National Transportation Safety Board
Washington, D.C. 20594

Office of Railroad, Pipeline and Hazardous Materials Investigations

Human Performance

Group Chairman's Factual Report of the Investigation

Atmos Energy Corporation

Natural Gas-Fueled Explosion During Routine Maintenance

Farmersville, Texas

June 28, 2021

NTSB Investigation No.:

PLD21FR002

Report Date: February 17, 2022

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B. Accident Summary

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

C. Personnel Information

At the time of the accident, seven workers were on-site:[1]

- Atmos Senior Field Construction Coordinator A (Atmos Sr. FCC A)
- Atmos Senior Field Construction Coordinator B (Atmos Sr. FCC B)
- Bobcat Foreman
- Bobcat Skilled Laborer
- Bobcat General Laborer (deceased)
- FESCO Project Manager (deceased)
- FESCO Pipeline Technician

The *Pipeline Operations Group Chairman's Factual Report*, within this docket, provides detailed information on the responsibilities of Atmos', Bobcat's and FESCO's employees who were onsite on the day of the accident. Atmos employees were to perform in-line inspection activities and oversee contractor personnel, Bobcat's employees were providing pig loading services to Atmos, and FESCO's employees were providing flaring services to Atmos.

At the site, Atmos Sr. FCC A and Atmos Sr. FCC B oversaw the work being performed by the two contractor companies (Bobcat and FESCO). In terms of the operations being performed, the contractors were not to manipulate any valves without first receiving approval from the Atmos Sr. FCCs.

Atmos Sr. FCC A's responsibilities included observing the flare, instructing the crew when the pipeline door could be opened, and indicating to the crews when the pig had been pushed far enough into the pipeline. During his interview, he expressed no concern about how the workers were performing their duties up to the time of the accident. He had not smelled gas before or after the accident.

Atmos Sr. FCC A stated that he first met the two FESCO employees on the day before the accident, but the accident day was the first day he worked with them.[2]

Atmos Sr. FCC B worked with the Atmos Sr. FCC A at the site. He described the work that day as routine. He also had observed the flare and the Bobcat crew going through the process of

[1] There were no remote operators or off-site workers with direct safety responsibilities for work being performed on-site.

[2] Atmos Sr. FCC A interview. Transcripts of interviews of all employees are in this docket.

launching the pig, including securing the straps to the pig and using the pole and excavator to insert the pig into the pipeline. Immediately after the accident, Atmos Sr. FCC B called 911.[3]

The Bobcat crew was responsible for the preparation work and processes performed to launch the pig into the pipeline. The Bobcat Foreman was responsible for moving the pig into place for loading, using the excavator (trackhoe). He stated that he had no concerns about the process being followed correctly and that nothing seemed out of the ordinary moments before the accident. At the time of the explosion, he was on the trackhoe, backing it up away from the pipeline. Although he stated there was no indication from his perspective of any types of problems or safety concerns, he stated that Bobcat did not perform a job safety analysis for this job. [4]

C.1 Employee Work History

NTSB investigators reviewed the work history of each employee, including past performance appraisals, incident/accident history, and disciplinary history available from the company that employed them at the time of the accident. Atmos' workers were onsite to perform in-line inspection activities and oversee contractor personnel, Bobcat's workers were providing pig loading services to Atmos, and FESCO's workers were providing flaring services to Atmos. Both the Bobcat Operations and the FESCO Assistant District Manager believed that their respective employees working at the site of the accident were qualified to perform their required duties.[5] Additional information on the roles, responsibilities and tasks performed by employees are described in the *Pipeline Operations Group Chairman's Factual Report* within this docket.

C.1.1 Atmos Sr. FCC A

Atmos Sr. FCC A had worked in the pipeline industry since 2006. He started working for Atmos in 2009 as a senior construction operator, became a Crew Leader in 2010, a FCC in 2012, and a Sr. FCC in 2015. He, along with Atmos Sr. FCC B, oversaw the work being performed by the two contractor companies (Bobcat and FESCO).

There were no records of disciplinary actions nor incidents/accidents related to pipeline safety, in Atmos' employee files for Atmos Sr. FCC A.

C.1.2 Atmos Sr. FCC B

Atmos Sr. FCC B started working for Atmos in 2004 as a Construction and Maintenance Specialist, became a Senior Construction Operator in 2005, a Crew Forman in 2006, an FCC in 2009, and a Sr. FCC in 2012. His actual pipeline experience at Atmos began when he became an FCC in 2009. He, along with Atmos Sr. FCC A, oversaw the work being performed by the two contractor companies (Bobcat and FESCO).

[3] Atmos Sr. FCC B interview.

[4] Bobcat Foreman interview.

[5] Bobcat Operations interview and FESCO Assistant District Manager interview.

There were no records of disciplinary actions nor incidents/accidents related to pipeline safety, in Atmos' employee files for Atmos Sr. FCC B.

C.1.3 Bobcat Foreman

The Bobcat Foreman started working for Bobcat as a General Laborer in 2017. He became a Skilled Laborer in 2017, an Operator in 2019, and a Foreman in 2021.

There were no records of disciplinary actions nor incidents/accidents in Bobcat's employee files for the Bobcat Foreman.

C.1.4 Bobcat Skilled Laborer

The Bobcat Skilled Laborer began working in the pipeline industry in January 2020. He was hired by Bobcat as a General Laborer in May 2021 and promoted to Skilled Laborer in June 2021.

There were no records of disciplinary actions nor incidents/accidents in Bobcat's employee files for the Bobcat Skilled Laborer.

C.1.5 Bobcat General Laborer (deceased)

The Bobcat General Laborer started working for Bobcat as a General Laborer on January 25, 2021. He had 2 years of prior work experience. He was described as smart and a good worker who was making good progress by Bobcat Operations.[6]

There were no records of disciplinary actions nor incidents/accidents, in Bobcat's employee files for the Bobcat General Laborer.

C.1.6 FESCO Project Manager (deceased)

The FESCO Project Manager began working for FESCO as a Trainee in 2004, became an PT assistant in 2005, a PT-3 in 2007, Pigging-3 in 2016, PG-1 in 2017, and Special Projects Coordinator in 2019. He was described as very knowledgeable by the FESCO Assistant District Manager. He had 18 years of experience, which included the flaring operations that they were performing that day.[7]

This employee had one warning report dated January 7, 2020, for a policy violation designated as "Other" (not designated as a safety, work quality, carelessness, disobedience, attendance or tardiness violation). There were no records of any incidents/accidents related to pipeline safety in FESCO's employee files for the FESCO Project Manager.

[6] Bobcat Operations interview.

[7] FESCO Assistant District Manager interview.

C.1.7 FESCO Pipeline Technician

The FESCO Pipeline Technician began working for FESCO as a Pipeline Pigging Trainee in 2019.

There were no records of disciplinary actions, nor incidents/accidents, in FESCO's employee files for the FESCO Pipeline Technician.

C.1.8 Additional Personnel Interviewed

The FESCO Assistant District Manager and the Bobcat Operations were interviewed during the on-scene portion of this investigation and provided information on how their personnel assigned to this task were trained and qualified to perform their duties. Details of the Operator Qualification process, other company training requirements, and the manner by which these employees were supervised, and their performance evaluated are included in the transcripts of these interviews in the docket.[8]

C.2 Employee Training and Qualifications

Federal requirements promulgated in 49 CFR Part 192, Subpart N, *Qualification of Pipeline Personnel*, prescribe minimum requirements for operator qualification of individuals performing covered tasks on a pipeline facility. For additional information, refer to the *Pipeline Operations Group Chairman's Factual Report* within this docket.

Atmos required its employees and contractors to meet minimum operator qualifications to perform the pig loading activities on the day and site of the accident. A list of those operator qualifications Atmos required of the seven workers on site the day of the accident is found in Appendix A, OQ Requirements.[9] The OQ required training materials were approved by Atmos.[10] Contractors (Bobcat and FESCO) were required by Atmos to utilize the services of an authorized OQ provider to administer and manage their training, qualifications, certification, and record keeping requirements. NTSB investigators reviewed training records for all seven workers that were onsite at the time of the accident. According to these records, they had each completed all assigned training, no expirations were indicated, and each had the OQs indicated in Appendix A.

C.3 Work Schedules Leading Up to the Accident

NTSB investigators reviewed timesheets for all seven workers who were onsite at the time of the accident. The following summarizes their approximate work hours in the days leading up to the accident:

[8] FESCO Assistant District Manager interview and Bobcat Operations interview.

[9] Atmos-NTSB IIC Email Statements

[10] Bobcat Provided OQ Information

Bobcat Skilled Laborer and Bobcat Foreman:
6/26, 5:30 a.m. – 5:30 p.m.
6/27, 5:30 a.m. – 7:00 p.m.
6/28, 3:00 a.m. start time

Bobcat General Laborer
6/26, off
6/27, off
6/28, 3:00 a.m. start time

FESCO Project Manager
6/26, 7:30 a.m. – 3:15 p.m.
6/27, 7:45 a.m. – 8:15 p.m.
6/28 6:00 a.m. start time

FESCO Pipeline Technician
6/26, 5:15 a.m. – 4:30 p.m.
6/27, off
6/28, 6 a.m. start time

Atmos Sr. FCC A
6/26, off
6/27, 3 p.m. – 6 p.m.
6/28, 3:15 a.m. start time

Atmos Sr. FCC B
6/26, off
6/27, 3 p.m. – 6 p.m.
6/28, 3:15 a.m. start time

C.4 Cell Phone Usage Leading Up to the Accident

The NTSB Research and Engineering Cell Phone Data final report will be in the docket.

C.5 Employee Medical and Toxicology Information

NTSB investigators reviewed medical information for the seven workers who were onsite at the time of the accident, as summarized.

C.5.1 Atmos Senior Field Construction Coordinator A

The 51-year-old male Atmos Senior FCC A underwent a United States Department of Transportation (DOT) post-accident alcohol breath test at 7:19 pm on the accident date. This did not detect any alcohol. A DOT post-accident urine drug test, collected at

7:26 pm on the accident date, did not detect any tested-for substances.[11] The urine specimen was reported as dilute, but the creatinine concentration of the specimen was sufficiently high that recollection was neither required nor completed.[12]

The Atmos Senior FCC A's job did not carry a medical certification requirement.

C.5.2 Atmos Senior Field Construction Coordinator B

The 59-year-old male Atmos Senior FCC B underwent a DOT post-accident alcohol breath test at 7:13 pm on the accident date. This did not detect any alcohol. A DOT post-accident urine drug test, collected at 7:14 pm on the accident date, did not detect any tested-for substances.

The Atmos Senior FCC B's job did not carry a medical certification requirement.[13]

C.5.3 Bobcat Foreman

The 27-year-old male Bobcat Foreman held a commercial motor vehicle (CMV) driver medical certificate. His last CMV driver medical examination before the accident was August 10, 2020. According to the Federal Motor Carrier Safety Administration (FMCSA) Medical Examination Report form (long form) from that examination, he reported no active medical conditions or medication use, and was found to meet standards for full 2-year medical certification without restrictions.[14]

The Bobcat Foreman underwent a DOT post-accident alcohol breath test at 7:10 pm on the accident date. This did not detect any alcohol. A DOT post-accident urine drug test, collected at 7:14 pm on the accident date, did not detect any tested-for substances.

C.5.4 Bobcat Skilled Laborer

The 31-year-old male Bobcat Skilled Laborer held a CMV driver medical certificate. His last CMV driver medical examination before the accident was May 5, 2021. According to the FMCSA long form from that examination, he reported no active medical conditions or medication use, and was found to meet standards for full 2-year medical certification without restrictions.

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[11] Tested-for substances on DOT urine drug testing are marijuana metabolites, cocaine metabolites, amphetamines, opioids, and phencyclidine (PCP), in accordance with 49 Code of Federal Regulations 40.85, as detailed in 49 Code of Federal Regulations 40.87.

[12] According to 49 Code of Federal Regulations 40.197(b)(2), if a urine specimen is reported as dilute, with negative drug test results, recollection is not required provided the creatinine concentration of the specimen is greater than 5 mg/dL. The specimen from the Atmos Senior FCC A had a creatinine concentration of 16.1 mg/dL.

[13] Atmos provided the NTSB with a copy of a Federal Motor Carrier Safety Administration Medical Examination Report form from a commercial motor vehicle driver medical examination that the Atmos Senior FCC B had undergone in 2006; this did not identify any significant issues.

[14] An FMCSA long form dated July 26, 2017, was also reviewed; this did not identify any significant issues.

The Bobcat Skilled Laborer did not undergo DOT post-accident drug or alcohol testing. At the request of the NTSB, the Federal Aviation Administration (FAA) Forensic Sciences Laboratory performed toxicological testing of blood collected during the Bobcat Skilled Laborer's initial post-accident medical care. This testing did not detect any tested-for substances.[15]

C.5.5 Bobcat General Laborer (deceased)

The 22-year-old male Bobcat General Laborer held a CMV driver medical certificate. His last CMV driver medical examination was January 25, 2021. According to the FMCSA long form from that examination, he reported no active medical conditions or medication use, and was found to meet standards for full 2-year medical certification without restrictions.

The Collin County Office of the Medical Examiner performed the Bobcat General Laborer's autopsy. According to the autopsy report, the cause of death was blunt force injuries, and the manner of death was accident. Evaluation of the brain was somewhat limited by injury. The autopsy did not identify any significant natural disease. A vitreous chemistry was unremarkable.

At the request of the NTSB, the FAA Forensic Sciences Laboratory performed toxicological testing of autopsy specimens from the Bobcat General Laborer. No tested-for substances were identified in femoral blood. The Bobcat General Laborer did not undergo DOT post-accident drug or alcohol testing, requirements which do not apply to deceased individuals.[16]

C.5.6 FESCO Project Manager (deceased)

The 35-year-old male FESCO Project Manager held a CMV driver medical certificate. His last CMV driver medical examination was October 14, 2019. According to the FMCSA long form from that examination, he reported no active medical conditions or medication use, and was found to meet standards for full 2-year medical certification without restrictions.[17]

The Collin County Office of the Medical Examiner performed the FESCO Project Manager's autopsy. According to the autopsy report, the cause of death was blunt force and thermal injuries, and the manner of death was accident. The autopsy did not identify any significant natural disease. A vitreous chemistry was unremarkable.

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[15] The FAA Forensic Sciences Laboratory tests specimens for over 1300 substances including toxins, prescription and over-the-counter medications, and illicit drugs; information about these substances can be found at the Civil Aerospace Medical Institute WebDrugs website (https://jag.cami.jccbi.gov/toxicology).

[16] See 49 Code of Federal Regulations 199.105(b)(1) and 199.225(a)(1).

[17] An FMCSA long form dated November 3, 2017, was also reviewed; this did not identify any significant issues.

At the request of the NTSB, the FAA Forensic Sciences Laboratory performed toxicological testing of autopsy specimens from the FESCO Project Manager. His urine glucose was mildly elevated, but his hemoglobin A1c (HbA1c) was normal at 5.1%.[18] No tested-for substances were otherwise identified.[15] The FESCO Project Manager did not undergo DOT post-accident drug or alcohol testing, requirements for which do not apply to deceased individuals.

C.5.7 FESCO Pipeline Technician

The 40-year-old male FESCO Pipeline Technician held a CMV driver medical certificate. His last CMV driver medical examination before the accident was February 26, 2021. According to the FMCSA long form from that examination, he reported using the prescription medication albuterol for asthma. Albuterol generally is not considered impairing. During the examination, his blood pressure was found to be elevated at 149/87, and 152/91 on repeat measurement.[19] He was found to meet standards for medical certification and was issued a 1-year medical certificate with periodic monitoring required for high blood pressure.

Records from the FESCO Pipeline Technician's new-hire medical evaluation on March 5, 2019, were reviewed, including from a CMV driver medical examination (noting infrequent albuterol rescue inhaler use for asthma), hearing testing, a functional assessment, a respirator medical evaluation questionnaire, and lung function testing. No concerns were identified.

The FESCO Pipeline Technician did not undergo DOT post-accident drug or alcohol testing. At the request of the NTSB, the FAA Forensic Sciences Laboratory performed toxicological testing of blood collected during the FESCO Pipeline Technician's initial post-accident medical care. This testing did not detect any tested-for substances.

C.6 Environment

At the time of the accident, light to heavy rain showers and a temperature of about 75°F were reported. The total precipitation reported on June 28, 2021, was 0.51 inches. No cloud-to-ground

[18] Glucose in the urine has several possible causes, including elevated blood sugars caused by diabetes. HbA1c is an indirect measure of a person's average blood sugar over the lifespan of that person's red blood cells, which is usually about 3 months. In general, HbA1c of less than 5.7% is considered normal, HbA1c of 5.7% to less than 6.5% is considered prediabetes, HbA1c 6.5% or higher can be used to diagnose diabetes, and good control of diabetes is considered an HbA1c of less than 7%.
[American Diabetes Association. Standards of medical care in diabetes – 2021. *Diabetes Care*. 2021;44(Suppl. 1):S1-S232. http://care.diabetesjournals.org/content/44/Supplement_1. Accessed December 10, 2021.]

[19] Blood pressure is denoted as systolic pressure over diastolic pressure, in units of millimeters mercury (mmHg). The FMCSA Medical Advisory Criteria contained at 49 Code of Federal Regulations Part 391, Appendix A consider stage 1 high blood pressure to be 140-159 mmHg systolic or 90-99 mmHg diastolic, noting that drivers with blood pressures in this range are at low risk for high-blood-pressure-related acute incapacitation.

lightning strikes were recorded within 15 miles of the accident site. The *Meteorology Specialist's Factual Report* within this docket provides additional information. In addition, employees who were on-site at the time of the incident provided the following information related to weather conditions during the time leading up to the incident.[20]

The Bobcat Skilled Laborer stated that when he arrived, it was pouring rain. When they unloaded the pig, it was drizzling. They set-up an umbrella and prepared the pig underneath it. It was raining the whole time slightly on and off. When they were still preparing the pig, the rain was heavy. He did not recall any lightning. The Bobcat Foreman stated that the rain intensity increased when they started opening the launcher door. The Atmos Sr. FCC A stated that he checked the radar and it looked like they would have a window to complete their work before heavier rain started again. He also stated that the rain began to increase while they were waiting for the flare to go down. Neither the FESCO Pipeline Technician nor the Bobcat Skilled Laborer recalled any lightning.

D. Events Leading up to the Accident

At the time of the accident, the crew was loading a gauge pig in preparation for the sixth run in a series of pig runs required for in-line inspection. The first five runs had been completed successfully in the week prior to the accident. However, on Monday, June 21, 2021, during one of the earlier runs, the workers suspected that the mainline valve was leaking because the flare did not extinguish as expected. They adjusted the position of the valve and were able to find a position where the leak stopped or reduced to the point that the flare extinguished. They marked that position and did not have any issues during subsequent runs prior to the accident.

Additional information regarding work performed on the week prior to the accident is contained in the *Pipeline Operations Group Chairman's Factual Report* within this docket. Specific details of employee actions and processes earlier in the day and in the time leading up to the accident are included in the *Pipeline Operations Group Chairman's Factual Report* and summarized in Table 1. Details of the events following the accident, including injuries sustained, are included in *the Emergency Response Group Chairman's Factual Report*, also within this docket.

As noted in Table 1, on the day of the accident, the Bobcat employees reported for work at 3 a.m., the Atmos employees reported at 3:15 a.m. and the FESCO employees reported at 6.a.m.

[20] Bobcat Skilled Laborer, Bobcat Foreman, Atmos Sr. FCC A and FESCO Pipeline Technician interviews, in the docket.

Events Earlier in the Day (Early Morning Run Launched from the Accident Site)

Timeline, Earlier on the Day of the Accident	
Approximate Time on 6/28/2021	**Description***
3:00	Bobcat crew reports for work
3:15	Atmos reports for work
3:30	Crew arrives, contacted gas control; pig loaded in trap and ready to go
4:00	Crew opened tubes, pushed pig out of launcher and into the line
	Group text, to follow speed and location of pig during the run
4:10	Crew lost contact with the pig, then got it running down
4:30	Crew closes yard, leaves facility
	Bobcat tracks, crew monitors pig speed through group texts with weld counts
6:00	FESCO reports for work
9:00	Pig received and plans made for cleaning it
	Atmos Sr. FCC A leaves to perform other work and visits other job sites
13:00 to 13:30	Met at Atmos' McKinney Service Center to get pig, go to D17 and pre-load pig for next day's run
	Questions with engineers on running a caliper tool, as Atmos Sr. FCC A had never done it. Engineer said to put it on charger as it was sitting for a week
	Bobcat arrives at office and assists in setting up the caliper tool. Pig loaded in truck

Timeline, On-site Events Leading up to the Accident		
	Bobcat arrives on-site (about 15:00)	
	Atmos arrives on-site (about 15:00)	
	Atmos Sr. FCC A checks weather radar and tells crew foreman the rain will lighten up and pass, but heavier weather on the way. Said there will be a window to get the pig loaded	
	Atmos Sr. FCC B tells Atmos Sr. FCC A that since it was raining, they would stay in the trucks for a little bit, wait the rain out as radar shows rain will clear out	
15:17:43[21]	FESCO arrives at site	Bobcat set-up pig under umbrella While the flare was burning, Atmos Sr. FCC A discusses the planned activities with Bobcat
	Atmos directs FESCO to light flare Atmos Sr. FCC A discusses planned activities with FESCO	
	FESCO lights flare	
	Flare burns until it is out	
15:28[22]	Bobcat takes whiteboard photos of pig under umbrella	
	Atmos directs Bobcat to open launcher door	
	Bobcat opens launcher door	
	Bobcat put sling around pig	
	Bobcat lifted pig with trackhoe	
	FESCO removed lifting strap; Bobcat backed up track hoe	
	Bobcat attached grounding cable to push pole and launcher, then pushed pig into launcher manually	
	Bobcat uses trackhoe and push pole with grounding cable to push pig further into launcher	
	Atmos informs Bobcat that pig is inserted far enough	
	Bobcat Foreman reverses track hoe, other Bobcat and FESCO employees manually remove push pole	
	Explosion occurs	
15:34:48[23]	Atmos Sr. FCC B calls 911, duration 11 minutes and 40 seconds	
15:35:03	Bobcat Foreman makes outgoing call, duration 26 seconds	
15:35:10	911 call received by dispatch	

Table 1. Events Leading up to the Accident

[21] The location of FESCO's truck was tracked (Location of FESCO Truck on 06.28.2021)
[22] These photographs were timestamped (Email, Carter-Lyons, Procedures, Photos, Timeline)
[23] Mobile Phone Records Specialist's Factual Report

D.1 Safety Meeting

A formal safety briefing was not held on the day of the accident. Instead, Atmos met first with FESCO employees and then with Bobcat employees to discuss what they were going to do and how they were going to accomplish it. The surviving workers described their recollection of the safety briefing during interviews with NTSB investigators as follows:

- Atmos Sr. FCC A: "We didn't have an official safety briefing. What we did was more of a, what we'd call, kind of a bumper or tailgate meeting. With the rain being like it was at that time, and since everybody was trucked up, we didn't come together in one large group. That where -- I went over and met individually with the gentlemen from FESCO and we discussed what they were going to be doing with the flare and assigned their roles. And then I went over and talked to the gentlemen from Bobcat, and we discussed what we were about to do, and how we were going to do it and accomplish it. And so, it was more of a bumper type meeting or a tailgate meeting like we like to call it. But we didn't all come together in a huddle for -- with it raining. We kind of -- as people were getting out of their truck, we broke it up and just visited with -- I visited with the FESCO gentlemen, and then I visited with the Bobcat gentlemen."
- Bobcat Foreman: When asked about the safety meeting when the team mobilized to the jobsite, the Bobcat Foreman responded, "…speaking of what we do every day, what we're going to do. I mean we just huddle. Okay, Atmos, okay, we're going to load this pig in. We're going to pull line down. Just same process."
- Bobcat Skilled Laborer: When asked if there was a safety meeting on the day of the incident, he responded, "Not a meeting." When asked if there were any JSAs [Job Safety Analyses] filled out by any of the parties, the Bobcat Skilled Laborer responded, "No, sir."
- FESCO Pipeline Technician: When asked if there was a safety meeting discussing the work that he was going to do that day, the FESCO Pipeline Technician responded, "There was a safety meeting." When asked if he recalled what was discussed, the FESCO Pipeline Technician responded, "…we just going to flare out the gas that was trapped inside the pipeline and we was going to load the pig into the trap -- I mean load the pig up into the launcher. It's -- yeah. It was a simple job -- it was supposed to have been a simple job. And again, like, we done it a couple of times so we knew what our job description was. But again, they had the safety meeting to cover everything that was supposed to be taking place."

Each employee had stop work authority, the ability to elevate safety concerns and the right to not do something if it was believed to be unsafe. No employee interviewed stated a concern for safety at any point before the accident occurred.[24]

D.2 Placement at scene

Photo 1 indicates the approximate location of each employee at the time of the explosion.

[24] Employee interviews, in the docket.

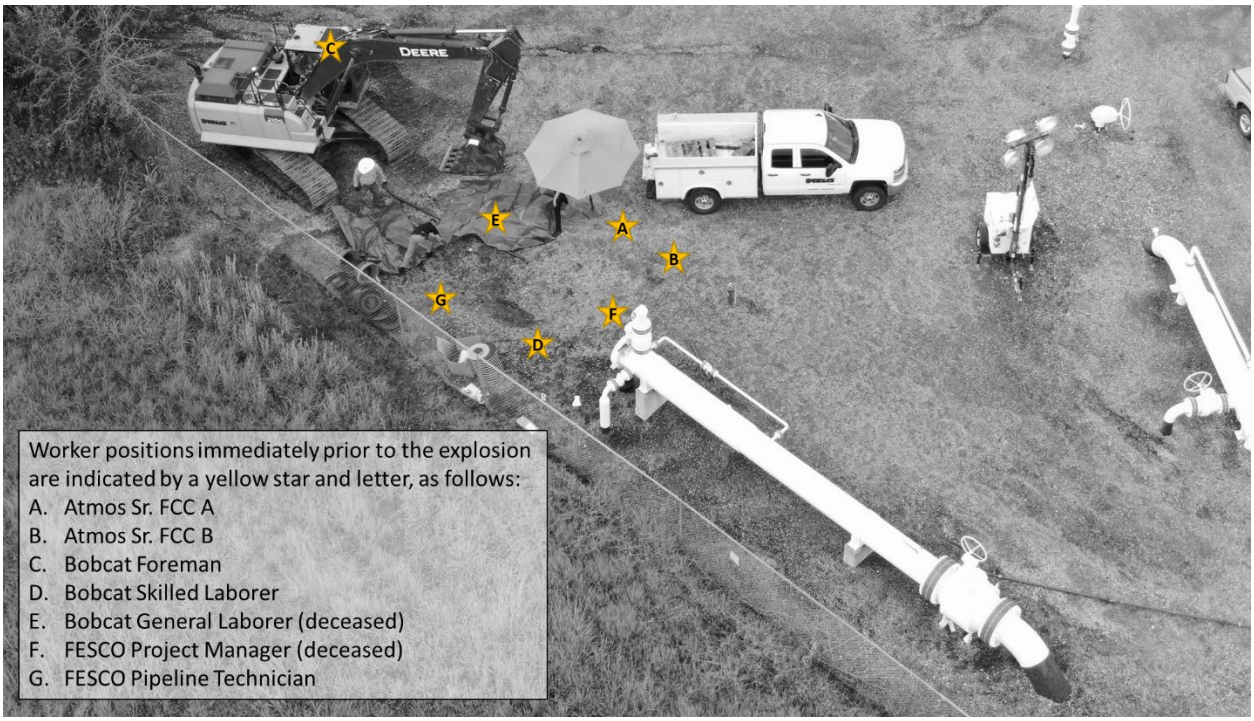

Photo 1. Positions of employees at the accident site immediately prior to the explosion.

E. Operator Procedures

On the day of the accident, Atmos and Bobcat employees were to follow Atmos procedures for loading and launching a pig.[25] FESCO employees were to follow FESCO procedures for flare stack operation.[26] Additional information regarding these procedures is contained in the *Pipeline Operations Group Chairman's Factual Report* within this docket.

Atmos Sr. FCCs A and B had performed pigging work since 2012 and 2009, respectively. They were either unaware of, or had not read, Atmos' pigging-specific procedures that were formally documented in writing in 2019 in Appendix R to Atmos' Pipeline Integrity Management Plan. The Bobcat Foreman was aware of the Appendix R procedure. The FESCO Pipeline Technician was not aware of FESCO's flaring procedures but indicated that the FESCO Project Manager was responsible for procedures.

[25] Atmos Pigging Procedures, in the docket, and operator qualifications shown in Appendix A.

[26] FESCO Flare Stack Operation Procedure, in the docket.

APPENDIX A: OQ Requirements

Covered Task	Task Title	Required
G03	Installation / Excavation of Pipeline[27]	Atmos Sr. FCC A Atmos Sr. FCC B
I01	Conduct Pipe to Soil Measurements[28]	Atmos Sr. FCC A Atmos Sr. FCC B
I07	Inspecting for External Corrosion and Repairing Pipe Coating	Atmos Sr. FCC A Atmos Sr. FCC B
I09	Internal Corrosion Control	Atmos Sr. FCC A Atmos Sr. FCC B
I10	Atmospheric Corrosion	Atmos Sr. FCC A Atmos Sr. FCC B
L02	Activating and Purging / Blowdown Pipelines	Atmos Sr. FCC A Atmos Sr. FCC B
L04	Tapping Pipelines Under Pressure with Self-tapping Tee	Atmos Sr. FCC A Atmos Sr. FCC B
M02	Conducting Pipeline Patrolling Surveys	Atmos Sr. FCC A Atmos Sr. FCC B
M03	Locating and marking lines[28]	Atmos Sr. FCC A Atmos Sr. FCC B
M04	Testing Service Lines (New and Reinstating)[28]	Atmos Sr. FCC A Atmos Sr. FCC B
M08	Preventing Accidental Ignition[27]	Atmos Sr. FCC A Atmos Sr. FCC B Bobcat Foreman Bobcat Skilled Laborer Bobcat General Laborer FESCO Project Manager FESCO Pipeline Technician
M11	Abandoning / Deactivating or Shutting Down Gas Pipelines[28]	Atmos Sr. FCC A Atmos Sr. FCC B
M13	Emergency Response	Atmos Sr. FCC A Atmos Sr. FCC B
M14	Damage Prevention during Excavation or Encroachment[27]	Atmos Sr. FCC A Atmos Sr. FCC B
M15	Leak Classification	Atmos Sr. FCC A Atmos Sr. FCC B

[27] Bobcat also required this qualification for the Bobcat Foreman, Bobcat Skilled Laborer, and Bobcat General Laborer.

[28] Bobcat also required this qualification for the Bobcat Foreman

M16	Recognize and React to Abnormal Operating Conditions[27]	Atmos Sr. FCC A Atmos Sr. FCC B Bobcat Foreman Bobcat Skilled Laborer Bobcat General Laborer FESCO Project Manager FESCO Pipeline Technician
M17	Installing / Maintaining Pipeline Markers[28]	Atmos Sr. FCC A Atmos Sr. FCC B
M20	Operating within Established MAOP	Atmos Sr. FCC A Atmos Sr. FCC B
2	Performing By-pass operations on Regulatory Stations and Meters	Atmos Sr. FCC A Atmos Sr. FCC B