



ABSTRACT

Internal After-Action
Report/Improvement Plan
(AAR/IP) for the Gas Explosion
on April 10, 2019 in Durham, NC

City of Durham Fire
Department

July 31, 2019

GAS EXPLOSION INTERNAL AAR/IP

Durham, NC



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Executive Summary

This report is written to provide an examination of the internal response strengths and weaknesses of the Durham Fire Department and is expected to be a companion report to the formal After Action Report being produced by Durham City/County Emergency Management through the use of Hagerty Consulting. This After-Action Report/Improvement Plan identifies strengths to be maintained and built upon within the DFD, identifies potential areas for further improvement, and supports development of corrective actions within the DFD.

Response:	On April 10 th 2019, the following units responded to a gas explosion at 115 N. Duke Street in Durham, NC: First Alarm: E1, L3 Second Alarm: FD1, FD2, FD3, FD4, FD5, FD6, FD8, FD20, MS1, E2, E3, E4, E5, E6, E9, E10, E12, E13, E15, E16, L2, L12, L17, Q7, Q11, SQ1, SQ4, SQ7, HM13, Prevention staff. Other: RRT-4, NC-TF8 (US&R)
Incident Commanders:	Division Chief Cremeans/Fire Chief Zoldos
Incident Type:	Odor of Gas/Explosion and Fire
Synopsis:	On April 10, 2019, the Durham Fire Department responded to a report of the smell of natural gas near 115 North Duke Street. As firefighters were searching for the source of the leak, and evacuating the surrounding businesses, an explosion occurred around 10:07 a.m. Nine firefighters were injured, transported to the hospital, treated and released. Three buildings were completely destroyed displacing three businesses (Kaffeinate, Prescient, and The Ingraham Collection). There were twenty-five civilians injured and two civilian fatalities. More than 97 firefighters responded to the explosion and remained on scene throughout the day to watch for fires.

Analysis of Response and Areas for Improvement of Service

#1: Command Post Staffing and EOC Activation

Although the EOC was initially activated at Level II with two Durham City/County Emergency Management staff members, the Incident Commander utilized the members of Emergency Management (EM) to supplement Command Post (CP) staffing due to a lack of available command level personnel. This use, while advantageous to the scene, hampered the ability for the EM personnel to continuously operate, and provide services from the EOC.

Many of the traditional EOC tasks were addressed through alternate means such as the multi-department coordination calls and meetings at the CP and the locating of resources needed at the Command Post inside the Durham School of the Arts. A more robust EOC activation would have enabled a number of other issues to be more effectively addressed: understanding risk management and legal issues, tracking of costs, maintaining situational awareness, and more seamlessly transferring command from one agency to another.

Recommendation: Train additional DFD personnel in EOC/CP operations.

Lead Agency: Durham Fire Department assisted by Durham City/County Emergency Management

Due Date: June 30, 2020

Recommendation: Maintain the Emergency Operations Center until all departments are certain that the circumstances of the incident can be adequately handled through alternate means.

Lead Agency: Durham City/County Emergency Management

Due Date: Complete

#2: Neighborhood Impact Assessment

The impacts to businesses and residents could have been better tracked. For example, the Command Post used a Google map to record damage, and various teams made building assessments using a variety of exterior marking systems.

Recommendation: Engage in the ArcGIS system add-on developed by Durham City/County Emergency Management. This tool is capable of adding multiple data layers, such as census data, address points, structural advisory tags, utilities, street closures, to a digital map. Specifically, train DFD personnel and other City staff on the use and deployment of this technology.

Lead Agency: Durham City/County Emergency Management to provide initial and continuing education on this mapping tool.

Due Date: March 31, 2020

#3: Multi-Department Training for Unified Command

Since the inception of the National Incident Management System in the early 2000s, hundreds of City employees have taken on-line and in-person Incident Command System classes. A specific concept of field coordination when there is more than one agency responsible for aspects of the response is Unified Command where agencies share in the responsibility for the event and jointly develop a common set of objectives. Though multi-agency coordination clearly did occur and after getting off the ground actually excelled, this incident highlighted the benefit of teaching specifically the concept of Unified Command to multi-agency and multi-department staff. Departments not traditionally associated with a strong field presence at incident scenes played very important roles, specifically the General Services and the Public Works Departments.

Recommendation: Develop and host multi-department and multi-agency Unified Command classes pre-identifying those departments and agencies who would most benefit from the training.

Lead Agency: Durham City/County Emergency Management with the assistance of the Durham Fire Department.

Due Date: Add to the annual update of the City-Wide Strategic Plan at its next revision.

#4: Staging Areas

There was a need to stage a variety of vehicles and equipment in order to respond to the incident, investigate the incident, set up lighting, re-direct traffic, establish command, etc. Vehicles were staged on Morgan Street both East and West of Duke Street, on Duke Street North of Morgan Street, on Gregson Street between Main Street and Morgan Street, and on Main Street both East and West of Duke Street. This created difficulties when trying not only bring additional resources to the incident scene, but also when trying to release resources from the scene.

Recommendation: Review the process and guidelines for identifying staging areas.

Lead Agency: Durham Fire Department

Due Date: Add to the City of Durham Fire Department policies, procedures and guidelines during update process.

#5: Spontaneous Response

On the day of the gas explosion, a large contingent of off duty fire department employees spontaneously responded into Durham, even though the department had not issued any form of call back notice. Many of these responders found their way to the incident scene. When those employees began to migrate down to the incident scene, there was no mechanism in place to maintain accountability for them. In many cases these employees were dressed in borrowed gear, further complicating the accountability concerns.

Recommendation: Employees will be instructed to respond to their assigned stations and stand by there, until formally requested to either respond to the incident scene, or backfill at a fire station.

Lead Agency: Durham Fire Department

Due Date: Add to the City of Durham Fire Department policies, procedures and guidelines during update process.

#6: Personal Protective Equipment

There were a number of fire department personnel operating on the scene of the explosion who were not dressed in the appropriate level of personal protective equipment (PPE) to include respiratory protection for the incident type. Because the possibility of secondary explosions, building collapse and inhalation hazards continued to exist throughout the first operational period, personnel operating within the hot zone should wear the appropriate PPE at all time.

Recommendation: All fire department personnel shall wear the appropriate level of PPE on all emergency incident scenes.

Lead Agency: Durham Fire Department

Due Date: Add to the City of Durham Fire Department policies, procedures and guidelines during update process and reiterate during departmental training.

#7: Risk Based Response

The Fire Department uses critical task analysis to determine the effective response force requirements for low, medium, and high risk occupancies and call types. The results of this critical task analysis is then programmed into the Computer Aided Dispatch system to match the department's resources adequately to the risk.

Recommendation: The fire department will review the Fire Priority Dispatch System protocols for all hazardous materials call types, to ensure that the department's resources adequately match the occupancy risk profile.

Lead Agency: Durham Fire Department

Due Date: Add to the City of Durham Fire Department critical task analysis for agency accreditation during update process.

#8: Daily Priority Staffing

On the day of the explosion, the department's primary hazardous materials station was only staffed with three personnel, with no one specifically assigned to HazMat 13 (that unit is cross staffed from members of Engine 13), reducing the effectiveness of that unit's response to the aftermath of the explosion. In addition, some of these personnel were out of service undergoing departmental physicals.

Recommendation: In the future, Engine 13 will receive priority staffing to ensure that four personnel are assigned to that unit, and a separate dedicated FTE will be assigned specifically to HazMat 13. This will increase the minimum staffing from 3 to 5 at this station. This will be an interim solution ahead of a fully staffed (four person) standalone HazMat unit.

Lead Agency: Durham Fire Department

Due Date: December 31, 2019.

#9: NFPA 1710 Compliance

National Fire Protection Association (NFPA) 1710 is the standard on minimum staffing. This standard identifies the minimum resources for an effective firefighting force to perform critical tasks. These tasks include establishing water supply, deploying an initial attack line, ventilating, performing search and rescue, and establishing a Rapid Intervention Team. NFPA 1710 recommends a minimum staffing level of four for an engine company to perform effective and efficient fire suppression. Of the 18 engines and ladder companies that responded to the gas explosion on April 10, 2019, only 4 met the NFPA 1710 minimum staffing standard.

Recommendation: The fire department has established a goal to comply with the NFPA 1710 Standard on minimum staffing through a five-year phased approach.

Lead Agency: Durham Fire Department

Due Date: To be determined through Budget Process

#10: Response to Low Frequency / High Impact Incidents

High-frequency events are found to rarely cause problems, because fire departments are trained and ready for these events through the use of standard operating procedures, strategy and tactics, operational risk management, and appropriate post incident analysis. When departments are assessing risk and impact, increased training should be provided that focuses on low-frequency and high-risk incidents, as these incidents do not happen often, but when they do occur, the impact to the community is far more significant due to lack of experience in responding to these events.

Recommendation: The fire department will hold continuing education classes that cover FD-3003 Initial Response to Hazardous Materials emergencies, and the utilization and maintenance of gas meters.

Lead Agency: Durham Fire Department

Due Date: March 31, 2020

#11: Incomplete Closure of Streets

First arriving units blocked the nearest lane of Duke Street upon their arrival to ensure a safe working environment. After the initial monitoring for gas and finding significant readings, consideration should have been given to developing formal exclusionary zones.

Recommendation: The fire department will hold continuing education classes that cover FD-3003 Initial Response to Hazardous Materials emergencies including additional training on developing and implementing exclusionary tactics such as lane closures and evacuations.

Lead Agency: Durham Fire Department

Due Date: March 31, 2020

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