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The Public Utilities  
Commission of Ohio

Public Utilities Commission of Ohio  
Service Monitoring and Enforcement Department  
180 East Broad Street, 7<sup>th</sup> Floor  
Columbus, OH 43215

15-1351-GA-GPS

1X

## Natural Gas Pipeline Failure Investigation Report

Operator Information	
Operator: Columbia Gas of Ohio	Operator ID: 2596
Operator Address: 290 West Nationwide Blvd.	
Company Official Point of Contact: Daniel Creekmur - President	
Phone No: (614) 460-4680	E-Mail: dcreekmur@nisource.com

Incident Criteria	
Deaths: 0	Names and Ages N/A
Injuries requiring hospitalization: 0	Names and Ages N/A
Est. Property Damage: \$9MM	Type 8 Homes made uninhabitable and 20+ with structural damage
Estimated Gas Lost (MMCF) 163 mcf	Comments: Gas was calculated based on 1/2" opening at 7 psig. from the time curb valve was opened until it was closed.

RECEIVED - DOCKETING DIV  
2015 JUL 24 PM 2:21  
PUCO

Failure Location and Response			
Address / Location: 3418 Sunningdale Way			
City: Upper Arlington		County: Franklin	
Coordinates of Failure Location:		Latitude: 40.027082	Longitude: -83.057943
Date of Failure: 03/21/15	Time of Failure: 14:47	Time Detected: COH On location	Time Located: COH On location
How Located: COH On location			
NRC Report #: 1111378 - Appendix GG	Time Reported: 15:45	Reported By: Rob Smith	
Type of Pipeline:			
<u>Gas Distribution</u>		<u>Gas Transmission</u>	
<input checked="" type="checkbox"/> Private distribution		<input type="checkbox"/> Interstate	
<input type="checkbox"/> Municipalities		<input type="checkbox"/> Intrastate	
<input type="checkbox"/> Other Distribution (Co-op)		<input type="checkbox"/> Part 192 Gathering	
<input type="checkbox"/> Master Meter		<input type="checkbox"/> Ohio R.C. Gas Gathering	
		<input type="checkbox"/> Other (description):	

This is to certify that the images appearing are an accurate and complete reproduction of a case file document delivered in the regular course of business.  
Technician [Signature] Date Processed 7/24/15



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System Description:

2" coated steel main, cathodically protected. MAOP = 9.5 psig, operating pressure 7 psig.

Services:

Active - 1" Plastic

Old Idle - 1-1/4" Steel.

Company Reported Apparent Cause	Company Reported Sub-Cause (from PHMSA Form 7100-1 / 7100-2)
<input type="checkbox"/> Corrosion	
<input type="checkbox"/> Natural Force Damage	
<input type="checkbox"/> Excavation Damage	
<input type="checkbox"/> Other Outside Force Damage	
<input type="checkbox"/> Material Failure (Pipe, Joint, Weld)	
<input type="checkbox"/> Equipment Failure	
<input checked="" type="checkbox"/> Incorrect Operation	Operator did not properly abandon old idle steel service line. Additionally, operator did not have any records for the new plastic customer service line and company service.
<input checked="" type="checkbox"/> Other	Miscapped/mislabeled/mislocated City Water Curb Valve.

**Narrative Summary (include a summary of findings and suggestions to prevent future recurrences if any):**

On Saturday, March 21<sup>st</sup>, 2015 at 2:47 pm an explosion occurred at 3418 Sunningdale Way, Upper Arlington, Ohio. This explosion was caused by a release of natural gas from an improperly abandoned natural gas service line that was installed in 1960 and taken out of service some time between 1985 and 1997. The curb box valve for this line was misidentified as a water valve and operated on Friday, March 20<sup>th</sup> leading to the gas release and subsequent explosion. A time line of events is below:

On Thursday, March 12<sup>th</sup>, 2015 the homeowners at 3418 Sunningdale Way contracted with a plumber to repair a leaking water valve in their basement. The plumber arranged for the Columbus Water Department (CWD) to turn off water service to the property so he could make repairs.

On Friday, March 13<sup>th</sup>, 2015 a CWD employee arrived at the property to disconnect service. The CWD work order noted the water valve box was located in the driveway apron (driveway valve box), but upon arrival at the property the CWD employee discovered there were two separate water boxes present. Investigation later revealed that the actual water line was located approximately 15 to 20 feet south of the driveway with a valve box located on the street side edge of the sidewalk (sidewalk valve box), while the driveway valve box housed a valve for an improperly abandoned gas service line originally installed in 1960.

The CWD employee opened both valve box lids (both labeled "water"), breaking the driveway valve box lid while attempting to remove it. He then operated the sidewalk valve and confirmed the water to the property was in fact turned off by operating an outside spigot. After this he painted the sidewalk valve box lid blue to aid in future identification, and replaced the broken driveway valve box lid with an unpainted (black) lid labeled "water".



The plumber arrived at the property later in the day, confirmed the water was off, and replaced the leaking water valve in the property basement. He then contacted CWD at approximately 1:00 pm to have the water turned back on. CWD informs him that they had nobody to dispatch at that time, and then at approximately 3:00 pm called back and gave him verbal permission to turn the water back on. The plumber then opened the sidewalk valve to restore service.

On Monday, March 16<sup>th</sup>, 2015 a CWD inspector arrived at the property to inspect the completed work. He noted that the repair was done using a copper coupling manufactured by Propress that the inspector believed was not approved for use. The inspector notified the homeowners that the Propress coupling was not an approved fitting and gave them 21 days to make corrections or their water would be shut off.

On Tuesday, March 17<sup>th</sup>, 2015, after being informed of the inspection results by the homeowners, the plumber spoke with a supervisor at CWD and explained that the homeowners were leaving on an extended vacation starting on Thursday, March 19<sup>th</sup>, 2015. During that conversation, the CWD Supervisor stated the Propress coupling was in fact an approved fitting and could be used for the repair. After contacting the homeowners and explaining the situation, it was decided that the plumber would contact CWD to have the water shut off to the residence while they were away on their extended vacation as a precaution.

On Friday, March 20<sup>th</sup>, 2015 a different CWD employee was dispatched and arrived at 7:35 am to turn off the water to the property. The CWD work order (Work Order #11603429) again incorrectly noted that the water valve box was located in the driveway apron. The CWD employee opened the unpainted valve box in the driveway apron and noted there was approximately 10"-12" of gravel covering the valve. After removing the gravel, he began to operate the valve using a curb key, a device approximately 6 feet long that is used to operate buried valves. While trying to operate the valve, he noticed the painted blue water box lid in the sidewalk, approximately 15 to 20 feet away. He then attempted to return the driveway valve to its original position, called the plumber to verify the sidewalk valve was the correct valve, and then turned off water service to the property. Later investigation revealed the driveway valve was not fully closed, allowing gas to leak by the valve.

On Saturday, March 21<sup>st</sup>, 2015 a U.S. Postal Service employee noticed a strong smell of natural gas at the property while delivering mail. He reported it to the next door neighbor who contacted Columbia Gas of Ohio (COH) at 12:09 pm. After COH was notified, a Service Technician was dispatched at 12:11 pm and arrived at the property at 12:38 pm. The technician then attempted to determine the location of a gas leak following COH procedures, found a reading of 19% gas in air against the building foundation, and reported his findings that a hazardous leak was found at the property at 2:18 pm. COH dispatched a repair crew at 2:40 pm, who was on their way to the property when the explosion occurred at 2:47 pm. The Upper Arlington Fire Department received the first alarm at 2:48 pm and arrived at 2:52 pm. They had control of fire at 3:56 pm and the last unit was cleared at 10:51 pm.

After the fire was put out an apparent gas fed flame continued to burn around the cinder block foundation near the location of the gas meter (adjacent to the property garage). COH physically disconnected the gas service at approximately 8:00 pm, but the gas fed flame kept burning and showed no signs of receding. COH then drilled additional bar holes on the property to determine if gas was migrating from the gas main or possibly another source (Appendix M). No gas readings were detected except at the building foundation where 100% gas was detected.

COH then prepared to dig an exploratory trench near the property sidewalk to determine if gas may have been following a possible utility or drainage conduit to the foundation. Before beginning excavation, the water service was turned off to avoid flooding the trench if the water line was hit. When COH operated what they believed to be the water valve in the driveway apron, the flame went out. Investigation revealed that this valve was in fact the curb valve for an abandoned service line still connected to the gas main and was the source of gas that led to the explosion.

## CONCLUSION

After investigating the events leading to the gas explosion at 3418 Sunningdale Way, Upper Arlington, Staff concludes that the explosion was caused by the following events:



1. At some point in time, the original service line at the property was shut off due to a corrosion leak and a new tap and plastic service line was installed (Appendix FF). The new line was installed during the time a previous owner of the property lived there, between 1985 and 1997. The old service line was not properly abandoned. The service line remained connected to the main, and COH procedures in effect at the time state "the service line shall be cut off at the main". In addition, when the threaded steel riser was removed from the old service line, the end of the service line was not plugged or sealed as required by the COH procedures that were in effect at the time.
2. On October 18<sup>th</sup>, 1990, the Columbus Water Department created a second water tap card for 3418 Sunningdale Way that identified a water service with an install date of 10/18/1990 and a valve "4' E of curb in driveway apron" as their water curb valve (Appendix X). The location of the identified water curb valve matches the location of the driveway valve box covering the curb valve to the abandoned gas service line. It is unclear at this time why this second tap card was created by CWD.
3. On March 20<sup>th</sup>, 2015, the curb valve for the improperly abandoned natural gas line was operated by a CWD employee while attempting to disconnect water service to the property. The valve was operated due to its misidentification as a water valve, and the valve was not fully returned to its original closed position when the error was recognized. This allowed natural gas from the COH main operating at 7 psig to flow freely through the abandoned line and exit against the foundation wall. Gas flowed from approximately 8:00 am on Friday, March 20<sup>th</sup> to the time of the explosion at 2:47 pm on Saturday, March 21<sup>st</sup>, allowing the gas to build up to an explosive concentration.

Staff further concludes that the following violations of the Pipeline Safety Regulations (49 C.F.R. 192) caused or contributed to this incident:

**192.13(c)** *Each operator shall maintain, modify as appropriate, and follow the plans, procedures, and programs that it is required to establish under this part.*

Columbia Gas of Ohio did not follow their Operation and Maintenance procedure 640-2 – Installation and Abandonment of Service Lines. This procedure that was in effect at the time of the service line abandonment states "the service line shall be cut off at the main, and all open ends of the abandoned pipe plugged or sealed". The procedure further states "the curb box shall be removed unless it is located in concrete or paving and cannot be removed. In this case, the curb box lid shall be removed and the curb box filled with concrete or similar material". Finally, the procedure states "Upon completion of any work on a Company service line, Form C 2641, "Service Line Order" (SLO) shall be completed". There is no record of this form being completed and COH records still show the SLO, or "tap card" for the service line at 3418 Sunningdale Way to be the original service line installed in 1960.

**192.727 (d)** *Whenever service to a customer is discontinued, one of the following must be complied with:*

- (1) *The valve that is closed to prevent the flow of gas to the customer must be provided with a locking device or other means designed to prevent the opening of the valve by persons other than those authorized by the operator.*
- (2) *A mechanical device or fitting that will prevent the flow of gas must be installed in the service line or in the meter assembly.*
- (3) *The customer's piping must be physically disconnected from the gas supply and the open pipe ends sealed.*

Columbia Gas of Ohio did not properly discontinue service at 3418 Sunningdale Way in Upper Arlington, Ohio. The curb valve was closed to prevent the flow of gas to the customer but no means to prevent the opening of the valve by persons other than those authorized by COH was provided. The service line remained connected to the gas main, and the open pipe end was not sealed.



Drug/Alcohol Testing <input type="checkbox"/> N/A					
Operator Drug Program Contact & Phone #: Donna Hefner - (219) 647-4391					
Operator Alcohol Program Contact & Phone #: Donna Hefner - (219) 647-4391					
Were all employees that could have contributed to the incident, post-accident tested within the 8 hour time frame for alcohol or the 32 hour time frame for all other drugs? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
Job Function	Test Date & Time	Location	Results		Type of Drug
			Pos	Neg	
Service Technition	Collection 18:36	Riverside - 3535 Olentangy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	

Operating Pressure <input type="checkbox"/> N/A	
Max. Allowable Operating Pressure: 9.5 psig	Determination of MAOP: Five year operating window
Actual Operating Pressure: 7.0 psig	
Method of Over Pressure Protection: District Regulator Stations - Refer to Appendix B	
Relief Valve Set Point: Multiple Feed	Capacity Adequate? <input type="checkbox"/> Yes <input type="checkbox"/> No

Pressure @ Time of Failure @ Failure Site <input type="checkbox"/> N/A				
Pressure @ Failure Site: 7.0 psig		Elevation @ Failure Site: 860'		
Pressure Readings @ Various Locations:				Direction from Failure Site
Location/M.P./Station #	Pressure (psig)	Elevation (ft msl)	Upstream	Downstream
3418 Sunningdale Way	7.0 psig	860'		

Pipe Data <input type="checkbox"/> N/A	
Material: Idle Service - Bare Steel	Wall Thickness/SDR: 1/4"
Diameter (O.D.): 1.77"	Installation Date: 1960 +/-
SMYS: N/A	Manufacturer: N/A
Longitudinal Seam: N/A	Type of Coating: Bare
Pipe Specifications (API 5L, ASTM A53, etc.): N/A	



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<i>Component Failure Description</i>		<input checked="" type="checkbox"/> N/A
Component Failed:		
Manufacturer:	Model:	
Pressure Rating:	Size:	
Comments:		

<i>Outside Force Damage</i>		<input checked="" type="checkbox"/> N/A
Responsible Party:	Telephone No.:	
Address:		
Work Being Performed:		
Equipment Involved:	Called One Call System? <input type="checkbox"/> Yes <input type="checkbox"/> No	
One Call Name:	One Call Report #:	
Notice Date:	Time:	
Response Date:	Time:	
Details of Response:		
Was Location Marked According to Procedures? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Pipeline Marking Type:	Location:	
State Law Damage Prevention Program Followed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> No State Law		
Notice Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	Response Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Was Operator Member of State One Call? <input type="checkbox"/> Yes <input type="checkbox"/> No	Was Operator on Site? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Did a deficiency in the Public Awareness Program contribute to the accident? <input type="checkbox"/> Yes <input type="checkbox"/> No		



<b>Failure Isolation</b>		<input type="checkbox"/> N/A
Squeeze Off/Stopple Location and Method: Curb Valve off at 21:15		
Valve Closed - Upstream: N/A Time: N/A	I.D.: N/A Milepost: N/A	
Valve Closed - Downstream: N/A Time: N/A	I.D.: N/A Milepost: N/A	
Pipeline Shutdown Method: <input checked="" type="checkbox"/> Manual <input type="checkbox"/> Automatic <input type="checkbox"/> SCADA <input type="checkbox"/> Controller <input type="checkbox"/> ESD		
Failed Section Bypassed or Isolated: Isolated		
Performed By: COH	Valve Spacing: N/A	

<b>Class Location/High Consequence Area</b>	
Class Location: 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> Determination:	HCA Area? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Determination:
Odorization Required? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

<b>Odorization</b>		<input type="checkbox"/> N/A
Gas Odorized: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Concentration of Odorant – Sniff Test (Post Incident at Failure Site): Next Door - 3430 Sunningdale Way - 0.2% 17:15	
Type of Odorizer(Wick, By-pass, Pulse): N/A	Heath/Bacharach Unit Used: Bacharach Additional Address: 3430 Sunningdale Way Reading: 0.05%	
Odorizer Manufacturer: N/A	Additional Address: Reading:	
Odorant Manufacturer: N/A	Additional Address: Reading:	
Odorant Manufacturer: N/A	OQ Individual Performing Sniff Test:	
Type of Odorant: Mercaptan	Sniff Test(s) Monitoring Interval (Monthly): Monthly Throughout operaing area Refer to Appendix D, E, and Q).	
Odorization History (Low Odorant Levels, Monitoring Locations, Distances from Failure Site): Mailman asked neighbor to report gas odor prior to incident at 12:09 pm, Saturday, March 21, 2015.		



<i>Weather Conditions</i>		<input type="checkbox"/> N/A
Temperature: 52 F	Wind (Direction & Speed): 10 MPH from west	
Climate (Snow, Rain): Clear	Humidity: 68%	
Was Incident preceded by a rapid weather change? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Weather Conditions Prior to Incident (Cloud Cover, Ceiling Heights, Snow, Rain, Fog): Clear Day (Refer to Appendix F)		

<i>Gas Migration Survey</i>		<input type="checkbox"/> N/A
Bar Hole Test of Area: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Equipment Used: Sensit Gold - CGI	
Method of Survey (Foundations, Curbs, Manholes, Driveways, Mains, Services) Refer to Appendix M Pre Incident - 19% at foundation wall. Waiting of Plant Crew Post Incident - All mains and services around 3418 Sunningdale Way		

<i>Pressure Test History</i> (Expand Lists as Necessary)						<input type="checkbox"/> N/A
	Test Date	Test Medium	Pressure (psig)	Duration (hrs)	% SMYS	
Installation	1960	Air	10.0 psig	5 minute		
Next						
Next						
Most Recent						
Describe any problems experienced during the pressure tests: Refer to Appendix C						

<i>Maps &amp; Records</i>		<input type="checkbox"/> N/A
Are Maps and Records Current? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Comments: Appendix I		

<i>Leak Survey History</i>		<input type="checkbox"/> N/A
Leak Survey History (Trend Analysis, Leak Plots): 4/5/12 - Scheduled Leakage Survey - No Indications in immediate area. 3/21/15 - Supplemental Survey are immediate area - No contributory leakage discovered. Appendix H - Leakage History		



***Additional Actions Taken by the Operator***

☐ N/A

Make notes regarding the emergency and Failure Investigation Procedures (Pressure reduction, Reinforced Squeeze Off, Clean Up, Use of Evacuators, Line Purging, closing Additional Valves, Double Block and Bleed, Continue Operating downstream Pumps):  
April 10, 2015, COH ran a camera inside their existing steel main line on Sunningdale Way to verify the inside integrity of their main.

**Checklist for Additional Information:**

- |  |   |  |
|--|---|--|
| <input checked="" type="checkbox"/> Witness names                              | <input type="checkbox"/> Name of Injuries   | <input checked="" type="checkbox"/> Leak Survey              |
| <input checked="" type="checkbox"/> Fire Dept. Responding                      | <input checked="" type="checkbox"/> Time operator notified  | <input checked="" type="checkbox"/> Drug & Alcohol Testing   |
| <input checked="" type="checkbox"/> Fire Dept Investigator                     | <input checked="" type="checkbox"/> Time operator arrived   | <input checked="" type="checkbox"/> Corrosion Reads          |
| <input checked="" type="checkbox"/> Cause of Leak                              | <input type="checkbox"/> What failed  | <input checked="" type="checkbox"/> Possible Flow Rate Study |
| <input checked="" type="checkbox"/> Odorization test at site                   | <input checked="" type="checkbox"/> Odorization History   | <input checked="" type="checkbox"/> Pressure Charts          |
| <input type="checkbox"/> Source of Ignition                                    | <input checked="" type="checkbox"/> CGI Bare Hole Survey  | <input checked="" type="checkbox"/> Map of Area              |
| <input checked="" type="checkbox"/> Sniff Testing To Verify Odorant            | <input checked="" type="checkbox"/> FI Study  | <input checked="" type="checkbox"/> Map of Facilities        |
| <input checked="" type="checkbox"/> How operator made safe                     | <input checked="" type="checkbox"/> Time operator made site safe                                    | <input checked="" type="checkbox"/> Prior Service History    |
| <input checked="" type="checkbox"/> Site Pressure test records                 | <input type="checkbox"/> Possible smoke test  | <input type="checkbox"/> Past Pressure Test Records          |
| <input type="checkbox"/> Control Room Log                                      | <input checked="" type="checkbox"/> Meter Readings  | <input checked="" type="checkbox"/> Prior Leak surveys       |
| <input type="checkbox"/> Was One Call Notified                                 | <input checked="" type="checkbox"/> Photo Documentation<br>(yours, operator, news, neighbors, etc.) | <input checked="" type="checkbox"/> Recent odor complaints   |
| <input checked="" type="checkbox"/> Construction activity in the incident area |   |  |

**Notes:**

N/A



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## Contact Information Log

Contact information for persons relevant to the investigation
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Name	Title	Phone Number
Rob Smith	Compliance Manager	[REDACTED]
Jeff Young	Fire Chief - Upper Arlington	[REDACTED]
Ben Anders	Fire Marshall - Upper Arlington	[REDACTED]
Rick Westerfield	Director - Columbus Water Department	[REDACTED]
[REDACTED]	[REDACTED] Plumbing	[REDACTED]
[REDACTED] Ishida	Homeowners	[REDACTED]

## Event Log

Sequence of events prior, during, and after the incident by time. (Consider the events of all parties involved in the incident, Fire Department and Police reports, Operator Logs and other government agencies.)

[illegible]



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<i>Photo Documentation Log</i>			
#	Description	#	Description
1	Photos taken on 3/21/2015	16	
2	Photos taken on 3/23/2015	17	
3	Photos water dept. tools used day of incident - 4/16/2015	18	
4	Photos for outside examination on 4/13/2015	19	
5	Photos for inside examination on 5/12/2015	20	
6	Photos for SEA lab on 6/25/15	21	
7		22	
8		23	
9		24	
10		25	
11		26	
12		27	
13		28	
14		29	
15		30	
Camera Type: Canon - Power Shot A4000 IS			



**Failure Investigation Documentation Log**

Operator:		Unit #:	CPF #:	Date:	
Appendix	Documentation Description	Date		FOIA	
Number		Received		Yes	No
A	Mainline data at/near incident site	6/26/15			
B	Pressure chart for regulator stations	6/26/15			
C	Old idle service – pressure test main and service	6/26/15			
D	Odorization report day of incident	6/26/15			
E	Odorization report for 2014	6/26/15			
F	Weather report day of incident	6/26/15			
G	Leakage report day of incident	6/26/15			
H	Leakage history report	6/26/15			
I	Map of system	6/26/15			
J	Aerial view incident site	6/26/15			
K	Remote read data from meter at incident site	6/26/15			
L	Tap card for old idle service	6/26/15			
M	Bar hole report and plotted map around incident site	6/26/15			
N	OQ for individuals	6/26/15			
O	Drug / Alcohol – for employees involved in incident	6/26/15			
P	Timeline of events performed by COH	6/26/15			
Q	Calibration of Odorator unit	6/26/15			
R	Calibration of leakage equipment	6/26/15			
S	TP reading at incident site	6/26/15			
T	Inside of main – tap photos	6/26/15			
U	O & M procedures from 1980 to 1990 – How to abandon service lines	6/26/15			
V	Audio from [REDACTED] interview	4/27/15			
W	Police – Dash cam video	4/17/15			
X	Water Dept. information	4/6/15			
Y	Water Dept. information	4/14/15			
Z	Sign in for outside examination	4/13/15			
AA	Sign in for inside examination	5/12/15			
BB	2013 Curb and sidewalk replacement in neighborhood for incident site	4/17/15			
CC	Plumber – [REDACTED] written statement	4/2/15			
DD	Interview by email with current homeowners (Ishida's)	3/26/15			
EE	Franklin County Recorder – previous homeowner list	4/15/15			
FF	Written statement by [REDACTED]	4/27/15			



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<i>Failure Investigation Documentation Log</i>				
Operator:		Unit #:	CPF #:	Date:
Appendix	Documentation Description	Date		FOIA
Number		Received	Yes	No
GG	NRC report	3/26/15		
HH	██████████-COH employee statement	6/26/15		
II	Timeline from water dept.	4/2/15		
JJ	Upper Arlington Fire Dept. report	4/10/15		
KK	Sign-in sheet for SEA lab work on material from incident site	6/29/15		
LL	██████████ signed statement (neighbor ██████████)	4/10/15		



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Based on the results of the investigation, did violations of the Pipeline Safety Regulations or Ohio Administrative Code cause or contribute to the incident? ☒ Yes ☐ No

Code Section	Violation
192.13 ( c )	Operator did not follow Operation and Maintenance Procedures
192.727 (d)	Operator did not properly discontinue old idle service line

Investigator(s): Michael F. Purcell II and Paul W. Hollinger

Date: July 17, 2015

Reviewed by: Peter A. Chace, GPS Program Manager

Date: July 24, 2015