

Gas safety training exercises

National Grid Group Training Exercise #2

This training reflects industry best practices but does not replace your organization's SOPs/SOGs. This material can be utilized to provide a perspective as you reflect on emergency operation's and can be collaboratively incorporated into your operating procedures as they are updated.

Training Officer:
Print pages 4 and 5 and hand them out to all participants so they can follow along for the discussion.

Gas Leaks

Gas service leak with ignition

After hearing what you perceived as a loud, concussive noise, your crew, along with a full structural response, is alerted to respond to 44 Woodlawn Avenue for the report of a fire and explosion. As you sign on the air you are informed that several 911 callers have reported an explosion near this location. One caller has also reported a fire next to a structure in this area. The dispatcher tells you that another report indicates that a contractor was installing a new gas service at 50 Woodlawn Avenue. Based on your location, your crew will be the first arriving unit.

As a crew, please work together to address the following response-related questions. Upon arrival, you encounter the situation displayed in the photo.



Training Officer Guidance | Questions and Answers

Relevant sections of the *National Grid Natural Gas Safety Training Certification Program* are listed below the answers where appropriate. Answers without a corresponding reference reflect fire service best practices or are derived from National Grid internal response protocols.

Initial response questions to consider

1. What instructions should be given to the callers in the immediate area of the incident?

The dispatcher should advise callers in the immediate area to evacuate their residences and clear the area for 330 feet. They should be asked to report to the arriving fire officer to provide additional information and receive additional evacuation instructions.

Please see Module 4, *Arriving on the scene, Evacuate occupants*

2. During response, how do you prepare yourself and your crew for the situation?

As your crew moves toward the incident scene, updates on the situation should be shared with all crew members and the officer should assign personnel to tasks that he/she anticipates.

Please see Module 4, *Universal response tactics, Arriving on the scene, Parking, Evacuation*

3. What are your operational priorities?

As this is a significant and dangerous situation, the immediate priority is the life safety of both first responders and the public. In this situation, crews should don full PPE including SCBA and deploy air-monitoring equipment. Crews should then focus on affecting the rescue, evacuation and treatment of those injured and trapped by the situation. Patient treatment areas should be established in the cold zone.

Please see Module 4, *When to call, Arriving on the scene*

4. How do you confirm that National Grid or the local natural gas utility has been notified of this event?

Upon arrival, the confirmation that National Grid or the local natural gas utility has been advised of the situation and is responding should be verified through the dispatch center after you have given your on-scene report.

Please see Module 4, When to call, Arriving on the scene

Additional information

After hearing what you perceived as a loud, concussive noise, your crew, along with a full structural response, is alerted to respond to 44 Woodlawn Avenue for the report of a fire and explosion. As you sign on the air you are informed that several 911 callers have reported an explosion near this location. One caller has also reported a fire next to a structure in this area. The dispatcher tells you that another report indicates that a contractor was installing a new gas service at 5 Woodlawn Avenue.

Questions as your crew arrives on the incident scene

1. Based on the image above, what is your size up of this situation?

A serious explosion has occurred at this location, several residents appear to be injured and others are unaccounted for. Multiple structures have been damaged and there is an open excavation in front of the destroyed structure. Mitigation of this situation will require the response of several ambulances and multiple alarms to generate a sufficient fire service response. Emphasis should be placed on safety, rescue and the control of utilities followed by controlling hazards associated with the damage generated by this event. Close coordination with National Grid will be required throughout this response.

Please see Module 4, When to call, Arriving on the scene

2. Should you extinguish the fire on the side of the structure?

No. The gas-fed fire should be allowed to burn freely until the source has been shut down by National Grid personnel. The fire will self-extinguish once the fuel supply has been exhausted. If it is not safe for crews to enter the area, a high volume hose stream can be directed at the adjacent piles of debris near the fire. Once it is safe to enter the area, crews should do so with a charged handline. These proactive actions will prevent potential incident escalation.

Please See Module 4, What not to do

3. What resource needs do you anticipate?

This situation will require the response of several ambulances to treat and transport the injured. Additional ambulances should be positioned to receive victims recovered during search operations and to provide advanced life support to any first responders who suffer injuries. Depending on the actual number of injuries, the incident commander should consider a mass casualty incident (MCI) response.

As multiple structures are involved in this unstable situation and residents have not been accounted for, a multiple-alarm response to provide sufficient resources and equipment would be required. Several other agencies including police, Department of Public Works (DPW) and National Grid should be integrated into a unified command structure.

Please see Module 4, Universal response tactics, What NOT to do

4. What methods would you utilize to instruct residents in the area?

Based on the debris field, it is apparent that an explosion has produced significant damage and collapsed at least one structure. The area should be evacuated for at least 330 feet in all directions. Rescue and evacuation should be the immediate operational priority. Residents should initially be evacuated to the cold zone and traffic should be rerouted in an effort to eliminate potential ignition sources and reduce congestion in the area. The incident commander may also wish to consider asking occupants within the cold zone to shelter in place, as this would minimize vehicular and pedestrian traffic that could complicate emergency operations.

Residents in the hazard area should be directed to move away from danger and be directed to an initial evacuation perimeter within the cold zone. The initial evacuation distance should be a minimum of at least 330 feet. The incident commander should consult the DOT Emergency Response Guide for further guidance relative to evacuation. Those who are injured but can move should be directed to a treatment area in the cold zone. Injured parties who cannot self-evacuate should be immediately moved to a medical treatment area and triaged.

Although residents can be directed by voice command, they may need direct contact from a first responder to leave the hazard area. The arriving fire officer should also consider providing direction using a PA system, as that would rapidly provide mass notification and instruction. This tactic would result in providing direction to the most people in the shortest period possible.

Please see Module 4, Outdoor leak response, Evacuate occupants

5. Using your knowledge of the characteristics of natural gas, what is the potential location of natural gas in the area?

Weather, especially temperature and wind direction, will impact the propagation of the vapor cloud. Although windy conditions will allow the vapor cloud to rapidly disperse it will also elongate your exclusionary zones. These factors should be considered when making decisions on evacuation, monitoring and deployment.

Please see Module 2, Migration behavior, Module 4, Combustible gas indicator

6. How would you deploy your crew and other responding resources?

As you and your crew arrive on the incident scene, the following tactical priorities should be pursued:

- Direct crews to don full PPE and proceed with caution.
- Evacuate and rescue people in the hazard area.
- Triage and treat the injured.
- Extend a hand line with a fog nozzle to limit fire spread and provide operational flexibility.
- Work with responding police officers to evacuate the area.
- Assume command and develop a unified command structure with police personnel and other responding agencies working within the incident command system.
- Establish a rapid intervention team (RIT) for first responder safety.

- Establish hot, warm and cold zones.
- Verify that people in the hot and warm zones have been evacuated.
- Initiate monitoring of the area with multiple combustible gas indicators (CGIs).

Please see Module 4, Arriving on the scene, Parking, Evacuation, Safeguards

7. What actions do you take prior to the arrival of National Grid personnel?

Immediate actions should be directed toward the evacuation, rescue and treatment of occupants. Secondary actions should be focused on incident stabilization and utility control.

Please see Module 4, Universal response tactics

Questions regarding working with National Grid

1. Upon the arrival of National Grid personnel, how do you integrate them into the command structure?

When it comes to stabilizing the incident, National Grid personnel are the experts relative to utility control and their efforts should be fully supported. Given the need to integrate operations, this is an opportunity to build relationships and form a unified command with National Grid personnel.

Please see Module 4, Working with us

2. What can you expect from National Grid?

National Grid personnel will respond to assist you, mitigate the leak, render the area safe and then restore service. In general, National Grid personnel will report presence to the incident commander (IC), coordinate action and work together to resolve the situation. Based on policy, National Grid personnel are responsible to do the following:

- Inform the IC of the arrival of National Grid Personnel and offer assistance. National Grid recognizes that an emergency incident is under the purview and control of the IC and will offer assistance.
- Inquire if the gas source has been controlled, provide

guidance as it relates to the gas distribution system and mobilize resources to control the leak.

- Offer to work with the IC as a non-governmental organization (NGO) in the incident command system. Typically, this is referred to as developing a unified command.
- Secure gas to compromised gas infrastructure and work to eliminate ignition sources in proximity to the leak.
- Upon request from the IC, work to detect combustible gas in structures that may have been impacted by the event.
- Work with the fire department to ventilate structures, manholes, vaults and other sealed spaces or areas that have accumulated gas.
- Coordinate with other utilities whose infrastructure has been impacted.
- Shut off all services fed by the compromised gas infrastructure.
- Coordinate with providing public information
- Restart gas service impacted by the event once the compromised infrastructure has been repaired and the isolated area has been re-pressurized.

Please see Module 4, Outdoor leak response, Evacuate occupants

Questions regarding working with the community

1. What expectation should you set for residents who have been displaced?

Given the magnitude of this incident, mitigation should be expected to consume multiple operational periods. Make no promises to residents pertaining to a specific timeframe; communicate the general expectation that the evacuation is likely to last more than 24 hours.

2. What agencies can assist you with this situation?

The key to rapid mitigation of this situation includes the development of partnership with several state, local and non-governmental agencies. Some of these agencies are listed below:

- *Local mayor's office*
- *Other elected community officials*
- *Local and state police*
- *State Fire Marshal*

- *Fire and explosion investigation personnel*
- *State, county or city offices of emergency management*
- *Departments of public works*
- *Red Cross*
- *Construction and demolition companies*
- *National weather service*
- *News media*

3. What resources will you need to search the debris at 50 Woodlawn Avenue?

Once the area has been rendered safe, crews will need to work methodically to remove layers of debris while searching for viable victims or recovering those lost during the event. Depending on the extent of collapse, the deployment of technical rescue resources and heavy equipment should be considered as you develop a plan to search the structure.

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Initial response questions to consider

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3. What are your operational priorities?
4. How do you confirm that National Grid or the local natural gas utility has been notified of this event?

Additional information

As you approach the area you notice an open trench surrounded by safety barricades in front of the address and a large quantity of debris emanating from a partially collapsed structure at 50 Woodlawn Avenue. A gas-fed fire is present on the right side of the structure but other areas of the collapsed structure appear to not be burning. Stepping out of your engine, you observe several injured parties in the street. A local resident informs you that three people were in the collapsed structure at 50 Woodlawn Avenue.

