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Natural Gas Utilization by Private Gas Wells Owners

In south-western Ontario, there are thousands of wells producing natural gas. Gas wells are regulated under the jurisdiction of the Ministry of Natural Resources (MNR) by the Petroleum Resources Centre (PRC). The construction, maintenance, operation and decommissioning of the gas wells is legislated under the *Oil, Gas and Salt Resources Act* (OGSRA), its Regulation 245/97 and its Operating Standards.

Some of these natural gas wells produce sour gas (gas having contaminants making it unsuitable for use as fuel gas, unless treated) and some produce sweet gas, which can be used as fuel gas under certain conditions. Natural gas, as commonly known, it is treated to eliminate contaminants, excessive water and heavier hydrocarbons such as propane, butane, and light gasoline.

Most of the conventional natural gas wells are operated by oil and gas companies where the wells are connected to a gathering system and the gas is treated and sold to natural gas distributors, such as Union Gas, Enbridge Gas Distribution and other gas utilities. The treated natural gas is typically transported and distributed to residential, commercial or industrial consumers under the requirements of the Ontario Regulation for Oil and Gas Pipeline Systems (O. Reg. 210/01). This regulation is administered by TSSA. Under the pipeline regulation, TSSA adopts the CSA Z662 code which outlines the requirements for natural gas transmission and distribution systems.

Prior to distribution to homes and businesses, the gas utilities companies odourize the natural gas. This odourizer provides the gas with a distinctive smell to best allow the detection of leaks. In its natural state, natural gas is an odourless, colourless and combustible gas that can also cause asphyxiation and thus must be handled in a safe manner.

The CSA Z662 scope is for piping systems from the gas well connection flange (known as a ‘Christmas tree’) and includes gathering, transmission, distribution, and service lines and facilities. The downstream boundary is the outlet of the customer meter or where there is no meter, the service regulator. Downstream of the customer meter or regulator as applicable, the Gaseous Fuels Regulation, O. Reg. 212/01 which adopts the CSA B149.1 code applies. These regulations and codes are administered by TSSA.

Natural gas suppliers and operators of distribution systems are licensed by TSSA, and their systems and safety procedures are audited by TSSA. Among their responsibilities is an inspection of the user’s installation (customer) prior to connecting natural gas for the first time. It is also mandatory for gas suppliers to conduct an inspection every 10 years of the customer installation, including piping, appliances and venting. If there is non-compliance, the gas supplier shall shut off the gas supply to any installation that presents an immediate hazard, or provide up to 90 days to bring the installation compliant to code when there is no immediate hazard.

When vessels are part of the natural gas system, the vessels need specific approval. The requirements for approval of vessels are stated in the Ontario Regulation on Boilers and Pressure Vessels (O. Reg. 220/01). Vessels, typically known as tanks, require a Canadian Registration Number whenever the vessel is larger than 1.5 cubic feet in water capacity and/or the design pressure is over 15 psig. The periodic inspections, conducted every three years, shall be made by the operator, and records for the last two inspections shall be kept by the operator.

The object of this paper is to clarify the situation of sweet natural gas producers possessing wells for their own utilization, which typically means that a natural gas piping system does not go beyond the boundaries of their own piece of land, and no gas is being supplied to anyone other than themselves for their personal use. These types of installations, do not require a license by TSSA. However, the requirements contained in O.Reg. 210/01 and the adopted CSA Z662 code apply for piping upstream of the regulator and the requirements contained in O.Reg. 212/01 and the adopted CSA B149.1 apply for piping, tubing and appliance installation downstream of the regulator.

There are a number of differences between a distribution system licensed by TSSA and a system operated by a private gas producer having wells solely for their own use. Some of the items to be aware include:

a) In general, there is no customer meter downstream of the service regulator; the service regulator reduces the pressure from typical Haldimand Norfolk pressures 125-20 psig to 4 ounces of pressure (7 inches of water column or 1/4 of psig). The system upstream of the service regulator shall meet O. Reg. 210/01 and CSA Z662 Code and the system downstream of the service regulator shall meet O. Reg. 212/01 and CSA B149.1 Code.

b) Natural gas produced will be saturated with water at the conditions found in the underground formation in the field. Contaminants, such as water and heavier hydrocarbons like propane, butanes, and light gasoline, would be present. Condensation of liquid will be required to be removed in order to avoid reduction or obstruction of gas flow.

c) Private gas well owners do not typically odourize their gas. A natural odour may be present due to the presence of gasoline type products, but leak detection by smell may be more difficult.

d) As the gas supplier and the user is the same person, there is no natural third-party, such as the licensed distributor, providing an inspection of the private gas user's installation. In this case, the owner must arrange an inspection by a qualified technician prior to the connection of natural gas for first time and every 10 years thereafter. This includes all downstream installations of the service regulator, including piping, appliances and venting.

e) G1and G2 shall inspect installations downstream of the service regulator. Owners shall be aware that G1's and G2's are not specifically trained to deal with unconditioned gas and may require that the gas be conditioned and ordourized to meet code requirements. Inspections of the system upstream of the service regulator shall be performed by a person that is the holder of a Gas Pipeline Inspector. These certificates and their scopes are outlined in the Fuels Industry Certificate Regulation, O. Reg. 215/01.