



National Transportation Safety Board
Washington, D.C. 20594

Emergency Response Group Factual Report
PLD18FR002 Natural Gas Pipeline Release – Atmos Energy
Dallas, Texas
February 23, 2018
(24 pages)

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A. Report Information

1. Report Date: July 14, 2020

2. Accident Identification

Operator: Atmos Energy
Location: Dallas, Texas
Incident Date: February 23, 2018 at 6:38 a.m.
NTSB No.: PLD18FR002

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B. Accident Summary

For a summary of the accident, refer to the *Accident Summary* report within this docket.

C. Emergency Response on February 23, 2018, 3534 Espanola Drive

On February 23, 2018, a natural gas explosion occurred at 3534 Espanola Drive, Dallas, Texas at 6:38 a.m. Multiple 9-1-1 calls came into Dallas Fire and Rescue (“DFR”) dispatch center reporting the explosion at that residence. At 6:44 a.m., the first unit to arrive were two fire engines and a truck. Firefighters assessed the scene and reported no smoke or fire but major structural damage to the home (See Figure 1). At 6:42 a.m. dispatch requested Atmos Energy Corporation (“Atmos”) and at 6:48 a.m. dispatch requested Oncor (electric utility) to shut off the utilities. A family of five was in the house at the time of the explosion and sent to Parkland Hospital. ¹ The family had just moved into the home about one month prior to the explosion, as it was newly remodeled.²



Figure 1: House 3534 Espanola Drive after the explosion on February 23, 2018

¹See in the docket: Dallas Fire-Rescue Department, Fire Investigation Report, February 23, 2018, 3534 Espanola Drive, Dallas, Texas.

² See in the docket: Interview - Dallas Fire-Rescue Arson Investigator 'A' 02.27.18.

On February 22, the day before the accident, Atmos crews were in the neighborhood and worked through the night into the early hours of February 23 to survey, monitor, and repair leaks that were found in the area, including four Grade 1 leaks that were repaired prior to the accident.³ According to an Atmos operations supervisor who was on scene, two construction crews were performing the repairs, and service technicians were monitoring for gas leaks. As this work was ongoing, the operations supervisor heard a “boom.” Within minutes, he heard the sirens of emergency responder vehicles approaching the neighborhood. The operations supervisor told NTSB investigators that he did not know the source of the noise. He immediately went to check on the safety of an Atmos crew in the vicinity of the noise. He saw an exploded home, but no smoke or fire. He indicated that the front of the house appeared to be “falling in.”

The operations supervisor called his supervisor (an operations manager). He also spoke with the director of operations, who told him to evacuate the Durango and Espanola side of the 3500 block. The operations supervisor told NTSB investigators that he directed his crew to evacuate the 2-block area and went door-to-door advising residents to evacuate and not to start cars or turn on lights. He also indicated that he requested assistance from a firefighter with this effort. Following the evacuation, the operations supervisor stated that he again called the director of operations who directed him to start isolating the main gas pipelines (“mains”) in the area, the first of which was in the alley behind Durango and Espanola Drives. He proceeded to shut down five mains north and south of the Espanola home before he was redirected to take a drug test as required by 49 CFR §199.105 and §199.225.⁴

During this time, firefighters were on scene assessing the situation and requesting additional ambulances for the injured family members. The DFR incident commander (IC) told NTSB investigators that he was aware of the two previous fires that occurred that same week in the neighborhood and was debating how wide to evacuate the area. He had seen Atmos crews in the area and requested that his safety officer find the highest ranking Atmos representative, which was the operations supervisor. The DFR safety officer brought an Atmos representative to the initial command post, which was set up across from 3534 Espanola Drive. The Atmos representative updated the IC on

³ Atmos classifies a grade 1 leak as a leak that represents an existing or probable hazard to persons or property that requires immediate repair or continuous action until the conditions are no longer hazardous. (See docket: Atmos Procedures Excerpt).

⁴ See in the docket: Interview - Atmos Operations Supervisor 'B' 03.05.2018 & 03.08.2018 with Errata.

the isolation of the system. The IC told NTSB investigators he initiated the first evacuation designating a 2-block area as “Exclusion Zone 1” (See Figure 3).^{5, 6}

Five arson investigators from DFR investigated the home. Investigators did not enter the structure under the advisement of the DFR incident commander that it was not safe. The arson investigators took photos of the exterior of the home and developed a sketch. Significant damage was observed to the northwest corner of the home where the exterior walls were completely blown out. The roof structure was partially collapsed on the same side. The east side wall was also blown out. The blast of the explosion pushed out the bottom wall of the structure. The other arson investigators went to the hospital to interview the family members and to obtain a sketch of the interior of the home.⁷

The family members told the arson investigators they were asleep at the time of the explosion. They said they had heard “popping” noises earlier that night but were unable to determine what was causing the sound. They did not smell any gas prior to the explosion. The three family members who were sleeping in the bedrooms at the time of the explosion did not sustain significant physical injuries. However, there were two family members who were in the living room (located towards the front of the house) who did. One was fatally injured due to severe trauma from the explosion, and the other sustained a severe foot fracture. Other injuries included minor abrasions, cuts, and bruises. A member of the family provided a sketch of the house to DFR indicating that the gas-fueled furnace and stove were located in the center of the home. The DFR submitted a copy of this sketch in their fire investigation report to the NTSB, which included a description of the damages to the house (See Figure 2), as well as the testimony of the family members. The classification of the incident on the arson report was “undetermined.”^{8, 9}

⁵ This was not a mandatory evacuation, which can only be issued by a County Judge. Mandatory evacuations are required for high risk security scenarios and also in times when residents are not compliant. This was not needed for the February 23 house explosion because residents were willing to evacuate.

⁶ See in the docket: Interview - Dallas Fire-Rescue Battalion Chief 'D' 02.26.18.

⁷ See in the docket: Interview - Dallas Fire-Rescue Arson Investigator 'E' 02.26.18.

⁸ See in the docket: Dallas Fire-Rescue Department, Fire Investigation Report, February 23, 2018, 3534 Espanola Drive, Dallas, Texas.

⁹ See in the docket: (a) Interview - Dallas Fire-Rescue Arson Investigator 'A' 02.27.18; (b) Interview - Dallas Fire-Rescue Arson Investigator 'B' 02.26.18; (c) Interview - Dallas Fire-Rescue Arson Investigator 'C' 02.26.18.

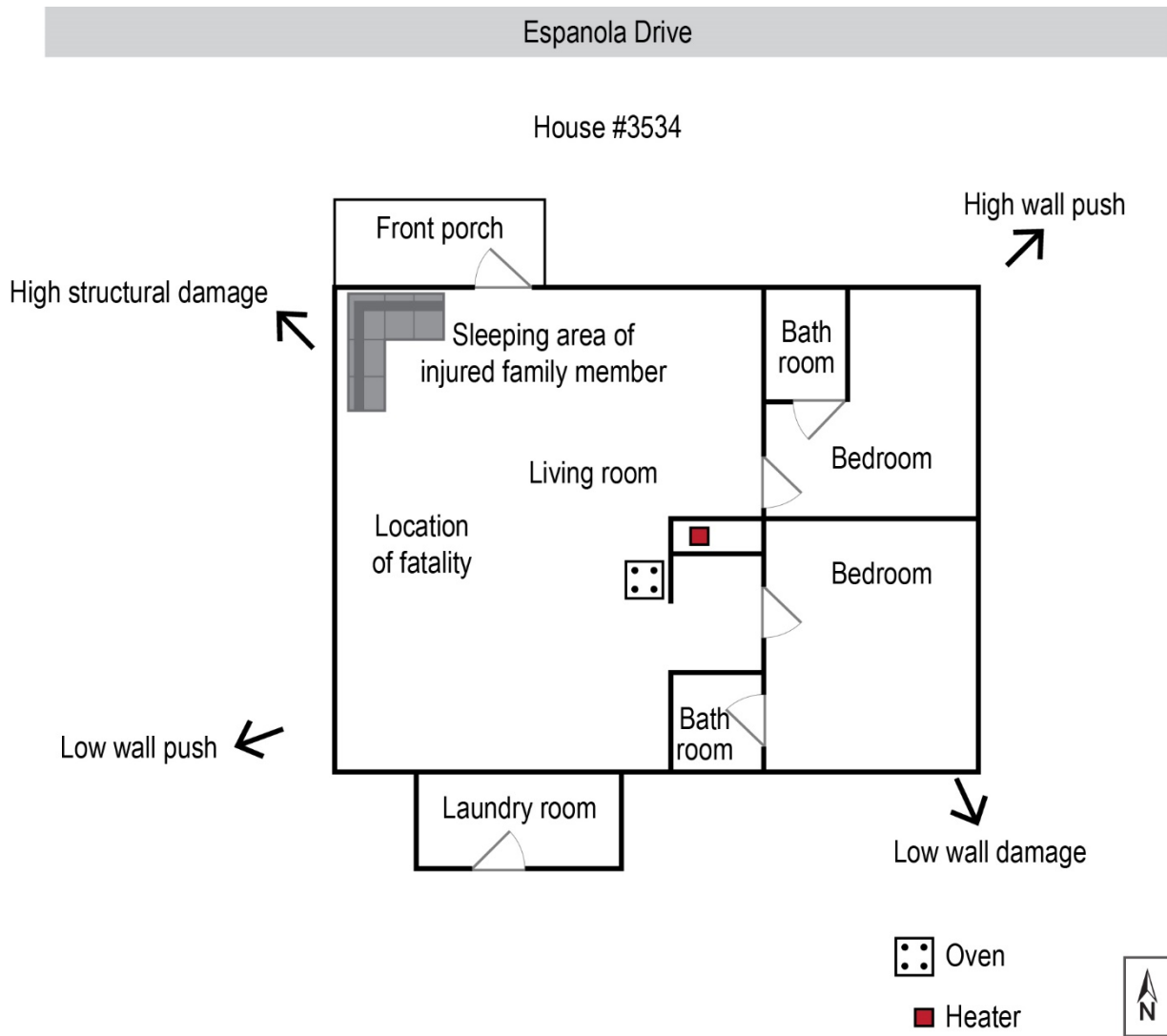


Figure 2: NTSB recreation of the DFR floor plan of 3534 Espanola Drive, Post-Accident

Following the evacuation of the 2-block area, Atmos technicians continued to leak survey in the surrounding neighborhood. DFR requested updates from Atmos on the perimeters to evacuate. A second evacuation, completed by about 10 a.m., was issued by DFR further expanding the area several blocks north, south and west of the exploded home (“Exclusion Zone 2”).¹⁰ Atmos began shutting down all the mains within the area of Exclusion Zone 2, which was completed later that night (February 23) around 7 p.m.

DFR and Atmos set up command posts near each other for coordination purposes. The posts were located in the parking lot area at Webb Chapel Road and Storey Lane. DFR sent their hazmat

¹⁰See in the docket: Interview - Dallas Fire-Rescue Battalion Chief 'D' 02.26.18.

coordinator to the Stephen C. Foster elementary school to monitor for gas; he detected none. Nonetheless, as a precaution, DFR evacuated the school (“Exclusion Zone 3”). Class was still in session at the time. Students were loaded on to a DART (Dallas Area Rapid Transit) bus and departed the school by 1:30 p.m. A fourth evacuation was issued for an additional 60 single-family homes east of this area (“Exclusion Zone 4”). In total, the DFR evacuated about 300 single-family homes and two apartment buildings (250 units), and the school (approximately 600 students) (See Figure 3).¹⁰ As needed during the evacuation, DFR escorted residents to and from their homes for critical items, such as medication.

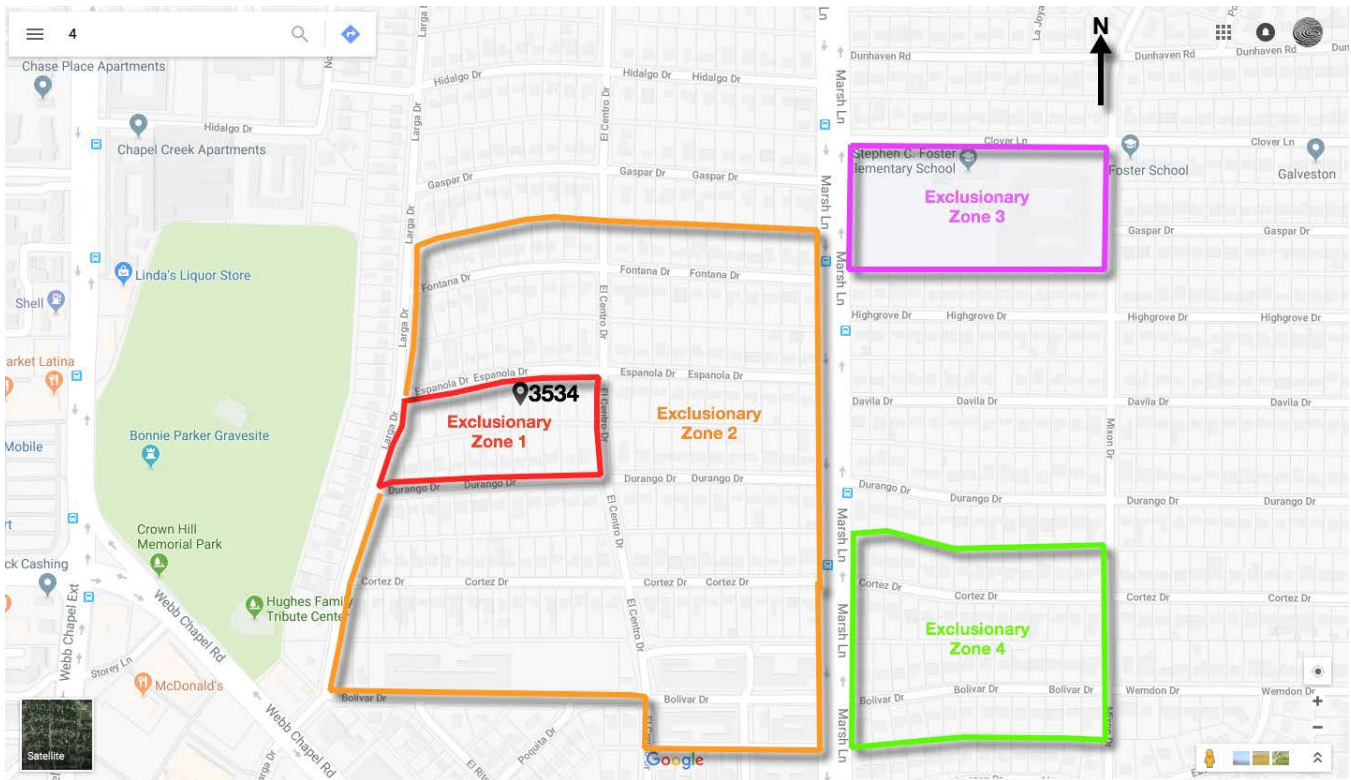


Figure 3: Dallas Fire-Rescue map of the four evacuations zones after the February 23 house explosion.

DFR ended its incident response at 7 a.m. on February 24. However, DFR continued to have a presence at the command post to assist in the event of further evacuations while Atmos conducted leak surveys. Firefighters reported that the proximity of the command posts had aided communications with Atmos, which were generally adequate. However, one of the DFR incident commanders said Atmos employees provided different perspectives on the necessary scope of the evacuation, which he found confusing.¹¹ About 3:30 p.m. (February 24) Atmos announced in a press conference the evacuation of

¹¹ See in the docket: (a) Interview - Dallas Fire-Rescue Battalion Chief 'C' 03.05.18 and (b) Interview - Dallas Fire-Rescue Battalion Chief 'A' 02.26.18 with Clarification

the four exclusion zones was lifted. Atmos continued to survey for leaks in the northwest Dallas area over the following days. The additional leaks discovered led Atmos to decide it was necessary to shut down part of its gas distribution system, which impacted the service of about 2,800 residents.

D. Previous Gas-Related Fire Incidents

Two other gas-related incidents occurred at two homes on the same block as the February 23 house explosion on Espanola Drive.¹² These two homes received gas from the same main as 3534 Espanola Drive; the main ran down the shared alley behind all three houses. The incidents occurred on February 21 and February 22, 2018. A summary of the response to these two incidents is provided below.

1. Emergency Response on February 21, 2018, 3527 Durango Drive

On February 21, at 5:49 a.m., the Dallas Fire-Rescue (DFR) dispatch received multiple emergency calls for a structure fire at 3527 Durango Drive (See Figure 4). The 9-1-1 calls from neighbors reported that a house “exploded,” and they observed smoke coming out. The first engine arrived at 5:53 a.m. and the firefighter on that engine told NTSB investigators that the fire was coming from the back of the house. He observed the roof blown off and was not involved in the fire. He said that normally, during house fire events, the roof falls into the house. He noticed that glass was broken outside of the house and sheetrock had been knocked down from the interior of the house onto the floors, as well as outside the exterior of the house. Upon this realization, the firefighter turned off the gas supply at the meter behind the house and requested for gas and electric utilities to respond at 5:59 a.m. Two other firefighters, the safety officer and the IC, told NTSB investigators that the post fire structural conditions of the house could have resulted from an explosion or from the kind of construction that was used to build the exterior walls. The DFR IC did note the bulging of the house walls.¹³

The safety officer told NTSB investigators that as he approached the front of the house, he noticed the left façade appeared pushed out. While fighting the fire, he noticed flames were coming from the subfloor of the house and he had to place the nozzle of his firehose directly into the floor to

¹² The term “incident” is used throughout this report in reference to the events at 3527 Durango Drive and 3515 Durango Drive. For this report, use of this term does not indicate that these events meet PHMSA’s definition of incident as promulgated in 49 CFR § 191.3.

¹³ See in the docket: (a) Interview - Dallas Fire-Rescue Battalion Chief 'D' 02.26.18; (b) Interview - Dallas Fire-Rescue Battalion Chief 'B' 02.27.18; (c) Interview - Dallas Fire-Rescue Battalion Chief 'A' 02.26.18 with Clarification.

extinguish it. He found this “unusual” because of the pier and beam style of the house, which typically does not have combustibles underneath to continuously fuel a fire.¹⁴ The fire was reported under control by 6:17 a.m. Evidence of other potential incident causes, such as drug activity or propane storage were not found.¹⁵

Two DFR arson investigators arrived on scene and interviewed the family of five, who were inside when the incident occurred. One of the arson investigators told NTSB investigators that she spoke to the then 19 year-old son of the owner of the house and he stated that his father “had heard something going on with the heater, went to check the heater, when it exploded on him and he got thrown back.” The son also told the arson investigator that he was asleep in a room at the rear of the home, which was an addition that was built a couple of years ago, which included a “restroom area.”¹⁶ He woke up to debris falling on him and sustained minor injuries, to which he refused transport to the hospital. The arson investigator was unable to speak directly to the owner that day because he was immediately transported to Parkland hospital for 2nd degree burns and was unable to communicate at the time due to his injuries. This arson investigator communicated the son’s testimony to the second arson investigator, who was the lead investigator for that incident.¹⁷

The lead arson investigator told NTSB investigators that she took photos of the house and spoke to the firefighters from the first fire truck on scene who told her smoke was showing from the back of the house, which is where firefighters started attacking the fire. She took photos of the house and observed the most severe fire damage was in the back bedroom of the house, indicating the room where the son was sleeping. She noted “remnants” from inside the room was on the roof, “like it had blown up onto that roof, onto the exterior of the roof.” She noted that the addition included a bedroom with a separate bathroom attached; the interior of the bedroom had the most damage. She noted that she never saw a heater, however she took a photo of the furnace that was located in the attic of the house (See Figure 4). The lead investigator could not specifically say if gas was involved; this was her first time investigating a fire that may have involved gas. She told NTSB investigators she was shown the location

¹⁴ See in the docket: Interview - Dallas Fire-Rescue Battalion Chief 'A' 02.26.18 with Clarification.

¹⁵ See in the docket: Interview - Dallas Fire-Rescue Battalion Chief 'D' 02.26.18.

¹⁶ Additional information regarding the construction of the addition to 3527 Durango Drive will be provided in Materials Laboratory Fire Factual Report (Report No. 20-031).

¹⁷ See in the docket: Interview - Dallas Fire-Rescue Arson Investigator 'E' 02.26.18.

of the gas meter by an Atmos representative (who was on-scene at the request of DFR) because she was unable to find it because of its location in the backyard. ¹⁸



Figure 4: Post-incident photo of the furnace in 3527 Durango Drive on February 21, 2018. (Courtesy of DFR)

The two arson investigators documented their findings and conclusions for the February 21 incident in a fire investigation report. The initial findings reported the following: “Occupant stated he had heard a noise coming from a gas heater in the restroom located in the back of the house and woke up to check the heater. Once he approached the heater, the heater exploded, throwing him a few feet back from the heater.The fire most probably originated in, on or around the gas heater when it exploded causing major damage to the back of the house.” The incident was first classified as “accidental.”

¹⁸ See in the docket: Interview - Dallas Fire-Rescue Arson Investigator 'D'02.26.18.

This classification was later changed to “undetermined” after the gas-related incidents occurred on February 22 at 3515 Durango Drive and on February 23 at 3534 Espanola Drive. In addition, the arson investigators followed up on March 2, 2018 with a statement from the owner who reported the incident differently from what was initially stated by his son. The owner reported that he heard a popping noise around 2 a.m. Then later that morning he heard a noise coming from the HVAC unit (i.e., furnace) and went to the thermostat to adjust the temperature when he noticed only the air conditioning was working, not the heat. He then went to the HVAC unit located in the attic to investigate and found that the plate that normally sits in front to the pilot light was on the ground next to the unit, and the pilot light was not turned on. The owner placed the plate back in front of the pilot light where it usually sits. This action re-activated the pilot light and the occupant was then thrown back a few feet because the HVAC unit exploded and he was injured, resulting in 2nd degree burns. ¹⁹

An Atmos Energy service technician arrived on scene soon after the fire was extinguished at 3527 Durango Drive.²⁰ He told NTSB investigators that he checked in with the firefighters and learned they had already turned off the gas.²¹ He indicated that his Atmos Energy issued SENSIT® GOLD combustible gas indicator (CGI) was on as he proceeded to the meter located at the rear of property. He did not recall looking at the CGI during this time but indicated that it would have started beeping if it picked up gas and it never beeped. He then inspected the meter, pressure-tested the regulator, and placed a lock on the meter to ensure that only Atmos Energy employees would have access to turn it back on. The service technician said that he was unable to pressure test the house line during his visit because the fire department was in the house and it would not have been safe. The service technician performed one bar-hole test near the service riser and detected no gas. The service technician indicated that he was not able to perform additional bar-hole tests because the soil was too saturated with water. He indicated that he put his CGI in survey mode and looked for bubbles emerging from the water. He said that he neither saw bubbles, nor obtained any positive gas reading with his CGI.

The service technician told NTSB investigators that before he departed the property, one of the arson investigators told him that she thought the fire was gas-related and that it “probably came from inside the house.” NTSB investigators asked this arson investigator, “Is it within your report to look at

¹⁹ See in the docket: Dallas Fire-Rescue Department, Fire Investigation Report, February 21, 2018, 3527 Durango Drive, Dallas, Texas.

²⁰ This summary of Atmos Energy’s response to 3527 Durango Drive is based on the NTSB Operations and Integrity Management Report.

²¹ See in the docket: Interview - Atmos Senior Service Technician 02.28.2018 with Errata.

that house [3527 Durango Drive] and the physical evidence about the walls and -- to make a determination of cause beyond accidental?" The arson investigator explained that they do have to be able to articulate "the origin and cause. We already know that the origin was in the bathroom area, in the back, and the cause being either some type of mechanical – you know, I specify mechanical malfunction or something as far [sic] unspecified gas issue." She reported that she made her fire origin conclusions in collaboration with the lead investigator by speaking with the homeowners and examining physical evidence. The arson investigator also informed NTSB investigators that the resident had reported a gas leak a few weeks prior to the February 21 incident.²² This leak was called in by the customer on January 1, 2018 after smelling gas. Atmos responded to the leak, classified it as a Grade 2 (30 day) leak and replaced the service line on January 29, 2018.



Figure 5: House 3527 Durango Drive after the February 21, 2018 incident²³

2. Emergency Response on February 22, 2018, 3515 Durango Drive

On February 22 at 10:21 a.m., the homeowner at 3515 Durango Drive reported a fire in his kitchen (See Figure 5). Responding firefighters arrived at 10:27 a.m. Upon arrival, the incident

²² See in the docket: Interview - Dallas Fire-Rescue Arson Investigator 'E' 02.26.18.

²³ See in the docket: Simplified floor plan of 3527 Durango Drive based on DFR Sketch.

commander observed large amounts of smoke that came from the south and west sides of the one-story pitched roof residence. He saw a significant fire on the north and west side of the structure. He ordered the roof to be ventilated during firefighter operations to control the spread of fire throughout the structure. It took about three hours to extinguish the fire and the incident ended at 1:17p.m.²⁴ DFR requested a response from the electric and gas utility at 10:38 a.m. and 11:40 a.m., respectively.²⁵

The fire investigation report stated that the fire traveled vertically to the attic, igniting nearby combustible cabinets and surrounding structural members, causing significant fire and smoke damage resulting in a total loss.²⁶ A DFR arson investigator interviewed the homeowner who reported that at the time of the fire, he was home alone in the kitchen, located towards the rear of the house. He was boiling water on the stove top when he noticed flames from the stove turning red and growing out of control. The burner then flashed over him, resulting in him suffering second-degree burns to his right arm and leg. He was subsequently transported to Parkland Hospital. The arson investigator also spoke to other family members who said the stove was only a year old and had no previous problems.²⁷ The Arson report also indicated that a neighbor voluntarily provided a statement that she had been experiencing issues with her gas service lately and told the arson investigator that she also observed red flames from her stove. The neighbor told arson investigators that she contacted Atmos on February 16, 2018 and asked if there were any gas issues in the neighborhood. The dispatcher told her Atmos was unaware of any issues. The DFR arson report classified this incident as “undetermined.”²⁸

An Atmos Energy service technician was the first Atmos Energy employee to respond to the fire at 3515 Durango Drive.²⁹ He told NTSB investigators that his first task was to examine the meter and verify that the gas was off. He confirmed that DFR had already turned off the gas at the meter. The DFR incident commander told the service technician that the fire started in the kitchen at the range. The DFR incident commander also told him that on the previous day (February 21), a gas-related event had occurred on the same street, three houses to the east (3527 Durango Drive). According to the service

²⁴See in the docket: Interrogatory response from February 22, 2018, Incident Commander.

²⁵See in the docket: Dallas Fire-Rescue Department, Fire Investigation Report, February 22, 2018, 3515 Durango Drive, Dallas, Texas.

²⁶ See in the docket: Interview - Dallas Fire-Rescue Arson Investigator 'E' 02.26.18.

²⁷ See in the docket: Interview - Dallas Fire-Rescue Arson Investigator 'C' 02.26.18.

²⁸ See in the docket: Dallas Fire-Rescue Department, Fire Investigation Report, February 22, 2018, 3515 Durango Drive, Dallas, Texas.

²⁹ See additional details to Atmos Energy’s response to 3515 Durango Drive in the NTSB Operations and Integrity Management Report.

technician, he was asked “to get in contact with someone to come out here to investigate what was going on,” which he did. Two operations supervisors and a distribution operator traveled to the property. This was the beginning of a response from Atmos Energy which included over a dozen people, including a director of operations, an operations manager, survey specialists, and construction crews. Atmos Energy employees were continuously working in the area surrounding the two Durango Drive residences from the afternoon of February 22 through the morning of February 23, 2018. The service technician told investigators that he did not test the regulator. He also said the customer’s “piping wasn’t testable because of fire.”



Figure 6: The back of house 3515 Durango Drive after the fire on February 22, 2018.³⁰

³⁰ See in the docket: Simplified floor plan of 3515 Durango Drive based on DFR sketch.

E. Federal and State Pipeline Regulations

1. Emergency Response

The Pipeline and Hazardous Materials Administration (PHMSA) under the U.S. Department of Transportation (DOT) issues regulations for the safe and secure movement of hazardous materials to industry and consumers by all modes of transportation, including pipelines. The regulations under 49 CFR Part 191 and 192 provide minimum safety standards that pipeline operators must comply with if they are transporting natural gas by pipeline. States assume safety authority over intrastate gas pipelines, hazardous liquid pipelines and underground natural gas storage through certifications and agreements with PHMSA under 49 U.S.C. §§ 60105- 60106.³¹ The Railroad Commission of Texas (TX RRC) has jurisdiction of all common carrier pipelines in Texas, person owning or operating pipeline in Texas, and their pipeline and oil and gas wells. The TX RRC has adopted by reference PHMSA pipeline safety regulations, 49 CFR §191 and §192 and is responsible for enforcing these regulations.³²

Federal regulations have requirements for both distribution and transmission pipeline for emergency response and investigation of failures. The applicable regulations for the current accident for emergency response include:

- 49 CFR Part 192.605 that a gas operator has a procedural manual for operations, maintenance, and emergencies. Under section 192.605(e), gas operators are required to establish procedures for surveillance, emergency response and accident investigation.
- 49 CFR Part 192.615, “Emergency Plans”, which requires that each natural gas operator have “established written procedures to minimize the hazard resulting from a gas pipeline emergency.” At a minimum, the procedures must address notification, identification and classification of events that require immediate response by the operator, as well as adequate means of communication between local emergency response authorities.
- 49 CFR Part 192.617, “Investigation of Failures”, which requires that each operator to establish procedures for analyzing accidents and failures for the purpose of determining the causes of the failure to be able to “minimize the possibility of a recurrence.”

PHMSA annually audits all state pipeline and underground natural gas storage safety programs. The program evaluation is posted online; the last one to be publicly released was the 2018 Gas State

³¹ See “State Programs Overview”, <https://www.phmsa.dot.gov/working-phmsa/state-programs/state-programs-overview>.

³² See in the docket: TX RRC Statutory authority letter (February 27, 2018) and see 16 Tex. Admin. Code § 8 (2020).

Program Evaluation for Texas. The program evaluates emergency response procedures only regarding leaks caused by excavation damage near buildings. In 2018, PHMSA noted that the state does evaluate operators for this specific procedure. The program evaluation also inspects whether the state reviews operator records of previous accidents and failures including reported third party damage and leak response; it was noted on the program evaluation that investigations into accidents and failures required by 49 CFR Part 192.617 were reviewed during inspections.

2. Incident Reporting

PHMSA regulations under 49 CFR §191.5 require operators of a distribution pipeline system to report a gas incident as soon as possible to the National Response Center but no longer than 1 hour after confirming the discovery of the releasing by submitting a DOT Form RSPA 7100.1 as soon as practicable but not more than 30 days after detecting the incident, and supplement that information if additional information is obtained after the report is submitted. An incident is defined in the regulation under 49 CFR §191.3:

(1) An event that involves a release of gas from a pipeline, gas from an underground natural gas storage facility (UNGSF), liquefied natural gas, liquefied petroleum gas, refrigerant gas, or gas from an LNG facility, and that results in one or more of the following consequences:

(i) A death, or personal injury necessitating in-patient hospitalization;

(ii) Estimated property damage of \$50,000 or more, including a loss to the operator and others, or both, but excluding the cost of gas lost; or

(iii) Unintentional estimated gas loss of three million cubic feet or more.

(2) An event that results in an emergency shutdown of an LNG facility or a UNGSF. Activation of an emergency shutdown system for reasons other than an actual emergency within the facility does not constitute an incident.

(3) An event that is significant in the judgment of the operator, even though it did not meet the criteria of paragraph (1) or (2) of this definition.

Atmos submitted a RSPA 71001.1 for the explosion at 3534 Espanola Drive, but not for the fires that occurred at 3527 and 3515 Durango Drive. Atmos reported that the fires that occurred at these

houses showed no evidence that they were caused by a release of gas from the company’s pipeline and therefore were not considered reportable “incidents” as defined by the regulation.³³

In addition to federal regulations, state pipeline regulations under the Texas Administrative Code require that the gas company notify the Commission by telephone of “any event that involves a release of gas from its pipeline as defined as an incident in 49 CFR § 191.3 as soon as possible but no later than one hour of the confirmed discovery.” Atmos sent a courtesy notification by email to the TX-RRC on the evening of February 22, 2018 that they were responding to “two separate leak investigations where fires within those homes had occurred”, referring to 3527 Durango Drive and 3515 Durango Drive . Atmos received a response to their courtesy notification from TX-RRC on the morning of February 23, 2018. ³⁴ The state pipeline regulations also require that gas companies have written procedures that require a supervisory review of leak complaints by 10 a.m. of the next business day.³⁵

3. Enforcement Guidance

PHMSA developed the Operations & Maintenance Enforcement Guidance for Part 192 Subpart L and M, provides guidance for internal enforcement purposes on sections 49 CFR Part 192.605, 192.615 192.617. For the enforcement of emergency response procedures, PHMSA provides flexibility on the development of those procedures under 192.615, as long as the operator’s response is “prompt” and “effective” in minimizing the hazard. For Part 192.605, lists guidance on the accessibility of the procedures and whether tasks being performed by field personnel are covered by the procedures.

F. Operator Emergency Response Procedures

Atmos Operations and Maintenance manual has several procedures that address these regulatory requirements. At the time of this incident, Atmos had in place “Emergency Operating Procedures” in their Operations and Maintenance Manual. This was their corporate emergency plan to “protect the general public and company employees from potential hazards,” and lists the different steps that an employee must take when responding to a gas emergency. The responding employee is to first determine the hazard, the extent of the hazard, and necessary actions to take to protect life and property. The

³³ See in the docket: Emails between NTSB IIC and Atmos Energy.

³⁴ See in the docket: (a) Atmos Energy Email to TX-RRC on February 22, 2018- Subj: Courtesy Notification-Atmos Energy; (b) TX-RRC Email to Atmos Energy on February 23, 2018-Subj: Re: Courtesy Notification-Atmos Energy.

³⁵ See 16 Tex. Admin. Code § 8.210 and §8.205 (2020).

procedure also states that “if required, the gas system identified in the affected area of the emergency should be isolated or shut down by using system maps which identify the location of valves, regulator stations and size of piping. The Operations and Maintenance manual states, “the primary responsibility of the responders’ role is to make the area safe.” The rest of the procedure lists reporting requirements for each of the states where Atmos has natural gas operations.

Atmos also has an emergency response plan for “local operations,” specific to the areas served by the Dallas Service Center, which includes guidelines for immediate investigation and reporting of emergencies and what actions to take when an emergency occurs to protect the public, employees and to minimize property damage. This procedure provides the roles and responsibilities of Atmos employees during an emergency. It also lists contact information for staff in the local operations center, a contractor list for utility repairs, as well as a list of priority customers such as hospitals and large volume customers.

Atmos has a fire response procedure for their technicians who are dispatched to the scene of a structural fire. The procedure calls for the technician to first make the area safe for employees and the public. After assessing the situation, the technician is to complete a “full leak investigation” when “access to premises is allowed and when practical” and also to notify the supervisor and/or dispatch of “any fire deemed reportable.” The procedure then allows “appropriate personnel” to determine if further evidence collection and investigation is needed and to follow appropriate state/federal reporting procedures. After logging the occurrence, the technician is to communicate with fire officials or customers of their intended departure.³⁶

The company’s leak investigation procedures, which is referenced as a requirement within their fire call procedures, lists steps for service technicians to investigate a gas leak. The procedures include provisions for investigating leaks that are reported to be inside or outside of a building.³⁷ For outside leak investigations, the technician is to search for leak indications outside, including excess gas consumption (which can be determined by examining the gas meter), abnormal appearance of vegetation, sewer venting, and the presence of natural gas odor. If a hazardous condition is identified, the technician must turn off the gas to the customer. This procedure also includes a provision that states that water-saturated soil may affect the accuracy of leak detection equipment and when in cases where

³⁶ See in the docket: Atmos Procedure Excerpts.

³⁷ Ibid.

“surface conditions are not favorable” to follow the section on “Wet Weather Leak Investigation.” The “Wet Weather Leak Investigation” procedures state that service technicians should visually inspect and perform “multiple bar hole tests as necessary,” while looking for water bubbles and vapors to determine if gas is present. It also lists the “Customer Piping Test Procedure”, if needed, which is discussed below. If natural gas is detected but the source is unknown, the procedure calls for a supervisor to be contacted.

Atmos’ leak investigation procedure states that for inside leaks where access is permitted, the technician is to enter the structure with approved leak detection equipment and then test the customer piping using Atmos’ “Customer Piping Test Procedure.”³⁸ However, if the customer is not home upon arrival, the meter is to be turned off and secured and the outside leak investigation is to be performed. The “Customer Piping Test Procedure” requires the technician to perform either a “shut-in” or “pressure drop test,” which measures pressure losses on the customer piping by isolating the appliances. The procedure notes that these tests may not be appropriate due to “unusual circumstances,” in which cases the technician is directed to contact a supervisor. The procedure contains the following examples of “unusual circumstances”:

- A. The meter is operating at excess or elevated pressure.
- B. The meter serves a multi-dwelling complex or the meter is classified as a master meter.
- C. The test requires special by-pass techniques or equipment.
- D. The meter is serving an extensive or large-diameter piping system.

The procedure requires that if the technician cannot isolate the leak, gas service will be left off until repairs are completed.

G. Industry Guidelines

The Gas Piping Technology Committee (GPTC) developed the GPTC Z380.1 as a guideline for the natural gas industry on both distribution and transmission pipelines. The committee and the guideline are both accredited by the American National Standards Institute. The GPTC Z380.1 provides information to the gas operator in complying with federal regulations, 49 CFR Part 191 and Part 192. The guide material is “advisory in nature” and not intended for public authorities to adopt as mandatory requirements. The GPTC is affiliated with the American Gas Association. Atmos is both a member of AGA and GPTC.

³⁸ See in the docket: Atmos Procedure Excerpts.

H. Dallas Fire-Rescue

1. Procedures

The February 21-23 incidents came into the DFR dispatch as either an explosion or structure fire. The DFR has standard operating procedures (SOPs) for responding to a structure fire, a hazardous materials (HAZMAT) incident, and natural gas leaks.³⁹ The DFR SOP for responding to structure fires lists the first truck to “control utilities” as one of its “tactical considerations.” DFR and Atmos employees reported to NTSB investigators that the first actions of the DFR when arriving on-scene during the February incidents was to shut off the natural gas meter.

The DFR HAZMAT SOP defines hazardous materials by the definition used by the DOT and the Environmental Protection Agency (EPA).⁴⁰ This SOP list three levels of a HAZMAT incident classification: Level I being a minor incident and Level III being the most severe. For all three categories of hazardous material incidents, the incident commander “shall request” the Hazardous Material Response Team (HMRT). The Dallas Fire-Rescue Department HMRT is comprised of a Deputy Chief of Special Operations, Special Operations Section Chief, Hazmat Coordinator, Hazmat Operations, and members of the designated Hazmat response station. The equipment they use are the SENSIT® Gold gas detector G2, combustible gas indicators, and MultiRae© Photoionization Detector. The HMRT has a continuing education training requirement of 20 hours a year. The DFR incident commanders for the February 21-23 incidents did not request HMRT support. On February 23, 2018, the hazmat coordinator dispatched himself to assist in the incident response.⁴¹

The HAZMAT SOP also requires that every member of the department be trained on emergency response operations sequence for a hazardous substance release. For all certified firefighters, they must be trained at a minimum of First Responder Operations Level. The procedure also requires for all personnel assigned for hazardous materials response be trained and certified to the hazardous material technician level as defined by Occupational Safety and Health Administration regulation, 29 CFR 1910.120; the National Fire Protection Association (NFPA) Standard 472, *Standard for Competence of*

³⁹ See in the docket: (a) Excerpt of DFR NG Leak Procedure (SOP130); (b) DFR HAZMAT Procedure (SOP 100); (c) Excerpt of DFR Structure Fire (MOP 601).

⁴⁰ The DOT lists its hazardous materials in the Hazardous Materials Table under 49 CFR §172.101. The EPA uses the term hazardous substances, which is a list of chemicals that are reportable if exceeding the listed threshold amount under 40 CFR § 302.4.

⁴¹ See in the docket: Interview - Dallas Fire-Rescue Hazmat Coordinator 02.27.18.

Responders to Hazardous materials/Weapons of Mass Destruction Incidents, and the Texas Commission on Fire Protection (TCFP).⁴² In February 2018, the DFR had 1,855 firefighter and of those, 1,722 of the firefighters had hazardous materials training up to first responder operations level. The remaining 133 had hazardous materials training up to the first responder technician level.⁴³

The DFR also has a SOP for responding to natural gas leaks and lists the type of equipment for gas detection and the maintenance requirements. The procedure also requires that every engine carries a 2-gas monitor to monitor the atmosphere for carbon monoxide and natural gas. The monitor will alarm at 5,000 ppm for natural gas.⁴⁴ DFR reported having 2-gas monitors on the engines, however no one was using it at the time due to operational issues and so replaced them with carbon-monoxide alarms only. The HMRT, however, did have combustible gas detectors, as described above. The procedure requires that DFR wear full turnout gear for personal protective equipment (PPE), which can be downgraded at the discretion of the incident commander. Officers are recommended to call the hazmat coordinator if they are unsure of needed assets are or unable to mitigate the hazard. This procedure addresses response for both inside and outside natural gas leaks.

2. Training with Atmos

The DFR firefighters that were not part of the HMRT, as well as one arson investigator, told NTSB investigators they never had any prior training with Atmos on natural gas emergencies. Most of these firefighters had been with the DFR for several years. The DFR Hazmat Coordinator told NTSB investigators the HMRT had trainings with Atmos periodically but not every year. The DFR Hazmat Coordinator last attended training with Atmos the month before the incident in January 2018.⁴⁵

3. Arson Investigation Training

DFR arson and fire investigators work in the Fire Investigation and Explosive Ordinance Division, which is under the Fire Prevention & Investigation Bureau. At the time of this report, the division had 23 arson and fire investigators, of which 12 were certified and the remaining 11 officers

⁴² See 37 Tex. Admin. Code § 453.

⁴³ First responder awareness, operations and technicians' level are three different levels of training for those working with hazardous materials, as defined by Occupational Safety and Health Administration regulation, "Hazardous Waste Operations and Emergency Response", 29 CFR § 1910.120.

⁴⁴ The limit of 5000ppm for methane is also 10% of the LEL of methane. The explosive range for methane is 5%-15% by volume in air.

⁴⁵ See in the docket: Sign-in sheet, DFR HAZMAT Coordinator training with Atmos in January 2018.

were in training. There are three positions as an Arson and Fire Investigator, which are captains, lieutenants, and senior fire prevention officers.

In Texas to become an arson investigator requires at a minimum a certification as a peace officer and a fire and arson investigator. The basic fire and arson investigator certification must be completed through the International Fire Service Accreditation Congress or completion of a fire investigation program approved by the Texas Commission of Fire Protection (TCFP). Once certified, a minimum of 18 hours of continuing education is required, plus an additional two hours of training in arson or fire investigation, to be completed during the certification period, which is one year.⁴⁶

The TCFP curriculum manual follows the NFPA standard 1033 (2014), *Professional Qualification for Fire Investigation*.⁴⁷ The TCFP curriculum also lists NFPA 921 as a required reference. The course outline does list building fuel gas systems as a covered subject, which requires the investigator candidate to identify common fuel gas system components, such as pressure regulations, service piping systems, valves, gas burners, common appliance and equipment requirements. Also, the investigator candidate must be able to explain fuel gas systems in regard to leakage, pressure testing, locating leaks, testing flow rates and pressures, collection of gas piping, and underground migration of fuel gases.

The DFR SOP for “Fire Investigation and Explosive Ordinance Disposal” that was in place in February 2018 listed the requirements for the qualifications of an arson investigator, which include meeting state requirements. They must attend and successfully complete a TCFP approved class and pass the TCFP administered exam, plus also maintain their certification requirements.⁴⁸ All the arson investigators involved in the February 21-23 incidents had their certifications as a peace officer and fire investigator. They also told NTSB investigators that once they are first certified, they are required to do a few months of on-the-job training before becoming an official arson investigator.

The DFR SOP also states that an arson and fire investigator is to use scientific methods to identify where the fire started and its cause. All evidence must be evaluated, which includes all witness accounts (e.g., firefighters, owners, occupants, neighbors), sketches and photographs of the property, and physical evidence. Investigators are directed to determine if “there were any possible accidental sources of ignition.” After investigating a fire, an arson investigator completes a fire investigation

⁴⁶ See 37 Tex. Admin. Code § 441.

⁴⁷ See 37 Tex. Admin. Code § 431.3 and TCFP, Certification Curriculum Manual, Chapter 5, Fire Investigator (Revised January 30, 2018).

⁴⁸ See in the docket: DFR SOP, Fire Investigation and Explosive Ordinance Disposal in Feb. 2018.

report. The DFR fire investigation reports follow the format as listed in NFPA 921 standard, *Guide for Fire and Explosion Investigations*. This report lists the type of structure, injuries reported, fire loss estimate, and includes a narrative portion that describes the incident, which can include witness testimony. A “significant fire incident report” is sometimes attached at the end of the report to document injuries or fatalities of firefighters or the public, which is then sent to the National Fire Incident Report System.⁴⁹

The fire investigation report also classifies each type of incident. Each incident is classified as either accidental, undetermined, or incendiary, as defined by the NFPA 921 standard. “Accidental” fires are those which “do not involve an intentional human act to ignite or spread fire into an area where fire should not be.” An “undetermined” classification is used when the cause of the fire cannot be proven to an acceptable level of certainty. The “incendiary” fire is defined as one that is deliberately set. The accident and fire events from Feb. 21-23, 2018 were all classified “undetermined” in the fire investigations reports.

When a fire and arson investigators identify a life safety issue during their investigation, e.g. gas issue or non-compliance with fire or building codes, they are expected to inform their supervisor. The supervisor will then forward the issue to the relevant division within the DFR or City of Dallas department. DFR told NTSB that natural gas concerns found during a fire incident would be forwarded to the City of Dallas Building Inspection Division. However, this practice is not documented anywhere in any DFR SOP. The February 21-23 fire investigation reports had not been sent to any other DFR division or City of Dallas department.

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Hazardous Materials Investigator

⁴⁹ The National Fire Incident Reporting System is a standard national reporting system used by U.S. fire departments to report fires and other incidents to which they respond and to maintain records of these incidents in a uniform manner. The system is administered by the U.S. Fire Administration.