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Fire Department Response to Utility Strike Incidents

Glenn Paley – Training Officer
Kelowna Fire Department

August 18th/2018 - Kelowna Fire Department Responds to Natural Gas Line Hit

Fire Department Radio Communications from this incident

August 18th, 2018
17:54 - Engine #5 Dispatched to a gas line struck by a resident with a roto tiller.

Kelowna Fire Department Responses January 1st to October 12th 2018

- 38 responses for reports of gas lines being struck within the city of Kelowna
- 60 responses for telephone, cable and electric lines being struck within the city of Kelowna. (this is both above ground and below)
- What is this costing the tax payers of each municipality where this is occurring as fire departments do not currently typically recoup these costs from the responsible parties?

Fire Department Response to a Natural Gas Line Strike

- As first responders fire departments need to be familiar with the basic properties of Natural Gas so that they can safely mitigate these incidents.

- In British Columbia Fortis Gas and other Utility Companies offer a Natural Gas Safety training program for fire departments and this program is a required training program under the Office of the Fire Commissioner minimum training standards otherwise known as the Playbook.

Fire Department Training for Natural Gas Incidents

Construction Crew Hits Gas Line

Properties of Natural Gas (CH4)

- Hydrocarbon which is primarily made up of Methane (> 90%) with small amounts of ethane, butane, pentane, and propane.
- Colorless/Odorless in natural state (mercaptan added later)
- Lighter than air (Vapour Density in Air 0.584 to 0.610)
- Flammable limits 5% - 15%

Fire /Explosion Hazards

- Preferred fire suppression method is to control the release by stopping flow (shutting valves or clamping line)
- If fire is suppressed without shutting off the flow of gas, re-ignition is the primary concern.
- Explosion hazard increases when natural gas is contained within a structure or underground by sewer pipe and other underground utilities such as conduit etc.
- Gas venting to atmosphere that is not contained is not normally a major concern as it is lighter than air and will naturally rise and dissipate.

Typical Fire Department Actions Natural Gas Incident

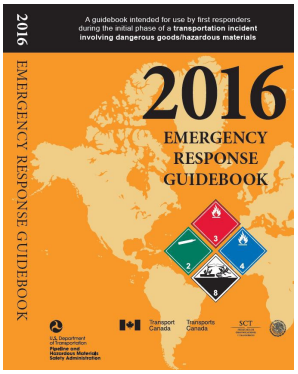
- Fire department is typically dispatched to all reported gas leaks within their response area.
- Fire departments primary role is to respond in case of fire or explosion.
- Fire department will evacuate civilians/workers and control the scene until Utility Company arrives.
- Upon arrival Fire Department would meet with a representative from the Utility Company to determine the best course of action.

Typical Fire Department Actions Natural Gas Incident

- If gas is venting to atmosphere let it vent until isolation valve can be shut or the pipe can be clamped by the Utility Company. (Fire Department does not typically clamp gas lines)
- In many cases the utility company will request that the Fire Department remains on scene will they perform the work to stop the leak. This is for safety reasons in case the leaking gas was to ignite or explode.
- Fire department has a gas detector with LEL/UEL capabilities to monitor scene for explosion hazards.
- If it is found that gas has been contained within an enclosure such as a building or underground, fire department would increase evacuation distance due to explosion hazard and determine the best way to stop flow of gas and ventilate in consultation with Utility Company/Fortis (must use intrinsically safe fan to ventilate).

Typical Evacuation Distances for a Natural Gas Release

- Fire department would refer to Emergency response guide (ERG)
  - Initial evacuation distance is 100 meters or 330 feet in all directions.
  - For a major leak the recommended evacuation distance is 800 meters (1/2 mile) downwind.



Fire Department Response to an Electrical Line Strike

- In most cases the fire department will be the first responders on scene to an emergency incident involving energized electrical equipment.
- As with Natural Gas firefighters must be familiar with the basic properties of electricity to ensure both their safety and the public's safety until the utility company is able to respond.
- Both Fortis Electric and BC Hydro offer electrical training programs for the Fire Departments of BC and these programs are required training under the British Columbia Office of the Fire Commissioner minimum training standards.

Demonstration of an 11kv electric cable strike

Backhoe Hits Underground Electrical Cable

Typical Fire Department Actions Electrical Incident

- Fire department is typically dispatched to all reported electrical line strikes and fires involving power poles, transformers and underground vaults.
- Fire departments primary role is to respond for public safety reasons to keep the public away from the hazard.
- Fire department will evacuate civilians/workers and control the scene until Utility Company arrives.
- Upon arrival Fire Department would meet with a representative from the Utility Company to determine the best course of action.
- If fire involves energized electrical equipment suppression will not typically begin until power has been shut off although in some cases water can be applied to an energized source using a fog nozzle pattern.

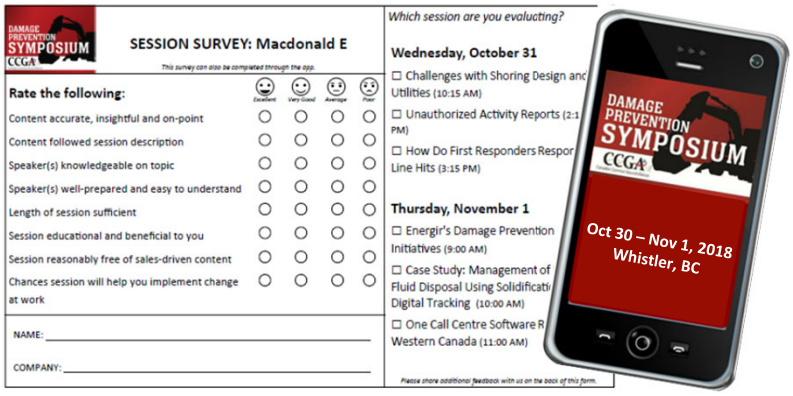
Typical Fire Department Response

- Most fire departments will send at least one engine with an average of four members to a report of a utility strike and will add additional resources to this as they see fit depending on the severity of the incident and the size of the fire department.
- These resources are unable to respond to other emergency incidents while they are dealing with the utility strike.
- For liability reasons fire departments cannot be canceled after the initial dispatch until they have arrived on scene and done their own assessment.

Impact of Disrupted Utilities

- Cost incurred to utility company and fire department for their response.
- Possible disruption of communications/internet if telephone lines are impacted .
- Possible fire/explosion hazard if natural gas line has been affected.
- Possible electrocution hazard if electrical lines are impacted.
- Environmental concerns if a pipeline was to be ruptured.

Before You Leave…



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