GLASTONBURY FIRE DEPARTMENT

STANDARD OPERATING GUIDELINES

SOG NUMBER: HZT-303	ISSUED DATE: 04-15-11	EFFECTIVE DATE: 04-15-11
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CATEGORY: HAZ-MAT

SUB-CATERGORY: EMERGENCY RESPONSE – GAS RELATED INCIDENTS

SUBJECT: NATURAL GAS/PROPANE

RELATED GUIDELINES: HZT-001; HZT-301 & HZT-302

Section I – Introduction

A. Objectives

To provide a common operating guideline to use in the response to Natural Gas or Propane Incidents, located both outside and inside of structures.

B. Applicability

This applies to any incident response in which it is reported to have a Natural Gas or Propane Gas leak or the incident is involving a fire fed by these gasses.

C. References

CNG Presentation – "CNG and the Fire Service", presented by Steven Joslyn, CNG – 02-22-2009.

CNG Distribution System Map – on file with Chief's Office.

Propane Dealers Association – http://www.propane101.com

Section II – Background

A. Natural Gas

Natural Gas (also known as Compressed Natural Gas) service to the Town of Glastonbury is provided by the Connecticut Natural Gas (CNG) Company. In addition to CNG distribution lines, Glastonbury has several Natural Gas cross country supply lines.

Natural Gas is characterized by the following:

- Colorless, Odorless Gas in its natural state
- Odorant added to Gas by Gas Distribution Company
- Flammable Range: 4.5% LEL – 15% UEL
- Ignition Temperature: 1100 – 1200 degrees F.
- Natural Gas is lighter than air.

CNG distribution Systems are made up of Gate Stations, Piping (Steel or Plastic), several types of distribution valves (generally located in the street), building service valves, pressure regulators, and meters. Appliances that use Natural Gas generally have an individual appliance shutoff valve.

The CNG Distribution system in Glastonbury includes Service Main pressures of from 5 lbs to 135 lbs of pressure.

The CNG system provides gas to residential end users at one of two different pressures, as listed below.

.25 lb Service.

Service at .25 lbs of pressure can be identified by a pressure regulator that is typically **LIGHT GREY** in color and has a center section the same color as the rest of the regulator. In addition, the meter for this type of service has a **WHITE face plate.**

2 lb Service

Service at 2 lbs of pressure can be identified by a pressure regulator is typically **DARK GREY** in color and has a RED center section. In addition, the meter for this type of service has a **RED face plate.**

The CNG system provides gas to commercial end users at one of several pressures. These can include the two pressures used for residential service, as well as a higher 5 lbs of pressure in some cases.

B. Propane

Propane (also known as Liquefied Petroleum Gas, or LPG) service to the Town of Glastonbury is provided by area propane distribution companies. It is provided to homes and businesses in several different sized portable and fixed tanks.

Propane is characterized by the following:

- Stored as a liquid, used as a gas.
- Colorless, Odorless Gas in its natural state
- Odorant added to Gas by gas supply company
- Flammable range: 2.15% LEL – 9.6% UEL
- Ignition Temperature: 920-1020 Degrees F.
- Propane Gas is heavier than air

C. Carbon Monoxide

Carbon Monoxide is one of the by-products of the burning of Natural Gas and Propane.

Carbon Monoxide is characterized by the following:

- Colorless, Odorless Gas in its natural state, but can have and Alde Hyde or Peanut Butter odor.
- Flammable Range: 12.5% LEL – 74% UEL
- Ignition Temperature: 1128 degrees F.
- Carbon Monoxide can be just lighter than or just heavier than air, depending on the temperature

Section III – Response

A. Standard Assignment

The standard assignment for a incident involving the following Natural Gas Leak – Natural Gas or Propane – Gas Leak Outside (small) and Gas Leak – Natural Gas or Propane – Gas Leak Outside (large) or Inside are defined in Glastonbury Fire Department SOG HZT-001 and related policies. These responses are summarized below.

Gas Leak –Natural Gas or Propane – Gas Leak Outside (small)

The initial assignment will be apparatus from the first due station only.

Additional resources can be added as required.

Gas Leak – Natural Gas or Propane – Gas Leak Outside (Large, or involving Fire) or Inside

The standard assignment of apparatus will be the first and second due companies and should consist of a minimum of: 2 Engines, 1 Ladder, 1 Rescue and (optionally) 1 Service Vehicle.

B. Incident Response – Outside Leak

Assigned apparatus are to proceed to the incident location and stage safely away from the reported or suspected source of the gas leak.

The following actions shall be taken by responding apparatus in the absence of specific instructions from the Incident Commander.

- The First Due Engine shall stand by a hydrant, available water source, or potential drop tank location that is situated away from the suspected leak and wait for further instructions.
- The Second Due Engine shall stage behind the First Due Engine.
- The Third Due Engine (if assigned) shall stand by a second hydrant, available water source, or potential drop tank location that is situated away from the leak and stand by for further instructions.
- All vehicles should be shut down if possible to minimize ignition hazards.

Apparatus operators shall make every attempt not to park above manhole covers, storm sewer covers or street valve box covers.

The area around the suspected gas leak should be isolated and controlled if practical. Traffic in the area may be controlled and diverted around the area as soon as possible and practical.

A crew or crews (minimum of two personnel in each) with full PPE shall be assigned to investigate the reported or suspected leak area. These crews shall be equipped with a multi gas meter. If operating at night, portable lights shall be used and shall be turned on in fresh air prior to entry. Readings shall be relayed to command. If the meter readings indicate a potentially flammable condition (readings above the LEL for the flammable gas – the meter's alarm activates), the crew shall immediately retreat to a safe area and report this finding to Command. The area found to contain an atmosphere in the explosive range shall be deemed the Hot Zone, and further entry into this area will require SCBA.

Crews shall investigate readings above zero but below the LEL.

Specific outside areas to check are listed below (as appropriate).

- Storm sewers
- Man holes
- Valve boxes
- Asphalt or concrete cracks
- Areas under obvious construction (observe call before you dig (CBYD) markings on the ground)

The lack of an odor shall not be used to determine if an area is safe; meters must be used for this purpose. Remember that the odorant in Natural Gas or Propane can be removed or filtered from the gas by frost, snow, rain. Etc.

CNG shall be notified as soon as a Natural Gas leak is suspected.

The appropriate Propane dealer shall be notified as soon as a Propane leak is suspected.

If an outside Natural Gas or Propane leak is located, piping in the area can be traced to locate an appropriate shut off valve. If multiple shut off valves are present in the piping, every attempt should be made to shut off only the valve required to stop the leak. If there is any doubt as to which valve will secure the leak, shut off the building's supply valve. Any valve that is shut down should be locked out and tagged out. No attempt should be made to turn a closed valve back one; this must be done only by CNG or the Propane supplier.

For leaks involving construction or other situations where exposed plastic piping is evident, under no circumstances are Glastonbury Fire Department personnel to touch the plastic piping. This can cause a static discharge and lead to an explosion. The area should be isolated and secured so that no one else can attempt to touch this pipe.

If an initial report of an outside leak is traced to a building, the response can be ungraded as required.

For outside leaks involving Compressed Natural Gas powered vehicles (identified with the CNG symbol on the rear of the car), look for the shut off valve indicator on the driver's door.

C. Incident Response – Outside Fires fueled by Natural Gas

CNG shall be contacted immediately to respond to any suspected or confirmed Natural Gas fueled outside fire.

The assigned apparatus is to proceed to the incident location. The following actions shall be taken by responding apparatus in the absence of any specific instructions from the Incident Commander.

- The First Due Engine shall either wrap a hydrant, locate an available water source or potential drop tank location that is located away from the fire or stand by for further instructions.

- The Second Due Engine shall stage behind the First Due Engine.

- The Third Due Engine shall wrap a second hydrant, available water source, or potential drop tank location located outside the danger area and stand by for further instructions.

- All other apparatus shall stage a safe distance away from the fire. At a minimum this means one (1) residence to either side of the incident address or 100 feet.

Apparatus operators shall make every attempt not to park above manhole covers, storm sewer covers, or street valve box covers.

The area around the gas fueled fire will be isolated and controlled. Traffic in the area will be controlled and diverted around the area as soon as possible.

Any Natural Gas fueled outside fire shall be allowed to burn if at all possible until CNG arrives on scene and is consulted about the incident. The timing of fire extinguishment and leak control is critical to the successful outcome of the incident. Once the leak is contained, it will be much easier to control and extinguish the fire.

Fire Attack Crews (minimum of two (2) personnel each plus a pump operator) shall place appropriate size hand lines in operation for use as in exposure protection and eventually in fire extinguishment.

If extinguishment cannot wait until the arrival of CNG (for example, in the event of a potential rescue of a person or persons in the immediate fire area), appropriate measures shall be taken to control, confine, and if necessary extinguish the fire, as determined by Incident Command. This may include the use of dry chemical extinguishers.

Additional crews (minimum of two) shall be assigned to check areas adjacent to the fire area for other gas leaks, as defined in Section B above.

D. Incident response – Inside Gas Leak

The assigned apparatus is to proceed to the incident locations. The following actions shall be taken by responding apparatus in the absence of any specific instructions from the Incident Commander.

- The First Due Engine shall stand by a hydrant, available water source, or potential drop tank location that located at least one house (or 100 feet) away from the structure with the suspected leak and wait for further instructions.

- The Second Due Engine (if assigned) shall stage behind the First Due Engine.

- The Third Due Engine (if assigned) shall stand by a second hydrant, available water source, or potential drop tank location located at least one house (or 100 feet) away from the structure with the suspected leak and stand by for further instructions.

- All other apparatus shall stage a safe distance away from the reported or suspected source of the gas leak. At a minimum this means one residence to either side of the structure with the suspected gas leak or 100 feet.

Apparatus operator shall make every attempt not to park above manhole covers, storm sewer covers, or street valve box covers.

The area around the structure with the suspected gas leak should be isolated and controlled if practical. Traffic in the area may be controlled and diverted around the area as soon as possible and practical.

A crew or crews (minimum of two personnel each) in full PPE and SCBA (donned) shall be assigned to investigate the structure with the suspected leak. These crews shall be equipped with a multi gas meter. If operating at night, portable lights shall be used and shall be turned on in fresh air prior to entering the structure.

When entering the structure, do not operate any electrical equipment, including doorbells and telephones. Lights that are on should remain on and those that are off should remain off.

Readings shall be relayed to command. If the meter readings indicate a potentially flammable condition (readings above LEL for flammable gas – meter's alarm should activate), the crew shall immediately retreat to a safe area and report this finding to Command. The area found to contain an atmosphere in the explosive range shall be deemed the Hot Zone.

Crews shall continue to investigate readings above zero but below the LEL.

Specific inside areas to check are listed below (as appropriate).

- Basements
- Kitchens
- Fireplaces
- Dryers
- Other gas fueled appliances

If a large gas leak is located in a structure (20% LEL or higher), additional evacuations of surrounding exposures should be considered.

The lack of an odor shall not be used to determine an area is safe; meters must be used for this purpose.

CNG shall be notified as soon as a Natural Gas Leak is suspected.
The appropriate Propane Dealer shall be notified as soon as a Propane leak is suspected.

If an inside Natural Gas or Propane leak is located, members should attempt to trace the piping in order to locate an appropriate shut off valve. If multiple shut off valves are present in the piping, every attempt should be made to shut off only the valve required to stop the leak. Meters in a multiple meter installation can be checked to identify a meter with a rapidly turning meter dial. This indicates the presence of the leak and points to the correct shut off valve to be use in isolating the leak. If there is any doubt as to which valve will secure the leak, shut off the building supply valve. Any valve that is shut down should be locked out and tagged out. No attempt should be made to turn a closed valve back on; this must be done only by CNG.

After the leak is secured, the building should be checked with meters. The building should not be vented until the readings have dropped below the LEL. Once this has occurred, ventilation (natural or mechanical) can be completed. Any electrical ventilation fans should be powered from an outside power sources.

E. Incident Response – Structure Fires fueled by Natural Gas or Propane

This SOG is not intended to cover operations at a structure fire in detail. The following notes apply to structure fires involving natural gas or propane.

If a structure fire is being fed by a gas leak, the easiest way to extinguish the fire is to secure the gas leak. Secure the gas supply to the building by any available valve.

Contact CNG or Propane supplier immediately when any structure on fire is known to be supplied by Natural Gas or Propane.

Section IV -Approval

Fire Chief Michael P Thuy Date of Approval: 1/11/16