

**LINE OF DUTY
DEATH REPORT
REPORT SLIDES**



F2024-01

Volunteer Firefighter Dies when
Propane from an Underground
Tank Leaked into a Residential
Home causing a Catastrophic
Explosion – Virginia

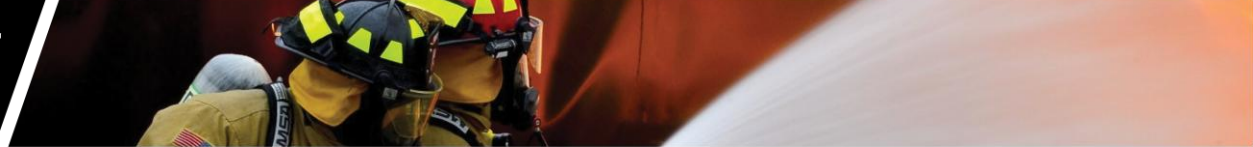


Summary

- On February 16, 2024, a 45-year-old volunteer firefighter (T611FF2) died after being struck by debris during a catastrophic explosion of a residential structure.
- At 19:36 hours, the Emergency Communications Center (ECC) received a call for an odor of gas outside of a residential home.



Aerial view of structure and surrounding area post explosion.
(Courtesy of fire department)



Summary

- Approximately two minutes later, two units were dispatched for a report of an outside gas leak in a residential neighborhood.
- E618 was staffed with five personnel: Captain E618, Driver Operator (E618DO), and three firefighters (E618FF1, E618FF2, and E618FF3).
- The second unit was T611, staffed with five personnel: Lieutenant T611, Driver (T611DO), and three firefighters (T611FF1, T611FF2, and T611FF3).
- At 19:43 hours, T611 arrived on-scene.
- As the crew approached the residence, they noticed a slight odor of gas.
- They met with the caller who reported an odor of gas outside the home.



Summary

- T611 began to conduct air monitoring around the home.
- Several neighbors who came outside reported they had no odor of gas in their homes.
- Lieutenant T611 instructed T611FF2 to check the storm drains using their gas meters.
- Two drains located in front of an adjacent home were alerted to a positive reading.
- T611FF2 and Lieutenant T611 noted there was no odor of gas in the storm drain.
- At 19:48 hours, E618 arrived on-scene.



Summary

- Two of E618's members were approached by a neighbor at an adjacent home, explaining she had a leak in an underground propane tank that supplied her swimming pool.
- She accompanied personnel from T611 and E618 to the propane tank location.
- There was a propane delivery earlier in the day.



View of the area the propane tank was located. (Courtesy of Fire Marshal's Office)



Summary

- While the propane delivery driver was filling the tank, he noticed a leak.
- He deposited approximately 125 gallons of propane into the tank before he noticed the leak.
- He was unable to extract the delivered propane due to a concern with the tank's valves.
- Captain E618 updated the ECC with the information and the correct address.
- As the crews approached the area of the propane tank they noticed a strong odor of gas.
- They opened the tank dome and noticed visible vapors from the ground surrounding the tank.



Summary

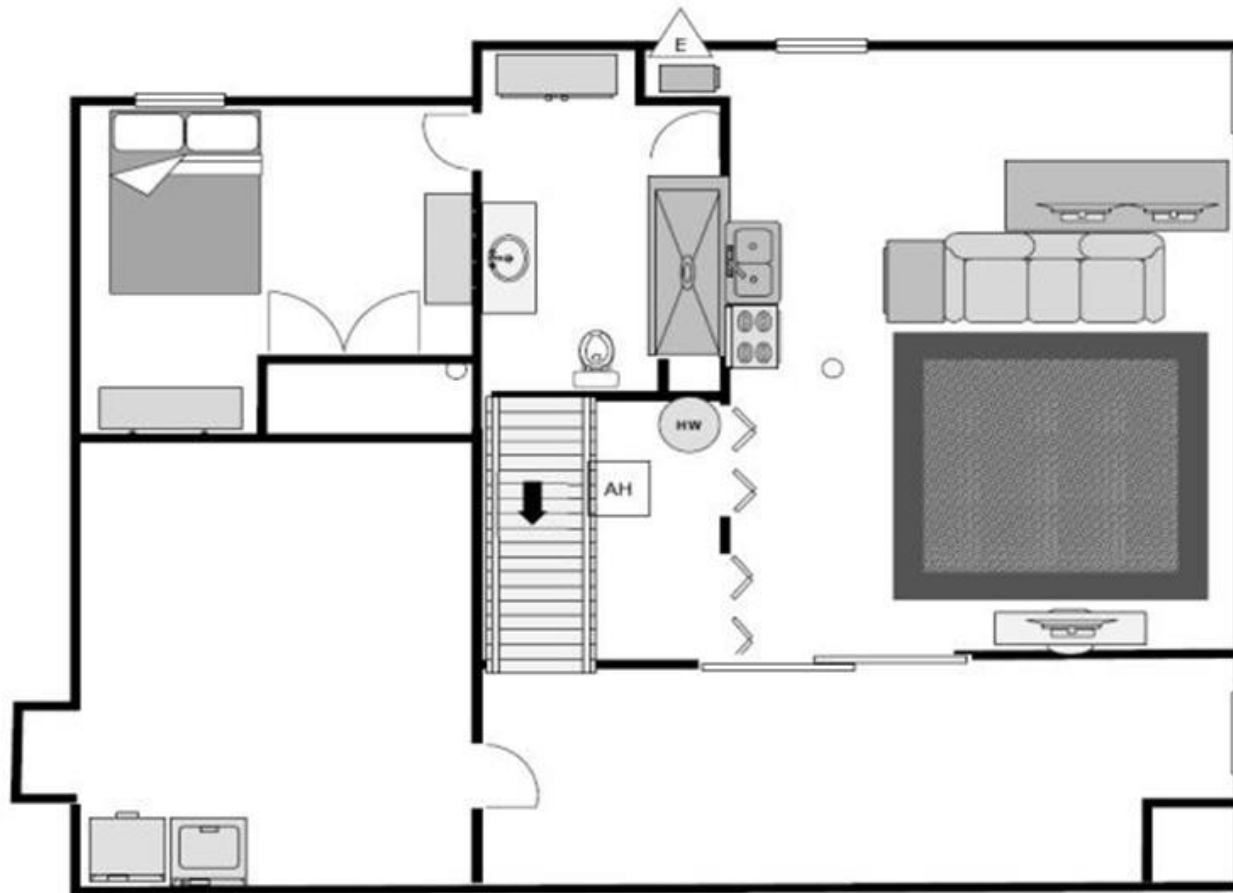
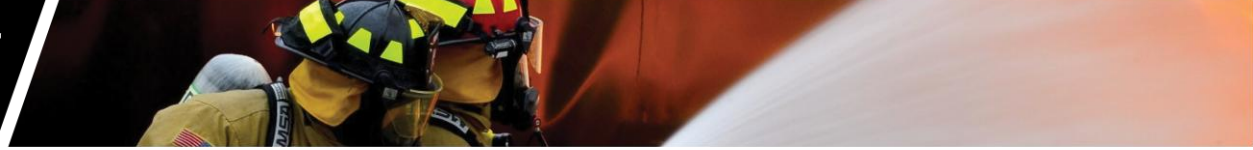
- The homeowner called the emergency contact number for the delivery company, left a message, and a return call was immediately received.
- Captain E618 and Lieutenant T611 discussed with a company representative how to mitigate the leak who noted the tank had to be removed from the ground.
- After speaking with the propane delivery company representative, Captain E618 contacted the Fire Marshal Supervisor (FM604) and Lieutenant T611 contacted the hazardous materials (hazmat) team's on-duty officer (HM619 OIC) to discuss the situation.
- HM619 OIC indicated that the hazmat team should respond.
- Captain E618 requested the hazmat team along with a second engine.



Summary

- Shortly after the request, he added a Battalion Chief and reported to the ECC that he was establishing himself as the incident commander (IC).
- Units entering the structure received elevated gas readings at the front door.
- T611 placed a positive pressure ventilation (PPV) fan at the front door directing air into the house.
- The homeowner advised the units there was an occupant living in the basement.
- Lieutenant T611 and E618FF1 made entry into the home.

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Basement of the structure.
(Courtesy of Fire Marshal's Office)



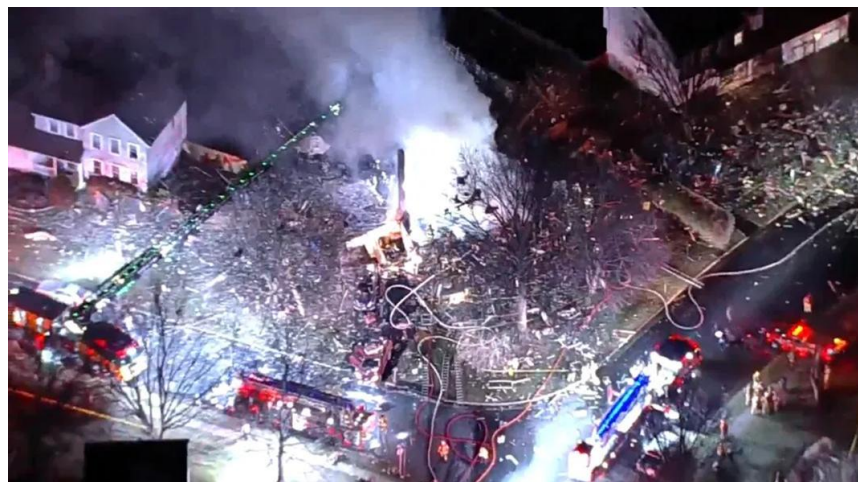
Summary

- They advanced down the basement steps, encountering the second occupant of the home.
- They directed her to immediately exit the house.
- A gas meter reading was taken in the basement.
- It went into alarm mode, giving an over range indication exceeding 10% of the Lower Explosive Limit (LEL).
- Once the occupant left the basement, Lieutenant T611 and E618FF1 began to manually open the basement windows.



Summary

- Suddenly without warning, there was a catastrophic explosion.
- The force of the explosion raised the roof, and the walls collapsed propelling outward.
- The contents soared in all directions.
- All four walls of the foundation cracked, and heavy fire conditions consumed all the collapsed structural components, along with the home's contents.



Aerial view of area effected by explosion.
(Courtesy of NBC News)



Summary

- T611FF2 (deceased firefighter) was standing in the front yard in line with the front door.
- He was struck by debris from the explosion and sustained a fatal injury.
- Lieutenant T611 and E618FF1, who were in the basement, survived the explosion.
- They were trapped and located in voids surrounded by heavy debris.
- They were conscious and alert with the ability to declare Maydays and execute survival techniques to maintain composure and allow for rescue personnel to assist with extricating them from the rubble.

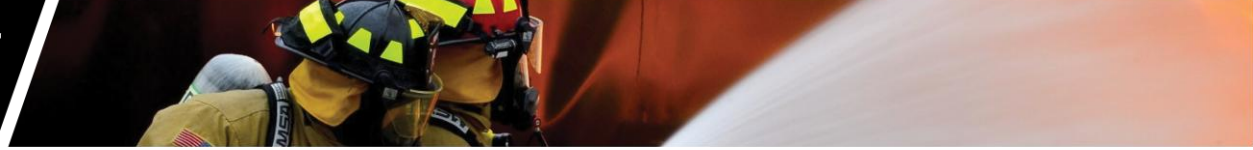


Summary

- Additional units arrived simultaneously beginning extinguishment and rescue operations.
- After approximately 40 minutes, both trapped personnel were rescued and transported to medical facilities with serious injuries.
- T611FF2 was declared deceased.

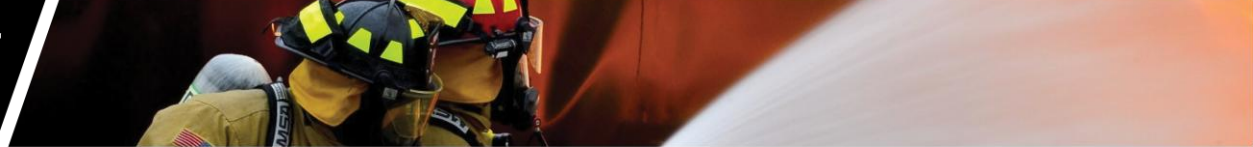


View of rescue operations.
(Courtesy of Fire Marshal's Office)



Contributing Factors

- Incident command and management
- Personnel accountability
- Hazardous materials incident response including air monitoring
- Mayday procedure and management
- Training and evaluation for rank and skill.



Recommendations

- Establish incident command at the beginning of the incident and ensure initial and ongoing size-ups and risk assessments are conducted throughout the incident.
- Use a personnel accountability system to readily identify the location and function of all personnel operating at an incident.
- Follow SOPs/SOGs for hazardous materials incidents, such as propane and natural gas emergencies.
- Ensure all firefighters and fire officers are trained in Mayday operations and management.
- Develop and implement a professional development program that includes routine evaluation based upon rank and skill for all combination fire department personnel. Such a program should also promote resilience and safety communication during an incident.

Contact Us

Fire Fighter Fatality Investigation and Prevention Program
Surveillance and Field Investigations Branch

Division of Safety Research

NIOSH 1000 Frederick Lane, MS 1808

Morgantown, West Virginia 26505-2888

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