Recommendations to Improve the Safety and Efficiency of Oil-burning Equipment Installations in the Yukon:

A Response to Two Surveys of Oil-Burning Equipment Installations in the Yukon

October 2007

Prepared for the:

Yukon Government:

Yukon Housing Corporation and
The Energy Solutions Centre

Prepared by:

Rod Corea
NRG Resources Inc.
95 Napier St. West
Thornbury, ON N0H 2P0
519-599-3923
rodcorea@nrgresources.ca

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Executive Summary

This report provides recommendations for the improvement of safety and efficiency at oil-burning equipment installations in response to the problems identified in two surveys (see Appendices A and B) conducted during the first part of 2007 in Whitehorse, Yukon.

The inspection of 124 sites with oil-burning equipment in Yukon provided statistically significant evidence that a large percentage of oil-burning equipment installations in the Yukon are not properly installed or maintained in accordance with the minimum standards established in the *B139 Installation Code for Oil-burning Equipment*. The average number of code infractions per site was 5.5 and the number of significant infractions that either posed an imminent hazard (12 cases) or could reasonably be expected to develop into a hazard in the future was 3 per site.

Eleven issues identified in both survey reports and summarized in this report require action to prevent the occurrence of serious safety problems at oil-burning equipment installations in the Yukon.

Six recommendations to improve the general safety and efficiency of oil burning equipment installations in the Yukon are discussed in detail in this report.

1. A third survey should be conducted of oil-burning equipment installations located outside Whitehorse to determine whether the issues identified in the first two surveys are applicable to smaller and remote communities.
2. An advertising campaign should be conducted to inform owners about the legal and practical need for annual maintenance of oil-burning equipment and the necessity of maintaining the proper clearances to combustibles around oil-burning equipment.
3. An information seminar or circular on the findings of the two survey reports should be provided to oil suppliers, heating contractors, and technicians to encourage discussion, debate, and corrective action by the oil heating industry.
4. The B139-04 Code should be amended to address obvious deficiencies identified in this report and to make it directly applicable to the unique needs in Yukon.
5. The development and implementation of a practical and effective method for training and licencing Oil Burner Mechanics in the Yukon is recommended.
6. An Oil Burning Devices Act, Regulations, and enforcement agency should be created to encourage and ensure that the oil heating industry complies with the B139 Code and Yukon Apprentice Training Act regarding training and licencing requirements for Oil Burner Mechanics.

The first three recommendations are direct and relatively easily achieved responses to the survey results. The last three recommendations require legislative or regulatory changes by the Yukon government.

Implementation of the six recommendations will significantly improve the safety and efficiency of oil-burning equipment installations across the Yukon.

State of Oil-burning Equipment Installations in the Yukon

Two separate surveys of 124 oil-burning equipment installations in Whitehorse were conducted between January and May 2007. The first survey of 55 installations was conducted by NRG Resources for the Yukon Government, Yukon Housing Corporation, and Energy Solutions Centre. The second survey of 69 installations employed the same format and procedure but was conducted by Yukon Housing Corporation and the results were reviewed and organized into a second report by NRG Resources.

The two survey reports are provided in Appendices A and B of this report. The types of sites, equipment, and infractions reported in both surveys were very similar. A comparison of the two surveys is included in the second report (see Appendix B). The size of the surveys is considered statistically significant at 2.5% of the estimated 5,000 oil-burning equipment installations in Whitehorse.

The inspection survey of 124 sites in Whitehorse with oil-burning equipment identified 685 infractions of the B139 *Installation Code for Oil-Burning Equipment* of which 381 were considered to be significant concerns that either posed an imminent hazard (12 cases) or could reasonably be expected to develop into a problem in the future. The average number of code infractions per site was 5.5; the average number of significant infractions was 3 / site. None of the 124 sites completely complied with the B139 Code.

The results and analysis of the surveys indicate that the general state of oil-burning equipment installations in the Yukon is poor. The potential for an incident causing harm to humans or property is high.

Both surveys identified eleven safety and efficiency issues. They are listed below in order of importance together with a brief explanation of the hazard(s) that they pose and their most probable cause(s).

1. **Lack of maintenance.** 79 of the 124 surveyed sites (i.e. 64%) were not in compliance with the B139 Section 14 requirements regarding annual maintenance. Very few of the appliances inspected had been cleaned on a regular basis. In many cases, the appliances had never been cleaned or properly maintained.

   Lack of maintenance is universally recognized as the primary cause of fires, leaks, and carbon monoxide poisonings for all fuel-fired appliances.

   Two probable causes for this problem are:

   i) Owners' lack of knowledge about the legal and practical requirements to have their oil-burning equipment maintained annually;

   ii) Service technicians' lack of training and/or knowledge regarding proper annual maintenance requirements.

2. **A very low percentage of installers or service technicians are trained and qualified as licenced Oil Burner Mechanics.** Only 21 of the 124 sites inspected (17%) provided any indication that a licenced Oil Burner Mechanic installed or serviced the installation. The number and nature of code infractions found during the surveys suggest that installers and service technicians either do not know about the minimum safety standards established in the fuel oil code or choose not to comply with these minimum standards.

   The problems and hazards that are potentially created by unqualified technicians working on oil-burning equipment are numerous as shown by the high percentage of non-compliant and hazardous installations found in both surveys.

   The Oil Burner Mechanic (OBM) trade is recognized and required in the Yukon by the Apprentice Training Act and Regulations. However, an informal survey of over 100 technicians who have attended five courses delivered by NRG Resources found that the compliance level for OBM licencing is significantly below that of similar trades such as the Gas Fitter.

   The three most probable causes for this problem are:

   i) Lack of enforcement by the governing authority of the Apprentice Training Act regarding the requirement to be licenced as an Oil Burner Mechanic.

   ii) Lack of inspections of oil-burning equipment installations since there is no fuel oil equivalent of the Gas Burning Devices Act and Regulations which require installation permits and inspections.

   iii) Lack of a reasonable means of achieving an OBM licence in the Yukon. In response to questions asked by NRG Resources to numerous contractors and technicians in the Yukon, two problems were identified with the OBM licencing process: 1/ The classroom portion of the licencing requirement must be carried out in New Brunswick at significant cost in terms of time and money; 2/ The supervision requirements for apprenticeship are not achievable for small-scale contractors.

3. **Spillage of flue gases indoors due to improperly installed or improperly maintained appliances and their venting systems.** 14 cases of flue gases spilling indoors were found during the two surveys. This constitutes 11% of the 124 surveyed sites; all of the cases were significant and 6 were considered hazardous. Most of the cases involved positive vented appliances which require special venting material and are especially prone to failure if not strictly installed in accordance with the manufacturer's certified instructions and the B139 Code.

   Spillage of carbon dioxide and carbon monoxide can cause severe health problems; heat spillage can cause fires.

   The two most probable causes of this problem are:

i) Lack of service technician training and/or knowledge regarding proper venting installation requirements.

ii) Lack of third-party inspections and enforcement of code requirements.

4. **Improper combustion set-up for safe, efficient combustion.** 46 of the 121 combustion tests (38%) conducted during both surveys indicated that the appliances were operating inefficiently (i.e. <78% efficiency) and/or were not in compliance with the safety requirements for combustion established in the manufacturer's certified instructions and the B139 Code.

   Inefficient combustion set-up not only increases fuel costs and pollution of the environment but also causes damage to appliances and increases the risk of fires and carbon monoxide poisonings.

   The three most probable causes of this problem are:

   i) Owners' lack of knowledge about the legal and practical requirements to have their oil-burning equipment maintained annually.

   ii) Lack of service technician training and/or knowledge regarding proper combustion set-up requirements.

   iii) Lack of third-party inspections and enforcement of code requirements.

5. **Oversized, improperly installed, poorly maintained vent systems.** 71 of the 124 sites surveyed (57%) had infractions related to their venting systems. 58 of these 71 cases (82%) had significant code infractions and 11 of the 12 imminent hazard sites had venting infractions.

   Oversized, improperly installed, or poorly maintained vent systems may cause venting problems resulting in flue gas spillage and damage to the appliances. These problems are especially prevalent in cold climates.

   The two most probable causes for oversized and improperly installed vent systems are:

   i) Lack of service technician training and/or knowledge regarding proper combustion set-up requirements.

   ii) Lack of third-party inspections and enforcement of code requirements.

6. **Clearance to combustible material is not maintained.** 31 of the 124 sites inspected (25%) had infractions related to clearance between combustible materials and the appliance or vent. Approximately half of these problems were related to installation infractions and the other half were caused by the owners storing material too close to the appliance or vent.

Failure to comply with the clearance to combustible requirements established in the B139 Code and manufacturer's instructions may result in fires.

The most probably causes of this potentially dangerous infraction of the B139 Code and manufacturer's requirements are:

i) Owners' lack of knowledge about the legal and practical requirements to maintain the proper clearance to combustibles.

ii) Service technicians' lack of training and/or knowledge regarding proper installation and maintenance requirements.

iii) Lack of third-party inspections and enforcement of code requirements.

7. **Combustion air supply requirements are not met.** Infractions related to improper combustion air supply to appliances were found at 48 (36%) of the 124 sites inspected. 8 of the 48 cases were considered significant since they were in confined spaces and/or adversely affected the safe operation of the appliance(s) at the site.

   Properly sized, installed and maintained combustion air openings have been required since the 1976 B139 Code. They ensure the safety and efficiency of appliances that use air from inside the building.

   The high percentage of non-compliance regarding air supply requirements can be contributed to:

   i) Owners' lack of knowledge about the legal and practical requirements to maintain the air supply requirements for oil-burning equipment.

   ii) Service technicians' lack of training and/or knowledge regarding proper installation and maintenance of air supply requirements for oil-burning equipment.

   iii) Lack of third-party inspections and enforcement of code requirements.

8. **Aboveground tanks not installed or maintained properly to prevent internal and external corrosion.** Two related problems are covered by this item: Firstly, 56 of the 106 aboveground tanks surveyed (53%) were not sloped toward the outlet as required by the current B139 Code; secondly, 15 of the 82 outdoor aboveground tanks surveyed (18%) showed signs of external corrosion.
   Improper tank slope has been proven to cause internal corrosion resulting in leakage. Together these two corrosion related infractions of the fuel oil code may result in tank leakage and significant damage to the environment.

   The four most probable causes for corroding aboveground tank systems are:

   i) Owners' lack of knowledge about the legal and practical requirements related to maintenance of corrosion protection on aboveground tanks.

ii) Lack of service technician training and/or knowledge regarding proper aboveground tank installation and maintenance requirements.

iii) Lack of regulatory responsibility placed on oil suppliers by to ensure that they are delivering to safe, compliant tank systems.

iii) Lack of third-party inspections and enforcement of code requirements.

9. **Lack of monitoring of underground tanks for leakage and corrosion.** None of the 20 underground storage tanks (UST) surveyed were regularly monitored for water accumulation or for cathodic (rust) protection. Unfortunately, the current edition of the B139 Code is the first fuel oil code to not provide any requirements related to UST installation, maintenance, or removal. This is a significant problem since 20 of the 124 sites surveyed (16%) had USTs that would benefit from requirements given in previous Codes.

   Improperly installed and maintained underground tank systems may lead to underground leaks that can contaminate water wells and surface water systems.

   The five most probable causes for the lack of monitoring of underground tank systems are:

   i) Owners' lack of knowledge about the legal and practical requirements related to maintenance of corrosion protection for underground tanks.

   ii) Lack of service technician training and/or knowledge regarding proper underground tank installation and maintenance requirements.

   iii) Lack of regulatory responsibility placed on oil suppliers by to ensure that they are delivering to safe, compliant tank systems.

   iv) Lack of third-party inspections and enforcement of code requirements.

   v) The current lack of direction provided in the B139 Code regarding UST installation, maintenance, or removal.

10. **Aboveground tanks not properly supported or secured to prevent toppling or damage - especially if a seismic event occurs.** Significant code infractions related to improper tank support and improper piping at the tank were found at 27 of the 106 aboveground tanks surveyed (25%). None of the 106 aboveground tanks surveyed were equipped with seismic restraints (as required by the B139 Code) even though Whitehorse is listed as an earthquake zone.
    Improper tank support and improper piping at the tank may result in tanks settling or falling over. If a significant earthquake occurs in the Yukon, a large number of aboveground tanks may topple resulting in significant contamination of soil, drinking water sources, and surface waterways.

    The four most probable causes for improperly supported and secured aboveground tank systems are:

i) Owners' lack of knowledge about the legal and practical requirements related to the maintenance of aboveground tank supports.

ii) Lack of service technician training and/or knowledge regarding proper aboveground tank installation and maintenance requirements.

iii) Lack of regulatory responsibility placed on oil suppliers by to ensure that they are delivering to safe, compliant tank systems.

iv) Lack of third-party inspections and enforcement of code requirements.

11. **Appliances and tanks without rating plates indicating that they have not been tested and approved to recognized standards.** 31 of the 106 above-ground tanks surveyed (29%) and 4 of the 134 appliances surveyed (3%) did not have a rating plate. The B139 Code requires that oil-burning equipment be certified to recognized standards.

    The approval of equipment to recognized standards is a primary safety requirement that helps ensure that sub-standard and unsafe equipment is not employed at oil-burning installations. The use of uncertified tanks may lead to leaks resulting in contamination of the environment. The use of uncertified appliances and components may lead to fires and carbon monoxide poisonings.

    Again, the three most probable causes for the high percentage of approved tanks and appliances found during the survey are:

    i) Lack of service technician training and/or knowledge regarding the use of approved tanks and appliances.

    ii) Lack of regulatory responsibility placed on oil suppliers by to ensure that they are delivering to safe, compliant tank systems.

    iii) Lack of inspections of oil-burning equipment installations by a third-party authority.

A detailed discussion of recommended solutions to the problems found during the two inspection surveys is provided in the next section of this report. However, it is worth providing some perspective on the survey results at this point in the report.

Based on the writer's experience (see Appendix D for details), the number and nature of the infractions indicate that a significant portion of oil heat users are not aware of the legal and practical need for annual maintenance of oil-burning equipment and that the oil heating industry is not responding responsibly to self-regulation as required in the Yukon. Although there are good installations, technicians, and contractors, a large number of oil installations do not meet minimum safety and efficiency standards.

Based on discussions held with home owners, oil burner technicians, and heating contractors while conducting the inspections and during various courses in the Yukon, there is a general lack of knowledge of code requirements and practical issues related to the safety and efficiency of oil-burning equipment.

Those discussions have also indicated that the lack of incentives, consequences, and/or opportunity to become licenced as Oil Burner Mechanics are important factors in regards to this general lack of knowledge. The lack of consequences for not complying with the code requirements has been identified by a number of technicians, contractors, and users as a major cause of the problems found at new and old installations.

Given the writer's knowledge and experience of the Ontario oil heat industry, a comparison of the state of the oil installations in that province to the surveyed installations may be of some value. In general, the number and type of infractions found in the Yukon would have been similar to those in Ontario before 2001.

Regulatory and enforcement changes in 2001 require oil distributors, oil heating contractors, and Oil Burner Technicians to take action whenever unsafe conditions are found. Oil distributors are required to inspect the installations before supplying oil to a site and to maintain a record of the inspection which must be updated at least every ten years. Technicians are given the power to shut down hazardous equipment and order repairs. Compliance with these new duties and responsibilities is now strictly monitored and enforced by the Technical Standards and Safety Authority which is a private, not-for-profit organization created out of a government department in 1997.

In comparison with the current state of oil-burning equipment installations in Ontario, the surveyed sites have a very high level of non-compliance. The non-compliance level in Ontario can be confidently estimated by the writer at less than 10% compared to the 95%+ infraction rate found during this survey.

Another equally worthwhile comparison can be made between the Yukon oil heating industry and the Yukon propane heating industry. The latter is tightly regulated by the Gas Burning Devices Act and Gas Regulations as well as closely monitored by the Gas Inspections Unit of the Building Safety Branch of Consumer and Safety Services.

Although the writer's knowledge of the state of propane installations in the Yukon is limited, the number of licenced Gas Fitters attending any of the courses delivered by NRG Resources in the Yukon has consistently been greater than the number of licenced Oil Burner Mechanics. It is expected that this higher proportion of licenced technicians, together with the requirement for permits and inspections, would result in a higher level of compliance with code requirements at propane installations compared to oil installations in the Yukon.

Recommended Actions to Correct the Problems Identified in the Surveys

The following six recommendations are offered in response to the eleven safety and efficiency issues identified in the two survey reports. A brief explanation of each recommendation is given first along with reference to the issue(s) (1 to 11) that it will help correct. A detailed discussion of each recommendation is provided after this list.

A. A third survey should be conducted of oil-burning equipment installations located outside Whitehorse to determine whether the trends identified in the first two surveys are applicable to smaller and remote communities.

This action will ensure that the issues and solutions that are applicable to communities outside of Whitehorse are addressed. Although it is anticipated that the same issues will be identified, the number of code infractions and therefore urgency of acting may be greater due to the challenges faced in getting qualified technicians and approved equipment.

B. An advertising campaign should be conducted to inform owners about the legal and practical need for annual maintenance of oil-burning equipment and the necessity of maintaining the proper clearances to combustibles around oil-burning equipment.

This action will help correct the following issues identified in the previous section.

1. Lack of maintenance.
3. Improperly installed or maintained appliances and their venting systems.
6. Clearance to combustible requirements.
7. Combustion air supply requirements are not met or maintained.
8. Aboveground tanks not installed or maintained to prevent corrosion.
9. Lack of monitoring of underground tanks for leakage and corrosion.
10. Aboveground tanks not properly supported or secured.

C. An information course or circular on the findings of the two survey reports should be provided to oil suppliers, heating contractors and technicians to encourage discussion, debate, and corrective action by the oil heating industry.

This action will help correct all eleven issues identified in the previous section.

D. The B139-04 Code should be amended to address obvious deficiencies and to make it directly applicable to the unique needs in Yukon.

This action will help correct the following issues identified in the previous section.

8. Aboveground tanks not installed or maintained to prevent corrosion.
9. Lack of monitoring of underground tanks for leakage and corrosion.
11. Appliances and tanks not approved to recognized standards.

E. The development and implementation of a practical and effective method for training and licencing Oil Burner Mechanics in the Yukon is recommended.

This action will help correct all eleven issues identified in the previous section.

F. An Oil Burning Devices Act, Regulations, and enforcement agency should be created to encourage and ensure that the oil heating industry complies with the B139 Code and Yukon Apprentice Training Act regarding training and licencing requirements for Oil Burner Mechanics.

This action will help correct all eleven issues identified in the previous section.

The first three recommendations are direct and relatively easily achieved responses to the survey results.

The last three recommendations require legislative or regulatory changes by the Yukon government.

A more detailed discussion of each of the six recommendations is provided below to assist in both the understanding and implementation of these recommendations.

A. Survey oil-burning equipment installations located outside Whitehorse.

Only one of the installations inspected during the two surveys was located outside Whitehorse. Although this recommendation does not directly provide a solution to the problems identified in the two Whitehorse surveys, it does ensure that the problems identified by the surveys are applicable to smaller and remote communities.

By including smaller and remote communities in the survey sample other measures, priorities, and impediments to improving the safety and efficiency may be identified. Since these communities do not have many of the advantages available in Whitehorse (e.g. number of heating contractors and equipment suppliers), the survey should investigate the applicability for these communities of the five other recommendations given in this report.

A survey of oil-burning equipment installations outside Whitehorse would engage owners and industry stakeholders in smaller and remote communities. It would also ensure that improvements to the safety and efficiency would have an effect across the Yukon rather than just in Whitehorse.

B. Inform owners about maintenance issues.

Although the owners and/or occupants of the 124 inspection sites were informed about the inspection findings at their location, the findings and implications of the surveys should be advertised to the general public so they can make informed decisions about their oil-burning equipment installations.

The advertisement should highlight the legal requirement established in Section 14 of the B139 Code for owners to maintain their oil-burning equipment annually. The list of tests and maintenance actions that are required during annual maintenance should be included to show the practical value and importance of the code requirements.

The practical value of having annual maintenance conducted by a qualified technician should be highlighted by using the statistical evidence of problems found during the surveys. Obvious correlations between maintenance and reduced heating costs as well extended equipment life can be drawn.

Although an informed public is a good first step in addressing the problems related to maintenance and clearance to combustible issues, the other recommendations will have longer-term and more comprehensive effects on safety and efficiency of oil-burning equipment installations.

C. Inform oil suppliers, heating contractors/technicians about the survey results

The intention of this second recommendation is to encourage discussion, debate, and corrective action by the oil heating industry. The vast majority of companies and workers involved with oil-burning equipment installations want to improve the safety and efficiency of the installations. They are aware that it is in their self-interest to effectively respond to all the problems identified in the surveys.

An information seminar about the survey results should be offered to interested oil suppliers, heating contractors and front-line technicians. An open forum presentation should encourage discussion and debate to ensure that these industry partners understand and take ownership for their respective roles in improving safety and efficiency at new and existing installations.

Two seminars are recommended with one occurring before the advertisement delivered to the public and one after the advertisement. The first would ensure that the concerns of the oil heat industry are included in the advertisement campaign; it would also ensure that they feel included and are ready to respond to public concerns about the problems identified in the surveys. The second seminar would allow those industry partners who were either not able or willing to attend the first seminar to participate after the public discussion is engaged by the advertising campaign.

Although an informed and engaged oil heat industry is crucial for the improvement of safety and efficiency at oil-burning equipment installations, the remaining three recommendations would help ensure that the entire oil heat industry becomes involved in the improvements to safety and efficiency.

D. Amend the B139-04 Code to address tank requirement deficiencies

One of the major impediments to improving the safety oil supply tank installations is the lack of code requirements in the current B139-04 *Installation Code for Oil-burning Equipment*. This is the first fuel oil code since 1957 that does not provide direction on how to install, maintain, or remove aboveground tanks with a capacity exceeding 5,000 L or any size of underground tank.

The lack of code requirements related to underground tank systems is especially troubling since recent surveys conducted across North America have indicated that a significant percentage of underground tank systems are leaking. The previous B139-00 Code recognized and responded to these environmental concerns by retroactively requiring the removal of any single-wall steel underground tank by 2009. Unfortunately, with the acceptance of the current code, these retroactive tank removal requirements were voided.

It is worth noting that Ontario has not accepted the B139-04 Code due in large part to its perceived deficiencies concerning larger aboveground tanks and all underground tanks. Instead, Ontario created its own Code which CSA publishes as the *B139ON-06 Ontario Installation Code for Oil Burning Equipment*.

The concept of customizing the B139 Code to meet local requirements is recommended for the Yukon. It would not only address the obvious deficiencies in code requirements for oil supply tanks but would also allow for the fine tuning of the requirements to make the entire code directly applicable to the unique needs in Yukon.

A Yukon Fuel Oil Code could provide focused direction on vent sizing and air supply sizing those factors in the cold temperatures experienced in the Yukon. Specific direction could be provided regarding seismic restraint methods.

By involving industry stakeholders (oil suppliers, contractors, technicians and consumers) in the code amendment process, the customized Yukon fuel Oil Code would garner the approval and acceptance that a safety code requires to be effective.

The Ontario Code could be employed as a starting point to minimize the work and liability involved in customizing a safety code. The legislative changes recommended in the final recommendation could easily establish the framework for the customization and approval process.

E. Create a practical and effective method for training and licencing Oil Burner Mechanics in the Yukon

The significant percentage of unlicenced workers installing and servicing oil – burning equipment installations in the Yukon is considered a major cause of all eleven safety and efficiency issues identified in the surveys.

A licence constitutes standardized proof that a technician has achieved a minimum level of knowledge and skills considered necessary to work in the industry. Without the proof of a licence all the actions of a technician are suspect as sub-standard. The high percentage of code infractions found in the surveys confirms that a high percentage of installation and service work being conducted in the Yukon is sub-standard.

The Oil Burner Mechanic (OBM) trade is recognized and required in the Yukon by the Apprentice Training Act and Regulations. Enforcement of the licencing requirement is not commonly conducted and may indeed have an adverse short term affect on the safety and viability of the oil heat industry if the current requirements were strictly enforced given the low numbers of licenced technicians.

Contractors and technicians have indicated that there are significant impediments to becoming licenced. These impediments include:

i) The classroom portion of the licencing requirement must be carried out in New Brunswick at significant cost in terms of time and money.

ii) The supervision requirements for apprenticeship are not achievable for small-scale contractors

A two-pronged response to the training and licencing problem is recommended. A training course that meets the requirements of the Yukon Apprentice Training Act and Regulations should be created and delivered in the Yukon. Secondly, an alternate means of achieving the intent of the apprenticeship training should be developed for small-scale contractors and individuals who cannot meet the supervision requirements for apprenticeship.

The alternate means of achieving an OBM licence could include a more intense, more “hands-on” training course and/or testing system. This method has successfully served Ontario’s certification needs for many years. Training program material is available and could be customized to meet Yukon’s OBM licencing needs.

Licencing alone cannot fully resolve the safety and efficiency issues raised by the surveys. Without incentives or consequences for contractors and technicians to justify meeting the licencing requirement, there is a competitive disadvantage to meeting the requirements since competing contractors or technicians do not spend the time or money to become licenced. The final recommendation addresses this concern.

F. Create an Oil Burning Devices Act, Regulations, and enforcement agency

The survey results show that the self-regulation model employed to date in the Yukon has failed to meet the minimum safety and efficiency standards established in the fuel oil code and manufacturer's instructions.

Currently, inspections of oil-burning equipment installations by government authorities are only required for new construction sites. Inspections of retrofit installations may be conducted at the request of the owner or installing contractor but are not mandatory. These inspections are conducted by Building Inspectors who are not required to be licenced or trained as Oil Burner Mechanics.

Currently, there is no procedure in place for identifying and resolving problems at existing installations. Oil suppliers, contractors, and technicians are not empowered or required to resolve problems that they find. Although civil litigation is a motivating force, there is, in fact, a competitive disadvantage for businesses to refuse to supply or work on non-compliant installations since competitors can gain market share without any consequences.

Without legislated inspection requirements and consequences, work conducted on oil-fired equipment installations will continue to be sub-standard since the market incentive to "cut-corners" to reduce prices inevitably forces even knowledgeable and responsible suppliers, contractors, and technicians to reduce their standards to the lowest common denominator set by those willing to put public safety at risk for short-term personal gain.

As previously discussed (page 8), the propane industry in the Yukon, which is subject to the Gas Burning Devices Act and Gas Regulations, as well as the fuel oil industry in Ontario, which is subject to the Technical Standards and Safety Act and Fuel Oil Regulation (see Appendix C), are two models of regulated fuel industries that work to the benefit of all parties. It is worth noting that NRG Resources investigated how all jurisdictions in Canada deal with oil-burning equipment installations and concluded that no other models are available for comparison.

It is recommended that the regulatory review process that creates an Oil Burning Devices Act and Oil Regulations draws the best features from both of the recommended models to create a system that addresses the following points.

- Designate an *authority having jurisdiction* over oil-burning equipment installations
- Provide the administrative structure, powers, and check and balance system for the designated authority to work effectively and efficiently. This provision should include:
    - the appointment process for a director and inspector(s)
    - powers given to the director to accept and amend National Codes and Standards
    - powers given to the inspector to effectively carry out his/her duties

    - powers given to the director and/or inspector to refuse or revoke the licence of an oil supplier, contractor or technician for significant failures to comply with minimum safety standards
    - an appeal procedure for challenging the orders or actions of a director or inspector - first by means of an internal procedure with ultimate authority given to the court system.

- Require that appliances and components employed at oil-burning equipment installations are approved to standards recognized by the Canadian General Standards Council
- Require that any installation, service, repair, or removal of oil-burning equipment be conducted by licenced Oil Burner Mechanics
- Require oil suppliers to be licenced to deliver oil and require heating contractors to be registered to conduct the business of installing, servicing, and removing oil-burning equipment. Like the technician licencing requirement, this licencing of oil suppliers and registration of contractors can be employed to track and control compliance with the duties and responsibilities established for these key groups.
- Require owners to maintain their oil-burning equipment and to comply with safety orders issued by inspectors, oil suppliers, contractors, or technicians.
- Establish a permit and inspection requirement and process for new and retrofit appliance or tank installations.
- Require the reporting of fuel-oil related fires, explosions, leaks, spills, or carbon monoxide poisoning to the designated authority and establish an investigation procedure that will effectively address any problems identified by the investigation.
- Either require the reporting of unsafe conditions and non-compliant installations (that can not be immediately corrected) to the designated authority so they can ensure the problems are corrected **OR** empower and require oil suppliers, contractors, and technicians to act decisively when hazardous conditions are identified and to issue work orders to correct deficiencies. The first option is the method employed to correct deficiencies under the Gas Burning Devices Act and Regulations while the second option is employed in the Ontario regulatory system. A combination of the two methods may be the most effective.
- Require oil suppliers to only supply oil to installations for which they have reliable evidence indicating that the installation meets the minimum safety standards established in the fuel oil code and manufacturer's instructions
- Set the maximum penalties that can be issued by the authority having jurisdiction and or the court system for failure to comply with the rules governing the oil heat industry.

The creation of an Oil Burning Devices Act, Fuel Oil Regulation, and enforcement agency is the most important and effective step toward the improvement of safety and efficiency at oil-burning equipment installations in the Yukon.

Conclusion

The inspection of 124 sites with oil-burning equipment in Yukon provided statistically significant evidence that a large percentage of oil-burning equipment installations in the Yukon are not properly installed or maintained in accordance with the minimum safety standards established in the *B139 Installation Code for Oil-burning Equipment*.

The problems identified in the two surveys can be categorized into eleven issues or areas of concern as follows:

1. Lack of maintenance.
2. Lack of trained and qualified as licenced Oil Burner Mechanics.
3. Improperly installed or maintained appliances and their venting systems.
4. Improper combustion set-up.
5. Oversized, improperly installed, poorly maintained vent systems.
6. Clearance to combustible requirements.
7. Combustion air supply requirements are not met or maintained.
8. Aboveground tanks not installed or maintained to prevent corrosion.
9. Lack of monitoring of underground tanks for leakage and corrosion.
10. Aboveground tanks not properly supported or secured.
11. Appliances and tanks not approved to recognized standards.

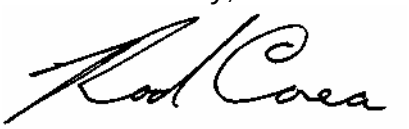
To address these 11 issues and improve safety and efficiency of oil-burning equipment installations in the Yukon, six recommendations are offered for consideration.

A. Survey oil-burning equipment installations located outside Whitehorse.
B. Inform owners about maintenance issues.
C. Inform oil suppliers, heating contractors/technicians about the survey results
D. Amend the B139-04 Code to address tank requirement deficiencies
E. Create a practical and effective method for training and licencing Oil Burner Mechanics in the Yukon
F. Create an Oil Burning Devices Act, Regulations, and enforcement agency

Implementation of the six recommendations will significantly improve the safety and efficiency of oil-burning equipment installations across the Yukon.

I trust that this report meets with your approval. Please do not hesitate to contact me to discuss any of the issues raised in this report.

Yours Sincerely,



Rod Corea
NRG Resources Inc.

NOTES:

Appendix A

Fuel Oil Heating Installation Inspection Report #1

March 2007

Fuel Oil Heating Installation Inspection Report

Prepared for the:

Yukon Government:

Yukon Housing Corporation, and
The Energy Solutions Centre

Prepared by:

Rod Corea
NRG Resources Inc.
95 Napier St. West
Thornbury, ON N0H 2P0
519-599-3923
rodcorea@nrgresources.ca

Contents

Executive Summary

NRG Resources Inc. conducted 55 inspections of oil-burning appliances and supply tanks in Whitehorse between January 20 and February 3, 2007 as part of a survey for the Yukon Government, Yukon Housing Corporation, and Energy Solutions Centre. The survey was conducted to determine the level of compliance with the B139 *Installation Code for Oil-Burning Equipment* and to identify safety and efficiency issues and their possible solutions.

The inspection survey identified 319 infractions of the B139 Code of which 174 were considered to be significant concerns that either posed an imminent hazard (6 cases) or could reasonably be expected to develop into a problem in the future. The average number of code infractions per site was 5.8 and the average number of significant infractions was 3.2/site.

The major safety and efficiency issues identified by the survey and listed in order of importance are:

1. Lack of maintenance.
2. No indication that the installers or service technicians are trained and qualified as licenced Oil Burner Mechanics.
3. Spillage of flue gases indoors due to improperly installed or improperly maintained positive venting systems.
4. 45% of appliances were improperly set-up for safe, efficient combustion.
5. Oversized and improperly installed vents.
6. Clearance to combustible material is not maintained.
7. Aboveground tanks not installed properly to prevent internal corrosion or damage to outlet piping.
8. Aboveground tanks not secured to prevent toppling or damage due to a seismic event.
9. Lack of monitoring of underground tanks for leakage and corrosion
10. Appliances and tanks without rating plates indicating that they have not been tested and approved to recognized standards.

The report recommends the following solutions to the identified safety and efficiency concerns:

- An advertising campaign should be conducted to advise owners about the legal and practical need for annual maintenance of oil-burning equipment.
- An Oil Burning Devices Act, Regulations, and enforcement agency should be developed and implemented to encourage the oil heating industry to comply with the B139 Code.
- A practical and effective method for training and certifying Oil Burner Mechanics in the Yukon should be developed and implemented.

Survey Procedure

The inspection sites were selected by Energy Solutions Centre and Yukon Housing Corporation from a list of home owners who responded to an advertisement concerning the inspection program. The selection criterion was primarily a "first call – first chosen" basis although some consideration was given to selecting a wide variety of ages and types of installations.

All 55 inspections were conducted by Rod Corea from NRG Resources Inc although various employees from Yukon Housing or the Yukon Government assisted Rod Corea during these inspections. The inspections were conducted between January 20 and February 3, 2007.

The inspection forms developed by NRG Resources and approved by Yukon Housing and Energy Solutions Centre were employed to record the inspection results. Blank copies of these forms are found in Appendix A and the completed forms for each site are found in Appendix B.

Only a visual inspection of the oil-burning appliances, supply tanks, and supply lines was conducted at each site. No adjustments or changes to the equipment were made during the inspection. Combustion analyses were conducted on 60 of the 63 appliances inspected. Two of the appliances not tested would have required significant changes to the appliances to conduct the tests.

The owner or occupant was in the house at the time of the inspection. A summary of the inspection findings was provided verbally to the owner/ occupant at the time of the inspection along with a copy of the combustion test print-out. Any safety or efficiency concerns were discussed with the owner/occupant. Where corrective action was warranted, the owner/occupant was advised to have a qualified heating contractor of their choice conduct the work.

Inspection Criteria

The inspection criteria regarding code compliance was the <u>B139 Code in effect at the time of the installation</u>. This criteria required reference to four editions of the B139 Installation Code for Oil Burning Equipment, namely: B139-1976 (in effect from 1976 to 1991); B139-M91 (in effect from 1991 to 2000); B139-00 (in effect from 2000 to 2006); and the current B139-04 in effect in the Yukon since April 2006). Installations dating from before 1976 have all been upgraded in some way and therefore were judged by the Code in effect at the approximate time of the upgrade.

Four exceptions were made to the above inspection criteria regarding reference to the Code in effect at the time of the installation. In all three cases (listed below) the current Code requirements were employed to identify the infraction since the condition poses a potential hazard that should be corrected even though it technically is in compliance with the Code at the time of installation. The four exceptions were:

1. The slope of the tank <u>toward</u> the outlet.
    - Although this requirement only appears in the B139-04 edition, it has been required by manufacturer's instruction in compliance with the S602 tank Standard since the early 1990's. Significant corrosion can occur inside the tank due to the collection of water and sludge when the tank is sloped <u>away</u> from the outlet.
2. The height of a tank fill pipe shall be at least one meter (3') above grade.
    - Again, this requirement only appears in the B139-04 edition. However, the corrosion problems posed by snow or water entering a tank warrant the identification of this poor installation practice as a code infraction.
3. Piping, valves, or filters shall not extend below the tank foundation.
    - Although this requirement only appears in the B139-04 edition, it has been required by manufacturer's instruction since the early 1990's. Since piping, valves, or filters that extend below the tank foundation could snap off as the tank settles, it is reasonable and responsible to identify this problem as a code infraction.
4. Piping and tubing shall not be buried in cement unless installed in a duct.
    - This requirement was explicitly made in the B139-00 edition but previous code requirements to protect oil lines from corrosion could be interpreted as prohibiting this practice. The potential for corrosion and leakage warrants the identification of this poor installation practice as a code infraction.

Combustion Efficiency Criteria

The criteria for judging whether the combustion efficiency of an appliance was "acceptable" was the guideline established in Canada's Energy Efficiency Act and Regulations which requires oil-fired furnaces with an input of ≤ 225,000 Btuh to have an efficiency of 78% or greater.

The combustion setup requirements established by the B139 Code and the appliance manufacturer's certified instructions were also factored into the assessment as to whether the efficiency of an appliance was "acceptable". Inefficient appliances (i.e. <78%) were not considered to be an infraction of the B139 Code unless they were in non-compliance with the combustion setup requirements of the B139 Code or the manufacturer's certified instructions.

Code Infraction Reporting Criteria

The criteria for identifying the code infractions found during the survey can be characterized as reasonable and practical. Not all code infractions found during the inspections are identified. Only those code infractions that could reasonably be considered as safety or efficiency issues are identified on the individual inspection reports found in Appendix C and summarized on the table found in Appendix B.

Minor code infractions that could not affect the safety or efficiency of the installation are not identified in this report. For example, the B139-1996 Code and the B139-M91 Code both required that a tank vent pipe terminate at least seven feet above grade. The B139-00 and B139-04 editions of the Code only require the vent pipe to terminate 150mm (6") above the fill pipe.

The recent code requirements were employed to identify infractions related to vent pipe termination since the technical or legal requirement to comply with the code in effect at the time of installation would "clutter" the report with inconsequential infractions that might obscure the important safety and efficiency issues identified in the survey.

In regards to underground storage tank (UST) requirements, the 2004 edition of the B139 Code is the first fuel oil code that has no requirements regarding the installation, maintenance, or removal of underground tanks. Currently, USTs must only comply with the National Fire Code of Canada and the CCME Environmental Code. The same is true for aboveground tanks with a capacity greater than 2500L.

For the purpose of this report, the requirements for underground tank installations from previous editions of the B139 Code were employed since all 13 of the UST inspected during this survey pre-date the current B139 Code.

Code Infraction Reporting Criteria (continued)

The Code infractions summarized on the table found in Appendix B are separated into two categories as follows:

1. Significant Code Infractions: These are code infractions that were considered to be safety concerns that either posed an imminent hazard or could reasonably be expected to develop into a problem in the future.
2. Minor Code Infractions: These are code infractions that were considered to be worth identifying since they should have been corrected during installation or maintenance of the appliances. However, they should not pose a problem under "normal" conditions.

Types of Sites and Equipment Inspected

All but two of the 55 sites inspected were single family dwellings. One site was a multi-residential building (8159 8th Avenue.) and one site was a Day-Care Centre (484 Range Road).

The ages of the buildings ranged from the 1967 to early 2005. All sites were in Whitehorse.

The types and age range of equipment inspected are listed below:

Appliance Type	Total	1960 to 1979	1980 to 1989	1990 to 1999	2000 to 2005	2006
Forced air furnace	44	17	1	13	10	3
Boiler	7	3		1	2	1
Combo Water heater/Space heater	2				2	
Water heater	3			3		
Space heater	7			2	5	
Aboveground Indoor tank	10	7	1	1		1
Aboveground Outdoor tank	34	2	3	6	22	1
Underground tank	13	5	2	5	1	
Total Appliances	63	20	1	19	19	4
Total Tanks	57	14	6	12	23	2

General Overview of Inspection Results

The inspection of 55 sites in Whitehorse with oil-burning equipment found a large number of code infractions and efficiency concerns as listed in the table in Appendix B and summarized below.

- None of the 55 sites completely complied with the B139 Installation Code for Oil-Burning Equipment.
- Code infractions related to the oil tank and supply lines were found at all but one of the sites.
- Code infractions related to the appliances and venting systems were found at all but two of the sites.
- A total of 319 contraventions of the B139 Code were found at the 55 sites. This constitutes an average of 5.8 code infractions per site.
- 157 or 49.2% of the total number of code infractions were related to the tank and supply lines. As such, the average number of code infractions per site related to the tank and supply lines was 2.9. A focused discussion of these code infractions is provided in the next section of this report (page 7).
- 162 or 50.8% of the total number of code infractions were related to the appliances and venting systems. This represents an average of 3 code infractions per site related to the appliance and venting system. More information regarding these code infractions is provided on pages 9 to 12 of this report.
- 6 of the 55 sites (11%) had at least one serious code infractions related to the appliance and venting system. A "serious" code infraction is one that was considered as posing a hazard to life or property if not addressed. In all cases, the owners or occupants were advised about these problems. More information regarding these code infractions is provided on pages 9 and 10 of this report.
- 53 of the 55 sites (96%) had at least one significant code infraction. A total of 174 significant code infractions were identified. A "significant" code infraction is defined on page 4 of this report.
- 27 of the 60 appliances (45%) tested for proper combustion were found to be inefficient and/or in non-compliance with the code requirements related to combustion set up.
- 33 of the 55 sites (60%) were not being maintained annually as required by Section 14 of the B139 Code.
- Proof that the technician who recently installed or serviced the installation was a licenced Oil Burner Mechanic was found at only one of the sites.

Discussion of the Tank Inspection Results

As noted above, the inspection of 55 sites with 57 oil supply tanks identified 157 code infractions related to the oil tanks and supply lines. This represents an average of 2.9 code infractions per site related to the oil supply systems. All but one of the 55 sites inspected (i.e. 98%) had at least one code infraction related to the tanks and supply lines.

73 (46%) of these 157 code infractions were considered to be "significant" in that they could reasonably be expected to develop into a problem in the future.

The following is a complete list of the types of infractions related to the oil tanks and supply lines as identified on the summary table in Appendix B and the individual inspection forms in Appendix C. Infractions are listed in order of importance with those considered "significant" identified in bold print.

Type of infraction	Number of sites with this infraction	Code Reference	Comments
Signs of oil leakage	3	**14.2.2**	**One case of dripping oil on outside tank and two cases of weepage through tank.**
Indications of water in UST	1		**Recent service found water in filter but did not investigate possible tank problem**
Oil lines cemented in or under floor	8	**8.3.5**	**See Note #4 on page 3**
Tank not sloped toward outlet.	25	**6.3.9.2 (c)**	See Note #1 on page 3
Piping at tank is improper.	10	**6.3.9.2**	See Note #3 on page 3
Single wall underground lines used after 2000	3	**8.3.2.1.2**	**2000 edition of B139 required the use of double-walled underground piping. These new installations did not comply.**
Tank not protected from corrosion or physical damage	3	**6.5.4 (a)**	**Two cases of significantly rusted outside ASTs and one case of tank in risk of damage from ice on eaves.**
Oil lines not protected from physical damage	2	**8.3.1.5**	**One case of tubing being subject to door hitting it. Other case of unsupported tubing under strain.**
Filter location improper.	6	**3.10.2**	**Code requires filters to be indoors wherever feasible. Five of these cases did not comply with this requirement.** **Sixth case had in accessible filter.**
Tank supported on combustible material	2	**6.3.8**	**Both cases used wooden blocks for no good reason.**

Discussion of the Tank Inspection Results (continued)

Type of infraction	Number of sites with this infraction	Code Reference	Comments
UST is not buried deep enough	1	Previous Codes	Exposed UST may rust easier and may float out of ground.
Indications of an abandoned UST	2	Previous Codes	Vent pipes from UST found close to newer AST. Previous Codes reasonably required removal of abandoned USTs.
Tank vent pipe not properly capped	1	6.9.1.6	Tin cup placed over vent pipe on UST one foot above grade
Tank vent does not terminate above fill	2	6.9.1.6	Code requires vent to terminate at least 6" above fill
No seismic restraint on aboveground tank	44	6.3.11	3 of these sites are considered significant infractions since the tanks were elevated
Tank vent or fill pipe terminates within 2' of opening	8	6.8.6 (b) 6.9.1.7 (d)	This is a nuisance problem since oil odours may enter building during fill operations.
No Rating Plate on Tank	15	6.2.1.1	10 of these cases were on pre-1980 tanks. Lack of approval may indicate that tanks were not built to a Standard.
Fill and/or vent pipe too close to ground	11	6.8.6 (c) 6.9.1.7(b)	See Note #2 on page 3
Tank vent pipe is too far away from fill pipe	1	6.9.1.7 (e)	Delivery driver may not hear vent whistle and overfill tank.
Underground lines under foundation	2	8.3.2.1.9	Stress may be placed on oil lines by house settling.
Outlets on top of tank not plugged properly	2	6.2.1.4	Shipping plugs not replaced on two tanks as required.
No level gauge in tank	2	6.10.2	Gauge allows for troubleshooting
Tank within 5' of property line	3	6.5.4 (b)	In all three cases the tanks were between 3 to 5 feet of the property line
Tank within 5' of exit doorway	1	6.3.12	Tank does not impede egress from building.
Compression fittings on oil lines	1	8.3.4 (d)	The 2000 edition of the Code prohibited the use of compression fittings. This case used compression fittings after 2000.
Copper tubing used for vent/fill lines	2	6.8.1 6.9.1.1	Although permitted at the time of installation, these installations may pose a problem due to strain or fire.
Tank within 20' of two propane tanks	1	Clause 7.1.8 of the B149.2-05 Propane Storage and Handling Code. This is a fire-fighting safety concern.	

Discussion of Appliance Inspection Results

As noted on page 6, the inspection of 55 sites with 63 appliances identified 162 code infractions related to the appliances and venting systems. This represents an average of 3 code infractions per site related to the appliances and venting systems. All but two of the 55 sites inspected (i.e. 96%) had at least one code infraction related to the appliances and their venting systems.

101 (58%) of these 162 code infractions were considered to be "significant" in that they either posed an imminent hazard (6 cases) or could reasonably be expected to develop into a problem in the future.

The following is a complete list of the types of infractions related to the appliances and venting systems as identified on the summary table in Appendix B and the individual inspection forms in Appendix C. Infractions are listed in order of importance with those considered "significant" identified in bold print. The 6 cases that were considered as imminent hazards are highlighted in the first four rows of this table.

Type of infraction	Number of sites	Code Reference	Comments
Flue gases leaking indoors	2	4.2.1 4.2.5.3	Two sidewall vent connectors found leaking flue gases at improper joints (10 Hayes Place and 22-11th Ave.). Both of these cases were considered imminent hazards since CO2, CO, and heat were escaping. The vent connections were improperly installed by two local heating contractors in 1995 and 2004. Both situations have been corrected.
Combustion tests results do not meet requirements of the Code and/or manufacturer	23	5.1 5.2.2 5.2.3 5.2.5	Numerous problems including - Soot plugged heat exchanger - High CO or smoke readings - Insufficient or excessive draft readings 23 out of 60 appliances tested constitute a 38% non-compliance rate. Two of these cases (130 Alsek Rd. and 604 Alexander St.) were considered imminent hazards. In one case, the furnace was plugged with soot and spilling soot from every joint and opening. In the other case, high levels of carbon monoxide (CO) were found in the flue gases of an older boiler. The vent was oversized and spilling at start-up. In both cases, the owners agreed to not use the appliance until it was fully cleaned & setup by a qualified technician.

Discussion of Appliance Inspection Results (continued)

Type of infraction	Number of sites	Code Reference	Comments
Appliance not installed as per manufacturer's instructions	1	3.1.1	**This was a 2006 installation by the building owner (8159 8th Ave.). The boiler was not completely installed before being put into steady use. This case is considered as an imminent hazard since the vent and burner were improperly installed.** **The owner committed to correcting the deficiencies.**
Common venting with unapproved wood appliance	2	4.1.4	**One of these two cases (7 Pelly Rd.) was considered as an imminent hazard that was corrected before it was allowed to develop.** **The owners were about to install a wood stove and common vent it with an oil–fired furnace within the next week. This work was reported being conducted by a local heating contractor with the approval of the City of Whitehorse.** **The wood stove was not approved for common venting with an oil appliance. It was also found that the oil furnace installed in 2003 was not connected to a properly constructed or sized chimney.** **The other case was considered significant but not an imminent hazard since the owner had not used the wood stove for 3 years. The owner was advised that the common venting of the stove was illegal and the chimney should be lined.**
Sidewall vent installation does not meet require-ments of the Code &/or manufacturer	8	4.3	Numerous problems including - Vent termination too close to ground - Vent termination too close to opening - Improper joint sealant used - Parts of vent kit not installed - Damaged vent termination Only one of these 8 infractions was considered minor.
Appliance too close to combustibles	6	7.1.1	All 6 of these infractions were considered significant. Three of the cases involved storage of material too close to the appliance.
Vent and/or vent connector too close to combustibles	8	4.2.5.5 (f)	All 8 of these infractions were considered significant. Four of the cases involved storage of material too close to the vent pipes.

Discussion of Appliance Inspection Results (continued)

Type of infraction	Number of sites	Code Reference	Comments
Installation of vent liner in chimney or factory vent does not meet Code &/ or manufacturer's requirements	4	4.2.2.5.1 4.2.2.9	Infractions included: - No base-tee on liner (installed 2006) - No base-tee on L-Vent (installed 2004) - No chimney cap (old installation) All 4 of these infractions were considered significant.
Vent connector improperly installed	9	4.2.5	Infractions included: - Vent sections not securely joined - Insufficient slope toward vent - Too many elbows - Reduction in size at wrong location - Improper vent material employed 7 of these infractions were considered significant.
Vent and/or vent connector too large	22	4.2.2.4	11 of these 22 infractions were considered significant. 6 of these installations were completed after 2000. Only 43 of the appliances required vents to be sized. As such 22 infractions constitutes a 52% non-compliance rate.
Barometric damper improperly installed	6	4.2.7.1 4.2.7.3	Infractions included: - No damper installed when required - Damper opening smaller than damper - Damper smaller than vent pipe - Damper in wrong location - Improper vent material employed 3 of these infractions were significant.
Return air opening too close to furnace	3	14.3.2	All 3 of these infractions were considered significant. This condition may starve the burner of air or cause flue gas spillage.
Electrical wiring does not meet Code requirements	6	3.7	Infractions included: - Emergency disconnect switch in wrong location or missing - Appliance wiring not secured - Appliance wiring modified All 6 of these infractions were considered significant.
Pressure relief on boiler improperly installed	1	3.1.3	The relief valve was not piped to within 1 foot of the floor as required by the Code. This was the previously discussed installation that was left uncompleted by the owner/installer.

Discussion of Appliance Inspection Results (continued)

Type of infraction	Number of sites	Code Reference	Comments
Appliances not maintained annually	33	14.2.1	Annual maintenance was not conducted on 33 of the 53 sites that required annual maintenance (2 of the 55 sites had appliances that were recently installed). This represents a 62% non-compliance rate. 8 of these infractions were considered significant since the appliances had either never been maintained or showed obvious signs of problems due to lack of maintenance.
No air supply or improperly sized air supply to appliances	24	4.4.2.1	11 of these 24 infractions were considered significant since they were in confined spaces or in newer, more tightly constructed houses.
Combustion chamber damaged	2	14.2.9	Both of these cases were older appliances that were suffering deterioration due to age and lack of maintenance.
Appliance modified from original design.	9	3.1.1	Eight of these cases involved upgrades to older burners and controls. Although Codes prior to 1991 allowed this activity under strict guidelines, it is worth highlighting as a minor infraction since it affects the approval of an appliance as discussed in the next row. The ninth case was the only one of the nine that was considered a significant infraction. This 2005 installation in a mobile home had a hole in the furnace casing for ventilation air from outdoors. This modification could damage the heat exchanger and may void the appliance warranty.
No rating plate on appliance	1	3.1.1	This 1971 vintage furnace had no signs of a rating plate having ever been installed. The lack of a rating plate calls into question whether the appliance was tested and approved to a recognized safety standard. There were numerous other infractions at this site (13 Redwood) and this one was considered minor in comparison.

Conclusions and Comparisons

The inspection survey of 55 sites in Whitehorse in January 2007 identified 319 infractions of the B139 Code of which 174 were considered to be significant concerns that either posed an imminent hazard (6 cases) or could reasonably be expected to develop into a problem in the future. The average number of code infractions per site was 5.8 and the average number of significant infractions was 3.2 per site.

Based on the writer's experience (see Appendix D for details), the number and nature of the infractions indicate that a significant portion of oil heat users are not aware of the legal and practical need for annual maintenance of oil-burning equipment and that the oil heating industry is not responding responsibly to self-regulation as required in the Yukon. Although there are good installations, technicians, and contractors, a large number of oil heating installations are in non-compliance with minimum safety and efficiency standards.

Based on discussions held with home owners, oil burner technicians, and heating contractors while conducting the inspections and during various courses in the Yukon, there is a general lack of knowledge of code requirements and practical issues related to the safety and efficiency of oil burning equipment.

Those discussions have also indicated that the lack of incentive, consequences, and/or opportunity to become licenced as Oil Burner Mechanics are important factors in regards to this general lack of knowledge. The lack of consequences for not complying with the code requirements has been identified by a number of technicians, contractors, and users as a major cause of the problems found at new and old installations.

The major safety and efficiency issues identified by the survey and listed in order of importance are:

1. **Lack of maintenance.** 33 of the 53 surveyed sites (i.e. 62%) that required annual maintenance were in non-compliance with the B139 Section 14 requirements regarding annual maintenance. Very few of all the appliances inspected had been cleaned on a regular basis. In many cases, the appliances had never been cleaned or properly maintained. Lack of maintenance is universally recognized as the primary cause of fires, leaks, and other incidences for all fuel-fired appliances.

2. **No indication that the installers or service technicians are trained and qualified as licenced Oil Burner Mechanics.** Only one of the 55 sites inspected had the licence number of a technician on any service sticker. This trend has also been evident in the five oil-related courses delivered by NRG Resources in the Yukon over the past two years. Of the 100+ active technicians who have attended these courses, less than 10 have met the minimum trade qualifications required to work on oil installations in the Yukon.

3. **Spillage of flue gases indoors due to improperly installed or improperly maintained positive venting systems.** 6 of the 7 positive vented appliances inspected had venting infractions – 4 of them significant of which 2 were considered hazardous. Positive vented appliances require special venting material and are especially prone to failure if not strictly installed in accordance with the manufacturer's certified instructions and the B139 Code. There was a high level of improperly installed and maintained positive venting systems among the surveyed appliances. Spillage of carbon dioxide and carbon monoxide can cause severe health problems; heat spillage can cause fires.

4. **47% of the appliances were improperly set up for safe, efficient combustion.** 28 of the 60 combustion tests conducted during the survey were operating inefficiently (i.e. <78% efficiency) and/or were not in compliance with the safety requirements for combustion established in the manufacturer's certified instructions and the B139 Code. Five of the 28 were operating efficiently but not in compliance with the Code; 7 of the 28 were not operating efficiently but were in compliance with the Code; and 16 of the 28 were neither efficient nor in compliance with the Code.

5. **Oversized and improperly installed vents.** 43 appliances surveyed had conventional vent systems that required the technician to properly size and install the vent systems without special instruction or components from the manufacturer. 17 of these 43 appliances (i.e. 39%) had vents larger than allowed by the B139 Code. 23 of these 43 appliances (i.e. 53%) had improperly installed vents and/or vent connectors. Oversized and improperly installed vent systems may cause venting problems resulting in flue gas spillage and damage to the appliances. These problems are especially prevalent in cold climates. The most probable reason for oversized and improperly installed vent systems is the lack of trained technicians conducting installations.

6. **Clearance to combustible material is not maintained.** 14 of the 55 sites inspected (25%) had significant infractions related to clearance between combustible materials and the appliance or vent. Half of these problems were related to installation infractions and the other half were caused by the owners storing material too close to the appliance or vent. In both cases, lack of knowledge is the most probably cause of this potentially dangerous infraction of the B139 Code requirements.

7. **Aboveground tanks not installed properly to prevent internal corrosion or damage to outlet piping.** Two related problems are covered by this item: 1/ 25 of the 44 aboveground tanks surveyed (57%) were not sloped toward the outlet as required by the current B139 Code; 2/ 10 of the 44 aboveground tanks surveyed (23%) had piping configurations at the tank outlet that may cause damage to the tank piping. In both cases, the infractions were considered significant since an improper slope has been proven to cause internal corrosion resulting in leakage and the second problem may result in the outlet piping at the tank breaking resulting in leakage. Lack of knowledge among tank installers is considered the most probable cause of these two related problems.

8. **Aboveground tanks not secured to prevent toppling or damage due to a seismic event even though Whitehorse is listed as an earthquake zone.** None of the 44 of the aboveground tanks surveyed were secured as required by the B139 Code and manufacturer's instructions. This infraction was not considered significant in this survey since there the writer was not aware of any reports of tanks toppling over during any of the numerous earthquakes in the Whitehorse area. A preventative program to address this concern should be considered.

9. **Lack of monitoring of underground tanks for leakage and corrosion.** None of the 13 underground storage tanks (UST) surveyed were regularly monitored for water accumulation or for cathodic protection. As discussed on page 4 of this report, the current edition of the B139 Code does not provide any requirements related to UST installation, maintenance, or removal. This is a significant problem since 13 of the 55 sites surveyed (24%) had USTs that would benefit from requirements given in previous Codes.

10. **Appliances and tanks without rating plates indicating that they have not been tested and approved to recognized standards.** 15 of the 44 aboveground tanks surveyed (i.e. 34%) and one of the 63 appliances surveyed did not have a rating plate. The approval of equipment to recognized standards is a primary safety requirement that is being undermined by this high percentage of unapproved equipment found in the survey sample (especially in regards to tanks). Unapproved equipment should be treated as sub-standard and unsafe unless proven otherwise.

Given the writer's knowledge and experience of the Ontario oil heat industry, a comparison of the state of the oil installations in that province to the surveyed installations may be of some value. In general, the number and type of infractions found in the Yukon would have been similar to those in Ontario before 2001 except for the licencing of Oil Burner Technicians which has had a high percentage of compliance since its inception in the 1960s.

Regulatory and enforcement changes in 2001 require oil distributors, oil heating contractors, and Oil Burner Technicians to take action whenever unsafe conditions are found. Oil distributors are required to inspect the installations before supplying oil to a site and to maintain a record of the inspection which must be updated at least every ten years. Technicians are given the power to shut down hazardous equipment and order repairs. Compliance with these new duties and responsibilities is now strictly monitored and enforced by the Technical Standards and Safety Authority which is a private, not-for-profit organization created out of a government department in 1997.

In comparison with the current state of oil-burning equipment installations in Ontario, the surveyed sites have a high level of non-compliance. The non-compliance level in Ontario would be less than 10% compared to the 95%+ infraction rate found during this survey.

It is worth noting that Ontario has not accepted the B139-04 Code due in large part to its perceived deficiencies concerning larger aboveground tanks and all underground tanks. Instead, Ontario created its own Code which CSA publishes as the *B139ON-06 Ontario Installation Code for Oil Burning Equipment*. The concept of customizing the B139 Code to meet local requirements may be an example to follow.

Another equally worthwhile comparison can be made between the Yukon oil heating industry and the Yukon propane heating industry. The latter is tightly regulated by the Gas Burning Devices Act and Gas Regulations as well as being closely monitored by the Gas Inspections Unit of the Building Safety Branch of Consumer and Safety Services.

Although the writer's knowledge of the state of propane installations in the Yukon is limited, the number of licenced Gas Fitters attending any of the courses delivered by NRG Resources in the Yukon has consistently been greater than the number of licenced Oil Burner Mechanics. It is expected that this higher proportion of licenced technicians, together with the requirement for permits and inspections, would result in a higher level of compliance with code requirements at propane installations compared to oil installations in the Yukon.

Recommendations

The following recommendations to improve the general safety and efficiency of oil burning equipment installations in the Yukon are offered for your consideration.

A. An advertising campaign should be conducted to inform owners about the legal and practical need for annual maintenance of oil-burning equipment as well as the necessity of maintaining the proper clearances to combustibles around oil-burning equipment. If implemented, this recommendation would help resolve items #1, #4, #6, and #9 as discussed in the "Conclusion" section of this report.

B. An Oil Burning Devices Act, Regulations, and enforcement agency should be developed and implemented to encourage and ensure that the oil heating industry complies with the B139 Code as well as the Yukon Apprentice Training Act and Regulations regarding training and licencing requirements for Oil Burner Mechanics. If implemented, this recommendation would help resolve all 10 items discussed in the "Conclusion" section of this report.

C. A practical and effective method for training and licencing Oil Burner Mechanics in the Yukon should be developed and implemented. If implemented, this recommendation would help resolve items #2 as discussed in the "Conclusion" section of this report.

I trust that this report meets with your approval. Please do not hesitate to contact me to discuss any of the issues raised in this report.

NRG Resources Inc. is committed to assisting the Yukon in its goal to achieve safer, more efficient oil-burning equipment installations.

Yours Sincerely,

Rod Corea
NRG Resources Inc.
95 Napier St. W.
Thornbury, ON N0H 2P0
Ph: 519-599-3923
Fax: 519-599-6681
Email: rodcorea@nrgresources.ca

Appendix B

Fuel Oil Heating Installation Inspection Report #2

September 2007

Fuel Oil Heating Installation Inspection Report #2

Prepared for the:

Yukon Government:

Yukon Housing Corporation and
The Energy Solutions Centre

Prepared by:

Rod Corea
NRG Resources Inc.
95 Napier St. West
Thornbury, ON N0H 2P0
519-599-3923
rodcorea@nrgresources.ca

Contents

Executive Summary

NRG Resources Inc. reviewed and interpreted 69 inspections of oil-burning appliances and supply tanks employing the same criteria used in the first "Fuel Oil Inspection Report" dated March 30, 2007. The 69 inspections were conducted by Carmon Whynot from Yukon Housing using the forms and procedures developed by NRG Resources. This report provides additional evidence of the state of oil-burning appliance installations in the Yukon as well as providing a comparison with the first report.

The 69 inspections were conducted at residential sites in Whitehorse (with one except in Teslin) between February and May, 2007 as part of a survey for the Yukon Government, Yukon Housing Corporation, and Energy Solutions Centre. Like the first survey, this survey was conducted to determine the level of compliance with the B139 *Installation Code for Oil-Burning Equipment* and to identify safety and efficiency issues.

The inspection survey identified 366 infractions of the B139 Code of which 204 were considered to be significant concerns that either posed an imminent hazard (6 cases) or could reasonably be expected to develop into a problem in the future. The average number of code infractions per site was 5.3 and the average number of significant infractions was 3.0 per site.

The major safety and efficiency issues identified by the survey and listed in order of importance are:

1. Lack of maintenance.
2. In over 70% of the cases, the owners indicated that the installers or service technicians are <u>not</u> trained and qualified as licenced Oil Burner Mechanics. It is suspected that the percentage of non-compliance with licencing requirements is significantly higher.
3. Spillage of flue gases indoors due to improperly installed appliances and/or their venting systems.
4. 31% of appliances were improperly set-up for safe, efficient combustion.
5. Improperly sized, installed, or maintained vent systems.
6. Clearance to combustibles is not met during installation or not maintained.
7. Lack of air supply to appliances.
8. Aboveground tanks not installed or maintained properly to prevent internal and external corrosion.
9. Aboveground tanks not installed or secured to prevent toppling or damage - especially if a seismic event occurs.
10. Lack of monitoring of underground tanks for leakage and corrosion.

The findings from the 69 inspections are <u>very</u> similar to the results of the first survey of 55 sites as discussed in the final section of this report. Although the same three recommendations from the first report apply equally to this survey, a separate report will be issued in October 2007 with a more detailed discussion of ways to improve the general safety and efficiency of oil burning equipment installations in the Yukon.

Survey Procedure

The inspection sites were selected by Energy Solutions Centre and Yukon Housing Corporation from a list of home owners who responded to an advertisement concerning the inspection program. The selection criterion was primarily a "first call – first chosen" basis although some consideration was given to selecting a wide variety of ages and types of installations.

All 69 inspections were conducted by Carmon Whynot from Yukon Housing although various employees from Yukon Housing assisted Carmon during these inspections. The inspections were conducted between February and May, 2007. It is worth highlighting that Carmon did an excellent job of conducting and recording the inspections for this second survey.

The same inspection forms and procedures employed during the first survey were used in this second survey. The forms and procedures were developed by NRG Resources and approved by Yukon Housing and Energy Solutions Centre. Blank copies of these forms are found in Appendix A and the completed forms for each site are found in Appendix C.

Only a visual inspection of the oil-burning appliances, supply tanks, and supply lines was conducted at each site. No adjustments or changes to the equipment were made during the inspection. Combustion analyses were conducted on 61 of the 71 appliances inspected. Ten of the appliances were not tested since they would have required significant changes to the appliances to conduct the tests.

The owner or occupant was in the house at the time of the inspection. A summary of the inspection findings was provided to the owner/ occupant. Any safety or efficiency concerns were discussed with the owner/occupant. Where corrective action was warranted, the owner/occupant was advised to have a qualified heating contractor of their choice conduct the work.

Interpretation Criteria

The criteria employed to interpret the inspection results regarding code compliance was the <u>B139 Code in effect at the time of the installation</u>. This criteria required reference to four editions of the B139 Installation Code for Oil Burning Equipment, namely: B139-1976 (in effect from 1976 to 1991); B139-M91 (in effect from 1991 to 2000); B139-00 (in effect from 2000 to 2006); and the current B139-04 in effect in the Yukon since April 2006). Installations dating from before 1976 have all been upgraded in some way and therefore were judged by the Code in effect at the approximate time of the upgrade.

Four exceptions were made to the above inspection criteria regarding reference to the Code in effect at the time of the installation. In all four cases (listed below) the current Code requirements were employed to identify the infraction since the condition poses a potential hazard that should be corrected even though it is technically in compliance with the Code at the time of installation.

Interpretation Criteria (continued)

The four exceptions were:

1. The slope of the tank toward the outlet.
   - Although this requirement only appears in the B139-04 edition, it has been required by manufacturer's instruction in compliance with the S602 tank Standard since the early 1990's. Significant corrosion can occur inside the tank due to the collection of water and sludge when the tank is sloped away from the outlet.
2. The height of a tank fill pipe shall be at least one meter (3') above grade.
   - Again, this requirement only appears in the B139-04 edition. However, the corrosion problems posed by snow or water entering a tank warrant the identification of this poor installation practice as a code infraction.
3. Piping, valves, or filters shall not extend below the tank foundation.
   - Although this requirement only appears in the B139-04 edition, it has been required by manufacturer's instruction since the early 1990's. Since piping, valves, or filters that extend below the tank foundation could snap off as the tank settles, it is reasonable and responsible to identify this problem as a code infraction.
4. Piping and tubing shall not be buried in cement unless installed in a duct.
   - This requirement was explicitly made in the B139-00 edition but previous code requirements to protect oil lines from corrosion could be interpreted as prohibiting this practice. The potential for corrosion and leakage warrants the identification of this poor installation practice as a code infraction.

Combustion Efficiency Criteria

The criteria for judging whether the combustion efficiency of an appliance was "acceptable" was the guideline established in Canada's Energy Efficiency Act and Regulations which requires oil-fired furnaces with an input of ≤ 225,000 Btuh to have an efficiency of 78% or greater.

The combustion setup requirements established by the B139 Code and the appliance manufacturer's certified instructions were also factored into the assessment as to whether the efficiency of an appliance was "acceptable". Inefficient appliances (i.e. <78%) were not considered to be an infraction of the B139 Code unless they were in non-compliance with the combustion setup requirements of the B139 Code or the manufacturer's certified instructions.

Code Infraction Reporting Criteria

The criteria for identifying the code infractions found during the survey can be characterized as reasonable and practical. Not all code infractions found during the inspections are identified. Only those code infractions that could reasonably be considered as safety or efficiency issues are identified on the individual inspection reports found in Appendix C and summarized on the table found in Appendix B.

Minor code infractions that could not affect the safety or efficiency of the installation are not identified in this report. For example, the B139-1996 Code and the B139-M91 Code both required that a tank vent pipe terminate at least seven feet above grade. The B139-00 and B139-04 editions of the Code only require the vent pipe to terminate 150mm (6") above the fill pipe.

The recent code requirements were employed to identify infractions related to vent pipe termination since the technical or legal requirement to comply with the code in effect at the time of installation would "clutter" the report with inconsequential infractions that might obscure the important safety and efficiency issues identified in the survey.

In regards to underground storage tank (UST) requirements, the 2004 edition of the B139 Code is the first fuel oil code that has no requirements regarding the installation, maintenance, or removal of underground tanks. Currently, USTs must only comply with the National Fire Code of Canada and the CCME Environmental Code. The same is true for aboveground tanks with a capacity greater than 2500L.

For the purpose of this report, the requirements for underground tank installations from previous editions of the B139 Code were employed since all 7 of the UST inspected during this survey pre-date the current B139 Code.

The Code infractions summarized on the table found in Appendix B are separated into two categories as follows:

1. **Significant Code Infractions**: These are code infractions that were considered to be safety concerns that either posed an imminent hazard or could reasonably be expected to develop into a problem in the future.
2. **Minor Code Infractions**: These are code infractions that were considered to be worth identifying since they should have been corrected during installation or maintenance of the appliances. However, they should not pose a problem under "normal" conditions.

Types of Sites and Equipment Inspected

All 69 sites inspected were single family dwellings.

The ages of the installations ranged from the 1976 to early 2005. All but one site was in Whitehorse; one installation was in Teslin.

The types and age range of equipment inspected are listed below:

Appliance Type	Total	Unknown Date	1960 to 1979	1980 to 1989	1990 to 1999	2000 to 2005	2006 & 2007
Forced air furnace	51	11	6	6	15	10	3
Boiler	14	3	1	1	4	4	1
Combo Water heater/Space heater	1				1		
Water heater	1				1		
Space heater	4				2	1	1
Aboveground Indoor tank	14	5			6	3	
Aboveground Outdoor tank	48	10			11	21	6
Underground tank	7		1	1	5		
Total Appliances	71	14	7	7	23	15	5
Total Tanks	69	15	1	1	22	24	6

The range of types and ages of the various of equipment inspected are considered representative of residential installations in Whitehorse.

General Overview of Inspection Results

The inspection of 69 sites with oil-burning equipment found a large number of code infractions and efficiency concerns as listed in the table in Appendix B and summarized below.

- None of the 69 sites completely complied with the B139 Installation Code for Oil-Burning Equipment.
- Code infractions related to the oil tank and supply lines were found at all of the sites.
- Code infractions related to the appliances and venting systems were found at all but eight of the sites.
- A total of 366 contraventions of the B139 Code were found at the 69 sites. This constitutes an average of 5.3 code infractions per site.
- 195 or 53% of the total number of code infractions were related to the tank and supply lines. As such, the average number of code infractions per site related to the tank and supply lines was 2.8. A focused discussion of these code infractions is provided in the next section of this report (page 7).
- 171 or 47% of the total number of code infractions were related to the appliances and venting systems. This represents an average of 2.5 code infractions per site related to the appliance and venting system. More information regarding these code infractions is provided on pages 10 to 12 of this report.
- 6 of the 69 sites (9%) were considered “imminent hazards” (i.e. posed a hazard to life or property if not addressed). In all cases, the owners or occupants were advised about these problems. Detailed information regarding these six sites is provided on pages 13 and 16 of this report.
- 62 of the 69 sites (90%) had at least one significant code infraction. A total of 204 significant code infractions were identified. A “significant” code infraction is defined on page 4 of this report.
- 20 of the 61 appliances (33%) tested for proper combustion were found to be inefficient and/or in non-compliance with the code requirements related to combustion set up.
- 46 of the 69 sites (67%) were not being maintained annually as required by Section 14 of the B139 Code.
- An indication from the owner or other source trusted by the inspector that the technician who recently installed or serviced the installation was a licenced Oil Burner Mechanic was recorded at 20 of the sites. As such, at least 49 or 71% of the installation were not installed or maintained by a licenced Oil Burner Mechanic.

Discussion of the Tank Inspection Results

The inspection of 69 sites with 69 oil supply tanks identified 195 code infractions related to the oil tanks and supply lines. This represents an average of 2.8 code infractions per site related to the oil supply systems. All the sites inspected had at least one code infraction related to the tanks and supply lines.

89 (46%) of these 195 code infractions were considered to be "significant" in that they could reasonably be expected to develop into a problem in the future.

The following is a complete list of the types of infractions related to the oil tanks and supply lines as identified on the summary table in Appendix B and the individual inspection forms in Appendix C. Infractions are listed in order of importance with those considered "significant" identified in bold print. Two of the six "imminent hazard" involved tank and oil supply line problems. Although these infractions are included and highlighted in the following table, detailed information on these sites is also provided on pages 13 to 16.

Type of infraction	Number of sites with this infraction	Code Reference	Comments
Signs of oil leakage	**10**	14.2.2	7 oil leaks were found at the tank and its immediate piping. 2 were at the burner, and one at the filter. Although 7 cases were identified as minor leaks, all 10 cases were considered significant since leaks may cause fire and environmental hazards, odour problems, and tend to increase.
Oil lines cemented in or under floor	**2**	8.3.5	See Note #4 on page 3
Tank not sloped toward outlet.	**31**	6.3.9.2 (c)	See Note #1 on page 3
Piping at tank is improper.	**6**	6.3.9.2	See Note #3 on page 3
Tank not protected from corrosion or physical damage	**9**	6.5.4 (a)	2 of these infractions contributed to the imminent hazard rating at 31 9th Ave. and Box 153 lot 46 & 47 Teslin Cottage. 7 cases related to painting the tank. 8 of the 9 cases were considered significant.

Discussion of the Tank Inspection Results (continued)

Type of infraction	Number of sites with this infraction	Code Reference	Comments
Oil lines not protected from damage	**3**	8.3.1.5	All cases involved kinks in tubing and were considered significant.
Filter location improper.	**10**	3.10.2	Filters were located outdoors even though it was feasible in all cases to have them indoors. In 2 cases the filters were inaccessible. In one case there was no filter. All cases were considered significant.
Tank supported on combustible material	**3**	6.3.8	All cases used wooden blocks for no good reason. All are considered significant infractions.
Tank not properly supported	**6**	6.3	In four cases the tanks were leaning and the base had settled. One was part of an immediate hazard (Box 20083 lot 123 Takahini Rd). All six were considered significant infractions.
No valve at tank	**1**	8.4.1	This case was considered significant since a means of shutting off oil in an emergency is critical.
Tank fill &/or vent pipe not properly capped	**3**	6.8.2 6.9.1.6	At all 3 sites water could be entering the tank resulting in corrosion or appliance problems. All 3 cases were considered significant infractions.
Tank vent does not terminate above fill	**1**	6.9.1.6	Code requires vent to terminate at least 6” above fill. This is considered a significant infraction.
No whistle in indoor tank	**5**	**6.8.9**	A whistle is necessary for safe filling in indoor tanks. All of these cases were considered significant.
Tank clearances not met	9	6.3.4 to 6.3.6	One of these cases was considered significant since the tank was not accessible for inspection/ maintenance.
No seismic restraint on aboveground tank	59	6.3.11	One of these sites was considered significant infractions since the tank was elevated

Discussion of the Tank Inspection Results (continued)

Type of infraction	Number of sites with this infraction	Code Reference	Comments
Fill and/or vent pipe too close to ground	2	6.8.6 (c) 6.9.1.7 (b)	See Note #2 on page 3. Both of these cases involved underground tanks.
No Rating Plate on Tank	16	6.2.1.1	Two of these cases was considered significant and contributed to the "imminent hazard" rating at these sites. 12 of these cases were on pre-1980 tanks. Lack of approval may indicate that tank is not built to a Standard.
Underground lines not properly installed	1	8.3.2	This one case, which was not considered significant, was part of an immediate hazard (Box 20083 lot 123 Takahini Rd)
No level gauge in tank	5	6.10.2	Gauge allows for troubleshooting. None of these cases were considered significant.
Tank within 5' of property line	2	6.5.4 (b)	None of these cases were considered significant.
Filter housing not rated for >540°C	5	8.1.1	None of these cases were considered significant.
Tank valve not approved for purpose.	7	8.4.1	None of these cases were considered significant.
Plastic tubing used for vent/fill lines	1	6.8.1 6.9.1.1	This case was not considered significant.

Discussion of Appliance Inspection Results

The inspection of 69 sites with 71 appliances identified 171 code infractions related to the appliances and venting systems. This represents an average of 2.5 code infractions per site related to the appliances and venting systems. All but six of the 69 sites inspected (i.e. 91%) had at least one code infraction related to the appliances and their venting systems.

115 (67%) of these 171 code infractions were considered to be "significant" in that they either posed an imminent hazard or could reasonably be expected to develop into a problem in the future.

The following is a complete list of the types of infractions related to the appliances and venting systems as identified on the summary table in Appendix B and the individual inspection forms in Appendix C. Infractions are listed in order of importance with those considered "significant" identified in bold print. Six sites were considered as posing an imminent hazard. Although these infractions are highlighted in the following table, detailed information on these sites is also provided on pages 13 to 16.

Type of infraction	Number of sites	Code Reference	Comments
Flue gases leaking indoors	**12**	4.2.1 4.2.5.3	6 of these cases were caused by incorrectly installed or maintained vent connectors. 4 were caused by tests ports in positive vent systems not being properly capped. 2 were caused by leaks around appliance ports. 4 of the cases contributed to the imminent hazard rating at: 31 9th Ave.; Box 10286 Marsh Lake; 41 Hyland & 14 Hart Cres. These cases are described in the next section.
Combustion test results do not meet requirements of the Code and/or manufacturer	**9**	5.1 5.2.2 5.2.3 5.2.5	9 out of 61 appliances tested is a 15% non-compliance rate. 6 of the appliances had efficiency levels above 78% but high CO or smoke readings. 3 appliances were both inefficient and unsafe. 3 of the cases contributed to the imminent hazard rating at: Box 10286 Marsh Lake; 41 Hyland & 14 Hart Cres. These cases are described in the next section.
Heat exchanger damaged	1	14.3.7.3	This was part of the imminent hazard at 31 9th Ave.

Discussion of Appliance Inspection Results (continued)

Type of infraction	Number of sites	Code Reference	Comments
Common venting with unapproved wood appliance	**3**	4.1.4	2 of the cases contributed to the imminent hazard rating at: Box 153 Teslin & 14 Hart Cres. These cases are described in the next section.
Sidewall vent installation does not meet requirements of the Code &/or manufacturer	**9**	4.3	Numerous problems including - Vent termination too close to ground - Vent termination too close to opening - Improper joint sealant used - Parts of vent kit not installed - Damaged vent termination 3 of these 9 infractions were considered minor
Appliance too close to combustibles	**11**	7.1.1	6 of these infractions were considered significant. Five of the cases involved storage of material too close to the appliance.
Vent and/or vent connector too close to combustibles	**8**	4.2.5.5 (f)	Five of these infractions were considered significant.
Installation or maintenance of vent liner in chimney or factory vent does not meet Code &/ or manufacturer's requirements	**10**	4.2.2.5.1 4.2.2.9	Infractions included: - No base-tee - No rain cap - Deteriorated vents All 10 of these infractions were considered significant.
Vent connector improperly installed or maintained	**8**	4.2.5	Infractions included: - Vent joints not secured - Vent joints not sealed - Insufficient slope - Too many elbows 7 of these 8 infractions were considered significant.
Vent and/or vent connector too large	**7**	4.2.2.4	5 of these 7 infractions were considered significant.
Barometric damper improperly installed or maintained	**10**	4.2.7.1 4.2.7.3	Infractions included: - No damper installed - Damper not functioning - Damper opening blocked 9 of these infractions were considered significant.

Discussion of Appliance Inspection Results (continued)

Type of infraction	Number of sites	Code Reference	Comments
Return air opening too close to furnace	**1**	14.3.2	This infraction was considered significant.
Appliances not maintained annually	**38**	14.2.1	Annual maintenance was not conducted at 38 of the 69 installations. This represents a 55% non-compliance rate. 25 of these infractions were considered significant since the appliances had either never been maintained or showed obvious signs of problems due to lack of maintenance.
No air supply or improperly sized air supply to appliances	**24**	4.4.2.1	8 of these 24 infractions were considered significant since they were in confined spaces or in newer, more tightly constructed houses.
Electrical wiring does not meet Code requirements	7	3.7	Infractions included: - Emergency disconnect switch in wrong location or missing - Appliance wiring not secured - Appliance wiring modified None these infractions were considered significant.
Burner not approved with appliance.	5	3.1.1	All of these cases involved upgrades to older burners and controls. Although Codes prior to 1991 allowed this activity under strict guidelines, it is worth highlighting as a minor infraction since it affects the approval of an appliance as discussed in the next row.
No rating plate on appliance	3	3.1.1	One of these sites was considered a significant infraction since it was a new appliance that did not have a Canadian approval label as required. The other two cases involved older appliances. The lack of a rating plate calls into question whether the appliance was tested and approved to a recognized safety standard.

Discussion of Six Imminent Hazard Sites

The code infractions identified at 6 of the inspection sites were considered to pose imminent hazards. Although these sites and infractions were included in the tables provided in the last two sections, they are worth a more detailed discussion since it will highlight the importance of complying with the installation and maintenance requirements fuel oil code. The six sites are listed below:

1. 31 9th Ave., Whitehorse
2. Box 153, Teslin (lots 46 & 47, Teslin Cottage)
3. Box 20083, Whitehorse (Lot 123 Takahini Rd.)
4. Box 10286, Whitehorse (Lot 1, Block M, Army Beach Subdivision, Marsh Lake)
5. 41 Hyland Cres., Whitehorse
6. 14 Hart Cres., Whitehorse

1. 31 9th Ave., Whitehorse: Twelve code infractions were identified at this site, of which nine were considered significant. This installation had a 1975 forced air furnace and an outdoor aboveground tank of unknown age. Although the tank had five code infractions (3 of which were significant), the imminent hazard related to the furnace.

The heat exchanger was cracked and could potentially impair combustion and distribute flue gases throughout the house. This dangerous condition was identified to the owner during a service call (unknown date) and confirmed by tests conducted during the survey inspection. The owner indicated to the survey inspector “that he intends to replace the tank [and] is considering a new heating system”. Flue gas spillage from an improperly maintained vent system was also noted at the site.

It is worth noting that there was no indication that the installer or service technician for this site was trained and qualified as an Oil Burner Mechanic. It is also worth noting that the installation was not maintained annually.

This site raises a major concern related to the powers of technicians and inspectors to decisively deal with imminent hazards by shutting down the appliance or ordering corrective action. The owner may be aware of the code infractions but not be knowledgeable about the dangers posed by these infractions.

This case supports all three of the recommendations provided in the first survey report. It especially highlights the need for legislation that would empower technicians and inspectors to require corrective action when imminent hazards are found.

Discussion of Six Imminent Hazard Sites (continued)

2. Box 153, Teslin: This installation had a 2002 forced air furnace and 500 gallon outdoor aboveground tank of unknown age. Ten code infractions were identified at the site of which six were significant. Both the tank and furnace posed imminent hazards.

The tank was not approved for use as an oil supply tank. It was improperly installed in that it was half buried in the ground and had no visible/accessible shut-off valve. Plastic fill and vent pipes were also used in contravention of the fuel oil code.

The relatively new furnace was improperly common vented with a wood stove that was not approved for this purpose. This is considered a hazard since the venting, operation, and condition of oil furnace could be impaired by the operation of the wood stove.

The furnace was reportedly not installed or serviced by a licenced Oil Burner. There was no indication that combustion tests and setup had ever been conducted on the furnace as required by the fuel oil code after installation and during annual maintenance.

This case also supports all three of the recommendations provided in the first survey report. It especially highlights the need for enforcement of the requirement for properly trained and qualified Oil Burner Mechanics.

3. Box 20083, Whitehorse: Eleven code infractions, of which nine were considered significant, were identified at this site equipped with a 1982 forced air furnace and outdoor aboveground tank of an unknown age. Both the tank and furnace posed imminent hazards.

The survey inspector noted that “Nothing on the tank is approved and the tank is severely corroded. A new fuel oil tank is required.” Seven code infractions were found related to the tank and supply line of which five were considered significant. The tank was an old underground tank that was “dug up in the ‘80’s, set on cement blocks”. The corrosion and lack of proper support on this tank poses an imminent environmental hazard.

There was no indication that the 25 year old furnace ever had combustion tests or annual maintenance conducted on it. The combustion setup was very inefficient (69%, high draft and high excess air). The combustion air opening was blocked and the barometric damper was not functioning properly. The vent was also deteriorating due to lack of maintenance.

Again, this site supports all three of the recommendations provided in the first survey report. It especially highlights the need for an advertising campaign to inform owners about the legal and practical need for annual maintenance of oil-burning equipment.

Discussion of Six Imminent Hazard Sites (continued)

4. Box 10286, Whitehorse: This installation consisted of a 1999 combination water heater / space heater and an indoor aboveground tank of unknown age. Ten code infractions were identified of which seven were considered significant. Although the tank had four code infractions (two of which were significant), the imminent hazard related to the combo water heater.

Spillage of flue gases and moisture were found at the base tee and the combustion setup was both unsafe and inefficient. The #8 smoke reading indicated very poor combustion that had or would soon plug the heat exchanger and/or vent with soot. There was no air supply provided for the appliance and there was no barometric damper installed on the appliance.

This installation had not been installed or serviced by a licenced Oil Burner Mechanic. Indeed, annual maintenance had not been conducted on this appliance for some time.

The lack of maintenance and number of code infractions at this site supports all three of the recommendations provided in the first survey report. It especially highlights the need for an advertising campaign to inform owners about the legal and practical need for annual maintenance of oil-burning equipment.

5. 41 Hyland Cres., Whitehorse: Only six code infractions were identified at this site but five were considered significant and the inspector shut-off the electrical supply to the appliance and advised the owner not to use it until it was serviced by a licenced technician. This installation had a 1998 space heater and 1998 indoor aboveground tank of the same age. Although the tank had three code infractions (two of which were significant), the imminent hazard related to the space heater.

After numerous attempts to start the appliance failed, the survey inspector noted “It seemed as though unburned fuel oil was accumulating in the fire box”. An attempt was made to conduct combustion tests when the appliance finally started but the inspector “recorded a very high CO [carbon monoxide] reading … in the room containing the heater”. As a result of this dangerous condition the inspector shut off the heater at the electrical disconnect switch and “instructed the home owner to have the unit replaced or properly repaired by a qualified technician”.

The owner indicated that the heater had not been installed or serviced by licenced Oil Burner Mechanic and that annual maintenance had not been conducted.

Again, this site supports all three of the recommendations provided in the first survey report. The advertising campaign to inform owners about the legal and practical need for annual maintenance of oil-burning equipment could also highlight the importance of employing qualified technicians.

Discussion of Six Imminent Hazard Sites (continued)

6. 14 Hart Cres., Whitehorse: This 1979 forced air furnace with a 2003 outdoor aboveground tank had six code infractions of which five related to the furnace and were all considered significant. The only infraction regarding the tank was the common one of no seismic restraint.

Like the second imminent hazard discussed above (Box 153, Teslin), this furnace was common vented with a wood stove that was not approved for use with an oil appliance. The inspector noted that the "flue is not sealed properly and [there are] signs of flue gas spillage". The owner also complained about "periodically" smelling flue gases.

There was no combustion air supplied to the room with the oil furnace and wood stove. Given the massive volume of combustion air needed for both these appliances to operate properly, it is reasonable to assume that the flue gas odours were at least partially caused by negative building pressures resulting in pressure induced backdraft of the flue gases.

The furnace duct system installation also contributed to the flue gas spillage in that a return air opening was located near the wood stove to draw warm air (and probably wood smoke) from the area and distribute it around the house. Although this unsafe use of the furnace ductwork to distribute air heated by a wood stove is not an infraction specified in the B139 Code, it is not permitted by the National Building Code which the fuel oil code endorses as mandatory.

The combustion analysis conducted by the survey inspector showed that the appliance was operating inefficiently (71%) and unsafely (high CO reading). Given that flue gases spillage was noted by the owner and inspector, the high CO readings are a serious concern.

One of the most disturbing aspects of this case is the inspector notes that the appliance was serviced by a local heating contractor in February 2007 – two months before the survey inspection. The poor combustion setup and numerous infractions (no air supply, dirty air filter, as well as those discussed above) left by this contractor indicate either that the technician was not trained and qualified to conduct the service call or that the lack of legal requirements placed on technicians to effectively deal with imminent hazards contributed to the continuation of this hazard.

In either case, the three recommendations provided in the first survey report are further endorsed by an analysis of this imminent hazard.

Comparison of 1st and 2nd Survey inspection Results

The results of this second survey are very similar to those of the first survey conducted by NRG Resources in January 2007(see Appendix D for report).

The following table shows the high degree of similarities in both the conditions and results of both surveys. A few differences are also noted.

Issue	First Survey	Second Survey
Number of installations and appliances inspected/tested	55 sites with 63 appliances were inspected. Combustion tests were conducted on 60 of the appliances.	69 sites with 71 appliances were inspected. Combustion tests were conducted on 61 of the appliances.
	Comment: The size of the two surveys is much closer than the number of sites would indicate since there were more appliances per site and more combustion tests per site in the first survey.	
Age of appliances	Appliance age ranged from 1967 to 2006. Unknown age: 0 1960 to 1979: 32% 1980 to 1989: 2% 1990 to 1999: 30% 2000 to 2007: 36%	Appliance age ranged from 1972 to 2006. Unknown age: 20% 1960 to 1979: 10% 1980 to 1989: 10% 1990 to 1999: 32% 2000 to 2007: 28%
	Comment: It would be reasonable to add the number of "unknown age" appliances in the 2nd survey to the number of 1960-1979 appliances. As such, the age range of appliances in both surveys is essentially the same.	
Type of appliances	Furnaces: 70% Boilers: 11% Water heaters: 5% Combo systems: 3% Space heaters: 11%	Furnaces: 72% Boilers: 20% Water heaters: 1% Combo systems: 1% Space heaters: 6%
	Comment: There were more boilers and fewer water heaters, combo systems, and space heaters in the 2nd survey. The differences are not considered significant.	

Comparison of 1st and 2nd Survey inspection Results (continued)

Issue	First Survey	Second Survey
Number of tanks inspected	57 tanks were inspected.	69 tanks were inspected.
	Comment: The additional 12 tanks in the 2nd survey account for the higher number of infractions related to tanks in the 2nd survey. However, the number of such infractions per site was essentially the same as discussed later in this table.	
Age of tanks	Tank and supply line age ranged from 1967 to 2006. Unknown age: 0 1960 to 1979: 24% 1980 to 1989: 11% 1990 to 1999: 21% 2000 to 2007: 44%	Tank and supply line age ranged from 1976 to 2006. Unknown age: 22% 1960 to 1979: 1% 1980 to 1989: 1% 1990 to 1999: 32% 2000 to 2007: 43%
	Comment: It would be reasonable to add the number of "unknown age" tanks in the 2nd survey to the number of 1960-1979 appliances. As such, the number of pre-1980 tanks in both surveys is essentially the same. There is a slightly higher percentage of pre-1990 tanks in the 1st survey.	
Type of tanks	Indoor AST: 18% Outdoor AST: 59% UST: 23%	Indoor AST: 20% Outdoor AST: 70% UST: 10%
	Comment: The lower percentage of underground storage tanks (USTs) in the 2nd survey accounts for the reduction in emphasis of UST concerns voiced in the 2nd report. The differences are not considered significant.	
Total number of code infractions found	Code infractions: 319 Significant ones: 174 Average # per site: 5.8 Average # of significant concerns/site: 3.2	Code infractions: 366 Significant ones: 204 Average # per site: 5.3 Average # of significant concerns/site: 3
	Comment: The average number of infractions per site found by during the two surveys is essentially the same. The slightly higher percentage in the first survey may be due to the older age of equipment inspected.	

Comparison of 1st and 2nd Survey inspection Results (continued)

Issue	First Survey	Second Survey
Number of code infractions found related to tank and oil supply lines	157 or 49.2% of the total number of code infractions were related to the tank and supply lines. 73 (46%) of these 157 code infractions were considered to be "significant". The average number of code infractions per site related to the tank and supply lines was 2.9. The average number of significant infractions related to the tank and supply lines was 1.3 per site.	195 or 53.3% of the total number of code infractions were related to the tank and supply lines. 89 (46%) of these 195 code infractions were considered to be "significant". The average number of code infractions per site related to the tank and supply lines was 2.8. The average number of significant infractions related to the tank and supply lines was 1.3 per site.
	Comment: The average number of tank related infractions per site found by during the two surveys is essentially the same.	
Number of code infractions found related to appliances and venting systems	162 or 50.8% of the total number of code infractions were related to the tank and supply lines. 101 (58%) of these 162 code infractions were considered to be "significant". The average number of code infractions per site related to appliances and their venting systems was 3. The average number of significant infractions per site related to appliances and their venting systems was 1.8.	171 or 47% of the total number of code infractions were related to the tank and supply lines. 89 (46%) of these 195 code infractions were considered to be "significant". The average number of code infractions per site related to appliances and their venting systems was 3. The average number of significant infractions per site related to appliances and their venting systems was 1.3.
	Comment: The average number of appliance and vent system related infractions per site found by during the two surveys is exactly the same (3/site).	

Comparison of 1st and 2nd Survey inspection Results (continued)

Types of tank related infractions found	A comparison of the types of infractions identified in the two surveys found a high degree of similarity. However, the following minor differences were noted: 1. More cases of oil leakage were found during the 2nd survey (3 in 1st survey and 10 in 2nd survey). 2. More cases of tanks not being protected against corrosion were found during the 2nd survey (3 in the 1st survey and 9 in the 2nd survey). 3. The following types of tank related infractions were noted in the 1st but not in the 2nd report: ➢ Indications of water in UST ➢ Single wall underground lines used after 2000 ➢ UST is not buried deep enough ➢ Indications of an abandoned UST ➢ Tank vent pipe is too far away from fill pipe ➢ Underground lines under foundation ➢ Outlets on top of tank not plugged properly ➢ Tank within 5' of exit doorway ➢ Compression fittings on oil lines ➢ Tank within 20' of two propane tanks 4. The following types of tank related infractions were noted in the 2nd report but not in the 1st report: ➢ No valve at tank ➢ No whistle in indoor tank ➢ Tank clearances not met ➢ Filter housing not rated for >540°C ➢ Tank valve not approved for purpose. These differences in the types of tank infractions found during the two surveys are not considered significant.
Types of appliance and venting system related infractions found	A comparison of the types of infractions identified in the two surveys found a high degree of similarity. However, the following minor differences were noted: 1. More cases of flue gas leakage were found during the 2nd survey (2 in the 1st and 12 in the 2nd). 2. More problems with the installation of vent liner in a chimney or factory vent were found during the 2nd survey (4 in the 1st and 10 in the 2nd survey). 3. More cases of oversized vents were found during the 1st survey (22 in the 1st and 7 in the 2nd). 4. The following type of appliance related infractions was noted in the 1st but not in the 2nd report: ➢ Pressure relief on boiler improperly installed

Conclusion

The inspection survey of 69 residential sites in the Yukon with oil-burning equipment identified 366 infractions of the B139 Code of which 204 were considered to be significant concerns that either posed an imminent hazard (6 cases) or could reasonably be expected to develop into a problem in the future. The average number of code infractions per site was 5.3 and the average number of significant infractions was 3 /site.

The types of sites, equipment, and infractions reported in this second survey conducted by Carmon Whynot from Yukon Housing are very similar to those in the first survey conducted by NRG Resources in January 2007.

Both surveys identified eleven safety and efficiency issues, listed below in order of importance are:

1. **Lack of maintenance.** 79 of the 124 surveyed sites (i.e. 64%) were not in compliance with the B139 Section 14 requirements regarding annual maintenance. Very few of all the appliances inspected had been cleaned on a regular basis. In many cases, the appliances had never been cleaned or properly maintained. Lack of maintenance is universally recognized as the primary cause of fires, leaks, and other incidences for all fuel-fired appliances.

2. **No indication that the installers or service technicians are trained and qualified as licenced Oil Burner Mechanics.** 21 of the 124 sites inspected (17%) indicated that a licenced Oil Burner Mechanic installed or serviced the installation. This trend has also been evident in the five oil-related courses delivered by NRG Resources in the Yukon over the past two years. Of the 100+ active technicians who have attended these courses, less than 10 have met the minimum trade qualifications required to work on oil installations in the Yukon.

3. **Spillage of flue gases indoors due to improperly installed or improperly maintained appliances and their venting systems.** 14 cases of flue gases spilling indoors were found during the two surveys. This constitutes 11% of the 124 surveyed sites; all of the cases were significant and 6 were considered hazardous. Most of the cases involved positive vented appliances which require special venting material and are especially prone to failure if not strictly installed in accordance with the manufacturer's certified instructions and the B139 Code. There was a high level of improperly installed and maintained positive venting systems among the surveyed appliances. Spillage of carbon dioxide and carbon monoxide can cause severe health problems; heat spillage can cause fires.

4. **38% of the appliances were improperly set up for safe, efficient combustion.** 46 of the 121 combustion tests conducted during both surveys indicated that the appliances were operating inefficiently (i.e. <78% efficiency) and/or were not in compliance with the safety requirements for combustion established in the manufacturer's certified instructions and the B139 Code.

5. **Oversized, improperly installed, poorly maintained vent systems.** 71 of the 124 sites surveyed (57%) infractions related to their venting systems. 58 of these 71 cases (i.e. 82%) had significant code infractions and 11 of the 12 imminent hazard sites had venting infractions. Oversized, improperly installed, or poorly maintained vent systems may cause venting problems resulting in flue gas spillage and damage to the appliances. These problems are especially prevalent in cold climates. The most probable reason for oversized and improperly installed vent systems is the lack of trained technicians conducting installations.

6. **Clearance to combustible material is not maintained.** 31 of the 124 sites inspected (25%) had infractions related to clearance between combustible materials and the appliance or vent. Approximately half of these problems were related to installation infractions and the other half were caused by the owners storing material too close to the appliance or vent. In both cases, lack of knowledge is the most probably cause of this potentially dangerous infraction of the B139 Code requirements.

7. **Combustion air supply requirements are not met.** Infractions related to improper combustion air supply to appliances were found at 48 (36%) of the 124 sites inspected during the two surveys. 8 of the 48 cases were considered significant since they were in confined spaces and/or adversely affected the safe operation of the appliance(s) at the site. Properly sized, installed and maintained combustion air openings have been required since the 1976 B139 Code. They ensure the safety and efficiency of appliances that use air from inside the building. The high percentage of non-compliance can be contributed to lack of knowledge among technicians and owners about the importance of air supply openings as well as the lack of enforcement of code requirements.

8. **Aboveground tanks not installed or maintained properly to prevent internal and external corrosion.** Two related problems are covered by this item: 1/ 56 of the 106 aboveground tanks surveyed (53%) were not sloped toward the outlet as required by the current B139 Code; 2/ 15 of the 82 outdoor aboveground tanks surveyed (18%) showed signs of external corrosion. An improper slope has been proven to cause internal corrosion resulting in leakage. The lack of corrosion protection on outdoor tanks and the second problem may result in the outlet piping at the tank breaking resulting in leakage. Although lack of knowledge among technicians and owners is the most probable cause of these two related problems, the lack of legal requirements placed on oil suppliers to ensure that they are delivering to safe, compliant tank systems is the most effective solution.

9. **Lack of monitoring of underground tanks for leakage and corrosion.** None of the 20 underground storage tanks (UST) surveyed were regularly monitored for water accumulation or for cathodic protection. As discussed on page 4 of this report, the current edition of the B139 Code does not provide any requirements related to UST installation, maintenance, or removal. This is a significant problem since 20 of the 124 sites surveyed (16%) had USTs that would benefit from requirements given in previous Codes.

10. **Aboveground tanks not properly supported or secured to prevent toppling or damage - especially if a seismic event occurs - even though Whitehorse is listed as an earthquake zone.** Significant code infractions related to improper tank support and improper piping at the tank were found at 27 of the 106 aboveground tanks surveyed (25%). None of the 106 aboveground tanks surveyed were equipped with seismic restraints as required by the B139 Code and manufacturer's instructions.

11. **Appliances and tanks without rating plates indicating that they have not been tested and approved to recognized standards.** 31 of the 106 aboveground tanks surveyed (29%) and 4 of the 134 appliances surveyed (3%) did not have a rating plate. The approval of equipment to recognized standards is a primary safety requirement that is being undermined by this high percentage of unapproved equipment found in the survey sample (especially in regards to tanks). Unapproved equipment should be treated as sub-standard and unsafe unless proven otherwise.

A detailed discussion of possible solutions to the problems found during the two inspection surveys will be provided in a separate report in October 2007. However, it is worth noting that the three recommendations provided in the first report are confirmed and supported by the findings of the second inspection survey. The recommendations to improve the general safety and efficiency of oil burning equipment installations in the Yukon are offered again by way of conclusion.

C. An advertising campaign should be conducted to inform owners about the legal and practical need for annual maintenance of oil-burning equipment and the necessity of maintaining the proper clearances to combustibles around oil-burning equipment.

D. An Oil Burning Devices Act, Regulations, and enforcement agency should be developed and implemented to encourage and ensure that the oil heating industry complies with the B139 Code as well as the Yukon Apprentice Training Act and Regulations regarding training and licencing requirements for Oil Burner Mechanics.

C. A practical and effective method for training and licencing Oil Burner Mechanics in the Yukon should be developed and implemented.

I trust that this report meets with your approval. Please do not hesitate to contact me to discuss any of the issues raised in this report.

Yours Sincerely,

Rod Corea
NRG Resources Inc.
Ph: 519-599-3923
Email: rodcorea@nrgresources.ca

Appendix C

Ontario Laws Governing the Fuel Oil Industry

Technical Standards and Safety Act, 2000

S.O. 2000, c. 16
No Amendments.

(NOTE: By Order in Council approved March 5, 2001, the powers and duties of the Minister were transferred to the Minister of Consumer and Business Services.)

Purpose, Application, Definitions

Purpose

1. The purpose of this Act is to enhance public safety in Ontario by providing for the efficient and flexible administration of technical standards with respect to the matters referred to in section 2. 2000, c. 16, s. 1.

Application

2. This Act applies with respect to amusement devices, boilers and pressure vessels, elevating devices, hydrocarbon fuels, operating engineers and upholstered or stuffed articles, as referred to in the regulations. 2000, c. 16, s. 2.

Definitions

3. In this Act,

"authorization" means any form of authorization under this Act and includes,

(a) with respect to a person, a certificate, identification, licence or registration, and

(b) with respect to a thing, an approval, certificate, licence, permit or registration; ("autorisation")

"designated administrative authority" means a not-for-profit corporation without share capital,

(a) incorporated under the laws of Ontario or Canada that operates in Ontario but that does not form part of the Government of Ontario, any other government or an agency of a government, and

(b) designated by the Lieutenant Governor in Council under subsection 3 (2) of the *Safety and Consumer Statutes Administration Act, 1996*; ("organisme d'application désigné")

"director" means a person appointed as a director under this Act or a predecessor Act; ("directeur")

"dwelling" means any premises or any part of a premises occupied exclusively as living accommodation; ("logement")

"inspector" means a person appointed as an inspector under this Act or a predecessor Act; ("inspecteur")

"Minister" means the Minister responsible for the administration of this Act; ("ministre")

"person" means an individual, an association, a partnership or a corporation; ("personne")

"predecessor Act" means any of the following:

1. *Amusement Devices Act*.
2. *Boilers and Pressure Vessels Act*.
3. *Elevating Devices Act*.
4. *Energy Act*.
5. *Gasoline Handling Act*.
6. *Operating Engineers Act*.
7. *Upholstered and Stuffed Articles Act*; ("loi précédente")

"prescribed" means prescribed by the regulations; ("prescrit")

"regulations" means the regulations made under this Act; ("règlements")

"seal" means to mark, tag, seal or label, and its noun has a corresponding meaning. ("apposer les scellés") 2000, c. 16, s. 3.

Directors and Inspectors

Appointments of directors and inspectors

4. (1) A designated administrative authority may appoint directors and inspectors for the purposes of this Act, the regulations or a Minister's order. 2000, c. 16, s. 4 (1).

Same

(2) The Minister may appoint directors and inspectors in the absence of a designated administrative authority. 2000, c. 16, s. 4 (2).

Restrictions

(3) An appointment is subject to the restrictions, limitations and conditions set out in it. 2000, c. 16, s. 4 (3).

Powers of directors, general

5. (1) A director has general supervisory and administrative responsibility in respect of all or any part of this Act, the regulations or a Minister's order with respect to which he or she is appointed. 2000, c. 16, s. 5 (1).

Powers regarding inspectors

(2) Unless otherwise stated in his or her appointment, a director,

(a) may supervise and direct inspectors and other persons responsible for administering or enforcing this Act, the regulations or a Minister's order; and

(b) is an inspector and may exercise any of the powers and perform any of the duties of an inspector. 2000, c. 16, s. 5 (2).

Delegation

(3) A director may delegate in writing any of his or her powers or duties to any person subject to the restrictions, limitations and conditions set out in the delegation. 2000, c. 16, s. 5 (3).

Document of appointment

(4) A document establishing their appointment shall be issued to directors and inspectors, who shall produce it on request. 2000, c. 16, s. 5 (4).

Authorizations

Requirement for authorization

6. (1) Except as provided in the regulations or a Minister's order, a person is required to obtain an authorization in accordance with this Act, the regulations or a Minister's order before carrying out the activities referred to in the regulations or a Minister's order as requiring an authorization or before operating or otherwise dealing with any thing referred to in the regulations or a Minister's order as requiring an authorization. 2000, c. 16, s. 6 (1).

Authorizations for persons

(2) An applicant who applies to a director for an authorization to carry out an activity referred to in the regulations or a Minister's order is entitled to the authorization if all the requirements for it are met. 2000, c. 16, s. 6 (2).

Refusal re applicant

(3) The director may refuse to grant an authorization to an applicant who does not meet the requirements for it. 2000, c. 16, s. 6 (3).

Authorizations for things

(4) An applicant who applies to a director for an authorization required for a thing is entitled to the authorization if all the requirements for it are met. 2000, c. 16, s. 6 (4).

Refusal re thing

(5) The director may refuse to grant an authorization for a thing if the applicant or thing does not meet the requirements for it. 2000, c. 16, s. 6 (5).

Conditions

(6) An authorization is subject to such restrictions, limitations and conditions as are prescribed and to the restrictions, limitations and conditions, if any, imposed on it by a director. 2000, c. 16, s. 6 (6).

Refusals, suspensions, etc.

(7) A director may refuse to grant, suspend, revoke or refuse to renew an authorization where he or she has reason to believe that the applicant or authorization holder,

(a) will not carry out the activities permitted by the authorization in accordance with law;

(b) will not carry out the activities permitted by the authorization safely;

(c) lacks the basic resources necessary for carrying out the activities permitted by the authorization;

(d) lacks honesty and integrity;

(c) is not competent or lacks reasonable skill;

(d) has failed to comply with the Act, the regulations, a Minister's order, the order of a director or an inspector, or a restriction, limitation or condition of an authorization;

(e) obtained the authorization through misrepresentation or fraud;

(f) permitted an unauthorized person to carry out the activities permitted under the authorization. 2000, c. 16, s. 6 (7).

Notice of proposal

7. (1) Subject to subsection (2), if a director proposes to refuse to grant an authorization, or to suspend, revoke or refuse to renew an authorization, the director shall serve notice of the proposal to that effect, together with written reasons, on the applicant or authorization holder. 2000, c. 16, s. 7 (1).

Exceptions

(2) A notice of proposal is not required,

(a) in the case of a provisional suspension of an authorization or a refusal to renew an authorization under section 9;
(b) in the case of a suspension for a failure to pay under section 13. 2000, c. 16, s. 7 (2).

Service of notice

(3) The director may serve the notice of proposal personally or by registered mail addressed to the applicant or authorization holder at the last address known to the director, by fax or by any other form of electronic transmission if there is a record that the notice has been sent. 2000, c. 16, s. 7 (3).

Deemed service, registered mail

(4) If registered mail is used, the notice shall be deemed to have been served on the third day after the day of mailing unless the person on whom notice is being served establishes to the director that the person did not, acting in good faith, through absence, accident, illness or other cause beyond the person's control, receive the notice until a later date. 2000, c. 16, s. 7 (4).

Deemed service, electronic transmission

(5) If a fax or other form of electronic transmission is used, the notice shall be deemed to have been served on the day after the fax or other transmission was sent unless the person on whom notice is being served establishes to the director that the person did not, acting in good faith, through absence, accident, illness or other cause beyond the person's control, receive the notice until a later date. 2000, c. 16, s. 7 (5).

Right to hearing

8. (1) A notice of proposal shall inform the applicant or authorization holder of the right to a hearing before the director if the applicant or holder applies for the hearing within 15 days after being served with the notice. 2000, c. 16, s. 8 (1).

Where no hearing requested

(2) If the applicant or authorization holder does not apply for a hearing, the director may carry out the proposal stated in the notice. 2000, c. 16, s. 8 (2).

Where hearing requested

(3) If the applicant or authorization holder applies for a hearing, the director shall set a time for and hold the hearing after issuing a notice of hearing to the applicant or authorization holder. 2000, c. 16, s. 8 (3).

Extension of time for hearing

(4) The director to whom application for a hearing is made may extend the time for making the application either before or after the 15-day period if he or she is satisfied that,

(a) there are reasonable grounds for applying for the extension; and
(b) there are apparent grounds for granting to the applicant or authorization holder the relief sought at the hearing. 2000, c. 16, s. 8 (4).

Directions

(5) In granting an extension, the director may give any directions he or she considers appropriate. 2000, c. 16, s. 8 (5).

Findings of fact

(6) On a hearing, the findings of fact made by a director shall be based exclusively on evidence admissible or matters that may be noticed under sections 15, 15.1, 15.2 and 16 of the *Statutory Powers Procedure Act*. 2000, c. 16, s. 8 (6).

Decision

(7) After a hearing, the director may refuse to grant the authorization or revoke, suspend or refuse to renew the authorization if the authorization holder is in contravention of this Act, the regulations, a Minister's order or a restriction, limitation or condition in the authorization. 2000, c. 16, s. 8 (7).

Delayed effect

(8) A revocation, suspension or refusal to renew under subsection (7) does not take effect until the later of the final disposition of an appeal under section 11 and the expiration of the 30-day period for filing an appeal, unless there is or may be, in the director's opinion, a threat to public safety or to the safety of any person. 2000, c. 16, s. 8 (8).

Provisional suspension or refusal to renew where safety involved

9. (1) A director may, by notice to an authorization holder and without a hearing, provisionally suspend or refuse to renew an authorization where the carrying on of the operations under the authorization is, in the director's opinion, an immediate threat to public safety or the safety of any person. 2000, c. 16, s. 9 (1).

Notice

(2) The notice under subsection (1) shall state the director's reasons for the decision to provisionally suspend or refuse to renew the authorization and inform the authorization holder of the right to a hearing before the director if the holder applies for the hearing within 15 days after being served with the notice. 2000, c. 16, s. 9 (2).

Application of provisions

(3) Subsections 7 (3), (4) and (5) apply with respect to a notice under this section and subsections 8 (3) to (6) apply for the purposes of a hearing under this section. 2000, c. 16, s. 9 (3).

Opportunity to achieve compliance

10. (1) Notice of a hearing shall afford to the applicant or authorization holder a reasonable opportunity to show or to achieve compliance with all lawful requirements for the granting, retention or renewal of the authorization before the hearing. 2000, c. 16, s. 10 (1).

Examination of documentary evidence

(2) An applicant or authorization holder shall be given an opportunity to examine before a hearing any written or documentary evidence that will be produced or any report the contents of which will be given in evidence at the hearing 2000, c. 16, s. 10 (2).

Recording of evidence

(3) The oral evidence taken before the director at a hearing shall be recorded at the request of the applicant, the authorization holder or the director. 2000, c. 16, s. 10 (3).

Cost of recording of evidence

(4) The recording shall be at the cost of the person making the request and, where copies of the transcript are requested, they shall be provided at the cost of the person making the request. 2000, c. 16, s. 10 (4).

Appeals

11. (1) An applicant or authorization holder may appeal to the Divisional Court if, after a hearing, the director,

(a) refuses to grant or to renew an authorization;

(b) grants or renews an authorization subject to conditions or restrictions; or

(c) revokes or suspends an authorization. 2000, c. 16, s. 11 (1).

How to appeal

(2) An appeal shall be made by filing a notice of appeal with the court within 30 days after receiving notice of the director's decision. 2000, c. 16, s. 11 (2).

Decision

(3) In deciding an appeal, the court may order the director to take such action as the court considers proper. 2000, c. 16, s. 11 (3).

Director is party

(4) The director is a party to every appeal under this section. 2000, c. 16, s. 11 (4).

Immediate threat to safety

(5) The bringing of an appeal under this section does not suspend or otherwise affect the decision appealed from where that decision was based on the director's opinion that there was an immediate threat to public safety or the safety of any person. 2000, c. 16, s. 11 (5).

Appeal from decision of director

12. (1) Any person who deems himself or herself aggrieved by a decision of a director under this Act, the regulations or a Minister's order may, within 10 days after the decision comes to the person's attention, appeal to the Divisional Court by notice in writing sent by registered mail to the director and the court. 2000, c. 16, s. 12 (1).

Powers of court on appeal

(2) Where a person has appealed under subsection (1), the court shall appoint a time for a hearing and shall hear the appeal and may affirm, rescind or vary the decision of the director and may direct the director to take any action that he or she is authorized to take under this Act, the regulations or a Minister's order as the court considers proper, and for such purpose the court may substitute its opinion for that of the director. 2000, c. 16, s. 12 (2).

Application of subss. 8 (4) and (5)

(3) Subsections 8 (4) and (5) apply with necessary modifications to an appeal under this section. 2000, c. 16, s. 12 (3).

Parties

(4) The director, the appellant and such other persons as the court may specify are parties to an appeal under this section 2000, c. 16, s. 12 (4).

Decision final

(5) A decision of the court under this section is final. 2000, c. 16, s. 12 (5).

Suspension of authorization for default in payment

13. (1) If an authorization holder is in default of the payment of a fee, an administrative penalty, a cost or other charge owing to the designated administrative authority, of a fine imposed on conviction for an offence under this Act or an order made under clause 69 (2) (a) or (b) of the *Provincial Offences Act*, a director may,

(a) suspend the holder's authorization; or

(b) refuse to grant an authorization to the holder or to renew the holder's authorization. 2000, c. 16, s. 13 (1).

Reinstatement of suspended authorization

(2) If an authorization is suspended under clause (1) (a), the authorization holder is entitled to have the authorization reinstated on providing proof to the director that the authorization holder is no longer in default. 2000, c. 16, s. 13 (2).

Granting of authorization or renewal

(3) If an application for an authorization or for the renewal of an authorization is refused under clause (1) (b), the applicant is entitled to the authorization on providing proof to the Director that the applicant is no longer in default. 2000, c. 16, s. 13 (3).

Notice

(4) A director is not required to give notice or to hold a hearing before acting under subsection (1). 2000, c. 16, s. 13 (4).

Safety and Compliance Orders

Safety orders

14. (1) A director may give a safety order to any person or class of persons with respect to any matter governed by this Act that pertains to safety. 2000, c. 16, s. 14 (1).

Same

(2) The safety order may require that any thing or part of a thing, or class of things, be dealt with as set out in the order, including,

(a) being shut down;

(b) being used only in accordance with the order; and

(c) not being used. 2000, c. 16, s. 14 (2).

Form of order

(3) The safety order may be given orally or in writing, and be made without prior notice or the holding of a hearing. 2000, c. 16, s. 14 (3).

Timeliness of written order

(4) A safety order that is given orally shall be provided in writing as soon as practicable in the circumstances and in no case later than seven days after the oral order is given. 2000, c. 16, s. 14 (4).

Immediate effect

(5) The safety order is effective immediately but may be suspended pending a hearing under subsection (6) with the consent of the director who made it. 2000, c. 16, s. 14 (5).

Hearing

(6) On the request of the person affected by the safety order, the director shall hold a hearing on the matter. 2000, c. 16, s. 14 (6).

Suspension for failure to comply with safety order

15. (1) The director may, without prior notice or the holding of a hearing, suspend any authorization granted to a person who fails to comply with a safety order. 2000, c. 16, s. 15 (1).

Reinstatement

(2) If an authorization is suspended under subsection (1), a new application must be made for the authorization. 2000, c. 16, s. 15 (2).

Conditions for reinstatement

(3) A suspended authorization shall not be reinstated unless the applicant provides proof of having complied with all outstanding safety orders affecting the applicant, in addition to satisfying all other requirements for the reinstatement of the authorization. 2000, c. 16, s. 15 (3).

Compliance order

16. (1) If it appears to a director that a person is not complying with any provision of this Act, the regulations or a Minister's order, the director may apply to a judge of the Superior Court of Ontario for an order directing compliance. 2000, c. 16, s. 16 (1).

Same

(2) The judge may make any order he or she considers just. 2000, c. 16, s. 16 (2).

Clarification

(3) The director may make an application under subsection (1) even if a penalty or some other sanction has been applied against the person in respect of the failure to comply and regardless of any other rights the person may have. 2000, c. 16, s. 16 (3).

Appeal

(4) An appeal lies to the Divisional Court from an order made under subsection (2). 2000, c. 16, s. 16 (4).

Inspections

Inspection without warrant

17. (1) An inspector may at any reasonable time, without a warrant, enter any lands or premises where the inspector has reason to believe, in good faith, any of the things, parts of things or classes of things to which this Act, the regulations or a Minister's order apply are used, operated, installed, made, manufactured, repaired, renovated or offered for sale and carry out an inspection for the purpose of determining in the public interest whether,

(a) this Act, the regulations or a Minister's order are being complied with; or

(b) a hazardous condition exists. 2000, c. 16, s. 17 (1).

Entry to dwellings

(2) Despite subsection (1), an inspector shall not enter a place or part of a place that is used as a dwelling without the occupier's consent. 2000, c. 16, s. 17 (2).

Consent, duty to inform

(3) An inspector who wishes to enter a place or part of a place that is used as a dwelling shall inform the occupier that he or she may refuse consent. 2000, c. 16, s. 17 (3).

Warrant required

(4) If the occupier refuses consent, the inspector shall not enter the dwelling unless he or she first obtains a warrant under section 158 of the *Provincial Offences Act*. 2000, c. 16, s. 17 (4).

Reasonable force

(5) The inspector may use such force as is reasonably necessary to execute the warrant and call on police officers to assist in its execution. 2000, c. 16, s. 17 (5).

Powers of inspector

18. (1) In carrying out an inspection, an inspector may,

(a) exercise such powers and act in such manner as is set out in this Act and the regulations; and

(b) on notice to the appropriate person, remove any thing for the purpose of making any examination, test or inquiry as may be necessary to determine whether this Act, the regulations or a Minister's order are being complied with. 2000, c. 16, s. 18 (1).

Receipt

(2) An inspector who removes a thing under clause (1) (b) shall provide a receipt to the appropriate person. 2000, c. 16, s. 18 (2).

Assistance

(3) An inspector may be accompanied by any person or persons who may be of assistance to him or her in carrying out the inspection. 2000, c. 16, s. 18 (3).

Seal

(4) An inspector conducting an inspection may seal any thing where the thing may be sealed under section 29. 2000, c. 16, s. 18 (4).

Use of force

(5) An inspector may only use force to enter and inspect a place where there is an immediate threat to public safety and only such force as is reasonably necessary in the circumstances. 2000, c. 16, s. 18 (5).

Entry, inspection, etc.

19. (1) Every person shall,

(a) furnish all necessary means in his or her power to facilitate any entry, inspection, examination, test or inquiry by an inspector in the exercise of his or her powers and the carrying out of his or her duties; and

(b) pay the fees required by the designated administrative authority for an inspection, examination, test or inquiry under clause (a). 2000, c. 16, s. 19 (1).

Written request

(2) An inspector who requires that a record or other thing be produced for inspection must do so in writing and state the nature of the record or thing required. 2000, c. 16, s. 19 (2).

Obligation to produce and assist

(3) If an inspector requires that a record or other thing be produced for inspection, the person who has custody of it shall produce it and, in the case of a record, provide any assistance that is reasonably necessary to interpret it or to produce it in readable form. 2000, c. 16, s. 19 (3).

Liability

(4) No action or other proceeding for damages shall be instituted against the designated administrative authority, an inspector or a director for any costs or loss incurred by the person that arise out of or in conjunction with an inspection, examination, test or inquiry carried out under this section or the production of a record or thing under subsection (3) unless the costs or loss arise out of the negligence or a wrongful act or omission of the authority, the inspector or the director. 2000, c. 16, s. 19 (4).

Records and things

(5) A record or other thing that has been removed for review and copying shall,

(a) be made available to the person from whom it was removed, on request, at a time and place convenient for both the person and the inspector; and

(b) be returned to the person within a reasonable time. 2000, c. 16, s. 19 (5).

Copy admissible in evidence

(6) A copy of a record that purports to be certified by an inspector as being a true copy of the original is admissible in evidence to the same extent as the original and has the same evidentiary value. 2000, c. 16, s. 19 (6).

Obstruction

20. (1) No person shall hinder, obstruct or interfere with an inspector conducting an inspection, refuse to answer questions on matters relevant to the inspection or provide the inspector with information on matters relevant to the inspection that the person knows to be false or misleading. 2000, c. 16, s. 20 (1).

Operation of thing

(2) No person shall operate, use or cause or permit the operation or use of a thing in contravention of an order issued under section 21 or where the thing has been sealed. 2000, c. 16, s. 20 (2).

Removal of seal

(3) No person shall remove a seal affixed by an inspector,

(a) without the inspector's consent;

(b) except as provided in the regulations or a Minister's order. 2000, c. 16, s. 20 (3).

When order revoked

(4) Subsection (3) does not apply upon the revocation of the order that was made when the seal was affixed. 2000, c. 16, s. 20 (4).

Inspection order

21. (1) If an inspector finds that any provision of this Act, the regulations or a Minister's order is being contravened, or that a thing under this Act is unsafe or is not being operated or used in accordance with the authorization relating to it, the inspector may,

(a) serve the person he or she believes to be the contravener or that person's supervisor or employer, or both, with an order in writing directing compliance with the provision or authorization and may require that the terms of the order be carried out forthwith or within such other time specified in the order; or

(b) seal any thing to which this Act or the regulations apply where there is or may be a demonstrable threat to public safety, whether or not the thing is subject to an authorization. 2000, c. 16, s. 21 (1).

Same

(2) An inspector who has reason to believe that there is a contravention of this Act, the regulations or a Minister's order that does not present an immediate hazard may serve the contravener or a person who has authority to correct the contravention with a written order directing that the correction be carried out within the time specified in the order. 2000, c. 16, s. 21 (2).

Revocation of order

(3) An inspector may revoke an order, or consent to the removal of a seal, if he or she is satisfied that a potential danger does not exist, that all provisions of this Act, the regulations or a Minister's order are being complied with or that a thing is being operated in accordance with the authorization relating to it, as the case may be. 2000, c. 16, s. 21 (3).

Content of order

(4) An inspector's order under this section shall contain sufficient information to specify the nature of any contravention. 2000, c. 16, s. 21 (4).

Not guilty of offence

(5) Any person who receives an order under subsection (2) and complies with it or who has made all reasonable efforts to comply with it is not guilty of an offence in respect of the contravention or other matter that formed the basis of the order. 2000, c. 16, s. 21 (5).

Report

(6) Following an inspection, the inspector shall make a report to a director on the inspection in such manner and with respect to such things as may be determined by the director. 2000, c. 16, s. 21 (6).

Appeal

22. (1) Any person affected by an order under clause 21 (1) (a) , the affixing of a seal under subsection 18 (4) or clause 21 (1) (b) or a requirement to pay fees under clause 19 (1) (b) may appeal at any time to a director. 2000, c. 16, s. 22 (1).

When required to be in writing

(2) The appeal is not required to be in writing but if a director so requires, the grounds for the appeal shall be specified in writing before the appeal is heard. 2000, c. 16, s. 22 (2).

Hearing

(3) On receiving an appeal, the director shall hold a hearing as soon as is reasonably possible, but such an appeal does not affect the operation of the order appealed from pending disposition of the appeal. 2000, c. 16, s. 22 (3).

Decision

(4) After a hearing, the director may,

(a) substitute his or her findings for that of the inspector;

(b) revoke the order if the director is satisfied,

(i) that a demonstrable threat to public safety does not or may not exist, or

(ii) that all provisions of this Act, the regulations or a Minister's order are being complied with or that the thing is being operated in accordance with the authorization relating to it; or

(c) affirm the order if the director is not satisfied under clause (b). 2000, c. 16, s. 22 (4).

Appeal

(5) Where the director affirms an inspector's order under clause (4) (c), the affected person may appeal to the Divisional Court under section 11. 2000, c. 16, s. 22 (5).

Affixing of seals, etc.

(6) After a hearing, the director may by order confirm the affixing of seals or direct the inspector to remove them. 2000, c. 16, s. 22 (6).

No disposal of article

(7) If the appeal relates to the destruction of an article, the appellant shall not dispose of the article pending the appeal. 2000, c. 16, s. 22 (7).

Personal liability

(8) No action or other proceeding for damages shall be instituted against an inspector or a director for any act done in good faith in the execution or intended execution of any power or duty under this Act, the regulations or a Minister's order or for any alleged neglect or default in the execution in good faith of that power or duty. 2000, c. 16, s. 22 (8).

Right to examine person under oath

(9) For the purpose of an inspection or an investigation under this Act, a director may, by notice in writing, require the attendance of any person at the time and place named in the notice and may examine such person under oath regarding any matter pertaining to the inspection or investigation. 2000, c. 16, s. 22 (9).

Additional Powers and Duties of Directors

Director's confirmation

23. (1) A director may issue a written confirmation with respect to,

(a) any authorization or non-authorization;

(b) the revocation or suspension of an authorization;

(c) the restrictions or conditions to which an authorization is subject;

(d) the filing or non-filing of any document or material required or permitted to be filed with the director; or

(e) any other matter that may be prescribed or set out in a Minister's order. 2000, c. 16, s. 23 (1).

Effect of confirmation

(2) A confirmation is proof, in the absence of evidence to the contrary, of the facts stated in it, without any proof of appointment or signature. 2000, c. 16, s. 23 (2).

Information confidential

24. (1) An inspector shall not disclose to any person any information, record, report or statement obtained under the powers conferred under this Act and the regulations except for the purposes of carrying out his or her duties under this Act and the regulations. 2000, c. 16, s. 24 (1).

Compellability in civil proceeding

(2) An inspector is a compellable witness in a civil proceeding respecting any information, record, report or statement obtained under the powers conferred under this Act or the regulations.

Refusal or conditional permission

(3) Despite subsection (2) but subject to subsection (4), a director may,

(a) on reasonable grounds, refuse to permit an inspector to attend as a witness; or

(b) require that an inspector's attendance as a witness be subject to such conditions as are reasonable and necessary for the proper administration of this Act and the regulations, including requiring the payment of a fee for the inspector's attendance as set out in the schedule of fees published by the designated administrative authority. 2000, c. 16, s. 24 (3).

Limitation

(4) Subsection (3) does not apply if,

(a) the court orders that the inspector attend as a witness;

(b) the proceeding is a proceeding under the *Provincial Offences Act*; or

(c) the designated administrative authority is a party to the proceeding. 2000, c. 16, s. 24 (4).

Written decision

(5) A director shall provide in writing a decision to refuse to permit an inspector to attend as a witness or to permit an inspector to attend as a witness subject to conditions. 2000, c. 16, s. 24 (5).

Exception

(6) The director may disclose or publish information, records, reports or statements obtained under the powers conferred under this Act and the regulations unless he or she obtained them while acting as an inspector. 2000, c. 16, s. 24 (6).

Investigation of accident

25. A director shall order such investigation as he or she considers necessary on being notified of an accident or incident. 2000, c. 16, s. 25.

Requirement to provide information

26. If a director receives a complaint alleging non-compliance with an authorization, the authorization holder shall, on request, provide the director with such information respecting the matter complained of as the director requires. 2000, c. 16, s. 26.

Limited use

27. A director may,

(a) establish the limits of operation and use of things that are found to be defective or do not conform with its authorization after fabrication or installation;

(b) permit the operation and use of such thing within such limits as are prescribed, or if there are no such limits, as the director considers safe. 2000, c. 16, s. 27.

Proof of inspection

28. A director may issue a proof of inspection with respect to things that have been inspected and found capable of being used or operated safely and may cancel such a proof. 2000, c. 16, s. 28.

Use of sealed things

29. (1) A director shall determine the operation and use of things that have been sealed by an inspector. 2000, c. 16, s. 29 (1).
Same

(2) A director shall determine the use and removal of seals. 2000, c. 16, s. 29 (2).

Retention of information

30. (1) A director may establish the information, records, documents, plans, log books, drawings, instructions, specifications or any other thing to be kept or provided with respect to any matter. 2000, c. 16, s. 30 (1).

Reports

(2) A director may provide for reports, including what information is to be reported, by whom and to whom, and the time, manner and frequency of reporting. 2000, c. 16, s. 30 (2).

Director's order, public safety

31. In cases where there is or may be a demonstrable threat to public safety, a director may make an order with respect to the following matters if they have not otherwise been provided for in this Act, the regulations or a Minister's order:

1. Requiring and establishing the form and location of notices, markings or other forms of identification to be used in conjunction with equipment or other things that are prescribed.
2. Regulating, governing and providing for the authorization of the design, fabrication, processing, handling, installation, operation, access, use, repair, maintenance, inspection, location, construction, removing, alteration, service, testing, filling, replacement, blocking, dismantling, destruction, removal from service and transportation of any thing, whether new or used, or a part of a thing and any equipment or attachment used in connection with it. 2000, c. 16, s. 31.

Qualifications and training

32. (1) If the regulations do not provide for these matters, a director may establish the qualifications, training and experience that are required for persons to whom this Act, the regulations or a Minister's order apply, and establish their duties and responsibilities. 2000, c. 16, s. 32 (1).

Equivalency

(2) A director may recognize training and experience of an applicant for an authorization if the director is of the opinion that such training or experience is equivalent to the requirements of this Act or the regulations. 2000, c. 16, s. 32 (2).

Re-examination

(3) A director may establish conditions for the re-examination of applicants who have taken examinations that may be prescribed. 2000, c. 16, s. 32 (3).

Appeal

(4) A person required by the Director to be re-examined under this section may appeal to the Divisional Court under section 11. 2000, c. 16, s. 32 (4).

Orders and Regulations

Minister's orders

33. (1) The Minister may make orders,

(a) requiring the use of notices, markings and other forms of identification in conjunction with equipment or other things that are prescribed;

(b) respecting and governing the granting, term, renewal, posting, transfer and reinstatement of authorizations;

(c) governing actions that may be taken or not taken in connection with an accident in order to preserve evidence;

(d) governing service of any notice or order required to be given or served under this Act or the regulations;

(e) establishing the qualifications for inspectors upon consideration of any advice that may be obtained from directors;

(f) providing for the assigning of identifying symbols to welding operators and requiring and providing for the imprinting of the symbol by the welding operator on welds made by him or her;

(g) establishing the circumstances under which an inspection may be carried out by an insurer who meets the prescribed requirements;

(h) establishing and governing reports to be made by insurers;

(i) requiring distributors to file proposed safety procedures, directors to establish safety procedures and distributors to comply with those procedures;

(j) establishing grades of gasoline and associated products, and providing for their identification;

(k) establishing methods of determining the capacity, content and rating of equipment and other things;

(l) establishing the form of labels required or authorized to be affixed to upholstered or stuffed articles, or any class of them, adopting labels affixed under the laws of any other designated jurisdiction and designating jurisdictions for that purpose. 2000, c. 16, s. 33.

Same

(2) A Minister's order under subsection (1) may be general or particular in its application. 2000, c. 16, s. 33 (2).

Concurrent authority

(3) The Lieutenant Governor in Council may make a regulation in respect of any matter in respect of which the Minister has authority to make an order under this section and may amend or revoke any order made by the Minister under this section or any regulation made by the Minister under section 36. 2000, c. 16, s. 33 (3).

Same

(4) Where the Minister has authority to make an order under section 33 or a regulation under section 36, he or she may amend or revoke a provision of a regulation if the provision was made or amended by the Lieutenant Governor in Council under subsection (3). 2000, c. 16, s. 33 (4).

Lieutenant Governor in Council regulations

34. (1) The Lieutenant Governor in Council may make regulations,

(a) prescribing any matter or thing required or permitted to be prescribed under this Act or otherwise referred to as being prescribed under this Act;

(b) regulating, governing and providing for the authorization of the design, fabrication, processing, handling, installation, operation, access, use, repair, maintenance, inspection, location, construction, removing, alteration, service, testing, filling, replacement, blocking, dismantling, destruction, removal from service and transportation of any thing, whether new or used, or a part of a thing, and any equipment or attachment used in connection with it;

(c) prohibiting any person from doing anything that is not in compliance with this Act, the regulations or a Minister's order;

(d) establishing the powers, duties and responsibilities of persons with respect to whom this Act, the regulations or a Minister's order apply;

(e) classifying,

(i) any thing or part of a thing referred to in this Act, the regulations or a Minister's order, and any equipment or attachment used in connection with it, and

(ii) persons and authorizations;

(f) governing the non-application of this Act, the regulations, or any part of them, or of a Minister's order to any person or thing or to any class of them, including the conditions of such non-application;

(g) requiring the payment of fees, administrative penalties and other amounts;

(h) establishing qualifications, training and experience for persons with respect to whom this Act, the regulations or a Minister's order apply, requiring that they obtain such qualifications, training and experience and establishing their duties and responsibilities;

(i) defining accident and classes of accidents and respecting and governing the reporting of accidents;

(j) providing for the isolation of things by means of seals or otherwise;

(k) prohibiting the sale, purchase, renting, installation and use of any thing to which this Act, the regulations or a Minister's order apply that does not bear the label of an organization designated by a director under clause 36 (3) (b);

(l) establishing a system of authorization numbers to be used for the identification of things and requiring inspectors and insurers to use such numbers for stamping or otherwise permanently identifying every thing inspected by them that does not have such a number;

(m) requiring welding operators to weld according to procedures established and approved by a director;

(n) governing the conduct of persons in or about elevating devices and amusement devices;

(o) requiring owners of pipelines to develop procedures for locating pipelines and providing for the establishment of such procedures by a director;

(p) requiring every person who carries on the business of operating an amusement device, as defined in the regulations, to obtain and maintain liability insurance, in at least the prescribed amount and in accordance with the prescribed conditions for such business including deductibles;

(q) respecting any matter necessary or advisable to carry out effectively the intent and purpose of this Act. 2000, c. 16, s. 34 (1).

(2) A regulation under subsection (1) may be general or particular in its application. 2000, c. 16, s. 34 (2).

Classes

(3) A regulation may establish different requirements for different classes of person, premises or activity. 2000, c. 16, s. 34 (3).

Definitions

35. Any word or expression used in this Act, the regulations or a Minister's order may be defined in the regulations or order for the purposes of the regulations or order. 2000, c. 16, s. 35.

Codes

36. (1) The Minister may make regulations,

(a) adopting by reference, in whole or in part and with such changes as he or she considers necessary, any code, standard, guideline or procedure and require compliance with the thing as adopted;

(b) amending or repealing codes and standards adopted by reference by a regulation of the Lieutenant Governor in Council before or after this section came into force. 2000, c. 16, s. 36 (1).

Rolling incorporation

(2) If a regulation under subsection (1) so provides, a code, standard, guideline or procedure adopted by reference shall be a reference to it, as amended from time to time, and whether the amendment was made before or after the regulation was adopted. 2000, c. 16, s. 36 (2).

Temporary codes, testing organizations, variations

(3) A director may, in writing,

(a) authorize, subject to such conditions as may be specified and for a limited time, the use of codes, standards, guidelines or procedures or changes to codes, standards, guidelines and procedures necessary to accommodate new developments or technological advances and require compliance with them and permit, subject to such conditions as may be specified, variances from them;

(b) designate organizations to test any thing for which standards or specifications are established under this Act and provide for and require the placing of the organization's label on the thing or any parts of the thing that conform to the standards and specifications;

(c) subject to such conditions as he or she may specify, allow a variance from any regulation or Minister's order made under this Act if, in his or her opinion, the variance would not detrimentally affect the safe use of the thing to which the regulation or Minister's order applies or the health or safety of any person. 2000, c. 16, s. 36 (3).

Regulations Act

(4) The *Regulations Act* does not apply to subsection (3). 2000, c. 16, s. 36 (4).

Exemptions

(5) The Minister may, in writing and subject to such conditions as may be specified, exempt any thing or part of any thing or any class of thing or any class of person from any provision of this Act, the regulations or a Minister's order. 2000, c. 16, s. 36 (5).

Disclosure

(6) Permissions, authorizations, variances, exemptions, requirements, designations and matters provided for under subsection (3) are public information and shall be disclosed by a director to the public on request. 2000, c. 16, s. 36 (6).

Transitional

(7) Codes and standards adopted by reference under a predecessor Act to which this section applies are continued in force until repealed and may be amended or varied as provided in this section. 2000, c. 16, s. 36 (7).

Miscellaneous

Offences

37. (1) Every person who,

(a) contravenes or fails to comply with any provision of this Act, the regulations or a Minister's order;

(b) knowingly makes a false statement or furnishes false information under this Act, the regulations or a Minister's order;

(c) contravenes or fails to comply with a term or condition of an authorization;

(d) contravenes or fails to comply with an order or requirement of an inspector or obstructs an inspector,

is guilty of an offence and on conviction is liable to a fine of not more than $50,000 or to imprisonment for a term of not more than one year, or to both, or, if the person is a body corporate, to a fine of not more than $1,000,000. 2000, c. 16, s. 37 (1).

Duty of director or officer

(2) Every director or officer of a body corporate has a duty to take all reasonable care to prevent the body corporate from committing an offence under subsection (1). 2000, c. 16, s. 37 (2).

Offence

(3) Every director or officer of the body corporate who has a duty under subsection (2) and who fails to carry out that duty is guilty of an offence and on conviction is liable to a fine of not more than $50,000 or to imprisonment for a term of not more than one year, or to both. 2000, c. 16, s.

Separate offence

(4) Where a person contravenes any of the provisions of this Act, the regulations, a Minister's order or any notice or order made under them on more than one day, the continuance of the contravention on each day shall be deemed to constitute a separate offence. 2000, c. 16, s. 37 (4).

Administrative penalty

(5) A person against whom an administrative penalty has been levied by a designated administrative authority or, in the absence of such authority, by the Minister does not preclude a person from being charged with, and convicted of, an offence under this Act for the same matter. 2000, c. 16, s. 37 (5).

Time limit

(6) No proceeding in respect of an alleged offence under this Act may be commenced after two years following the date on which the facts that gave rise to the alleged offence were discovered. 2000, c. 16, s. 37 (6).

Crown bound

38. This Act binds the Crown. 2000, c. 16, s. 38.

Municipal by-laws

39. This Act, the regulations and a Minister's order prevail over any municipal by-law. 2000, c. 16, s. 39.

Priority of use, natural gas

40. (1) Despite anything in this or any other Act, or in any contract for the supply of natural gas made between a distributor and a consumer, the Minister may, if the supply of natural gas to the distributor is interrupted or curtailed, order the distributor to halt or reduce the supply of natural gas to a consumer or a class of consumers if he or she considers it advisable in the circumstances. 2000, c. 16, s. 40 (1).

Compliance

(2) Every person to whom an order referred to in this section is directed shall comply with it in accordance with its terms. 2000, c. 16, s. 40 (2).

Definitions

(3) In this section,

"distributor" means a person who supplies a hydrocarbon to an end user, and "distribute" and "distribution" have corresponding meanings; ("distributeur", "distribuer", "distribution")

"hydrocarbon" means a chemical compound of hydrogen and carbon used as a fuel, either liquid or gaseous. ("hydrocarbure") 2000, c. 16, s. 40 (3).

Duties of employers, contractors

41. Every contractor and employer shall take all reasonable precautions to ensure that they and their agents and employees comply with this Act, the regulations or a Minister's order. 2000, c. 16, s. 41.

Environmental Bill of Rights, 1993

42. The *Environmental Bill of Rights, 1993* applies to this Act with respect to matters to which the predecessor *Gasoline Handling Act* would have applied had it not been repealed by this Act. 2000, c. 16, s. 42.

Minister's confirmation

43. The Minister may confirm in writing the designation of an administrative authority as a designated administrative authority under the *Safety and Consumer Statutes Administration Act, 1996* and such written confirmation is proof, in the absence of evidence to the contrary, of the facts set out in it, without proof of signature. 2000, c. 16, s. 43.

Conflict

44. In the event of conflict between this Act and any provision of the *Safety and Consumer Statutes Administration Act, 1996,* that Act prevails. 2000, c. 16, s. 44.

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REPEALS, TRANSITION AND AMENDMENTS

Repeals

45. (1) The following Acts are repealed:

1. Amusement Devices Act, as amended by the Statutes of Ontario, 1994, chapter 27, section 69 and 1996, chapter 19, section 16.

2. Boilers and Pressure Vessels Act, as amended by the Statutes of Ontario, 1994, chapter 27, section 70 and 1996, chapter 19, section 17.

3. Elevating Devices Act, as amended by the Statutes of Ontario, 1993, chapter 27, Schedule, 1994, chapter 27, section 80, 1996, chapter 19, section 19 and 1999, chapter 12, Schedule F, section 24.

4. Energy Act, as amended by the Statutes of Ontario, 1993, chapter 27, Schedule, 1994, chapter 27, section 81 and 1996, chapter 19, section 20.

5. Gasoline Handling Act, as amended by the Statutes of Ontario, 1993, chapter 27, Schedule, 1994, chapter 27, section 84 and 1996, chapter 19, section 21.

6. Operating Engineers Act, as amended by the Statutes of Ontario, 1993, chapter 27, Schedule 1994, chapter 27, section 95 and 1996, chapter 19, section 23.

7. Upholstered and Stuffed Articles Act, as amended by the Statutes of Ontario, 1994, chapter 27, section 101, 1996, chapter 19, section 26, 1999, chapter 12, Schedule F, section 42 and 1999, chapter 12, Schedule G, section 36.

(2) The following sections of the Ministry of Consumer and Commercial Relations Act are repealed:

1. Section 16, as enacted by the Statutes of Ontario, 1994, chapter 27, section 90 and amended by 1996, chapter 19, section 22.

2. Sections 17, 18 and 19, as enacted by the Statutes of Ontario, 1994, chapter 27, section 90.

Transition

(3) Despite subsection (1),

(a) the regulations made under the Acts referred to in paragraphs 1 to 7 of subsection (1) continue in effect until they are revoked and replaced by regulations or Minister's orders made under this Act;

(b) a designation made under the Ministry of Consumer and Commercial Relations Act and a licence, certificate, approval, identification, registration or permit granted under the Acts referred to in paragraphs 1 to 7 of subsection (1) that are in effect on the day this Act comes into force continue to be in effect until they expire or are earlier revoked; and

(c) every director, inspector, chief officer or chief inspector appointed under the Acts referred to in paragraphs 1 to 7 of subsection (1) or section 16 of the Ministry of Consumer and Commercial Relations Act who are in office on the day this Act comes into force continue in office until the appointment expires or is earlier revoked.

Amendment to the Safety and Consumer Statutes Administration Act, 1996

46. (1) The Schedule to the Safety and Consumer Statutes Administration Act, 1996, as amended by the Statutes of Ontario, 1998, chapter 15, Schedule E, section 46, is further amended by striking out "Amusement Devices Act", "Boilers and Pressure Vessels Act", "Elevating Devices Act", "Energy Act", "Gasoline Handling Act", "Operating Engineers Act" and "Upholstered and Stuffed Articles Act".

(2) The Schedule to the Act is amended by adding "Technical Standards and Safety Act, 2000".

COMMENCEMENT AND SHORT TITLE

Commencement

47. This Act comes into force on a day to be named by proclamation of the Lieutenant Governor.

48. The short title of this Act is the Technical Standards and Safety Act, 2000.

O.Reg. 213/01

ONTARIO REGULATION
made under the
TECHNICAL STANDARDS AND SAFETY ACT, 2000

FUEL OIL

Interpretation

1. (1) In this Regulation,

"aboveground tank" means a tank that is installed at or above grade level within a building or within a secondary containment, but does not include a tank that is in direct contact with backfill material;

"appliance" means a device that consumes or is intended to consume a fuel oil and includes all valves, fittings, controls and components attached or to be attached to it;

"approved" means,

(a) with respect to a standard or a laboratory test report, that it is listed in "Titles of Standards and Laboratory Test Reports Authorized in the Province of Ontario" as published by the designated administrative authority from time to time,

(b) with respect to an appliance, tank, equipment, component or accessory, that it bears the label or symbol of a designated testing organization or a label or symbol authorized by the director, certifying that it complies with an approved standard or laboratory test report, or

(c) with respect to an installation, that it complies with this Regulation;

"central oil distribution system" means a system by which oil is supplied by piping from a central supply tank or tanks to a building, mobile home, travel trailer or other structure and includes, but is not limited to, tanks, pressure piping, valves, fittings, and auxiliary components;

"code adoption document" means the "Fuel Oil Code Adoption Document" adopted as part of this Regulation under Ontario Regulation 223/01;

"contractor" means a person who carries on, in whole or in part, the business of installing, removing, repairing, altering or servicing appliances, and includes a person or an agent of the person who agrees to install, remove, repair, alter or service appliances sold or leased by the person;

"designated testing organization" means an organization designated under section 26 or 27 to test and label an appliance, equipment, component or accessory;

"distributor" means a person who supplies fuel oil to an end user, and "distribute" and "distribution" have corresponding meanings;

"facility" means an installation where fuel oil or used oil, when such oil is used as a fuel, is handled, but does not include a facility referred to in Ontario Regulation 217/01 (Liquid Fuels);

"fuel features" means,

(a) parts that use or handle fuel oil or used oil, govern combustion or vent combustion products, and

(b) construction and installation features that relate to the safe use and handling of fuel oil or used oil;

"fuel oil" means fuel oil as defined in the code adoption document;

"handling" means the transportation or distribution of fuel oil, or the storage of fuel oil in a container, and "handle" and "handler" have corresponding meanings;

"install" includes placing an appliance in position for permanent or temporary use, venting it and connecting piping to it, and "installation" has a corresponding meaning;

"maintenance" means the inspection, servicing or repair of equipment or the replacement of equipment, including replacement with equipment having similar performance specifications to that being replaced where it is not necessary to change the layout perimeters directly associated with the equipment being replaced;

"modification" means a reduction or expansion or other change to layout or equipment, or a change in the operation of a facility, but does not include maintenance;

"operator" means a person who is responsible for all aspects of the day-to-day operation of a distribution system or tank system, whether or not the person is located on the premises during hours of operation and whether or not the person is the owner of the system;

"pipeline" means a pipe that is used for the distribution of fuel oil and includes fittings, valves, controls, compressor stations, pump stations, pressure regulating stations and meter stations, but does not include the pipe, fittings, valves or controls of the end user;

"tank system" means an aboveground or underground tank, and includes all piping, valves, fittings, pumps and other equipment associated with the tank;

"underground tank" means a buried tank or partially buried tank that is in direct contact with earth or backfill;

"used oil" means a petroleum based oil that has been used primarily for lubrication purposes in combustion engines, turbines, transmissions, gear boxes, hydraulic equipment or other similar equipment;

"work" means the facilities used in the handling of fuel oil.

(2) In the event of a conflict between a provision of this Regulation and the code adoption document, this Regulation prevails.

(3) Unless otherwise specified in this Regulation or the code adoption document, equipment installed in accordance with the predecessor of this Regulation shall be deemed approved under this Regulation on the day this Regulation comes into force if the equipment complied with the predecessor regulation at the time that it was installed.

(4) A reference in this Regulation to a director is a reference to the director to whom the subject matter of this Regulation is assigned.

Application

2. (1) This Regulation applies to the installation, testing, maintenance, repair, removal, replacement, inspection and use of appliances, equipment, components and accessories where fuel oil is to be used as a fuel, but it does not apply to equipment referred to in Ontario Regulation 217/01(Liquid Fuels) or to the transmission of fuel under Ontario Regulation 210/01(Oil and Gas Pipeline Systems).

(2) This Regulation applies to the maintenance, modification and specified upgrading of existing equipment and to all new equipment.

General requirement for compliance

3. (1) Every person engaged in an activity, use of equipment, process or procedure to which the Act and this Regulation apply shall comply with the Act and this Regulation.

(2) For the purposes of subsection (1), the reference to activity, use of equipment, process or procedure includes, but is not limited to, design, installation, alteration, repair, service, removal, purging, activation, storage, handling, modification and use of equipment.

Certificates required for various activities

4. (1) No person shall install, alter, purge, activate, repair, service or remove any appliance or any equipment or other thing employed or to be employed in the handling or use of fuel oil unless the person is the holder of a certificate for that purpose under Ontario Regulation 215/01(Fuel Industry Certificates).

(2) The holder of a certificate under Ontario Regulation 216/01(Petroleum Equipment Mechanics) may install, repair, service or remove an underground tank or aboveground tank of any capacity, of any fuel oil type or used oil, within the scope of the holder's certificate.

Duty of employer

5. (1) Every person who installs, removes, repairs, alters or services appliances or works shall instruct the person's employees to comply with the Act and this Regulation.

(2) Every person who installs, removes, repairs, alters or services appliances or works shall take every precaution that is reasonable in the circumstances to ensure that the person's employees comply with the Act and this Regulation.

Licence required to distribute fuel oil

6. (1) No person shall distribute fuel oil through a central oil distribution system or facility unless the person is the holder of a licence issued for the purpose.

(2) An application for a licence as a distributor or its renewal shall be made to the director in the form published by the designated administrative authority and be accompanied by the fee set by the authority.

(3) A licence or its renewal shall be issued to the applicant if the central oil distribution system or facility with respect to which the application is made complies with the requirements of this Regulation, and the director may have an inspection of the system or facility made for the purpose of determining whether the system or facility is in compliance.

(4) A licence as a distributor is not transferable.

(5) A licence as a distributor expires no later than 12 months after the date it is issued, and the date of its expiry shall be stated on the licence.

(6) An application to renew a licence shall be made before the licence expires.

(7) The holder of a licence may obtain a duplicate upon application to the director and payment of the fee set by the designated administrative authority.

(8) A licence, duplicate or renewal of a licence shall not be issued if any fees set by the designated administrative authority are owed by the applicant.

(9) The holder of a licence shall post it at the location for which it is issued such that it is readily visible.

(10) The holder of a licence shall notify the director within 30 days of any change of address.

Supply to containers and tank systems

7. (1) No distributor shall supply fuel oil to a container or tank system that is connected to an appliance or work unless the distributor is satisfied that the installation and use of the appliance or work comply with this Regulation and,

(a) unless the distributor has inspected the appliance or work at least once within the previous 10 years; or

(b) unless the distributor has inspected the appliance or work in accordance with a quality assurance inspection program.

(2) A distributor shall prepare a report on each inspection made under subsection (1) and shall retain the report until the next inspection and report are completed.

(3) An inspection shall be carried out by a person who is the holder of a certificate for that purpose.

(4) No person shall supply fuel oil to an underground tank unless the underground tank is registered.

Supply to institutional buildings

8. (1) Where an appliance or work is installed in an industrial, institutional or assembly building that is defined in the code adoption document, the owner of the building shall ensure that,

(a) the appliance or work and its fuel features are maintained in accordance with the manufacturer's recommended maintenance procedures;

(b) an evaluation of the maintenance procedures referred to in clause (a) is carried out in consultation with the manufacturer or, as required by the director, at least once every 10 years and, where indicated by the evaluation, new or upgraded procedures are established; and

(c) an inspection of the appliance or work and its fuel features is carried out at least once every 10 years to ensure that they are in a safe operating condition and that the installation complies with this Regulation.

(2) An inspection under this section shall be carried out by a person who is the holder of a certificate for that purpose.

(3) The owner of the building shall keep a record of an inspection made under this section until the next inspection and report are completed.

Initial putting into use

9. (1) No person shall put into use for the first time an appliance in premises that is to be supplied with fuel oil by pipeline without first giving notice in writing to the distributor of the address of the premises at which the installation was made or is to be made and the type of appliance supplied or to be supplied.

(2) No person shall put into use for the first time an appliance in premises that is being supplied with fuel oil by pipeline until the distributor has examined the installation of the appliance and is satisfied that the installation and use of the appliance are in compliance with this Regulation.

(3) An examination under subsection (2) shall include the examination of all appliances installed at the time of occupation of the premises.

Access by distributor

10. A distributor shall have access, at all reasonable times and upon reasonable notice, to all parts of every premises to which the distributor supplies fuel oil for the purpose of,

(a) examining any appliance in or on the premises and disconnecting the appliance if it, its installation or its use does not conform with this Regulation; and

(b) placing, protecting, setting, shutting off, removing, repairing or altering any meter or regulator owned by the distributor in or on the premises.

Initial activation of pipeline

11. (1) No person shall activate a pipeline until it has been examined and found to be in compliance with this Regulation.

(2) The examination referred to in subsection (1) shall be made by a person who holds a certificate for that purpose under Ontario Regulation 216/01 (Petroleum Equipment Mechanics).

Duty to inquire before digging

12. (1) No person shall dig, bore, trench, grade, excavate or break ground with mechanical equipment or explosives without first ascertaining from the holder of a licence as a distributor the location of any pipeline that may be interfered with.

(2) The licence holder shall provide as accurate information as possible on the location of any pipeline within a reasonable time in all the circumstances.

No interference with pipeline

13. No person shall interfere with or damage any pipeline without authority to do so.

Duty of distributor re underground tanks

14. Every distributor shall, before the day that is 180 days after the day this Regulation is filed, provide to the director the address of every underground tank that the distributor is aware of to which the distributor is supplying fuel at the time of providing the notice.

Contractor registration

15. (1) No person shall act as a contractor unless the person is registered for that purpose.

(2) An application for registration as a contractor or the renewal of a registration shall be made to the director in the form published by the designated administrative authority and shall be accompanied by the fee set by the designated administrative authority.

(3) A registration as a contractor is not transferable.

(4) A registration as a contractor expires no later than 12 months after the date it is issued and the date of its expiry shall be stated on the licence.

(5) An application to renew a registration shall be made before the registration expires.

(6) The holder of a registration may obtain a duplicate upon application to the director and payment of the fee set by the designated administrative authority.

(7) A registration or duplicate or a renewal of a registration shall not be issued if any fees set by the designated administrative authority are owed by the applicant.

Design registration

16. (1) Except as provided in subsection (4), a person who plans to construct a central oil distribution system or facility or to make a modification to it shall submit drawings in triplicate of the proposed system or facility to the director for registration.

(2) The drawings shall be submitted before the construction or modifications begin.

(3) Upon registering the drawings, the director shall return one copy of them to the applicant.

(4) A person may prepare drawings for the construction or modification of a system or facility under subsection (1) and may, despite that subsection, submit only one copy if,

(a) a professional engineer has reviewed them, stamped them with his or her seal and signed them;

(b) the professional engineer has submitted a declaration to the director that the drawings are in compliance with the requirements of this Regulation; and

(c) a copy of the drawings is kept at all times at the facility while the construction or modification is being carried out.

(5) In this section,

"professional engineer" means a person licensed under the *Professional Engineers Act*.

No sale of thing without approval

17. (1) No person shall offer for sale, sell, lease, rent, buy, install, use or supply fuel to an appliance, equipment, tank system or other thing, except a stationary diesel engine or turbine, unless it is approved prior to activation.

(2) No person shall offer for sale, sell, lease, rent, buy, install or service an appliance, equipment, tank system or other thing for a use for which it is not approved.

Installation

18. Every certificate holder and every contractor who installs an appliance or tank system shall record on the appliance or system in a conspicuous place the installation performed and the date, as well as the name of the certificate holder and the certificate number.

Operation

19. No person shall operate or permit to be operated an appliance or tank system unless it is maintained in a safe operating condition and it complies with this Regulation.

Supply of fuel

20. No person shall supply fuel oil to or use an appliance, container, equipment, tank system or other thing employed in the handling or use of fuel oil or used oil unless it complies with this Regulation.

Dangerous occurrences

21. (1) Where it appears that carbon monoxide poisoning, asphyxiation, accidental release, leak, explosion or fire has occurred because of the use, storage or handling of fuel oil, a certificate holder, licence holder, operator, contractor or distributor shall forthwith notify an inspector of the occurrence by telephone, fax or any other form of electronic transmission, and a registered contractor or licence holder shall have in place procedures for such notification.

(2) No person shall interfere with or disturb any wreckage, article or thing at the scene of an occurrence that is connected with it except in the interest of public safety, saving life, relieving human suffering, continuity of service or preservation of property.

(3) Where it is permitted to interfere with or disturb wreckage, an article or a thing under subsection (2), no person shall carry away or destroy any wreckage, article or thing unless an inspector gives permission to do so.

Procedures on discovery of unacceptable condition

22. (1) In sections 23, 24, 25 and 26,

“unacceptable condition” means,

(a) with respect to an appliance, container or work, that it is being used for a purpose other than that for which it was approved,

(b) with respect to an appliance or work, that a device, attachment, alteration or deterioration of it is likely to impair its safe operation,

(c) with respect to an appliance or work, that the conditions of the tank, piping, tubing or hoses, the venting of products of combustion, the supply of air for combustion or the clearance from adjacent, combustible matter is likely, in the director’s opinion, to impair its safe operation, or does not conform to this Regulation, or

(d) with respect to equipment, that the condition of its state of repair, its mode of operation or its operating environment is likely to impair its safe operation or does not meet the requirements of this Regulation.

(2) No person shall remove a notice that has been affixed to an appliance or system under section 23, 24, 25 or 26 unless the person is a holder of a certificate for that purpose.

Unacceptable condition — immediate hazard

23. (1) A distributor who is informed or who finds, during delivery operations or during an inspection, that the condition of a facility, appliance or tank system constitutes an immediate hazard shall,

(a) immediately cease supplying fuel oil to the facility, appliance or tank system;

(b) immediately take such steps as are reasonable in the circumstances to shut off the supply of fuel oil to the facility, appliance or tank system**;**

(c) promptly give written notice of the condition to its operator stating that it is not to be used until the condition is corrected and a distributor has determined on reinspection that the condition has been corrected;

(d) affix the notice under clause (c) to the facility, appliance or tank system; and

(e) forward a copy of the notice to the designated administrative authority.

(2) If the notice affixed under clause (1) (d) is subsequently removed, the person removing it shall endorse his or her certificate number, name and address on the notice and send it by prepaid registered mail or deliver it to the distributor.

(3) No operator to whom a notice has been given under subsection (1) shall use or permit the use of the appliance or tank system referred to in the notice until the condition set out in the notice has been corrected and a person holding a certificate for that purpose has determined on reinspection that the hazardous condition no longer exists.

(4) A distributor to whom a notice has been given under subsection (1) shall not supply fuel oil to the appliance or tank system referred to in the notice unless written evidence, containing the date the hazardous condition was corrected, together with the name and certificate number of the person who corrected the condition, is received by the distributor.

Unacceptable condition — no immediate hazard

24. (1) A distributor who is informed or who finds, during delivery operations or during an inspection, that an appliance or tank system is, in the opinion of the distributor, in an unacceptable condition but that an immediate hazard does not exist, shall,

(a) give to the operator a description of the condition;

(b) promptly provide a notice to the operator indicating that the distributor will cease supplying fuel oil to the appliance or tank system if the condition is not corrected within the period of time specified in the notice;

(c) affix the notice under clause (b) to the appliance or tank system; and

(d) forward a copy of the notice to the designated administrative authority.

(2) The period of time set out in the notice under clause (1) (b) shall not exceed 90 days.

(3) If the notice affixed under clause (1) (b) is subsequently removed, the person removing it shall endorse his or her certificate number, name and address on the notice and send it by prepaid registered mail or deliver it to the distributor.

(4) No operator to whom a statement has been given under subsection (1) shall use or permit the use of the appliance or tank system after the expiry of the period of time specified in the notice for correcting the condition unless the condition has been corrected.

(5) A distributor who gives a notice under subsection (1) shall cease supplying fuel oil to the appliance or tank system if the unacceptable condition described in the notice is not corrected within the period of time specified in the notice.

(6) A distributor to whom a notice is given under subsection (1) shall not supply fuel oil to the appliance or tank system after the period of time referred to in the notice, unless written evidence, containing the date the hazardous condition was corrected, together with the name and certificate number of the person who corrected the condition, is received by the distributor.

Unacceptable condition — immediate hazard

25. (1) Where a certificate holder or a contractor finds that an appliance or tank system is, in the opinion of the certificate holder or contractor, in an unacceptable condition and that it constitutes an immediate hazard, the certificate holder or contractor shall,

(a) immediately shut off the supply of fuel oil or used oil to the appliance;

(b) immediately give the user oral notice of the unacceptable condition and of the immediate hazard, and of the holder's or contractor's intention to shut off the supply of fuel oil or used oil;

(c) promptly give oral notice of the actions taken under clauses (a) and (b) to the distributor, if known;

(d) after giving the oral notice under clause (b), promptly give written notice to the user that sets out,

(i) a description of the unacceptable condition and the immediate hazard, and

(ii) a statement indicating that the appliance or tank system not be used until the condition is corrected;

(e) within 14 days of finding the unacceptable condition, give to the distributor, if known, written notice of the unacceptable condition and indicate that the supply of fuel oil to the appliance or tank system has been shut off;

(f) affix the notice under clause (e) to the appliance or tank system; and

(g) forward a copy of the notice to the designated administrative authority

(2) If the notice affixed under clause (1) (f) is subsequently removed from the appliance or tank system, the person removing it shall endorse his or her certificate number, name and address on the notice and send it by prepaid registered mail or deliver it to the distributor.

(3) A user to whom notice has been given under subsection (1) shall not use or permit the use of the appliance or tank system until the condition has been corrected and confirmation of the correction has been forwarded to the designated administrative authority.

Unacceptable condition — no immediate hazard

26. (1) Where a certificate holder or a contractor finds that an appliance or tank system is, in the opinion of the certificate holder or contractor, in an unacceptable condition but that it does not constitute an immediate hazard, the certificate holder or contractor shall,

(a) immediately give oral notice of the unacceptable condition to the distributor, if known;

(b) immediately give written notice to the user, setting out a description of the unacceptable condition and advising that notice of the condition has been given to the distributor;

(c) within 14 days of finding the unacceptable condition, give written notice of the condition to the distributor, if known;

(d) affix the notice under clause (b) to the appliance or tank system; and

(e) forward a copy of the notice required under clause (b) to the designated administrative authority.

(2) If the notice affixed under clause (1) (d) is subsequently removed, the person removing it shall endorse his or her certificate number, name and address on the notice and send it by prepaid registered mail or deliver it to the distributor.

Off-site testing and approvals

27. (1) This section applies only to the testing of an appliance, equipment, a component or an accessory that is carried out at a place other than the place where the appliance, equipment, component or accessory is installed for its intended use.

(2) A person may apply to a designated testing organization to have an appliance, equipment, a component or an accessory tested under this section.

(3) Organizations accredited by the Standards Council of Canada are designated as organizations to test appliances, equipment, components and accessories to the applicable approved standards or laboratory test reports.

(4) A designated testing organization that tests an appliance, equipment, a component or an accessory under this section shall place its label or symbol on it if it conforms to the applicable approved standards or laboratory test report.

On-site testing and approvals

28. (1) This section applies only to the testing of an appliance, equipment, a component or an accessory that is carried out at the place where it is installed for its intended use.

(2) A person may apply to the director or to an inspector designated by the director to have an appliance, equipment, a component or an accessory tested under this section.

(3) The director or inspector may test the appliance, equipment, component or accessory to determine if it conforms to the applicable approved standards or laboratory test reports and, where it does conform, shall place on it a label or symbol approved by the director.

(4) If an appliance, equipment, a component or an accessory tested under this section conforms to the applicable approved standards or laboratory test reports, the director or inspector shall place his or her approved label or symbol on it.

(5) A test under this section shall include a determination as to whether the fuel features of the appliance, equipment, component or accessory conform with the approved standards or laboratory test report and this Regulation and, if they do, the director or an inspector shall place on it the label or symbol approved by the director.

(6) The applicant shall provide to the director or inspector all information, and conduct or cause to be conducted all tests, required to determine whether the fuel features are in compliance with the requirements of subsection (5).

(7) The applicant shall pay the fees set by the designated administrative authority for time reasonably spent in,

(a) reviewing information about the thing to be tested;

(b) inspecting its fuel features; and

(c) observing any test of the fuel features to determine their compliance with this Regulation;

(d) using the thing during testing.

Commencement

29. This Regulation comes into force on the day the *Technical Standards and Safety Act, 2000* is proclaimed in force.

O.Reg. 215/01

ONTARIO REGULATION
made under the
TECHNICAL STANDARDS AND SAFETY ACT, 2000

FUEL INDUSTRY CERTIFICATES

Interpretation

1. (1) In this Regulation,

"approved appliance" means a device that uses a hydrocarbon, including all valves, fittings, controls and components attached to the device, that bears a label indicating that it meets an approved standard under any of the regulations mentioned in subsection 2 (1);

"direct supervision" means the supervision of a supervising certificate holder who is on site in close proximity to a trainee and is available to assist and supervise the trainee;

"general supervision" means the supervision of a supervising certificate holder who may or may not be on site but who is readily available to assist a trainee;

"record of training" means a record issued by an approved training provider that indicates training received by a person;

"supervising certificate holder" means a person who holds a certificate under this Regulation and provides supervision to a trainee.

(2) A reference in this Regulation to a director is a reference to the director to whom the subject matter of this Regulation is assigned.

Application and requirement to comply

2. (1) This Regulation applies with respect to certificates required to be held in order to perform work under the following regulations:

1. Ontario Regulation 212/01(Gaseous Fuels).

2. Ontario Regulation 211/01(Propane Storage and Handling).

3. Ontario Regulation 210/01(Oil and Gas Pipeline Systems).

4. Ontario Regulation 213/01(Fuel Oil).

5. Ontario Regulation 214/01(Compressed Natural Gas).

(2) Every person engaged in an activity, use of equipment, process or procedure to which the Act and this Regulation apply shall comply with the Act and this Regulation.

(3) For the purposes of subsection (1), the reference to an activity, use of equipment, process or procedure includes, but is not limited to, design, construction, erection, installation, maintenance, alteration, service, use or disposal.

Certificates

3. (1) No person shall perform the functions of a certificate holder without first having obtained a certificate from the director designating the person as one or more of the following:

1. A gas technician 1 (a “G.1 certificate”).

2. A gas technician 2 (a “G.2 certificate”).

3. A gas technician 3 (a “G.3 certificate”).

4. A gas piping fitter (a “GP certificate”).

5. A liquid propane fitter (an “LP certificate”).

6. An internal combustion alternate fuel technician (an “ICE certificate”).

7. An internal combustion alternate fuel technician - industrial vehicles (an “ICE-IV certificate”).

8. A domestic appliance technician (a “DA certificate”).

9. A recreational vehicles technician 1 (an “RV.1 certificate”).

10. A recreational vehicles technician 2 (an “RV.2 certificate”).

11. An industrial maintenance technician (an “IMT certificate”).

12. A gas pipeline inspector (a “GPI certificate”).

13. A refuelling station installer - natural gas (a “RSI-NG certificate”).

14. A refuelling station service technician - natural gas (a “RST-NG certificate”).

15. A propane plant operator 1 (a “PPO-1 certificate”).

16. A propane plant operator 2 (a “PPO-2 certificate”).

17. A propane plant operator 3 (a “PPO-3 certificate”).

18. A propane cylinder inspector (a “PCI-1 certificate”).

19. A propane truck inspector (a “PTO-1 certificate”).

20. An oil burner technician 1 (an “OBT-1 certificate”).

21. An oil burner technician 2 (an “OBT-2 certificate”).

22. An oil burner technician 3 (an “OBT-3 certificate”).

23. A fuel oil pipeline inspector (an “OPI certificate”).

24. A special effects fuel technician 1 (an “FXFT-1 certificate”).

25. A special effects fuel technician 2 (an “FXFT- 2 certificate”).

26. An oil pipe fitter (an “OP certificate”).

27. A crop dryer technician (a “CDT certificate”).

28. An oil burner activation technician (an “OBAT certificate”).

29. A construction heater operator 1 (a “CH-01 certificate”).

30. A construction heater operator 2 (a “CH-02 certificate”).

31. A construction heater service and maintenance technician 1 (a “CH-SM1 certificate”).

32. A construction heater service and maintenance technician 2 (a “CH-SM2 certificate”).

33. A roofing equipment operator (an “RE-O certificate”).

(2) A person may apply to the director to add one or more designations to his or her certificate.

(3) An application for a certificate or a renewal thereof shall be in the form published by the designated administrative authority and be accompanied by the fee set by the authority.

(4) A professional engineer within the meaning of the *Professional Engineers Act* shall be deemed,

(a) to hold a GPI certificate if he or she works in the field of natural gas distribution;

(b) to hold an OPI certificate if he or she works in the field of fuel oil distribution.

Renewals

4. (1) An application for renewal of a certificate may be made before the certificate expires or within one year after it has expired.

(2) A person who wishes to renew a certificate shall successfully complete an approved upgrading course by the date specified by the director.

Qualifications **5.** (1) An applicant only qualifies for a certificate for which the applicant has successfully completed a program approved by the director that is conducted by an accredited training organization approved by the director and registered with the designated administrative authority.

(2) Subsection (1) does not apply where the director is satisfied that the applicant possesses knowledge and competence with respect to each designation sought by the applicant that is equivalent to the applicant having taken the program referred to in subsection (1).

(3) An applicant referred to in subsection (1) may be issued a certificate only with respect to a designation sought by the applicant if the applicant first successfully completes an examination or a series of examinations conducted or approved by the director that demonstrates that the applicant possesses the necessary knowledge and competence for each designation sought by the applicant.

(4) If an applicant fails the examination or series of examinations for one designation, he or she is not entitled to take the examination or series of examinations for the same designation until,

(a) he or she makes a new application for the designation; and

(b) 30 days have passed since the applicant took the examination or series of examinations.

Additional requirements for G.1 certificate

6. In addition to the requirements set out in section 5, an applicant for a G.1 certificate shall meet the following requirements:

1. The applicant shall be the holder of a G.2 certificate when he or she applies.

2. The applicant shall have worked as a gas technician 2 within the scope of a G.2 certificate for at least two years or 4,000 hours of which at least 500 hours must have been on systems with an input greater than 400,000 Btuh, under the direct supervision of a person holding a G.1 certificate.

3. The applicant shall submit a completed declaration of work experience in a form acceptable to the director that sets out the nature of the experience the applicant acquired as the holder of a G.2 certificate during the period described in paragraph 2.

Additional requirements for G.2 and DA certificates

7. In addition to the requirements set out in section 5, an applicant for a G.2 or DA certificate shall meet the following requirement:

1. The applicant shall be the holder of a G.3 certificate or of a valid certificate of qualification as an operating engineer under Ontario Regulation 219/01(Operating Engineers) when he or she applies.

Additional requirements for RV.1 certificate

8. In addition to the requirements set out in subsection 5 (1), an applicant for an RV.1 certificate shall meet the following requirements:

1. The applicant shall be the holder of an RV.2 certificate when he or she applies.

2. The applicant shall have obtained at least nine continuous months of documented work experience under the direct supervision of an RV.1 certificate holder.

Additional requirements for FXFT- 1 certificate

9. In addition to the requirements set out in section 5, an applicant for an FXFT-1 certificate shall meet the following requirements:

1. The applicant shall be the holder of an FXFT-2 certificate when he or she applies.

2. The applicant shall have obtained at least one year or 2,000 hours of documented work experience, whichever is obtained first, under the direct supervision of an FXFT-1 certificate holder.

Additional requirements for IMT certificate

10. (1) In addition to the requirements set out in section 5, an applicant for an IMT certificate shall meet the following requirements:

1. The applicant shall be employed in an industrial or institutional establishment equipped with hydrocarbon-fuelled appliances or by a manufacturer of hydrocarbon-fuelled appliances.

2. The applicant shall have been trained by a training provider approved by the director on the systems being installed, maintained or serviced by the applicant.

(2) The employer of an applicant for an IMT certificate shall maintain records of the training given to the applicant under paragraph 2 of subsection (1) and, upon request, shall give a copy of them to an inspector.

(3) An applicant for an IMT certificate who has successfully completed a training program approved by the director on the electrical components of the equipment as they relate to the gas and fuel oil systems only may be issued a certificate with the additional designation “E”.

(4) An applicant for an IMT certificate who has successfully completed a training program approved by the director on the mechanical components of the equipment only may be issued a certificate with the additional designation “M”.

LP certificates

11. In addition to the requirements set out in section 5, an applicant for an LP certificate shall be the holder of a G.1, G.2, GP or IMT certificate.

RSI-NG certificates

12. In addition to the requirements set out in section 5, an applicant for an RSI-NG certificate shall be the holder of a G.1 or G.2 certificate.

Additional requirements for ICE certificate

13. (1) In addition to the requirements set out in section 5, an applicant for an ICE certificate shall meet the following requirements:

1. The applicant shall be the holder of a valid certification of qualification under the *Apprenticeship and Certification Act, 1998* as an automotive service technician, a truck and coach technician, a heavy duty equipment mechanic, a fuel and electrical systems technician or a farm equipment mechanic when he or she applies.

2. The applicant shall have successfully completed a training program acceptable to the director on propane fuelling systems and natural gas fuelling systems.

(2) An applicant for an ICE-IV certificate shall have successfully completed a training program acceptable to the director on propane fuelling systems and natural gas fuelling systems.

(3) An applicant for an ICE or ICE-IV certificate who has successfully completed a training program on propane fuelling systems only may be issued a certificate with the additional designation "P" and such certificate entitles the holder to carry out work on propane fuelling systems only.

(4) An applicant for an ICE or ICE-IV certificate who has successfully completed a training program acceptable to the director in natural gas fuelling systems only may be issued a certificate with the additional designation "NG" and such certificate entitles the holder to carry out work on natural gas fuelling systems only.

Additional requirements for OBT-1 certificates

14. In addition to the requirements set out in section 5, an applicant for an OBT-1 certificate shall meet the following requirements:

1. The applicant shall be the holder of an OBT-2 or an IMT certificate when he or she applies.

2. The applicant shall have worked for at least 4,000 hours either as an OBT-2 or as an IMT of which at least 500 hours must have been on oil-fired systems with an input greater than 7 U.S. gallons per hour, under the direct supervision of a person holding an OBT-1 certificate.

3. The applicant shall submit a completed declaration of work experience in a form acceptable to the director that sets out the nature of the experience the applicant acquired as an OBT-2 certificate holder during the period described in paragraph 2.

Additional requirements for OBT-2 certificate

15. In addition to the requirements set out in section 5, an applicant for an OBT-2 certificate shall meet the following requirement:

1. The applicant shall be the holder of an OBT-3 certificate or a valid certificate of qualification as a first, second or third class stationary engineer under Ontario Regulation 219/01(Operating Engineers) when he or she applies.

Additional requirements for an OP certificate

16. In addition to the requirements set out in section 5, an applicant for an OP certificate shall meet the following requirement:

1. The applicant shall be the holder of a GP certificate or a gas technician certificate that allows the holder to conduct the work of a GP certificate holder.

No transfer

17. A certificate is not transferable.

Expiry of certificates

18. (1) A certificate or renewal of a certificate remains in force for the period of time set out in it.

(2) The addition of a designation to a certificate after the certificate is issued does not change the expiry date of the certificate.

Notice of change of address

19. (1) A person who holds a certificate shall notify the director within 30 days after any change in his or her address.

(2) The director is not responsible for misdirected notices or renewals resulting from the certificate holder's failure to comply with subsection (1).

Scope of certificates

G.1 certificate

20. (1) A person who is the holder of a G.1 certificate may install, inspect, alter, purge, activate, repair, service or remove a natural gas or propane appliance of any BTU input and the equipment and accessories essential to its operation.

(2) A person who is certified to carry out the functions described in subsection (1), may also do the following:

1. Install, inspect, test, alter, purge, activate, repair, service or remove any piping or tubing, or component in a piping or tubing system, to an appliance downstream of the natural gas meter or propane vapour service valve.

2. Install, inspect, alter, repair, service or remove any vent, vent connector, draft control device or other component in an appliance venting system.

3. Disconnect and reconnect water piping in order to exchange, service or install an approved appliance and carry out the replacement of water pipe necessary to complete the reconnection or installation of controls, control systems, components and accessories that are essential to the operation of the appliance, but the person shall not perform any additional plumbing unless he or she is also the holder of a valid certificate of qualification as a plumber or steamfitter issued under the *Trades Qualification and Apprenticeship Act*.

4. Maintain, service or replace a mechanical or electrical component or accessory that forms part of an appliance or that is essential to the operation of the appliance.

5. Perform such tasks as are necessary to replace controls and components that form part of an appliance.

6. Install, service, remove or replace components and accessories that form part of the gas-side of a refrigerating or air-conditioning unit, but the person shall not perform any work beyond the gas-side unless he or she is the holder of a certificate of qualification as a refrigeration and air-conditioning mechanic issued under the *Trades Qualification and Apprenticeship Act*.

7. Install, repair, service and maintain electrical wiring from an existing branch circuit containing overcurrent protection to appliances in order to exchange, service, repair or install an approved appliance and carry out the replacement of electrical wiring necessary to complete the reconnection or installation of controls, control systems, components and accessories that are essential to the operation of the appliance, but the person shall not run wiring back to the electrical supply panel or perform any additional wiring unless he or she is also the holder of a valid certificate of qualification as an electrician issued under the *Trades Qualification and Apprenticeship Act*.

8. Install, repair, service, remove or replace the plenum connection or components forming part of the plenum connection in order to complete the installation of a natural gas or propane appliance, but the person shall not perform any sheet metal work beyond the plenum connection unless he or she is the holder of a certificate of qualification as a sheet metal worker issued under the *Trades Qualification and Apprenticeship Act*.

9. Service a flue where an oil appliance is vented through the same flue as a gas appliance.

10. Remove a fuel oil appliance, and the equipment and accessories, but not the aboveground storage tanks associated with the fuel oil appliance during a conversion of the fuel oil appliance from fuel oil to natural gas or propane gas.

G.2 certificate

21. (1) A person who is the holder of a G.2 certificate may install, inspect, alter, purge, activate, repair, service or remove a natural gas or propane appliance that has an input of 400,000 Btuh or less and the equipment and accessories essential to its operation.

(2) When performing a function described in subsection (1), the person may do the following:

1. Perform the functions described in paragraphs 1 to 10 of subsection 20 (2) that the holder of a G.1 certificate may perform.

2. Under the direct supervision of a person who is the holder of a G.1 certificate, perform all of the functions that fall within the scope of the supervising certificate holder's certificate.

G.3 certificate

22. (1) A person who is the holder of a G.3 certificate may, under the general supervision of a person who is the holder of a G.1, G.2 or DA certificate, carry out the following functions on a propane or natural gas appliance that falls within the scope of the supervising certificate holder's certificate, but only if the person has demonstrated the essential skills required to perform such work and has had that experience documented and signed-off by the supervising certificate holder in a form as set out and published by the director:

1. Install, test, activate or purge gas piping or tubing that is less than two and one-half inches in diameter or a component in a piping or tubing system to an appliance downstream of a natural gas meter or propane service valve up to an appliance control valve.

2. Reactivate a previously installed or converted appliance.

3. Clean and lubricate an appliance.

4. Clean, remove or replace a vent connector, venting or a draft control device.

(2) A person referred to in subsection (1) shall not perform the initial activation of a new appliance or a newly converted appliance.

(3) A person who is the holder of a G.1, G.2, DA, DA-RV, GP or IMT certificate is responsible for any work carried out by a person who is the holder of a G.3 certificate who is under his or her supervision.

(4) A person who is the holder of a G.3 certificate may, under the direct supervision of a person who is the holder of a G.1, G.2 or DA certificate, carry out any of the functions that fall within the scope of the supervising certificate holder's certificate.

GPI certificate

23. A person who is the holder of a GPI certificate may, on behalf of an operating company, inspect and certify natural gas pipeline installations, tests and replacements in accordance with Ontario Regulation 210/01(Oil and Gas Pipeline Systems).

RSI-NG certificate

24. A person who is the holder of a RSI-NG certificate may install, alter, service, maintain and repair natural gas vehicle refuelling stations.

RST-NG certificate

25. A person who is the holder of a RST-NG certificate may alter, service, maintain and repair natural gas vehicle refuelling stations.

LP certificate

26. (1) A person who is the holder of an LP certificate may install, purge, activate, repair, alter, service and remove liquid propane piping or tubing systems and components.

(2) When performing a function described in subsection (1), the person may do the following:

1. Install, alter, purge and test valves, regulators or accessories that are connected to equipment or component downstream of the liquid outlet of the propane storage tank.

2. Disconnect and reconnect appliances and components in the liquid gas piping or tubing in order to carry out repairs to piping or tubing.

3. Connect liquid piping or tubing to newly-installed or replacement propane appliances or components.

ICE certificate

27. (1) A person who is the holder of an ICE certificate may install, purge, inspect, activate, repair, service and remove propane and natural gas fuelling equipment and systems on industrial vehicles and stationary engines mounted on vehicles and on motor vehicles within the meaning of the *Highway Traffic Act*.

(2) When performing a function described in subsection (1), the person may do the following:

1. Install, service and replace approved propane and natural gas fuelling engine components, tubing, hoses, tanks and other related equipment on vehicles and stationary engines that operate on gaseous fuels.

2. Purge and pressure test the related equipment and systems to ensure that they do not leak.

3. Adjust and calibrate propane and natural gas carburation systems.

4. Purge propane or natural gas containers and lines of air and moisture.

5. Conduct visual inspections of fuel tanks or cylinders and fuelling equipment for internal combustion engines on vehicles that are powered by propane or natural gas.

ICE-IV certificate

28. (1) A person who is the holder of an ICE-IV certificate may,

(a) install, alter, purge, activate, repair, service or remove propane or natural gas fuelling equipment on stationary engines or internal combustion engines for mobile industrial equipment; and

(b) install, service or remove equipment, piping, tubing or hoses on mobile industrial equipment.

(2) When performing a function described in subsection (1), the person may do the following:

1. Install, service or replace approved propane or natural gas fuelling engine components, tubing, hoses, tanks and other related equipment for vehicles that operate on gaseous fuels.

2. Purge and pressure test the related equipment referred to in paragraph 1 and systems to ensure that they do not leak.

3. Purge propane or natural gas containers and lines of air and moisture.

4. Conduct visual inspections of fuel tanks or cylinders and fuelling equipment for internal combustion engines on mobile industrial equipment that are powered by propane or natural gas.

5. Adjust and calibrate propane and natural gas carburation systems.

GP certificate

29. (1) A person who is the holder of a GP certificate may,

(a) install and repair pipe and tubing that supplies gas in a vapour state to an appliance; and

(b) alter, purge, test, repair, service or remove gas piping or tubing systems for natural gas and propane gas in the vapour state.

(2) When performing a function described in subsection (1), the person may do the following:

1. Install, alter, purge and test valves or regulators that are connected to an appliance downstream of the natural gas meter or propane vapour service valve.

2. Disconnect and reconnect appliances at the gas piping or tubing in order to carry out plumbing or steam repairs.

3. Connect gas piping or tubing to newly-installed or replacement natural gas or propane gas appliances.

(3) The person shall not weld piping or tubing unless he or she is qualified to do so under Ontario Regulation 220/01(Boilers and Pressure Vessels) and does so in accordance with the procedures required by that regulation.

IMT certificate

30. (1) A person who is the holder of an IMT certificate may carry out work on the equipment for which the certificate is valid and perform any of the functions of a G.1 or OBT-1 certificate holder on which they have been trained, except the following work:

1. Install, service, remove or replace components and accessories that form part of a refrigerating or air-conditioning unit.

2. Install, service, remove or replace tanks.

IMT-E certificate

(2) A person who is the holder of an IMT-E certificate may perform the functions of an IMT certificate holder with respect to electrical functions of the equipment only.

IMT-M certificate

(3) A person who is the holder of an IMT-M certificate may perform the functions of an IMT certificate holder with respect to mechanical functions of the equipment only.

DA certificate

31. (1) A person who is the holder of a DA certificate may install, alter, purge, activate, repair, service or remove any unvented residential natural gas or propane gas appliance and its equipment or a vented refrigerator that has an input of 100,000 Btuh or less, other than a construction heater.

(2) When performing a function described in subsection (1), the person may also do the following:

1. Install, test, inspect, activate, alter, purge, service, repair or remove any piping or tubing or component in a piping or tubing system to an unvented residential appliance or vented refrigerator downstream of the natural gas meter or propane vapour service valve.

2. Maintain, service or replace a mechanical or electrical component or moisture duct or accessory that forms part of an unvented residential appliance or vented refrigerator and that is essential to the appliance’s operation.

3. Perform the tasks that are necessary to replace controls, components and accessories that form part of an unvented residential appliance or vented refrigerator and that is essential to the appliance’s operation.

4. Service and replace electrical switches, fuses, components and control wiring that are directly related to the operation of an unvented residential appliance or vented refrigerator.

(3) A person referred to in subsection (1) shall not perform electrical work other than that described in subsection (2) unless he or she is the holder of a certificate of qualification as an electrician issued under the *Trades Qualification and Apprenticeship Act*.

RV.1 certificate

32. (1) A person who is the holder of an RV.1 certificate may install, alter, purge, activate, repair, service or remove any propane non-vented, direct vent or power vent appliance installed in a recreational vehicle, mobile home, office trailer or trailer that are not permanently located on a site or in an additional enclosure attached to any one of them with an input of 100,000 Btuh or less.

(2) When performing a function described in subsection (1), the person may also do the following:

1. Install, alter, purge, activate, test, service or remove regulators, accessories and tubing to supply the appliance.

2. Install, alter, purge, activate, test, service or remove any cylinders, regulators, accessories and tubing to supply the appliance.

3. Install a natural gas appliance provided that it is immediately converted to propane and the appliance is approved for the conversion to propane.

4. Replace, pressure and leak test a section of hard pipe that has been cut and threaded by a tradesperson referred to in paragraph 4 of subsection 3 (1).

(3) A person referred to in subsection (2) shall not fill propane containers unless he or she holds the appropriate certificate or record of training as a propane plant operator referred to in paragraphs 15, 16 and 17 of subsection 3 (1).

RV.2 certificate

33. A person who is the holder of an RV.2 certificate may, under the direct supervision of a holder of an RV.1 certificate, carry out any of the following functions that fall within the scope of the supervising certificate holder’s certificate:

1. Relight appliances that have been operating in a satisfactory and safe condition.

2. Clean appliances in accordance with the manufacturer’s instructions.

3. Remove and reconnect appliances.

4. Exchange cylinders but not fill them.

5. Conduct a leak test of the propane system of the appliance.

PPO-1 certificate

34. A person may perform the following functions if the person is the holder of a PPO-1 certificate or is the holder of a record of training issued by a training organization approved by the director that indicates that the person has taken training acceptable to the director:

1. Transfer propane to and from tank cars, cargo liners, tank trucks, filling plants and container refill centres.

2. Fill containers and operate propane transfer equipment in a filling plant or container refill centre.

PPO-2 Certificate

35. A person may perform the following functions if the person is the holder of a PPO-2 certificate or is the holder of a record of training issued by a training organization approved by the director that indicates that the person has taken training acceptable to the director:

1. Transfer propane to and from tank trucks, filling plants and container refill centres.

2. Fill containers and operate propane transfer equipment in a filling plant or container refill centre.

PPO-3 certificate

36. A person may fill containers, including vehicle tanks, and operate propane transfer equipment in a filling plant or container refill centre if the person is the holder of a PPO-3 certificate or is the holder of a record of training issued by a training organization approved by the director that indicates the person has taken training acceptable to the director.

PCI-1 certificate

37. (1) A person may examine and requalify cylinders if the person is the holder of a PCI-1 certificate or is the holder of an equivalent record of training issued by a training organization approved by the director that indicates that the person has taken training acceptable to the director.

(2) In examining cylinders under subsection (1), the person shall follow the procedures described in the regulation ("Standards for Visual Inspection of Compressed Gas Cylinders") under the *Transportation of Dangerous Goods Act* (Canada).

PTO-1 certificate

38. A person may perform the following functions if the person is the holder of a PTO-1 certificate or is the holder of a record of training issued by a training organization approved by the director that indicates that the person has taken training acceptable to the director:

1. Operate a propane tank truck or a vehicle that tows a cargo liner.
2. Operate propane handling equipment in order to transfer propane to and from tank trucks, cargo liners, filling plants and container refill centres.
3. Fill containers on the premises of end-users.

OBT-1 certificate

39. (1) A person who is the holder of an OBT-1 certificate may install, inspect, alter, purge, activate, repair, service or remove an oil-fired appliance and the accessories that form a part of the appliance assembly and that are essential to the operation of the appliance whether they are attached to the appliance directly or remotely.

(2) When performing a function described in subsection (1), the person may perform all the functions that the holder of an OBT-2 certificate may perform.

OBT-2 certificate

40. (1) A person who is the holder of an OBT-2 certificate may install, alter, purge, repair, activate, service or remove an oil-fired appliance that has an input not greater than 7 U.S. gallons per hour and the accessories that form a part of the appliance assembly and that are essential to the operation of the appliance whether they are attached to it directly or remotely.

(2) When performing a function described in subsection (1), the person may do the following:

1. Install, repair, service, activate, remove or alter the piping or tubing supply system of an appliance or a component in the system.
2. Install, repair, service, activate, remove or alter any vent, vent connector, draft control device or other component in an appliance venting system.
3. Disconnect and reconnect water piping in order to exchange, service or install an approved appliance and to carry out the replacement of water pipe necessary to complete the reconnection or installation of controls, control systems, components and accessories that are essential to the operation of the appliance but the person shall not perform any additional plumbing unless he or she is also the holder of a valid certificate of qualification as a plumber or steamfitter issued under the *Trades Qualification and Apprenticeship Act*.

4. Install, service, remove or replace components and accessories that form part of the fire-side of a refrigerating or air-conditioning unit but the person shall not perform any work beyond the fire-side unless he or she is also the holder of a certificate of qualification as a refrigeration and air-conditioning mechanic under the *Trades Qualification and Apprenticeship Act.*

5. Maintain, service or replace a mechanical or electrical component or accessory that forms part of an appliance or system or that is essential to the operation whether the components or accessories are attached to the appliance or system directly or remotely.

6. Perform the tasks that are necessary to replace controls and components that form part of an appliance or system and that are essential to the operation of the appliance or system, whether they are attached to it directly or remotely.

7. Install, repair, service and maintain electrical wiring from an existing branch circuit containing overcurrent protection to appliances in order to exchange, service, repair or install an approved appliance and carry out the replacement of electrical wiring necessary to complete the reconnection or installation of controls, control systems, components and accessories that are essential to the operation of the appliance but the person shall not run wiring back to the electrical supply panel or perform any additional wiring unless he or she is also the holder of a valid certificate of qualification as an electrician issued under the *Trades Qualification and Apprenticeship Act*.

8. Install, repair, service, remove or replace the plenum connection or components that form part of the plenum connection in order to complete the installation of an oil-fired appliance but the person shall not perform any sheet metal work beyond the plenum connection unless he or she is the holder of a certificate of qualification as a sheet metal worker issued under the *Trades Qualification and Apprenticeship Act*.

9. Install, repair, alter, purge, service or remove aboveground tanks that have a capacity not greater than 5,000 litres.

10. Service a flue where an oil appliance is vented through the same flue as a gas appliance.

(3) The holder of an OBT-2 certificate may also, under the direct supervision of a person who is the holder of an OBT-1 certificate, carry out any of the functions that fall within the scope of the supervising certificate holder’s certificate.

OBT-3 certificate

41. (1) A person who is the holder of an OBT-3 certificate may, under the general supervision of a person who is the holder of an OBT-2 or OBT-1 certificate, carry out the following functions on an oil-fired appliance that has an input rate not greater than 2 U.S. gallons per hour:

1. Clean, remove and adjust a flue pipe or a barometric damper.

2. Clean, lubricate or perform maintenance on an appliance.

3. Conduct tests and adjustments necessary for the annual maintenance of the oil burner, controls or accessories that form part of the appliance assembly, whether attached to it directly or remotely, but shall not install, service, repair or remove an oil-fired appliance and the accessories that form part of the appliance assembly and that are essential to the operation of the appliance beyond that necessary for annual maintenance

4. Install, activate or bleed oil piping or tubing that is less than two and one-half inches in diameter.

5. Reactivate a previously installed appliance.

(2) The person may also perform any of the functions of an OBT-2 certificate under the direct supervision of a holder of an OBT-2 or OBT-1 certificate.

OPI certificate

42. A person who is the holder of an OPI certificate may examine a fuel oil pipeline to determine whether it complies with the requirements of this Regulation and Ontario Regulation 210/01(Oil and Gas Pipeline Systems).

FXFT-1 certificate

43. (1) A person who holds an FXFT-1 certificate may fabricate, assemble, alter, install, activate, maintain, operate, purge, repair or replace components or assemblies of equipment of any BTU input for the purpose of providing a special effect, whether visual or audible.

(2) When performing a function described in subsection (1), the certificate holder shall ensure the safe installation, utilization, maintenance, repair or removal of special effects equipment and the accessories essential to the operation.

(3) When performing a function described in subsection (1), the certificate holder may do the following:

1. Store, use, transport or transmit propane to be used to create special effects.

2. Perform the tasks that are necessary to replace controls and components forming part of an equipment or a system that are necessary for operation of the equipment or system, whether such controls and components are attached directly or remotely to the equipment or system.

3. Install, repair, service and maintain electrical wiring for special effects equipment from an existing branch circuit containing over current protection, but shall not run wiring back to the panel or perform any other type of electrical work related to wiring of the equipment unless the certificate holder holds a certificate of qualification as an electrician issued under the *Trades Qualification and Apprenticeship Act.*

4. Service or replace electrical switches, fuses and components that are directly related to the operation of special effects equipment and systems.

5 Install, repair, service, active, remove or alter any vent, vent connector, draft control device, or other component in a special effects equipment venting system.

FXFT- 2 certificate

44. (1) A person who holds an FXFT-2 certificate may fabricate, assemble, alter, install, activate, maintain, operate, purge, repair or replace components, assemblies of manually operated, non-electric powered propane appliances with an input of 400,000 Btuh or less for the purpose of providing a special effect, whether visual or audible.

(2) The holder of an FXFT-2 certificate may also, under the direct supervision of a person who is the holder of an FXFT-1 certificate, carry out any of the functions that fall within the scope of the supervising certificate holder's certificate.

OP certificate

45. A person who holds an OP certificate may carry out the following functions:

1. Install and repair piping or tubing that supplies oil to an appliance of any input.

2. Alter, purge, test, repair, service or remove oil piping or tubing to an oil appliance.

3. Disconnect and reconnect appliances at the oil piping or tubing to carry out the necessary plumbing or steam repairs.

4. Connect oil piping or tubing to newly installed or replacement oil appliances.

OBAT certificate

46. (1) A person who holds an OBAT certificate may reactivate an oil-fired appliance with an input not greater than 7 U.S. gallons per hour and the accessories that form part of the appliance assembly, whether they are attached to it directly or remotely.

(2) When performing a function described in subsection (1), the person may do the following:

1. Replace the filters on the oil supply line to the appliance.

2. Bleed the oil pump or fuel unit.

3. Reset any switches or components that are directly related to the operation of an appliance or system.

(3) The person shall not perform the initial activation of a new appliance or a newly converted appliance.

CH-01 certificate

47. A person who is the holder of a CH-01 certificate or the holder of a record of training for the purpose may activate a propane, natural gas or oil-fired construction heater or torch with an input of any Btuh, and connect it to or disconnect it from piping, tubing, a refuelling appliance, a container or a natural gas meter.

CH-02 certificate

48. A person who is the holder of a CH-02 certificate or the holder of a record of training for the purpose may perform the functions of a CH-01 on a construction heater or torch that has an input of less than 400,000 Btuh.

CH-SM1 certificate

49. A person who is the holder of a CH-SM1 certificate or the holder of a record of training for the purpose may service a propane, natural gas or oil-fired construction heater or torch with an input of any Btuh.

CH-SM2 certificate

50. A person who is the holder of a CH-SM2 certificate or the holder of a record of training for the purpose may perform the functions of a CH-SM1 on a construction heater or torch that has an input of less than 400,000 Btuh.

RE-O Certificate

51. A person who is the holder of an RE-O certificate or the holder of a record of training for the purpose may activate and operate a propane-fired tar pot heater with an input of any Btuh and connect it to or disconnect it from piping, tubing or a container.

CDT certificate

52. (1) A person who holds a CDT certificate may install, inspect, alter, purge, activate, repair, service, or remove natural gas or propane-fired agricultural crop drying appliance and the equipment and accessories essential to its operation but shall not activate the appliance for the first time.

(2) When performing a function described in subsection (1), the person may do the following:

1. Install, inspect, test, alter, purge, activate, repair, service or remove any piping or tubing, or component in a piping or a tubing system, to an agricultural crop drying appliance downstream of the natural gas meter or propane service valve.

2. Ensure safe installation, utilization, maintenance, repair or removal of agriculture crop drying equipment.

3. Maintain, service or replace a mechanical or electrical component or accessory forming part of an appliance or essential to its operation.

4. Perform the tasks that are necessary to replace controls and components forming part of an appliance.

5. Install, repair, service and maintain electrical wiring for natural gas or propane-fired appliances from an existing branch circuit containing over current protection, but shall not run wiring back to the panel or perform any other type of electrical work related to wiring of the appliance unless the person holds a certificate of qualification as an electrician issued under the *Trades Qualification and Apprenticeship Act.*

6. Service and replace electrical switches, fuses and components that are directly related to the operation of the crop drying appliance.

Supervising certificate holder

53. A supervising certificate holder providing direct supervision to a person is responsible for the work of the supervised person.

Record of training

54. A person holding a record of training shall be required to undergo either full retraining or skills retesting at three year intervals or, in the event the competence of the person is in question, at shorter intervals as set by the director, unless the record of training is for the purpose of subsection 52 (2).

Exemptions

55. (1) A person is exempt from subsection 3 (1) with respect to the following activities:

1. Installing or servicing an appliance in a detached dwelling that is owned and occupied by the person but the person shall not activate a newly installed appliance until a person who is the holder of an appropriate certificate referred to in subsection 3 (1) determines that the appliance and its installation comply with the requirements of Ontario Regulation 212/01(Gaseous Fuels) and Ontario Regulation 213/01(Fuel Oil).

2. Installing, activating or servicing a portable appliance for his or her own personal use provided that the appliance does not serve the public.

3. Activating an appliance in accordance with the certified lighting instructions of its manufacturer if it is done by the owner of the dwelling or building in which the appliance is located and,

    i. if the appliance was initially installed and activated by a person who is the holder of an appropriate certificate referred to in subsection 3 (1), and

    ii. if the appliance is maintained in a safe working condition.

4. If the person is the holder of a record of training, performing any work that is within the scope of work as set out in a PPO-1, PPO-2, PPO-3, PCI-1, PTO-1, CH-01, CH-02, CH-SM1, CH-SM2 or an RE-O certificate.

5. Constructing new propane or natural gas vehicles for an original equipment manufacturer of propane or natural gas vehicles on the manufacturer's premises.

6. Servicing, repairing or replacing any part of a propane or natural gas fuelled vehicle other than its propane or natural gas fuel system.

(2) An employee of a natural gas or propane distributor is exempt from subsection 3 (1) when shutting off the gas supply to or relighting appliances in a dwelling unit, and relighting appliances installed in a dwelling unit is exempt from subsection 3 (1) if the employee is under the general supervision of a holder of a G.1 or G.2 certificate and has received a training course approved by the director from his or her employer within the previous three years.

(3) A person who performs duct cleaning is exempt from subsection 3 (1) if, in doing so, the person does not work on any other part of the appliance except for the purpose of cleaning the fan.

(4) A person who holds a certificate as an operating engineer is exempt from subsection 3 (1) when performing work that is within the scope of the person's certificate on equipment that is located at a registered plant at which the person is employed.

56. This Regulation comes into force on the day the *Technical Standards and Safety Act, 2000* is proclaimed in force.

Appendix D

About NRG Resources Inc.

NRG Resources Inc. has over 30 years of experience in the heating and training industry. It is a federally incorporated company headed by **Rod Corea**.

Rod is a certified Oil Burner Technician 1 in the Province of Ontario with 30 years experience in the oil and gas industry – 12 years of which he was employed at the *Technical Standards and Safety Authority* (TSSA) as a Fuels Safety Inspector, Training Program Developer, and Training Consultant. He has taught technical training courses to over 4,000 heating technicians as an instructor for various colleges and as the owner of *NRG*'s predecessor company - *Fuel Safe Training*.

Rod has developed or co-developed the following training courses:

- *The Fuel Safe Manual – A Handbook for the Fuels Safety Workshop*
- *Oil Burner Technician Manuals* (for the Oil Institute of Learning)
- *Gas Technician Update Workshop Handbook* (for TSSA)
- *Oil Burner Technician Update Workshop Handbook* (for TSSA)
- *Industrial Maintenance Technician Manuals* (for various manufacturing industries)
- *Oil Pipe Fitter Manual* (for the Ontario Pipe Trades Council)
- *Gas Technician 1 Manual*
- *Practical Guide to Safe Fuel oil Installations*, *Installation Codes for Furnaces and Boilers*, *Combustion Tests for Oil-Burning Equipment, and Installation of Oil Burning Equipment* (4 manuals employed for the delivery of 4 courses for Yukon Housing and Energy Solutions)

NRG Resources Inc. has proven its ability to develop and deliver the highest quality of consultation and training services. The field and regulatory experience, skills, and contacts upon which *NRG Resources* is founded make it uniquely qualified to provide recommendations to improve the safety and efficiency oil-burning equipment in the Yukon.

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