

***NYS Dept. Of Public Service
Office of Electric, Gas & Water Division
Safety Section
Incident Investigation Report***

Pipeline System: <u>Natural Gas Distribution</u>	Operator: <u>National Grid Corporation</u>
Location: <u>310 Paige Street, Schenectady, NY</u>	Date of Incident: <u>August 10, 2014</u>
Material Released: <u>Natural Gas</u>	Quantity: <u>Unknown</u>
Staff Arrival Time & Date: <u>4:05 PM August 10, 2014</u>	Total Damages \$ <u>140,000 (estimated per National Grid 30-Day Report No. 20140078-15927, dated 9/10/2014, Form PHMSA F 7100.1 (Rev. 06-2011))</u>
Report Date (Final): <u>4/1/15</u>	Matter Number <u>14-01638</u>

Company Reported Apparent Cause:	Company Reported Sub-Cause (from either telephonic notice or 30-day report⁽¹⁾):	
	Corrosion	
	Natural Forces	
	Excavation Damage	
	Other Outside Force Damage	
	Material Failure	
	Equipment Failure	
	Incorrect Operation	
X	Other	(National Grid 30-Day Report No. 20140078-15927, dated 9/10/2014, indicated "Unknown" and "To be determined")

Accident/Incident Resulted in (check all that apply):	Comments:
<input type="checkbox"/> Rupture	
<input type="checkbox"/> Leak	
<input type="checkbox"/> Fire	
<input checked="" type="checkbox"/> Explosion	
<input checked="" type="checkbox"/> Evacuation	Number of Persons: <u>Unknown</u> Area: <u>7 Buildings on Paige Street.</u>

<i>Narrative Summary</i>
<p>Short summary of the Incident/Accident scenario</p> <p>At 3:26 PM on August 10th, 2014 National Grid notified DPS Staff of a natural gas explosion at 310 Paige Street in Schenectady, NY. Upon arrival, Staff observed a large contingent of emergency responders, as well as, National Grid gas and electric crews. The two-unit residential structure at 310 had been completely destroyed (See Photo 1). The walls were blown out and the roof dropped down consistent with a natural gas explosion (See Photo 2). Some debris had caught fire which, along with the initial blast, led to damage at 304 and 314 Paige Street (See Photos 3 and 4). Seven buildings were evacuated and the Fire Department initiated a search and rescue mission at 310 (See Photo 5). It was uncertain as to whether anyone was in the residence at the time of the explosion, but after searching through the debris, no persons were found. No injuries were reported.</p> <p>Staff interviewed National Grid's first responders, members of the Schenectady Fire Department, and occupants of neighboring houses. Both National Grid and Schenectady Fire stated that the explosion occurred prior to their arrival. Neighbors claimed that they smelled gas for a couple of days leading up to the incident. They also stated that the house was abandoned, but claimed that squatters were frequently seen going in and out of the residence.</p> <p>On August 11th and 12th, Staff worked collaboratively with representatives from the New York State Office of Fire Prevention & Control, Schenectady Fire, Schenectady Police, and National Grid. Investigators carefully sifted through the</p>

¹ Or from PHMSA Form 7000-1/7100.2 if appropriate.

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debris to expose what was left of the gas facility. Two gas meters, a section of 1-1/4-inch steel meter piping, and two service valves were recovered from the basement (See Photos 6, 7 and 8). The meters and associated piping were discovered lying on the basement floor, several feet from where the service line came through the foundation wall. Staff examined the meter piping and found that it had sheared at the wall (See Photo 9). Staff also found both service valves unlocked in the “on” position (See Photos 10 and 11). A hot water heater, which still contained hot water several hours after the incident was also recovered. This indicated that gas was being supplied to the customer’s piping prior to the incident.

Public records indicate that the property was transferred to the City of Schenectady in a foreclosure action in October 2012. In February 2013, the City conveyed the property to the Schenectady Urban Renewal Agency. National Grid billing records indicate that the electric and gas services to both units were inactive from March 2013 through the date of the incident. The gas services were discontinued by the company via “soft closure,” where no mechanical device or fitting was installed at the service valve to prevent the flow of gas. The company used “soft closure” because the service valves and meters were inside the residence, and the company claims it could not gain access to physically lock them.

Records indicate that the company dispatched representatives to 310 Paige Street at least six times between March 2013 and September 2013. The first time was for a gas meter turn off and the other five times were to investigate inactive gas meter usage. The Company could not gain access to complete any of the six work orders issued. Records also show that the company continued to record usage each month, at both gas meters, through July 2014. In April 2014, records indicate that the company reviewed one of the inactive accounts for advanced consumption, but concluded that the usage was too low and did not require attention at that time.

On August 11th, Schenectady Police interviewed one of the squatters who allegedly frequented the house. During the interview, the squatter confirmed that on August 8th she was in the house with two other men. She claimed that the men were in the basement cutting metal pipes with the intent to sell them. Later that day, they sold some of the pipe to a local scrap yard for cash.

Based upon the evidence, the root cause of this incident was escaping gas from a leaking fuel line inside the house, beyond the meter. The leak was a result of trespassers cutting piping in the basement two days prior to the explosion. A contributing factor to this incident was the utility company’s failure to physically lock the gas service line valves and/or physically disconnect the customer piping from the gas supply, when the service was discontinued. Staff believes that the gas service piping up to the meters was intact prior to the incident. The service piping most likely sheared off during the explosion or when the search and rescue mission was underway. Although Staff could not confirm definitively, ignition appears to have initiated at the water heater. The explosion completely destroyed the two-family residential structure at 310 Paige Street and substantially damaged the neighboring residential structures, 304 and 314 Paige.

During the course of investigation, Staff identified two violations of 16 NYCRR Part 255. One violation was noted for Abandonment or Inactivation of Facilities (255.727 (d)). National Grid failed to physically disconnect the customer’s piping or lock the service valves when service was discontinued. The second violation, 255.603(d), was identified because National Grid failed to follow its own company procedure; CMS03004, Turn On and Turn Off Gas Meters, Revision 1, dated 2/1/13. Under the section “Meter Turn Off (Lock) Procedure,” the company is required to, “Install a locking device at the meter shut off valve, when turning gas off: at the customer’s request, for discontinuance of service, or for safety.” Both violations will be issued to National Grid under separate cover.

	Name	Title	Signature	Date
Approved by:				
Lead Investigator	Zachary Tondera	Utility Engineer 1 (Safety)	Approved in DMM	4/1/2015
Contributing Staff	Michael Moll	Utility Engineer 3 (Safety)	Approved in DMM	4/1/2015
Contributing Staff				
Local Supervisor	Michael Moll	Utility Engineer 3 (Safety)	Approved in DMM	4/1/2015
Regional Supervisor	Christopher Stolicky	Utility Supervisor	Approved in DMM	4/1/2015
Section Chief	Kevin Speicher	Chief Gas Safety	Approved in DMM	4/1/2015
Reviewed by:				
Counsel	Robyn Adair	Assistant Counsel	Approved in DMM	4/1/2015

Failure Location & Response

Location (City, Township, Range, County/Parish): (Acquire Map)
 310 Paige Street, Schenectady, NY

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Failure Location & Response		
Address or M.P. on Pipeline: (2) NA	Type of Area (Rural, City): (1) City	
Coordinates of failure location: Latitude: 42.8079		Longitude: -73.93872
Date: August 10, 2014	Time of Failure: Approx. 2:45 PM	
Time Detected: NA	Time Located: NA	
How Located: Reported by the Schenectady Fire Department		
NRC Report #: 1091862	Time Reported to NRC: 16:38 on 08/10/2014	Reported by: National Grid
Type of Pipeline:		
Gas Distribution	Gas Transmission	Hazardous Liquid
<input type="checkbox"/> Municipal <input checked="" type="checkbox"/> Public Utility	<input type="checkbox"/> Interstate Gas <input type="checkbox"/> Intrastate Gas <input type="checkbox"/> Gas Gathering	<input type="checkbox"/> Interstate Liquid <input type="checkbox"/> Intrastate Liquid
<input type="checkbox"/> LNG		
Pipeline Configuration (Regulator Station, Pump Station, Pipeline, etc.):		
Customer's piping, beyond the meter.		

Owner/Operator Information	
Owner: Schenectady Urban Renewal Agency (customer's piping) Address: 105 Jay Street Schenectady, NY 12305 Company Official: Phone No.: Fax No.:	Operator: National Grid Corporation (Niagara Mohawk Power Corporation) Address: 300 Erie Boulevard West Syracuse, NY 13202 Company Official: Mr. Robert A. Demarinis Vice President Operations, NY National Grid 175 East Old Country Road Hicksville, NY 11801 Phone No. Fax No.
<u>Drug and Alcohol Testing Program Contacts</u>	
<input checked="" type="checkbox"/> N/A Drug Program Contact & Phone: Alcohol Program Contact & Phone:	

2 Photo documentation

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Damages			
Product/Gas Loss or Spill ⁽³⁾	Natural Gas	Estimated Property Damage	\$120,000
Amount Recovered:	0	Associated Damages ⁽⁴⁾ \$5,000 operators property and repairs \$15,000 operators emergency response	
Description of Property Damage: The two-family residential structure, 310 Paige Street, was completely destroyed. The structures at 304 and 314 Paige had some exterior damage from the resulting blast and debris. A few vehicles in the immediate area had been damaged by debris.			
Customers out of Service: __ Yes <u>X</u> No Number:			
Suppliers out of Service: __ Yes <u>X</u> No Number:			

Fatalities and Injuries						<u>X</u> N/A
Fatalities:	__ Yes	__ No	Company:	Contractor:	Public:	
Injuries - Hospitalization:	__ Yes	__ No	Company:	Contractor:	Public:	
Injuries - Non-Hospitalization:	__ Yes	__ No	Company:	Contractor:	Public:	
Total Injuries (including Non-Hospitalization):			Company:	Contractor:	Public:	
Name	Job Function	Yrs. w/ Comp.	Yrs. Exp.	Type of Injury		

Drug/Alcohol Testing	<u>X</u> N/A
Were all employees that could have contributed to the incident, post-accident tested within the 2 hour time frame for alcohol or the 32 hour time frame for all other drugs?	
__ Yes __ No	

3 Initial volume lost or spilled
4 Including cleanup cost

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<i>Drug/Alcohol Testing</i>					<u>X</u> N/A
Job Function	Test Date & Time	Location	Results		Type of Drug
			Pos	Neg	

<i>System Description</i>
Describe the Operator's System: The distribution system that feeds Paige Street was low pressure. The distribution main was four inch cast iron. The service to the house was 1 ¼ inch unprotected steel.

<i>Pipe Failure Description</i>		<u>X</u> N/A
Length of Failure (inches, feet, miles):		(1)
Position (Top, Bottom, include position on pipe, 6 O'clock): (1)	Description of Failure (Corrosion Gouge, Seam Split): (1)	
Laboratory Analysis: ___ Yes ___ No		
Performed by:		
Preservation of Failed Section or Component: ___ Yes ___ No		
If Yes - Method:		
In Custody of:		
Develop a sketch of the area including distances from roads, houses, stress inducing factors, pipe configurations, direction of flow, etc. Bar Hole Test Survey Plot, if included, should be outlined with concentrations at test points.		

<i>Component Failure Description</i>		<u>X</u> N/A
Component Failed:	(1)	
Manufacturer:	Model:	
Pressure Rating:	Size:	
Other (Breakout Tank, Underground Storage):		

<i>Pipe Data</i>		<u>X</u> N/A
Material:	Wall Thickness/SDR:	
Diameter (O.D.):	Installation Date:	
SMYS:	Manufacturer:	
Longitudinal Seam:	Type of Coating:	
Pipe Specifications (API 5L, ASTM A53, etc.):		

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<i>Joining</i>		<u>X</u> N/A
Type:	Procedure:	
NDT Method:	Inspected: ___ Yes ___ No	

<i>Pressure @ Time of Failure @ Failure Site</i>					<u> </u> N/A
Pressure @ Failure Site: Multiple stations feed the distribution system on Paige Street. The closest stations are located on Craig Street and Broadway in Schenectady. The system maximum allowable operating pressure is 12 i.w.c. Staff reviewed pressure records from 7/27 through 8/26. No MAOP issues were identified.			Elevation @ Failure Site: NA		
Pressure Readings @ Various Locations:				Direction from Failure Site	
Location/M.P./Station #	Pressure (psig)	Elevation (ft msl)	Upstream	Downstream	
Craig Street (GRS 451)	8.5 inches water column	NA	NA	NA	
Broadway (GRS 405)	8 inches water column	NA	NA	NA	

<i>Upstream Pump Station Data</i>		<u>X</u> N/A
Type of Product:	API Gravity:	
Specific Gravity:	Flow Rate:	
Pressure @ Time of Failure ⁽⁵⁾	Distance to Failure Site:	
High Pressure Set Point:	Low Pressure Set Point:	

<i>Upstream Compressor Station Data</i>		<u>X</u> N/A
Specific Gravity:	Flow Rate:	
Pressure @ Time of Failure ⁽⁵⁾	Distance to Failure Site:	
High Pressure Set Point:	Low Pressure Set Point:	

<i>Operating Pressure</i>		<u> </u> N/A
Max. Allowable Operating Pressure: 12 i.w.c.	Determination of MAOP: Calculated by operator	
Actual Operating Pressure: Approx. 8 i.w.c.		
Method of Over Pressure Protection: Relief		
Relief Valve Set Point: 15-20 i.w.c.	Capacity Adequate? <u>X</u> Yes ___ No	

<i>Integrity Test After Failure</i>		<u> </u> N/A
Pressure test conducted in place? (Conducted on Failed Components or Associated Piping): <u>X</u> Yes ___ No		
If No, tested after removal? <u>X</u> Yes ___ No		
Method: The company conducted two "on site" pressure tests on the 1 ¼ inch steel service line feeding 310 Paige Street. Metallurgical testing was also done at Lucius Pitkin Inc.		
The company conducted two pressure tests on the 1 ¼ inch steel service line. The first test on the service line was performed immediately after the explosion (8/10/14). Pressure was applied where the service line was disconnected at the main (See Photos 12 and 13). This test was done to assess the integrity of the service line, and determine whether the inside service valves were off. This test was unsuccessful.		

5 Obtain event logs and pressure recording charts

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Integrity Test After Failure	<u> </u> N/A
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The following day (8/11/14), Staff discovered that the inside piping had sheared at the foundation wall, leaving the service line open ended, which prevented an effective test the previous day. A second test was performed from inside the foundation wall to the main. The service line was capped at the main. Pressure was applied from inside the foundation wall, where the service piping has sheared (See Photo 14). This test was also unsuccessful.

On the next day (8/12/14), the company uncovered the service with a high pressure water lance and vacuum excavator. A few pinholes were discovered in the service line, approximately 11 feet from the foundation wall (See Photo 15).

On 2/23/15 and 2/24/15, metallurgical testing was conducted on the service line pipe at Lucius Pitkin Inc. An additional microscopic leak was discovered approximately 4 feet from the building wall.

Staff is unsure whether these pinholes had formed due to corrosion, or were created during the excavation and/or pressure testing process. Due to the following factors, it is not likely that these pinholes were the primary source of gas migration into the house: the size of the pinholes, their relative location to the foundation wall, the low pressure distribution system, sandy soil conditions, and areas of unpaved cover above the service line. The service line was not believed to be a contributing factor in the explosion.

Soil/water Conditions @ Failure Site	<u>X</u> N/A
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Condition of and Type of Soil around Failure Site (Color, Wet, Dry, Frost Depth):	
Type of Backfill (Size and Description):	
Type of Water (Salt, Brackish):	Water Analysis ⁽⁶⁾ <u> </u> Yes <u> </u> No

Cathodic Protection	<u>X</u> N/A
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P/S (Surface):	P/S (Interface):
Soil Resistivity: pH:	Date of Installation:
Method of Protection:	
Did the Operator have knowledge of Corrosion before the Incident? <u> </u> Yes <u> </u> No	
How Discovered? (Close Interval Survey, Instrumented Pig, Annual Survey, Rectifier Readings, ECDA, etc):	

External Pipe or Component Examination	<u> </u> N/A
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External Corrosion? <u>X</u> Yes <u> </u> No ⁽¹⁾	Coating Condition (Disbonded, Non-existent): ⁽¹⁾ Non-existent
<p>Description of Corrosion: The unprotected steel service showed surface corrosion throughout its length. There were a few visible pinholes along the external surface, approximately 11 feet from the foundation wall. An additional microscopic leak was discovered approximately 4 feet from the building wall.</p> <p>Staff is unsure whether these pinholes had previously formed due to corrosion, or were created during the excavation and/or pressure testing process on the service line. Due to the size of the pinholes, their relative location to the foundation wall, the low pressure distribution system, sandy soil conditions, and areas of unpaved cover above the service line, it is not likely that these pinholes were the primary source of gas migration into the house. The service line was not believed to be a contributing factor in the explosion.</p>	
Description of Failure Surface (Gouges, Arc Burns, Wrinkle Bends, Cracks, Stress Cracks, Chevrons, Fracture Mode, Point of Origin): The surface had some general and local corrosion, but is not believed to be the cause of failure.	

6 Attach copy of water analysis report

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<i>External Pipe or Component Examination</i>		<u> </u> N/A
Above Ground: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	(1)	Buried: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Stress Inducing Factors: NA	(1)	Depth of Cover: Greater than 18 inches

<i>Internal Pipe or Component Examination</i>		<u>X</u> N/A
Internal Corrosion: <input type="checkbox"/> Yes <input type="checkbox"/> No	(1)	Injected Inhibitors: <input type="checkbox"/> Yes <input type="checkbox"/> No
Type of Inhibitors:		Testing: <input type="checkbox"/> Yes <input type="checkbox"/> No
Results (Coupon Test, Corrosion Resistance Probe):		
Description of Failure Surface (MIC, Pitting, Wall Thinning, Chevrons, Fracture Mode, Point of Origin):		
Cleaning Pig Program: <input type="checkbox"/> Yes <input type="checkbox"/> No		Gas and/or Liquid Analysis: <input type="checkbox"/> Yes <input type="checkbox"/> No
Results of Gas and/or Liquid Analysis ⁽⁷⁾		
Internal Inspection Survey: <input type="checkbox"/> Yes <input type="checkbox"/> No		Results ⁽⁸⁾
Did the Operator have knowledge of Corrosion before the Incident? <input type="checkbox"/> Yes <input type="checkbox"/> No		
How Discovered? (Instrumented Pig, Coupon Testing, ICDA, etc.):		

<i>Natural Forces</i>	<u>X</u> N/A
Description (Earthquake, Tornado, Flooding, Erosion):	

<i>Outside Force Damage</i>		<u>X</u> N/A
Excavator:		Telephone No.:
Address:		
Work Being Performed:		
Equipment Involved:	(1)	Called One Call System? <input type="checkbox"/> Yes <input type="checkbox"/> No

7 Attach copy of gas and/or liquid analysis report
 8 Attach copy of internal inspection survey report

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<i>Outside Force Damage</i>		<u>X</u> N/A
One Call Name:	One Call Report # ⁽⁹⁾	
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: ⁽¹⁾	Location: ⁽¹⁾	
State Law Damage Prevention Program Followed? <input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, attach copy of §753 Citation(s))		
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		

<i>Failure Isolation</i>		<u>X</u> N/A
Squeeze Off/Stopple Location and Method: ⁽¹⁾		
Valve Closed - Upstream: Time:	I.D.: M.P.:	
Valve Closed - Downstream: Time:	I.D.: M.P.:	
Pipeline Shutdown Method: <input type="checkbox"/> Manual <input type="checkbox"/> Automatic <input type="checkbox"/> SCADA <input type="checkbox"/> Controller <input type="checkbox"/> ESD		
Failed Section Bypassed or Isolated:		
Performed By:	Valve Spacing:	

<i>Odorization</i>		<u> </u> N/A
Method of Determination: Quantitative Test with Bacharach Odorometer	Concentration of Odorant ⁽¹⁰⁾ : % LEL: <u>NA</u> % Gas In Air: <u>3</u> Time Taken: 1820	
Was Odorizer Working Prior to the Incident? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Type of Odorizer (Wick, By-Pass): NJEX (Injection)	
Odorant Manufacturer: Chevron Phillips	Type of Odorant: Tert-Butylmercaptain	

9 Attach copy of one-call report

10 Post Incident at Failure Site

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<i>Odorization</i>		<u> </u> N/A
Model: Sentinel "E"		
Amount Injected: .4 lbs./MMCF	Monitoring Interval (Weekly): Monthly	
<p>Odorization History (Leaks Complaints, Low Odorant Levels, Monitoring Locations, Distances from Failure Site):</p> <p>Following the incident, the company verified odorant concentration.</p> <p>8/10/14- 18:20 at GRS 451 (Craig St) the readily detectible odor level reading was .3% gas in air.</p> <p>8/10/14- 18:40 at GRS 405 (Broadway) the readily detectible odor level reading was .3% gas in air.</p> <p>8/10/14- 20:10 at 720 Albany Street, Staff witnessed Crews take readings where the readily detectible reading was .25% gas in air.</p> <p>Odorant intensity was adequate. Staff reviewed Monthly Odorization Reports from March 2014 through August 2104. No odorant issues were identified in Schenectady.</p>		

<i>Weather Conditions</i>		<u> X</u> N/A
Temperature:	Wind (Direction & Speed):	
Climate (Snow, Rain):	Humidity:	
Was Incident preceded by a rapid weather change? <u> </u> Yes <u> </u> No		
Weather Conditions Prior to Incident (Cloud Cover, Ceiling Heights, Snow, Rain, Fog):		

<i>Gas Migration Survey</i>		<u> </u> N/A
Bar Hole Test of Area: <u> </u> Yes <u> X</u> No	Equipment Used: FI	
<p>Method of Survey (Foundations, Curbs, Manholes, Driveways, Mains, Services) ⁽¹¹⁾ (1)</p> <p>The company conducted a "special" leakage survey a few hours after the explosion. No leaks were found. The company conducted another leak survey the next day (8/11) and one Type 1 leak was found near 302 Paige. The leak was fixed that day. Subsequent leakage surveys were performed, and a leak was discovered and fixed near 334 Paige Street.</p>		

<i>Environment Sensitivity Impact</i>		<u> X</u> N/A
Location (Nearest Rivers, Body of Water, Marshlands, Wildlife Refuge, City Water Supplies that could be or were affected by the medium loss): (1)		
OPA Contingency Plan Available? <u> </u> Yes <u> </u> No		Followed? <u> </u> Yes <u> </u> No

<i>Class Location/High Consequence Area</i>		<u> X</u> N/A
Class Location: 1 <u> </u> 2 <u> </u> 3 <u> </u> 4 <u> </u>	HCA Area? <u> </u> Yes <u> </u> No <u> </u> N/A	
Determination:	Determination:	

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Maps & Records	<u>X</u> N/A
Are Maps and Records Current? ⁽¹²⁾ <input type="checkbox"/> Yes <input type="checkbox"/> No	
Comments:	

Pressure Test History							<u>X</u> N/A
<i>(Expand List as Necessary)</i>							
	Req'd ⁽¹³⁾ Assessment Deadline Date	Test Date	Test Medium	Pressure (psig)	Duration (hrs)	% SMYS	
Installation	N/A						
Next							
Next							
Most Recent							
Describe any problems experienced during the pressure tests.							

Internal Line Inspection/Other Assessment History						<u>X</u> N/A
<i>(Expand List as Necessary)</i>						
	Req'd ⁽¹³⁾ Assessment Deadline Date	Assessment Date	Type of ILI Tool ⁽¹⁴⁾	Other Assessment Method ⁽¹⁵⁾	Indicated Anomaly If yes, describe below	
Initial					<input type="checkbox"/> Yes <input type="checkbox"/> No	
Next					<input type="checkbox"/> Yes <input type="checkbox"/> No	
Next					<input type="checkbox"/> Yes <input type="checkbox"/> No	
Most Recent					<input type="checkbox"/> Yes <input type="checkbox"/> No	
Describe any previously indicated anomalies at the failed pipe, and any subsequent pipe inspections (anomaly digs) and remedial actions.						

Pre-Failure Conditions and Actions	<u>X</u> N/A
Was there a known pre-failure condition requiring ⁽¹³⁾ the operator to schedule evaluation and remediation? <input type="checkbox"/> Yes (describe below or on attachment) <input type="checkbox"/> No	
If there was such a known pre-failure condition, had the operator established and adhered to a required ⁽¹³⁾ evaluation and remediation schedule? Describe below or on attachment. <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

12 Obtain copies of maps and records

13 As required of Pipeline Integrity Management regulations in 16 NYCRR Part 255 and 49CFR Parts 192 and 195

14 MFL, TFI, UT, Combination, Geometry, etc.

15 ECDA, ICDA, SCCDA, "other technology," etc.

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<i>Pre-Failure Conditions and Actions</i>	<u>X</u> N/A
Prior to the failure, had the operator performed the required ⁽¹³⁾ actions to address the threats that are now known to be related to the cause of this failure? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A List below or on an attachment such operator-identified threats, and operator actions taken prior to the accident.	
Describe any previously indicated anomalies at the failed pipe, and any subsequent pipe inspections (anomaly digs) and remedial actions.	

<i>Leak Survey History</i>	<input type="checkbox"/> N/A
Leak Survey History (Trend Analysis, Leak Plots): According to National Grid records, a 3 year leakage survey was performed on Paige Street on July 18, 2013 in conformance with 16 NYCRR Part 723. No leaks were identified during this survey.	

<i>Pipeline Operation History</i>	<u>X</u> N/A
Description (Repair or Leak Reports, Exposed Pipe Reports):	
Did a Safety Related Condition Exist Prior to Failure? <input type="checkbox"/> Yes <input type="checkbox"/> No Reported? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Unaccounted For Gas:	
Over & Short/Line Balance (24 hr., Weekly, Monthly/Trend):	

<i>Operator/Contractor Error</i>		<u>X</u> N/A
Name:	Job Function:	
Title:	Years of Experience:	
Training (Type of Training, Background):		
Was the person "Operator Qualified" as applicable to a precursor abnormal operating condition? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Was qualified individual suspended from performing covered task <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Type of Error (Inadvertent Operation of a Valve):		
Procedures that are required:		
Actions that were taken:		
Pre-Job Meeting (Construction, Maintenance, Blow Down, Purging, Isolation):		
Prevention of Accidental Ignition (Tag & Lock Out, Hot Weld Permit):		
Procedures conducted for Accidental Ignition:		
Was a Company Inspector on the Job? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Was an Inspection conducted on this portion of the job? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Additional Actions (Contributing factors may include number of hours at work prior to failure or time of day work being conducted):		

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<i>Operator/Contractor Error</i>					<u>X</u> N/A
Training Procedures:					
Operation Procedures:					
Controller Activities:					
Name	Title	Years Experience	Hours on Duty Prior to Failure	Shift	
Alarm Parameters:					
High/Low Pressure Shutdown:					
Flow Rate:					
Procedures for Clearing Alarms:					
Type of Alarm:					
Company Response Procedures for Abnormal Operations:					
Over/Short Line Balance Procedures:					
Frequency of Over/Short Line Balance:					
Additional Actions:					

<i>Additional Actions Taken by the Operator</i>	<u> </u> N/A
<p>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):</p> <p>After the explosion, National Grid excavated over the 4 inch cast iron main (at the service tee) and cut the 1 ¼ inch unprotected steel service. The service tee was removed and the main was plugged. Made safe time was 17:12 on 8/10. On 8/10, a leakage survey was conducted along Paige Street (between Westover and Albany), with no leaks found. On 8/11, another leakage survey was conducted. A Type 1 leak was discovered near 302 Paige Street, and was repaired. National Grid crews also retired the services to the vacant buildings 319 and 321 Paige Street. On 8/19, another Type 1 leak was discovered near 334 Paige Street. The service to this residence was renewed with plastic and a hub was encapsulated on the main.</p>	

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Photo Documentation ⁽¹⁾

Overall Area from best possible view. Pictures from the four points of the compass. Failed Component, Operator Action, Damages in Area, Address Markings, etc.

Photo No.	Description	Photo No.	Description
1	(8/10/2014) - 310 Paige Street after the explosion (Facing North).	31	
2	(8/10/2014) - 310 Paige Street after the explosion (Facing West).	32	
3	(8/10/2014) - 304 Paige Street exterior damage.	33	
4	(8/10/2014) - 314 Paige Street exterior damage.	34	
5	(8/10/2014) - Search and rescue mission after the explosion.	35	
6	(8/11/14) - A gas meter on the floor of the basement, before it was moved for observation.	36	
7	(8/11/2014) - Inside meters and service valves, after they were moved for observation.	37	
8	(8/11/2014) - 1 ¼ inch steel service pipe (inside).	38	
9	(8/11/2014) - 1 ¼ inch steel service pipe where it was sheared off at the foundation wall.	39	
10	(8/11/2014) - First floor inside meter and service valve in "on" position.	40	
11	(8/11/2014) - Second floor inside meter and service valve in "on" position.	41	
12	(8/10/14) - National Grid crews cutting the service at the main.	42	
13	(8/10/14) - National Grid crews pressure testing the service pipe (near the main).	43	
14	(8/11/14) - National Grid crews pressure testing the service pipe at the foundation wall to the capped end of the service (near the main).	44	
15	(8/12/14) - The pinholes found in the 1 ¼ inch service line.	45	
16		46	
17		47	
18		48	
19		49	
20		50	
21		51	
22		52	
23		53	
24		54	
25		55	
26		56	
27		57	

Incident Investigation Report

28		58	
29		59	
30		60	
Camera Type: Digital			

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Photo 1 (8/10/2014) - 310 Paige Street after the explosion (Facing North).



Photo 2 (8/10/2014) - 310 Paige Street after the explosion (Facing West).

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Photo 3 (8/10/2014) - 304 Paige Street exterior damage.

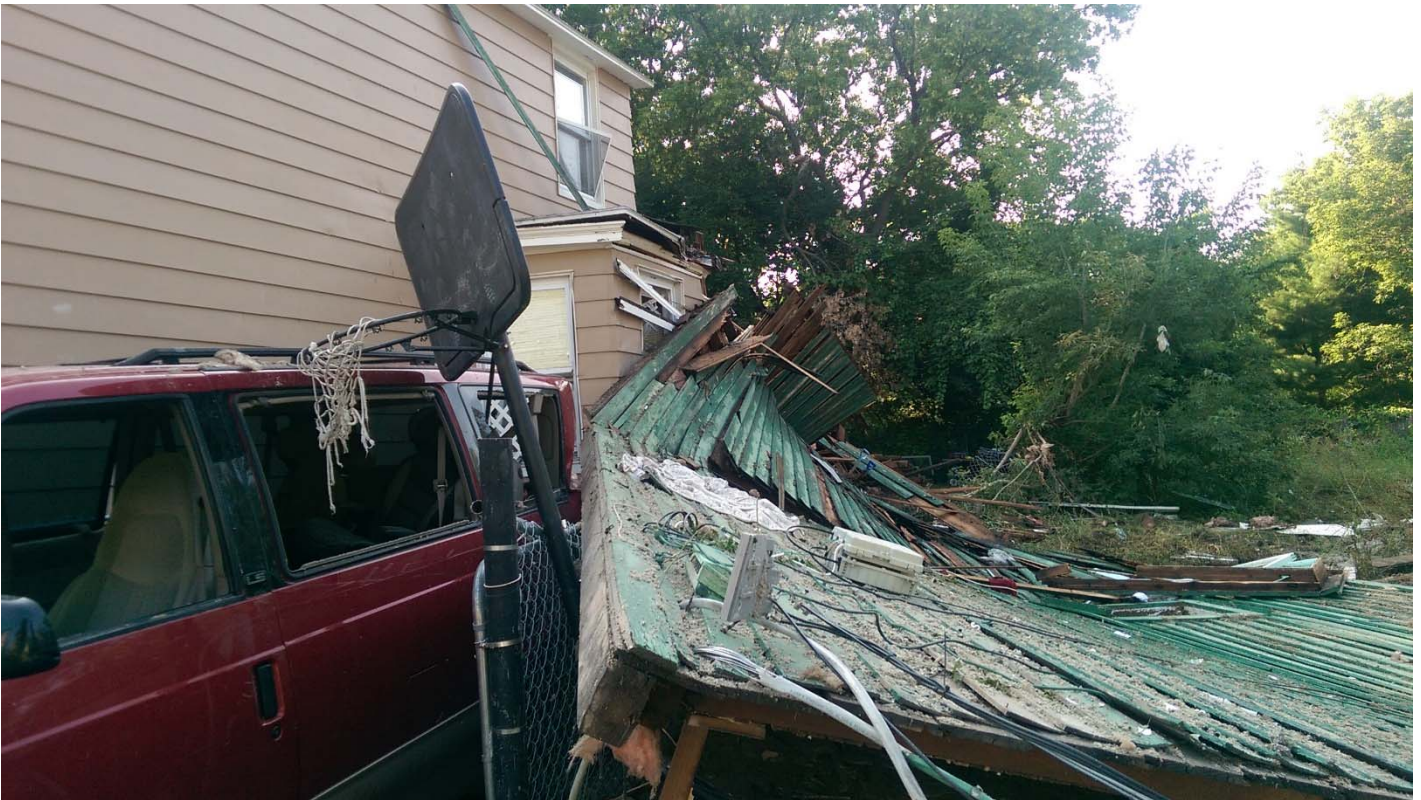


Photo 4 (8/10/2014) - 314 Paige Street exterior damage.

Incident Investigation Report



Photo 5 (8/10/2014) - Search and rescue mission after the explosion.



Photo 6 (8/11/14) - A gas meter on the floor of the basement, before it was moved for observation.

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Photo 7 (8/11/2014) - Inside meters and service valves, after they were moved for observation.

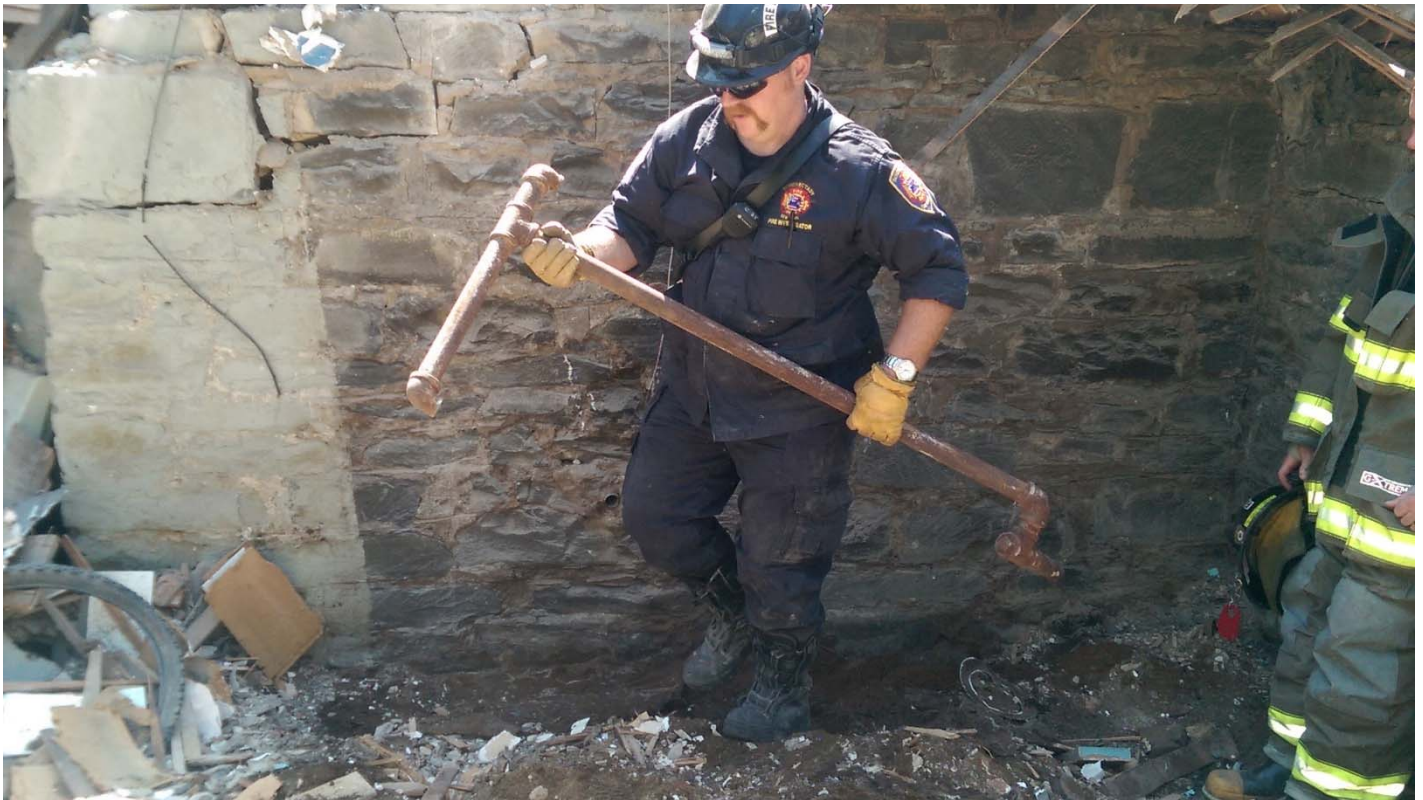


Photo 8 (8/11/2014) - 1 1/4 inch steel service pipe (inside).

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Photo 9 (8/11/2014) - 1 ¼ inch steel service pipe where it was sheared off at the foundation wall.



Photo 10 (8/11/2014) – First floor inside meter and service valve in “on” position.

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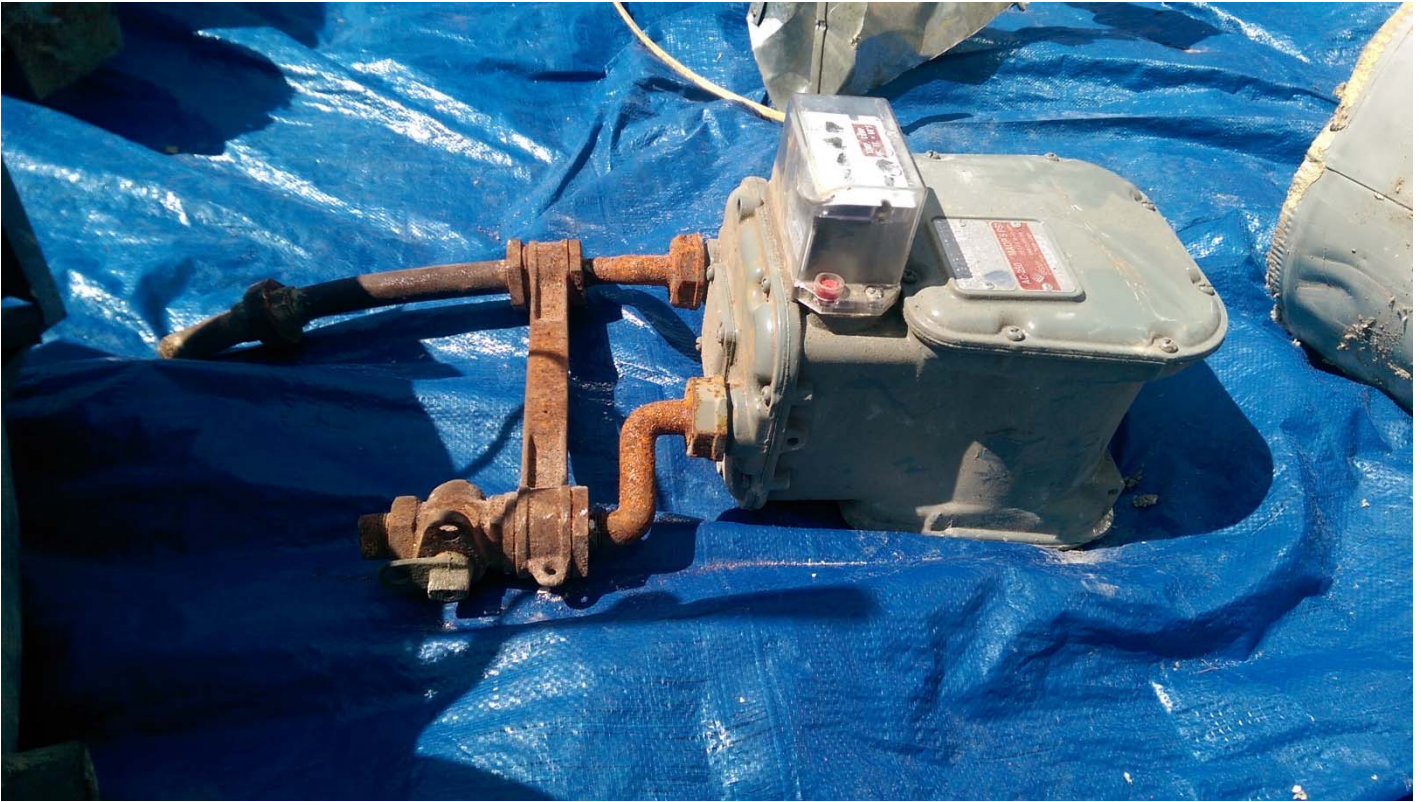


Photo 11 (8/11/2014) – Second floor inside meter and service valve in “on” position.



Photo 12 (8/10/14) – National Grid crews cutting the service at the main.

Incident Investigation Report



Photo 13 (8/10/14) – National Grid crews pressure testing the service pipe (near the main).

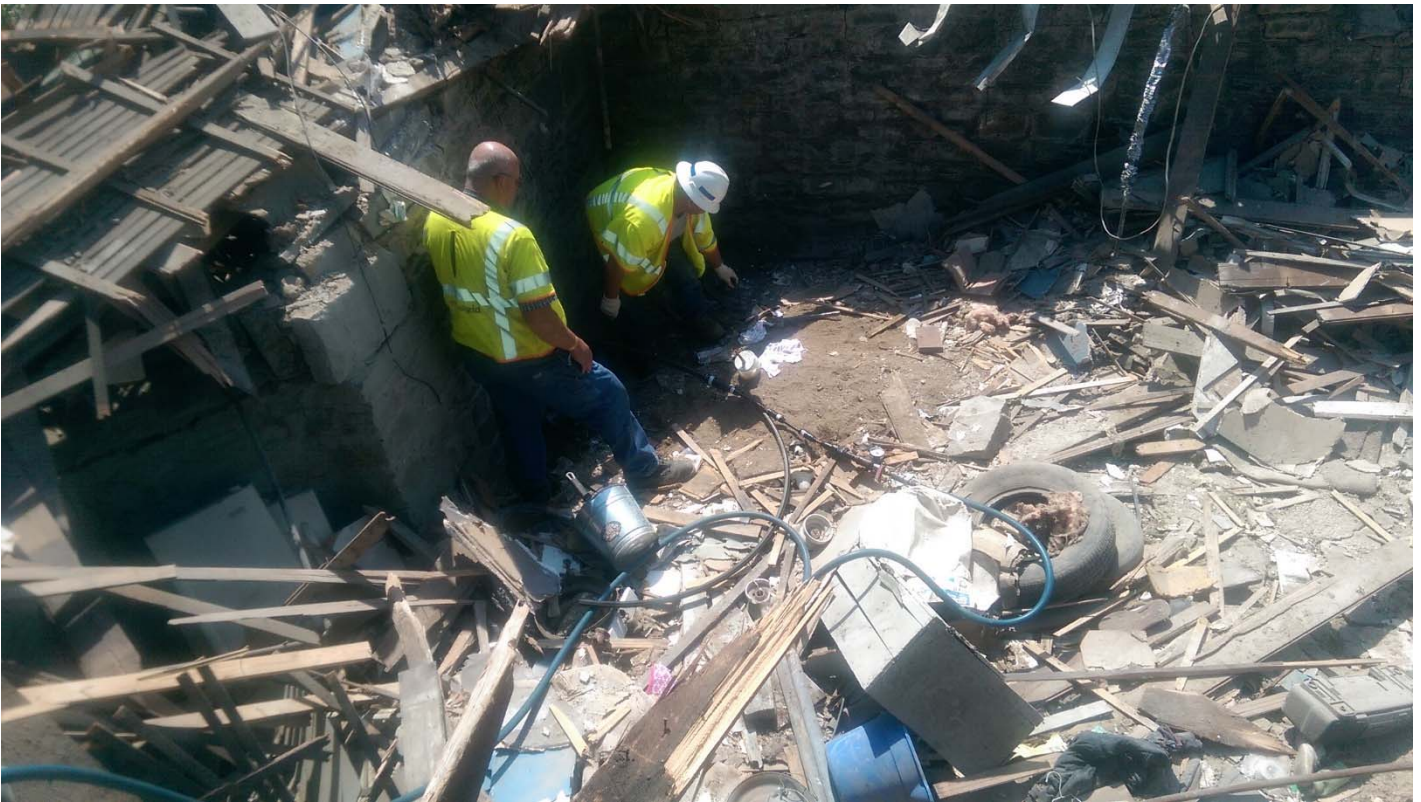


Photo 14 (8/11/14) – National Grid crews pressure testing the service pipe at the foundation wall to the capped end of the service (near the main).

Incident Investigation Report



Photo 15 (8/12/14) - The pinholes found in the 1 ¼ inch service line.

<i>Additional Information Sources</i>			
Agency	Name	Title	Phone Number
Police:	Mathew Kiser	Lead Detective	(518) 382-5245 Ext. 5604
Fire Dept.:	Jim Penn	Relations Officer	(518) 365-1530
State Agency:	Jim Cable	State Fire Special Ops	(518) 474-6746
NYS Homeland Security	Andrew Pohl	Fire Investigator	(518) 474-6746 or (518) 380-0546

Incident Investigation Report

<i>Persons Interviewed</i>		
Name: Vince Calhoun	Title: Neighbor at 315 Paige St.	Phone Number: NA
Interviewed by: Zachary Tondera	Others present: NA	
Date Interview: 8/10/14		
Name: Thomas Batchner	Title: Neighbor at 314 Paige St.	Phone Number: NA
Interviewed by: Zachary Tondera	Others present: Michael Moll	
Date Interview: 8/11/4		
Name:	Title:	Phone Number:
Interviewed by:	Others present:	
Date Interview:		
Name:	Title:	Phone Number:
Interviewed by:	Others present:	
Date Interview:		
Name:	Title:	Phone Number:
Interviewed by:	Others present:	
Date Interview:		
Name:	Title:	Phone Number:
Interviewed by:	Others present :	
Date Interview:		
Name:	Title:	Phone Number:
Interviewed by:	Others present:	
Date Interview:		
Name:	Title:	Phone Number:
Interviewed by:	Others present:	
Date Interview:		
Name:	Title:	Phone Number:
Interviewed by:	Others present:	
Date Interview:		
Name:	Title:	Phone Number:
Interviewed by:	Others present:	
Date Interview:		
Name:	Title:	Phone Number:
Interviewed by:	Others present:	
Date Interview:		
Name:	Title:	Phone Number:
Interviewed by:	Others present:	
Date Interview:		

Incident Investigation Report

<i>Event Log</i>	
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.)	
Time / Date	Event
1500-8/10/14	(NGRID Gas Operations) On call supervisor received call from UNY Dispatch regarding disturbance at 310 Paige Street, Schenectady.
1501-8/10/14	NGRID Customer Meter and Services (NGRID CMS) received phone call from Upstate Dispatch and Scheduling that there was a house explosion on Paige Street in Schenectady. Cause unknown at time of call.
1505-8/10/14	(NGRID Gas Operations) Scheduled crew from Albany dispatched to scene.
1507-8/10/14	(NGRID CMS) Kim Hines (Service Rep C) arrives on the scene.
1526-8/10/14	National Grid dispatcher reported incident to NYSDPS.
1545-8/10/14	(NGRID Gas Operations) Gas Ops Supervisor arrives on scene.
1545-8/10/14	(NGRID CMS) Greg Buck (CMS Supervisor) on scene at Paige St in Schenectady.
1555-8/10/14	(NGRID CMS) With the assistance of the Schenectady Police Department, CMS began to check adjacent houses (304, 313, 314, 315, 316, 319, and 321 were checked). All had no gas readings in the basements. Because 314 Paige St (next door to 310) sustained significant damage, the gas and electric was shut off to that house. 319 and 321 were vacant homes and did not have active service. All the above addresses had been evacuated by the Fire Dept. and, therefore, no contact with customers was made. After completing checks, the electric meter from 310 was pulled. CMS Supervisor kept in regular contact with the Fire Dept. and stood by to see if we would have access to the gas meter in 310.
1600-8/10/14	(NGRID Gas Operations) Albany Scheduled crew arrives at scene and started preparations to retire service to 310 Paige Street.
1605- 8/10/14	NYSDPS Staff arrives on site. Staff spoke with representatives from Schenectady Fire, State Fire, National Grid, and neighbors to 310 Paige.
1710-8/10/14	(NGRID Gas Operations) Scheduled crew completes gas service retirement.
1745-8/10/14	(NGRID Gas Operations) Checked active leak list for any existing leaks on Paige Street or within the surrounding area.
1800-8/10/14	(NGRID Gas Operations) Schenectady Gas Operations crew arrives to conduct a Special Leak Survey of all gas facilities on Paige Street between Albany Street and Hamilton Street.
1820- 8/10/14	NGRID Instrument and Regulation (NGRID I&R) - Took Odor Sniff Test readings at GRS 451 (Craig St). The readily detectible odor level reading was .3% gas in air.
1840- 8/10/14	(NGRID I&R) - Took Odor Sniff Test readings at GRS 405 (Broadway) the readily detectible odor level reading was .3% gas in air.
1930-8/10/14	(NGRID CMS) Supervisor leaves the scene as the Fire Department was still searching the premises.

Incident Investigation Report

<i>Event Log</i>	
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.)	
2000-8/10/14	(NGRID Gas Operations) Special Leak Survey completed and documented (results submitted to DPS Staff)
2010- 8/10/14	NGRID I&R and DPS Staff - Took Odor Sniff Test readings at 720 Albany Street. The readily detectible odor level reading was .25% gas in air.
2015-8/10/14	(NGRID CMS) Kim Hines leaves scene.
0100-8/11/14	(NGRID Gas Operations) Gas Operations crews departed scene.
0100-8/11/14	Schenectady Fire, State Fire, Schenectady Police, National Grid, and NYSDPS agree to secure the site for the night and resume investigation at 0800 on 8/11/14.
0100-8/11/14	NYSDPS Staff departed scene.
0800-8/11/14	Onsite investigation continued.
0800-8/11/14	(NGRID Gas Operations) The following morning (8/11/14), Gas Operations returned to area and conducted Special Leak Surveys of gas facilities in the surrounding area, including the following streets: Paige Street between Albany Street and Hamilton Street Schenectady Street between Albany Street and Hamilton Street Germania Ave between Albany Street and Westover Ave Georgetta-Dix Plz between Hamilton Street and Westover Ave Westover Ave between Georgetta-Dix Plz and Paige Street Hamilton Street between Veeder Ave and Hulett Street Albany Street between Veeder Ave and Hulett Street
1600-8/11/14	NYSDPS Staff departed scene.
0800-8/12/14	Onsite investigation continued.
1600-8/12/14	NYSDPS onsite investigation concluded.

<i>Investigation Contact Log</i>			
Time	Date	Name	Description
NA	8/10/14-10/30/14	Mathew Kiser	Lead Detective- Schenectady Police Department
NA	8/10/14-10/30/14	Jim Penn	Relations Officer- Schenectady Fire Department
NA	8/10/14-10/30/14	Brian Robinson	National Grid Compliance Manager

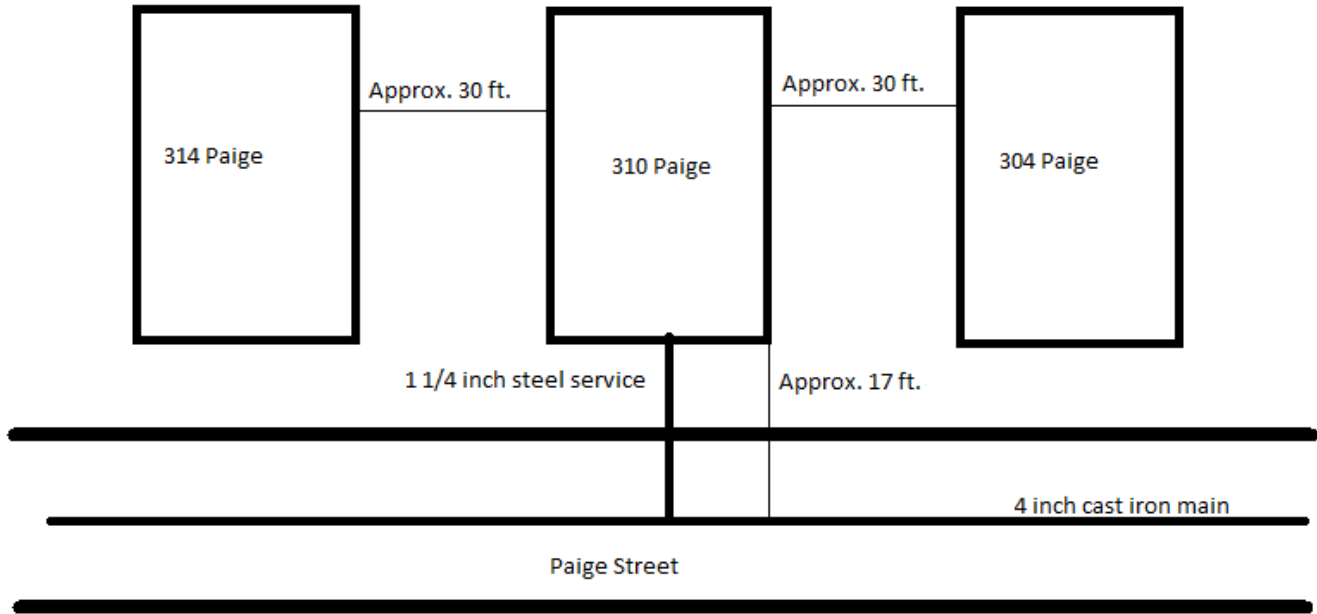
Incident Investigation Report

<i>Failure Investigation Documentation Log</i>		
Appendix Number	Documentation Description	Date Received

Incident Investigation Report

Site Description

Provide a sketch of the area including distances from roads, houses, stress inducing factors, pipe configurations, etc. Bar Hole Test Survey Plot should be outlined with concentrations at test points. Photos should be taken from all angles with each photo documented. Additional areas may be needed in any area of this guideline.



Note: Drawing not to scale.