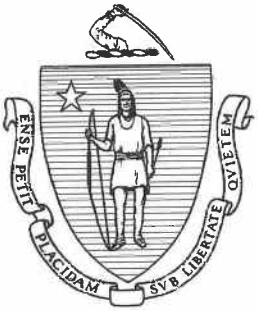

The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

INCIDENT REPORT

3 Hancock Avenue, Lexington, Massachusetts
November 9, 2005

PIPELINE ENGINEERING AND SAFETY DIVISION

Accident File

Location: Lexington, Massachusetts

Date of Accident: November 9, 2005

Gas Company: KeySpan Energy Delivery New England

Estimated Property Damage: Over $394,000 *

Injuries: Two

Report Issued - June 2007

* Estimated by KeySpan Energy Delivery, New England

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I. INTRODUCTION

A. Scope of this Investigation

The Massachusetts Department of Public Utilities, formerly known as the Department of Telecommunications and Energy ("Department"), Division of Pipeline Engineering and Safety ("Division"), pursuant to G.L. c. 164, § 105A and a Federal Certification Agreement as provided for in 49 U.S.C.§ 60105, has investigated a natural gas ("gas") release at 3 Hancock Avenue, Lexington, that occurred on November 9, 2005 ("incident").[1] The incident contributed to an explosion, fire and over $394,000 in property damage to the dwelling, as estimated by KeySpan Energy Delivery, New England ("KeySpan") (Exh. 1).[2] There were two injuries as a result of the explosion and fire (Exh. 2). The pipeline involved was owned and operated by KeySpan.

As part of the Department's annual certification process by the United States Department of Transportation ("U.S. DOT"), the Department must report to the US DOT

> each accident or incident . . . involving a fatality, personal injury requiring hospitalization, or property damage or loss of more than an amount the Secretary

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1 Incident means any of the following events:
(1) An event that involves a release of gas from a pipeline or liquefied natural gas or gas from an LNG facility and,
  (i) A death, or personal injury necessitating in-patient hospitalization; or
  (ii) Estimated property damage, including cost of gas lost, of the operator or others, or both, of $50,000 or more.
(2) An event that results in an emergency shutdown of an LNG facility.
(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)." 49 C.F.R. Part 191,§ 191.3.

2 As a result of a merger completed in 2007, KeySpan is part of the National Grid utility system.

> establishes... and any other accident the [Department] considers significant, and a summary of the investigation by the [Department] of the cause and circumstances surrounding the accident or incident.
> 49 U.S.C. § 60105(c).

The purpose of this report is to inform the U.S. DOT as to the circumstances surrounding, and as to the cause of the incident.

The Department has established procedures for determining the nature and extent of violations of codes and regulations pertaining to safety of pipeline facilities and the transportation of gas, including but not limited to, 220 C.M.R. §§ 101.00 through 113.00. See 220 C.M.R. § 69.00 et seq. The Division also enforces the U.S. DOT safety standards for gas pipeline systems as set forth in 49 C.F.R. Part 192 ("Part 192"). G.L. c. 164, § 105A.

B. Overview of Incident

On November 9, 2005, at 11:19 a.m., the Lexington Fire Department ("Fire Department") received an alarm for an explosion and fire at 3 Hancock Avenue (Exh. 2). The fire department was at the scene immediately after the gas explosion. At 11:35 a.m., KeySpan was notified of the incident by the fire department and requested at the scene. A KeySpan crew working at the intersection of Hancock Street and Coolidge Street, Lexington, also responded to the scene. Additional KeySpan personnel arrived at the scene at 12:23 p.m., and the gas was shut off at 1:09 p.m.

At approximately 12:00 p.m.,[3] KeySpan notified the Division of the explosion and fire (Exh. 3). KeySpan reported that a portion of the distribution system in Lexington had been over pressurized. Three Division investigators arrived at the scene at about 1:20 p.m.

The Division's investigation finds that KeySpan inadvertently connected a two pounds per square inch gauge("psig")[4] high pressure[5] main to a 60 psig high pressure main while in the process of performing a main connection. This allowed natural gas from the 60 psig system to enter the lower pressure two psig system, resulting in an over-pressurization of the two psig system including the natural gas service line[6] feeding 3 Hancock Avenue.

A metallurgical analysis of the service piping concluded that the over-pressurization event caused the service line feeding 3 Hancock Avenue to blow out at a corroded section of inside service line piping, releasing gas into the basement of the house. The gas explosion was

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3 In a letter to all operators; the Director of the Division has requested that operators inform the Department of any incident promptly, but no more than two hours after the incident.

4 Pounds per square inch gauge refers to the pressure expressed in pounds exerted on one square inch of surface area. The designation "gauge," indicates the readings are already adjusted to ignore the surrounding atmospheric pressure, which is 14.7 psi at sea level. If psig gauge were not connected to any pressure source, it would read zero even thought it is actually sensing 14.7 psi at sea level.

5 A high pressure system is a system in which the pressure in the main is higher than the pressure provided to the customer. Part 192, § 192.3.

6 A distribution line that transports gas from a common source of supply to an individual customer, to two adjacent or adjoining residential or small commercial customers, or to multiple residential or small commercial customers served through a meter header or manifold. A service line ends at the outlet of the meter or at the connection to a customer's piping, whichever is further downstream , or at the connection to customer piping if there is not meter.

caused by the ignition of an accumulation of natural gas in the basement of 3 Hancock Avenue (Exh.2). There were multiple ignition sources in the basement, including a water heater pilot and a furnace burner. It could not be determined which source triggered the explosion and subsequent fire (id.). KeySpan reported eleven additional locations where there were leaks on inside company-owned piping (Exh. 4).

II. THE DIVISION INVESTIGATION

A. Description of the Site

Hancock Avenue is located in a residential area of Lexington. The area consists of mostly single family houses. The structure at 3 Hancock Avenue was a two-story wood frame house with a basement. The house was constructed in 1865. The furnace and hot water heater were located in the front portion of the basement (Exh. 5).

The gas meter and service regulator[7] were also located inside the house near the front foundation wall. The gas service line entered the house below ground, through the front foundation wall (Exh. 6). The 1.25-inch diameter service line was installed on May 26, 1919. Massachusetts Materials Research Inc. ("MMR") has analyzed it and determined that the service line was made of carbon steel pipe. The gas main[8] under Hancock Avenue was four-

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7 A service regulator is a valve which reduces the pressure in the service line from the pressure in the main to the pressure provided to the customer.

8 A main is a distribution line that serves as a common source supply for more than one service line. Part 192, § 192.3.

inch cast iron pipe, installed in 1911 (Exh. 7). The maximum allowable operating pressure ("MAOP")[9] of the main and service at the time of the incident was two psig.

B. Description of the Scene

1. The Homeowners

At the time of the explosion, there were two people at 3 Hancock Avenue. The son of the homeowner stated that he was in a bedroom on the second floor of the house when he heard a loud hiss. He went outside to get his mother to investigate the noise. His mother said that she could not hear any noise outside but could smell gas. They both went back into the house. The homeowner opened the basement door and turned on the light. She stated that she took a few steps into the basement. At that time her son made her go back outside. He stated that at no time could they smell gas inside of the house (Exh. 2). The lack of an odor may have been caused bya wall separating the basement.

The son retrieved his cell phone prior to leaving the house. He stated that five minutes had passed between the time he heard the hissing sound and when he called 911. Approximately a minute later the house exploded (Exh. 2).

2. The Scene

On November 9, 2005 at approximately 1:20 p.m., three Division investigators arrived at 3 Hancock Avenue to investigate the incident. Representatives from KeySpan, Lexington Police and Fire Departments, and the State Fire Marshall's Office were at the scene.

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[9] Maximum Allowable Operating Pressure (MAOP) means the maximum pressure at which a pipeline or segment of a pipeline may be operated. Part 192 § 192.621.

The house had been completely destroyed by the explosion and ensuing fire (Exh. 8). The house had collapsed into the basement. The adjacent two car garage was partially destroyed. Debris had been blown into the street and throughout the yard (Exh. 9).

The service regulator and meter had been severed from the service line near the inside foundation wall (Exh. 10). KeySpan shut the main down near the intersection of Hancock Street and Hancock Avenue (Exh. 5, at 4). KeySpan shut off the gas by inserting a stop off bag into the four-inch cast iron main. The pressure at this time was approximately 1.25 psig.

The Division's investigators requested that KeySpan pressure test the portion of the service line from the main to a point outside the foundation wall. The pressure test did not include the section of KeySpan's service line that passed through the foundation wall, the interior piping, the service regulator and the meter. The service line was pressure tested to 34.2 inches water column[10] ("in.wc.") for 15 minutes, at the end of the pressure test the pressure was 30.3 in.wc. The service line was then pressure tested at 50.0 in.wc. for 15 minutes, at the end of the pressure test the pressure was 44.9 in.wc. The Division investigators observed slight leakage on the test equipment. The Division considers this leakage to be insignificant.

After the completion of the pressure tests, the investigators exposed the remaining portion of service line that passed through the foundation wall. The pipe section was photographed and taken into custody by the Lexington Fire Department. The inside piping, the regulator, and the meter were also taken into custody by the fire department.

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10 "Inches water column" is a measurement of pressure with 27.71 inches of water column equal to one psig.

C. KeySpan Energy Delivery New England - Records

1. Service to 3 Hancock Avenue

KeySpan last entered the house on May 21, 1996, to replace the meter (Exh. 11). KeySpan provided no record of a leakage survey or a corrosion inspection being performed at that time. KeySpan could not gain access to the house on July 23, 2004 (Exh. 12). KeySpan provided no other records of entry to the house after 1996. State law requires that meters be replaced every seven years. G.L. c. 164, s. 115A.

2. Leakage Survey and Repair Records

The main and services underlying Hancock Avenue were leak surveyed on August 18, 2005 (Exh. 13). The service line was surveyed up to the exterior building wall. No leaks were discovered (id).

KeySpan has no records of any leak surveys performed on the company owned interior piping. KeySpan has no records of any maintenance or replacement work being performed on the main for one year prior to the incident (Exh. 7). There is also no record of any leaks on the service line or any maintenance performed on customer owned piping or appliances (Exh. 14).

Federal pipeline safety regulation Part 192, § 192.3 states that a service line ends at the outlet of the customer meter or at the connection to a customer's piping, whichever is further downstream, or at the connection to customer piping if there is no meter. Federal pipeline safety regulation, Part 192, § 192.723: Distribution systems: Leakage surveys, requires leakage surveys to be conducted of services and mains at three or five year intervals, if they

are located outside of business districts.[11] In KeySpan's O&M procedure LSUR-5020 Walking Surveys states that at least once each three years all services outside the business district shall be leakage surveyed by walking each buried service line (Exh. 20). The survey is conducted by walking along the route of the pipeline or in the area between the main and the building. The procedure does not address leakage survey of interior service piping. KeySpan's procedures only address the portion of the service line up to the foundation wall. KeySpan does not have any record of performing a leak survey of the company piping inside 3 Hancock Avenue (Exh. 19).

Based on this information, KeySpan had inadequate operating and maintenance procedures to address leakage surveys. Therefore, KeySpan's procedures do not comply with federal pipeline safety regulations. Part 192, §§ 192.3; 192.723.

3. Leakage Surveys on Hancock Avenue After the Incident

Immediately after the incident, KeySpan conducted leakage surveys of the houses on Hancock Avenue. Records indicate that the surveys were conducted inside houses that were

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[11] (a) Each operator of a distribution system shall conduct periodic leakage surveys in accordance with this section.
(b) The type and scope of the leakage control program must be determined by the nature of the operations and the local conditions, but it must meet the following minimum requirements:
(1) A leakage survey with leak detector equipment must be conducted in business districts, including tests of the atmosphere in gas, electric, telephone, sewer, and water system manholes, at cracks in pavement and sidewalks, and at other locations providing an opportunity for finding gas leaks, at intervals not exceeding 15 months, but at least once each calendar year.
(2) A leakage survey with leak detector equipment must be conducted outside business districts as frequently as necessary, but at least once every 5 calendar years at intervals not exceeding 63 months . . . . Part 192, § 192.723.

accessible (Exh. 15). The results of the leakage surveys were negative. There is no record of the four-inch cast iron main being surveyed immediately after the incident, because it was shutdown.

4. Operating Pressure on Hancock Avenue

The MAOP of the main and service on Hancock Avenue is two psig. Shortly after the incident the main was shut down. The pressure in the main at that time was 1.25 psig.

KeySpan used their records to estimate the maximum pressure reached in the two psig system. The estimate was based on the pressure drop at the surrounding regulator stations that supply the 60 psig system. KeySpan estimated the maximum pressure throughout the two psig distribution system to be 56 psig (Exh.16). The maximum pressure at 3 Hancock Avenue was 50.3 psig.

The federal pipeline safety regulation Part 192, § 192.621: Maximum allowable operating pressure: High-pressure distribution systems,[12] requires that the MAOP not be exceeded. The Division is also investigating the over-pressurization incident itself. The Division will issue a separate report on the results of that investigation.

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[12] (a) No person may operate a segment of a high pressure distribution system at a pressure that exceeds the lowest of the following pressures, as applicable…

(5) The pressure determined by the operator to be the maximum safe pressure after considering the history of the segment, particularly known corrosion and the actual operating pressures.

(b) No person may operate a segment of pipeline to which paragraph (a) (5) of this section applies, unless over-pressure protective devices are installed on the segment in a manner that will prevent the maximum allowable operating pressure from being exceeded, in accordance with § 192.195. Part 192 § 192.621

5. Odor Testing

The state regulation, 220 C.M.R. § 101.06(20), requires operators to odorize gas in their distribution systems. Gas must be "readily perceptible to the normal or average olfactory senses of a person coming from fresh uncontaminated air into a closed room containing 0.15 percent gas and air." The state regulation, 220 C.M.R. § 101.06(20)(a), requires operators to conduct periodic sampling of odorant concentrations throughout their system.

KeySpan conducts odorant sampling throughout its system on a monthly basis. On November 9, 2005, several odor level tests were conducted in Lexington after the explosion (Exh.17). The results of the tests are as follows:

1. 7-9 Harrington Street @ 1:15 p.m. - Odor level 0.08 percent gas and air

2. 55 Coolidge Avenue @ 2:15 p.m. - Odor level 0.07-0.09 percent gas and air

The odor detectability levels of gas in air ranged from 0.070 percent to 0.09 percent gas in air, indicating that the odorant levels were within the limit prescribed in the state regulation. The odorant levels also met the federal pipeline safety requirement, contained in Part 192, § 192.625, which requires that gas be odorized so that it can be detected at a level of one percent gas in air.

6. Corrosion Control Procedures and Records

Federal pipeline safety regulation, Part 192, § 192.481: Atmospheric corrosion control: Monitoring,[13] requires atmospheric corrosion inspections of aboveground piping every three

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[13] (a) Each operator must inspect each pipeline or portion of a pipeline that is exposed to the atmosphere for evidence of atmospheric corrosion; as follows: Onshore, At least once every 3 calendar years, but at intervals not exceeding 39 months.
(b) During inspections the operator must give particular attention to pipe at soil-to-air

(continued...)

years. KeySpan's Operating and Maintenance manual ("O&M") addresses the inspection of exposed pipe in procedure CORR 5101: Atmospheric Corrosion Program (Exh. 18). The procedure states that inspections must be performed once every three years to determine if atmospheric corrosion exists. Further, it states that the Corrosion Control Section shall be responsible to inspect "all outside service piping installations to the outlet of the meter (id. at 3)." The procedure does not address atmospheric corrosion inspection of interior service piping. Part 192, § 192.3 (definition of "service line"). KeySpan stated that it does not have any record of corrosion monitoring of interior company piping at 3 Hancock Avenue, Lexington (Exh. 19). KeySpan's procedures require atmospheric corrosion inspection of only the "outside service piping installations (Exh. 18, at 3)."

Based on this information, KeySpan had inadequate operating and maintenance procedures to address atmospheric corrosion monitoring. Therefore, KeySpan's procedures do not comply with federal pipeline safety regulations. Part 192, §§ 192.3; 192.481.

D. Failure Analysis of Pipe Sections

Massachusetts Materials Research, Inc. ("MMR") conducted a failure analysis of the interior piping and fittings from 3 Hancock Avenue.[14] The pipe was recovered by the Lexington Fire Department and stored at their facility. After the piping and fittings were released to the Division, they were taken to MMR for metallurgical testing. The piping and

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[13](...continued)
interfaces, under thermal insulation . . . . Part 192, § 192.481

[14] Copies of the MMR report can be obtained by contacting: Veda-Anne Ulcickas, Massachusetts Material Research, Inc., P.O. Box 810, Century Drive, West Boylston, MA 01583.

fittings consisted partly of sections of high pressure piping and a valve, which was located upstream of the regulator. The low pressure piping from the regulator to the meter inlet, the regulator and regulator vent pipe, and the meter were also part of the evidence sent to MMR. The purpose of the testing was to document the condition of the interior facilities and to attempt to determine the cause of the incident.

MMR performed debris analysis, leak testing, radiographic examination, microscopic examination, fracture surface conditions and chemical analysis. Their analysis and testing found:

1. The fractured end was corroded to a knife-edged appearance and the corrosion appeared to be from the outer surface to the inner surface.

2. On-site photographs taken after the incident during the dismantling of the foundation to excavate this pipe revealed that the fracture surface was visible at the cellar wall.

3. Examination of the fracture origin region revealed extensive corrosion at the knife-edged region rimming the blown-out section.

4. The inlet pipe examination revealed that the metal at the fracture origin had been completely consumed by corrosion products by the time of the incident.

Based on the analysis, MMR concluded the following:

> This incident was caused by the over-pressure event on the two psig gas main resulting in a blown out section of corroded inlet pipe on the service line to 3 Hancock Avenue. The corroded region of pipe surrounding the missing blown-out material revealed regions where the pipe wall was corroded through. This indicates that portions of the pipe retaining pressure consisted solely of corrosion products. The corroded portion of pipe was visible to inspection outside the inner foundation wall surface in the cellar of 3 Hancock Avenue.
>
> Pipe material and corrosion product analysis indicated a high phosphorous Type 1008 or similar carbon steel with mechanical properties consistent with the material and its metallurgical condition. The corrosion product leachable pH

was 7.4, which indicates a slightly basic environment. The higher phosphorous content and basic environment would both act to retard corrosion of this pipe.

The cupric meter shutoff valve was constructed of leaded brass and possessed a secondary fracture caused by the incident.

The inlet pipe dimensions correspond to Standard Schedule 40 pipe. The nominal corrosion rate for the time period covering the 1919 installation date to the 2005 incident rate was 0.0016-inch per year. Corrosion was caused by a phenomenon known as barrier effect.

MMR discussed the possible cause for the condition of the service piping.

In general, the mild indoor environment of this service was not detrimental to the majority of the exposed pipe. However, even in mild environments, transition zones can be ideal locations for corrosion. A transition zone can be defined as a change in piping material, a wall penetration region, a change in insulation status (i.e. insulated to non-insulated pipe run), etc. These are regions where slight differences in the local environment can create electropotential anomalies that lead to corrosion. In this specific case, the rocks of the foundation were a boundary between the soil they contacted on one side of the wall and air of the cellar room they defined. Temperature differentials, especially in the summertime, likely caused the rocks to sweat. This would expose the portion of pipe emerging from the foundation to a wetter environment (from actual drips and/or higher local humidity) than the rest of the exposed length. Over time, this can lead to localized general corrosion like that on this incident inlet pipe, despite the lack of aggressive elements and the corrosion retarding effects of higher phosphorous and basis pH. This phenomenon is called the "barrier effect."

While piping lengths within walls are not visible to visual inspection, this corroded region was, based upon scene photographs. Since it is possible that loose, flaky corrosion product could hide severe wall wastage from a cursory visual pipe inspection, the possibility of adding touch to inspection programs should be investigated.

III. FINDINGS AND CONCLUSIONS

A. Findings

1. A four-inch cast iron main was laid under Hancock Avenue Lexington in 1911.

2. A 1.25 - inch steel service line to 3 Hancock Avenue was installed in 1919.
3. The MAOP of the main and the service on Hancock Avenue was two psig.
4. On November 9, 2005, KeySpan allowed natural gas from its 60 psig system to enter the two psig system servicing, among other places in Lexington, 3 Hancock Avenue.
5. KeySpan estimated the maximum pressure at 3 Hancock Avenue to be 50.3 psig.
6. A metallurgical analysis of the KeySpan service piping at 3 Hancock Ave concluded that the over-pressure event resulted in a blown out section of the service line to 3 Hancock Avenue.
7. Natural gas escaped from the blown out section of the service line at 3 Hancock Avenue, accumulated in the basement, and ignited.
8. Possible ignition sources in the basement included a water heater and furnace; however, the exact source of ignition could not be determined.
9. Two residents were in the area of the house at the time of the explosion.
10. Both residents were taken to the hospital with minor injuries and released.
11. KeySpan's last entry into 3 Hancock Avenue was to replace the meter on May 21, 1996.
12. On August 18, 2005, KeySpan conducted a leakage survey of the main and outside service piping of 3 Hancock Avenue, but did not find any leaks.
13. KeySpan has no record of conducting a leakage survey of its interior service piping at 3 Hancock Avenue.
14. KeySpan has no record of monitoring corrosion of its interior service piping at 3 Hancock Avenue.
15. KeySpan has no record of any maintenance or replacement work being performed on the main on Hancock Avenue one year prior to the incident.
16. KeySpan has no record of any leaks on the service line, or any maintenance performed on customer owned piping or appliances at 3 Hancock Avenue.
17. KeySpan conducted a leakage survey immediately after the incident of the houses that were accessible on Hancock Avenue and found no leaks.
18. KeySpan does not have a record of the leakage survey of the main on Hancock Avenue after the incident, because it was shutdown.
19. KeySpan met the odorization requirements of state and federal pipeline safety regulations.
20. KeySpan's Operating and Maintenance Procedures require atmospheric corrosion monitoring of company piping be conducted on outside service lines.

21. KeySpan's Operating and Maintenance Procedures require leak surveys be conducted by walking along the route of the company piping or in the area between the main and the building.

B. Conclusions

1. The analysis in the MMR report was based upon substantial evidence and the report's conclusions are reasonable.
2. The cause of the incident was natural gas released from the blown out section of service pipe into 3 Hancock Avenue, the exact ignition source can not be determined.
3. KeySpan's corrosion monitoring procedures do not provide that it monitor corrosion up to "the outlet of the customer meter," should that meter (and service line) be located inside a customer's premises. 49 C.F.R. Part 192, § 192.3.
4. KeySpan's leakage survey O&M procedures do not provide for a leakage survey of interior service piping "to the outlet of the service meter" because the procedures only address that portion of KeySpan service line up to the foundation wall. Part 192, § 192.3.

IV. KEYSPAN ACTIONS

On February 11, 2008, pursuant to G.L. c. 164, § 105A and 220 C.M.R. §§ 69.00 et seq., the Department concluded an enforcement action with KeySpan. KeySpan Energy Delivery, New England, D.P.U. 05-PL-17. KeySpan agreed to amend its O&M procedures to establish a program that requires corrosion monitoring and leak surveys of KeySpan inside service piping, consistent with the frequency requirements established in federal and state regulations.

EXHIBIT LIST

1. U.S. Department of Transportation Incident Report
2. Town of Lexington Fire Department, Fire Investigation Report
3. KeySpan's DTE Incident Report
4. KeySpan Letter on inside services leaks (March 21, 2006)
5. State Fire Marshal Report
6. KeySpan Service Card for 3 Hancock Avenue
7. Records for Main on Hancock Avenue
8. Photograph - 3 Hancock Avenue, Lexington, following explosion and ensuring fire
9. Photograph - 3 Hancock Avenue, Lexington, collapsed into basement. Adjacent two car garage was partially destroyed
10. Photographs of 3 Hancock Avenue KeySpan Service Line
    Inlet pipe in foundation wall (MMR Report figures 26-27)
    Inlet pipe and fracture origin (MMR Report figures 24-25)
    Inlet pipe view of mating fractures (MMR Report figures 30-31)
11. KeySpan Order Detail (May 20, 1996)
12. KeySpan Order Detail (July 23, 2004)
13. 2005 Leakage Service Results - Hancock Avenue
14. Service Line Records Summary- 3 Hancock Avenue
15. KeySpan Premise Condition Reports (Nov. 9, 2005)
16. KeySpan Documentation of Over-pressurization Event
17. KeySpan DOL testing results (November 9, 2005)
18. KeySpan Atmospheric Corrosion Monitoring Procedure
19. KeySpan Leak Survey and Corrosion Monitoring Records for 3 Hancock Ave.
20. KeySpan Leak Survey Procedure

EXHIBIT 1

U.S. Department of Transportation Incident Report

KEYSPAN
Energy Delivery

KeySpan Energy Delivery
52 Second Avenue
Waltham, MA 02451
Tel 781 466-5137
Fax 781 290-4965
E-mail ttechan@keyspanenergy.com

Thomas R. Teehan
Senior Counsel

Via Facsimile
Confirmatory Copy by U.S. Mail

December 9, 2005

Mr. Jefferson Tancil
Office of Pipeline Safety
Information Resource Manager
DPS-13
407th Street, S.W.
Washington, DC 20590

Re: 3 Hancock Avenue, Lexington, Massachusetts

Dear Mr. Tancil:

Enclosed please find Incident Report-Gas Distribution System regarding the above-captioned matter.

Very truly yours,

Thomas R. Teehan

TRT/dmo
Enclosure

NOTICE: This report is required by 49 CFR Part 191. Failure to report can result in a civil penalty not to exceed $100,000 for each violation for each day the violation continues up to a maximum of $1,000,000 for any related series of violations as provided in 49 USC 60122. Form Approved OMB No. 2137-0522

U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

INCIDENT REPORT - GAS DISTRIBUTION SYSTEM

Report Date _____
No. _____ (DOT Use Only)

INSTRUCTIONS

Important: Please read the separate instructions for completing this form before you begin. They clarify the information requested and provide specific examples. If you do not have a copy of the instructions, you can obtain one from the Office Of Pipeline Safety Web Page at http://ops.dot.gov.

PART A – GENERAL REPORT INFORMATION Check: X Original Report ☐ Supplemental Report ☐ Final Report

1. Operator Name and Address

a. Operator's 5-digit Identification Number / 3 / 6 / 4 / 0 / /

b. If Operator does not own the pipeline, enter Owner's 5-digit Identification Number / / / / / /

c. Name of Operator Boston Gas Company d/b/a KeySpan Energy Delivery New England

d. Operator street address 52 Second Avenue

e. Operator address Waltham, MA 02451
City, County or Parish, State and Zip Code

2. Time and date of the incident
approx. / 1 / 1 / 1 / 9 / / 1 / 1 / / 0 / 9 / / 2005 /
hr. month day year
(based upon information from Fire Dept.)

3. Incident Location

a. 3 Hancock Avenue
Street or nearest street or road

b. Lexington
City and County or Parish

c. Massachusetts, 02420
State and Zip Code

d. Latitude: / / / / / / Longitude: / / / / / /
(if not available, see instructions for how to provide specific location)

e. Class location description
O Class 1 X Class 2 O Class 3 O Class 4

f. Incident on Federal Land O Yes X No

4. Type of leak or rupture

O Leak: O Pinhole O Connection Failure *(complete sec. F5)*
O Puncture, diameter or cross section *(inches)*____

O Rupture (if applicable):
O Circumferential – Separation
O Longitudinal
- Tear/Crack, length *(inches)* _____
- Propagation Length, total, both sides *(feet)* _____

O N/A

O Other: still under investigation

5. Consequences *(check and complete all that apply)*

a. ☐ Fatality Total number of people: / / / /
Employees: / / / / *General Public:* / / / /
Non-employee Contractors: / / / /

b. ☐ Injury requiring inpatient hospitalization
Total number of people: / / / /
Employees: / / / / *General Public:* / / / /
Non-employee Contractors: / / / /

c. X Property damage/loss *(estimated)* Total $ in excess of $50,000
Gas loss $_____ Operator damage: in excess of $1 million
Public/private property damage $394,000.

d. ☐ Gas ignited X Explosion O No Explosion

e. ☐ Gas did not ignite O Explosion O No Explosion

f. ☐ Evacuation *(general public only)* / / / / / people
Evacuation Reason:
O Unknown
O Emergency worker or public official ordered, precautionary
O Threat to the public
O Company policy

6. Elapsed time until area was made safe:
approx. / 0 / 2 / hr. / / / min.

7. Telephone Report
/ 7 / 7 / 8 / 9 / 9 / 8 / / 1 / 1 / / 0 / 9 / / 0 / 5 /
NRC Report Number month day year

8. a. Estimated pressure at point and time of incident:
in excess of 5 psig

b. Max. allowable operating pressure *(MAOP)*: 2 PSIG

c. MAOP established by:
O Test Pressure _____ psig
O 49 CFR § 192. 619 (a)(3)

PART B – PREPARER AND AUTHORIZED SIGNATURE

Thomas R. Teehan, Senior Counsel
(type or print) Preparer's Name and Title

781-466-5137
Area Code and Telephone Number

TTeehan@keyspanenergy.com
Preparer's E-mail Address

781-290-4965
Area Code and Facsimile Number

Authorized Signature (type or print) Name and Title

12/9/05
Date

781-466-5137
Area Code and Telephone Number

PART C – ORIGIN OF THE INCIDENT

1. Incident occurred on
   - O Main
   - O Meter Set
   - O Service Line
   - X Other: under investigation
   - O Pressure Limiting and Regulating Facility
2. Failure occurred on
   - O Body of pipe
   - O Pipe Seam
   - O Joint
   - O Component
   - O Other: under investigation
3. Material involved *(pipe, fitting, or other component)*
   - O Steel
   - O Cast/Wrought Iron
   - O Polyethelene Plastic (complete all items that apply in a-c)
   - O Other Plastic (complete all items that apply in a-c)
   - Plastic failure was: ☐ a.ductile ☐ b.brittle ☐ c.joint failure
   - O Other material: ________
4. Year the pipe or component which failed was installed: /__/__/__/__/

PART D – MATERIAL SPECIFICATION (if applicable)

1. Nominal pipe size *(NPS)* /__/__/__/__/__/ in.
2. Wall thickness /__/__/__/__/__/ in.
3. Specification ________ SMYS /__/__/__/__/__/__/__/
4. Seam type ________
5. Valve type ________
6. Pipe or valve manufactured by ________ In year /__/__/__/__/

PART E – ENVIRONMENT

1. Area of Incident
   - O Under pavement
   - O Under ground
   - O Inside/under building
   - O In open ditch
   - O Above ground
   - O Under water
   - O Other: ________
2. Depth of cover: ________ inches

PART F – APPARENT CAUSE

***Important:** There are 25 numbered causes in this section. Check the box to the left of the primary cause of the incident. Check one circle in each of the supplemental items to the right of or below the cause you indicate. See the instructions for this form for guidance.*

F1 – CORROSION

1. ☐ External Corrosion
2. ☐ Internal Corrosion

If either F1 (1) External Corrosion, or F1 (2) Internal Corrosion is checked, complete all subparts a – e.

a. Pipe Coating
- O Bare
- O Coated
- O Unknown

b. Visual Examination
- O Localized Pitting
- O General Corrosion
- O Other: ________

c. Cause of Corrosion
- O Galvanic
- O Stray Current
- O Improper Cathodic Protection
- O Microbiological
- O Other: ________

d. Was corroded part of pipeline considered to be under cathodic protection prior to discovering incident?
O No O Yes O Unknown Year Protection Started: /__/__/__/__/

e. Was pipe previously damaged in the area of corrosion?
O No O Yes O Unknown How long prior to incident: /__/__/__/ *years* /__/__/ *months*

F2 – NATURAL FORCES

3. ☐ Earth Movement ⇒ O Earthquake O Subsidence O Landslide O Other: ________
4. ☐ Lightning
5. ☐ Heavy Rains/Floods ⇒ O Washouts O Flotation O Mudslide O Scouring O Other: ________
6. ☐ Temperature ⇒ O Thermal stress O Frost heave O Frozen components O Other: ________
7. ☐ High Winds

F3 – EXCAVATION

8. ☐ Operator Excavation Damage *(including their contractors)* / Not Third Party
9. ☐ Third Party Excavation Damage *(complete a-d)*

a. Excavator group
O General Public O Government O Excavator other than Operator/subcontractor

b. Type: O Road Work O Pipeline O Water O Electric O Sewer O Phone/Cable/Fiber O Landowner O Railroad
O Building Construction O Other: ________

c. Did operator get prior notification of excavation activity?
O No O Yes: Date received: /__/__/ mo. /__/__/ day /__/__/ yr.
Notification received from: O One Call System O Excavator O General Contractor O Landowner

d. Was pipeline marked?
O No O Yes *(If Yes, check applicable items i – iv)*
- i. Temporary markings: O Flags O Stakes O Paint
- ii. Permanent markings: O Yes O No
- iii. Marks were *(check one)* O Accurate O Not Accurate
- iv. Were marks made within required time? O Yes O No

F4 – OTHER OUTSIDE FORCE DAMAGE

10. ☐ Fire/Explosion as primary cause of failure ⇒ Fire/Explosion cause: O Man made O Natural *Describe in Part G*
11. ☐ Car, truck or other vehicle not relating to excavation activity damaging pipe
12. ☐ Rupture of Previously Damaged Pipe
13. ☐ Vandalism

F5 – MATERIAL OR WELDS

Material

14. ☐ Body of Pipe ⇒ O Dent O Gouge O Wrinkle Bend O Arc Burn O Other: ________
15. ☐ Component ⇒ O Valve O Fitting O Vessel O Extruded Outlet O Other: ________
16. ☐ Joint ⇒ O Gasket O O-Ring O Threads O Fusion O Other: ________

Weld

17. ☐ Butt ⇒ O Pipe O Fabrication O Other: ________
18. ☐ Fillet ⇒ O Branch O Hot Tap O Fitting O Repair Sleeve O Other: ________
19. ☐ Pipe Seam ⇒ O LF ERW O DSAW O Seamless O Flash Weld
O HF ERW O SAW O Spiral O Other: ________

Complete a-f if you indicate any cause in part F5.

a. Type of failure:
☐ Construction Defect ⇒ O Poor Workmanship O Procedure not followed O Poor Construction Procedures
☐ Material Defect

b. Was failure due to pipe damage sustained in transportation to the construction or fabrication site? O Yes O No

c. Was part which leaked pressure tested before incident occurred? O Yes, ***complete d-f, if known*** O No

d. Date of test: /__/__/ mo. /__/__/ day /__/__/ yr.

e. Time held at test pressure: /__/__/ hr.

f. Estimated test pressure at point of incident: ______________ *PSIG*

F6 – EQUIPMENT OR OPERATIONS

20. ☐ Malfunction of Control/Relief Equipment ⇒ O Valve O Instrumentation O Pressure Regulator O Other: ________
21. ☐ Threads Stripped, Broken Pipe Coupling ⇒ O Nipples O Valve Threads O Mechanical Couplings O Other: ________
22. ☐ Leaking Seals

23. ☐ Incorrect Operation

a. Type: O Inadequate Procedures O Inadequate Safety Practices O Failure to Follow Procedures O Other: ________

b. Number of employees involved in incident who failed post-incident drug test: /__/__/__/ Alcohol test: /__/__/__/

c. Was person involved in incident qualified per OQ rule? O Yes O No d. Hours on duty for person involved: /__/__/

F7 – OTHER

24. X Miscellaneous, *describe:Overpressurization occurred when 60pounds of pressure was inadvertently introduced into a 2 pound system during the course of a main relay project.*

25. ☐ Unknown
O Investigation Complete O Still Under Investigation *(submit a supplemental report when investigation is complete)*

PART G – NARRATIVE DESCRIPTION OF FACTORS CONTRIBUTING TO THE EVENT *(Attach additional sheets as necessary)*

EXHIBIT 2

Town of Lexington Fire Department, Fire Investigation Report

Town of Lexington
Fire Department

William V. Middlemiss, Fire Chief
Wayne P. Delaney, Assistant Fire Chief

Tel: (781) 862-0272
Fax: (781) 861-2791

Fire Investigation Report

Location: 3 Hancock Ave
Owner / Occupant: Elliot Thrasher Home Phone: :
Date: November 9th, 2005
Insurance: Quincy Mutual
Time: 1st. alarm 11:19:02 2nd alarm 11:19:02 3rd alarm 11:20:00
Type of Notification: Cell phone call to fire department business line by resident.

Bldg. Description: Two story wood frame single family dwelling with mixed balloon frame/platform construction. Mansard style asphalt shingle roof. Wood clapboard siding. Mixed stone and mortar, and poured concrete foundation. Home constructed in 1865, with additions added at a later date.

Utilities: Gas fired hot air furnace, Gas fired hot water heater, and Electric circuit breaker over protection panel. City water and sewer.

Fire Suppression Devices: none present

Fire Detection Devices: N/A

Fire Description: Upon arrival fire companies found what appeared to be residential dwelling that had exploded. The front of the dwelling and debris were burning. Fire increased at a rapid rate consuming most of the dwelling.

Victims:

Transported to Mass General Hospital by Lincoln Fire Rescue and Action ALS., later released.

Witness Statements: Thomas Thrasher (resident), Tom states he was on the second floor bedroom and heard a loud hiss, he went outside to get his mother to investigate. He asked his mother if she could hear the noise? She stated she couldn't but could smell gas. Both Tom and his mother went back into the home, Tom retrieved his cell phone and his mother opened the basement door to further investigate. Tom called to her and made her come back outside. He indicated at no time could they smell any gas inside. Tom stated he called 911, he further states that it was approx 5 minutes from when the time he heard the hiss until he made the call, and another minute from the explosion.(see full witness statement).

Antra Thrasher (resident/owner), Antra tells a similar story. She smelled gas only on the outside of the dwelling and could only hear the hiss from the inside. She states that she opened the basement door and turned on the light, and went down several steps. She doesn't remember if she shut the light off or closed the door. (see full witness statement).

John Hager (working at 11 Hancock Ave), John was inside #11 when he heard a loud bang "like a plane crash", the house started to shake. He ran outside and saw a women staggering in the road and helped her across the street. He states there was debris everywhere you could see inside the house. There was initially small fires but the house quickly erupted in flames. (see full statement)

Origin: The explosion and subsequent fire originated on the "A" side of the structure. Witness statements placed the initial fire in the area of the gas meter, center of the "A" side

Conclusion: After an extensive investigation to include scene examination and witness interviews we discovered the following; NEUCO, a private contractor for KeySpan gas company was working on connecting an existing high pressure main to a new main . While purging the system of air they inadvertently pressurized a low pressure line (2 lbs) with a high pressure line(60 lbs).

Knowing that the system had been over pressurized, and that the origin was in the area of the gas meter we focused on the equipment in this area. Debris was systematically removed and examined. We uncovered the area were the vent pipe penetrated through the sill plate. The vent pipe had broken free from the regulator at the diaphragm, the pipe was removed and secured for later examination. The remainder of the basement was under water and required removal of the water. We next found the pipe with the regulator connected, this pipe had broken free of the meter. This pipe was removed and secured for later examination. The gas meter was found still attached to the appliance feed. The meter was cut from the pipe , removed and secured for later examination. The last piece of the system removed was the feeder where it penetrated the foundation. A backhoe was utilized to remove debris and some earth, the remainder was removed by hand so the pipe would not be further damaged. This pipe was removed and secured for later examination. All evidence was viewed and photographed by fire investigators, Department of Telecommunications and Energy, and KeySpan. At no time was KeySpan allowed to touch any evidence. Many of the components of the gas system showed signs of damage, but until DTE has the system examined and tested we can not say whether any part of the system had failed due to over pressurization or was merely damaged due to the fire.

More debris had to be removed to access the remainder of the basement, we located and examined the gas fired hot water heater first. The unit was in tacked and all piping looked to be attached correctly. The access door was partially removed and there was a clear "V" pattern coming from this area. We next excavated the gas fired forced hot air furnace, this again was in tacked and was piped properly. The furnace showed signs of an equal burn pattern. Note that both gas appliances utilized a standing gas pilot light, and they are the only gas appliances in the dwelling. We also found the remains of a partition wall separating the basement, explaining the lack of inside odor.

After discussion with DTE officials and a licensed plumber, noting the evidence found I believe that as a result of the over pressure to the system some part of the gas system failed resulting in a quantity of gas entering into the basement area. The gas was most likely above the explosive range of natural gas, as the gas dissipated into the balloon frame and the second space of the basement it reached its explosive range. With multiple ignition sources in the area it is not known which one triggered the explosion and subsequent fire.

It is my opinion that that this explosion and fire was accidental in nature.

Attachments:
MFIRS
Witness Statements; Thomas Thrasher, resident
Antra Thrasher, resident/homeowner
John Hagar, working in neighborhood
Raymond Young, KeySpan
Paul McDonough, KeySpan
William Sweeny LPD detail officer
Michael Sowle LPD detail officer
Kerry Evans, FD administrator
Interviews with neighbors by Trp. O'Donnell and Detective Demambro
Tax assessment #3Hancock Ave
Tax assessment #5 Hancock Ave (exposure)
Building permit records
Summary of interviews by DTE of KeySpan
KeySpan response to the incident.
Evidence log
3 digital photo CD's 1) investigation photos
2) aerial photos
3) FF Robinson's photos

Participating Officers:

John A Wilson, Lieutenant LFD
Derek Sencabaugh, Lieutenant LFD
Timothy Flaherty, FF LFD
Det. Rick Corazzini, LPD
Trp. Robert O'Neil, MSFO
Trp. Peter Cummings, MSFO
Trp. Sheryl O'Donnell, MSFO
Paul Grieco, DTE

Submitted by:

John A Wilson
Lieutenant
Lexington Fire Department

EXHIBIT 3

KeySpan's DTE Incident Report

KEYSPAN
Energy Delivery

KeySpan Energy Delivery
52 Second Avenue
Waltham, MA 02451
Tel 781 466-5137
Fax 781 290-4965
E-mail tteehan@keyspanenergy.com

Thomas R. Teehan
Senior Counsel

Via Facsimile & U.S. Mail

November 16, 2005

Mr. Christopher Bourne
Department of Telecommunications & Energy
Pipeline Safety & Engineering Division
One South Station
Boston, MA 02110

Re: 3 Hancock Avenue, Lexington

Dear Mr. Bourne:

Enclosed please find DTE Incident Report with regard to the above location.

Very truly yours,

Thomas R. Teehan

TRT/dmo
Enclosure

KEYSPAN ENERGY

DTE INCIDENT REPORT

TODAY'S DATE: November 16, 2005
DATE OF INCIDENT: November 9, 2005

Mr. Christopher Bourne
Department of Telecommunications and Energy
Pipeline Safety and Engineering Division
One South Station
Boston, MA 02110

INCIDENT LOCATION	TYPE OF INCIDENT	# PEOPLE AFFECTED	DATE/TIME CALLED	DOT NOTIFIED
3 Hancock Avenue, Lexington	Release of gas: X Outage: X Evacuation:	1625 accounts	To Dispatch: 11:40 A.M. To DTE: 12:00 noon (Chris Bourne)	Yes: X Time: 1:15 P.M. No.: 778998

PROBABLE CAUSE: Overpressurization of main. Investigation is ongoing.

INJURIES REPORTED:

PERSON(S) INJURED	TYPE OF EMERGENCY CARE
Mrs. Antra Thrasher Thomas Thrasher	Reported taken to hospital and released

PROPERTY DAMAGES:

LOCATION OF DAMAGE	TYPE OF DAMAGE
3 Hancock Ave., Lexington, MA	House and Contents

TOTAL DURATION EVACUATION KEYSPAN PERSONNEL RESPONSE:
TOTAL DURATION OUTAGE: Main back in service evening of November 13.

EVACUATED BY:
FIRE DEPT. _____
POLICE _____
SELF _____
KEYSPAN _____

KEYSPAN ENERGY DELIVERY NEW ENGLAND
LEGAL SERVICES
(781) 466-5137

EXHIBIT 4

KeySpan Letter on inside services leaks (March 21, 2006)

KEYSPAN
Energy Delivery

KeySpan Energy Delivery
52 Second Avenue
Waltham, Massachusetts 02451

March 21, 2006

Mr. Chris Bourne
Department of Telecommunications & Energy
Pipeline Engineering & Safety Division
One South Station, 4th Floor
Boston, MA 02110

Dear Mr. Bourne:

Per your request, we have reviewed our records relative to addresses and dates you provided to Kevin Knapp in your facsimile dated, March 15, 2006 and have determined that the following addresses were found to have leaks on inside company-owned piping.

1620 Massachusetts Ave
0 Bedford St
100 Hancock St
1 Harrington Rd
2127 Massachusetts Ave
4 Muzzey St
12 Shirley St7
0 Taft St
32 Worthen Rd
29 Adams St
43 Gleason Rd

If you have any questions or require any additional information, please do not hesitate to contact me.

Sincerely,

William Kildare
Director, Field Service

EXHIBIT 5

State Fire Marshal Report

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FIRE SERVICES--OFFICE OF THE STATE FIRE MARSHAL
p.o. box 1025, State Road, Stow, MA 01775

MASSACHUSETTS FIRE INCIDENT REPORTING SYSTEM -- BASIC

	fdid	st	inc date	station	inc no	exp	type
A	17155	MA	11/09/2005		0505125	0000	NEW

B location: [1] STREET ADDRESS

number	pre	street or highway	type	su	census
3		HANCOCK	AV		

apt/suite/room	city	st	zip	x-street/directions
	LEXINGTON	MA	02421	

C 111 BUILDING FIRE

inc tp	crit inc	team mob	critical reason:
	NO	NO	[ ] [ ] [ ]

	aid given/received	their fdid	st	their inc #
D	[ ]		MA	

		date	time	shift	alarms	district
E	alarm:	11/09/2005	11:19	B	4	02
	arrival:	11/09/2005	11:19	special study		
	control:	11/09/2005	11:54	id#:	code:	
	lst clr:	11/09/2005	20:00			

F action taken #1: [11] EXTINGUISH
#2: [22] RESCUE, REMOVE FROM HARM
#3: [12] SALVAGE & OVERHAUL

G1 resources:

	apparatus	personnel
suppression:	20	64
ems:	2	4
other:	0	0

resource count includes aid received: [NO]

G2

	$ loss	pre-incident value
property:	$ 821,000.	$ 821,000.
contents:	$ 200,000.	$ 200,000.

H1 casualties

	deaths	injuries
fire service:	0	0
civilian:	0	2

H2 detector: [U] UNKNOWN

H3 hazardous materials release:
[1] NATURAL GAS: SLOW LK, NO EVAC/HAZ ACTION

I mixed use property:
[40] RESIDENTIAL USE

J property use:
[419] 1 OR 2 FAMILY DWELLING

	oic id	first name	mi	last name	rank
M	F83	WILLIAM		MIDDLEMISS	CHIEF

assignment	date
	11/10/2005

mic id	first name	mi	last name	rank
F83	WILLIAM		MIDDLEMISS	CHIEF

assignment	date
	11/10/2005

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FIRE SERVICES--OFFICE OF THE STATE FIRE MARSHAL
p.o. box 1025, State Road, Stow, MA 01775

MASSACHUSETTS FIRE INCIDENT REPORTING SYSTEM -- BASIC

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FIRE SERVICES--OFFICE OF THE STATE FIRE MARSHAL
p.o. box 1025, State Road, Stow, MA 01775

MASSACHUSETTS FIRE INCIDENT REPORTING SYSTEM -- BASIC

NARRATIVE case: 0505125 exp: 000 page: 1

001 HOUSE EXPLOSION & FIRE, BOX 5121 TRANSMITTED
002 11:19:02 CD-F10-HOUSE EXPLOSION & FIRE, BOX 5121 TRANSMITTED
003 11:19:02 FIRE SHOWING, STRIKE 2ND ALARM B.O. CAPT. FULTON
004 11:20:00 STRIKE 3RD ALARM B.O. CHIEF MIDDLEMISS
005 11:33:11 ACTION P-UNIT & LINCOLN R1 AS BLS UNIT
006 11:35:34 NSTAR & KEYSPAN NOTIFIED
007 11:21:00 ARL E2 COVER E.LEX, WIN E3 TO H.Q
008 11:45:00 PR1. LARGE 2.5 WDFR FULLY INVOLVED, 2 GUNS AND
009 STRECTHING 3 BIG LINES. FIRE CONTAINED TO STRUCTURE
010 11:54:25 TRANSPORT ALS TO MGH WITH LINCOLN R1
011 12:23:00 KEYSPAN ON SCENE
012 12:18:00 LINCOLN E1 COVER H.Q.
013 12:18:00 PR.2 FIRE KNOCKED DOWN, ALL COMPANIES WORKING
014 12:20:00 REQUEST FOR CANTEEN UNIT, METRO NOTIFIED
015 12:49:05 PR. 3 ALL COMPANIES STILL WORKING
016 12:53:00 REQUEST DFS INCIDENT SUPPORT UNIT TO RESPOND
017 2ND ALARM RESPONSE HAFB E6, BURL E2, WAL E8, BED L1
018 3RD ALARM RESPONSE BEL E2, WOB E3, CONC E3, WAL L2
019 COVERING COMPANIES H.Q. WIN. E3 RESPONDED TO 23 LINCOLN ST
020 WITH HAFB R3. LINCOLN E1 TO COVER H.Q.
021 E. LEX. ARL E2
022 SPECIAL CALLS: ACTION P2, LINCOLN R1, DFS ISU, METRO-FIRE
023 A-10 CANTEEN
024 13:05:00 ALL FIRST ALARM COMPANIES TO RE-HAB
025 13:09:57 KEYSPAN REPORTS GAS SHUT DOWN ON HANCOCK
026 13:10:45 BED L1 FROM FIRE TO COVER AT H.Q.
027 13:33:32 PR.4 FIRE KNOCKED DOWN, STARTING TO MAKE UP
028 COMPANIES. MSP SGT ZIPPER ON SCENE
029 13:44:03 FROM FIRE TO COVER H.Q.
030 14:20:55 RESPONDING FROM FIRE TO LINCOLN ST
031 14:31:51 STRIKE 4TH ALARM, COMPANIES STAGED TO FIRE HQ
032 14:35:44 TO FIRE HQ.
033 4TH ALARM COMPANIES SOM E-6, CAMB E-4, MED L-1
034 BEL E-2 RESPONDED BACK TO FIRE H.Q ON THE FOURTH ALARM
035
036 15:20:28 RETURNING TO WINCHESTER
037
038 UPON ARRIVAL ENGINE 2 WAS DIRECTED TO THE FRONT OF THE STRUCTURE,
039 TAKING THE HYDRANT AT HANCOCK STREET AND HANCOCK AVE. ENGINE 2'S CREW
040 ADVANCED AN 13/4 EXPOSURE LINE TO THE B SIDE OF THE STRUCTURE
041 PROTECTING # 5 HANCOCK AVE. ENGINE 2 PLACED ITS MONITOR IN SERVICE
042 ON THE MAIN BODY OF FIRE.
043 ENGINE 4'S CREW ADVANCED A 2 1/2 INCH LINE WITH A 500GPM MONITOR TO
044 THE D SIDE OF THE FIRE. WALTHAM ENGINE 8 FED LEX ENGINE 2 WITH AN

ADDITIONAL 4 INCH SUPPLY LINE FROM HANCOCK STREET.
BURLINGTON SUPPLIED LADDER 1 WITH ONE FOUR INCH SUPPLY FROM HANCOCK BRIGHAM ROAD. LADDER 1;
'

LADDER 1'S PIPE WAS PLAYED ON THE MAIN BODY OF FIRE FRON THE B SIDE
ENGINE 4 WAS SUPPLIED BY BELMONT ENGINE 2, FROM HANCOCK AND HAYES, ENGINE 4 SUPPLIED 2 - 21/2 INCH ATTACK LINES ON THE MAIN BODY OF FIRE, ONE LINE WAS EVENTUALLY BROKEN DOWN WITH A Y AND SUPPLIED TWO 1 3/4 LINES USED TO PROTECT THE REAR GARAGE AND EXPOSURES.
ENGINE 3 LAID FROM CAMELIA PLACE AT FIRE HEADQUARTERS TO HANCOCK AVE, SUPPLYING ONE 1 3/4 LINE AND ONE 2 1/2 INCH LINE. BEDFORD LADDER 1 POSITIONED ITSELF ON HANCOCK ST, HOWEVER WAS NOT UTILIZED. WALTHAM LADDER 2 WAS POSTIONED ON BRIGHAM RD. HOWEVER WAS NOT USED.
POWER WAS DISCONTINUED BY NSTAR CREWS, KEYSPAN RESPONDED AND EVENTUALLY DICONTINUED FLOW TO HANCOCK AVENUE.
DUE TO THE LARGE NUMBER OF CALLS FOR SERVICE RELATED TO NATURAL GAS A FOURTH ALARM WAS STRUCK, FOR RELIEF AND SUPPORT CREWS.
REQUESTS TO THE DEPARTMENT OF FIRE SERVICES FOR THE INCIDENT SUPPORT UNIT AND INCIDENT REHAB UNIT WERE MADE.
AMERICAN RED CROSS RESPONDED AND PROVIDED SUPPORT.
LEXINGTON POLICE, DEPARTMENT OF PUBLIC WORKS AND COMMUNITY DEVELOPMENTSUPPLIED SUPPORT SERVICES.
THE FIRE IS UNDER INVESTIGATION BY THE LEXINGTON FIRE AND POLICE DEPARMENTS FIRE INVESTIGATION UNIT ALONG WITH INVESTIGATORS FROM THE STATE FIRE MARSHAL'S OFFICE AND DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY.

EXPOSURE 001, 5 HANCOCK AVE
EXPOSURE 002, 2001 SAAB MA REG 7359ZP
EXPOSURE 003, 1980 PORSCHE MA REG. 731-KAE
EXPOSURE 004, 1994 NISSAN MA REG. NE28ED

PENDING TESTING OF ALL EVIDENCE THROUGH "DTE", I BELIEVE AN ACCIDENTAL OVER PRESSURIZED SYSTEM CAUSED SOME PART OF THE INTERNAL GAS SYSTEM TO FAIL. A QUANTITY OF GAS BUILT UP IN THE INTERIOR BASEMENT. THE GAS ENTERED ITS EXPLOSIVE RANGE AND WAS IGNITED BY ONE OR MORE EXISTING SOURCES TO INCLUDE THE STANDING PILOTS FROM THE GAS FIRED HOT WATER HEATER, AND GAS HOT AIR FURNACE. THE IGNITION CAUSED AN EXPLOSION AND SUBSEQUENT FIRE IN THE STRUCTURE. IT IS MY OPINION THAT THIS FIRE WAS ACCIDENTAL IN NATURE.
LT. JOHN A WILSON

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FIRE SERVICES--OFFICE OF THE STATE FIRE MARSHAL
p.o. box 1025, State Road, Stow, MA 01775

MASSACHUSETTS FIRE INCIDENT REPORTING SYSTEM -- FIRE

A

fdid	st	inc date	station	inc no	exp	type
17155	MA	11/09/2005		0505125	000	NEW

B

property details:
[0] living units [X] not residence
[0] buildings involved [X] not buildings
[0] acres burned [ ]less than one [X] none

C

on-site materials/products [ ] none
#1[200] PERSONAL & HOME PRODUCTS, OT [ ]
#2[ ] [ ]
#3[ ] [ ]

D

ignition: [ ] spread limited to first item
area of origin [UU] UNDETERMINED
heat source [UU] UNDETERMINED
item first iginited [UU] UNDERTERMINED
type mat first ignited [11] NATURAL GAS

E

cause of ignition: [ ] exposure report > skip to section G
[5] CAUSE UNDER INVESTIGATION
factors contributing to ignition: [ ] none
#1[UU] UNDERTERMINED
#2[ ]

human factors contributing to ignition:
[X] none
[ ] 1 asleep [0] estimated age
[ ] 2 possible alcohol/drug [ ]
[ ] 3 unattended person
[ ] 4 possible mentally disabled
[ ] 5 physically disabled
[ ] 6 multiple persons involved
[ ] 7 age was a factor

F

equipment involved in ignition:
[UUU] UNDETERMINED brand:
model: yr: [ ] ser #:
eq pwr src:[UU] UNDETERMINED port?[ ] STATIONARY

G
suppression factors: [ ] none
#1[ ]
#2[ ]
#3[ ]

H
mobile property involved: [ ] none
[ ]1 NOT INVOLVED IN IGN, BUT BURNED
[ ]2 INVOLVED IN IGN, BUT NOT BURNED
[ ]3 INVOLVED IN IGN AND BURNED

[ ] car stolen
type:[ ]
make:[ ]
model: yr:
plate: state: [ ]
vin:

I
structure type:[1] ENCLOSED BUILDING
building status:
[2] OCCUPIED AND OPERATING
building heights:
stories at/above ground: [25]
stories below ground: [1]

main floor size:
total sq foot: [ ]
length x width: [ ]x[ ]

J
fire origin:
story of fire:[ ]
below grade:[ ]
fire spread:[5]
BEYOND BUILDING OF ORIGIN

stories damaged by flames:
minor flame damage(1- 24%)[ ]
significant flame damage(25- 49%)[ ]
heavy flame damage(50- 74%)[ ]
extreme flame damage(75-100%)[ ]

K
material contributing most ot flame spread: [ ] no flame spread
item contrib most to flame spread: [UU] UNDERTERMINED
type mater contrib most to spread: [11] NATURAL GAS

L
detectors[1] PRESENT
pwr supply[U] UNDETERMINED
det effectiveness: [U] UNDETERMINED
det failure reason: [U] UNDETERMINED

detector type:[U] UNDETERMINED
det operation:[U] UNDETERMINED

M
automatic extinguishing systems: [NONE]
type [ ]
operation [ ]
sprinkler hds operating [ ]
failure reason [ ]

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FIRE SERVICES--OFFICE OF THE STATE FIRE MARSHAL
p.o. box 1025, State Road, Stow, MA 01775

MASSACHUSETTS FIRE INCIDENT REPORTING SYSTEM -- CIVILIAN FIRE CASUALTY

A

fdid	st	inc date	station	inc no	exp	type
17155	MA	11/09/2005		0505125	000	NEW

B

first name	mi	last name	su	sex	cas no
ANTRA		THRASHER		FEMALE	C 001

D

dob	age	months	race
02/06/1941	64	[ ]	E[1] WHITE

E

ethnicity	affiliation
[ ] 1 HISPANIC	F[1] CIVILIAN

G

date -injury- time	injury severity
11/09/2005	H[2] MODERATE

I

cause of injury
[1] EXPOSED TO FIRE PROD, FLAME,HE

J

human factors contributing to injury
J[N] NONE
[N] NONE
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]

K

factors contributing to injury
#1[00] OTHER
#2[ ]
#3[ ]

L

activity when injuried
[1] ESCAPING

M

location at time of injury	general location at time of injury
[U] UNDETERMINED LOCATION AT TIME	[3] OUTSIDE, BUT NOT IN AREA

story at start of injury: [ ] [ ] below grade
story where injury occurred: [ ] [ ] below grade
specific location at time of injury: [90] OUTSIDE AREA, OTHER

N

primary apparent symptom:
[21] CUT OR LACERATION

O

primary area of body injured:	disposition:
[9] MULTIPLE BODY PARTS	P[X] transport to emergency care facility

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FIRE SERVICES--OFFICE OF THE STATE FIRE MARSHAL
p.o. box 1025, State Road, Stow, MA 01775

MASSACHUSETTS FIRE INCIDENT REPORTING SYSTEM -- CIVILIAN FIRE CASUALTY

A

fdid	st	inc date	station	inc no	exp	type
17155	MA	11/09/2005		0505125	000	NEW

B

first name	mi	last name	su	sex	cas no
THOMAS		THRASHER		MALE	C 002

D

dob	age	months	race
09/05/1976	29	[ ]	E[1] WHITE

E

ethnicity	affiliation
[ ] 1 HISPANIC	F[1] CIVILIAN

G

date -injury-	time	injury severity
11/09/2005		H[1] MINOR

I

cause of injury
[U] UNDETERMINED

J

human factors contributing to injury
J[N] NONE
[N] NONE
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]

K

factors contributing to injury
#1[10] EGRESS PROBLEM, OTHER
#2[ ]
#3[ ]

L

activity when injuried
[U] UNDETERMINED

M

location at time of injury	general location at time of injury
[U] UNDETERMINED LOCATION AT TIME	[3] OUTSIDE, BUT NOT IN AREA

story at start of injury: [ ] [ ] below grade
story where injury occurred: [ ] [ ] below grade
specific location at time of injury: [90] OUTSIDE AREA, OTHER

N

primary apparent symptom:
[21] CUT OR LACERATION

O

primary area of body injured:	disposition:
[9] MULTIPLE BODY PARTS	P[X] transport to emergency care facility

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FIRE SERVICES--OFFICE OF THE STATE FIRE MARSHAL
p.o. box 1025, State Road, Stow, MA 01775

MASSACHUSETTS FIRE INCIDENT REPORTING SYSTEM -- BASIC

A	fdid: 17155	st: MA	inc date: 11/09/2005	station:	inc no: 0505125	exp: [redacted]	type: NEW
B	location: [1] STREET ADDRESS						
	number: 5	pre:	street or highway: HANCOCK			type: AV	su:
	census:	apt/suite/room:	city: LEXINGTON	st: MA	zip: 02421	x-street/directions:	
C	112 FIRES IN STRUC, NOT BUILDING						
	inc tp:	crit inc: NO	team mob: NO	critical reason: [ ] [ ] [ ]			
D	aid given/received: [ ]	their fdid:	st: MA	their inc #:			
E		date	time	shift	alarms	district	
	alarm:	11/09/2005	11:19	B	1	1	
	arrival:	11/10/2005	11:19	special study id#:		code:	
	control:	11/09/2005	11:54				
	lst clr:	11/09/2005	20:00				
F	action taken #1: [10] FIRE, OTHER #2: [53] EVACUATE AREA #3: [11] EXTINGUISH						
G1	resources:		apparatus	personnel	resource count includes aid received: [YES]		
		suppression:	20	15			
		ems:	3	4			
		other:	0	0			
G2		$ loss	pre-incident value				
	property:	$ 50,000.	$ 480,000.				
	contents:	$ 0.	$ 0.				
H1	casualties	deaths	injuries	H2			
	fire service:	0	0		detector: [2] DETECTOR DID NOT ALERT OC		
	civilian:	0	0				
H3	hazardous materials release: [N] NONE						
I	mixed use property: [40] RESIDENTIAL USE						
J	property use: [419] 1 OR 2 FAMILY DWELLING						

M	oic id: F83	first name: WILLIAM	mi:	last name: MIDDLEMISS	rank: CHIEF
	assignment:	date: 11/13/2005			
	mic id: F83	first name: WILLIAM	mi:	last name: MIDDLEMISS	rank: CHIEF
	assignment:	date: 11/13/2005			

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FIRE SERVICES--OFFICE OF THE STATE FIRE MARSHAL
p.o. box 1025, State Road, Stow, MA 01775

MASSACHUSETTS FIRE INCIDENT REPORTING SYSTEM -- BASIC

owner:

K2

business name				phone number
				(781)862-5070
pre	first name	mi	last name	suf
	EDITH		RUQUIST	
number	pre	street/highway	tp	suf
5		HANCOCK	AVE	
p.o. box	apt/suite/room	city	st	zip
		LEXINGTON	MA	02420
insurance company		total insurance		
		.		

person/entity involved:

K1

business name				phone number
				(781)862-5070
pre	first name	mi	last name	suf
	EDITH		RUQUIST	
number	pre	street/highway	tp	suf
5		HANCOCK	AVE	
p.o. box	apt/suite/room	city	st	zip
		LEXINGTON	MA	02420
insurance company		total insurance		
		.		

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FIRE SERVICES--OFFICE OF THE STATE FIRE MARSHAL
p.o. box 1025, State Road, Stow, MA 01775

MASSACHUSETTS FIRE INCIDENT REPORTING SYSTEM -- FIRE

A

fdid	st	inc date	station	inc no	exp	type
17155	MA	11/09/2005		0505125	000	NEW

B

property details:
[1] living units [ ] not residence
[1] buildings involved [ ] not buildings
[0] acres burned [ ]less than one [X] none

C

on-site materials/products [ ] none
#1[200] PERSONAL & HOME PRODUCTS, OT [ ]
#2[ ] [ ]
#3[ ] [ ]

D

ignition: [ ] spread limited to first item
area of origin [UU] UNDETERMINED
heat source [UU] UNDETERMINED
item first iginited [UU] UNDERTERMINED
type mat first ignited [11] NATURAL GAS

E

cause of ignition: [ ] exposure report > skip to section G
[5] CAUSE UNDER INVESTIGATION
factors contributing to ignition: [ ] none

#1 [UU] UNDERTERMINED
#2 [ ]

human factors contributing to ignition:
[X] none
[ ] 1 asleep [0] estimated age
[ ] 2 possible alcohol/drug [ ]
[ ] 3 unattended person
[ ] 4 possible mentally disabled
[ ] 5 physically disabled
[ ] 6 multiple persons involved
[ ] 7 age was a factor

equipment involved in ignition:
F [UUU] UNDETERMINED brand:
model: yr: [ ] ser #:
eq pwr src:[UU] UNDETERMINED port?[ ] STATIONARY

G
suppression factors: [ ] none
#1[ ]
#2[ ]
#3[ ]

H
mobile property involved: [ ] none
[ ]1 NOT INVOLVED IN IGN, BUT BURNED
[ ]2 INVOLVED IN IGN, BUT NOT BURNED
[ ]3 INVOLVED IN IGN AND BURNED

[ ] car stolen
type:[ ]
make:[ ]
model: yr:
plate: state: [ ]
vin:

I
structure type:[1] ENCLOSED BUILDING
building status:
[2] OCCUPIED AND OPERATING
building heights:
stories at/above ground: [25]
stories below ground: [1]

main floor size:
total sq foot: [968]
length x width: [44]x[22]

J
fire origin:
story of fire:[ ]
below grade:[ ]
fire spread:[5]
BEYOND BUILDING OF ORIGIN

stories damaged by flames:
minor flame damage(1- 24%)[ ]
significant flame damage(25- 49%)[ ]
heavy flame damage(50- 74%)[ ]
extreme flame damage(75-100%)[2]

K
material contributing most ot flame spread: [ ] no flame spread
item contrib most to flame spread: [10] STRUCTURAL COMPONENT OR FINISH
type mater contrib most to spread: [11] NATURAL GAS

L
detectors[1] PRESENT
pwr supply[U] UNDETERMINED
det effectiveness: [U] UNDETERMINED
det failure reason: [U] UNDETERMINED

detector type:[U] UNDETERMINED
det operation:[U] UNDETERMINED

M
automatic extinguishing systems: [NONE]
type [ ]
operation [ ]
sprinkler hds operating [ ]
failure reason [ ]

EXHIBIT 6

KeySpan Service Card for 3 Hancock Avenue

St. and No. 3 HANCOCK AVE Town LEXINGTON

Owner / Tenant L C Atwood Date Laid May 26 1919 Ord. No. 2347

Service Report of LEX. GAS Co.

Size 1¼" Length 49' Ser. Drip — Drips to Main

Size Main 4" Kind Main C.I. Depth 2'6" Tapped on TOP Size Tap ¾"

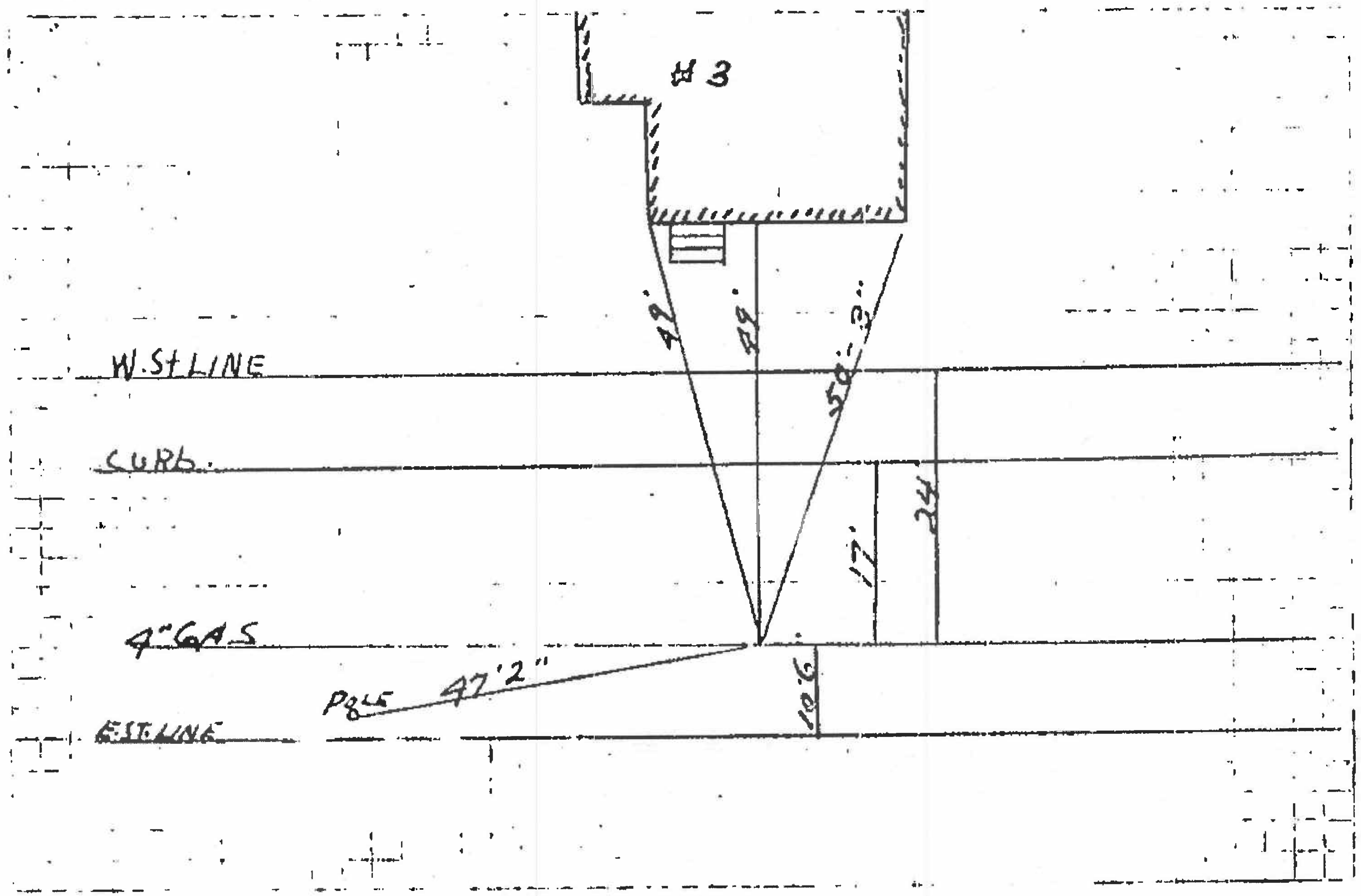
Main to E St. Line 10'6" Main to W ~~Curb~~ STONE 24' Soil G Pavement G

FITTINGS	NO.	SIZE	CAT. NO.	COST		FITTINGS	NO.	SIZE	CAT. NO.	COST	
St. Tee						Saddle					
St. Ell						Ser. Cock					
Plug						Curb Cock					
Pipe						Lock Cock					
Ells						Ser. Box.					
Tee						Req.					
Nipples											

Remarks:

Signed W. McManus.

GJ



#3
49'
49'
50'-3"
W.St LINE
CURb.
24'
17'
4" GAS
47'2"
Pole
10'6"
E.St LINE

EXHIBIT 7

Records for Main on Hancock Avenue

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY
PIPELINE ENGINEERING AND SAFETY DIVISION

INFORMATION REQUESTS FROM
THE PIPELINE ENGINEERING AND SAFETY DIVISION OF
THE DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY TO
KEYSPAN ENERGY DELIVERY

RE: Investigation of Incident at 3 Hancock Avenue, Lexington - November 9, 2005

Respondent: Melissa Wing, Dave Iseler, Phillip Quan, Stanley Allgor, Thomas Hamilton

PL 1-4: Provide records for the main on Hancock Avenue, including but not limited to, installation date, maximum allowable operating pressure ("MAOP"), leak history (over the last year) and operating pressure at the time of the incident. Include in your response a description of any maintenance or replacement work performed on the main within the last year.

Response: The 4 inch cast iron main was installed on Hancock Avenue, Lexington, MA in 1911 (Exhibit 1); the MAOP was 2 PSIG; KeySpan has no records of any leaks on Hancock Avenue over the past year. The operating pressure at the time of the incident was 2 PSIG. KeySpan is unaware of any maintenance or replacement work performed on this main within the past year.

EXHIBIT 8

Photograph - 3 Hancock Avenue, Lexington,

following explosion and ensuing fire

EXHIBIT 9

Photograph - 3 Hancock Avenue, Lexington, collapsed into basement. Adjacent two car garage was partially destroyed

EXHIBIT 10

Photographs of 3 Hancock Avenue KeySpan Service Line

Inlet pipe in foundation wall (MMR Report figures 26-27)

Inlet pipe and fracture origin (MMR Report figures 24-25)

Inlet pipe view of mating fractures (MMR Report figures 30-31)

Figure 26: Inlet pipe prior to dismantling incident location foundation wall. Note fracture and blowout location are visible. Photo courtesy of DTE.

Figure 27: Cut end of inlet pipe exposed. Photo courtesy of DTE.

Figure 24: Approximate extent of sooty debris on pipe OD.

Figure 25: Blown-out material and fracture origin location, red arrow. White debris at blue arrow.

Figure 30: Inlet pipe (foundation side), right, and inlet pipe assembly, left, mating fractures aligned and viewing 12 o'clock position at front.

Figure 31: Inlet pipe assembly showing drip marks upstream of shutoff valve, arrow. In-service 12 o'clock position on inlet pipe fracture marked.

EXHIBIT 11

KeySpan Order Detail (May 20, 1996)

Order Detail

BOSTON GAS COMPANY

MASTER ORDER DETAIL

Job Info (1)

Customer Name: THRASHER ELLIOTT L **Account #:** 4281121212010
Address: 3 HANCOCK AV
Town/Zip: LEX / 02173
Host Ord Create Dt: 5/20/96 7:30:00 AM **Service Rep:** 4290
CICS Term ID: R002 **Taken By:** MGO **Group:** 21
Dispatcher: 46145 **Disp Time:** 5/21/96 7:16:00 AM

Tran Code: MERT **Class:** 25
Reported By: MGO **HSP:** **Chg/No Chg:** N **Reissue:** 0
Appointment Dt: 5/20/96 **Rental:** **Log Num:**
WTD From: **WTD To:**

Meter Num: 0K258659 **Route:** 3800 **Size:** 148 **Dials:** 4
Lken: C FD **Inst:** 83 **Multi Meter:**
ERT Num: PEND **ERT Batt:** **ERT Inst:** 0
Comments: CHG W/ERTN/C

Mail Name: **Mail Street:**
Mail City: **Mail Zip:**
Telephone 1: 6178611756 **Telephone 2:**

GENERAL COMPLETION DETAIL (81503)

Last Job (1)

Job Codes: MT MT CT **Job Mins:** 25 **OT Code:** N
EnRoute: 5/21/96 8:00:00 AM **EnRoute Override:** **Flu Check:** Y
OnSite: 5/21/96 8:24:00 AM **OnSite Override:** **Chk+Read:**
Comp Date: 5/21/96 9:17:00 AM
Warning: N **Gas On:** Y **Mtr Lck:** N **Appl Lck:** N

METER COMPLETION DETAIL

Prev-Rem Meter#: 0K258659 **Correct Meter #:** **On-Off Rem Read:** 1169
Set Meter #: 0N534166 **Set Read:** 0405 **Set Dials:** 4 **Set Locn:** C
Set Size: 148 **Set ERT#:** 06676831

RG: 0	KH: 0	WH: 1	CD: 0	HH: 1	RH: 0	RFHT: 0	AC: 0
LMP: 0	PLHT: 0	UNHT: 0	OBP: 0	EMG: 0	GRL: 0	OTH: 0	

Comments: C/C CLKD+SOAPED METER RELIT APPL C/F
Finished: Y
New Customer Name:

ORDER NUMBER INFORMATION

Top

CAD Order Num: 81503
CAD Date/Time: 5/20/96 7:28:00 AM

CSS Order Num: 9613414593782

EXHIBIT 12

KeySpan Order Detail (July 23, 2004)

Order Detail

BOSTON

MASTER ORDER DETAIL

Customer Name: ELLIOTT L THRASHER **Account #:** 04972216360
Address: 3 HANCOCK AVE N/A
Town/Zip: LEX / 02420
Host Ord Create Dt: 7/23/04 7:38:09 AM **Service Rep:** 13505
CICS Term ID: **Taken By:** 00000 **Group:** D
Dispatcher: **Disp Time:** 7/23/04 7:38:19 AM

Tran Code: 048 **Class:** M
Reported By: **Reissue:** 000
Appointment Dt: 7/23/04
WTD From: 7/23/04 **WTD To:** 7/23/04

Meter Num: 00N534166 **Size:** 2148
Lken: - **Inst:** 19960521
ERT Num: **ERT Batt:** -
Telephone 1: 7818611756 **Telephone 2:** 7818611756

Special Instructions
Call: **
Sys: Pend Ord: * Verify Mtr: * Chg Mtr: * Theft: * Contract: * Spc Con *
Disp:

GENERAL COMPLETION DETAIL (23296)

Job Codes: CG 6 **Job Mins:** 6
CRIS Codes: 048 010 00 **Job Mins:** 6
EnRoute: 7/23/04 9:23:04 AM **EnRoute Override:** **Flu Check:**
OnSite: 7/23/04 9:24:24 AM **OnSite Override:**
Comp Date: 7/23/04 9:30:19 AM
Warning: **Gas On:** **Mtr Lck:** **Appl Lck:**
Tag Posted: **Tag Location:** **Aff Appl:**
Problem Found:
Referd To:

Prev-Rem Meter#: 00N534166 **Correct Meter #:** **On-Off Rem Read:**
Set Meter #: **Set Read:** **Set Dials:** **Set Locn:**
Set Size: **Set ERT#:**
RG: 00 **WH:** 00 **DR:** 00 **HH:** 00 **SH:** 00 **AC:** 00 **OTH:** 00

Comments: CGI

New Customer Name:

Safety Gas Reading			
	Check?	Reading	Loc
Service		000	
Water		000	
Sewer		000	
Electric		000	
Wall		000	
Barhole Svc		000	
Perimeter		000	
CO Test (PPM)		0000	
Check Flue			

ORDER NUMBER INFORMATION

CAD Order Num: 23296 **CSS Order Num:** 05296069549

CAD Date/Time: 7/23/04 7:38:09 AM

Top

EXHIBIT 13

2005 Leakage Service Results - Hancock Avenue

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY
PIPELINE ENGINEERING AND SAFETY DIVISION

INFORMATION REQUESTS FROM
THE PIPELINE ENGINEERING AND SAFETY DIVISION OF
THE DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY TO
KEYSPAN ENERGY DELIVERY

RE: Investigation of Incident at 3 Hancock Avenue, Lexington - November 9, 2005

Respondent: Phillip Quan

PL 1-8: Provide the date and results of the most recent leakage survey of the main and services underlying Hancock Avenue that was conducted by KeySpan prior to the gas explosion.

Response: KeySpan performed a walking survey of the main and services underlying Hancock Avenue on August 18, 2005. No leaks were found.

EXHIBIT 14

Service Line Records Summary- 3 Hancock Avenue

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY
PIPELINE ENGINEERING AND SAFETY DIVISION

INFORMATION REQUESTS FROM
THE PIPELINE ENGINEERING AND SAFETY DIVISION OF
THE DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY TO
KEYSPAN ENERGY DELIVERY

Respondent: Melissa Wing, Gary Bennett, Phillip Quan, Amy Smith

PL 1-5: Provide the records for service line to 3 Hancock Avenue, including but not limited to: installation date, line size and material, number of meters, leak history and maintenance. Include in your response a description of any leak history or maintenance performed on customer owned piping or appliances. Please list known appliances at that address.

Response: The 1 ¼ cast iron service line to 3 Hancock Avenue was installed in 1919. (Exhibit 2) There was 1 meter for 3 Hancock Avenue. KeySpan's records indicate that there was one house heater and one water heater for the address. KeySpan has no records of any leaks on the service line for 3 Hancock Avenue or of any maintenance performed on the customer owned piping or appliances for the premises.

EXHIBIT 15

KeySpan Premise Condition Reports (Nov. 9, 2005)

KEYSPAN
Energy Delivery

PREMISE CONDITION REPORT

NOTE:
ALL READINGS TAKEN AT FOUNDATION WALLS UNLESS OTHERWISE NOTED

REPORTED ADDRESS	2 Hancock Av 26X			DATE OPENED	DATE ARRIVED	DATE LEFT	ZIP	SHEET 1 OF 1
FIRST SERV. REP: T. Burke	EXECUTED BY: T. Burke	EMP. NO. 23280		11.9.05 1140 A.M. P.M.	11.9.05 1140 A.M. P.M.	11.9.05 1230 A.M. P.M.		COMMENTS

ADDRESS											COMMENTS
4 Hancock Av	TIME	1200									Found Wet
	READ	0%									
5 Hancock Av	TIME	1215									
	READ	0%									
6 Hancock Av	TIME	1230									
	READ	0%									
8 Hancock Av	TIME	1245									
	READ	0%									0% at Door
7 Hancock Av	TIME	1300									
	READ	0%									
30 Hancock St	TIME	1315									
	READ	0%									
32 Hancock St	TIME	1330									
	READ	0%									
	TIME										
	READ										

LEAK INVESTIGATION COMPLETE	INITIALS JD	HAZARDOUS	NON-HAZARDOUS	
REVIEWED WITH DISTRIBUTION	INITIALS	DIST. CREW LEADER/ SUPERVISOR	RELIEVED BY:	EMP. NO.
LEAK CLASSIFICATION GRADE 1, 2, 3, NA		LEAK SURVEY		
LEAK TURNED OVER TO DISTRIBUTION	YES NO	TIME TO DIST.	A.M. P.M.	
LEAK CLOSED OUT	A.M. P.M. MONITOR SETUP	YES NO	MONITOR TIME FRAME	HOURS

KEYSPAN ENERGY DELIVERY–MANAGING SAFETY

FORM NO. 1701 (REV. 2/01)

KEYSPAN Energy Delivery

PREMISE CONDITION REPORT

NOTE: ALL READINGS TAKEN AT FOUNDATION WALLS UNLESS OTHERWISE NOTED

REPORTED ADDRESS	5 Hancock St. Lex			DATE OPENED	DATE ARRIVED	DATE LEFT	ZIP	SHEET 2 OF 2
FIRST SERV. REP.	EXECUTED BY: E. Delbrocco	EMP. NO. 25461		11/9/05 A.M. P.M. 1231	11/9/05 A.M. P.M. 1239	11/9/05 A.M. P.M.		

ADDRESS			COMMENTS
46 Hancock St.	TIME	1340	
	READ	0%	
6 Brigham Rd	TIME	CGI	Pool outside Foundation
	READ		0%
10 Brigham Rd	TIME	1355	CGI pool Foundation 0%
	READ		
14 Brigham Rd	TIME	1404	
	READ	0%	
	TIME		
	READ		
	TIME		
	READ		
	TIME		
	READ		
	TIME		
	READ		

LEAK INVESTIGATION COMPLETE	INITIALS EDL	HAZARDOUS	X	NON-HAZARDOUS
REVIEWED WITH DISTRIBUTION	INITIALS EDL	DIST. CREW LEADER/ SUPERVISOR S. Dennison		RELIEVED BY: EMP. NO.
LEAK CLASSIFICATION GRADE (1) 2, 3, NA		LEAK SURVEY		
LEAK TURNED OVER TO DISTRIBUTION	YES X NO	TIME TO DIST.	A.M. P.M.	
LEAK CLOSED OUT	A.M. P.M.	MONITOR SETUP	YES NO	MONITOR TIME FRAME HOURS

KEYSPAN ENERGY DELIVERY–MANAGING SAFETY

FORM NO. 1701 (REV. 2/01)

KEYSPAN
Energy Delivery

PREMISE CONDITION REPORT

NOTE:
ALL READINGS TAKEN AT FOUNDATION WALLS UNLESS OTHERWISE NOTED

REPORTED ADDRESS: 3 Hancock st Lex

DATE OPENED	DATE ARRIVED	DATE LEFT	ZIP	SHEET
11/9/05	11/9/05	11/9/05		1 OF 2
12:39 A.M. (P.M.)	12:39 A.M. (P.M.)	4:30 A.M. (P.M.)		

FIRST SERV. REP. | EXECUTED BY: E. DeGrosso | EMP. NO. 93461

ADDRESS			COMMENTS
4 Hancock st.	TIME	12:43	
	READ	0%	
6 Hancock st.	TIME	1247	
	READ	0%	
30 Hancock st.	TIME	1253	
	READ	0%	
32 Hancock st.	TIME	1259	
	READ	0%	
34 Hancock st.	TIME	1303	
	READ	0%	
Clarke Hist. Bld. 38 Hancock st.	TIME	1310	C&I BID
	READ	0%	Poss Foundation
40 Hancock st.	TIME	1322	
	READ	0%	
44 Hancock st.	TIME	1330	
	READ	0%	

LEAK INVESTIGATION COMPLETE — INITIALS: ESG
REVIEWED WITH DISTRIBUTION — INITIALS:
HAZARDOUS | X NON-HAZARDOUS
LEAK CLASSIFICATION GRADE (1) 2, 3, NA
DIST. CREW LEADER/SUPERVISOR: D. Donegan
LEAK SURVEY
RELIEVED BY: EMP. NO.
LEAK TURNED OVER TO DISTRIBUTION (YES) NO — TIME TO DIST. — A.M. P.M.
LEAK CLOSED OUT — A.M. P.M. — MONITOR SETUP — YES NO — MONITOR TIME FRAME — HOURS

KEYSPAN ENERGY DELIVERY–MANAGING SAFETY

FORM NO. 1701 (REV. 2/01)

EXHIBIT 16

KeySpan Documentation of Over-pressurization Event

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY
PIPELINE ENGINEERING AND SAFETY DIVISION

SUPPLEMENTAL INFORMATION REQUESTS FROM
THE PIPELINE ENGINEERING AND SAFETY DIVISION OF
THE DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY TO
KEYSPAN ENERGY DELIVERY

Release of Gas in the Town of Lexington (November 9, 2005)

Respondent: David Kearney/ Jonathan Hedman

Suppl. PL 1-2: The Company stated that a 60 lb. gas main had been tied into a 2 lb. gas main. Please provide documentation as to: (1) the exact times, and the duration of time, that the Company introduced 60 lbs. of pressure into the 2 lb. gas main in Lexington; (2) the Company's calculation of maximum pressure reached in the 2 lb. system following the tie in of the 60 lb. gas main into the 2 lb. main at (a) 3 Hancock Avenue, Lexington, and (b) the Affected Area; (3) provide all pressure charts for the 60 lb. gas system in the Affected Area. Include all data, assumptions, and calculations on which these calculations rely; provide the source of and basis for all data and assumptions employed; include all studies, reports, and planning documents from which data, estimates, or assumptions were drawn, and support for how the data or assumptions were used in developing the projections or estimates; and provide and explain all supporting work papers.

Response:

1. The 60 pound gas system and 2 pound gas system were connected at approximately 11:10 am based on data collected at Supervisory Control and Data Acquisition ('SCADA') points at the Lexington Take Station and Burlington Take Station. At about 11:10 am, as seen on Historical Quick Trend NELEXGS OTPS, which is the outlet pressure from the Lexington Take Station, the outlet pressure droops from approximately 54.2 psig to approximately 50.7 psig. NELEXGS OTPS is a plot of pressure in psig versus time. This droop in pressure is due to an increase in flow which resulted from the connection of the 60 pound gas system to the 2 pound gas system. The increase in flow also shows on Historical Quick Trend NEBURGS DTHRT, which is the flow in therms versus time for the Burlington Take Station. Both the Lexington Take Station and the Burlington Take Station feed the 60 pound gas system which was connected to the 2 pound gas system.

   The exact time at which the valve between the 60 pound system and 2 pound system was closed cannot be determined. The estimated time the valve on the connection between

the systems was closed is between 11:22 am and 11:29 am. The estimated time, 11:22 am to 11:29 am, is based on three SCADA points for Lexington Take Station and Burlington Take Station. See the three attached Historical Quick Trends charts: (1) NELEXGS OTPS, (2) NEBURGS OTPS, and (3) flow chart NEBURGS DTHRT. The NELEXGS OTPS, Lexington Take Station outlet pressure, shows the outlet pressure increasing at 11:22 am until it stabilizes at 11:29 am. This reflects the 2 pound system being packed out resulting in system load decreasing allowing the pressure to return to normal operating pressure at the Lexington Take Station. Between 11:22 am and 11:29 am, the valve connecting the 60 pound system and the 2 pound system was closed. At 11:29 am the pressure stabilizes, indicating that was the latest time the valve could have been closed. The NEBURGS OTPS , Burlington Take Station outlet pressure, shows a pressure trend similar to that seen at the Lexington Take Station. NEBURGS OTPS plots pressure in psig versus time. NEBURGS DTHRT, flow in therms from Burlington Take Station versus time, shows a drop in flow starting at 11:22 am and returning to normal flow at approximately 11:29 am. This trend also indicates the 2 pound system being packed out after 11:22 am and the valve between the systems being closed some time between 11:22 am and 11:29 am.

2. The maximum pressure reached in the 2 pound system at 3 Hancock Avenue was 50.3 psig and the average pressure was 50.3 psig in the Affected area. The maximum pressures are based on outlet pressure of 54.5 psig, at the Lexington Take Station and the Lexington Stoner Network Analysis model. See attached SCADA pressure chart NELEXGS OTPS, which shows the maximum outlet pressure at the Lexington Take Station. This chart shows a maximum pressure of 54.5 psig supplying the 60 psig system during the time frame of 11:10 am to 11:29 am. The Lexington Stoner Network Analysis model simulates the pressures and flows in the distribution system. The model is constructed from the pipe attributes in the ArcFM mapping system and customer usage, which is determined from actual customer usage in Keyspan customer database CRIS2. The model customer usage is based on the Effective Degree Day (EDD) of 16 EDD for the day of the over pressurization. To determine the maximum pressures, the maximum pressure of 54.5 psig was set in the model at the Lexington Take Station, and the model was run to simulate system pressures. The Lexington Stoner Network Analysis model plot, which is attached, shows 54.5 psig at Lexington Take Station and 50.3 psig at 3 Hancock Avenue, which address is labeled 633LEX. The model calculates the average pressure of 50.3 psig by looking at the average pressure across the complete 2 pound system, which was the Affected area. The location of the connection between the 60 pound system and the 2 pound system is labeled H404DJ6M on the Stoner model plot.

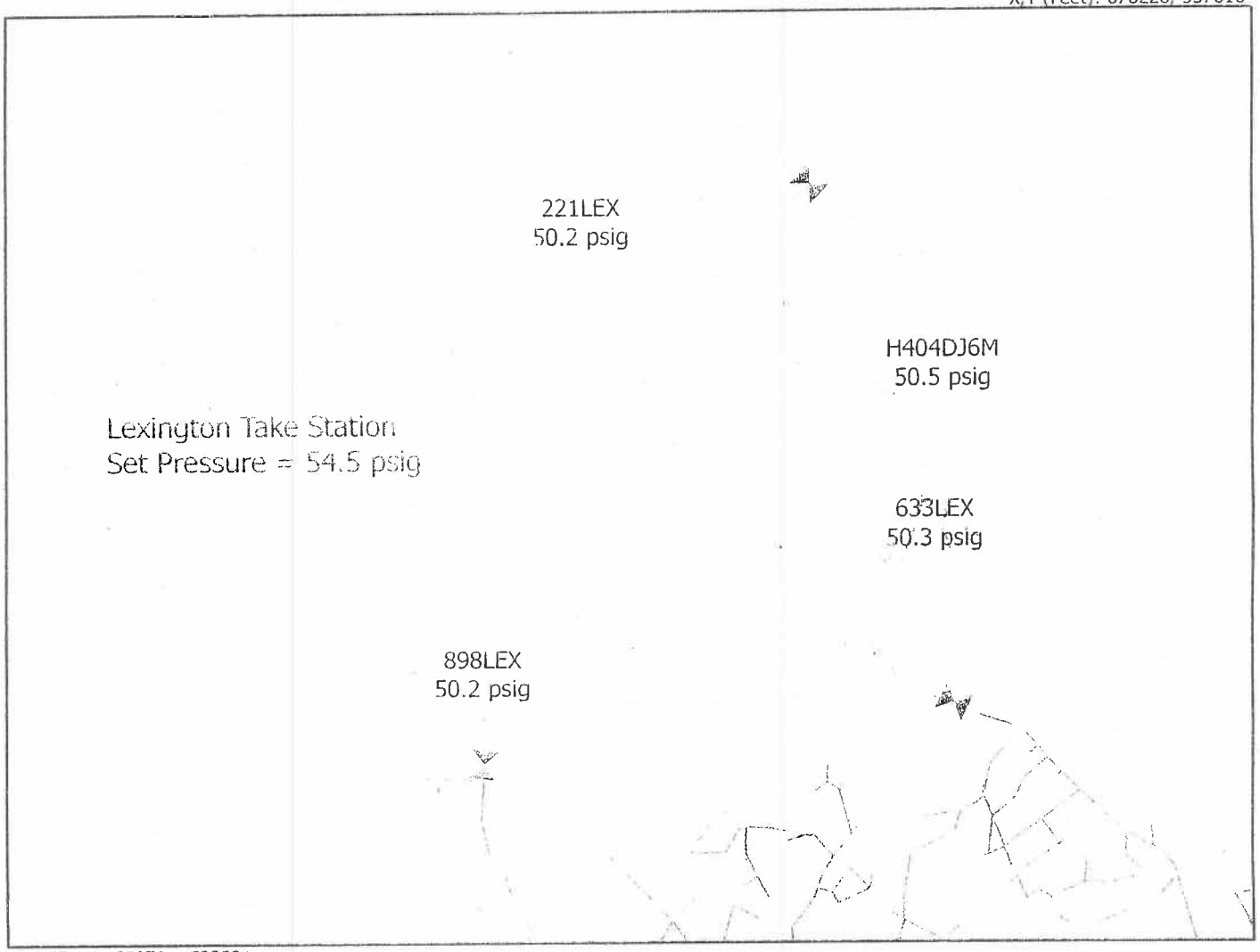
3. There were no pressure charts for the 60 pound gas system in the Affected area. There are pressure charts for the 60 pound gas system that feeds the Affected area. These charts were SCADA points at the Lexington Take Station and the Burlington Take Station. See attached SCADA pressure chart NELEXGS OTPS and NEBURGS OTPS. Both NELEXGS OTPS, Lexington Take Station outlet pressure, and NEBURGS OTPS, Burlington Take Station outlet pressure, plot pressure in psig versus time.

Model Name: West_Boston 16 EDD 04-05

Symbols
- Default Valve
- Default Regulator
- Default Supply Node

Facilities Color By
Pressure (Primary Only) (psig)
- Not Applicable (69105)
- < 3.0 (0)
- 3.0 - 10.0 (0)
- 10.0 - 15.0 (8179)
- 15.0 - 25.0 (1)
- 25.0 - 45.0 (1152)
- 45.0 - 60.0 (14242)
- 60.0 - 100.0 (15)
- 100.0 - 200.0 (691)
- > 200.0 (63)

X,Y (Feet): 678228, 537616



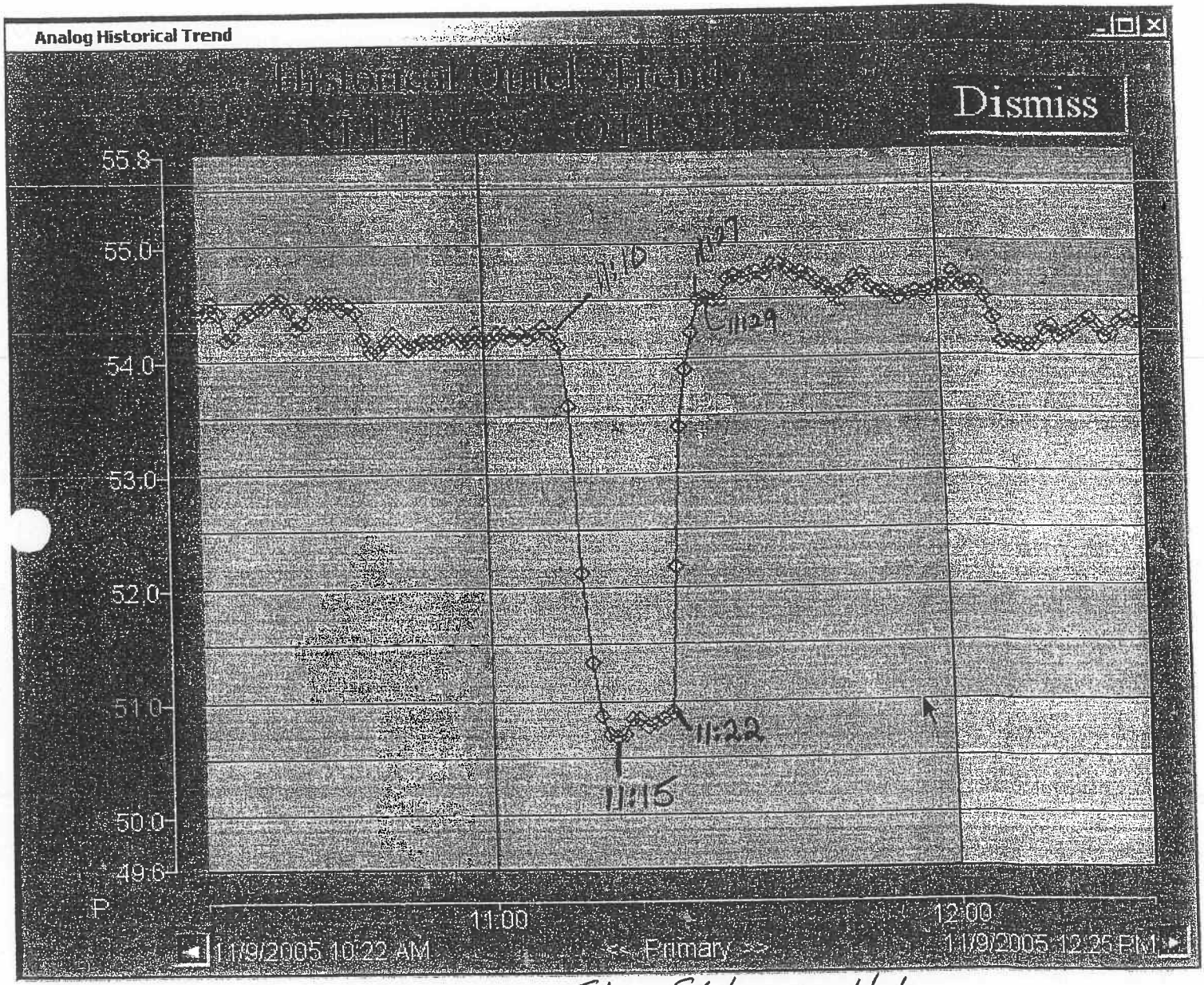
X,Y (Feet): 659791, 523831

4,800 2,400 0 4,800 Feet

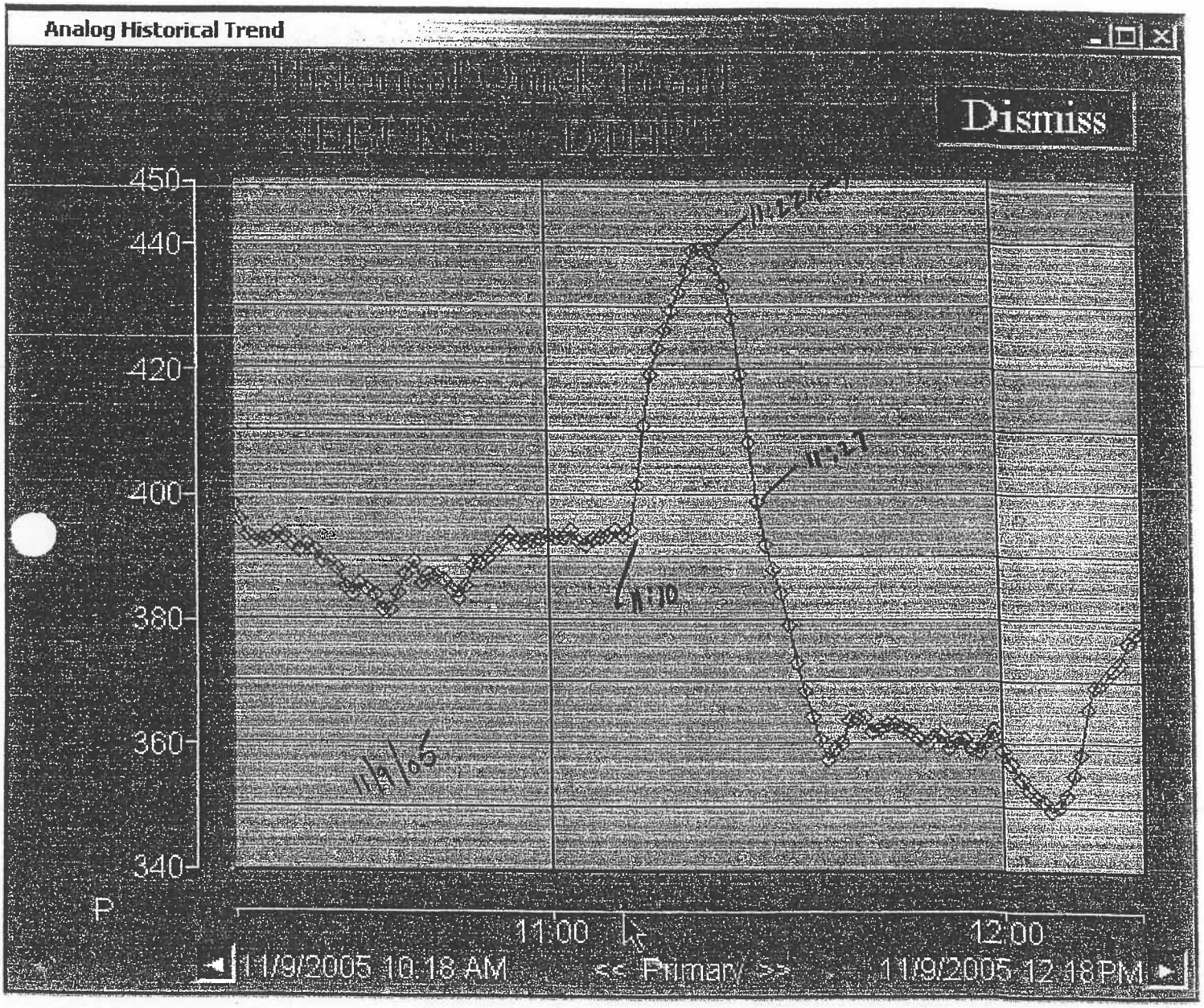
Scale 1 : 30,727

SynerGEE 4.20 (31 Dec 2005)

4/6/2006 3:29:28 PM



Lexington Take Station outlet


Analog Historical Trend
Dismiss
450
440
420
400
380
360
340
P
11:00
12:00
11/9/2005 10:18 AM
<< Primary >>
11/9/2005 12:18 PM

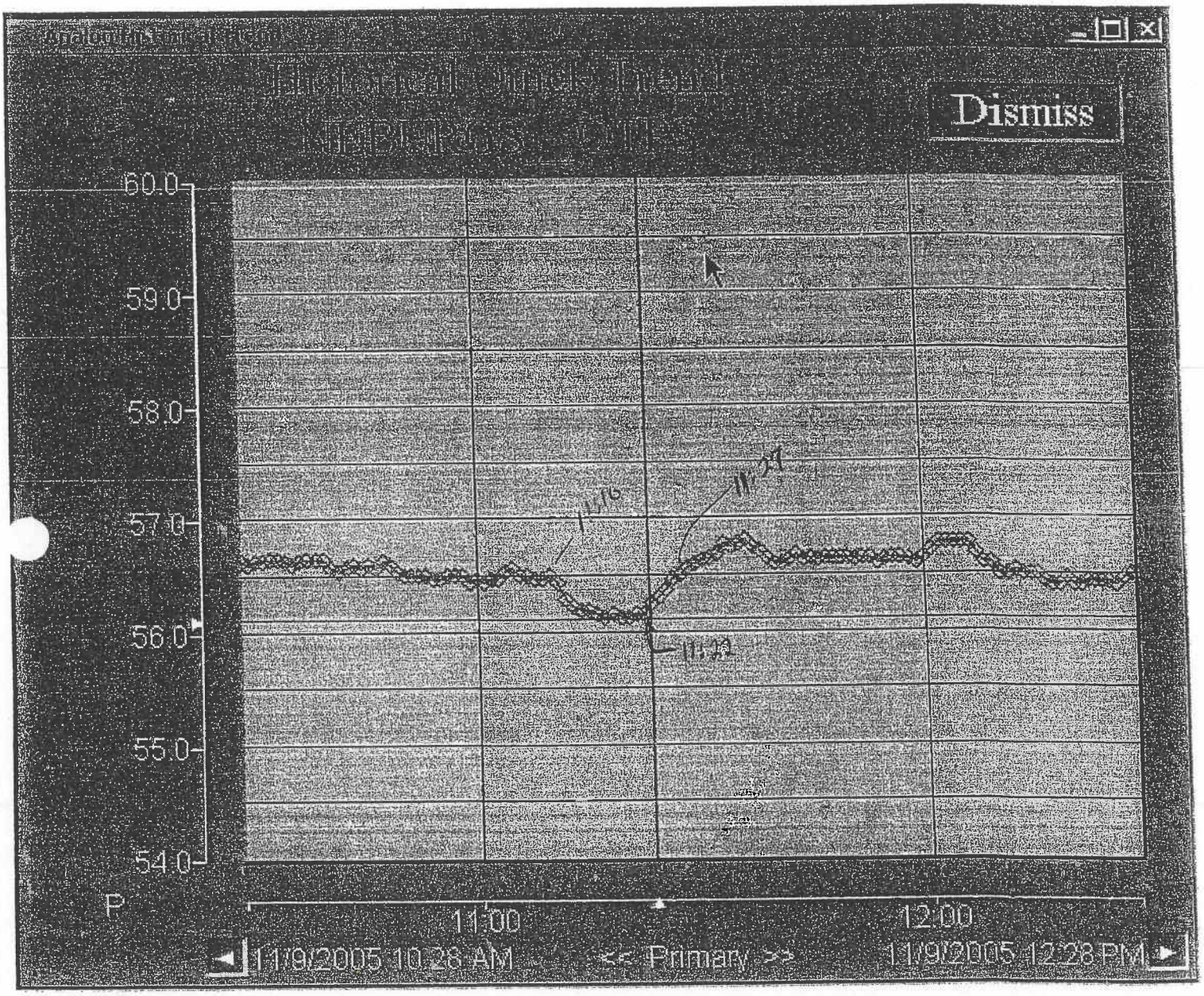

Dismiss
60.0
59.0
58.0
57.0
56.0
55.0
54.0
P
11:00
12:00
11/9/2005 10:28 AM
<< Primary >>
11/9/2005 12:28 PM

EXHIBIT 17

KeySpan DOL testing results (November 9, 2005)

KEYSPAN
Energy Delivery

Inter-office Memo
Instrumentation & Regulation NE

To: John Barrett

From Tim Driscoll

Date: 11/09/05

Subject: Lexington Incident

On Wednesday 11/09/05 DOL testing was conducted in Lexington in the Hancock Ave. area due to an incident which occurred on Wednesday morning 11/9

Incident Location: 4 Hancock Ave.

DOL Test locations and Results
First Parish Unitarian/Universalist Church 7 – 9 Harrington St.
Tests taken at 1:15 PM on gas stove

Results	Andy Crowley	Tim Driscoll
Threshold	.04	.03
Distinct	.08	.08

Pilgrim Congregational Church 55 Coolidge Ave.
Tests taken at 2:15 PM on gas stove

Results	Andy Crowley	Tim Driscoll
Threshold	.03	.04
Distinct	.07	.09

EXHIBIT 18

KeySpan Atmospheric Corrosion Monitoring Procedure

CORR 5101: Atmospheric Corrosion Program

Date:	08/01/2005	Filed:	Yes	Application:	LI-MA-NH-NYC
		Review:	Annual	Lead Org:	Gas Engineering
Revision: Clarified responsibilities and instructions for corrosion control and I&R depts. Sects A.1.B, A.3.A and B.1.B and B.3.A.					

DESCRIPTION

This procedure defines the departmental responsibilities under the Atmospheric Corrosion Program to ensure the detection, reporting and correction of atmospheric corrosion problems on gas facilities.

Actions detailed in this procedure are required to comply with federal and state regulatory requirements for periodic inspections and maintenance of gas facilities.

Personnel responsible for carrying out the actions specified herein must be familiar with the applicable procedures. Each department shall provide training, as required, in the detection and reporting of atmospheric corrosion on gas facilities.

The following references are utilized:

1. Code of Federal Regulations 49 CFR Part 192, Subpart I, Requirements for Corrosion Control

2. Code of Federal Regulations 49 CFR Part 193, Subpart G, Maintenance - Liquified Natural Gas Facilities

3. State of New York Codes, Rules and Regulations 16 NYCRR 255.479 and 244.481, Requirements for Corrosion Control

4. New Hampshire Code of Administrative Rules, PUC 500, Rules for Gas Service.

PROCEDURE

A. Responsibilities

All inspections must be performed once every three (3) years but with intervals not exceeding 39 months to determine if atmospheric corrosion and/or deteriorated coating condition exists which warrants corrective action.

1. The Corrosion Control Section of Gas Engineering LI, MA & NH :

a. Shall be responsible to inspect exposed gas supply pipelines located above-grade (in the public right of way or on private property).

b. Shall be responsible to inspect all above ground transmission and distribution gas measuring and regulating station piping and equipment and governor houses.

c. Shall be responsible to provide corrective recommendations and schedule repairs in a timely manner in accordance with state and federal regulations on any atmospheric corrosion conditions found during the inspections performed.

d. Upon request provide assistance and/or corrective recommendations in a timely manner on any atmospheric corrosion conditions identified.

e. Shall be responsible to manage the LI Gas Meter Service Inspections performed by Meter Readers and NE pre-inspect Walking Survey recommendations.

f. Shall be responsible to maintain completed inspection reports for each facility inspected by Corrosion Control.

2. The Gas Production Section of Gas Engineering:

a. Shall be responsible to inspect the gas production facilities. This inspection **must** include insulated carbon steel piping. Inspections will be conducted through viewing windows cut into the thermal insulation at predetermined locations.

b. Shall be responsible to provide corrective recommendations and schedule repairs in a timely manner in accordance with state and federal regulations on any atmospheric corrosion conditions found during the inspections performed and/or notify the Corrosion Section of any questionable circumstances.

c. Shall be responsible to maintain completed inspection reports for each facility.

3. The Instrumentation and Regulation Section of Field Operations:

a. Shall be responsible to inspect all internal piping and equipment in enclosed vault, regulating station and governor houses.

b. Long Island Instrumentation and Regulation shall also be responsible to inspect:

- Main line gas cleaning facilities at Long Beach, E.F. Barrett, Stewart Avenue and Glenwood Gas Plants

- The two (2) Storage Spheres facilities in East Hampton and Sag Harbor
- The Southold Distribution Compressor
- All fuel gas facilities located on KeySpan Energy electric plant facility properties including gas cleaning, measuring and regulating equipment and piping, **but exclude in-plant gas pipes, burners and controls**

c. Shall be responsible to provide corrective recommendations and schedule repairs in a timely manner in accordance with state and federal regulations on any atmospheric corrosion conditions found during the inspections performed, and/or notify the Corrosion Section of any questionable circumstances.

d. Shall be responsible to maintain appropriate documentation reflecting completed inspections for each facility.

4. The Customer Offices Department:

a. Shall be responsible to conduct field inspections of all outside gas meter (Long Island Only) installations and associated piping, including riser, regulator, etc.

b. Shall be responsible to provide corrective recommendations and schedule repairs in a timely manner in accordance with state and federal regulations on any atmospheric corrosion conditions found during the inspections performed and/or notify the Corrosion Section of any questionable circumstances.

5. The Field Operations - Maintain:

a. Corrosion Control Section (NYC) shall be responsible to inspect exposed gas supply pipelines located above-grade (in the public right of way or on private property) and required outside services.

b. Shall be responsible to provide corrective recommendations and schedule repairs in a timely manner in accordance with state and federal regulations on any atmospheric corrosion conditions found during the inspections performed and/or notify the Corrosion Section of any questionable circumstances.

c. New England Field Operations shall be responsible to conduct field inspections of all outside service piping installations to the outlet of the meter.

d. Shall be responsible to maintain completed inspection reports for each facility.

B. Instructions

1. The Corrosion Control Section of Gas Engineering LI, NY, MA & NH

    a. Inspect all exposed gas supply facilities located above-grade. During inspections the operator must give particular attention to pipe at soil-to-air interfaces, under thermal insulation, under dis-bonded coatings, at pipe supports, in splash zones, at deck penetrations, and in spans over water. Mains in places or on structures where anticipated physical movement or external loading could cause failure or leakage must be patrolled in business districts at intervals not exceeding 4 ½ months, but at least 4 times each calendar year, and outside business districts at intervals not exceeding 7 ½ months, but at least twice each calendar year.

    b. Inspect all above ground transmission and distribution gas measuring and regulating station piping and equipment and governor houses.

    c. Initiate corrective recommendations in a timely manner of any atmospheric corrosion conditions found that could not be corrected during the inspection performed.

    d. Upon request from other departments, provide recommendations for corrective action of atmospheric corrosion on gas facilities.

    e. Inspect for atmospheric corrosion (New England Only) identified during walking survey (Field Operations); create remedial action and forward to Field Operations.

    f. Initiate inspection requests to the Customer Offices Department (Long Island Only) to carry out inspections of all outside gas meter installations and piping.

        - Review the year-end annual RSD report that was generated by the Meter Reader Inspections to identify corrosion conditions found.

        - Perform follow-up inspections on gas services identified as severely corroded. Minor repairs to the riser and transition zone areas will be made during the follow up inspection. If the condition of the service riser is beyond repair, then it will be forward to field operations for replacement.

        - Forward a list of the corroded meter sets found during the follow-up inspection to Field Operations, for replacement.

    g. Initiate and maintain a historical file consisting of Gas Meter Inspection Summary Reports, each Atmospheric Corrosion Report, and the remedial measures taken.

2. The Gas Production Section of Gas Engineering LI, NYC, MA & NH

a. Inspect metallic piping and equipment of propane gas plants, and the LNG plant. During inspections the operator must give particular attention to pipe at soil-to-air interfaces, under thermal insulation, under dis-bonded coatings, at pipe supports, in splash zones, at deck penetrations, and in spans over water. This inspection **must** include insulated steel piping. Inspections will be conducted through viewing windows cut into the thermal insulation at predetermined locations.

b. Complete a Corrosion Inspection Report for the facilities, indicating the condition of the piping and protective coating, and if any maintenance is required and/or was performed

c. Correct in a timely manner any atmospheric corrosion conditions found that could not be corrected during the inspection performed

d. Contact the Corrosion Control Section for any recommendations for corrective action if required

e. Initiate and maintain a historical file consisting of the above inspections and the remedial measures taken.

f. Mains in places or on structures where anticipated physical movement or external loading could cause failure or leakage must be patrolled in business districts at intervals not exceeding 4 ½ months, but at least 4 times each calendar year, and outside business districts at intervals not exceeding 7½ months, but at least twice each calendar year.

3. The Instrumentation and Regulation Section of Field Operations:

a. Inspect all internal piping and equipment in enclosed-vault, regulating station and governor houses. During inspections the operator must give particular attention to pipe at soil-to-air interfaces, under thermal insulation, under dis-bonded coatings, at pipe supports, in splash zones, at deck penetrations, and in spans over water.

b. Complete appropriate station inspection documentation, indicating the condition of the piping and protective coating, and if any maintenance is required and/or was performed.

c. Correct in a timely manner any atmospheric corrosion conditions that could not be corrected during the initial station inspection.

d. Long Island Instrumentation and Regulation also shall inspect:

- Main line gas cleaning facilities at Long Beach, E.F. Barrett, Stewart Avenue and Glenwood Gas Plants.

- The two Storage Sphere facilities in East Hampton and Sag Harbor.
- The Southold Distribution Compressor.
- All fuel gas facilities located on KeySpan Energy electric plant facility properties including gas cleaning, measuring and regulating equipment and piping, **but exclude in-plant gas pipes, burners and controls**

e. Complete a Corrosion Inspection Record for each facility listed in section d., indicating the condition of the piping and protective coating, and if any maintenance is required and/or was performed.

f. Correct in a timely manner any atmospheric corrosion conditions that could not be corrected during the initial facility inspection.

g. Contact the Corrosion Section for any recommendations for corrective action as may be needed.

h. Initiate and maintain a historical file consisting of the above inspections and the remedial measures taken.

i. Mains in places or on structures where anticipated physical movement or external loading could cause failure or leakage must be patrolled in business districts at intervals not exceeding 4½ months, but at least 4 times each calendar year, and outside business districts at intervals not exceeding 7½ months, but at least twice each calendar year.

4. Customer Offices Department, Gas Meter Inspection Program

a. Conduct field inspections of all outside gas meter installations (Long Island Only) and associated piping, including riser, regulator, etc., for the purpose of locating atmospheric corrosion problems requiring investigation. During inspections the operator must give particular attention to pipe at soil-to-air interfaces, under thermal insulation, under dis-bonded coatings, at pipe supports, in splash zones, at deck penetrations, and in spans over water. Inspections will be initiated by the Corrosion Control Section via ITRON system programming.

b. Input applicable atmospheric corrosion codes into the hand-held ITRON unit.

- Code 1 = Meter Touching Ground/Water
- Code 2 = Meter/Piping Severely Corroded
- Code 3 = No substandard condition

5. Field Operations - Maintain

a. Corrosion Control Section (NYC):

- Inspect exposed gas supply pipelines located above-grade and selected outside services. During inspections the operator must give particular attention to pipe at soil-to-air interfaces, under thermal insulation, under dis-bonded coatings, at pipe supports, in splash zones, at deck penetrations, and in spans over water
- Complete a Corrosion Inspection Report for the facilities, indicating the condition of the piping and protective coating, and if any maintenance is required and/or was performed.
- Provide corrective recommendations and schedule repairs in a timely manner on any atmospheric corrosion conditions found during the inspections performed.
- Initiate and maintain a historical file consisting of the above inspections and the remedial measures taken.

b. New England Field Operations only:

- Conduct field inspections of all outside service piping installations to the outlet of the meter. During inspections the operator must give particular attention to pipe at soil-to-air interfaces, under thermal insulation, under dis-bonded coatings, at pipe supports, in splash zones, at deck penetrations, and in spans over water.
- Notify Corrosion control when:
  1. Piping has never been painted
  2. Piping is in poor condition
  3. Buried Meter Shut-off
  4. Buried Meters
- Maintain a historical file consisting of the above inspections

c. Take remedial action to correct atmospheric corrosion conditions reported by the Corrosion Control Sections. Maintain completed repair reports for each facility.

d. Replace meters with atmospheric corrosion conditions sent to Field Operations for repair or retirement.

C. Records

1. All forms, data sheets and summary reports associated with the implementation of this instruction shall be stored in the applicable corrosion control job file.

2. Each of the records must be retained for the life of the facility.

(END CORR 5101)

EXHIBIT 19

KeySpan Leak Survey and Corrosion Monitoring

Records for 3 Hancock Ave.

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY
PIPELINE ENGINEERING AND SAFETY DIVISION

Respondent: Phillip Quan and Donald Doubleday

PL 1-7: Provide the date(s) and results of the last leakage survey and atmospheric corrosion survey of the interior piping at 3 Hancock Avenue, Lexington.

Response: KeySpan does not have any record of a leak survey or atmospheric corrosion survey of the interior piping at 3 Hancock Avenue, Lexington.

EXHIBIT 20

KeySpan Leak Survey Procedure

LSUR-5020: Walking Surveys

Date:	07/01/04	Filed:	Yes	Application:	MA
		Review:	Annual	Lead Org:	Mand. Prog.
Remarks:					

DESCRIPTION

This procedure describes the requirements to perform a walking leakage survey on gas mains and services. The walking leak detection surveys will be performed by qualified personnel.

PROCEDURE

A. Specific Survey Requirements

1. At least once every three years, all services outside of Business Districts shall be leakage surveyed by walking each buried service line with a portable Hydrogen Flame Ionization unit or equivalent industry accepted testing equipment.

2. A walking survey of Business Districts shall be conducted at intervals not exceeding one year. Each city and or Town defines a Business District.

B. Primary Equipment

1. A portable Hydrogen Flame Ionization Unit, or equivalent, set at a sensitivity of 10 PPM for full scale deflection is used to collect and analyze samples of atmosphere through a probe held at less than 3 inches above the ground.

2. Percent gas-in-air readings are obtained using a Combustible Gas Indicator or equivalent.

3. The Hydrogen Flame Ionization Unit and Combustible Gas Indicator shall be at least tested in a manner consistent with the manufacturer specification. (See also SAFE-5090)

C. General Procedure

1. The walking surveys shall be performed utilizing a map of the survey area. The surveyor shall color code the survey map by day surveyed.

2. The survey is conducted by walking along the route of the pipeline or in the area between the main and the building, sampling the atmosphere at ground level while paying particular attention to foundation walls.

3. The survey person shall make a reasonable effort to pass over or near manholes, cracks in the pavement, or any opening from which leaking gas may vent, in the area where mobile surveys cannot reasonably be expected to cover.

4. If any indication of a leak is detected, a test hole shall be made to obtain a reading utilizing a combustible gas indicator. If a positive reading is detected the leak shall be classified.

5. The walking survey shall not be performed, when in the judgement of the Supervisor conducting the survey, conditions are otherwise unsuitable.

D. Reports

The leak surveyor prepares daily and weekly reports containing leak statistics, miles surveyed, and hours worked. The reports are sent to Leak Survey. A copy of the leak investigation report is given to the division and a copy to Leak Survey. The surveyor also retains a copy.

E. Records

Records which may include survey data, consultants reports, maps and required survey reporting forms of walking surveys shall be retained for a period of time not less than the interim between surveys.

(End LSUR-5020)

LSUR-5020: Walking Surveys

Date:	4/13/2006	Filed:	Yes	Application:	MA
		Review:	Annual	Lead Org:	Mand. Prog.
Remarks: Updated and clarified C.4 for leak reporting.					

DESCRIPTION

This procedure describes the requirements to perform a walking leakage survey on gas mains and services. The walking leak detection surveys will be performed by qualified personnel.

PROCEDURE

A. Specific Survey Requirements

1. At least once every three years, all services outside of Business Districts shall be leakage surveyed by walking each buried service line with a portable Hydrogen Flame Ionization unit or equivalent industry accepted testing equipment.

2. A walking survey of Business Districts shall be conducted at intervals not exceeding one year. Each city and or Town defines a Business District.

B. Primary Equipment

1. A portable Hydrogen Flame Ionization Unit, or equivalent, set at a sensitivity of 10 PPM for full scale deflection is used to collect and analyze samples of atmosphere through a probe held at less than 3 inches above the ground.

2. Percent gas-in-air readings are obtained using a Combustible Gas Indicator or equivalent.

3. The Hydrogen Flame Ionization Unit and Combustible Gas Indicator shall be at least tested in a manner consistent with the manufacturer specification. (See also SAFE-5090)

C. General Procedure

1. The walking surveys shall be performed utilizing a map of the survey area. The surveyor shall color code the survey map by day surveyed.

2. The survey is conducted by walking along the route of the pipeline or in the area between the main and the building, sampling the atmosphere at ground level while paying particular attention to foundation walls.

3. The survey person shall make a reasonable effort to pass over or near manholes, cracks in the pavement, or any opening from which leaking gas may vent, in the area where mobile surveys cannot reasonably be expected to cover.

4. If any indication of a leak is detected, a test hole shall be made to obtain a reading utilizing a combustible gas indicator. If a positive reading is detected the leak shall be classified. Grade 1 leaks shall be reported immediately to the Customer Call Center. Grade 2A, 2, and 3 leaks shall be submitted to the appropriate divisional field coordinator.

5. The walking survey shall not be performed, when in the judgement of the Supervisor conducting the survey, conditions are otherwise unsuitable.

D. Reports

The leak surveyor prepares daily and weekly reports containing leak statistics, miles surveyed, and hours worked. The reports are sent to Leak Survey. A copy of the leak investigation report is given to the division and a copy to Leak Survey. The surveyor also retains a copy.

E. Records

Records which may include survey data, consultants reports, maps and required survey reporting forms of walking surveys shall be retained for a period of time not less than the interim between surveys.

(End LSUR-5020)