrode. The electrolyte completes the circuit for a galvanic cell. In a galvanic cell ions of steel travel through the electrolyte and are deposited at the cathode; if the cathode is large relative to the anode, pitting corrosion at the anode will occur.

Oil tank corrosion can be subdivided into long-term and short-term (pitting corrosion). Long term corrosion will occur over thirty or more years. Short-term corrosion can cause failure in as little as eight months.

Long-term corrosion occurs when there are no vast differences between the sizes of anodic to cathodic areas. Long-term corrosion is not a problem with oil tanks since the rate of corrosion is low and tanks are generally replaced before this type of corrosion causes tanks to fail.

Short-term corrosion is a very real problem but is easily prevented. The main contributor to short term corrosion is early exposure of the tank to an electrolyte. Fuel oil is a very poor electrolyte but sludge and water that accumulates in fuel oil tanks is a good electrolyte. There are several ways that water can enter a fuel storage system.

The most common source of water is transfer of sludge and water from an old tank to a new one. This practice shall be avoided. Condensation, especially in outside tanks, will cause a build-up of water.

This is why it is important to keep the tank full during the summer. Water can enter the tank through broken gauges or through openings with missing caps. Water may also be

delivered directly from the oil truck.

The way to eliminate corrosion of steel tanks is to eliminate the electrolyte or water. Bottom outlet steel tanks, tilted toward the burner connection ¼ inch per foot of length to prevent the accumulation of water, will help eliminate this problem.

MINIMUM TANK AND STEEL STAND STANDARDS

All aboveground fuel oil tanks shall bear a label in accordance with Section 7 of CAN/ULCS602, Standard for Aboveground Steel Tanks for the Storage of Combustible Liquids Intended to Be Used as Heating and/or Generator Fuels, as revised, amended or substituted.

NHC MINIMUM OIL TANK SPECIFICATION

NHC provides the following Oil Tank Specification:

a. 250 imperial gallon capacity horizontal fuel oil tank(s) for outside building installation. Tank(s) is/are to be ULC labeled.

b. Standard of acceptance: 250 imperial gallon capacity fuel oil tank for outside building installation c/w 2” diameter fill opening, 2” vent opening, 1 ½” fuel gauge opening and 2” diameter bottom outlet opposite end from fill opening, double-wall, shop prime and paint with a minimum one coat of rust resistant paint.

NHC MINIMUM OIL TANK STAND SPECIFICATION

The oil tank stand shall be constructed in accordance with the following:

a. Manufacturer to design stand to resist all applied loads, including tank and contents, snow, wind, rain, etc.

b. All steel sections and plates to be the latest edition of CSA G40.21-M, type 300 W.

c. Metal stair treads shall be hot dipped galvanized, 13 gauge cold formed, one piece metal. Standard of acceptance: “Safety-Grip Channel”. 10” side x 1 1/2” high as manufactured by ISG Safety Grating Products Ltd. Or approved alternate.

d. Structural bolts and nuts shall be A307 galvanized structural grade.

e. All welding to conform to the latest edition of CSA W59.

f. Do all cutting, boring and welding prior to shop priming/painting. Shop prime and paint with a minimum one coat of rust resistant paint.

DOCUMENTATION PROCEDURE

All oil-fired systems including the tank shall be approved by a Certified Oil Burner Technician or a Certified Tank Installer before fuel is delivered. Installers should have the equipment to properly install a tank and ensure no sludge is transferred to the new tank. They also have the procedures to dispose of sludge and the old tank in an environmentally acceptable manner. (See Section 13 – Disposal of Old Oil Tank)

The Local Housing Organization (LHO) should maintain records of installations including date, tank serial number, tank manufacturer, address of installation, type of tank, and type of installation. If practical, photographs of the finished installation are also recommended.

PLACEMENT OF THE TANK

Oil storage tanks can be placed inside or outside the structure. The tank must be handled without dragging or dropping. Do not move a tank unless it is empty. Tanks shall not impede the means of egress from a building.

TANK ANCHORING

Additional stability shall be considered in flood plain areas, areas of high wind and areas susceptible to earthquakes. This will require some form of shelter or anchoring that does not adversely affect the operation of the tank (e.g. if using a strap attached to a support, insure that the strap does not cause chafing or increased corrosion). The hold-downs must be designed for a total up thrust of 2000 pounds (9000 N).

INDOOR TANK INSTALLATIONS

Reasons to Install Tanks Indoors

Domestic fuel oil tanks are recommended to be installed indoors whenever possible for many reasons including the following:

a. A poured concrete floor, such as a basement, provides the best option for a strong, stable and solid base for the tank. If a solid floor is not present the recommendations for outdoor installations (6.2) should be followed.

b. There should be no odors from a properly installed inside tank. If the tank begins to weep from internal corrosion, early detection is more likely with an indoor tank than with one located outside.

c. An outside tank is subject to the elements including extreme temperatures, rain, snow, ice, external corrosion, as well as vandalism.

All of these factors contribute to a reduced life expectancy, higher maintenance costs and a greater possibility of an oil leak occurring.

d. Inside tanks are not subject to frozen product lines.

e. Inside tanks provide better performance and less maintenance for oil heating systems because the fuel is kept at a constant temperature. Constant storage temperature enhances fuel stability.

f. Cold oil causes the flow rate to the burner to increase and larger fuel droplets are produced by the nozzle causing poor combustion.

g. Temperature cycling of outside tanks causes water vapor to condense and collect inside the tank. This can lead to early failure caused by corrosion.

Indoor Tank Installation Instructions and Recommendations

a. Tanks shall be installed on the lowest floor of the building. An exception is allowed if the tank is installed in an attached garage that is not the lowest floor. Tanks less than 50 gal (230 L) can be located above the lowest storey, cellar or basement. See Section 6.0.1.

b. Inside tanks shall be located not less than 2 feet (0.6 m) from any fuel-fired appliance. This applies to the complete appliance not just the burner. Fuel oil temperature shall be kept below 100 ºF (38 ºC).

c. The tank should be placed in an area where it is unlikely to be adversely affected by normal household activities.

d. Tanks shall be placed in an area where they can be visually inspected from all sides. Maintain a minimum separation of 2 in (50 mm) from all walls and a clearance of 4 in (100 mm) beneath the tank. The tank label shall be visible.

e. Tanks shall be installed so that there is at least 18 in (460 mm) clearance along one side and one end of the tank

f. Tanks located in garages should be provided with adequate protection from vehicular traffic.

g. The supply line, valve and filter should be protected from damage. The copper tubing can be placed inside a protective plastic sleeve (see 6.2.5).

h. It is recommended that a plastic tank tray be placed underneath the tank to contain any potential small leaks of product.

Outdoor Installations

A. General Location:

a. Tanks must not block building entrances or windows including crawlspace openings.

b. A single 250 gallon (1,150 L) tank can be placed next to a propane cylinder with a capacity of 125 gallon (475 L) or less. If the capacity of either tank exceeds these volumes, the separation shall be not less than 20 feet (6 m).

c. Tanks with a 550-gallon (2,500 L) capacity or less shall be not less than 5 feet (1.5 m) from a property line. Variances may be requested from the authority having jurisdiction.

d. The tank should be located down grade from any domestic drinking water source if possible.

e. Protection from physical damage incident to outdoor use shall be provided. If possible, tanks should not be located directly under house eaves where they may be subject to falling snow and icicles and increased risk of external corrosion due to dripping water.

f. Tanks should not be placed in intimate contact with the building since organic matter can accumulate and cause external corrosion of the tank. Tanks shall be installed so that there is at least 18 in (460 mm) clearance along one side and one end of the tank.

The end or side of the tank shall be at least 2 in (50 mm) from wall. Where possible, it is recommended a clearance of 24 in (610 mm) from the building be maintained for maintenance/inspection purposes.

g. Outside tanks should not be exposed to corrosive substances, such as rock salt.

B. Protection from Vehicle Traffic:

Tanks located in areas exposed to vehicular traffic (e.g. driveways, carports) should be provided with adequate protection such as the following:

Posts used for the protection of a tank should:

a. be spaced not more than 53 in (1350 mm) apart

b. be buried not less than 36 in (900 mm) below grade

c. extend at least 30 in (750 mm) above grade; and

d. be one of the following:

i. 4 in (100 mm) capped steel pipe; or

ii. 4 in (100 mm) tubing filled with concrete; or

iii. 8 in (200 mm) pressure-treated wood, either square or round; or

iv. 6 in (150 mm) minimum dimension reinforced concrete.

C. Guardrails used for the protection of a tank should be either:

a. of the steel deep beam type, 12 x 162 in (300 x 4050 mm), supported by 6 in (150 mm) minimum pressure-treated wooden posts located not more than 75 in (1875 mm) apart, centre to centre, and with the top of the beam not more than 24 in (600 mm) above grade; or

b. of the reinforced concrete barrier type, commonly referred to as the New Jersey Turnpike barrier, not less than 30 in (750 mm) in height, and the width of the base not less than the height. Posts or guardrails used for the protection of a tank should be located not less than 39 in (1 m) from all sides of the tank.

D. Tank Base:

a. All outside tanks are at risk of movement, especially new installations placed on recently disturbed ground. The site must have all organic materials such as sod or bark removed and the soil must be compacted.

b. A well-drained sub grade shall also be utilized to provide appropriate drainage. Six inches (150 mm) of crushed clear compacted stone is recommended.

c. The tank must be properly supported to prevent it from shifting, settling, or falling over. The tank base shall be rigid and non-combustible. It is recommended that the tank support legs be installed on a minimum of 2 - 6” x 6” x 8’ pressure treated lumber installed at grade with the tank stand anchored to the center. The pad should extend four inches (100 mm) beyond the tank stand base in all directions. See Section 6.0.1. Tank cradles are not recommended unless designed by a professional engineer. Note: A full tank (900 L) of oil weighs about 2,000 pounds (9000 N) and the support must be designed for this weight.

d. The tank shall be installed on rigid non-combustible supports having a fire resistance of not less than 2 h.

e. The tank shall be securely supported to prevent settling, sliding, toppling or lifting.

f. New outdoor tank installations should be inspected regularly (once per month for the first year) after installation to ensure that the tank has not moved. Yearly checks are required after the first year.

g. Cross-connected tanks must be placed on the same pad.

E. Protection from Snow and Ice:

Outdoor tank installations are particularly susceptible to damage from snow and ice. Generally it is not the tank that fails but the oil line. Protection devices for the tank valve, oil line, and tank gauge are available and are required for outdoor tank installation.

F. Product Supply Lines

a. The product supply line(s) leading from the tank to the building must be protected from mechanical damage including the weight of snow, ice or other objects that could cause the line to break and release product.

   Heaving frost or an application of force can snap the supply line. Installation of a line made of schedule 40 rigid threaded pipes may provide sufficient mechanical protection.

b. The product supply lines of bottom outlet tanks shall be installed on a decline (downward slope) from the building to the tank to prevent the accumulation of water and possible freezing of the product line.

c. To allow for frost heaving and movement, the supply line shall have an 18” to 24” long, oil approved flex pipe to match the pipe size between the oil tank/stand and building.

d. Interior product supply lines shall not be less than 3/8 in (10mm) outside diameter copper tubing.

e. All tank fittings shall be of the oil approved and a minimum schedule 40 black iron or galvanized for exterior piping and a minimum of 3/8” coated copper for interior piping. All threaded joints will be made oil safe using approved thread compound for threaded fittings and flare fittings only for copper tubing.

f. Under no circumstances are pipe/tube connections or joints to be installed in an inaccessible area such as in floors or walls.

FILL & VENT PIPING

The Tank Fill Shall Meet the Following Requirements:

a. The fill pipe opening shall not be more than 13 ft (4 m) above the bottom of the tank.

b. Each fill opening and each entry to a fill pipe shall be provided with a vapor and liquid tight cover designed to discourage tampering.

c. The fill pipe material shall be minimum 2 in IPS schedule 40 black steel or galvanized steel pipe.

d. Threaded joints in the fill piping shall be made fuel oil-tight using joint compound conforming to CAN/ULC-S642, Standard for Compounds and Tapes for Threaded Pipe Joints, or equivalent, approved for this use.

e. The fill pipe shall terminate outside the building, close to the wall, at least 2 ft (600 mm) from any building opening. Outside tanks can have the fill directly above the tank opening.

f. The fill pipe shall be located to permit easy filling in a manner that will avoid spillage.

g. The fill pipe shall terminate at least 39 inches (1 m) above grade. This should be increased in areas of high snowfall.

h. The fill shall drain towards the tank (minimum slope of 1%) without traps where liquid can collect.

The Vent Shall Meet the Following Requirements:

a. The vent pipe material shall be schedule 40 black steel or galvanized steel pipe.

b. Threaded joints in the vent piping shall be made fuel oil-tight using joint compound conforming to CAN/ULC-S642, Standard for Compounds and Tapes for Threaded Pipe Joint, or equivalent, approved for this use.

c. Vent pipe shall not be less than 1¼ IPS. The vent shall be large enough to prevent abnormal pressure or vacuum within the tank caused by filling or emptying. Consult B 139 for the required vent size.

d. All tanks shall be connected to a vent alarm or whistle as a means to prevent

e. overfilling. The whistle or alarm shall be clearly audible above normal ambient noise.

f. Use of single whistle or alarm is recommended for cross-connected tanks.

g. The vent shall drain towards the tank (minimum slope of 1%) without traps where liquid can collect.

h. The lower end of the vent shall enter the tank through the top and shall extend into

the tank not more than 1 in (25 mm).

i. Vent pipe that terminates adjacent to a building shall be installed so that the termination point is:
   i. close to the building wall (inside tank),
   ii. at a sufficient level to remain above total snow accumulation
   iii. not higher than 13 ½ ft (4.15 m) above the bottom of the tank
   iv. not less than 2 ft (600 mm) from any operable window or any other building opening,
   v. not less than 2 ft (600 mm) from the vertical projection of any window or building opening that is at a lower elevation than the termination of the vent pipe,
   vi. sufficiently close to the fill pipe opening to allow the vent whistle to be clearly audible to the person filling the tank unless an alternative overfill device has been installed, and
   vii. 6 inches (150 mm) higher than the intake of the fill pipe.

j. The vent shall be provided with a weatherproof vent cap. The vent cap should have an opening that does not reduce the vent area.

BURNER SUPPLY CONNECTIONS

a. Copper tubing 3/8” (10 mm) shall have 0.027 in (0.67 mm) minimum wall thickness; 7/16” – 9/16” (11 – 14 mm) shall have 0.032 in (0.80 mm) minimum wall thickness; and 5/8” (15 – 18 mm) shall have 0.037 in (0.93 mm) minimum wall thickness.

b. Outside tanks should use minimum 1 in (25 mm) schedule 40 black iron piping. Inside tanks can use 3/8 in (10 mm) tubing.

c. All connections in copper piping and tubing should be visible, accessible and made fuel oil-tight using a flared joint.

d. An automatic shut off device shall be installed in the burner supply line if the burner pump does not have an automatic shut off in the event of a fire.

e. Product piping connections at any level below the highest level to which the liquid in the tank will rise shall be provided with a shut-off valve (ideally a steel ball valve or gate valve) located as close as practicable to the tank shell. This will allow the fuel supply to the heating appliance to be shut off.

f. Product filters will:

   i. be installed inside the building, and;

   ii. have sufficient clearance to allow for replacement or repair.

g. Burying product piping is not permitted. Where inside product piping requires additional protection, corrosion-resistant tubing shall be used and be protected from damage.

h. Product tubing placed in direct contact with concrete shall be placed in a continuous run of corrosion-resistant tubing.

i. On supply lines from outside tanks two shutoff valves shall be installed, one outside at the tank and one inside on the tank side of the filter.

j. The burner supply lines should be run as directly as practicable.

CROSS-CONNECTED TANKS

Two obround oil tanks may be cross-connected if their total capacity does not exceed 520 gal (2400 L).

The cross-connected tank installation shall be as follows:

a. the two tanks are mounted on a common installation pad foundation;

b. the top of the two tanks shall be at the same elevation;

c. the inlet fill pipe is connected to one tank only;

d. a vent whistle is installed on the tank to which the fill inlet pipe is connected;

e. the size of the connecting pipe between the tank bottoms is at least the size of the inlet pipe;

f. each tank is individually vented from the top;

g. individual vents that are joined to a common vent pipe cross-connected to the tops of both tanks do so through a vent manifold pipe located above the highest liquid level in the tanks;

h. the common vent and manifold pipes are sized in accordance with CSA B139 Installation Code;

i. the two tanks shall have separate shut off valves; and

j. the space between the tanks shall be at least 4 in (100 mm)

TESTING

Oil tank manufacturers' pressure tests all tanks before shipping. Oil storage systems must be tested for leaks before oil is put into the tank. At the very minimum the installer or oil company representative must be in attendance for the first fill up to ensure that there are no leaks in the system.

Air Test (Optional):

An air test, on an empty tank, is recommended to ensure that no damage has occurred to the tank in shipping and handling.

a. Install a pressure gauge having an accuracy of ± 2% and a maximum scale range of 15 pounds per square inch (psig) using compatible thread compound.

b. Install a valve using compatible thread compound to allow air to be pumped into the tank.

c. Remove all thread protectors from the tank and install metal pipe plugs properly prepared with compatible thread compound.

d. Pressurize tank to a maximum of 3 psig for a minimum of 10 minutes. CAUTION! Lower pressure if tank starts distorting.

e. Check all tank surfaces including all weld seams, handles and fittings for leaks using a soap solution.

f. CAUTION: Do not leave pressurized tank unattended.

g. After the test is complete release pressure from the tank before proceeding with the installation.

Hydrostatic Test during First Filling:

a. The installer or oil company representative shall visually inspect all seams and fittings for leakage during the first filling.

b. Tanks that are not filled immediately after installation shall have a warning tag affixed to the fill pipe and an arrangement shall be made with the oil supplier to conduct the inspection during the first filling.

c. The tag shall warn the oil supplier that the tank is to be filled for the first time and that the tank shall not be filled unless an arrangement has been made for the installer or the oil company representative to inspect the tank and fuel system during the filling operation.

d. The tank shall not be filled if access to conduct the inspection is not available.

OIL TANK MANAGEMENT

It is important for the LHO to understand that the oil tank is, in most cases, their property and hence their responsibility.

Transfer of Product:

a. Most premature failures of steel oil tanks are caused by a transfer of product including water and sludge from the old tank to the new tank. Any transfer of product from an old tank to a new tank should be avoided if possible.

   New tanks are initially more susceptible to corrosion caused by the presence of sludge and water. Transfer of the sludge and water can result in premature failure in as little as eight months.

   The Nunavut Housing Corporation strongly recommends product not be transferred from the old tank. Wherever possible, the fuel should be used till the tank and product line is empty.

b. If fuel must be transferred, a filtering pump that separates the fuel from any potential contaminant should be used. As a last resort a standard pump with a clear plastic suction line and stop to prevent the suction line from going to within 8 in (200 mm) of the bottom of the fuel tank may be used.

   This operation can only be performed on oil that has been allowed to settle for at least 2 hours. Filling the tank mixes the water and sludge with the oil. The remaining sludge and water must be disposed of in a manner approved by the authority having jurisdiction.

Tank Movement & Levelling:

a. Outside tank installations for new construction or on unstable ground should be inspected regularly during the first year. Any movement of the soil will require repositioning of the tank.

b. Any tank that has settled should have the elevation adjusted by a qualified technician as soon as possible.

c. Bottom outlet tanks must be installed with the appropriate incline (¼ in per foot) toward the outlet.

d. The tank must never be moved without completely emptying the tank.

Inspection:

Tanks should be visually inspected at least once a year. Running your hand along the underside of the tank will detect weeping. Inside tanks must be kept free of clutter and be protected from damage. Outside tanks must be kept free of ice and snow as much as possible.

SERVICE LIFE

The service life is what a well maintained tank will provide with minimal risk of leakage. It should also be noted that when an oil tank is replaced, the fuel piping from the fuel tank to the burner should also be replaced. The service life listed below is based on the practices detailed herein being followed.

- End outlet oil tank 10 years
- Bottom outlet oil tank 15 years
- Double wall, bottom outlet oil tank 20 years

TANK DISPOSAL

Once an oil tank has been removed from service the tank, piping and any potential contaminants shall be disposed of in accordance with the *authority having jurisdiction* (in most cases this will be the Hamlet or local Wildlife Officer).