BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the Matter of the General Investigation Into the Escape of Natural Gas from a Pipeline Operated by Kansas Gas Service, a Division of ONEOK, Inc., on January 30, 2012, Resulting in an Explosion and Injury to Person and Property in Topeka, Kansas.	))))))	Docket No. 12-GIMG-584-GIG

NOTICE OF FILING OF STAFF REPORT AND RECOMMENDATION

COMES NOW, the Staff of the State Corporation Commission of the State of Kansas (Staff and Commission, respectively), and for its Notice of Filing of Staff Report and Recommendation states as follows:

1. Staff hereby files the attached Report and Recommendation dated August 22, 2012, recommending that the Commission approve the recommendations as set out in the report.

WHEREFORE, Staff requests the Commission consider its Report and Recommendation, and for such other and further relief as the Commission deems just and proper.

Respectfully submitted,

PUBLIC VERSION

Judy Jenkins, S. Ct. No. 23300
Litigation Counsel
Kansas Corporation Commission
1500 SW Arrowhead Road
Topeka, Kansas 66604
(785) 271-3181 (Telephone)
(785) 271-3167 (Facsimile)
For Commission Staff

1500 SW Arrowhead Road
Topeka, KS 66604-4027

Kansas
Corporation Commission

Phone: 785-271-3100
Fax: 785-271-3354
http://kcc.ks.gov/

Mark Sievers, Chairman
Thomas E. Wright, Commissioner

Sam Brownback, Governor

REPORT AND RECOMMENDATION
UTILITIES DIVISION

TO: Chairman Mark Sievers
Commissioner Thomas E. Wright

FROM: Leo Haynos, Chief of Gas Operations & Pipeline Safety

DATE: August 22, 2012

DATE SUBMITTED TO EXECUTIVE DIRECTOR: 8·23·12

DATE SUBMITTED TO LEGAL: 8·27·12

DATE SUBMITTED TO COMMISSIONERS: 8-31-12

SUBJECT: Docket No. 12-GIMG-584-GIP : In the Matter of the General Investigation Into the Escape of Natural Gas from a Pipeline Operated by Kansas Gas Service, a Division of ONEOK, Inc., on January 30, 2012, Resulting in an Explosion and Injury to Person and Property in Topeka, Kansas. Report and Recommendations of Commission Staff

EXECUTIVE SUMMARY:

On January 30th, 2012, at 11:38 a.m., an explosion occurred at 1905 SW Navajo Lane, Topeka, Kansas. The owner and occupant of the home was badly injured, hospitalized, and died five days later. The property damage associated with the destruction of this home and damage to surrounding homes is estimated at over $350,000. Upon completing its investigation, the Kansas Corporation Commission Staff (Staff), determined the explosion and fire were the result of a natural gas leak occurring on the distribution main located directly behind this residence, and the event is considered to be a natural gas incident as defined in 49 C.F.R Part 191.3 and adopted by K.A.R. 82-11-3.

The incident was the result of N-Line Lawn Service (N-Line) damaging a Kansas Gas Service (KGS) service line with excavation equipment. The damaged service line served the residence at 1912 SW. Arrowhead located directly behind the incident site. Unknown to N-Line, the gas service line was pulled out of a compression fitting service tap on the main resulting in a large underground gas leak. Staff opened the subject general investigation into the excavation activity of N-Line as the party that caused damage to the natural gas line. The general investigation also includes a review of the emergency response activities of KGS, the operator of the gas system that was damaged.

At the conclusion of its investigation, Staff determined that N-Line violated two provisions of the Kansas Underground Utility Damage Prevention Act (KUUDPA) and its associated regulations. The Notices of Probable Noncompliance issued to N-Line are summarized as follows:

- N-Line did not call emergency responders when a gas leak from a damaged line became evident as required by K.S.A. 2011 Supp. 66-1810.
- N-Line did not have a valid notice of intent to excavate at the time the damage occurred as required by K.S.A. 2011 Supp. 66-1804.

Staff also concluded that KGS violated three provisions of pipeline safety regulations related to responding to a natural gas emergency. K.A.R. 82-11-4 requires each operator to prepare a manual of written procedures for conducting operations and maintenance activities and for emergency response. The Notices of Probable Noncompliance issued to KGS are summarized as follows:

- The leak investigation section of the KGS emergency plan was ineffective in directing personnel responding to an emergency to prioritize the protection of life and property.
- Training of KGS personnel did not provide for prioritizing protection of life and property as the first step in emergency response or leak investigation.

Per K.S.A. 66-1812 and 66-1,151, any person who violates any pipeline safety or KUUDPA rule or regulation adopted by the Commission shall be subject to a civil penalty not to exceed $25,000 for each violation for each day that the violation persists. In past cases, where the consequences of the violation result in significant property damage or a death, Staff has recommended a maximum civil penalty of $25,000 for each violation.

After taking into account all of the facts gathered in this investigation, the nature of the KUUDPA violations, and the consequences of the KUUDPA violations, Staff determined that a $25,000 baseline civil assessment is an appropriate penalty based on the single violation of N-Line's failure to call emergency responders when the pipeline was found to be leaking.[1] However, Staff then accounted for the mitigating actions taken by N-Line before and after the pipeline was damaged, resulting in the recommendation that N-Line be assessed a civil penalty of $5,000 for failure to comply with KUUDPA and its associated regulations.[2]

Similarly for KGS, after considering the violations of pipeline safety regulations that have occurred, Staff considers the interrelated violations of pipeline safety regulations are the result of an ineffective emergency response plan. Therefore, Staff determined that a $25,000 baseline civil assessment is an appropriate penalty for this single violation. As in the case of N-Line, Staff weighed the consequences of these violations and accounted for mitigating factors

[1] Staff is not recommending a penalty for N-Line's failure to have a valid notice of intent to excavate because that violation did not contribute to the cause or consequences of the incident.

[2] Page 12 of this report provides an explanation of Staff's rationale regarding penalty amounts recommended for N-Line.

associated with KGS's emergency response resulting in the recommendation that KGS be assessed a civil penalty of $15,000.[3] The violations are based on Staff's conclusion that KGS's Emergency Plan does not contain enough specificity to instruct its personnel regarding steps to take for protecting life and property when investigating an emergency related to leaking gas caused by excavator damage. In addition to a civil penalty, Staff also recommends that KGS be required to:

- Amend its Emergency Plan and associated training programs to clearly address the protection of life and property in a manner which requires the responder to check for potential gas migration endangering any structures adjacent to the leak.
- Identify on maps available for emergency first responders areas in which a gas main overlies the sanitary sewer main.
- Consider installing additional valves to affect more rapid gas shutoff in areas where steel gas mains overlie sanitary sewer mains.

BACKGROUND:

Construction of Gas Facilities and Description of Location

The main serving this area was constructed before the enactment of pipeline safety regulations and lists an in-service date of January 1, 1966. The main, installed in a utility easement between abutting residential lots, is constructed from a 4-inch diameter coated steel pipe protected from corrosion via a rectified cathodic protection system. The placement of the main configuration is commonly referred to as a rear utility easement. The main was initially installed at a depth of 42 inches with an operating pressure of 45 psig. The Maximum Allowable Operating Pressure (MAOP) of this main is 58 psig.[4] The main is installed in the same rear utility easement as the sewer main, electric power poles and underground telecommunications lines serving the neighborhood. (See Staff's Exhibit 1).

The service line and tap serving the residence at 1912 SW Arrowhead were placed in service on March 12, 1969. The line was constructed of 1-inch diameter unprotected coated and wrapped steel and was connected to the main through a bolt-on ½-inch Mueller "No-Blo" tapping tee that transitioned to a Normac mechanical compression fitting.[5] When constructed in 1969, there was a pressure test of the service line at 30 psig for 15 minutes with air. The meter was originally installed at the building wall and no modifications to the service or tap had occurred since its installation.

The Normac mechanical compression fitting consisted of a nut tightened down on a rubber gasket between the service line and the fitting body to provide a seal against pressure but no significant resistance to being pulled apart when a force is applied along the length of the pipe.

[3] Page 16 of this report provides an explanation of Staff's rationale regarding penalty amounts recommended for KGS.

[4] Response to Staff Data Request 1. The MAOP is the Maximum Allowable Operating Pressure as prescribed in 49 C.F.R 192.619 and adopted by K.A.R. 82-11-4.

[5] Response to Staff Data Request 1 Attachment 1 Page 4.ee

A Manufacturer's specification as to the amount of pull-out resistance provided by this type of fitting was not available. See Staff's Exhibit 2, attached hereto, which is a schematic of the sealing mechanism of a compression fitting.

Reconstruction of Events Leading up to the Explosion

Based on the results of our investigation, Staff provides its interpretation of the events immediately prior to the explosion as follows:

1. Excavation Activity of N-Line Immediately Prior to the Explosion

N-Line was hired by the occupant of 1912 SW Arrowhead to install a lawn sprinkler system in the yard at this address. This address is directly behind the house located at 1905 SW Navajo Lane, which exploded approximately 88 minutes after the service line was damaged. Staff's Exhibit 3, attached hereto, provides an aerial photo of the neighborhood taken during the fire that followed the explosion.

Prior to excavating with mechanized equipment, N-Line had exposed the gas service line at each point where the proposed sprinkler system would cross it. Within the industry, this practice is referred to as "pot-holing" the existing utilities. A photograph of the "pot-holes" over the gas service line is provided as Staff's Exhibit 4, attached hereto. Despite "pot-holing" the anticipated crossing points between the excavation path and the gas service line, N-Line was unable to maintain the digging depth of the vibratory plow knife and caught the service line with the device. The machine's pulling head caught the service line, bent it, and pulled it 18 inches from its original location. (See Staff's Exhibits 5 and 6, attached hereto). The facts support that N-Line was unaware at the time that the service line had separated from the main at the tap approximately 10 feet away and 4 feet below the point of damage.

2. Activity of N-Line Immediately After the Service Line Damage Occurred

Staff's investigation indicates that N-Line damaged and pulled apart the KGS service line at 10:10 a.m., on January 30, 2012. While gas odor indicated the service line at 1912 SW Arrowhead was leaking, N-Line personnel did not realize the hit had caused the service line to pull apart from the gas main resulting in a large release of natural gas approximately 4 feet underground.

The N-Line personnel reported that after the damage occurred he could smell gas and believed that gas was escaping from the spot where he hit the line.[6] Rather than call emergency personnel from the City of Topeka, the N-Line machine operator attempted to call KGS by calling the number on the locate flag at the site. See, Staff's Exhibit 7, which provides a picture of the locate flag. Again, unbeknownst to the N-Line personnel at the time, the number on the flag contacts the contract locating firm that provides utility locates for KGS and is not considered to be an emergency notification contact number. After waiting on hold for 17 minutes,[7] the N-Line machine operator placed a second call to Kansas One Call to advise them of the damage. The

[6] Response to Staff Data Request 4-1

[7] City of Topeka Fire Department Report Case No. 2012-1471

recorded message from Kansas One Call instructed the caller to call the utility operator directly in the event of damage to a facility.[8] After receiving these instructions, the N-Line machine operator placed a call to the KGS emergency phone number he had available in his truck. In his call to KGS' emergency phone number, he stated that he had hit a line, could smell gas, but did not want to move his machine since he thought it was holding the gas in the pipe.[9] Based on the records provided to Staff, KGS personnel arrived at the scene of the damaged line 53 minutes after the damage occurred and 29 minutes after being notified. At that point, control of the scene passed to KGS personnel.

3. Activities of KGS Immediately Prior to the Explosion

According to the phone records reviewed by Staff, KGS was notified of the damaged line at 10:34 a.m., approximately 25 minutes after the damage occurred. Additionally, KGS records indicate that the Company's first responder arrived on scene at 11:03 a.m., surveyed the damage site, and placed a call to his supervisor requesting assistance in repairing the damage. Shortly thereafter, the KGS first responder shut the meter off at the 1912 SW Arrowhead residence and began to take readings of gas concentrations below the surface of the ground within the immediate vicinity of the damaged service line. According to KGS records,[10] the KGS emergency first responder obtained five readings of gas concentrations near the damaged service line. A KGS work crew arrived on scene at 11:35 a.m. The KGS first responder was in the process of showing the KGS work crew the site of the leak when the house at 1905 SW Navajo exploded at 11:38 a.m.[11] No records or statements were provided indicating that the KGS emergency first responder attempted to contact any occupants of homes adjacent to the damage site, prior to the explosion.

4. Miscellaneous Activities Immediately Prior to the Explosion

Based on the City of Topeka Fire Department's report regarding this incident,[12] an appliance technician was in the residence at 1905 SW Navajo working on the clock of the electric kitchen range for the occupant. At approximately 11:10 a.m., the technician noticed a distinct gas odor in the basement of the house. At that time, he asked the occupant to join him in the basement so she could notice the odor also and suggested she call KGS to inquire about the odor. At approximately 11:30 a.m., the technician left the residence. KGS has no record of a phone call from 1905 SW Navajo.

At 11:03 a.m. an odor complaint was called in by the occupant of 1819 SW Cheyenne who complained about a strong odor outside the house. This address is located approximately 630 feet from 1912 SW Arrowhead, where the service line damage occurred. Based on the wind direction that morning, this address was downwind of the damage site. KGS's records show that a serviceman had arrived at 1819 SW Cheyenne to investigate the odor complaint shortly before the house at 1905 SW Navajo exploded.

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[8] Reference email from Kansas One Call to Staff

[9] Response to Staff Data Request 4-1

[10] Response to Staff Data Request 13 -5

[11] City of Topeka Fire Department Report Case No. 2012-1471

[12] City of Topeka Fire Department Report

5. Summary of Timeline of Events Until Gas Flow is Shut off[13]

10:10 AM	N-Line damages and breaks natural gas service line to 1912 SW Arrowhead.
10:10 AM	N-Line places a phone call to a non-emergency phone number listed on the KGS locate flag and is placed on hold.
10:13 AM	[redacted]
10:30 AM	N-Line calls Kansas One Call, Inc. and receives instructions to contact the utility operator directly in the event of a damage to an underground utility.
10:34 AM	N-Line notifies KGS Call Center of a hit service line.
10:42 AM	KGS first responder notified by KGS Dispatch to respond to a dig-in call at 1912 SW Arrowhead.
11:03 AM	Serviceman arrives at 1912 SW Arrowhead.
11:03 AM	KGS Call Center notified of outdoor odor complaint by resident of 1819 Cheyenne.
11:10 AM	Appliance technician notices odor of natural gas in basement of 1905 SW Navajo and instructs occupant to notify the gas company.
11:12 AM	First responder serviceman calls Dispatch and Supervisor notifying of hit service line at 1912 SW Arrowhead, reports Class 1 leak and requests emergency locates.
11:13 AM	KGS Supervisor calls crew to respond to gas leak at 1912 SW Arrowhead.
11:16 AM	Serviceman #2 notified by dispatch of odor complaint at 1819 Cheyenne.
11:34 AM	Serviceman #2 arrives at 1819 Cheyenne.
11:35 AM	KGS Crew arrives to 1912 SW Arrowhead.
11:38 AM	Residence at 1905 SW Navajo explodes.
11:41 AM	KGS first responder Serviceman calls supervisor notifying of 1905 SW Navajo explosion.
11:45 AM	Serviceman #2 leaves 1819 Cheyenne and begins checking area with leak detection equipment.
4:47 PM	Gas flow to fire shut off by upstream stopple[14] on main.

Post Accident Investigation by KGS and Staff

Gas System Isolation

Following the house explosion, a KGS employee checked the surrounding homes and area using a Flame Ionization (FI) tool[15] to detect any flammable gas. At the time of this inspection, the

[13] Response to Staff Data Request 5 and State of Kansas Office of the Fire Marshal Supplemental Report of Activity Case No. 37917

[14] Expandable plug used to control gas flow by sealing inside a pipeline.

[15] An FI (Flame Ionization) unit continuously pulls in a sample of the air through a small hydrogen flame in the unit. These tools can sense a change in the hydrogen flame's size with the presence of only parts per million of combustible gas.

homes surrounding 1905 SW Navajo had already been evacuated by the Topeka Fire Department. Gas was detected around 1909 SW Navajo and gas concentrations readings up to 10% were taken using a CGI along the building's wall. No gas was detected inside the home. The gas concentrations near the home and inside the home were monitored by KGS throughout the Company's ensuing investigation to ensure that they remained nonhazardous. After the gas to the leak was shut off, an interceptor trench was dug around the backyard of this home in an attempt to vent the residual gas and block the migration path up to this home.

Immediately following the explosion, the KGS serviceman who initially responded to the odor complaint at 1819 Cheyenne also checked the sewer system for gas. The serviceman checked the sewer for gas by inserting a probe in the manhole cover located approximately 141 feet north of the damage site. No evidence of gas was indicated at that time.

KGS personnel analyzed the nearby gas system and the proximity of emergency valves to determine the best method of shutting off gas flow to the incident site. Rather than use emergency valves on the gas system to shut off service to 419 customers[16] during the cold weather, KGS decided to excavate the main in an accessible location upstream of the incident site and to use a stopple to shut off gas flow. A fitting was first welded on the main, the stopple was inserted, and the gas flow to the fire was declared under control at 4:47 p.m. - 4.6 hours after the explosion occurred. Using this approach, a total of 77 customers lost gas service.[17]

During the Company's investigation, KGS calculated that gas was escaping from the damaged pipeline at a rate of 7.64 MCFH.[18] Assuming this rate to be constant, 11.3 MSCF[19] was released underground during the 88 minutes between the time of damage and the house explosion. An additional 54.17 MSCF was released underground between the time of the explosion and the gas flow being shut off approximately 4.6 hours later.

The main was then excavated and sections of pipe were removed both upstream and downstream of the incident site to isolate the section of main for further investigation. KGS then pressure tested the section of main upstream from the incident site and downstream from the "stopple" for 1 hour, using normal operating pressure. No indication of leakage was observed.[20] A bypass around the isolated section of main was then installed and the system downstream of the explosion site was pressure/flow tested for 30 minutes with results showing a leak of 1 cubic feet/hour at system operating pressure. This small amount of leakage was deemed to be an acceptable safety risk by KGS and Staff. At that point, the line was leak surveyed with no leaks detected and the relight process was begun. Service to all customers was restored except five homes served from the isolated section of main.

Underground Migration Path of Gas Investigation

With the help of personnel from the City of Topeka, an investigation of a pathway between the isolated section of gas main and the adjacent sewer main was performed in an effort to establish

[16] Staff's analysis of Response to Data Request 2.
[17] DR 2
[18] DR 6-4
[19] MSCF is the industry acronym of thousand standard cubic feet of gas measured at 14.7 psi and 60°F.
[20] DR 6

a path of migration from the leak site to the basement at 1905 SW Navajo. For this purpose, a sewer camera was inserted into the sewer manhole north of the damage site. No cracks or integrity flaws in the sewer tiles were observed; however, several of the tap locations had large roots growing through the joints in the pipe where the sewer lateral connected to the main. Further investigation into the involvement of the sewer system was performed by placing the camera inside the sewer main for the purpose of watching for evidence of smoke from a smoke bomb (typically used to check for leaks in sewer systems) which was placed into the isolated section of gas main. Once the smoke bomb was lit and inserted into the isolated section of the *gas* main, the smoke was forced through the pipe using compressed air. The sewer camera filmed the test while moving up and down the *sewer* main. The film from the camera in the sewer showed smoke throughout a large length of the *sewer* main in the areas between the tap for 1905 SW Navajo south and that of the tap for 1909 SW Navajo, a distance of over 111 feet. This test indicates to Staff that the sanitary sewer system was a potential path of gas migration from the *gas* main to 1905 SW Navajo, the site of the explosion.

A follow-up investigation was conducted on February 9, 2012, – ten days after the explosion – to determine if any additional potential pathways could be found to explain the migration of gas from the leaking gas main to the basement of 1905 SW Navajo. For this purpose, a flexible camera was inserted into the sewer lateral in the basement of the structure towards the main. The tap location measurement on the main was confirmed and no cracks or anomalies were noted in the sewer lateral line. Based on the camera footage, it appears that all of the drain locations discovered inside the residence tied into the main sewer drain/lateral. Gas concentration readings were taken through bar-holes with a CGI around the incident site. Although it was ten days after the gas source had been removed, varying concentrations of gas were discovered throughout the backyard of 1905 SW Navajo, between the gas service tap, to 1912 SW Arrowhead and the foundation of 1905 SW Navajo. Bar-holes were drilled in the foundation of the home and residual concentrations of gas up to 39% gas were also discovered. Although the sanitary sewer appears to have been a pathway for gas migration into 1905 SW Navajo, the widespread concentration of gas in the soil throughout the back yard of 1905 SW Navajo indicates to Staff the possibility of multiple pathways of the gas migration. Most likely, the migrating gas plume traveled along the extensive tree roots found in the area.

Excavation of Leak Site

After the initial test of the main for a gas migration pathway, the service tap to the main was excavated. As soil was removed from this area, it became evident that the service line was physically separated from the main by a distance of several inches. (See Staff's Exhibits 8 and 9 attached hereto). Further excavation revealed the service line had been pulled out of the mechanical fitting connecting it to the main, leaving a 1/2-inch diameter opening from the gas main into the soil. The nut and the rubber gasket on the mechanical fitting were both still in place and free of damage. The service line was then tested at operating pressure with no indication of leakage -- even at the kink in the pipe where contact with the excavation equipment had been made. Following the removal of a section of the main, the remaining two sections of isolated main were pressure tested to system operating pressure. No indication of leakage was found and the pressure held for 1 hour.

Rear Utility Easements, Valve Placement, and Emergency Response

As noted earlier, the natural gas main in this residential neighborhood is located in a rear utility easement. In this case, the utility easement also includes the sanitary sewer, telecommunications lines and facilities, and overhead electric power equipment. Not only is the easement somewhat congested underground, but it also includes the typical backyard fencing and vegetation that restrict access to the site. After the explosion occurred at 1905 SW Navajo, Staff notes the gas continued to flow through the leak for an additional 4.6 hours while KGS modified its distribution system in order to shut off the gas in a manner which would disrupt service to only the bare minimum number of customers. This approach was taken because the use of available shut off valves would have disrupted gas service to a large number of customers. At the time of the incident, gas concentrations were being monitored in the vicinity of the explosion, and given the cold weather, this approach to shutting off the gas flow appeared reasonable. Of concern to Staff, however, is the fact that the migration path investigation mentioned above demonstrated a direct connection for gas migration between the gas main and the sanitary sewer system. If a significant amount of gas had entered the sanitary sewer system, a 4.6 hour delay in controlling the flow of gas could have led to multiple incidents in the area.

ANALYSIS:

Requirements of KUUDPA Relative to this Incident

Regarding this incident, Staff concludes there are three KUUDPA requirements that are relevant to this report. The following paragraphs describe the requirements and provide Staff's findings related to each requirement.

K.S.A. 2011 Supp. 66-1804(a): Except in the case of an emergency, an excavator shall serve notice of intent of excavation at least two full working days, but not more than 15 calendar days before the scheduled excavation start date, on each operator having underground tier 1 facilities located in the proposed area of excavation.

K.S.A. 2011 Supp. 66-1804(c): The notice of intent to excavate or any subsequent updates shall be valid for 15 calendar days after the excavation start date and such notice shall only describe an area in which the proposed excavation reasonably can be completed within the 15 calendar days.

KUUDPA requires any excavator to request locates prior to begin excavating. In order to allow the utility sufficient time to provide locates during normal working hours, the excavator is required to wait two working days prior to excavating.[21] After waiting the prescribed time period, the excavator is provided with a 15 calendar day window in which to complete the proposed excavation. If more time is needed, the excavator is required to request an additional locate to be performed. The purpose of the 15 calendar day excavating window is to provide maximum visibility of the flags and paint used to mark the location of the underground utilities.

[21] K.S.A. 66-1802(v) defines "working day" as every day, Monday through Friday beginning at 12:01 a.m., except for the following officially recognized holidays: New Year 's Day, Memorial day, Independence day, Labor day, Thanksgiving day, the day after Thanksgiving, and Christmas.

Related to this incident, Staff determined the locate request made by N-Line had expired on January 25, 2012, four days before the damage occurred. N-Line requested utility locates from Kansas One-Call on January 6, 2012, for the purpose of installing a lawn sprinkler system at 1912 SW Arrowhead in Topeka, KS. The excavator noted that the work to begin date was January 11, 2012. See Staff's Exhibit 10, attached hereto, which is a copy of the locate request with relevant information underlined by Staff. According to documents obtained during the investigation, KGS located the service line to this address on January 10, 2012.[22] The gas service line was located using both flags and paint from the fence in the utility easement to the home's meter at the building wall. The main was not located as it was on the other side of the backyard fence, therefore outside of the ticket's scope.

Staff issued a Notice of Probable Noncompliance to N-Line regarding the Company's excavation activities beyond the statutory 15 day window. See the Notice of Probable Noncompliance and N-Line's *confidential* response, attached to this report as "Appendix 1." In its response, N-Line points out [redacted]. Because Staff confirmed the service line was visible at the crossing points, Staff concludes the fact that this locate ticket was out of date did not contribute to the cause of the explosion.

K.S.A. 2011 Supp. 66-1810: Contact with or damage to facility; procedure, notification requirements.

When any contact with or damage to any underground facility occurs, the operator shall be informed immediately by the excavator. Upon receiving such notice, the operator immediately shall dispatch personnel to the location to provide necessary temporary or permanent repair of the damage. If the protective covering of an electrical line is penetrated or dangerous gases or fluids are escaping from a broken line, the excavator *immediately shall inform emergency personnel* of the municipality in which such electrical short or broken line is located and take any other action as may be reasonably necessary to protect persons and property and to minimize hazards until arrival of the operator's personnel or emergency first responders. (Emphasis added).

Upon damaging the gas line, N-Line personnel realized the line was leaking because of the gas odor. Records support N-Line's assertion that personnel immediately began to attempt to contact KGS. However, at no time during the course of the events leading up to the point when KGS personnel arrived on the scene - 53 minutes after the damage occurred - did N-Line contact the City of Topeka emergency responders.

Staff issued a Notice of Probable Noncompliance to N-Line regarding this violation. In its response, N-Line notes [redacted]. The response does not address the fact that N-Line did not call City of Topeka emergency responders, but it notes [redacted]

[22] Response to Staff Data Request 10

[redacted]

It is evident to Staff that neither the N-Line personnel nor the KGS first responder assumed the gas odor in the air was anything more than the result of damage to the service line at the point of contact with the excavation equipment. A gas leak from a small diameter opening venting directly into open air at 35 psi of pressure realistically would not present a significant threat to the safety of the surrounding houses. However, the service line at the point of contact, though damaged, was not leaking while the leak from the gas main, underground and directly over the sewer main, was a serious safety threat. Because the potential safety threat from a leaking gas line is often unknown, KUUDPA requires all excavators to immediately contact municipal emergency responders when there is evidence that dangerous gases are escaping from a broken line. The fact that gas odor was readily detectible throughout the area and the statement from N-Line personnel to KGS emergency dispatch that a line was leaking demonstrates that N-Line was aware of the escaping natural gas. It is unknown how N-Line's failure to contact the City of Topeka emergency responders affected the outcome of this incident. We note, however, that it has been Staff's experience that a call placed to 9-1-1 serves the purpose of notifying fire departments of a gas leak, and in turn, serves the purpose of notifying the gas operator through a subsequent call from the fire department dispatch to the gas operator.

K.S.A. 2011 Supp. 66-1809: Excavator's duty to exercise reasonable care.

(a) Upon receiving information as provided in K.S.A. 2011 Supp. 66-1806, and amendments thereto, an excavator shall exercise such reasonable care as may be necessary for the protection of any underground facility in and near the construction area when working in close proximity to any such underground facility.[23]
(b) An excavator using a trenchless excavation technique shall meet minimum operating guidelines as prescribed in rules and regulations developed and adopted by the state corporation commission in support of this act.

In Staff's Notice of Probable Noncompliance issued to N-Line, Staff alleged the Company did not use reasonable care while excavating and that the use of a vibratory plow was a trenchless excavation technique. In its response, N-Line disagreed with Staff's contention and explained why a vibratory plow should not be considered trenchless excavation. In its response, N-Line described the steps taken to avoid damaging the gas service line which meets the definition of reasonable care stated in KUUDPA.[24] N-Line's explanation of its operation of the vibratory plow also indicates to Staff that N-Line was not performing a trenchless excavation in this case. Therefore, after reviewing N-Line's response on these concerns, Staff has closed the Notices of Probable Noncompliance as related to K.S.A. 2011 Supp. 66-1809 and K.A.R. 82-14-2.

[23] K.S.A. 2011 Supplement – Revisor's Note: "Citation to "68-1806" in section in hardbound volume should be "66-1806."
[24] See K.A.R. 82-14-1(n) definition of reasonable care.

Civil Penalties against Excavator

Pursuant to K.S.A. 66-1812, any person who violates any provisions of the KUUDPA, shall be subject to civil penalties and injunctive relief as set out in K.S.A. 66-1,151, and amendments thereto, and any remedies established in rules and regulations promulgated by the Corporation Commission. K.S.A. 66-1,151 provides that any person who violates any KUUDPA rule or regulation adopted by the Commission shall be subject to a civil penalty not to exceed $25,000 for each violation for each day that the violation persists. The maximum civil penalty shall not exceed $1,000,000 for any related series of violations. It has been Staff's policy to recommend civil penalties for KUUDPA violations based on the foreknowledge of the violator and the consequences of his actions. In past cases where the consequences of the violation result in significant property damage or a death, Staff has recommended a maximum civil penalty of $25,000 for each violation, as allowed by K.S.A. 66-1,151.

With regard to N-Line, Staff notes that N-Line violated two KUUDPA regulations adopted by the Commission. First, N-Line violated K.S.A. 2011 Supp. 66-1804(a) when the company conducted excavation activities more than 15 calendar days after notification of the intent to excavate. In this case, N-line notified One Call of the intent to excavate on January 10, 2012 but did not complete the excavation on or before January 25, 2012. As noted in this report, the damage occurred to the KGS service line on January 30, 2012. Typically, Staff recommends a civil assessment in cases where a damage occurs and a locate ticket has not been requested. In this case, a locate had been requested and the markings were visible at the time of Staff's investigation of the scene. Likewise, Staff has determined that N-Line had actually pot-holed (exposed the service line) prior to excavating in the area of the service line, which serves the purpose of the markings. Therefore, Staff does not recommend a civil penalty for this violation.

Next, N-Line violated K.S.A. 2011 Supp. 66-1810 when N-Line failed to contact 9-1-1 after causing damage to the KGS service line. However, Staff's investigation revealed that N-Line attempted to alert KGS immediately after the damage occurred and that KGS trained personnel were on the scene 35 minutes before the explosion. Staff also notes that N-Line is a small company with limited means to pay a large fine, a consideration permitted pursuant to K.S.A. 66-1,152. Therefore, Staff recommends a $5,000 civil penalty be assessed to N-Line for failure to call emergency personnel immediately upon damaging an underground facility resulting in a gas leak as required by K.S.A. 2011 Supp. 66-1810.

Requirements of Kansas Pipeline Safety Regulations Relative to this Incident

Regarding this incident, Staff determined there are three requirements of pipeline safety regulations related to the operator's (KGS) response to an emergency that are relevant to this report. The following paragraphs describe the requirements and provide Staff's findings regarding the requirements.

49 C.F.R Part 192.605(a) as adopted by K.A.R. 82-11-4: General.
Each operator shall prepare and follow for each pipeline, a manual of written procedures for conducting operations and maintenance activities and for emergency response.

49 C.F.R Part §192.615(a) as adopted by K.A.R. 82-11-4: Emergency plans.
Each operator shall establish written procedures to minimize the hazard resulting from a gas pipeline emergency. At a minimum, the procedures must provide for the following:
(a)(3) Prompt and effective response to a notice of each type of emergency, including (i) Gas detected inside or near a building.
(a)(5) Actions directed toward protecting people first and then property.

49 C.F.R Part §192.615(b)(2) as adopted by K.A.R. 82-11-4:
Each operator shall train the appropriate operating personnel to assure that they are knowledgeable of the emergency procedures and verify that the training is effective.

Kansas pipeline safety regulations nearly mirror the federal safety regulations found in 49 C.F.R Part 192. These regulations require operators, such as KGS, to develop and follow a manual of written procedures for conducting all operations and maintenance actions taken on its pipeline facilities. In addition to routine activities, the regulations require operators to establish company procedures governing its employee's response to emergencies.[25] Because each pipeline operator may have operating circumstances unique to its pipeline system, the regulations do not prescribe specific actions that must be taken, but instead provide minimum requirements that must be incorporated into the operator's unique procedures. In the case of emergency response, pipeline safety regulations require the operator to develop plans that specifically address effective response to *each type*[26] of emergency that can be anticipated with priority given to protecting people first and then property from potential fire or explosions.

Related to this incident, Staff reviewed KGS's written procedures for emergency response and leak investigation as found in sections 1901, 1710, and 1730 of the KGS Operations and Maintenance Plan. (See Appendix 2, attached hereto). Staff asserts that KGS's procedures dealing with emergency response are not effective in providing sufficient directives to its first responders as they fail to emphasize the priority of protecting people from the potential dangers of gas leaks related to excavator damage to underground pipelines. While the KGS Emergency Plan recites the code requirements listed in 49 C.F.R. 192.615(a) as objectives, the Company's procedures fails to provide specifics on *how* to implement the objectives.

Staff issued three Notices of Probable Noncompliance to KGS regarding this matter. Staff also issued Notices of Amendment[27] to KGS requesting they formally consider modifying their procedures in answer to Staff's concerns. The Notices of Probable Noncompliance, Notices of Amendment, and KGS's responses to each are attached to this report as Appendix 3. In its response, KGS disagrees with Staff's position and states that KGS emergency procedures place priority on protecting life and that the KGS emergency first responder took appropriate action for the circumstances he faced in the time he had before the explosion.

[25] 49 C.F.R. Part 192.615, as adopted by K.A.R. 82-11-4

[26] 49 C.F.R. Part 192.615(a)(3) , as adopted by K.A.R. 82-11-4

[27] A Notice of Amendment is a formal request from Staff to the pipeline operator to modify its procedures to address a concern by Staff. The operator is requested to provide a response explaining why the procedure modification is not needed or providing a copy of the modified procedure for Staff's review.

After review of KGS's responses to the Notice of Probable Noncompliance, Staff concludes KGS personnel did not take sufficient steps to protect public safety in the 35 minutes prior to the explosion. The notable steps *not taken* by the KGS emergency first responder are as follows:

- The perimeter of houses adjacent to the leak site, (1905 SW Navajo, 1909 SW Navajo, 1906 SW Arrowhead, and 1918 SW Arrowhead) were not checked for the presence of gas prior to the explosion.[28]
- The boundaries of the leak in the direction of the house at 1905 SW Navajo were not determined, as the first responder's leak investigation stopped at the property line of 1912 SW Arrowhead.[29]
- KGS staff made no attempt to contact occupants of any of the properties adjacent to 1912 SW Arrowhead to alert them to the presence of the gas leak and to inquire if they smelled gas inside their homes prior to the explosion.

Staff further concludes that KGS's procedures did not provide sufficient direction to its personnel on the scene. Staff's outline of the essential parts from the KGS Emergency Plan at issue is listed below with emphasis added for those parts that require a decision to be made by the KGS first responder on the scene of a potential emergency.

- Safety: The primary concern during any emergency shall be to *protect life and property* for the general public and employees. Any action needed to achieve this concern shall be the primary objective of all employees at the emergency site.[30]
- A major emergency is defined as any situation involving company facilities or *operations which endanger human life or property.*[31]
- All employees responding to a potential emergency situation shall consider during the initial investigation and subsequent course of action, at a minimum, the following steps in the order shown:
    - *Protection of the public from possible injury.*
    - *Protection of company personnel and others conducting the investigation.*
    - *Protection of property from possible damage.*
    - *Eliminating or making safe the source of gas leakage or other condition which led to the emergency situation.*[32]
- The following actions shall be initiated as required and are appropriate when the first employee arrives at the scene.

[28] Response to Staff Data Request 13

[29] Response to Staff Data Request 13

[30] See page 2, section 1901 of Appendix 2, attached hereto.

[31] *Id.*

[32] See page 5, section 1901 of Appendix 2, attached hereto.

- If a building is *involved in a fire*, turn the gas to the premises off - if it is possible to do so without endangering the employee.
- If the source of leakage is *readily apparent* and danger to lives or property is *imminent*, employees shall respond in accordance with the following:
- Stop the flow of gas by closing a valve or squeezing off the line. Do not endanger yourself or others in attempting to shut off the flow of gas if it *cannot be done safely*...
- If the leakage is creating a *hazardous condition* and cannot be located and/or immediately brought under control, the section of piping involved shall be removed from service.
- Inform level III personnel of the situation as soon as possible.
- *If possible*, correct the situation. *If it is not possible* with only one person, request assistance and wait until management determines how the emergency situation should be corrected.
- If the emergency *situation warrants*, request local police or fire department assistance.
- If the nature of the emergency *is gas leakage on a customer's facility*, the investigation shall be made in accordance with the procedures set forth in Gas Construction Standard 1700 — Leak Control.[33]

Each of the italicized phrases noted above require an independent decision to be made at the potential emergency scene by the KGS emergency first responder. While the procedures state the objectives for a general emergency response, the procedures do not offer any guidelines on how the responder should go about making those decisions. A procedure can be defined as 'a step-by-step method followed to assure a result is achieved.' Simply listing objectives and a series of decisions to be made on the scene does not represent an adequate procedure.

In its response to Staff's Notice of Amendment for the KGS procedure required by 49 C.F.R. 192.605(b)(14), as amended by K.A.R. 82-11-4(y), KGS points out that the initial determination of the response to be taken depends on the judgment of the responder and the correct response must be determined on an incident-by-incident basis. This approach implies to Staff that an emergency procedure necessarily must be a high level and uncomplicated document. Generally, Staff agrees with this approach but points out that 49 C.F.R Part 192.615(a)(3), as adopted by K.A.R. 82-11-4, requires emergency procedures that provide for prompt and effective response to a notice of *each* type of emergency that is encountered. While Staff agrees that KGS can not anticipate every type of emergency that may occur, we also point out that excavator damage causing multiple leaks on a gas system is a relatively common occurrence that historically has had catastrophic consequences. So much so that the Pipeline and Hazardous Materials Safety Administration (PHMSA) issued an Advisory Bulletin to request pipeline operators to ensure their emergency plans address such a scenario. (See Staff's Exhibit 11, attached hereto for a copy of the PHMSA Advisory Bulletin). There is no indication that KGS modified its Emergency Plan after the publication of this Bulletin, but relied on the existing plan to address PHMSA's

[33] See page 6, section 1901 of Appendix 2, attached hereto.

concerns.[34] Staff concludes that KGS has a high-level conceptual emergency response plan that does not provide enough specificity to direct its first responders to check for gas migration to other structures.

Another approach to adding guidelines to a high-level plan is to provide training for emergency responders that address specific situations. In fact, training emergency responders on the use of the Emergency Plan is a requirement of pipeline safety regulations.[35] With this in mind, Staff reviewed KGS training materials for its emergency responders and leak investigators. For the materials provided in response to data requests, Staff found no training record that would indicate the scenarios discussed in the aforementioned Advisory Bulletin were discussed with KGS first responders. It appears the annual training on the Emergency Plan for the Topeka area consisted of reviewing the KGS Emergency Plan[36] with no guidance provided to a first responder as to how to make the necessary decisions outlined above. Additionally, in reviewing lesson plans for operator qualification of leak surveyors, Staff could find only two references directed toward investigating for leaks on adjacent property.[37] Again, there was no record that the likelihood of gas migrating to adjacent houses was discussed during the training sessions. Likewise, the training records Staff reviewed contained extensive documentation on how to properly use gas detection instruments but minimal - if any - information on how to prioritize emergency response activities.

Civil Penalties against Gas Operator

As a result of the investigation, Staff asserts that KGS is in violation of 49 C.F.R Part 192.615(a)(3), 49 C.F.R Part 192.615(a)(5), and 49 C.F.R Part 192.615(b)(2), as adopted by K.A.R. 82-11-4. Staff notes these three requirements are interdependent and are the result of KGS not having an effective emergency plan. Specifically, Staff asserts the KGS Emergency Plan has not adequately addressed the emergency scenario where excavator damage results in multiple leaks. Because of the ineffective emergency plan, Staff asserts the KGS training program does not provide guidance to the KGS emergency first responders on which steps to use when investigating a gas leak to assure the safety of all structures adjacent to the suspected leak. An ineffective Emergency Plan in this regard is a violation of the three above cited interrelated pipeline safety requirements. After taking into account all of the facts gathered in this investigation, the nature of the pipeline safety violations, and the consequences of the violations, Staff determined that a $25,000 baseline civil assessment is an appropriate penalty for the single violation of not having an effective emergency plan. However, Staff considers the actions taken by KGS's emergency responder in assuring the safety of the residence at 1912 SW Arrowhead and the unknown location of the leaking pipeline to be mitigating factors in calculating a civil assessment. Therefore, Staff is recommending the Commission assess a civil penalty of $15,000 to KGS.

Further, Staff recommends the Commission order KGS to amend its Emergency Plan found in Section 1901 of its Operations and Maintenance Manual to specifically address the steps to be

[34] Response to Staff Data Request 18

[35] 49 C.F.R Part 192.615(b)(2)

[36] Response to Staff Data Request 16

[37] Response to Staff Data Request 17 Attachment A

taken to protect life and property when investigating the possibility of multiple leaks caused by excavator damage. Additionally, Staff recommends KGS be ordered to provide training to its emergency responders on specific steps to be taken in order to prioritize the protection of public safety. Such steps should include investigating for gas concentrations near all houses adjacent to an excavation damage.

RECOMMENDATION:

Staff concludes this incident is the result of N-Line damaging a KGS service line with excavation equipment. Unknown to N-Line or KGS first responders, the service line was pulled out of a compression fitting service tap resulting in a large underground gas leak. N-Line's failure to call the City of Topeka emergency responders resulted in no assistance from the Topeka Fire Department in protecting life and property prior to the explosion. It also resulted in delaying KGS's response by 25 minutes. KGS's failure to consider the possibility of gas migrating to adjacent structures as part of its emergency response resulted in an additional delay in protecting life and property from the gas leak prior to the explosion. Recognizing the extensive migration of gas due to this damage, Staff is unable to determine if prompt action by both parties would have averted the subsequent explosion, fire and loss of life.

As discussed in detail previously, Staff recommends the following:

N-Line Civil Penalty

As a result of this investigation, Staff asserts N-Line violated K.S.A. 2011 Supp. 66-1810 when it failed to contact 9-1-1 after causing damage to the KGS service line. Therefore, Staff recommends a $5,000 civil penalty be assessed to N-Line for failure to call emergency personnel immediately upon damaging an underground facility resulting in a gas leak as required by K.S.A. 2011 Supp. 66-1810.

KGS Civil Penalty

As a result of the investigation, Staff asserts the KGS' Emergency Plan has not adequately addressed the emergency scenario where excavator damage results in multiple leaks. Because of the ineffective emergency plan, the KGS training program also does not provide guidance to the KGS emergency first responders on which steps to use when investigating a gas leak to assure the safety of all structures adjacent to the suspected leak. An ineffective Emergency Plan in this regard results in violations of 49 C.F.R Part 192.615(a)(3), 49 C.F.R Part 192.615(a)(5), and 49 C.F.R Part 192.615(b)(2), as adopted by K.A.R. 82-11-4. Therefore, Staff is recommending the Commission assess a civil penalty of $15,000 to KGS.

KGS to Amend its Emergency Response Procedures and Training Program

Staff recommends the Commission order KGS to amend its Emergency Plan found in Section 1901 of its Operations and Maintenance Manual to specifically address the steps to be taken to protect life and property when investigating the possibility of multiple leaks caused by excavator damage. Additionally, Staff recommends KGS be ordered to provide training to its emergency responders on specific steps to be taken in order to prioritize the protection of public safety.

Such steps should include investigating for gas concentrations near all houses adjacent to an excavation damage.

KGS to Identify areas of Steel Mains installed above Sewer Mains and Consider Additional Valve Placement for Quicker Isolation during an Emergency

Staff recommends the Commission order KGS to analyze its distribution system and identify areas on its maps where steel mains are installed in the rear easement above the sewer main. Staff further recommends the Commission urge KGS to analyze these systems for valve placement and consider the installation of additional valves to more quickly isolate sections of the system during an emergency.

cc: Patrice Petersen-Klein, Executive Director
Jeff McClanahan, Director of Utilities

EXHIBITS

EXHIBIT 1

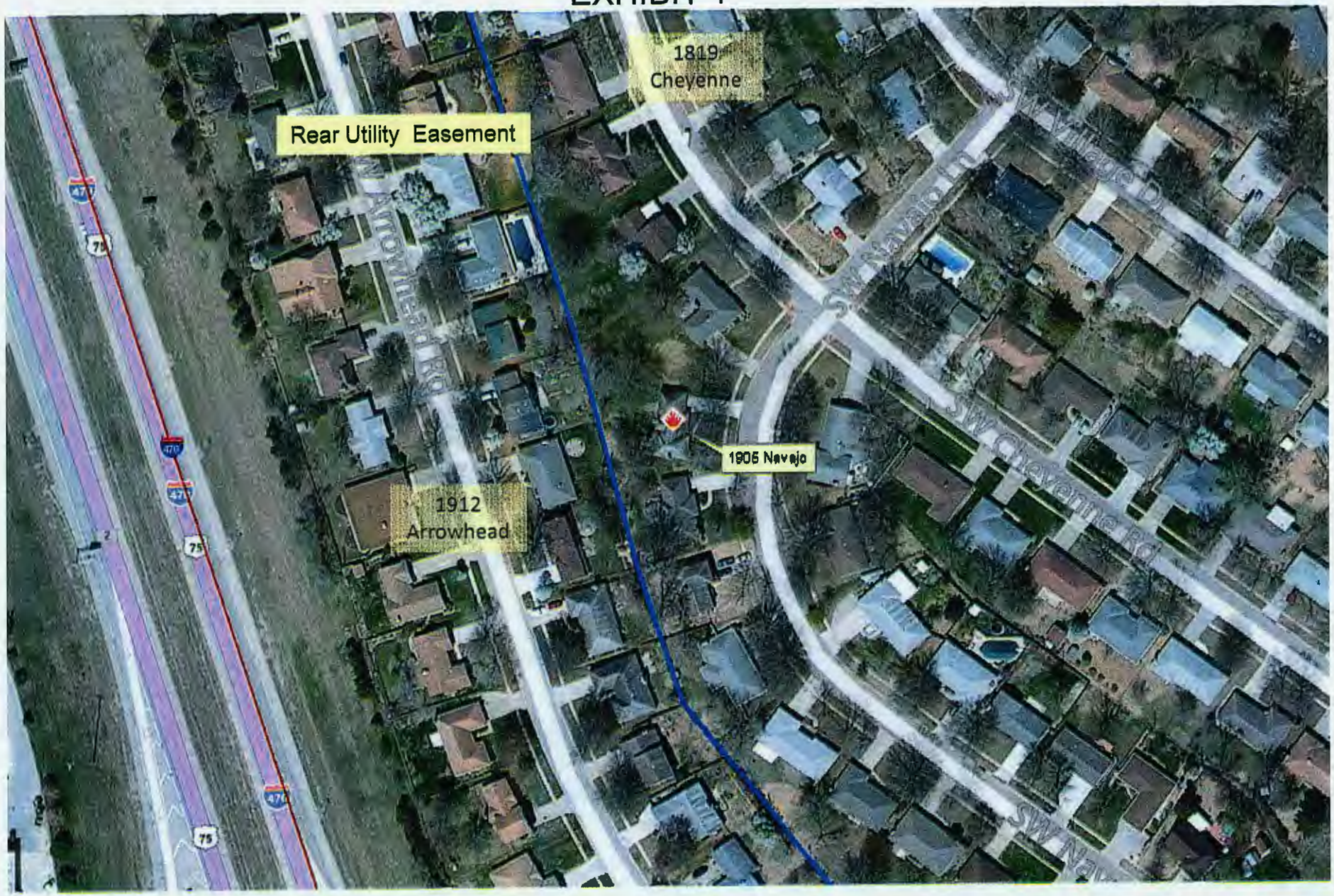
Rear Utility Easement
1819
Cheyenne
1912
Arrowhead
1905 Navajo
SW Arrowhead Rd
SW Navajo Ln
SW Cheyenne Rd
SW Village Dr
470
75

EXHIBIT 2
Schematic of Compression Fitting

Tighten Nut or Follower
– Crush Gasket Against Pipe

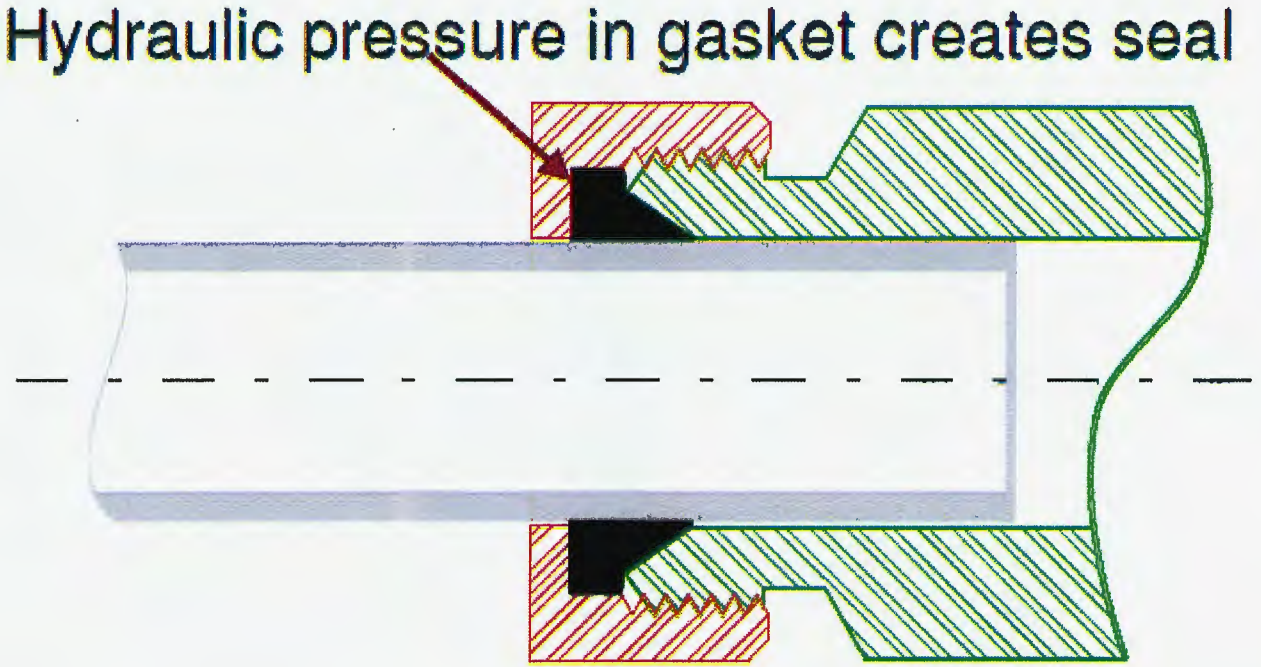

EXHIBIT 3
Aerial Photo of Scene Immediately after Explosion

EXHIBIT 4


"Pot-Holes" where sprinkler line
To cross gas service line
Locate marks for gas service line

EXHIBIT 5
Service Line Damage Caused by Vibratory Plow

EXHIBIT 6
Service Line After Removal from Ground

EXHIBIT 7

Flag Used to Mark Location of Buried Gas Lines

EXHIBIT 8

Service Line Pulled out of Compression Fitting

EXHIBIT 9
Service Line Pulled from Compression Fitting

RETURN

Kansas One Call

Ticket No:	12006700	STANDARD	
Original Call Date:	01/06/12 10:38 am	**Op:**	ksward
Work to Begin Date:	01/11/12 12:01 am	**Op:**	ksward

Caller Information

Company Name:	N-LINE LAWN SERVICE	**Fax Phone:**	
Contact Name:	GLEN NIEHUES	**Phone:**	(785)866-2757
Alt. Contact:	GLENS CELL	**Alt. Phone:**	(785)364-5923
Caller Address:	355 X RD WETMORE, KS 66550		
Contact Email:	GETNLINE@JBNTELCO.COM		

Dig Site Information

Type of Work: INSTALLING LAWN SPRINKLER SYSTEM

Explosives: N **Duration:** ABOUT 2 DAYS **Trenchless Excav:** N

Work Being Done For: JIM DANIEL

Dig Site Location

County:	SHAWNEE	**Place:**	TOPEKA
Address:	1912		
Street:	SW ARROWHEAD ROAD		
Intersecting Street:	SW 20TH		

Location of Work:

MARK THE ENTIRE LOT.

Remarks:

Map Twp: 12S **Rng:** 15E **Sect-Qtr:** 4-SW

Map Coord NW Lat: 39.0330132 **Lon:** -95.7544127 **SE Lat:** 39.0326278 **Lon:** -95.7537547

MEMBER INFORMATION:

KANSAS ONE-CALL WILL NOTIFY THE FOLLOWING UNDERGROUND FACILITY OPERATOR(S):

District	Company Name	Business Hours	After Hours
ATT302	ATT DISTRIBUTION	(866)861-7678	
KANGAS79	KANSAS GAS SERVICE	(800)778-9140	
KPL54	WESTAR ENERGY	(800)778-9140	
TOPEKA01	CITY OF TOPEKA	(785)368-3111	

Popup Google Map

Advisory Bulletin ADB-01-02

May 16, 2001

[Notices][Page 28027]

DEPARTMENT OF TRANSPORTATION

Research and Special Programs Administration

Pipeline Safety: Emergency Plans and Procedures for Responding to Multiple Gas Leaks and Migration of Gas Into Buildings

AGENCY: Research and Special Programs Administration (RSPA), DOT.

ACTION: Notice; issuance of an advisory bulletin.

SUMMARY: The Office of Pipeline Safety (OPS) is issuing this advisory to owners and operators of gas pipeline distribution systems. Owners and operators should review their emergency plans and procedures to determine whether the procedures prompt the appropriate actions for gas leaks caused by excavation damage near buildings, and whether the procedures adequately address the possibility of multiple leaks and the underground migration of gas into nearby buildings.

FOR FURTHER INFORMATION CONTACT: Marvin Fell, (202) 366-6205, or by e-mail, marvin.fell@rspa.dot.gov. This document can be viewed at the OPS home page at http://ops.dot.gov.

SUPPLEMENTARY INFORMATION:

I. Background

On January 22, 1999, while excavating a trench behind a building in the downtown area of Bridgeport, Alabama, a backhoe operator damaged a natural gas service line. This resulted in two leaks on the natural gas service line, which was operating at a pressure of 35 pounds per square inch (psig). One leak occurred where the backhoe bucket contacted the gas service line and pulled it aboveground. Although the second leak was not visible, the ensuing investigation revealed that the natural gas service line was separated at an underground joint near the gas meter, and close to a building. As a result, natural gas migrated into the building. The gas ignited, destroying three downtown buildings in a two square block area. The incident resulted in four fatalities and five injuries.

The National Transportation Safety Board (NTSB) investigated this incident and determined that the probable cause of the accident was (1) the failure of the construction contractor to establish and follow safe procedures for excavation activities, resulting in damage to the \3/4\-inch steel natural gas service line and (2) the failure of the operator to provide appropriate emergency response to the subsequent natural gas leak.

The operator's written emergency procedures in effect at the time of the accident instructed service personnel to ``* * * evaluate the extent of the emergency, request assistance as needed, and to inform the manager if necessary.'' However, the procedures did not instruct employees responding to a reported leak to consider the possibility of multiple leaks, check for gas accumulation in nearby buildings, and, if necessary, take steps to promptly stop the flow of gas.

II. Advisory Bulletin (ADB-01-02)

To: Owners and Operators of Gas Distribution Systems.

Subject: Emergency Plans and Procedures for Responding to Multiple Gas Leaks and Migration of Gas into Buildings

Purpose: To advise owners and operators of gas distribution pipeline systems to review their emergency plans and procedures to determine whether the procedures prompt the appropriate actions for gas leaks caused by excavation damage near buildings, and whether the procedures adequately address the possibility of multiple leaks and the underground migration of gas into nearby buildings.

Advisory: Owners and operators of gas distribution systems should ensure that their emergency plans and procedures require employees who respond to gas leaks to consider the possibility of multiple leaks, to check for gas accumulation in nearby buildings, and, if necessary, to take steps to promptly stop the flow of gas. These procedures should be communicated to both employee and contractor personnel who are responsible for emergency response to pipeline incidents.

Issued in Washington, DC on May 16, 2001.

Jeffrey D. Wiese,

Manager, Program Development, Office of Pipeline Safety.

[FR Doc. 01-12717 Filed 5-18-01; 8:45 am]

BILLING CODE 4910-60-P

APPENDIX 1

CONFIDENTIAL AND REDACTED

APPENDIX 2

Emergency Plan			
Subject:	Emergency Plan	Effective Date:	Aug 1, 2011
		Superseded Date:	Mar 14, 2011

TABLE OF CONTENTS

Emergency Plan			
Subject:	Emergency Plan	Effective Date:	Aug 1, 2011
		Superseded Date:	Mar 14, 2011

SCOPE

Description This standard describes the procedures for taking action to prevent and minimize injuries and property damage in an emergency situation.

APPLICABLE CODES AND REGULATIONS

Regulations This standard meets the requirements of the Federal, Kansas, and Oklahoma Pipeline Safety Regulations of:

- 49 CFR: Part 192.615

GENERAL

Safety The primary concern during any emergency shall be to protect life and property for the general public and employees. Any action needed to achieve this concern shall be the primary objective of all employees at the emergency site.

Incident

(1) An event that involves a release of gas from a pipeline that results in one or more of the following consequences:

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

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

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

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

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

Major Emergency A major emergency is defined as any situation involving company facilities or operations which endanger human life or property, or which have an unplanned effect on normal service to customers. A major emergency may include, but is not limited to, the following:

- An Abnormal Operating Condition (AOC) that threatens the operation of the distribution or transmission system; or public safety;

- Loss of service to customers due to an unplanned outage of 50 or more customers;
- An Abnormal Operating Condition resulting from a tornado, major flood, or other outside force.

Causes The cause of an emergency may be, but is not limited to, the following:

- Failure of gas facilities;
- Man-made disturbances, such as contractor excavation;
- Natural disasters, such as floods, tornadoes, or earthquakes, etc.;
- Vandalism or enemy or terrorist attack; and
- Operator error.

Plan Access All levels of supervision shall have access to this plan and shall be familiar with its contents. Operating areas may access lists of emergency equipment, manpower, and materials on ONEOK online (click about us, KGS, Manuals, KGS Emergency Plan) or utilize lists from local files. These lists will provide general guidance, even though they may not be complete and listed items may not be currently available.

Personnel Levels of personnel referenced throughout these procedures are as follows:

- Level I: hourly and/or the first responder.
- Level II: supervisor (hourly personnel report directly to this person).
- Level III: director or operations manager.

Annual Review Each local operating area shall review and update this plan as necessary. Such review shall be made at minimum of once each calendar year but at intervals not exceeding 15 months. The review by each local operating area shall include documenting that adequate vehicles, personnel, equipment, tools, and materials are available to adequately respond to emergencies on their in-service facilities.

Annual Training of Employees Annual training of employees related to emergency response shall be documented on a training verification form. The original form shall be sent to the training department, at the KGS division office and a copy of the form shall be retained in the local operating area office.

NOTIFICATION

Notifications Notifications of possible emergency situations are handled as follows:

- Personnel (employees or representatives of the company) receiving emergency calls shall obtain the information necessary to assess the type of emergency and determine the appropriate response. In the event the person reporting the emergency does not have or refuses to provide the required information, this fact shall be recorded on the gas trouble order. All pertinent information shall be recorded on this form.

Information Center Calls

Emergency calls received by the company information centers shall be handled as follows:

- After receiving an emergency call and obtaining the necessary information, the person receiving the call shall complete the gas trouble order and electronically transmit it to the appropriate dispatching area.
- Once the order has been transmitted the information center employee shall then call the dispatch center to verify that the order has been received.

Local Calls

Emergency calls received directly by local operating personnel shall be handled as follows:

- The employee shall obtain the necessary information and record it on the gas trouble order. Local operating supervision shall be notified and will determine the type of responsive action to be taken. Dispatching will enter the gas trouble order into the system to ensure tracking and retention.
- Gas trouble orders shall be retained for a minimum of seven years.

Field Notification

Each local operating area shall handle emergency notifications in accordance with the following guidelines:

- After receiving a notification, the person receiving the notification shall notify the appropriate Level II personnel.
- An appropriate qualified employee shall be dispatched to the scene of a possible emergency to investigate and confirm the emergency. If the situation is confirmed an actual emergency situation, corporate notifications are to be made.

Corporate Notification

Appropriate corporate personnel shall be notified in accordance with Exhibit 1 of all incidents and major emergencies as defined in the General section above.

- Level III personnel shall be responsible for ensuring that gas dispatch Overland Park (for distribution) or gas control Overland Park (for transmission) is notified of all emergencies which meet any of the following conditions and making other department notifications as necessary.

- ♦ Transmission: Transmission system, gathering system, compressor stations, or any emergency call received, regardless of the nature.
- ♦ Distribution: Emergencies as described above and/or extensive news media coverage.

➢ Gas dispatch or gas control Overland Park shall be responsible for notifying the appropriate company departments and personnel in accordance with the gas incident calling tree. See Exhibit 1.

➢ Gas engineering shall be responsible for notifications to federal and state agencies, when necessary, and other department notification(s) as deemed necessary.

➢ The claims department shall be notified by local field operations. See Exhibit 1.

➢ In addition, telephone notification to the regional vice president and the claims department shall be made of any fatality fires, or fires with significant media coverage and/or property damage.

Customer Notification

Notify the customers affected by the emergency as follows:

➢ Pipeline suppliers and power plants, which are fed directly from the transmission system, shall be notified by gas control Overland Park, Ks.

➢ All other customers, including main line industrial, rural domestic, irrigation, or lease customers who are fed from the transmission system and all distribution system customers shall be notified by local operating area personnel.

INVESTIGATION

Plan

Each local operating area shall establish a communications plan to assure appropriate manpower and equipment can be summoned to respond to an emergency.

Responding

All employees responding to a potential emergency situation shall consider during the initial investigation and subsequent course of action, at a minimum, the following steps in the order shown:

➢ Protection of the public from possible injury.

➢ Protection of company personnel and others conducting the investigation.

➢ Protection of property from possible damage.

- Eliminating or making safe the source of gas leakage or other condition which led to the emergency situation.

Response to Mass Odor Calls

At times odors are released into the atmosphere causing an abnormal number of leak calls. To ensure that resulting leak calls are properly handled refer to the investigation procedures for odor releases located in standard 1730 Leak Investigations.

First Responder

The following actions shall be initiated as required and appropriate when the first employee arrives at the scene.

- If a building is involved in a fire, turn the gas to the premises off if it is possible to do so without endangering the employee.
- Upon first entry into a building, sample the atmosphere with the CGI set on the explosive range to determine if a hazard exists. If a hazardous condition is detected, the following actions shall be taken immediately:
  - Evacuate all occupants immediately.
  - Shut off the gas supply to the building.
  - Eliminate all sources of ignition.
  - If practical, ventilate by opening doors and windows.
  - Establish a restricted zone.
  - Remove vault, manhole, and valve box covers, as appropriate.
  - Vent any escaping subsurface gas directly to the atmosphere by digging over the point of leakage where the gas is entering the building, if appropriate.

Life & Property

If the source of leakage is readily apparent and danger to lives or property is imminent, employees shall respond in accordance with the following:

- Stop the flow of gas by closing a valve or squeezing off the line. Do not endanger yourself or others in attempting to shut off the flow of gas if it cannot be done safely. Under no circumstances shall an employee enter an excavation to stop the flow of gas without a responsible person (such as another employee or firefighter) present. If the leakage is creating a hazardous condition and cannot be located and/or immediately brought under control, the section of piping involved shall be removed from service.

- Inform level III personnel of the situation as soon as possible. Level III personnel shall inform either gas dispatch (distribution) or gas control (transmission) in Overland Park of the situation as soon as appropriate and keep them apprised of developments.
- If possible, correct the situation. If it is not possible with only one person, request assistance and wait until management determines how the emergency situation should be corrected.
- Make note of pertinent information for future reference and records, such as people involved, time sequence of events, etc.

Assistance If the emergency situation warrants, request local police or fire department assistance. Usually, dispatch will make arrangements for this assistance. If such officials are already present, the employee shall identify himself or herself to these agencies.

Customer Facility If the nature of the emergency is gas leakage on a customer's facility, the investigation shall be made in accordance with the procedures set forth in gas Construction Standard 1700 – Leak Control.

No Emergency If the investigation reveals that the situation does not meet the definition of an emergency, the leakage shall be classified and repaired in accordance with Gas Construction Standard 1700 – Leak Control.

REPORTING

Notification Level II personnel shall inform local management of any major incident as soon as possible after receiving sufficient information about the occurrence.

Two Hours **Government agencies must be notified of an incident within two hours** after the company is first made aware of the incident. For that reason, it is vital that information from local operating area supervisory personnel is reported as quickly and accurately as possible. If necessary, notification(s) shall be made before all information is available to give to gas dispatch or gas control in Overland Park, with additional information forwarded as it becomes available.

- Each local operating area shall establish and maintain open lines of communication between all levels of supervision to achieve prompt reporting.
- See Exhibits 4 & 5 for federal and state requirements for reporting.

Written Report Incidents requiring a telephone report to state or federal agencies also require that **a written report be submitted to the gas engineering department within 10 days** following the incident. That report may be forwarded to the legal department for further action. Level III personnel shall ensure that the following forms and responsibilities are completed and forwarded as appropriate:

- DOT Forms: Distribution F7100.1
  Transmission F7100.2
- Kansas and Oklahoma: Same as DOT.

- See exhibits for a description of requirements for reporting of incidents to federal and state agencies.

- Level III personnel shall notify gas dispatch or gas control in Overland Park, promptly of each incident that is reportable to federal or state agencies.

In the event subsequent investigation indicates an incident is not an emergency situation, but is a "spectacular or newsworthy" occurrence or may infer liability, level III personnel shall notify gas dispatch or gas control in Overland Park as soon as possible.

If there is ever a doubt about the need to report an incident, report it to gas dispatch or gas control who will then report to gas engineering for a determination if an incident situation exists.

POST-INCIDENT REVIEW

Review Meeting

Following each reportable incident or major emergency as defined in the General section above, a review shall be conducted in accordance with Gas Construction Standards Section 1800 – Investigation of Failures:

- Within one week of an incident;
- Soon after the completion of the response to a major emergency.

This review shall be conducted in accordance with, but not be limited to, the following guidelines:

- A review meeting shall be conducted by the local operating area office to review the response to the incident or major emergency, including the particular steps taken, and identification of any actions that could have been taken to improve the response.

- During the meeting, the local operating area shall verify that this standard was properly complied with. In the event it is determined some portions of this standard were not properly complied with, the local operating area shall initiate further training of employees to better acquaint them with the provisions of this standard and to ensure full compliance in future emergency situations.

- Review incidents that must be reported pursuant to 49 CFR part 191 to determine if control room actions contributed to the event and, if so, correct, where necessary, deficiencies related to:

  (i) Controller fatigue;

  (ii) Field equipment;

  (iii) The operation of any relief device;

  (iv) Procedures;

  (v) SCADA system configuration; and

  (vi) SCADA system performance.

- Include lessons learned from the operator's experience in the training program required by this section and in the control room training program.

Documentation

The local operating area shall develop documentation of the meeting including, but not limited to, the following guidelines:

- The time and date of the review meeting.
- Hourly, level II and level III personnel in attendance.
- A general recap of the discussion occurring at the meeting, including what conclusions were reached and what actions will be taken to improve response to emergencies.
- Minutes of the meeting shall be taken and a typed report shall be forwarded to the gas engineering department. A copy of the report shall be maintained in the local operating area office.
- Any training of employees related to emergency response shall be documented on a training verification form. The original form shall be sent to the training department, at the KGS division office and a copy of the form shall be retained in the local operating area office.

LEVEL III RESPONSIBILITIES

Coordination

Level III personnel shall be responsible for general supervision and coordination during all field operations of an emergency situation including, but not limited to, the following:

- Assignments and duties for all level II personnel (supervisors).
- Final decisions on curtailment, essential valve operation, regulator control, and evacuation of structures.
- Notifying fire and police departments.
- Reporting incidents to gas dispatch or gas control in Overland Park as soon as possible in accordance with provisions of this plan.
- Reporting incidents to the next higher level of management as soon as practical.
- Contacting local public officials when necessary.
- The release of information to the news media in accordance with this plan.
- Making arrangements through appropriate corporate level management for assistance from other local operating areas for manpower and equipment, when necessary.
- The investigation, in accordance with this plan.

Review

Level III personnel also shall be responsible for reviewing and updating the emergency plan, as appropriate and providing training on the plan for their local operating area, in accordance with the following:

- All level II personnel (supervisors) shall have access to the plan.
- Each local operating area shall conduct meetings with supervisory personnel to discuss and update the emergency plan at least once each calendar year at intervals not exceeding fifteen (15) months.
- Annual training shall be provided to all operating personnel to ensure they are familiar with operating procedures dealing with the investigation and handling of gas emergencies.

FUNCTIONAL RESPONSIBILITIES

Pipeline Controller

The pipeline controller is responsible for monitoring and controlling the flow of natural gas to ensure daily receipt and delivery requirements are met within pipeline safety and tariff standards while optimizing compression equipment usage and maintaining safe operations during normal, abnormal and emergency operating conditions. This includes, but is not limited to:

- SEE - See the problem which can be an alarm condition on the SCADA System or a series of events that is observed which could lead to a possible problem.
- CALL - Immediately notify the appropriate field personnel.
- FIX – Fix the problem. The pipeline controller has the authority to take whatever steps are necessary to protect the customers and maintain the integrity of the pipeline system.
- REPORT – Report information to the pipeline control room supervisor or appropriate designee.
- Monitor and control the operation of the pipeline system from pipeline control room using the SCADA system and responding to critical alarms to maintain system integrity.
- Monitor and control gas pressures necessary for system operations, and respond accordingly to maintain MAOP compliance in accordance with the company's O & M Plan.
- Direct operations personnel to perform any necessary adjustments to the overall pipeline system, including start-up or shut-down of compression, to maintain system pressures at normal levels and to ensure that compression facilities continue to operate in a safe and reliable manner.
- Coordinate routine pipeline maintenance (i.e. reducing pressure for pigging operation, leak repair, line replacement, etc.) by shutting-off or re-routing gas flows as needed, while maintaining other system pressures and system integrity.
- Operate the pipeline system in accordance with the DOT Operator Qualification requirements established by the company.

- Monitor gas quality for compliance within approved parameters; take appropriate corrective action whenever these parameters are not met.
- Respond to abnormal operating conditions. Take appropriate action to restore the pipeline system to normal operations, maintain MAOP limits and continuation of service.
- Assist emergency response personnel to ensure the pipeline system is safe. Assistance may be required to shut-down compression, raise or lower pressure set-points or re-route gas flows as ordered.
- Communicating with inter-connecting pipelines, company personnel, or other affected third-parties regarding issues pertaining to abnormal pipeline operations or emergency-related event.

Construction/ Maintenance

C&M personnel are responsible for determining the manpower needed to handle emergencies related to construction and maintenance activity. If additional assistance is needed, level III personnel shall be informed and shall make appropriate arrangements for additional assistance, as follows:

- Perform investigative functions as well as performing repairs, system shutdown, etc. All personnel within the department shall be familiar with requirements of this standard relating to investigation and notification.
- Maintain sufficient vehicles, personnel, equipment, tools, and materials to adequately respond to an emergency situation.
- Be responsible for furnishing main and service locations and purging operations during emergency situations.

I&S Personnel

I & S personnel shall determine the manpower required to handle investigative, leak response, and turn-on/turn-off procedures during an emergency situation. If additional manpower is required from other departments or other local operating areas, level III personnel shall be so informed and shall make arrangements for additional assistance, tools, equipment, etc., as follows:

- In many cases, field service and installation and service personnel will be the first company employees to arrive on the scene of an emergency and therefore all departmental personnel shall be familiar with the investigation and notification requirements of this standard.
- The field services and installation and service personnel shall maintain sufficient vehicles, personnel, equipment, tools, and materials to respond to an emergency situation.

Engineering & Pressure Measurement

Level II and III personnel who handle engineering and pressure and measurement personnel shall be responsible for determining what valves and regulators may need to be operated when reducing, isolating, shutting off, or turning on the pressure in a system, as follows:

- Determine what companies and industries should be curtailed in an emergency situation, and shall be responsible for notifying these customers. An appropriate business development representative may assist in notification of customers.

- Be responsible for locating essential valves.

- Be responsible for determining the manpower required to operate valves and regulators. If additional assistance is required to operate valves and regulators, level III personnel shall be notified and shall make arrangements for assistance as appropriate.

Valves/Maps Lists of essential valves records, and system maps (either paper or electronic), and other piping system records shall be maintained at each local distribution operating area office and records will be available for use during emergency situations.

The transmission office shall determine which transmission valves, regulators, compressors, etc., will be operated during an emergency, and shall notify transmission gas control, which will coordinate the operation of such facilities.

The transmission office shall maintain valve schematics, including main line valves, town border stations, and compressor stations and shall make them available during an emergency situation.

Customer Service Each local operating area shall be responsible for determining and providing the clerical manpower needs to organize the turn-on/turn-off process and request the appropriate computer printouts to assist with the emergency situation.

Meals Each local operating area is responsible for assisting in making arrangements for meals and other requirements for employees, both at the emergency control center and in the field.

Business Development These personnel are responsible for handling contacts and making calls to curtailable customers as deemed necessary by the engineering and pressure & measurement departments, and shall provide other assistance as appropriate to all other departments during an emergency situation.

Claims These personnel are responsible for dealing with injury or damage claims resulting from emergency-type conditions, and shall be contacted any time such situations develop.

Transmission These personnel have the following responsibilities:

- The notification of customers regarding an emergency involving the company's transmission system.

- When an emergency occurs on the transmission system which may affect service to a distribution system, the transmission office shall contact the appropriate distribution system personnel.

Emergency Plan			
Subject:	Emergency Plan	Effective Date:	Aug 1, 2011
		Superseded Date:	Mar 14, 2011

KGS EMERGENCY RESPONSE GUIDANCE FOR CONSTRUCTION CONTRACTORS

Any time construction work results in an unintentional release of gas, the abnormal operating condition will be immediately assessed for proper response. The contractor shall keep all personnel a safe distance from the hazard and immediately contact KGS for emergency response by KGS employees. Emergency response can be performed by the contractor, with KGS approval, if the responding contractor employees have been trained at a KGS Fire School, are equipped with proper firefighting equipment, and are wearing proper fire retardant clothing and fresh air breathing equipment.

CORPORATE COMMUNICATIONS

Spokesperson

The corporate communications department shall serve as the official spokesperson for the company. All questions, information, and press releases shall be issued through and answered by this department to assure consistent information is provided to all the media. Additional responsibilities include the following:

- Once an emergency situation is announced to local media, reporters or other media representatives may begin calling the local operating area for information. Direct all media inquiries to the communications department.

- Appropriate level III personnel shall provide immediate notification to corporate communications of any major supply problem or system malfunction that may result in a number of customers losing pressure or service. These departments must be furnished with all available information and kept updated as the situation progresses.

  - Notification of corporate communications shall include the appropriate personnel within each operating territory. Corporate communications shall provide gas dispatch or gas control in Overland Park, with the names and telephone numbers of appropriate personnel within each operating territory.

- If the emergency situation is so significant that it is going to last for an extended period of time and a corporate communications representative can be sent to the scene before it is over, one shall be assigned as soon as possible to handle all local news media inquiries and interviews.

  - If a corporate communications representative is on the scene prior to the situation being declared all-clear, that representative shall notify media of the all-clear announcement.

- If an emergency situation occurs shortly before a local radio or television station has a newscast, a live or taped interview may be requested. If a corporate communications representative is not available, level III personnel may conduct the interview if time allows and only if so directed by corporate communications. In that situation, the local media should be asked to arrange for an interview at the local operating area office where the next higher level of management is located.

Leakage Control			
Subject:	Leak Classification	Effective Date:	Sep 19, 2011
		Superseded Date:	Jan 30, 2009

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Leakage Control			
Subject:	Leak Classification	Effective Date:	Sep 19, 2011
		Superseded Date:	Jan 30, 2009

SCOPE

Description This standard describes the proper procedures for conducting distribution system leakage classifications on the company's natural gas systems.

APPLICABLE CODES AND REGULATIONS

Regulations This standard meets the requirements of the Pipeline Safety Regulations of:

- Kansas KAR 82-11-4(bb);
- Oklahoma 192.723 or (applicable company standards).

DEFINITIONS

Adverse Soil Condition Any soil condition that could be reasonably expected to change the ability of a gas leak to vent to the atmosphere or cause gas to migrate underground. An example of an adverse soil condition would be the frozen moisture in the ground.

Branch Service Line A branch service line is defined as a service line extending onto private property serving two adjacent or adjoining residential or small commercial customers with only a single meter at each meter set.

Carbon Monoxide Carbon monoxide (CO) is a colorless, odorless, highly- poisonous gas produced by incomplete combustion.

CFH An abbreviation for the flow rate of natural gas in cubic feet per hour.

Confined Space A confined space means any subsurface structure, such as a vault, tunnel, catch basin or manhole, of sufficient size to accommodate a person and in which gas could accumulate.

Distribution Main Means a pipeline other than a gathering or transmission line that serves as a common source of supply for more than one service line.

Distribution System A distribution system consists of connected mains and services supplied from town border stations, town regulator stations, and district regulator stations to supply individual customers. It includes all piping to the meter outlet or the connection to customer's piping, whichever is further downstream.

Leakage Control			
Subject:	Leak Classification	Effective Date:	Sep 19, 2011
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Farm Tap A farm tap is a service connection to a high-pressure line, and usually is located in a rural or outlying area. A farm tap service often includes an odorizer, a first and second cut regulator, and meter near the connection to the main.

Fuel Line The piping installed by the customer, which is the interior piping within the structure and/or the piping extending from one structure to another or structure to an appliance.

Gas-Associated Structure A gas-associated structure is a device or gas facility such as a valve box, vault, test box, or vented casing pipe which is not intended for storing, transmitting, or distributing gas.

Lower Explosive Limit (LEL) The lower explosive limit is the lowest percentage concentration of natural gas in a mixture with air that can be ignited at normal ambient atmospheric temperatures and pressures. Typically, the LEL is regarded as 4.5% percent gas.

Master Meter System A pipeline system for distributing gas within, but not limited to, a definable area such as a mobile home park, housing project, or apartment complex, where the operator purchases metered gas from an outside source for resale through a gas distribution pipeline system. The master-meter system operator's gas distribution pipeline system supplies the ultimate consumer, who either purchases the gas directly through a meter or by other means, such as rents.

Public Buildings Public buildings are facilities, e.g. hospitals, schools -- which are regularly used for public gatherings and are served by natural gas or located within 50 feet of a natural gas facility.

Service Line The piping that delivers gas from a distribution or transmission main to the outlet of the meter or connection to customer's piping, whichever is further downstream.

Small Commercial Customer A commercial customer using 600 MCF/yr or less.

Small Substructure A small substructure is any subsurface structure, other than a gas-associated substructure, that is of insufficient size to accommodate a person and in which gas could accumulate. Examples include telephone, electrical ducts or conduit or non-associated valve and meter boxes.

Underground Leak Classification The process of sampling the subsurface atmosphere for gas using a combustible gas indicator in a series of available openings or barholes over, or adjacent to, the gas facility. If applicable, the sampling pattern shall include sample points that indicate sustained readings of 0% gas in air in the four cardinal directions.

Yard Line The buried, customer-owned piping between the outlet of the meter and the building wall.

Leakage Control			
Subject:	Leak Classification	Effective Date:	Sep 19, 2011
		Superseded Date:	Jan 30, 2009

LEAK CLASSIFICATION - GENERAL

Investigation/ Classification

All leaks shall be investigated and classified in accordance with the following:
(Note: For above ground leaks on company piping, see standard 1730 page 6)

- Any leak or odor reported by the general public, police, fire, or other authorities, or company personnel, any notification of damage to facilities by contractors or other outside sources shall be responded to and classified within **two hours** of notification when possible.
- Every leak is to be promptly and thoroughly investigated to determine the extent of the leak.
- Any leak considered hazardous shall be made safe. This shall include isolating, repairing, or venting, the leak or discontinuing service, whichever is appropriate.
- Service investigations, e.g., odor calls, leak investigation, high-bill complaints, etc. shall be completed either electronically or on gas trouble order form 12109.
- Each indication of a leak found by the mobile unit shall have its location logged on a mobile truck leak survey log, form 12163, by the leak survey specialist.
  - Indications of leaks identified by the mobile leak truck shall be investigated and classified. These indications require the same response that is given to customer calls.
- Each leak detected shall be evaluated and classified using a combustible gas indicator (CGI). Classification shall be in accordance with the guidelines set forth in this standard. Leak classifications shall be recorded electronically or on an appropriate leak investigation form.
- Below ground leaks being investigated shall be classified according to the following procedure: (Sustained readings obtained from the CGI shall be used for the leak classification.)
  - Observe the CGI reading while sampling.
  - For hand aspirated CGI's - continue pumping the bulb until the needle stabilizes (sustained reading). The sustained reading should be obtained after no more than eight aspirations.
  - Rangers provide peak and sustained readings in the bar hole mode.
  - Record the sustained reading and classify the leak according to the sustained reading only. All readings shall be designated as percent (%) gas-in-air.
- It is important to determine and document the full extent of a leak migration pattern during an underground leak investigation. The area of leakage shall be checked in a minimum of four directions until zero (0% GAS) readings are obtained. The area of leak migration is to be drawn on the reverse side of the leak investigation recheck form.

- Show, on the form being used, the area of leakage (with readings), the significant facilities such as streets, driveways, gas lines, sewer lines (including manholes), and water lines (including valve boxes) as well as structures in the immediate vicinity along with measurements from permanent landmarks.

- If there is no increase in the area of leakage from the original drawing on the leak investigation or leak recheck forms, indicate this by writing "No Change from the leak investigation form or "No Change from Last Recheck" in the drawing area with the date of the last check of the leak.

➢ If gas is found in sanitary sewers or ducts, further tests shall be made in both the manhole and as close as possible to the lateral openings into the manhole. This shall be accomplished by utilizing an extended CGI probe hose.

- Manhole and vault covers shall be cracked open prior to testing if the cover is solid. If the cover contains vent holes, these holes shall be used for test purposes.

- The true reading shall be the highest sustained reading in either the manhole or lateral.

➢ When a leak investigation is completed for a leak subsequently discovered to be on another company's facility, the leak shall be cleared by notifying in writing the other company, operator, or owner. A copy of the letter of notification shall be attached to the work report.

➢ If the combustible gas discovered is not from company facilities or another natural gas company's facility (e.g., sewer gas, landfill gas, private well gas, etc.), then the leak shall be cleared by notifying the property owner or customer in writing of the detection of a combustible gas at the location. A copy of the letter of notification shall be attached to the work report.

➢ Unless the "area of concern" of a repaired leak is cleared at the time of the repair, the leak shall remain active and require further appropriate actions based on its classification. If all indications of leakage are clear after the excavation has been filled, no further rechecks will be required.

- All checks of a repaired leak shall be made after the excavation has been filled.

- Clearing the "area of concern" upon repair of a leak shall include a complete check of the area.

- The results of such checks shall be indicated either electronically or on a leak investigation or leak recheck form.

Lowering Classification

A leak may be reclassified to a lower classification as a result of one of the following conditions:

- When venting of a class 1 leak is the immediate corrective action taken, the leak may be reclassified to a class 2 leak only.

- When venting of a class 1 leak is the immediate corrective action taken, when gas is detected entering the building, the leak shall be repaired within fifteen (15) days and rechecked daily until repairs are completed. The daily recheck shall be documented on the leak recheck drawing form.

  - Leaks of this nature, if not repaired within five (5) days, shall be reported to gas engineering, Topeka, Kansas.

Extension of Repair Time

An extension of the repair time schedule may be granted if conditions exist which make it impractical to comply with the repair schedule set forth in the classification requirements.

- Approval for repair extensions shall be obtained from the Kansas Corporation Commission or the Oklahoma Corporation Commission through the Manager Engineering Services, Topeka, Ks.

- Examples of conditions which may warrant such an extension include, but are not limited to, the following:

  - Leaks located under railroads, highways, or major thoroughfares.

  - Leaks located under bodies of water such as rivers, lakes, ponds, etc.

  - Leaks located in a segment of pipe that is scheduled for replacement in the near future.

Casing Leak Repair Time

For any sustained leak found in a vented casing that is not a class 1 leak, immediate corrective action for repair or replacement shall begin within 30 days of detection and shall be completed within six (6) months after detection.

LEAK CLASSIFICATION - KANSAS

The minimum requirements for classifying underground leaks located on any company-owned or maintained natural gas facilities in the **State of Kansas** shall be classified according to the following:

- **Class 1** – A leak that requires immediate repair or continuous action until the conditions are no longer hazardous. After conditions are no longer hazardous, a class 1 leak shall be replaced, repaired, or removed from service within five days of the operator being notified of its existence.

  - Any leak which, in judgment of the operation personnel at the scene, is regarded as an immediate hazard.

  - Any leak in which escaping gas has ignited.

- Indication that gas has migrated into or under a building or into a tunnel.
- Any sustained reading of gas at the outside wall of a building, or when there is a reading of gas where it is likely to migrate to an outside wall of a building.
- Any sustained reading of 4% gas in air or greater in a confined space. where gas could accumulate, such as a vault, tunnel, catch basin or manhole, of sufficient size to accommodate a person.
- Any sustained reading of 4% gas in air or greater in a small substructure, too small for a person to enter, such as a valve or meter box, telephone duct, electrical duct or conduit, from which gas would likely migrate to the outside wall of a building.
- Any leak that can be seen, heard, or felt, **and** which is in a location that may endanger the general public or property.

➢ **Class 2** - A leak that is non-hazardous at the time of detection but justifies scheduled repair based on probable future hazard. Class 2 leaks shall be repaired within six (6) months after detection. Under adverse soil conditions, a class 2 leak shall be monitored weekly to assure that the leak will not represent a probable hazard and that it reasonably can be expected to remain non-hazardous. A class 2 leak may include, but is not limited to, the following:

- Any sustained reading of 2% gas in air or greater under a sidewalk in a wall-to-wall paved area that does not qualify as a class 1 leak.
- Any sustained reading of 5% gas in air or greater under a street in a wall-to-wall paved area that has significant gas migration and does not qualify as a class 1 leak.
- Any sustained reading of less than 4% gas in air in any small substructure that is of insufficient size to accommodate a person and in which gas could accumulate, such as telephone and electrical ducts and conduit, or non-associated valve and meter boxes, from which gas would likely migrate creating a probable future hazard.
- Any sustained reading of between 1% gas in air and 4% gas in air in a confined space, such as a vault, tunnel, catch basin or manhole, of sufficient size to accommodate a person, and in which gas could accumulate.
- Any sustained reading on a pipeline operating at or above 30% Specified Minimum Yield Strength (SMYS) in a class 3 or 4 location, which does not qualify as a class 1 leak.
- Any sustained reading of 4% gas in air or greater in a gas associated substructure such as a valve box, vault, test box or vented casing pipe, which is not intended for storing, transmitting, or distributing natural gas.
- Any leak which, under adverse soil conditions would be likely to migrate to the outside wall of a building.

- Any leak which, in the judgment of operating personnel at the scene after a thorough investigation by operating personnel at the scene, is of sufficient magnitude to justify a scheduled repair.

- **For transmission or gathering pipe lines only**, any leak located within 100 feet of any structure (bridge, barn, house, etc.) or road.

➢ **Class 3** - A leak that is non-hazardous at the time of detection and can reasonably be expected to remain non-hazardous. Class 3 leaks shall be repaired or replaced within 30 months, of their classification date. Class 3 leaks may include, but are not limited to, the following.

- Anytime there is a sustained reading of less than 4% gas in air in a small gas associated substructure, such as a valve box, vault, test box or vented casing pipe, which is not intended for storing, transmitting or distributing natural gas.

- Anytime there is a sustained reading under a street in areas without wall-to-wall paving where it is unlikely the gas could migrate to the outside wall of a building.

- Anytime there is a sustained reading of less than 1% gas in air in a confined space, such as a vault, tunnel, catch basin or manhole, of sufficient size to accommodate a person and in which gas could accumulate.

➢ **Class 3 Rechecks** - Class 3 leaks shall be rechecked twice each calendar year, at intervals not to exceed 7-1/2 months from the date of the original classification. These leaks shall be considered scheduled rechecks. Subsequent rechecks of existing class 3 leaks shall be considered non-scheduled rechecks. Documentation of rechecks shall be on the leak recheck drawing form.

- Scheduled Rechecks - These rechecks require a thorough investigation of the existing leak the same as investigating a new leak and documented on the leak recheck drawing form.

- Unscheduled Rechecks - These rechecks require the same thorough investigation as scheduled rechecks. However, if it is determined to be an existing leak and remains a class 3 leak, it is not required to take measurements and draw a sketch. The date and "Non-Scheduled Recheck" shall be written on the form being used.

- When rechecking an existing leak, the previous leak sketch must be reviewed to confirm that it is an existing leak rather than a new leak, which has developed in the same vicinity.

- All rechecks of existing leaks that are the result of a leak or odor reported by the general public, police, or other authorities, must be investigated as a "Scheduled Recheck" including an update of all measurements and drawings.

LEAK CLASSIFICATION - OKLAHOMA

KANSAS GAS SERVICE
A DIVISION OF ONEOK

STD # 1730

Leakage Control			
Subject:	Leak Investigation and Survey Procedures	Effective Date:	Apr 30, 2010
		Superseded Date:	Jan 30, 2009

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Leakage Control			
Subject:	Leak Investigation and Survey Procedures	Effective Date:	Apr 30, 2010
		Superseded Date:	Jan 30, 2009

SCOPE

Description This standard describes the proper procedures for leak investigation on the company's natural gas facilities, including leak investigation of customer facilities and mobile leak truck and walking surveys.

APPLICABLE CODES AND REGULATIONS

Regulations This standard meets the requirements of the Federal, Kansas, and Oklahoma Pipeline Safety Regulations:

- 49 CFR: Part 192.723
- Kansas K.A.R. 82-11-4(dd)

LEAK INVESTIGATION PROCEDURES - CUSTOMER FACILITIES

Procedure Investigation of leaks on a customer's premises shall be in accordance with the following:

- Each leak reported on a customer's premise shall be promptly and thoroughly investigated to determine the extent of the leak. Any leak considered hazardous shall be made safe, which shall include isolating the leak or discontinuing service, whichever is appropriate.
- The investigation for gas leakage shall involve appropriate safe methods of leak detection, which may include, but are not limited to, the following:
  - House piping shut-in tests.
  - Combustible Gas Indicator (CGI) readings.
  - Flame Ionization (FI) detection.
  - Remote Methane Leak Detector (RMLD)
  - Soap-and-water tests.
  - Observation of brown grass spots, dead or dying shrubs or trees, bubbling water, or discoloration of the soil (vegetation survey).
  - Smell analysis. (Caution: Some soil and pipe conditions may remove the odor from natural gas.)
- All personnel investigating leaks shall be trained and familiar with the requirements of all applicable leak investigation procedures.

- Each person receiving leakage notifications is to be adequately trained to obtain and record the proper information electronically, by leak log, or using form 12109 gas trouble order. If the person reporting the leak does not have or refuses to provide all necessary information, that condition shall be recorded.

- A Gas Trouble Order form 12109, including all necessary information, shall be prepared for each leak being investigated if the electronic system is not available.

- Appropriate personnel shall then be dispatched to the location of the suspected leakage to thoroughly investigate the reported leak.

Inside Investigation

Investigation of suspected gas **in a building** shall be in accordance with the following:

- Turn on the combustible gas indicator (CGI), purge, and zero the instrument in a gas-free atmosphere.

- Upon first entry into the building, sample the atmosphere with the CGI set on the low scale to determine if a hazard exists. If no hazardous conditions are detected, further atmospheric checks need to be made only in the area of the reported leak. If a hazardous condition is detected, the following actions shall be taken **immediately**.

  - Occupants of the building shall be instructed to leave the building at once and directed to a safe location.

  - The local supervisor or dispatcher shall be notified of the situation immediately.

  - Sources of ignition shall be eliminated. Electrical appliances and lights shall not be operated.

  - The source of gas shall be shut off from the outside, if possible.

  - Doors and windows shall be opened after all sources of ignition have been eliminated.

  - The source of the escaping gas shall be determined.

  - Appropriate corrective action shall be taken. This shall be determined based on the location of the leak, and shall include repair, isolation of the leak, or discontinuing service, as appropriate.

  - Results of the test shall be recorded on the gas trouble order.

- Once it has been determined that a hazardous condition does not exist, a shut-in test of the building piping to determine the extent of the leakage shall be performed as follows:

- Turn off the pilot and burner valves on all appliances on the premises. Do not turn off the appliance main shut-off valves. If the pilot and burner valves on all appliances cannot be shut off, supervisory approval must be obtained before the gas will be left on.

- On inside meter settings, relight a small burner and observe the test dial of the meter to determine whether the meter is functioning. On outside meter settings, utilize the orifice tip and rubber stop with a #78 orifice installed in the outlet of the meter and observe the test dial. If the dial hand moves, the meter is operating properly. If the dial hand does not move, the meter is defective and will have to be replaced.

- With all burners turned off and the meter connected, conduct a shut-in test by carefully watching the test dial of the meter to determine whether gas is passing through the meter. This observation shall be made with the test hand on the upstroke. The test shall include all of the house piping with minimum test times as follows:

  For a 1/4- or 1/2-cubic-foot test dial, the minimum test time shall be 5 minutes.

  For a 1- or 2-cubic-foot test dial, the minimum test time shall be 10 minutes.

  For a 5-cubic-foot test dial, the minimum test time shall be 30 minutes.

  For a 10-cubic-foot test dial, the minimum test time shall be 35 minutes.

  The shut-in test shall be made at the delivery pressure to the customer.

  For rotary and turbine meters, and larger size positive displacement diaphragm meters as an option, the following method shall be used.

  Install a small-sized positive displacement meter between the bypass fittings with a minimum test of 15 minutes. Indicate use of check meter for shut-in test.

- Based on observations made during the shut-in test, determine the amount of leakage, if any, using the chart in exhibit 1 of this standard, or form 12062. Record the amount of leakage electronically or on the gas trouble order form 12109.

- **Note**: When dealing with elevated delivery pressures, remember that the test hands on a pressure-compensating index are not pressure compensated.

➢ If the shut-in test indicates leakage, an attempt shall be made to locate the source of leakage. Such an attempt shall be restricted to the appliances and exposed house piping. It is not intended that an extensive search be made inside the customer's building. Such an extensive search shall be restricted to special hardship cases and shall require supervisory approval.

- Additional inside checks using a CGI shall be made at the service entrances, sump pump cavity, sewer drains, and around any cracks in the foundation. If the meter loop is located inside, checks shall be made around the meter, including the regulator vent. If CGI readings are found at the service entrances, sump pump cavity, sewer drains, or foundation cracks, a supervisor or dispatcher shall be notified **immediately** since this could indicate leakage from facilities located outside the building.

➢ Using gas detection equipment, conduct a perimeter check completely around the structure where the gas leakage was reported. Additional checks are required over the service and yard lines of adjoining structures and the foundation walls nearest to the structure where the gas leakage was reported.

- When leakage is found, the investigation shall continue in all directions until the limits of the leakage are established.

➢ When a perimeter check is not appropriate, leak investigation shall continue until the leak migration pattern is identified.

Fuel Line Leakage

For existing structures, when leakage is discovered on equipment or fuel lines owned by the customer, response shall be in accordance with the following:

When the leakage is less than two cubic feet per hour and is not considered hazardous, the gas may be left on at the discretion of local supervision.

- The customer shall be informed of the leakage and instructed to have repairs made.
- The amount of leakage shall be noted on the meter order.

➢ When the leakage is less than two cubic feet per hour but may endanger life or property and cannot safely be isolated or reduced due to the type and location of the leak, the gas supply to the meter shall be shut off and the meter sealed.

- The customer shall be informed of the situation and advised that the gas will be left off until proper repairs have been completed.
- The amount of leakage shall be noted on the meter order.

➢ When the leakage is two cubic feet per hour or more and cannot safely be isolated or reduced, the gas supply to the meter shall be shut off and the meter sealed.

- The customer shall be informed of the situation and advised that the gas will be left off until proper repairs have been completed.
- The amount of leakage shall be noted on the meter order.

- When the leakage is two cubic feet per hour or more and is not considered hazardous, the gas may be left on with local supervisory approval.
  - The customer shall be informed of the situation and advised that the gas will be left on and that proper repairs should be completed.
  - The amount of leakage shall be noted on the meter order.
- Each meter, which has been shut off and sealed, shall be entered into the customers account for further monitoring. In addition, the message "meter shut off due to ___ cu. ft. /hr. leak" shall also be entered.
  - The customer shall be informed that they must notify the company when the problem has been corrected in order for service to be restored.
- All restoration of discontinued services shall be made in accordance with the guidelines established in company standards.
  - In cities and towns requiring a city inspection, the inspection shall be made prior to the company reinstating service.
  - Only company personnel shall be authorized to remove the seal from the meter and restore service.
  - Service may be restored any time there are qualified personnel on duty.
- There shall be no charge to the customer for restoring gas service, which has been shut off due to leakage or fire. Appropriate charges shall be made when turning on gas, which has been shut off for the customer's convenience.

Leakage on Company Equipment or Piping

When leakage is discovered on company equipment and piping, response shall be in accordance with the following:

- Suspected leakage on company equipment and piping shall be thoroughly investigated. Particular attention shall be given to the service entrance and any hollow walls through which the service piping passes.
- Any leakage that is located on exposed company piping or equipment and can be reasonably repaired or replaced by the serviceperson shall be repaired by the serviceperson.
  - Proper notation shall be recorded on the gas trouble order to indicate where the leak was located and what was required to accomplish the repair.

- Non-hazardous leaks that can be eliminated by lubrication, adjustment, or tightening shall not be included in the local operating area's leak inventory and shall not be counted as a repaired leak.

➢ If the nature of the leak is such that the employee cannot reasonably repair it, the leak shall be classified on work report form 12129 and repaired in accordance with Gas Construction Standard 1710 - Leak Classification.

- If a hazardous condition exists in the serviceperson's opinion, a supervisor or dispatcher shall be notified immediately. In addition, the serviceperson shall take appropriate steps to make the leak safe or remain at the leak location until proper personnel arrive to relieve him. Proper notation shall be made on the gas trouble order to document the situation. A work report form 12129 shall be completed classifying the leak.

Odor Investigation

When odors are detected, response shall be in accordance with the following:

➢ Each report of odor shall be thoroughly investigated to determine whether or not a gas leak is present. If the source of the odor can be determined, it shall be indicated on the gas trouble order.

Mass Odor Investigation

Leak orders may originate because of odors on or near a customer's premise that are not an actual leak. These odors may be from excess odorant in the system, odorant spills, or include odors from sources such as factories, refineries creosote, gasoline, or sewer gases. These types of odorant releases may generate a large number of leak calls in a short period of time.

When the condition has been identified and it is determined that an odor release has occurred the following procedure shall be used to handle the call volume generated from the odor release.

On the field order document that the modified leak procedure was used. This will make a permanent record in the customer service system.

➢ For meters that are located inside or outside the premise with the customer home do the following:

- Upon entry check the atmosphere with a CGI on the LEL scale.
- If no gas is found upon entry using the CGI check all gas fired appliances, the service entrance, sump pump cavity, sewer drains, and around any cracks in the foundation.
- If the meter is located inside check the meter loop, meter, and regulator vent for leakage.

- Check the furnace and water heater flue pipes to ensure they are connected properly.
- Use gas detection equipment at the riser, service entrance and ten feet either side of the service entrance and over the service tap.
- If any leakage is found proceed with normal leak investigation procedures.

➢ For outside meters with the customer not home do the following:

- Using gas detection equipment check for gas at the riser, service entrance, and completely around the perimeter of the building if access is possible.
- Time the meter if possible. Observe the test hand for one minute. If one minute check indicates no leakage or less than two cubic feet per hour in excess of pilots or gaslights the gas will be left on. If there is no movement of the test hand then crack open the outlet side of the meter to ensure the meter is working properly.
- If indications of leakage are greater than the normal usage of pilots or a gaslight and the two cubic feet per hour from the test hand supervision shall be notified to make a decision whether to leave the gas on or seal the meter. During cold weather if turning off the gas is necessary consideration should be give to turning off the water as well.
- If any leakage is found proceed with normal leak investigation procedures.

➢ For inside meters with the customer not home do the following:

- Using gas detection equipment, check for presence of gas at the riser, service entrance, and completely around the perimeter of the building if possible.
- During the perimeter check, check for indications of gas at cracks in the foundation, around windows, around door jams, or other openings where gas could be venting to the atmosphere.

If any leakage is found proceed with normal leak investigation procedures.

Fumes/Customer Headaches

When fumes or customer headaches are detected, response shall be in accordance with the following:

➢ All leak investigations, which encounter fumes or customer complaints of headaches, burning eyes, or nausea, shall be thoroughly investigated.

- The presence of these fumes may indicate carbon monoxide or the movement of raw gas through the flame zone of an appliance.

- Tests shall include a complete check with a CGI inside and a CGI or FI outside the premises, a check for the presence of carbon monoxide using a carbon monoxide detector, and a meter shut-in test, where appropriate.
  - In addition, all gas appliances shall be checked for proper adjustment, proper installation including make-up air, proper flue conditions, and the possibility of a heat exchanger being faulty.
- The results of all tests shall be recorded on the gas trouble order.

Customer Not Home

When the customer is not at home, response shall be in accordance with the following:

- All reported leaks inside a building where entry cannot be gained shall be promptly reported to the local office. The local supervisor shall determine if the gas supply is to be shut off, based on information provided by investigating personnel. One of the following methods shall be used when it is necessary to turn off the gas.
  - If the gas meter is inside, the gas shall be shut off at the curb. If no curb stop exists, a supervisor shall be contacted for further instructions.
  - If the gas meter is outside, the gas shall be shut off at the meter stopcock and the outlet connection of the meter sealed.
- Checks shall be made at the meter riser or pipe entry into the structure if the meter is located inside. Additional checks shall be made over the service line or buried customer fuel line and around the perimeter of the foundation.
  - If leakage is indicated close to the building, a supervisor shall be contacted for further instructions.
- The gas trouble order shall be completed as fully as possible. The results of all tests shall be recorded, along with the notation "customer not home", and any course of action taken.
  - In addition, leave a Customer Not Home - Left Note Notice, form 12140, indicating the action taken.

Outside Leak Investigation

When investigating gas outside a building in response to a leak call, response shall be in accordance with the following:

- Investigation of an outside leak on a customer's premise is different than an investigation, which concerns inside leakage. An outside leak may or may not require a shut-in test.

- Gas detection equipment (such as a CGI, RMLD, or FI) shall be used to conduct tests at the following locations, as a minimum:
  - Check over the approximate location of the service line or yard line entrance to the building. This test may be made by using either a flame ionization unit or by using a bar hole and CGI unit. If there is an indication of gas when the flame ionization unit is used, further investigation shall be made using a CGI and bar holes. If a bar hole is used, a test shall be made at the inlet and outlet risers and should be no closer than 8" to the riser.
  - Check over the service line at the property line and main location. This test may be made by using either a flame ionization unit or by using a bar hole and CGI unit. If there is an indication of gas when the flame ionization unit is used, further investigation shall be made using a CGI and bar holes.
  - Make a perimeter check completely around the structure where the gas leakage was reported, using gas detection equipment. Additional checks shall be made over the service and yard lines of the adjoining structures and the foundation walls nearest to the structure where the gas leakage was reported.
    - When leakage is found, the investigation shall continue in all directions until the limits of the leakage are established.
    - Perimeter checks normally apply only to residential areas. Investigation of leakage on wall-to-wall structures shall be conducted on an individual basis.
    - In such instances, the investigation shall continue in all directions until the limits of the leakage are established.
- Any leakage found on the customer's buried fuel line shall require a shut-in test regardless of whether the leakage is indicated through dead vegetation, discolored soil or through the use of a combustible gas indicator.
  - The shut-in test shall be conducted in accordance with this standard. Any action taken shall be in accordance with this standard.
- Any leakage found on the service line, yard line, or main shall be classified and reported in accordance with Gas Construction Standard 1710 - Leak Classification.

Records

Records for customer leak investigations shall be in accordance with the following. Such records shall be kept on file in the local operating area office in accordance with the record retention standards procedure.

- All leak calls received shall be recorded electronically, by leak log, or using form 12109 gas trouble order.
- Each investigation shall be recorded either electronically or on a manually prepared gas trouble order, form 12109.

APPENDIX 3

(PROBABLE NONCOMPLIANCE)

COMPANY: Kansas Gas Service DIVISION: Topeka

REGULATION:

49 C.F.R. 192.605 as adopted by K.A.R. 82-11-4

(a) General. Each operator shall prepare and follow for each pipeline, a manual of written procedures for conducting operations and maintenance activities and for emergency response.

NON COMPLIANCE DESCRIPTION:

The gas leak that occurred at 1912 SW Arrowhead in Topeka, Kansas on January 30, 2012 meets the definition of an "emergency" as used in Section 1901 of the Kansas Gas Service (KGS) operations and maintenance manual. Section 1901 requires all employees responding to a potential emergency to protect the public form possible injury as a first step in emergency response. However, in response to the emergency at 1912 SW Arrowhead on January 30, 2012, KGS personnel did not take steps to determine the extent of the migration of gas and the subsequent potential hazard to nearby homes and inhabitants, at anytime during the 30 minutes that KGS personnel were on site prior to the explosion at 1905 SW Navajo Lane.

OPERATOR'S RESPONSE: (Attach verification if needed) **KANSAS GAS SERVICE DISAGREES WITH THE STATED NONCOMPLIANCE FOR THE REASONS LISTED ON THE ATTACHMENT.**

Operator's authorized signature: Rob Greer Date: 6/22/2012

PIPELINE SAFETY USE ONLY

Date approved: _____ Date approved: _____ Inspection type: Incident
Date approved: _____ Date approved: _____ Inspected By: Haynos
Chief: _____ Inspector: _____ Date Inspected: 5/22/2012

(PROBABLE NONCOMPLIANCE)

COMPANY: Kansas Gas Service DIVISION: Topeka

REGULATION:

49 C.F.R. 192.615(b)(2) as adopted by K.A.R. 82-11-4

(b) Each operator shall:

(2) Train the appropriate operating personnel to assure that they are knowledgeable of the emergency procedures and verify that the training is effective.

NON COMPLIANCE DESCRIPTION:

The gas leak that occurred at 1912 SW Arrowhead in Topeka, Kansas on January 30, 2012, meets the definition of an "emergency" as used in Section 1901 of the Kansas Gas Service (KGS) operations and maintenance manual. KGS's first responder to the excavation damage at 1912 SW Arrowhead on January 30, 2012, did not appear to have received effective training on how to prioritize steps to be taken in evaluating a gas leak caused by excavation damage so as to readily identify the extent of the hazard and to take steps protect life and property.

OPERATOR'S RESPONSE: (Attach verification if needed) **KANSAS GAS SERVICE DISAGREES WITH THE STATED PROBABLE NONCOMPLIANCE FOR THE REASONS LISTED ON THE ATTACHMENT.**

Operator's authorized signature: Rob [signature] Date: 6/22/2012

PIPELINE SAFETY USE ONLY

Date approved: _____ Date approved: _____ Inspection type: Incident

Date approved: _____ Date approved: _____ Inspected By: Haynos

Chief: _____ Inspector: _____ Date Inspected: 5/22/2012

ATTACHMENT TO 49 C.F.R. 192.605(K.A.R. 82-11-4) AND

49 C.F.R. 192.615(B)(2) (K.A.R. 82-11-4)

Standard 1901, Kansas Gas Service's Emergency Plan, describes procedures for taking action to prevent and minimize injuries and property damage in an emergency situation.

While protecting the public from possible injury can be the "first step" in an emergency response (as suggested by KCC Staff), Standard 1901 actually provides that: "The *primary concern* during any emergency shall be to protect life and property for the general public and employees. Any action needed to achieve this concern shall be the *primary objective* of all employees at the emergency site." An assessment of the emergency situation is usually the first step to determine how to protect the public from possible injury.

The first responder to 1912 SW Arrowhead ("1912 Arrowhead") followed the Emergency Plan's directive. The first responder for KGS did take action to achieve the primary objective of the protection of life for the general public and employees and that action included "steps to determine the extent of the migration of gas and the subsequent potential hazard to nearby homes and inhabitants during the 30 minutes" prior to the explosion at 1905 SW Navajo Lane ("1905 Navajo").

Upon arrival at 1912 Arrowhead, our first responder followed the notification requirements set forth in the applicable standards and observed N-Line (what was later determined to be N-Line) personnel working in the yard of the residence. He proceeded to the backyard where he observed the gas service line that had been excavated and appeared to be pulled (damaged). He determined that the gas service line had been hit between the gas main and the meter of 1912 Arrowhead which was located at the house. A mild odor of gas was present.

He considered the likelihood that the service line had been pulled from the tee-connector at the main (which turned out to be the case) and/or that the service line had been ruptured elsewhere, e.g., the meter at 1912 Arrowhead, both of which would suggest that the flow of fugitive gas would be toward 1912 Arrowhead. He considered the location of other residences and possible avenues of gas migration to them.

The meter of 1905 Navajo was observed to be at the yard line rather than the house and at a much greater distance from the source of the leak than the meter at the residence immediately south of 1905 Navajo which was also at the yard line. Both service lines appeared to be at right angles from the likely location of the leak. He determined that the likelihood of gas migration and potential hazard was greatest to 1912 Arrowhead in the circumstances he observed. He determined that there were no obvious avenues of rapid gas migration to 1905 Navajo or the residence immediately south of 1905 Navajo.

Our first responder used his flame ionization unit (FIU) to determine the extent of gas migration toward 1912 Arrowhead. He detected gas from the excavation approximately halfway down the service line. He continued his FIU to the meter and the foundation surrounding the

meter. No additional gas migration findings were made. He turned off the gas flow to 1912 Arrowhead at the meter.

Pursuant to the Standard for Leakage Control (Standard 1730) and the Emergency Plan, our first responder proceeded to isolate the leak, make it safe (Standard 1901 and 1730), and he undertook the measures available to him to make it safe, e.g., venting the leak. He drove bar holes and conducted Combustible Gas Indicator (CGI) tests up the service line toward the main until he received a 100% gas reading at the fence. The leak now venting 100% gas to atmosphere, our first responder remained at the leak with a fire extinguisher awaiting proper personnel. That wait was short, as our Construction team arrived and before a full assessment of the construction situation could be made (a couple of minutes), the explosion at 1905 Navajo occurred. Please note that once venting commences—which is the appropriate response to the situation presented here—FIU's are unproductive because the FIU is sensitive and detects gas and atmosphere at parts per million. Readings are positive throughout the atmosphere. KGS received odor reports from residences much farther away than 1905 Navajo.

For the 30 minutes our first responder was present, all of his time was spent determining the potential hazard to nearby homes and inhabitants, determining the extent of migration of gas, mitigating migration, protecting against damage and harm, and in notifications both of progress and for additional support. What he did was consistent with the Emergency Plan, the applicable Standards, and industry practice.

(PROBABLE NONCOMPLIANCE)

KANSAS CORPORATION COMMISSION

JUN 25 2012

UTILITIES DIVISION

COMPANY: Kansas Gas Service DIVISION: Topeka

REGULATION:

49 C.F.R. 192.615 as adopted by K.A.R. 82-11-4

(a) Each operator shall establish written procedures to minimize the hazard resulting from a gas pipeline emergency. At a minimum, the procedures must provide for the following:

(3) Prompt and effective response to a notice of each type of emergency, including the following:

(i) Gas detected inside or near a building.

(5) Actions directed toward protecting people first and then property.

NON COMPLIANCE DESCRIPTION:

Section 1901 of the Kansas Gas Service Emergency Plan requires the first employee on the scene of an emergency to address scenarios of fire or of gas leaks inside a building. When the section identifies the goals of the directive, the section fails to provide a procedure or even offer guidance to the first responder on how to evaluate the extent of the potential emergency and then how to minimize the hazard of an underground gas leak caused by excavator damage.

This type of emergency was addressed with utility owners in a PHMSA issued Advisory Bulletin ADB-01-02, dated May 16, 2001. This Advisory Bulletin provided advice on how to respond to emergencies similar to the incident that occurred at 1905 Navajo Lane. Specifically, the Advisory Bulletin, advises owners and operators of gas distribution systems to ensure their emergency plans and procedures require employees who respond to gas leaks to consider the possibility of multiple leaks, to check for gas accumulation in nearby buildings, and, if necessary, to take steps to promptly stop the flow of gas.

OPERATOR'S RESPONSE: (Attach verification if needed) **KANSAS GAS SERVICE DISAGREES WITH THE STATED NONCOMPLIANCE FOR THE REASONS LISTED ON THE ATTACHMENT.**

Operator's authorized signature: Rob Green Date: 6/22/2012

PIPELINE SAFETY USE ONLY

Date approved: _____ Date approved: _____ Inspection type: Incident

Date approved: _____ Date approved: _____ Inspected By: Haynos

Chief: _____ Inspector: _____ Date Inspected: 5/22/2012

ATTACHMENT TO 49 C.F.R. 192.615(K.A.R. 82-11-4)

Our Emergency Plan complies with 49 C.F.R. 192.615 (K.A.R. 82-11-4) as it includes, in addition to other items, a protocol for responding to an emergency consisting of "gas detected inside or near a building" and " actions directed toward protecting people first and then property."

For gas detected inside or near a building, the Emergency Plan outline includes a CGI test, evacuation, shutting off gas supply, eliminating sources of ignition, ventilating when practical, establishing a restricted zone, removing vault covers, and other provisions for the protection of life and property.

Life precedes property, as the Emergency Plan stipulates that the considerations to be made by those who respond to an emergency are, *in order:* Protection of the public from injury; Protection of company personnel and others conducting the investigation; Protection of property from possible damage; and eliminating or making safe the source of gas leakage or other condition which led to the emergency situation.

Regarding PHMSA Advisory Bulletin ADB-01-02, our Emergency Plan does provide for gas checks to detect gas accumulation in nearby buildings "as required and appropriate," and it incorporates our Construction Standard 1700 Leak Control when leakage is found to be on a customer's facility.

Specifically, the Outside Leak Investigation procedure in 1730 provides that a perimeter check shall be made of the structure where gas leakage was reported (or found) and nearby foundation walls. This provision encompasses a multiple leak scenario comparable to that in the PHMSA Advisory.

The Emergency Plan does include references to Standard 1730 and the series of 1700 procedures that do provide for addressing multiple leaks. In addition, the Emergency Plan's requirement that a first responder be "an appropriate, qualified employee" envisions that consideration of multiple leaks in an excavation response (and other responses) is part of the employee's qualification training and covers the general consideration of multiple leaks. The provisions of 1730 are a part of the first responder's qualifications and training. Our first responder considered multiple leaks by checking the service line to the meter at 1925 Arrowhead and shutting off the supply of gas to that residence. Those were the missing action(s) in the PHMSA Advisory example.

The Emergency Plan contains several provisions prioritizing and otherwise providing for "eliminating or making safe the source of gas leakage," "shut(ting) off the gas supply to the building," "venting," and "stop(ping) the flow of gas by closing a valve or squeezing off the line. These activities were undertaken by our first responder as limited by the time that was available, and a multiple leak scenario was considered prior to the arrival of the construction crew, which occurred near the time of the explosion.

KANSAS CORPORATION COMMISSION

JUN 25 2012

UTILITIES DIVISION

(NOTICE of AMENDMENT)

COMPANY: Kansas Gas Service DIVISION: Topeka

REGULATION:

49 C.F.R. 192.605(b)(14) as adopted by K.A.R. 82-11-4

[K.A.R. 82-11-4 (y)]

(b) Maintenance and normal operations. The manual required by paragraph (a) of this section must include procedures for the following, if applicable, to provide safety during maintenance and operations.

(14) Performing leakage surveys of underground pipelines

NOTICE of AMENDMENT DESCRIPTION:

KGS- Leak Classification Standard 1710:

This procedure does not provide adequate instructions to provide for safety during a leak survey. Specifically, the procedure does not refer back to the emergency plan in Section 1901 and remind the leak investigator to protect all life and property as a priority. The procedure also focuses the attention of the leak investigator to start at the leak and work in four directions until zero readings are found. It does not prioritize the sequence of finding the zero readings (assuring safety) and then finding the source of the leak.

OPERATOR'S RESPONSE: (Attach verification if needed) **KANSAS GAS SERVICE DISAGREES WITH THE STATED NOTICE OF AMENDMENT FOR THE REASONS LISTED ON THE ATTACHMENT.**

Operator's authorized signature: Rob Trea Date: 6/22/2012

PIPELINE SAFETY USE ONLY

Date approved: _____ Date approved: _____ Inspection type: Incident

Date approved: _____ Date approved: _____ Inspected By: Haynos

Chief: _____ Inspector: _____ Date Inspected: 5/22/2012

ATTACHMENT TO 49 C.F.R. 192.605(b)(14)(K.A.R. 82-11-4)

Leak survey procedures and the safety considerations involved are included in 1730. For example, Staff states that "(T)he procedure also focuses the attention of the leak investigator to start at the leak and work in four directions until zero readings are found. It does not prioritize the sequence of finding the zero readings (assuring safety) and then finding the source of the leak." However, to leave the site of a blowing leak ("the source of the leak"), to "prioritize finding the zero readings" away from the leak in an unknown direction would not be assuring safety.

Standard 1710 covers the procedures for leak classification, and it would not be expected that the provisions for leak survey procedures would be repeated in this response, as they are better explained and included in the Notice of Amendmentaddressing 1730.

Standard 1710 does provide that a leak which, in the judgment of the operation personnel at the scene, is regarded as an immediate hazard is a Class 1 leak that requires immediate repair or continuous action until the conditions are no longer hazardous. Whatever repair or continuous action is required will be event specific and, as the judgment of operation personnel at the scene is depended upon for the initial determination, so is that person's judgment necessary to determine what appropriate repair or activity responses may be warranted by the factors that are present.

(NOTICE of AMENDMENT)

COMPANY: Kansas Gas Service DIVISION: Topeka

REGULATION:

49 C.F.R. 192.605(b)(14) as adopted by K.A.R. 82-11-4

[K.A.R. 82-11-4 (y)]

(b) Maintenance and normal operations. The manual required by paragraph (a) of this section must include procedures for the following, if applicable, to provide safety during maintenance and operations.

(14) Performing leakage surveys of underground pipelines

NOTICE of AMENDMENT DESCRIPTION:

KGS - Outside Leak Classification Standard 1730:

This standard does not direct leak investigators to make safety a priority prior to conducting a leak investigation. Standard 1730 does require the leak investigator to conduct a perimeter check completely around the structure where the gas leakage was reported, using gas detection equipment and making additional checks over service and yard lines of the adjoining structures and the foundation walls nearest to the structure where the gas leakage was reported. However, this procedure fails to designate the perimeter check of the leak site and surrounding structures, as a priority.

Additionally, Standard 1730 also requires that upon finding evidence of leakage, the investigator shall continue to take readings in all directions emanating from the point of the leak outward, until the limits of the leakage are established. This approach does not prioritize the sequence of assuring the safety of the immediate area before determining the extent of the leak.

OPERATOR'S RESPONSE: (Attach verification if needed) **KANSAS GAS SERVICE DISAGREES WITH THE STATED NOTICE OF AMENDMENT FOR THE REASONS LISTED ON THE ATTACHMENT.**

Operator's authorized signature: Rob Lee Date: 6/22/2012

PIPELINE SAFETY USE ONLY

Date approved: _____ Date approved: _____ Inspection type: Incident

Date approved: _____ Date approved: _____ Inspected By: Haynos

Chief: _____ Inspector: _____ Date Inspected: 5/22/2012

ATTACHMENT TO 49 C.F.R. 192.605 (b)(14) AS ADOPTED BY K.A.R. 82-11-4

This Notice of Amendment pertains to 49 C.F.R. § 192.605 (b) as adopted by K.A.R. 82-11-4 with the inclusion of subparagraph (y) relating to item (14): Performing leakage surveys of underground pipelines. As part of K.A.R. 82-11-4 (y), item (13) refers to Classifying Underground Leaks. Safety is a priority before and during Leak Classification and Investigation. However, the scope of this Notice is leakage surveys and not leak classification. Leakage surveys are performed as part of the safe maintenance and operation of a pipeline system. Standard 1730 is in full compliance with the cited federal and state regulations.

It is clear that some level of assessment and investigation is required before safety measures can be implemented in response to a leakage report. Perimeter checks, which the Staff cites as an investigative tool under Standard 1730, are to be considered as one of several safety responses that can be implemented to identify and contain a leak.

1730's first mandate is that each leak *shall* be promptly and thoroughly investigated to determine its extent and, if hazardous, it *shall* be made safe. If gas is suspected in a building it is to be investigated and if any hazardous conditions are found, occupants are *immediately* instructed to exit "at once." An outside leak investigation can become an inside leak investigation as factors warrant and vice versa. Whether outside, where the leak must be made safe, or inside, where occupants are evacuated, making a hazardous situation safe is both the purpose of 1730 as well as a 1730 priority.

Although there may be circumstances where perimeter checks should take place before the investigator evacuates a hazardous structure or initiates another procedure, it would seem that in circumstances involving the containment of a blowing leak where no other immediately hazardous condition is found, this condition can and should take precedence over foundation perimeter checks at remote structures. Whether foundation perimeter checks should be prioritized over another investigative technique or a leak mitigation effort, the correct response should be determined on an incident-by-incident basis depending upon the unique circumstances of each event. Those individual circumstances also dictate whether perimeter checks can be done with an FIU or require initial or further investigation with a CGI.

Perimeter checks, as many other investigative and mitigation efforts, are to be implemented in course as assessment and investigation indicate that they be utilized. We think, however, to declare them a priority without consideration of unique circumstances is neither prudent nor the intention of the applicable regulation.

1730 requires that where leakage is found on our outside leak investigation, it is the *investigation* that continues in all directions until the limits are established. Granted, that investigation may consist of taking readings but, as 1730 directs, if the investigation gives rise to a suspicion of gas inside a structure, then entry to the structure is made and evacuation of the structure (if a hazardous condition is found) is going to take place, as is notification to superiors, elimination of ignition sources, and such other activities as 1730 requires, all before further perimeter checks are undertaken.

These determinations and the undertakings that flow from them are fact dependent and seldom are two factual situations the same. Determination of the extent of an outdoor leak by CGI or FIU as the very next step following the location of a leak can be the appropriate action to maintain safety of the public. It is often the obvious and best method for assuring the safety of the immediate area.

But 1730 does not mandate that readings take precedence over safety, either generally, or over the other safety provisions of 1730 or the safety provisions contained in other applicable standards.

CERTIFICATE OF SERVICE

12-GIMG-584-GIP

I, the undersigned, hereby certify that a true and correct copy of the above and foregoing Notice of Filing of Staff Report and Recommendation was served via electronic service this 31st day of August, 2012, to the following:

* GLENDA CAFER, ATTORNEY
CAFER LAW OFFICE, L.L.C.
3321 SW 6TH STREET
TOPEKA, KS 66606
Fax: 785-233-3040
glenda@caferlaw.com

* TERRI PEMBERTON, ATTORNEY
CAFER LAW OFFICE, L.L.C.
3321 SW 6TH STREET
TOPEKA, KS 66606
Fax: 785-233-3040
terri@caferlaw.com

RAY BERGMEIER, LITIGATION COUNSEL
KANSAS CORPORATION COMMISSION
1500 SW ARROWHEAD ROAD
TOPEKA, KS 66604-4027
Fax: 785-271-3354
r.bergmeier@kcc.ks.gov
Hand Delivered

* JUDY JENKINS, LITIGATION COUNSEL
KANSAS CORPORATION COMMISSION
1500 SW ARROWHEAD ROAD
TOPEKA, KS 66604-4027
Fax: 785-271-3167
j.jenkins@kcc.ks.gov
Hand Delivered

* WALKER HENDRIX
KANSAS GAS SERVICE
7421 W 129TH ST
OVERLAND PARK, KS 66213
whendrix@oneok.com

* JOHN DECOURSEY
KANSAS GAS SERVICE, A DIVISION OF ONEOK, INC.
7421 W. 129TH ST
OVERLAND PARK, KS 66213
Fax: 913-319-8622
john.decoursey@kansasgasservice.com

* GLEN NIEHUES
N-LINE LAWN SERVICE
355 X RD
WETMORE, KS 66550
getnline@jbntelco.com

Vicki Jacobsen

Vicki Jacobsen

* Denotes those receiving the Confidential version