



National Transportation Safety Board

Pipeline Accident Brief

Third-party Damage by Sure Shot Communications to Ameren Natural Gas Distribution System Canton, Illinois

The Accident

On November 16, 2016, about 5:44 p.m. central standard time, a natural gas-fueled explosion occurred at a two-level commercial building located at 45 East Side Square in Canton, Illinois. One Ameren employee was killed and 11 people were injured, including two Ameren employees.

Prior to the accident, Sure Shot Communications LLC (Sure Shot), a contractor for Mid Century Communications (Mid Century), a telephone and fiber optics cooperative, was performing directional drilling adjacent to the building to install conduit for fiber optic cable.¹ About 9:00 a.m., the Sure Shot crew began performing multiple drills at various locations on the block. At 3:58 p.m., the contractor reported to the Joint Utility Locating Information for Excavators (JULIE), the one-call message handling and delivery service for identifying underground utilities, that a marked gas line had been damaged. The damage occurred while crews were pulling the drill rod back to the drilling rig after a directional drilling operation under the sidewalk along North First Street.

At 4:06 p.m., Ameren Illinois (Ameren), the owner and operator of the gas line, received a damage report from Sure Shot and dispatched field technicians to evaluate the situation. About 7 minutes later, the first Ameren responder arrived at the scene; three other Ameren technicians arrived shortly thereafter. The lead Ameren responder contacted his supervisor to confirm the pipeline had been struck and to request excavation equipment to uncover the service line. A backhoe excavator arrived at 4:41 p.m. and Ameren technicians began to isolate the leak.

At 4:48 p.m., nearby customers called the Ameren Customer Contact Center to report natural gas odors both indoors and outdoors. According to Ameren, these customers were given safety instructions and told to leave their buildings if an odor was detected.² By 5:37 p.m., Ameren technicians shut off the natural gas flow to the service line by squeezing off the pipeline. At 5:44 p.m., the Opera House Annex behind the Opera House Professional Center exploded, killing one and injuring 11 who were impacted by debris from the blast. (See figures 1 and 2.)

¹ *Directional drilling* is a trenchless pipe or conduit installation technique that involves drilling into the soil to create a horizontal bore or pathway for the pipe or conduit.

² Ameren provided verbal instructions as written in their Customer Contact Center Emergency Plan Procedures, subsection 4.G and 4.H.

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Figure 1. A Google Earth image of the back of the Opera House Professional Center and the two-level Opera House Annex prior to the accident.



Figure 2. Photograph of the accident site and debris from the Opera House Annex. (Courtesy of Canton Police Department.)

The Pipeline System

The damaged natural gas service line was a 1-inch polyethylene line connected to a 2-inch gas main located about 6 feet east of the west curb line (inside the roadway) of North First Street. The service line was installed on December 6, 2012, and was 32 feet long.³ The natural gas service was operating at 30 pounds per square inch gauge (psig) with a maximum allowable operating pressure of 60 psig.

Sure Shot Communications LLC

Sure Shot had previously performed fiber optic conduit installation for Mid Century; however, there was no written contract between the companies for the work performed on the day of the accident or past work. Additionally, Sure Shot did not have either a written project plan or an emergency response plans for the work. The company also did not have qualification and training records for the employees performing directional drilling. The day of the accident was the first field work day for the employee-in-charge (crew leader) of the directional drilling crew. Sure Shot positioned directional drilling equipment at the corner of East Chestnut and North First Street. The crew drilled southward, under the sidewalk, to a utility handhole located about 1 foot past the service line to the extension of the Opera House Professional Center.⁴ Figure 3 shows the location of the drilling rig in relation to the Opera House Professional Center and depicts the horizontal drill path and the location where the gas service line was struck.

³ Prior to the installation of this gas main line and service in 2012, the Opera House Annex was serviced by a branch line off the service line to the Opera House Professional Center at 45 East Side Square.

⁴ A *handhole* is an opening created on the face of an underground concrete junction box used for the routing and termination of below grade cables/wires.

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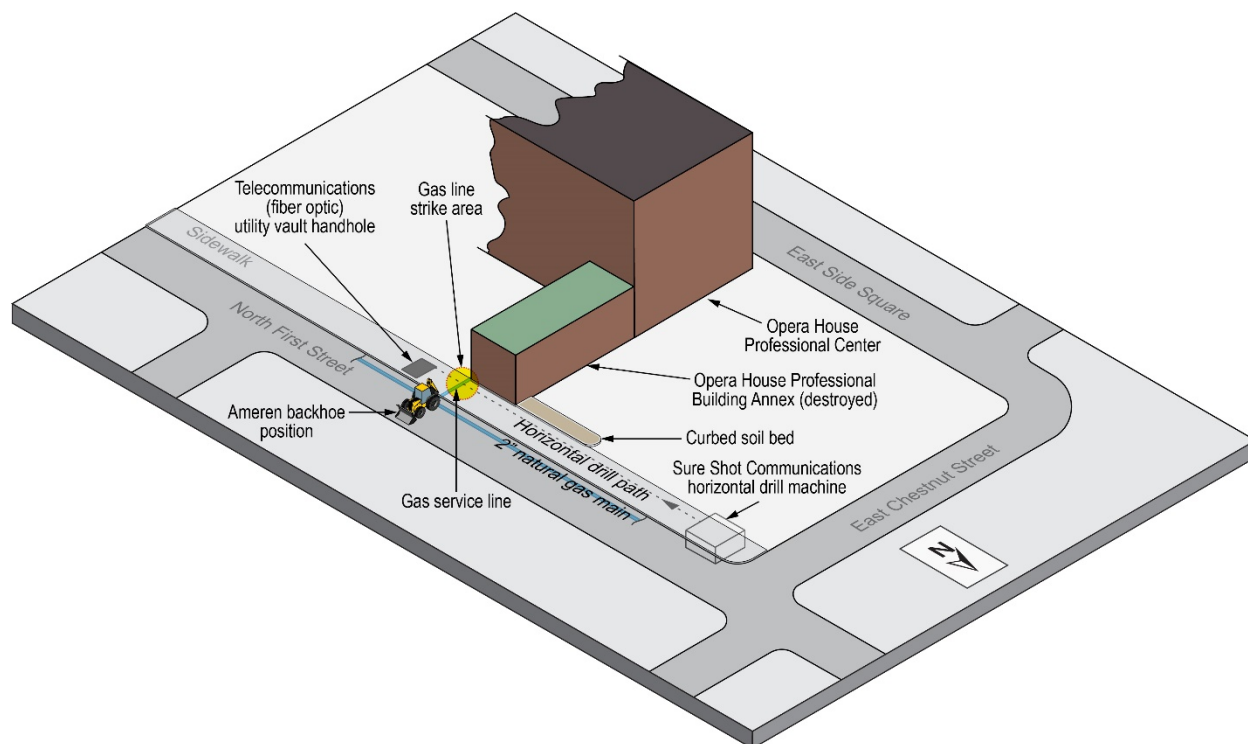


Figure 3. An illustration of the drill path and the location where the gas service line was struck.

The location of the natural gas service line damage was underneath the concrete sidewalk adjacent to the destroyed structure. Sure Shot did not excavate the utility crossing location before starting the drilling work, as required by Illinois statute.⁵ According to Illinois law, during directional drilling, each location where the drill path crosses underground, utilities must be excavated using methods such as hand or vacuum excavation. The excavator must visually inspect the work, while in progress, until clear of the underground utilities.

Section 4(a) and (b) of 220 Illinois Compiled Statutes (ILCS) 50, *Illinois Underground Utility Facilities Damage Prevention Act*, states: Every person who engages in nonemergency excavation or demolition shall:

- (a) take reasonable action to inform himself of the location of any underground utility facilities in and near the area for which such operation is to be conducted;
- (b) plan the excavation or demolition to avoid or minimize interference with underground utility facilities within the tolerance zone by utilizing such precautions

⁵ The Illinois Commerce Commission's Natural Gas Pipeline Safety section is charged with inspection and enforcement activities applicable to intrastate natural gas transmission, distribution and gathering pipeline facilities to assure compliance with all federal and state safety rules and regulations pertaining to the design, construction, operation, and maintenance of those facilities (see <https://www.icc.illinois.gov/pipelinesafety/> accessed October 29, 2018).

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that include, but are not limited to, hand excavation, vacuum excavation methods, and visually inspecting the excavation while in progress until clear of the existing marked facility.

The crew leader told National Transportation Safety Board (NTSB) investigators that the owner of Sure Shot instructed him not to excavate under the concrete slab to avoid replacing the relatively new concrete sidewalk.⁶

The crew leader was concerned about the failure to expose the gas line; however, he thought it would be adequate since the crew was drilling 30 inches underground or below the depth of the natural gas line that he believed was buried 18 inches.⁷ (See figure 5.)



Figure 5. Image showing the damaged yellow service line intersected by the orange fiber optic cable conduit.

He told investigators that he believed the drill crossed the natural gas line without incident and that the strike occurred when the drill machine operator was pulling the drill rod back to the drill rig.⁸ He was certain that he would have smelled natural gas in the handhole if the drill had

⁶ Interview summary of Sure Shot owner located in NTSB Docket DCA17FP003.

⁷ The bore diameter was 6 inches.

⁸ The pullback of the drill rod was described as a dead pull, meaning the drill is neither rotating nor spinning on the way back to the drill rig.

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struck the gas line when pushing the drill rod to the vault since it was only a foot away and he had his face in the vault.

After striking the gas line, the crew leader described hearing, smelling, and seeing the leaking gas moving rocks and soil in the handhole. He called JULIE to report the accident and also contacted Ameren after he spoke with a representative from Mid Century. He did not contact 911. He told NTSB investigators that he believed JULIE would make the 911 notification.⁹

Ameren provided the crew leader with safety instructions to block off the street and to evacuate nearby buildings. The Sure Shot crew shut off their equipment and blocked off the street: the crew leader spoke to people leaving the nearby buildings. Some of these individuals told him they smelled gas and he instructed them to leave the building. Additionally, he attempted to evacuate the Opera House Annex by knocking on the door, but no one answered. He awaited the arrival of Ameren response personnel.

Mid Century Communications

On the day of the accident, a Mid Century representative was at the excavation site all day; however, he told NTSB investigators he was not responsible for overseeing work by Sure Shot employees. His role was to answer technical questions from either Sure Shot or potential customers. He stated that he spent most of his day sitting in his vehicle.¹⁰

Local Emergency Response Notifications

The Sure Shot employees, the Ameren field technicians, and Ameren dispatch center personnel called did not call 911 to report the gas leak prior to the explosion. In response to a one call enforcement information request from the Illinois Commerce Commission, the owner of Sure Shot stated that the company did not contact 911 since JULIE usually dispatches the fire department when gas leaks are reported. However, he affirmed on the same form that he is aware that Section 7 of Illinois Underground Utility Facilities Damage Prevention Act requires that “[i]n the event of any damage to any underground utility facility that results in the escape of any flammable, toxic, or corrosive gas or liquid, the person responsible for the excavation or demolition shall call 911 and notify authorities of the damage.” He also affirmed that the same section of the Act requires the person responsible to immediately notify both the affected utility and JULIE.

Ameren employees responding to the damage report were on scene for about 1.5 hours before the explosion. The employees recorded gas readings were taken from the outside perimeter

⁹ The Horizontal Directional Drilling (HDD) industry at large must follow the appropriate state one call digging and Occupational Safety and Health Administration laws, however; in the state of Illinois, there are no training or certification requirements for HDD contractors who work on water, telecommunications, and other utilities with HDD equipment. Federal rules do exist for contractors performing work on gas utilities whereby HDD operators must comply and meet the requirements under the Operator Qualification rules in the PHMSA Pipeline Safety Regulations.

¹⁰ Interview summary of Mid Century employee located in NTSB Docket DCA17FP003.

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of the Opera House Professional Center building; however, they did not take any readings from inside the building despite Ameren having received both indoor and outdoor odor complaints.

Service Line Damage

An Ameren utility crew excavated and visually examined the damaged service line at the accident scene. The top of the 1-inch polyethylene line showed clear damage as a result of being struck by drilling equipment. The damage to the service line from the directional drilling is shown in figure 6.

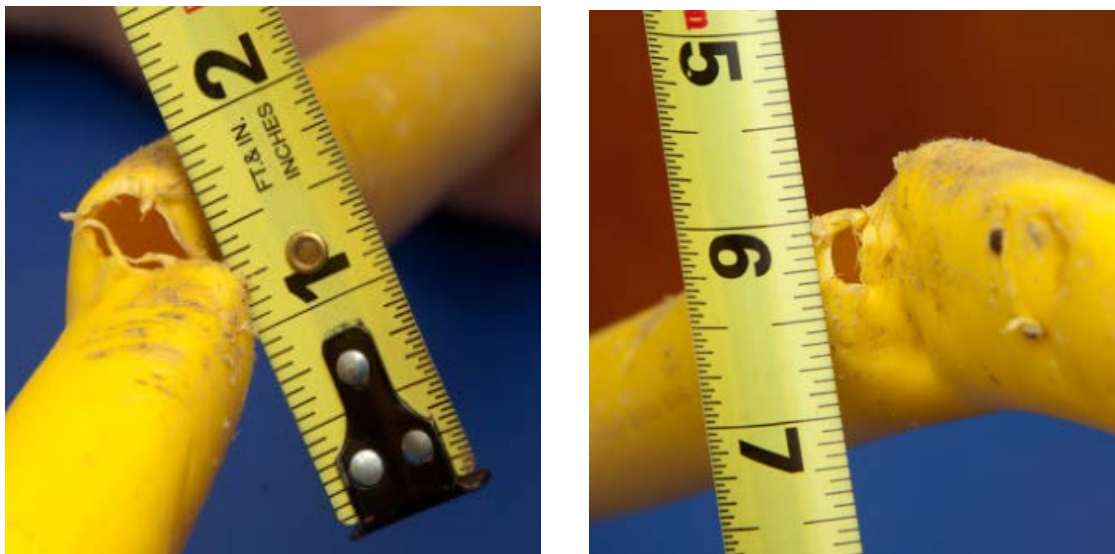


Figure 6. Damaged service line to the exploded building from two different angles.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the natural gas release and subsequent explosion was third party damage from Sure Shot's directional drilling to install underground fiber optic conduit. Contributing to the pipeline damage was Sure Shot's decision not to excavate at the utility crossing to visually inspect the work, while in progress, until clear of the underground utilities, as required by Illinois law. Contributing to the severity of the accident was the failure of Sure Shot and Ameren to evacuate the area.

For more details about this accident, visit www.nts.gov/investigations/dms.html and search for NTSB accident ID DCA17FP003.

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The NTSB has authority to investigate and establish the facts, circumstances, and cause or probable cause of a pipeline accident in which there is a fatality, substantial property damage, or significant injury to the environment. (49 US Code § 1131 - General authority)

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties . . . and are not conducted for the purpose of determining the rights or liabilities of any person.” Title 49 Code of Federal Regulations, Section 831.4. Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report. 49 USC 1154(b).
