



UPDATE

F u e l s S a f e t y E d i t i o n

Message from the Director: The State of Public Safety

By Catherine Taylor, TSSA Director of Engineering & Risk Management & Statutory Director, Ontario Fuels Regulations

Each year, in September, TSSA publishes a State of Safety Report for the previous calendar year (CY). We are pleased to announce that this Report, for CY2002 is now available on our Web site, at:



http://www.tssa.org/about_tssa/state_safety.asp



TSSA's State of Public Safety Report details safety-related incidents in Ontario for the sectors that we regulate. We developed this report to help us identify potential safety hazards and the actions we need to take to reduce the number of incidents that occur.

The report could not be

produced without the cooperation of you -- our clients in the Fuels sector. Without your continued diligence in reporting to us all events where public safety was or may have been compromised, we would not be able to analyze trends and introduce programs to prevent serious incidents in the future.

I encourage you to take some time to review the report to familiarize yourself with the types of incidents that are occurring in your area of the Fuels sector. Most importantly, we ask you to review our analysis on what needs to be done to prevent their reoccurrence. Your understanding of the need and your assistance in delivering these prevention programs is paramount.

Together, we can all make a difference in ensuring the safe use of hydrocarbon fuels.

Here are some of the key findings in the current report with respect to the various Fuels sectors:

- Reducing the number and impact of Carbon Monoxide (CO) exposures in the fuel-oil sector remains a priority. There were 42 incidents involving CO, which resulted in 4 deaths and 9 serious injuries. TSSA is working closely with the Fuels industry to create a communications program aimed at the public, promoting the safe use and maintenance of fuel-burning appliances.

- Determination of the root cause and contributing factors to every incident is essential to ensure that all our activities are effective in reducing risk. In the gasoline sector, for example, TSSA will be relying extensively

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An Introduction to Risk Management

By Michelle Williamson, Risk Management Advisor

Over the past few decades, the term "risk management" has crept into the vernacular of the business world. There has been much discussion surrounding this rapidly developing discipline and there continues to be many and varied views and descriptions of the scope of risk management, what it involves and how it is used.

It is generally accepted that risk management is a continuous process whereby

organizations methodically identify and address their risks with the goal of minimizing loss, maximizing opportunity and increasing stakeholder value.

Risk management at TSSA involves:

- (1) the identification of risk;
- (2) the analysis and assessment of risk and the potential consequences;
- (3) the control of risk by effecting loss prevention and reduction strategies; and

(4) the monitoring, continuous improvement and communication of the effectiveness of those strategies.

This begs the question, what is risk? Essentially, it is the things that we do, or fail to do, that possess an element of uncertainty and result in either a positive or negative outcome. Risks are the chances we take, everyday, in hopes of being successful.

Organizations that focus

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on the cooperation and input of industry to determine whether public education is a viable strategy to reduce incidents.

- The bulk of incidents reported in the Fuels area involved the disturbance of natural gas pipelines due to improper excavation and location activities. As a result, pipeline safety is an important focus for TSSA. In an effort to ensure that our programs are effective in reducing risk, TSSA is working closely with industry partners in the Ontario Region Common Ground Alliance (ORCGA) to prevent pipeline incidents.
- TSSA continues to work with manufacturers of portable propane-fueled appliances on improving their design and manufacture. To date this joint venture, has successfully implemented the replacement of a valve that was the cause of three separate explosions.

TSSA values its industry partnerships and recognizes that without your cooperation the overall state of public safety in Ontario could not improve.

Your comments on the State of Public Safety Report are welcome. Please do not hesitate to contact either myself or any other member of TSSA's Fuels team with your comments or questions. In addition, if you do not have web access, we would be pleased to send you a copy. Our contact information is included on the last page of this newsletter.

Lets continue to work together to put Public Safety First! ■

Working Tips: Carbon Monoxide and Fin Tube Type Boilers

By Raphael Sumabat, Fuels Safety Engineer

As we get into another heating season, gas technicians are reminded to pay special attention to ensuring that fin tube boilers are properly maintained to prevent serious carbon monoxide (CO) incidents. You should not rely on safety systems such as flame rollout switches, blocked vent switches, or carbon monoxide detectors.

Several years ago, a fatal carbon monoxide incident occurred involving a fin tube type gas boiler. The boiler was originally installed nine years prior to the incident and there had been a number of service calls and at least one cleaning. The investigation revealed that the top boiler section was plugged with rust/scale. Discolouration and sooting was also observed at the bottom edge of the boiler, indicating prolonged spillage of fuel products, incomplete combustion and high levels of carbon monoxide. It was also noted that the boiler had been inadequately serviced since the shipping straps were never removed. A flame-roll

out switch was not installed with the boiler.

Another incident occurred in Ontario involving another fin tube type boiler and two fatalities. The boiler installation was only one year old and common vented with a water heater. The common venting system was obstructed by a squirrel's nest. When the boiler was tested, a flame rollout occurred. The flame rollout switch and the blocked vent switch did not deactivate the boiler.

Instead, the boiler kept shutting down and resetting on flame failure as a result of the flames lifting off the burner and away from the flame sensor. This caused a continuous production of carbon monoxide into the home. There was no evidence that the boiler had been serviced since its installation.

During the past heating seasons, there were a high

number of carbon monoxide incidents reported to TSSA involving boilers with blocked heat exchangers. In some cases, levels up to 530 ppm CO were measured in the home.

Gas technicians are reminded to review the manufacturer's certified installation instructions for

proper installation and maintenance procedures. For example one boiler manufacturer requires that upon completion of the installation, the external surfaces of the heat exchanger must be inspected for fouling 24 hours, 7 days, 30 days, 90 days, and once every 6 months thereafter. Another manufacturer requires inspection in the first and third month and then on an annual basis.

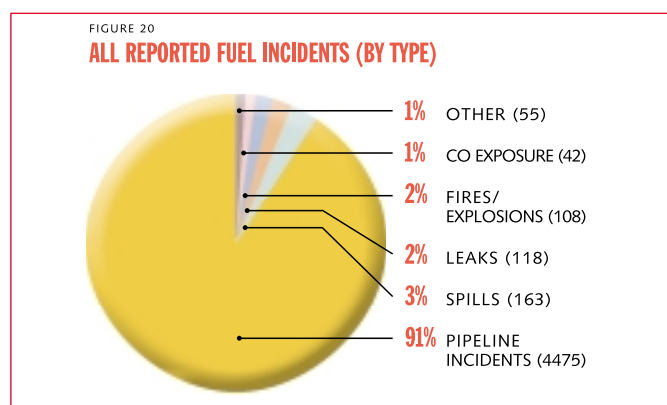
Remember: proper installation and regular maintenance are your best defence against future CO incidents! ■

...pay special attention to ensuring that fin tube boilers are properly maintained...

AN INTRODUCTION TO RISK MANAGEMENT... continued from cover

their efforts and activities on the risks that have the greatest impact can minimize their overall risk exposure and align their resources in a way that brings about the realization of the company's goals and objectives.

Risk Management is not just something for corporations or public entities, but for any activity whether short or long term. The benefits and opportunities can be viewed, not just in terms of the activity itself, but in the relation to the many and varied stakeholders



who can be affected.

In future issues of this newsletter, the TSSA Risk Management Department will

present a series of articles on risk management principles and practices and how this applies to fuels safety issues. ■

Temporary Power Projects

By Solomon Ko, Fuels Safety Engineer

In early June 2003, TSSA received notice of intention that a number of temporary power plants would be installed in Ontario to help supplement the summer electricity loading that might go beyond the current capacity. The plants would consist of mobile skids of generators driven by natural gas fired turbines. Urgent approval was called for to have these units commissioned in the early summer.

Even though details of

plants were not available at that time, TSSA's Fuels Safety Program initiated an emergency plan to tackle this urgent and critical need. The plan included logistics such as allocation of expertise and staff resources. To prepare for that, TSSA started proactively discussion with the potential project managers on the latest development of the projects.

Three natural gas driven turbine plants were finally decided on. They were located in Markham, Hamilton and

Cobourg with units of turbines from Alstom, GE and Solar. 27 sets of turbines in total were installed, providing a total of 200+ MW power to our Ontarians.

To keep up with the tight timetable, TSSA staff worked very closely with the project teams. We maintained almost daily dialogues with the parties involved, kept them informed of the code and regulation requirements, scheduled site visits and inspection activities well in advance.



At the end, projects were all completed on time in accordance with the projects' schedules. We are glad that once again we have fulfilled our commitment to put both public safety and our clients' needs on top priority. ■

TSSA Focused on Improving Natural Gas Line Safety in Ontario

By Tom Zach, Manager, TSSA Communications

As Ontario's fuels safety regulator, TSSA is playing a key role in investigating the cause of the natural gas explosions that claimed eight lives recently in Toronto and Windsor in April 2003. Our special investigators are working closely with the fire services, police, utilities, and others to take the appropriate measures to prevent these devastating incidents from happening again.

Under Ontario's *Technical Standards & Safety Act*, it's against the law to dig without having natural gas lines located. Excavators must contact the appropriate utility that sends out their locator to accurately mark the presence of underground equipment.

The majority of reports of contact with underground pipelines brought to our attention over the last several years were minor in nature

and the result of improper excavation practices. They involved homeowners and contractors digging a garden, landscaping or excavating a patio area or pool area who have failed to call their natural gas utility before digging and have scraped or damaged underground gas lines.

Annual safety statistics compiled by TSSA reveal that human error is responsible for the majority of natural gas pipeline incidents in Ontario each year. The causes include:

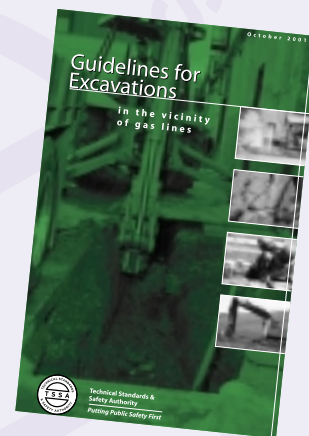
- Failure to locate buried natural gas pipelines prior to conducting excavation work;
- Failure to follow safe guidelines when working in the vicinity of buried natural gas pipelines; and
- Inaccurate locates for

buried natural gas lines provided to individuals/companies before conducting excavation work.

TSSA has made the reduction of pipeline hits a top priority since taking over responsibility for delivering fuels safety programs and services in 1997.

We believe that the key to preventing natural gas pipeline incidents is effective enforcement activity combined with greater safety education and training for workers and the public who are working with, or near natural gas pipelines. Key safety improvement activities have included:

- Significantly increasing the number of Fuels Safety inspectors in Ontario from 19 in 1996 to 34 in 2003 to enhance enforcement



activity and improve compliance with Ontario safety laws.

- The founding of a working group called the Ontario Region Common Ground Alliance comprised of members representing Ontario utilities, contractors and industry associations. The Alliance

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IMPROVING NATURAL GAS PIPELINE SAFETY... continued from page 3

conducted a research project in 2001 involving excavation contractors working in the vicinity of natural gas pipelines.

- Results were used to assist in the development of an overall prevention strategy, which includes targeted training and excavator education programs for excavation contractors.
- TSSA delivered safety information seminars to over 2,100 excavators in Ontario in 2002. The program is being further

expanded this year to reach an even greater number of excavators.

- The creation of the "Guidelines for Excavation in the Vicinity of Gas Lines" guide that was distributed to over 20,000 excavators over the last year. The guide outlines proper excavation procedures and lists what safety precautions should be taken before excavating in an area where gas lines may be buried.
- In addition to regular

enforcement, TSSA introduced an Administrative Penalties Program in 2002 that allows TSSA to impose immediate fines of up to \$5,000 for non-compliance with fuels safety laws.

If you are planning to excavate, please contact **Ontario One Call** before you dig and take advantage of the free gas pipe location service.

Ontario One Call, a state of the art call centre that processes locate requests and forwards the information to the underground utility company, was created to promote

safety and reduce damages to underground equipment in the province. To arrange for free natural gas pipe location service, contact:

Ontario One Call
Tel: 1-800-400-2255
Fax: 1-800-400-8876
Web: www.on1call.com

You can also visit TSSA's Web site at www.tssa.org to view and download an electronic version of the "Guidelines for Excavation in the Vicinity of Gas Lines" guide. ■

Thinking Of Buying A Portable Emergency Generator?

By Oscar Alonso, Fuels Safety Engineer

We rely on electricity so much that in case of a power outage, like the one that affected Ontario and several North Eastern American states in August 2003, we feel virtually paralyzed. Things we take for granted such as keeping food refrigerated or heating your home become serious concerns.

Having an emergency generator may be just the kind of insurance that we can have to cope with blackouts. If your homeowner clients intend to go in for emergency power, the following information will be useful to them.

Emergency generators need either a liquid or gaseous fuel. The storage of fuel, the installation of the generator, and its operation need to be done in accordance with safety regulations.

Before one decides to pur-

chase a portable generator set, consider the type of fuel to be used. Natural gas would provide a practically unlimited supply even in long power outages. The limitation of this alternative is that the portability of the emergency generator is eliminated. The installation of stationary natural gas engines shall meet the requirements of clause 6.33 of CSA B149.1-00 Code (O. Reg. 212/01).

Propane powered generators would have to consider the limitations about storage of fuel, among other factors. Liquid fuels are a popular option for portable emergency generators, but again, storage of fuel creates limitations.

Installation of diesel generators, either portable or stationary, shall meet the requirement of the CSA

Standard B139-00 under the Fuel Oil Code. No matter what type of fuel you may use, provincial and municipal regulations will have to be met.

The Ontario Fire Code establishes requirements regarding the storage of flammable and combustible liquids, such as gasoline, inside dwellings. For gasoline, the storage requirements inside a residence are contained in the O. Reg. 388/97, Sections 4.2.4.5 and 4.2.4.6. The requirements allow for the storage of up to 10 liters of gasoline inside dwelling and 30 liters inside an attached garage, making a possible storage of 40 liters.

The above requirements do not apply to the fuel inside the generator tank. Unattached garages or sheds may store larger amounts, provided it complies with

other sections of the Fire Code.

The installation of portable generators must also meet the Ontario Electrical Safety Code administered by the Electrical Safety Authority (ESA). These generators must be inspected by ESA to ensure proper electrical connection and safe operation. Natural gas or propane generators must meet the O. Reg. 211/01 Storage and Handling of Propane and 212/01 Gaseous Fuels, under the *Technical Standards and Safety Act*.

The generators must be approved unless they meet the Requirements for Approval of Natural Gas or Propane Emergency Generators (available from our Web site, www.tssa.org – click on Fuels/Regulations and Updates/Advisories and select

the above referenced title).

The storage of propane inside a dwelling or garage is prohibited (other than 1 lbs. non-reusable cylinders). Unless the exhaust of the engine is vented outdoors, emergency generators shall not be operated indoors.

The installation of stationary propane engines shall meet the requirements of clause 6.34 of CSA B149.1-00 Code (O. Reg. 212/01).

The following tips may be of use to your clients if they are planning to buy an emergency generator:

- Installation of a natural gas

or propane generator needs to be done by a TSSA registered contractor, involving a Gas Technician 1 or 2 certificate holder;

- A licensed electrical contractor shall make the electrical connection of a portable emergency generator. A special electrical panel that, either manually or automatically, would disconnect the grid power supply when the portable emergency generator is connected (not having it, may destroy the emergency generator when utility power is re-established, or

inadvertently supply power to the utility grid) All wiring shall be inspected by ESA.

- Determine what electrical devices/lights that need to be powered in order to select the size of the emergency generator. It should be taken into consideration that electric motors would require approximately double their rated power when it starts, in order not to overload the emergency generator.
- Think on the best location for operating the generator. Then check for the exhaust

noise levels the manufacturer specifies and see if the noise may affect you or your neighbours.

- Engine exhaust, if installed indoors, shall be vented independently of other appliances.
- Keep the fuel in an approved container and away from the generator.
- Refuel the generator only after shutting it down and letting it cool.
- Follow the manufacturer's instructions. ■

Prevention Through Voluntary Safety Training Programs

By Terry Brand, Manager, Strategic Development

Fuel Oil Symposia – This symposia series, launched in April 2003 in response to stakeholder demand, has been very well received. Each of the three symposia held to date has been targeted to meet specific stakeholder needs (including consulting engineers, property managers, insurers, and real estate practitioners). These symposia have been designed to provide stakeholders with a practical, up-to-the-minute understanding of Ontario's fuel oil requirements and how to achieve compliance with those requirements. Here is a sampling of what some of the participants had to say:

"Excellent content and source of expertise - excellent interaction, interpretation and feedback from questions." – Andy Smith, Director of Engineering, West Haldimand General Hospital

"TSSA's training events provide well organized, timely, pertinent safety information. The opportunity to ask questions and receive a clear answer from TSSA experts is also very useful and practical for clarification purposes." – Saeed Khan, Vice President, CH2M Hill Canada

"Excellent - presented very simply and to the point." – John Bietola, Senior Technical Engineer, Ontario Power Generation.

"The facilitators were experts in their field." – Robert Fontanini, Chief Engineer, Lear Windsor.

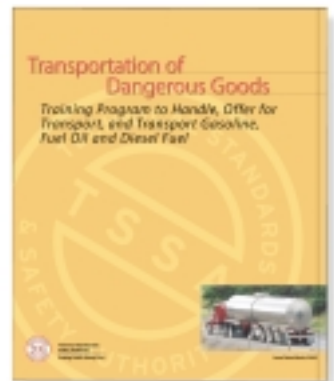
"Good presentations - clear and concise interpretation." – Brian Nichols, Operations Integrity Coordinator, Imperial Oil.

"Overall very well done and presented." – David Ledingham, Principal, Petroleum Technical Services.

For more information regarding the next symposium, or to register, please contact Judy Harrison at 416-325-1599 or jharrison@tssa.org.

Transportation of Dangerous Goods (TDG)

– TSSA has recently developed and launched (in the GTA) a new training program designed to meet the needs of gasoline, diesel, and fuel oil transporters based in Ontario respecting Transport Canada's new Clear Language Regulations under Canada's Transportation of Dangerous Goods Act. As of August 15th, 2002 this certification training became mandatory for all transporters of dangerous goods in Canada. For more information on this program, or to register, please contact Ken Langer at 416-325-9623/ 416-722-3615 or by e-mail: klanger@tssa.org



Other Training – TSSA has also developed and delivered other safety code-related training including a Liquid Fuels Handling Symposium. For more information on this training program or if you have identified a need for other safety training and would like to discuss a potential partnership with TSSA, please e-mail us at trainingservices@tssa.org ■

Are You in Compliance?

By June Balleger, Certification Standards Advisor

I was driving back from completing an Industrial Maintenance Technician Assessment and came across a sign on the road that said, **"If you think training is expensive...you should try ignorance!"**

I always read the roadside signs and find that they really impact the way I think and believe. Some statements hit home more than others. This particular philosophical statement has definitely impacted my views toward training and I often communicate it to our clients.

Today, compliance and due diligence are in the forefront of our minds. Whether it is completing tasks at job sites or holding a certificate of qualification for the tasks that you are completing. The questions of "What if..." in relationship to safety aspects on the job need to be answered by the individual and of his or her supervisor. What if I change or modify a component on this boiler? Compliance with most laws requires that you act with logic and due diligence.

The knowledge of the legal limitations and expectations is placed upon the employees and employers as the foundation for due diligence. It is only possible if the organization and the individual(s) are knowledgeable about the activity in which they are involved.

The laws governing our industry are intended to prevent safety, economic and environmental problems that may

occur for our clients and us.

The proof of successful training and the basic safety procedures followed are designed to serve this purpose.

This basis for judgment would not only be whether you hold a certificate of qualification but also whether you are competent and knowledgeable to conduct the specific task.

In order to act reasonably and with a sound understanding of what is legally required by the governing rules of the industry that you work in, TSSA is offering an Industrial Maintenance Technician Certificate Assessment Program. This service offering will assist our industry clients to facilitate and determine the "what if's" and the determined training requirements to perform their job in compliance with safe working practices:

Industrial Maintenance Technician Certificate Assessment Program.

In Ontario, people who install, service or maintain appliances fuelled by natural gas, propane or fuel oil must demonstrate their competence by being certified for the work they perform.

The Industrial Maintenance Technician (IMT) certification and training process is unique among our large list of certificates. An IMT certificate holder is permitted to work on **any** appliance of any fuel input **only** at the premises of his or her industrial employer as limited by the training program delivered to achieve certification. This unique mixture of unlimited appliance input at a limited

location requires a unique assessment and training process.

Normally, certification as a gas technician requires the applicant to attend a standardized training program and pass standardized written exams and practical tests. These courses and tests are wide-ranging in nature and therefore more conducive to general certification rather than site-specific certification. To become certified to work on industrial gas appliances, a person can follow the standardized route to IMT certification but the hours are lengthy (450+ hours) and the content is not always focused on the direct training needs of the applicant.

To address the needs of industry and better serve the training needs of workers, TSSA has developed an enhanced set of policies and procedures that came into effect in September 2003 to facilitate the customization of IMT training and certification. To focus the training, a customized scope of certificate must be developed and an assessment of the equipment and candidates must be submitted to determine the curriculum and training requirements for each site.

The customized scope of certificate along with the gap

analysis between the standardized curriculum and the site-specific equipment as well as the prior skills and knowledge of the candidates can be submitted to TSSA for review and approval by the company seeking IMT certification.

The consultation service offered by TSSA consists of five simple steps:

1. Consultation Meeting
2. Assessment of Equipment and Procedures
3. Assessment of the Candidate's Skills
4. The Assessment Report
5. Training – completed by an Accredited Training Provider

Based on the simplified certification process and focused training requirements, the Industrial Maintenance Technician Certificate is quickly becoming recognized as the certification of choice for Ontario maintenance staff and employers.

For more information on the IMT Assessment Program, or to book your free consultation meeting, please contact Joan Lein at (416) 325-9242; or contact an IMT Assessment Program Representative – Neil McPherson (905) 655-8396 (Eastern Ontario) June Balleger at (416) 325-0221 (Western Ontario). ■

Compliance with most laws requires that you act with logic and due diligence.

Gas/Oil Burner Technician Update Workshop Reminder

By Penny Connors, Certification Standards Advisor

The Gas and Oil Burner Technician Update Workshops were launched almost two years ago and to date most of the registered technicians have completed the requirement.

Both Gas and Oil Burner

Technicians are required to complete this program by December 31, 2003 in order to maintain their certificate and continue to work as technicians in the Province of Ontario.

Act now! This is a reminder

to those who have yet to complete the workshop to do so and to ensure confirmation is submitted to TSSA before the end of 2003 in order to maintain your certificate.

If you are a certified Gas or Oil Burner Technician working in Ontario and have not yet registered to take this update training, we recommend you do so at your earliest convenience to ensure an available class with one of our accredited training providers.

A complete listing of TSSA accredited training providers who offer the update workshops is available on our Web site at:

http://www.tssa.org/fuels/certification_services6.asp

For Gas Technicians who are unable to access training in a classroom setting, please visit our Web site for informa-

tion on the web based training option:

http://www.tssa.org/about_tssa/course_info.asp

All other categories of gaseous fuel certification (certified under Ontario Regulation 215/01) need to be aware of and familiar with the changes appropriate to their industry but attendance at the workshop is not mandatory (i.e. RV Technicians, ICE (Automotive) categories).

Oil Burner Technicians certified prior to January 1, 2000 are required to attend a two-day (minimum 16 hours) update and upgrade workshop. Those certified by means of a recognized training course after January 1, 2000 are required to attend a one-day (minimum 8-hour) update workshop in order to maintain their current certification status in fuel oil. ■

Scope of the Gas Technician "3" Certification

By Penny Connors, Certification Standards Advisor

The Fuels Certification Regulations provide an allowance for Gas Technician 3 (G3) to perform specified tasks under general supervision of an appropriate certificate holder, as follows:

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 & lubricate an appliance.*
4. *Clean, remove or replace a vent connector, venting or a draft control device.*

The scope of activity allowed under the allowance for "clean and lubricate an appliance" is not explicit.

A Contractor therefore has discretion to specify the scope of this activity within the intent of the regulations. This discretion allows a Contractor to assign appropriate duties to suit his/her own service strategy. TSSA interprets the clause to permit a G3 to complete activities commonly included within this service designation i.e. within an industry norm. The service may include disassembly and reassembly of appliance components for the purpose of cleaning or lubricating. The service may not include replacement of components if they are suspected of being defective; that assessment must be made by the certificate holder. However, the G3 is expected to be sufficiently aware of maintenance requirements to point out areas of concern to the certificate holder. All activities included within the Contractor's service definition must have been included in explicit training received by the G3 and the services delivered only following demonstration of technical and practical competence by the G3.

A copy of the sign off sheet prescribed by the Director is now available at www.tssa.org/fuels/pdf/g3_sign_off.pdf. ■

The categories of technicians that are required to attend the Update Workshops are:

- Gas Technician 1 (G.1)
- Gas Technician 2 (G.2)
- Gas Technician 3 (G.3)
- Gas Pipe Fitters (GP)
- Liquid Propane Fitter (LP)
- Domestic Appliance Certificate (DA)
- Industrial Maintenance Technician (IMT)
 - Oil Burner Technician 1 (OBT.1)
 - Oil Burner Technician 2 (OBT.2)
 - Oil Burner Technician 3 (OBT.3)



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We welcome your comments and story ideas for future editions
of this newsletter. Please contact:

TSSA UPDATE (Fuels Safety Edition)

Fuels Safety Program

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