The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

INCIDENT REPORT

Overpressurization
3 Hancock Avenue, Lexington, Massachusetts
November 9, 2005

PIPELINE ENGINEERING AND SAFETY DIVISION

Accident File

Overpressurization

Location: Lexington, Massachusetts

Date of Accident: November 9, 2005

Gas Company: KeySpan Energy Delivery New England

Estimated Property Damage: Over $1,000,000 *

Report Issued - March 2008

* Estimated by KeySpan Energy Delivery, New England

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I. INTRODUCTION

A. Scope of this Investigation

The Massachusetts Department of Public Utilities ("Department"), formerly known as the Department of Telecommunications and Energy, Pipeline Engineering and Safety Division ("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 release of natural gas ("incident")[1] in the Town of Lexington, that occurred on November 9, 2005. KeySpan inadvertently over-pressurized its two psig distribution system supplying 1,634 customers in Lexington, to approximately 56 psig. The incident contributed to an explosion and fire that caused the collapse of a structure at 3 Hancock Avenue, Lexington.[2] Boston Gas Company d/b/a KeySpan Energy Delivery, New England ("KeySpan" or "Operator")[3] estimated the damage to the structure to be $394,000 and Operator's damage to be in excess of $1,000,000 (Exh. 1).

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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 of 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 The cause and circumstances surrounding the incident at 3 Hancock Avenue is addressed in a separate report.

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

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 U.S. DOT:

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

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

The Department has established procedures for determining the nature and extent of violations of codes and regulations pertaining to the 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").

B. Overview of Incident

On November 9, 2005, KeySpan was in the process of replacing approximately 550 feet of six-inch bare steel pipe with six-inch plastic pipe for a main replacement project in the vicinity of Hancock Street and Coolidge Avenue, Lexington (Exh. 2). This process involved laying plastic pipe parallel to and abandoning the existing bare steel main, in place. In addition, the new main was going to be connected to another existing main to reinforce the

distribution system. KeySpan stated that it believed the entire scope of the project was high pressure (i.e., 60 pounds per square inch gauge ("psig")) (Exhs. 3,4).[4,5]

KeySpan reported that the two psig distribution system, supplying 1,634 customers in Lexington, was over-pressurized to approximately 56 psig (Exh. 3 at § 1.0; Exh. 4). KeySpan stated that the two psig system returned to normal operating pressure at 12:04 p.m. (id.).[6] The over pressurization of the two psig system to 56 psig exceeded the maximum allowable operating pressure of the two psig system.[7]

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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. 49 C.F.R. Part 192, § 192.3

6 The Operator monitors the two psig system at three Supervisory Control and Data Acquisition points (Exh. 5). The three points are: (1) the School Street at Roosevelt Street station; (2) the Mass. Ave. at Edison Way station; and (3) the Simmons Rd. at Preston Rd. station (id.).

7 The federal regulation, 49 C.F.R. Part 192, § 192.621 Maximum allowable operating pressure: High-Pressure distribution system, states:

> (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

(continued...)

On November 9, 2005, sometime after 11:00 a.m., KeySpan stated that its crew connected, tapped and purged the new six-inch plastic main on Hancock Street. When the crew connected and purged the main at Coolidge Avenue, they noticed a different sound (Exh. 2). The KeySpan crew on site was not aware that the main relay tie-in was connecting two mains with differing pressures (60 psig to two psig) (Exh. 4).

At approximately 11:19 a.m., the Lexington Fire Department was notified of an explosion and fire (Exh. 4) at 3 Hancock Avenue. At approximately 12:00 p.m., KeySpan notified the Division of the Incident (id.).[8]

As a result of the over-pressurization, the home at 3 Hancock Avenue was destroyed and KeySpan reported leaks on company owned piping at 11 other addresses. Further, KeySpan found and replaced 165 service regulators that had been compromised (Exh. 3). In addition 317 gas meters were subsequently replaced (Exh. 6). KeySpan stated that the two psig system returned to normal operating pressure at 12:04 p.m. (Exh. 3,4).

At 3:51 p.m., KeySpan began to shut down the two psig distribution system. By 4:45 p.m., KeySpan confirmed that the system was shut down (id.). Once the system was isolated and shut down, it took Keyspan six days to test the integrity of the system and the customer services (id.). KeySpan restored the system on Tuesday, November 15, 2005 (id.).

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7 (...continued)
being exceeded, in accordance with §192.195.

8 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.

II. THE DIVISION'S INVESTIGATION

A. Background

Hancock Street and Coolidge Avenue are located in a residential area of Lexington. The neighborhood is classified as a class 3 location.[9] The main relay project consisted of replacing 550 feet of six inch bare steel main with six inch plastic. The project was initiated by KeySpan's Corrosion Control Department (Exh. 7). KeySpan's maps listed two different pressures for the main on Hancock Street, intermediate[10] and high[11] pressure (id.). The maps indicated an intermediate pressure section of pipeline that was installed in 1958, and a high pressure section of pipeline that was installed in 1960 (id.).

B. Project Description

KeySpan Energy has a Bare Steel/Wrought Iron Replacement Program. As part of the Program's 2005 supplemental budget, and based on the distribution main history of leaks, the KeySpan Corrosion Control department recommended the relay of approximately 550 feet of

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9 A "class location unit" is an onshore area that extends 220 yards (200 meters) on either side of the centerline of any continuous 1 - mile (1.6 kilometers) length of pipeline. A class 3 location is: any class location unit that has 46 or more buildings intended for human occupancy; or an area where the pipeline lies within 100 yards (91 meters) of either a building or a small, well-defined out-side area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12 month period. (The days and weeks need not be consecutive.). Part 192, § 192.5.

10 Intermediate pressure is pressure greater than low pressure, but not over 25 psig. Low pressure is substantially the same pressure in the main as the pressure delivered to the customer (KeySpan Gas Construction Standards, Specifications and Procedures).

11 High pressure is the pressure in the main that is higher than the pressure provided to the customer.

six inch bare steel pipe (installed in 1960) with six inch plastic pipe. This section of main had a cluster of leaks ranging between 75 to 82 Hancock Street, as a result, this section was selected for replacement (Exhs. 8). The project boundaries began at an existing six inch plastic pipe in front of 84 Hancock Street and extended to Coolidge Avenue (Exh. 7).[12]

C. Preconstruction

On October 10, 2005, KeySpan provided to a KeySpan supervisor a work package for the main replacement project (Exh. 7). The work package contained maps for the project area and service card information for the gas services within the scope of the work area (id.). Of the eight service cards in the work package, four denoted the operating pressure as "IP" or "MP"(Intermediate Pressure) (e.g. 2 psig.) (id.). On October 11, 2005, the supervisor reviewed the work to be done at Hancock Street and Coolidge Avenue, Lexington and walked the length of the project (Exh. 9). The supervisor notified Dig Safe[13] and requested a markout of the proposed work area. On October 14, 2005, the Town of Lexington granted KeySpan a road opening permit (Exh. 7).

During the preconstruction review, the KeySpan supervisor identified inconsistencies on the maps in the work package. He identified a section of the gas main that had been labeled

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12 A KeySpan Street Main Authorization Work order (444904) indicates that the pipe is to be installed from 73 - 84 Hancock St.

13 Dig Safe System, Inc. is a communication network, assisting excavators, contractors and property owners in complying with state law by notifying the appropriate utilities before digging. Dig Safe, a free service, notifies member companies of proposed excavation projects. In turn, these member utilities respond to the work area and identify the location of underground facilities. Callers are given a permit number as confirmation.

as intermediate pressure (two psig) in front of 84 Hancock Street, while the other sections of the gas main were labeled high pressure (60 psig) (Exhs. 7, 8). The supervisor visually inspected the service to 84 Hancock Street, confirmed it was high pressure and not intermediate pressure. He then walked the other services from 84 Hancock Street to Coolidge Avenue and concluded that the section of gas main in front of 84 Hancock Street was labeled incorrectly on the maps as intermediate pressure (Exh. 9). The KeySpan supervisor stated that the project was a fairly routine high-pressure tie over, and that there would be no interruption of service and as such the use of gauges would not be required (id.).

D. Construction Requirements

KeySpan has several specifications in its Operations and Maintenance manual ("O&M manual"), that prescribe the required procedures required when tying in mains. One of the procedures, **STOP-5040: Installation of Gas Main Tie-in Connections and Stopping Off**, describes the requirements for planning and performing a main connection that requires the interruption of gas flow (Exh.10).[14] At the time of the incident, KeySpan's Procedure **STOP-5040-MA-NH (B)(4)** stated in relevant part:

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[14] Other procedures include the following: **HTAP-5010**: **Procedure for Hot Tapping Mains** (minimum requirements for hot tapping mains); **CNST-5010: General Construction Requirements**, Section B.2,Plans and Specifications (detailed plans and/or specifications may be supplied); **GCON - 5100: Operating Procedure for Coordinating Gas Main Connections or Shutdowns** (KeySpan policy for preparing and processing of system operating procedures); **GCON - 5020: MAOP and Operation Pressure for Distribution Systems** (MAOP for all Keyspan elevated-pressure distribution and feeder systems, and operating pressures for low-pressure distribution systems.

> Pressure gauges shall be installed whenever the flow of gas in a main is **interrupted**, regardless of distribution system operating pressure. [Emphasis added]

However, the main replacement project in Lexington did not require that the flow of gas be interrupted.

Subsequent to the incident, KeySpan amended its O&M manual to require the use of pressure gauges on live-main jobs, such as the project in Lexington. This procedure, **GCON 5100 (4)(g)**, states:

> Whenever live mains are tapped, pressure gauges shall be installed, regardless of system operating pressure. Sufficient gauges shall be installed, and utilized, to determine pressure of all mains associated with job.
> (Exh. 10)

In addition, on January 6, 2006, the Division issued an advisory letter to all operators, requesting that all operators review - and revise if necessary - their respective written procedures regarding planning and performing all live gas main connections in order to reduce the possibility of the over-pressurization of gas mains occurring in the future (Exh. 11).

E. Training

The federal code requires that gas company personnel be qualified to perform hot-tapping of pipelines under pressure.[15] KeySpan personnel who perform hot tapping are initially trained by KeySpan in conjunction with a T.D. Williamson manufacturer's

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[15] Each tap made on a pipeline under pressure must be performed by a crew qualified to make hot taps. Part 192, § 192.627 Tapping pipelines under pressure

representative. The training is hands on and reviews the use of, setup and breakdown of the equipment, simulated on live pipelines that are pressurized with air (Exh. 12). In addition, the Northeast Gas Association provides procedural training based on the Operator Qualification Program guidelines. KeySpan records indicate that one of the two persons was trained by a representative of T.D. Williamson, the manufacturer of the equipment (id.). The other person was trained by a Senior KeySpan welder (id.).

F. Maps

KeySpan's O&M manual, Section **CNST-5010: General Construction Requirements, subsection B2(a)** states, " Depending on the nature of the work, detailed plans and/or specifications may be supplied (Exh.10)." Prior to construction, the KeySpan Supervisor responsible for the oversight of the main relay project was provided a work package containing a map that was generated by the KeySpan System Integrity group (Exh 7). This map was also provided to KeySpan personnel performing the main tie-in at Hancock Street and Coolidge Avenue.

KeySpan admitted that the main pipeline segment between buildings 81 and 82 Hancock Street was incorrectly marked as intermediate pressure (two psig) (Exh. 8). The map for Hancock Street and Coolidge Avenue showed only the six inch high pressure bare steel mains on each street (Exhs 7, 13). KeySpan determined that the mapping system had incorrectly attributed a segment of 60 psig high pressure pipe as intermediate pressure pipe (Exhs. 7, 13). In addition, the maps did not show the presence of the intermediate pressure (two psig) main that the KeySpan Crew tied into and over pressurized. KeySpan included the inaccurate maps in the work package for the main relay project (Exhs. 7, 9).

The U.S. Department of Transportation/Pipeline Hazardous Materials and Safety Administration has stated that construction maps and operating history should be comprehensive and current, and include the maximum operating pressure of each pipeline. See Advisory Bulletin ADB-02-03, 67 Fed Reg. 40,768 - 40,770 (June 13, 2002) (Research and Special Programs Administration, Office of Pipeline Safety).

G. Service Line Regulators

KeySpan reported that 165 regulators had failed inspection, and that it tested 21 of the failed regulators (Exh. 3, at § 1.0). Of the 21 regulators, the test sample contained eight different styles of regulators (id. at § 6.0). The test consisted of exposing the regulator to an inlet pressure of 60 psig, the tests revealed that each of the 21 service regulators delivered unacceptable downstream pressure (id. at 1.0). The testing was performed by an independent lab and witnessed by Department personnel.

III. FINDINGS AND CONCLUSIONS

A. Findings

1. KeySpan's, Corrosion Control department initiated a main replacement project to replace 550 feet of six inch bare steel pipe with six inch plastic pipe from 84 Hancock Street to Coolidge Avenue.
2. The KeySpan supervisor responsible for the main relay project reviewed the work to be done prior to the November 9, 2005 incident, and identified inconsistencies on the map that labeled a section of the high pressure (e.g. 60 psig) main on Hancock Street as intermediate pressure (2 psig).
3. The map for Hancock Street and Coolidge Avenue shows the six inch high pressure bare steel mains on each street. The map does not show the two psig main that was present on Hancock Street that was tied into and over pressurized during the main relay project.
4. The work package for the project included eight service cards for gas services located within the scope of the work area, four denoted the operating pressure as intermediate pressure (2 psig).

5. The supervisor visited the work site to reconcile the mapping differences and visually inspected the services between 84 Hancock Street and Coolidge Avenue and concluded that the section of main in front of 84 Hancock Street was a high pressure main and not intermediate pressure.
6. KeySpan believed that the entire scope of the project was high pressure (60 psig).
7. KeySpan procedures in place at the time of this incident required that pressure gauges be installed whenever the flow of gas in a main is interrupted, regardless of distribution system operating pressure.
8. KeySpan did not plan to interrupt the flow of gas during this tapping procedure (e.g., perform a hot tap) and as such did not use pressure gauges.
9. On November 9, 2005, KeySpan personnel prepared and tapped the mains to be tied in.
10. The KeySpan personnel performing the tie-in received a map that incorrectly attributed pressure on the Hancock Street and Coolidge Avenue mains as high pressure (60 psig).
11. The KeySpan supervisor and crew on site were not aware that the main relay and connection of the two (2) six-inch bare steel mains was connecting mains with differing MAOPs (60 psig to 2 psig).
12. On November 9, 2005, the KeySpan crew connected and purged the new six-inch plastic main to the existing six-inch bare steel main at 73-78 Hancock Street.
13. The KeySpan crew opened the valve at Coolidge Avenue, purged the six inch main , closed the purge stack and noticed a different sound.
14. The main tie in between the high pressure and intermediate six-inch mains fed gas at approximately 56 psig into the two psig main at 73-38 Hancock Street.
15. The two psig distribution system supplying 1,634 servers in Lexington was over pressurized to approximately 56 psig.
16. Within moments of noticing the abnormal sound, the crew was ordered to report to the scene of an explosion at 3 Hancock Avenue, Lexington.
17. The over-pressurization resulted in the maximum allowable operating pressure ("MAOP") of the two psig system to be exceeded.
18. Subsequent to the incident, KeySpan amended its Operations and Maintenance manual to state that pressure gauges shall be installed whenever a gas main is tapped, regardless of distribution system operating pressure.

B. Conclusions

1. The over-pressurization of the two psig system to 56 psig exceeded the maximum allowable operating pressure of the two psig system.
2. The map which the KeySpan supervisor and crew relied upon for the main replacement project in Lexington was not comprehensive and current.

3. The incorrect map utilized by the KeySpan supervisor and the personnel performing the main tie in contributed to the introduction of 56 psig to enter the two psig system.
4. KeySpan's System Integrity Group, responsible for generating the map, failed to notice the inconsistencies on the map.
5. The use of pressure gauges to monitor system pressure during the tapping procedure may have prevented the incident.
6. Utilizing the service card and map information for verification of the gas pressure of the mains present on Hancock Street may have prevented the incident.
7. Taking actual pressure readings at the gas services to verify the gas pressure may have prevented the incident.

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-18. KeySpan has modified its Operations and Maintenance manual to specify the use of pressure gauges when live mains are tapped, regardless of the system operating pressure. Id. In addition, KeySpan agreed to amend its O&M procedures to establish a program that specifies the communication path and title(s) of operational personnel responsible for correcting mapping inconsistencies found by field personnel. Id. KeySpan also agreed to develop and initiate a comprehensive program to ensure that all maps and associated records of the KeySpan distribution system are accurate and up-to-date. Id.

EXHIBIT LIST

1. KeySpan's- Gas Distribution System Incident Report to PHMSA
2. Time Line of Events for the Hancock Street Main Replacement
3. KeySpan Executive Summary of the Incident
4. KeySpan Post Incident Report
5. Pressure Readings for the Intermediate Pressure System and SCADA Reports
6. Meters Replaced in the Affected Area
7. Work Package Containing Maps, Service Cards, and Permits
8. Explanation of Maps
9. Supervisor Interview Summary
10. KeySpan Construction Standards
11. Division Letter to All Operators Regarding the Use of Pressure Gauges
12. KeySpan Training Records
13. Distribution Systems Map Showing Where the Hot Taps Were Made

EXHIBIT 1

KeySpan's- Gas Distribution System
Incident Report to PHMSA

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

Via Facsimile
Confirmatory Copy by U.S. Mail

Thomas R. Teehan
Senior Counsel

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 / 1 / 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 / (hr.) / 11/ (month) / 0/9 / (day) / 2005 / (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 / (NRC Report Number) / 11 / 1 / (month) / 0 / 9 / (day) / 0 / 5 / (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

781-466-5
Area Code and Telephone

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

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

1. ☐ External Corrosion
2. ☐ Internal Corrosion

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 ⇒ ○ Dent ○ Gouge ○ Wrinkle Bend ○ Arc Burn ○ Other: _____
15. ☐ Component ⇒ ○ Valve ○ Fitting ○ Vessel ○ Extruded Outlet ○ Other: _____
16. ☐ Joint ⇒ ○ Gasket ○ O-Ring ○ Threads ○ Fusion ○ Other: _____

Weld

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

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

a. Type of failure:

☐ Construction Defect ⇒ ○ Poor Workmanship ○ Procedure not followed ○ Poor Construction Procedures

☐ Material Defect

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

c. Was part which leaked pressure tested before incident occurred? ○ Yes, *complete d-f, **if known*** ○ 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 ⇒ ○ Valve ○ Instrumentation ○ Pressure Regulator ○ Other: _____
21. ☐ Threads Stripped, Broken Pipe Coupling ⇒ ○ Nipples ○ Valve Threads ○ Mechanical Couplings ○ Other: _____
22. ☐ Leaking Seals

23. ☐ Incorrect Operation

a. Type: ○ Inadequate Procedures ○ Inadequate Safety Practices ○ Failure to Follow Procedures ○ 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? ○ Yes ○ 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

○ Investigation Complete ○ 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

Time Line of Events for the Hancock Street Main Replacement

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: Thomas Hamilton/John Stavrakas

PL 1-16: Provide a timeline for the Hancock Street main replacement project, including but not limited to, the names and titles of any KeySpan employee and/or contractor who made the tie-in, and when such tie-in was performed. Include in your response complete and detailed documentation on the procedures the Company used and followed.

Response: KeySpan provides the following timeline for the main replacement project. Also please see Exhibit 7 regarding project procedures.

Date	Time	Event
August 30	No time available	261 initiated for the relay of 550 ft of 6 inch BS (1960) with 6 inch PL on Hancock St. Lex
October 10	No time available	Ron Raymond, Neuco Supervisor, receives job from Mike Jubert, PCS Supervisor, KeySpan.
October 11	No time available	Ron Raymond, Neuco Supervisor, walks the job, calls Dig Safe, initiates permit application.
October 14	No time available	Permit granted from town.
October 25	App. 6:45 am	Mike Jubert walks job with Ron Raymond, Neuco Supervisor
October 26	No time available	Neuco begins saw cutting of street.
October 28	App. 9:00 am	Neuco begins excavation and installation of new 6 inch PL main. P. Sutton, Foreman
November 8	No time available	Problem reported in finding existing 6 inch PL main for tie-in in front #84 Hancock St. This end of new main not tied in. Tie-in to occur at a later date.
November 9	App. 7:00 am	Neuco crew on-site, removes air test for new 6 inch PL main, preps tap area for KeySpan crew, moves out of the way of

		the KeySpan crew, begins working on tie-over of services at 75 and 80 Hancock St. P. Sutton, Foreman PJ Sweeney, Dump Trk. W. Cabral, Ld. Labr. D. Kennedy, Labr. R. Raymond, Supervisor Raymond leaves site after app. one hour.
November 9	App. 8:30 to 9:00 am	KeySpan MSF crew on-site. R. Young, C/Ldr. W. Sweeney, Tech B P. McDonough, Tech B
November 9	App. 8:30 to 9:00 am	KeySpan welders on-site. R. Schindler, Wldr. C. Dennahy, App. Wldr.
November 9	Beginning at App. 9:00 am	KeySpan personnel prepare for tapping, install Williamson equipment, tap the existing mains, first tap in excavation in front of #73 Hancock St., second tap in excavation on Coolidge Ave.
November 9	No time available	KeySpan Welders leave the site to go to another job.
November 9	Beginning between App. 10:00 – 11:00 am	KeySpan MSF crew begins purging sequence of new 6 inch PL main. Opens valve in front of #73 Hancock St., purges 6 inch PL main, closes purge stack valve, fully opens 6 inch PL valve. Opens valve on Coolidge Ave., purges 6 inch PL main, closes purge stack valve, crew notices something different with sound.
November 9	No time available	KeySpan crew leaves site and goes to 3 Hancock Ave.

EXHIBIT 3

KeySpan Executive Summary of the Incident

1.0 EXECUTIVE SUMMARY

On Wednesday, November 9, 2005 at 11:10 AM, a two (2) psig gas distribution system (herein referred to as the "system") in Lexington, Massachusetts was inadvertently pressurized to almost 60 psig. The system was pressurized to this higher pressure until 12:04 PM when the entire system, which contains 22.4 miles of gas distribution main serving 1,800 customers, was isolated from the 60 psig system. At 3:51 PM, the shut down of the system commenced and, by 4:45 PM, it was confirmed that the system was shut down. Once the system was isolated and shut-down, it took KeySpan six days to check the integrity of the system and customer services. The system was restored on Tuesday, November 15, 2005. As a result of this over-pressurization, an incident involving residential property damage occurred at 3 Hancock Avenue in Lexington.

All of the customer services were inspected and tested three (3) times during the course of the gas restoration process. The first stage of this inspection and testing occurred at 8-inches water column (w.c.), the second stage occurred at one psig, and the final stage occurred at two psig. During this inspection and testing process, one hundred sixty five (165) service regulators failed inspection (i.e. lock up occurred at a pressure greater than 12-inches w.c.). The regulators that failed inspection were removed from service and a new regulator was installed. At locations where a new service regulator was installed, the customer's flexible gas tubing, manual gas valves, appliance control valves and regulators were removed. Comparable new customer equipment was then installed.

In addition to this effort, KeySpan field crews also performed leak survey tests on the entire 2 psig system and made gas main and service repairs as necessary.

In order to ensure the long-term integrity of the entire 2 psig distribution system in Lexington, Gas Engineering initiated a "Fitness for Service" investigation. This following summarizes the investigation's primary objectives and their associated results:

Objective 1 - Service Regulators

Perform an evaluation of customer service regulators to determine if these regulators can continue to operate safely and effectively after being exposed to an inlet pressure of up to 60 psig.

Result 1 - Service Regulators

Testing conducted on six (6) different types of new service regulators revealed that exposing a new, properly functioning service regulator (which has been appropriately sized for an inlet pressure of 2 psig) to an inlet pressure of 60 psig results in an increase in outlet pressure of 3 to 4 inches water column above set point. However, once the inlet pressure has been reduced back to 2 psig, the service regulator returns to its original operating characteristics.

Twenty one (21) of the 165 service regulators that failed inspection in Lexington were tested in accordance with the test protocol. The testing revealed that each of these 21 service regulators delivered unacceptable downstream pressure.

Twelve (12) service regulators, which failed inspection during the restoration effort, were disassembled for inspection and analysis. Based upon this inspection and analysis, it appears that the failure of these regulators was not associated with the 60 psig over-pressurization incident.

See Section 6.1 for test results associated with the service regulators.

Objective 2 - Meters

Perform an evaluation of customer meters to determine if these meters can continue to operate safely and effectively even after being exposed to an inlet pressure of up to 60 psig.

Result 2 - Meters

Testing conducted on eighteen (18) different types of newly re-furbished meters revealed that exposing both tin and aluminum cased meters (which are normally exposed to a pressure of approximately 7-inches water column), to pressures between 5 psig and 50 psig resulted in failure (i.e. leak) of the seams on tin cased meters and failure of the housing gaskets on aluminum cased meters.

Ten (10) of the one hundred ninety eight (198) meters (which are associated with the 165 service regulators that failed inspection) were tested in accordance with the test protocol. The testing revealed that exposing aluminum cased meters (which are normally exposed to a pressure of approximately 7-inches water column), to pressures between 10 psig and 55 psig resulted in failure (i.e. leak) of the housing gaskets (associated with seven (7) meters). Three (3) of the 10 meters were Roots-type meters, which are rated for an inlet pressure of 175 psig MAOP, and passed the test.

See Section 6.2 for test results associated with the meters.

Objective 3 - Customer-Owned Gas Piping and Appliances

Perform an evaluation of customer-owned gas piping and equipment to determine if these items can continue to operate safely and effectively after being exposed to an internal pressure of up to 60 psig.

Result 3 - Customer-Owned Gas Piping and Appliances

Flexible Tubing - Leak testing conducted on three (3) samples of new flexible tubing were tested in accordance with the test protocol. The testing revealed no leaks at 7-inches w.c., 60 psig or 10-inches w.c.

Leak testing conducted on seven (7) flexible tubing samples removed from customer locations where service regulators failed inspection revealed no leaks at 7-inches w.c., 60 psig or 10-inches w.c.

Manual Gas Shutoff Valves - Leak testing conducted on five (5) samples of new manual gas shutoff valves revealed no leaks at 7-inches w.c., 60 psig or 10-inches w.c.

Leak testing conducted on nine (9) manual gas shutoff valves removed from customer locations where service regulators failed inspection revealed:

- no leaks at 7-inches w.c.,
- leaks occurring on five (5) valves at 60 psig,
- no leaks at 10-inches w.c.

Appliance Regulators - A functionality test (observed outlet pressure at flow conditions and lock up) conducted on three (3) new appliance regulators revealed:

- appliance regulators operated properly at an inlet pressure of 7-inches w.c. under both flow and lock up conditions,
- appliance regulators shut off at an inlet pressure of 2.5 psig (would not flow gas to the appliance) under flow conditions and operated properly under lock up conditions,
- appliance regulators shut off at inlet pressures between 2.5 psig and 60 psig (would not flow gas to the appliance) under flow conditions and operated properly under lock up conditions.

A functionality test conducted on two (2) appliance regulators removed from customer locations where service regulators failed inspection revealed:

- both appliance regulators operated properly at an inlet pressure of 7-inches w.c. under both flow and lock up conditions,
- at an inlet pressure of 2.5 psig, the outlet pressure of both appliance regulators, during flow conditions, declined approximately two and one half inches (2-1/2") w.c. below a set point of 4.5" w.c. Under lock up conditions, one appliance regulator delivered an unacceptable outlet pressure of 1.1 psig, while the other appliance regulator operated properly.
- both appliance regulators shut off at inlet pressures between 2.5 psig and 60 psig (would not flow gas to the appliance) under flow conditions. Under lock up conditions, one appliance regulator failed operated properly and one failed.

Control Valves - A functionality test (observed outlet pressure at flow conditions and lock up) conducted on seven (7) new control valves revealed:

- control valves operated properly at an inlet pressure of 7-inches w.c. under both flow and lock up conditions,
- at an inlet pressure of 2.5 psig, the outlet pressure of the control valves, during flow conditions, declined approximately one to two inches w.c. below a set point of 3.5 inches w.c. Under lock up conditions, the control valves shut off as designed. Small leaks were observed on two of these control valves.
- at inlet pressures between 2.5 psig and 60 psig, five control valves failed (did not shut off or delivered too much pressure) under flow conditions. Under lock up conditions, four control valves failed. Minor leaks were observed on five of the control valves and one major leak on one control valve.

A functionality test conducted on ten (10) control valves removed from customer locations where service regulators failed inspection revealed:

- control valves operated properly at an inlet pressure of 7-inches w.c. under both flow and lock up conditions,
- at an inlet pressure of 2.5 psig, eight of the ten control valves operated properly under flow conditions. One control valve had an unstable outlet pressure of between two and four inches w.c. The outlet pressure of one control valve declined one and one half inches (1-1/2") w.c. below a set point of 3.5 inches w.c. Under lock up conditions, the 10 control valves operated properly.
- between inlet pressures of 2.5 psig and 60 psig, outlet pressures became unstable under flow conditions on seven control valves (between one to five inches w.c.), while one control valve delivered 2 psig downstream. Under lock up conditions, one control

valve failed (did not shut off) when exposed to an inlet pressure of 60 psig. In addition, minor leaks were observed on nine valves.

See Section 6.3 for test results associated with customer-owned gas piping and appliances.

EXHIBIT 4

KeySpan Post Incident Report

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

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

RE: System over Pressurization, Lexington, MA, November 9, 2005

Respondent: Leo Cody

IR PL 5-1 (Supp): Provide a copy of the post incident investigation report completed by KeySpan with respect to the system over pressurization and the release of gas at 3 Hancock Avenue on November 9, 2005.

Response: Please refer to the attached Exhibit 5-1(Supp).

INCIDENT INVESTIGATION REPORT
New England

Incident Investigation Team Members:

Construction and Work Planning/Tapping and Main Connections
Lead: John Stavrakas
Maps and Records/Design and Work Orders
Lead: Chris Cole
Abnormal Operating Conditions
Lead: Gerry Lundquest

Date of the Incident: Wednesday November 9, 2005

Location of the Incident: 3 Hancock Avenue, Lexington, MA

Time of the Incident: 11:19 AM Lexington Fire Department received first call

Date of Investigation: Began Wednesday November 9, 2005

Cause of the Incident:

-	Material Failure
-	Third Party Construction, Drilling, etc
-	Outside Force
x	KeySpan Personnel
x	Other

Fatalities and/or Injuries: Antra and Thomas Thrasher transported to hospital.

Customer Assistance Center Notification to Gas Dispatch: 11:40 AM

First Responder Arrival On-Site: PCS crew arrived shortly after incident occurred.

Gas System Operator Notified: 11:40 AM

Field Operations Notified By: Emergency Dispatch

Field Operations Crews and Supervisory Personnel On-Site:
Crew and Supervisory Personnel initially on-site
M. Jubert, KeySpan PCS Supervisor
R. Young, KeySpan PCS crew leader
W. Sweeney, KeySpan Technician B
P. McDonough, KeySpan Technician B
R. Elmstrom, KeySpan MSF Supervisor
K. Callahan, KeySpan PFR Supervisor

March 2, 2007

S. Bell, KeySpan Manager Field Operations MSF
B. McCallum, KeySpan MSF Supervisor
T. Sheehan, KeySpan MSF Supervisor
M. Sarno, KeySpan Manager Field Operations PCS
S. Morganto, KeySpan PFR Supervisor
K. Lincoln, KeySpan PFR Supervisor
T. Burke, KeySpan PFR Technician
W. Haggerty, Manager Field Operations PFR

During the primary restoration process, which lasted November 9 to November 15, approximately staffing reached the following levels: 225 service technicians, 150 distribution technicians, and 100 supervisory, management, clerical and support staff.

DTE Office Notified: 12:00 PM

Made Safe Time: 12:04 PM - System returned to normal operating pressure.
04:45 PM - System shut-down *(Fitness for Service Investigation – Executive Summary)*

Gas Outage - # of Gas Services/Customers Affected: 1,634

Gas Returned to Normal Operating Condition: November 14, 2005 @ 02:30 AM

Contributing to the Damage:
Over-pressurization of the distribution system.

Work Scope Being Performed by KeySpan: Main relay at the intersection of Hancock Street and Coolidge Avenue.

Crew Members:
R. Young, KeySpan PCS crew leader
W. Sweeney, KeySpan Technician B
P. McDonough, KeySpan Technician B
W. Sutton, NEUCO Foreman
W. Cabral, NEUCO Laborer
D. Kennedy, NEUCO Laborer
P. Feeney, NEUCO Subcontractor Dump Truck Driver

A. DESCRIPTION OF THE EVENTS

Includes:

- Chronological Sequence of Events

Approximate Times

- On November 9, 2006, shortly after 11:00 AM, the KeySpan crew connected a live new 6" PL main to the existing 6" BS main at 73 – 78 Hancock Street.
- At 11:19 AM an incident occurred at 3 Hancock Place, Lexington.
- At 11:29 AM KeySpan crew shutdown feed from 60 PSIG system to 2 PSIG system.
- At 12:04 PM 2 PSIG system returned to normal operating pressure.
- At 01:19 PM Instrument & Regulation crews reduced district regulators supply pressure, to 2 PSIG system, to 1 PSIG.
- At 01:50 PM 2 PSIG system pressure stabilized at 1 PSIG.
- At 03:51 PM Supply to 2 PSIG system shut off.
- At 04:45 PM Pressure in 2 PSIG system at 0 pressure.

- Description of Facilities Involved
  1-1/4" bare steel ('BS') service line to 3 Hancock Avenue.
  6" BS 2 PSIG main at 73 – 78 Hancock Street.
  6" BS 60 PSIG main at 82 – 84 Hancock Street.
  6" PL - 550' main 84 – 73 Hancock Street.

B. INVESTIGATION OF THE INCIDENT

1. Mike Jubert, KeySpan PCS Supervisor, was responsible for the main relay Hancock Street and Coolidge Avenue, Lexington.
2. The KeySpan Supervisor, Mike Jubert, after reviewing the main relay concluded the job appeared to be a fairly routine high-pressure tie over. He believed the job was all high pressure (i.e. 60 PSIG).
3. Main connection for the Hancock Street and Coolidge Avenue main relay was completed on November 9, 2005.
4. The KeySpan Supervisor, Mike Jubert, believing the entire scope of the 550 foot relay at Hancock Street and Coolidge Avenue was high pressure and that there was no interruption of gas service being performed and that this job did not require the use of gauges or a need for a main connection form.
5. The KeySpan Supervisor or KeySpan crew, on-site, were not aware the main relay connecting the two (2) 6" BS mains was connecting mains with differing MAOPs (60 PSIG to 2 PSIG).
6. On November 9, 2006, shortly after 11:00 AM, the KeySpan crew connected the live new 6" PL main to the existing 6" BS main at 73 – 78 Hancock Street.
7. The new 6" PL main feed gas at approximately 56 PSIG into the 2 PSIG BS main at 73 – 78 Hancock Street.
8. At approximately 11:19 AM an incident occurred at 3 Hancock Avenue.

9. The 2 PSIG distribution system supplying 1,634 service was over pressurized to approximately 56 PSIG.
10. The distribution system pressure returned to normal operating pressure at approximately 12:00 AM.

C. FINDINGS and CONCLUSIONS

1. The work package provided the KeySpan Supervisor and KeySpan crew had errors in the pressure designation of the distribution mains involved in the main relay.
2. The mapping symbol, in the mapping system, for the end caps at Harvard Street at Coolidge Avenue were not clear.

D. DETERMINATIONS

1. The mapping system, at the Hancock Street and Coolidge Avenue location, had incorrect pressure designations on the mains involved in the main relay.
2. The work package for the main relay did not properly identify the distribution pressures at the Hancock Street and Coolidge Avenue main relay location.

E. RECOMMENDATIONS

1. **Recommendation – (Action Taken):** Procedures. Implement new/revised procedures for main and services connection which requires submission of main connection documentation and approval, prior to construction. (GCON-5100 and GCON-7010)
2. **Recommendation – (Action Taken):** Training. Train support and field personnel on new/revised procedures for main and service connections.
3. **Recommendation – (Action Taken):** Procedures. Implement procedure for main construction package initiation, preparation, validation, completion and record keeping. (ADMN-7000)
4. **Recommendation – (Action Taken):** Training. Train support and field personnel on requirements for construction work package procedure.
5. **Recommendation – (Action Taken):** Review mapping data and correct and improve main pressure designation.
6. **Recommendation – (Action Taken):** Replace mapping system main end cap symbol.
7. **Recommendation – (Action Taken):** Implement procedures to validate distribution system operating pressures.

EXHIBIT 5

Pressure Readings for the Intermediate Pressure System and SCADA Reports

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.

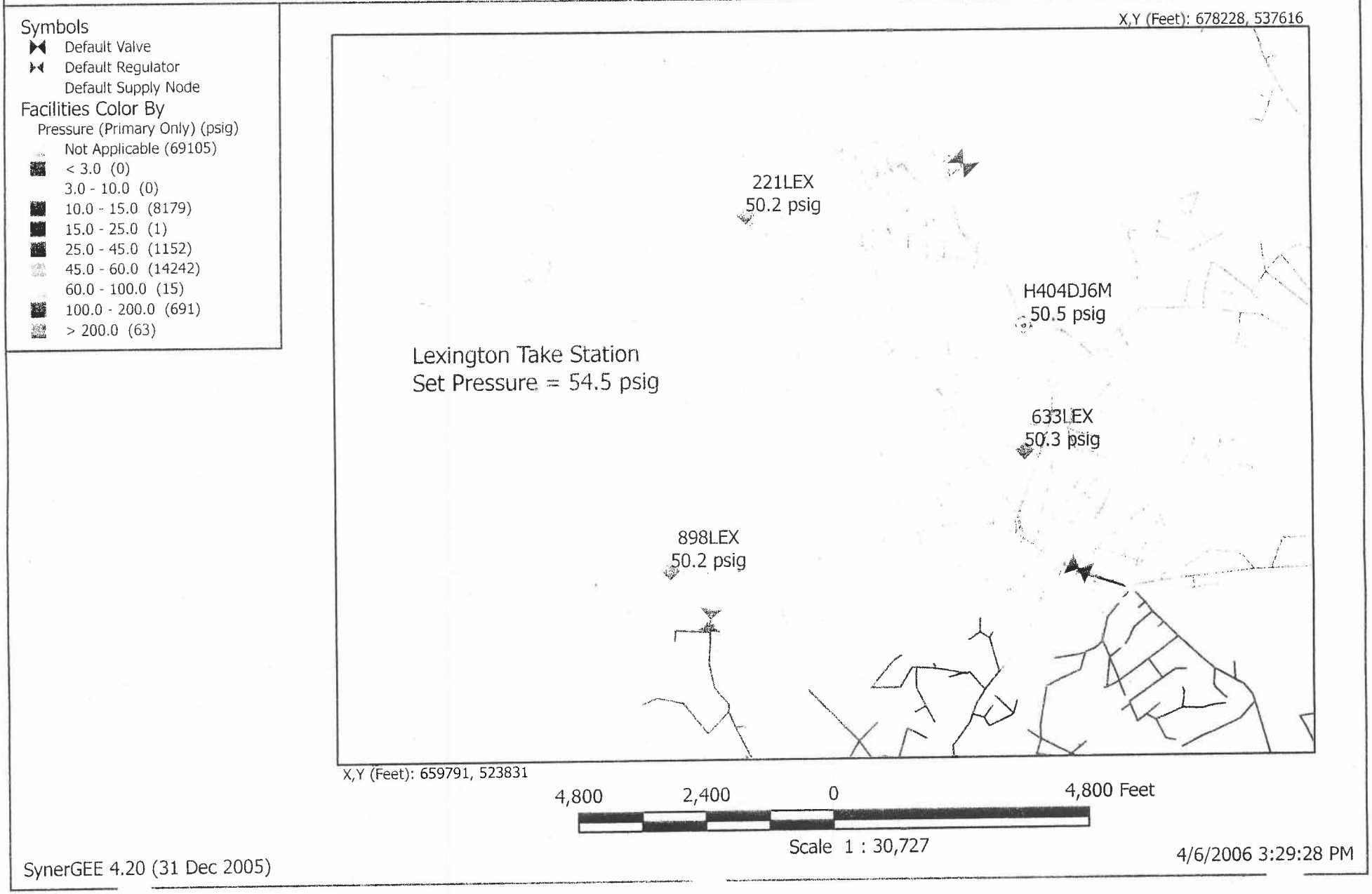
   The exact time at which the valve between the 60 pound system and 2 pound system was closed cannot be determined. The estimated time the valve on the connection between

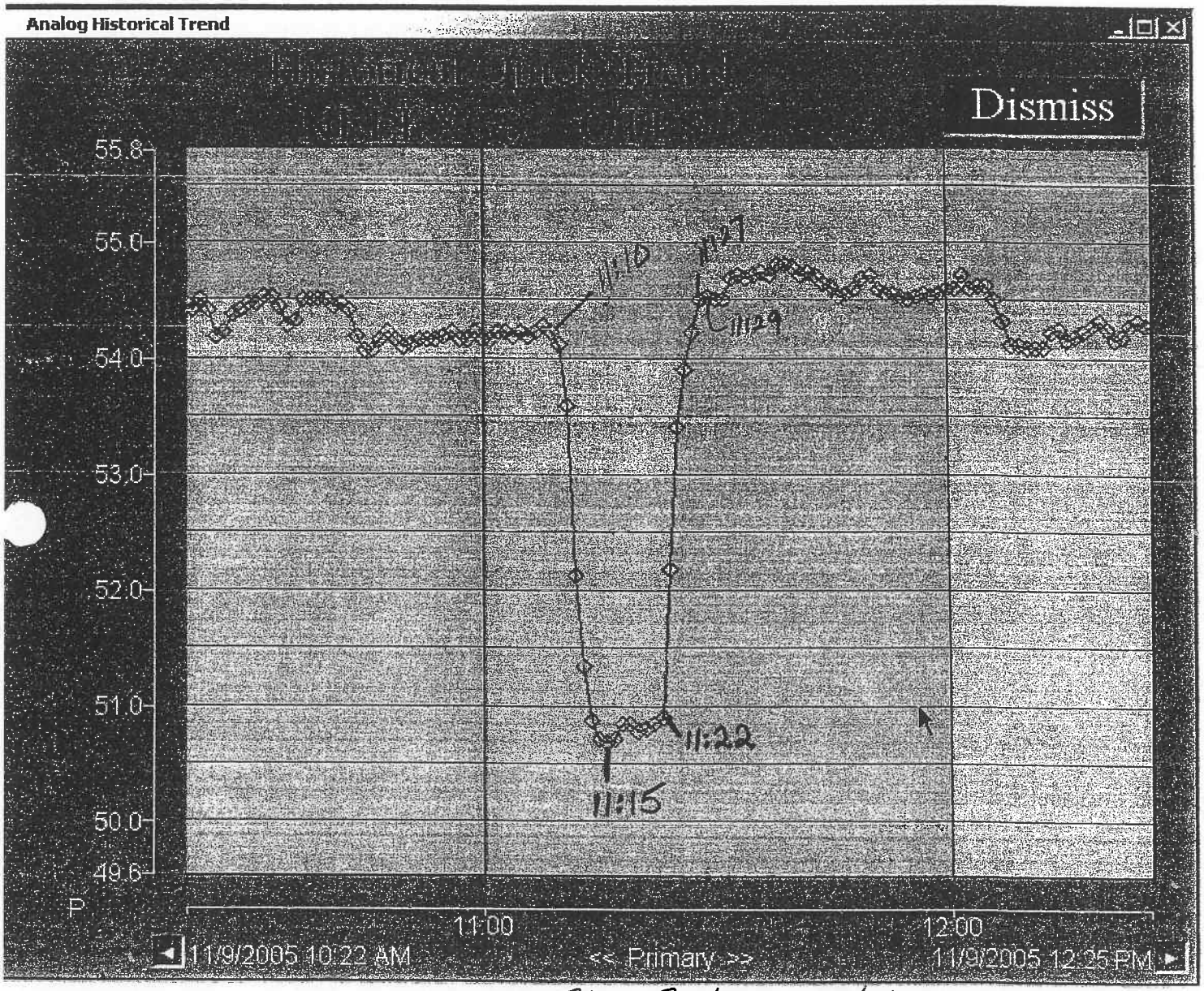
the systems was closed is between 11:22 am and 11:29 am. The estimated time, 11:22 am to 11:29 am, is based on three SCADA points for Lexington Take Station and Burlington Take Station. See the three attached Historical Quick Trends charts: (1) NELEXGS OTPS, (2) NEBURGS OTPS, and (3) flow chart NEBURGS 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.

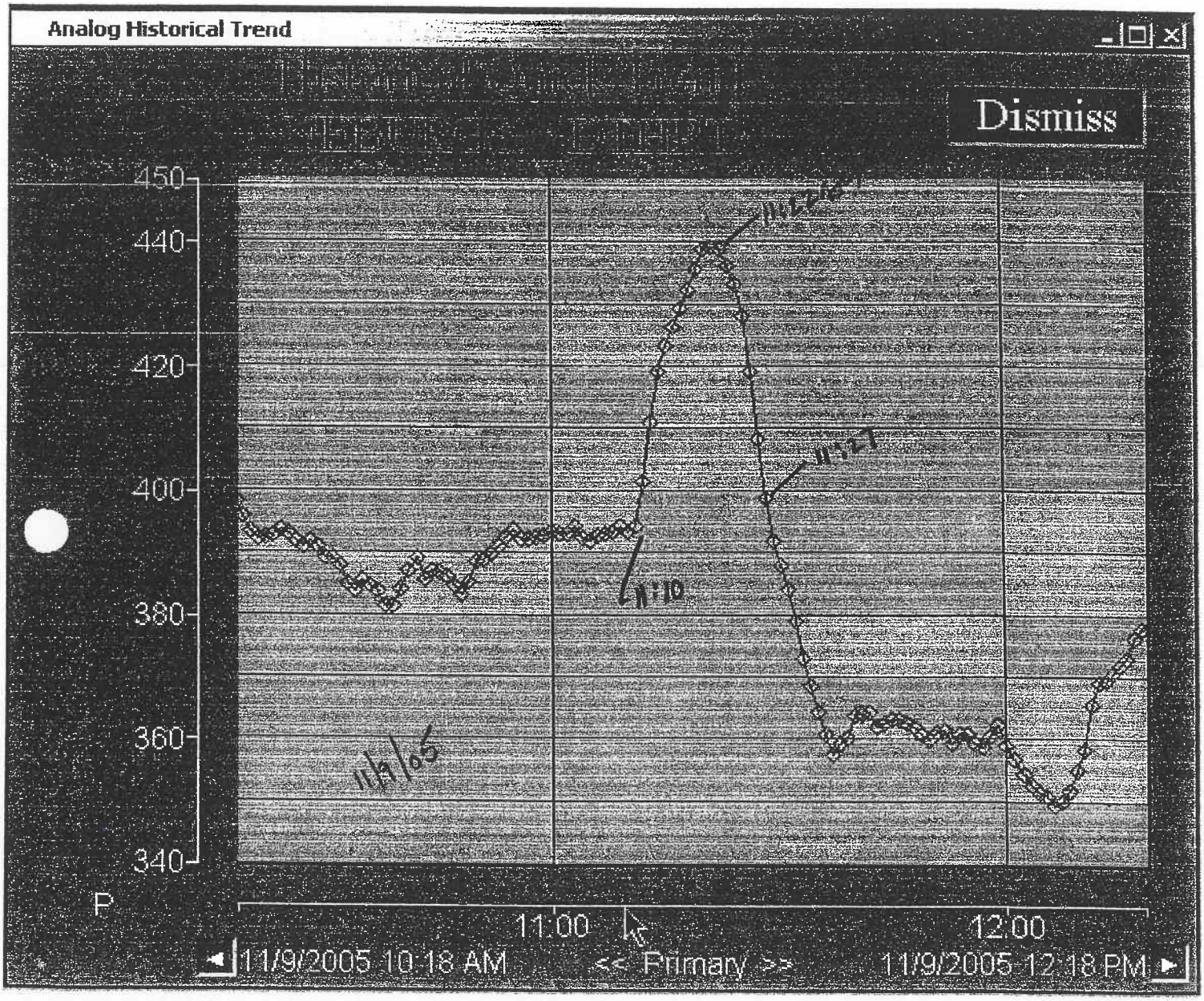
3. There were no pressure charts for the 60 pound gas system in the Affected area. There are pressure charts for the 60 pound gas system that feeds the Affected area. These charts were SCADA points at the Lexington Take Station and the Burlington Take Station. See attached SCADA pressure chart NELEXGS 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





Lexington Take Station outlet


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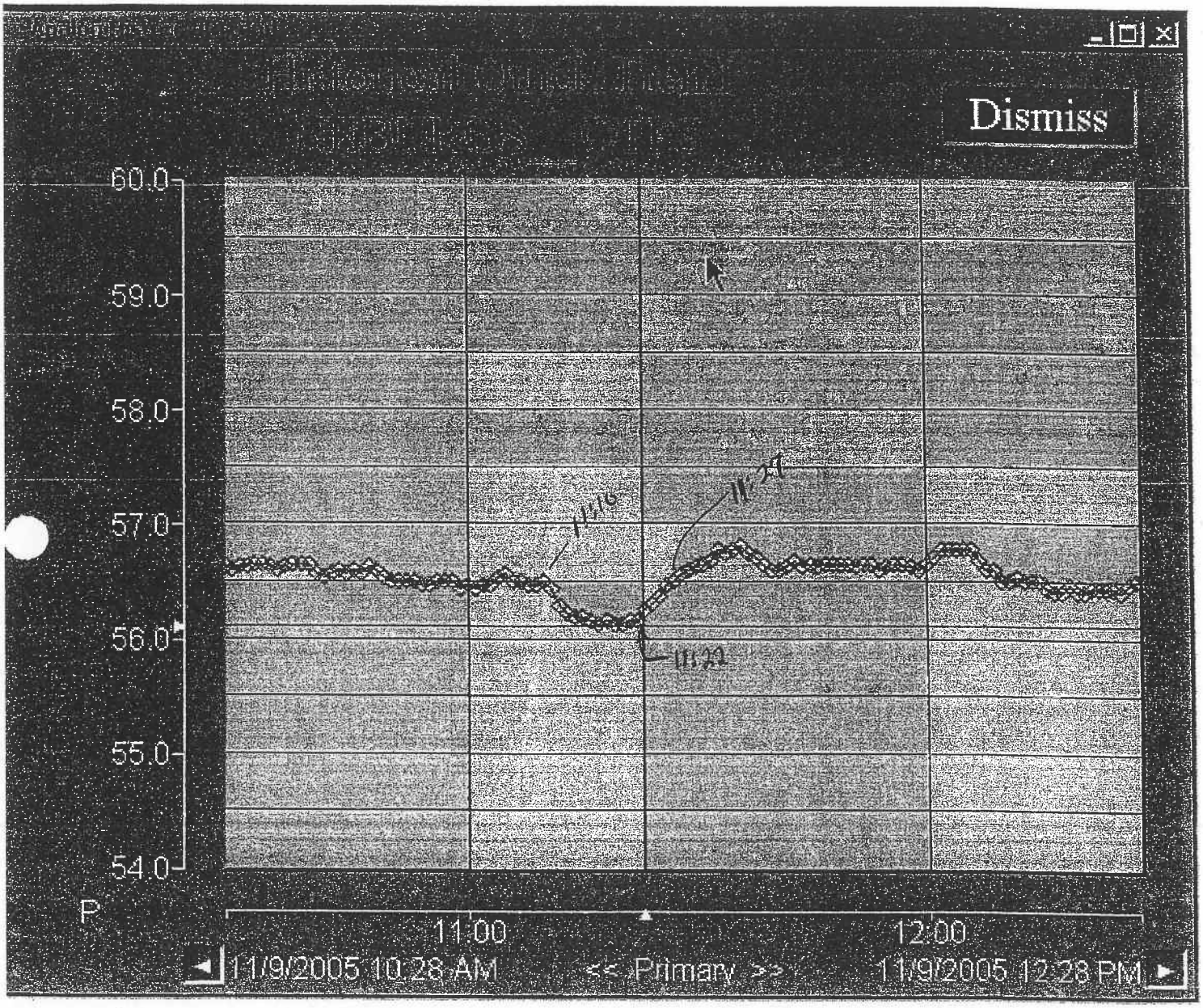
440
420
400
380
360
340
P
11:00
12:00
11/9/2005 10:18 AM
<< Primary >>
11/9/2005 12:18 PM


Dismiss
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56.0
55.0
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11/9/2005 12:28 PM

EXHIBIT 6

Meters Replaced in the Affected Area

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

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

RE: System Over Pressurization, Lexington, MA, November 9, 2005

Respondent: Steve Sechovicz

PL 3-23: Please list all meters replaced in the Affected Area, and their respective addresses.

Response: The attached list of meters is based on the CRIS database of meters in the Lexington 2 psig distribution system and shows meters that were removed from the system between November 9, 2005 and February 2, 2006.

See attached document titled "Lexington 2 psig Meter List (Exhibit 3-23)"

Lexington 2 psig Meter List

HouseNum	Street Name	MeterNum
10	ADAMS ST	00K416735
29	ADAMS ST	00F411232
30	ADAMS ST	003978830
32	ADAMS ST	00J937219
34	ADAMS ST	000405154
36	ADAMS ST	00D096637
44	ADAMS ST	00W775986
52	ADAMS ST	00P265666
15	AUDUBON RD	00W636492
16	AUDUBON RD	004164032
11	AUGUSTUS RD	00D470695
6	BALLARD TER	0B0001935
18	BEDFORD ST	00N070638
20	BEDFORD ST	00H938468
21	BEDFORD ST	0B0006324
23	BEDFORD ST	0B0014140
26	BEDFORD ST	0B0006328
45	BEDFORD ST	9714356
53	BEDFORD ST	006317352
53	BEDFORD ST	001178094
55	BEDFORD ST	0B0029559
58	BEDFORD ST	001624505
69	BEDFORD ST	00R653624
71	BEDFORD ST	003154279
77	BEDFORD ST	0B0035114
79	BEDFORD ST	0B0031782
80	BEDFORD ST	00J102606
81	BEDFORD ST	004037148
83	BEDFORD ST	00J298351
100	BEDFORD ST	00X146401
118	BEDFORD ST	009842156
122	BEDFORD ST	009843980
133	BEDFORD ST	00M850441
136	BEDFORD ST	009850500
139	BEDFORD ST	00P940258
142	BEDFORD ST	009841505
143	BEDFORD ST	001814264
155	BEDFORD ST	00M385168
164	BEDFORD ST	00W775803
166	BEDFORD ST	9002102
180	BEDFORD ST	00P204318
199	BEDFORD ST	00J101034
229	BEDFORD ST	005168749
235	BEDFORD ST	009935256
235	BEDFORD ST	004164186
237	BEDFORD ST	004281216
265	BEDFORD ST	003155727
265	BEDFORD ST	003632060
3	BELFRY TER	003137123
5	BELFRY TER	009017636
7	BELFRY TER	004164041
21	BERTWELL RD	00A054064
37	BERTWELL RD	00P499817

78	BERTWELL RD	00J181425
12	BERWICK RD	00A311923
73	BLAKE RD	004143264
99	BLAKE RD	009943163
118	BLAKE RD	00M173975
123	BLAKE RD	00H262380
127	BLAKE RD	00J101750
63	BLOOMFIELD ST	00M103785
109	BOW ST	00P265730
9	BURLINGTON ST	00X153084
28	BURLINGTON ST	00W104365
1	BURNHAM RD	002584474
8	CAMELLIA PL	00V092166
8	CAMELLIA PL	00X147922
10	CAMELLIA PL	00B190779
10	CAMELLIA PL	00W109451
6	CARMEL CIR	00W109419
8	CARMEL CIR	003618551
3	CAROL LA	00W103234
8	CAROL LA	004164000
12	CAROL LA	00X147950
29	CEDAR ST	004208080
5	CENTRE ST	003154291
2	CHANDLER ST	009843260
6	CHERRY ST	00E608254
22	CLARKE ST	0B0019021
38	CLARKE ST	0N0008475
17	CLELLAND RD	00V092548
6	COLONY RD	002989598
9	COLONY RD	009931608
10	COLONY RD	00W112446
14	COLONY RD	00X152251
23	COLUMBUS ST	0B0003686
3	DEE RD	00M051969
10	DEPOT SQ	00W108674
49	DEXTER RD	00B485295
51	DEXTER RD	00R654691
51	DEXTER RD	003462639
58	DEXTER RD	00G906032
62	DEXTER RD	00W112712
63	DEXTER RD	00N043139
23	EATON RD	005000935
28	EATON RD	00T533431
30	EATON RD	00R659505
3	ELLEN DANA CT	00C711463
23	FAIRBANKS RD	009932706
12	FAIRFIELD DR	00J383084
7	FLETCHER AVE	00B751513
20	FLETCHER AVE	002577163
50	FLETCHER AVE	00K547839
3	FOREST ST	004158708
5	FOREST ST	00F802203
6	FOREST ST	00P146979
7	FOREST ST	00K548609

10	FOREST ST	00P930962
12	FOREST ST	00M669718
34	FOREST ST	00V096081
50	FOREST ST	00P500223
54	FOREST ST	00M596811
56	FOREST ST	00C128362
12	FOX RUN LA	00J858371
51	GLEASON RD	00W109813
3	GOODWIN RD	00H262411
26	GRANT ST	002775211
132	GRANT ST	002620553
135	GRANT ST	00R664995
137	GRANT ST	00M335644
17	GRASSLAND ST	00M942163
5	HANCOCK AVE	00W104309
6	HANCOCK AVE	00B049241
7	HANCOCK AVE	001334332
8	HANCOCK AVE	0L8000050
9	HANCOCK AVE	009746585
10	HANCOCK AVE	001752245
10	HANCOCK AVE	002995787
11	HANCOCK AVE	002993773
12	HANCOCK AVE	000584022
13	HANCOCK AVE	004194426
16	HANCOCK ST	00N966429
17	HANCOCK ST	00E800174
17	HANCOCK ST	003615799
27	HANCOCK ST	00X148174
43	HANCOCK ST	00L260991
43	HANCOCK ST	001624435
46	HANCOCK ST	00R667960
48	HANCOCK ST	00H878998
50	HANCOCK ST	00C316745
52	HANCOCK ST	00B205291
55	HANCOCK ST	00B192374
56	HANCOCK ST	00J322806
56	HANCOCK ST	00T530623
58	HANCOCK ST	00P674478
60	HANCOCK ST	003992426
79	HANCOCK ST	00D542295
82	HANCOCK ST	00N375368
98	HANCOCK ST	005000895
25	HARDING RD	00B205784
56	HARDING RD	001439511
58	HARDING RD	009849826
61	HARDING RD	00R262167
1	HARRINGTON RD	004173104
11	HARRINGTON RD	002863493
4	HASTINGS RD	P392728
11	HAYES AVE	004165022
26	HAYES AVE	00P937134
43	HAYES AVE	00J102617
14	HAYES LA	00M941547
16	HAYES LA	00G669580

18	HAYES LA	009747394
27	HAYES LA	00N579184
14	HICKORY ST	00H262836
33	HIGHLAND AVE	003613117
11	HOLMES RD	00H362455
75	KENDALL RD	00D517120
3	KIMBALL RD	00J181361
15	LAKE ST	007564486
8	LARCHMONT LA	00W109135
18	LARCHMONT LA	00K101080
21	LARCHMONT LA	J612007
28	LEDGELAWN AVE	00X146086
33	LEDGELAWN AVE	008741923
4	LEXINGTON AVE	00W106689
17	LIBERTY AVE	001705974
23	LINCOLN ST	00V095747
12	LINMOOR TER	00P913897
16	LINMOOR TER	00L012413
18	LOIS LA	00W108086
22	LOIS LA	009793326
51	LOWELL ST	00D218778
675	LOWELL ST	00X147524
675	LOWELL ST	00X147530
675	LOWELL ST	003613516
675	LOWELL ST	004318668
5	MANNING ST	001618092
7	MANNING ST	00P416467
11	MANNING ST	00P499636
7	MARLBORO RD	001813637
123	MARRETT RD	005291423
205	MARRETT RD	004064603
211	MARRETT RD	00C400177
212	MARRETT RD	00B752061
212	MARRETT RD	00R455961
1505	MASSACHUSETTS AVE	007277544
1505	MASSACHUSETTS AVE	009842961
1505	MASSACHUSETTS AVE	00N146118
1505	MASSACHUSETTS AVE	00W103257
1505	MASSACHUSETTS AVE	00W106037
1505	MASSACHUSETTS AVE	00W107420
1505	MASSACHUSETTS AVE	00X154648
1505	MASSACHUSETTS AVE	004164156
1505	MASSACHUSETTS AVE	004173268
1690	MASSACHUSETTS AVE	8913199
1726	MASSACHUSETTS AVE	0B0026615
1730	MASSACHUSETTS AVE	0B0022784
1894	MASSACHUSETTS AVE	G105280
1900	MASSACHUSETTS AVE	00Z890232
1906	MASSACHUSETTS AVE	004141905
2030	MASSACHUSETTS AVE	009934194
2127	MASSACHUSETTS AVE	002996594
2161	MASSACHUSETTS AVE	008489205
2173	MASSACHUSETTS AVE	00X147694
2226	MASSACHUSETTS AVE	00J099529

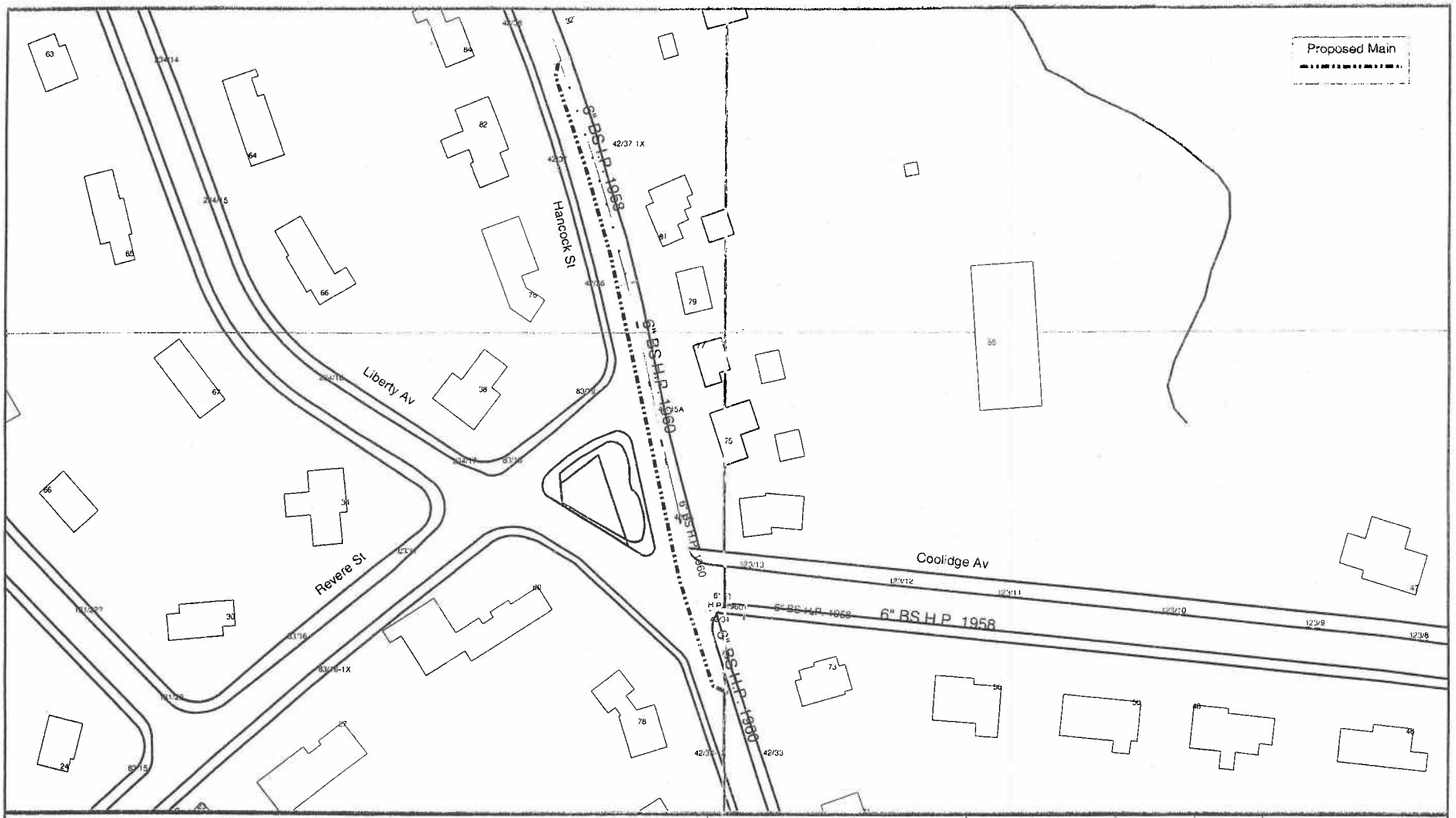
2318 MASSACHUSETTS AVE	W104834
2360 MASSACHUSETTS AVE	F801873
2405 MASSACHUSETTS AVE	004143849
2418 MASSACHUSETTS AVE	001881541
2618 MASSACHUSETTS AVE	003061412
12 MERIAM ST	00E836054
5 MOHAWK DR	00W187626
10 MUZZEY ST	00G185759
10 MUZZEY ST	00C708222
20 MUZZEY ST	00F167839
28 MUZZEY ST	001621046
6 N HANCOCK ST	00U606361
9 N HANCOCK ST	003546181
67 N HANCOCK ST	00U294990
11 NICHOLS RD	00P919009
15 NICHOLS RD	003154414
16 NICHOLS RD	002996027
28 NICKERSON RD	004164205
16 OAKLAND ST	000580616
23 OAKLAND ST	002576392
27 OAKLAND ST	00V104933
49 OUTLOOK DR	002903128
14 PARKER ST	00V102578
15 PARKER ST	002947641
19 PARKER ST	00P937618
25 PARKER ST	00E228136
4 PATRIOTS DR	009843313
5 PATRIOTS DR	004141906
17 PATRIOTS DR	00P929980
15 PERCY RD	00N147557
31 PERCY RD	00M942086
31 PERCY RD	000587020
4 PLYMOUTH RD	00X152781
2 PRESTON RD	009736451
3 PRESTON RD	00A890391
6 PRESTON RD	00N365553
5 RAYMOND ST	004174507
70 REED ST	000022750
75 REED ST	005000910
153 REED ST	00N705665
15 RICHARD RD	00L814612
21 SHADE ST	002999569
2 SHERMAN ST	004010503
5 SHERMAN ST	00W636921
7 SHERMAN ST	00W637261
7 SHIRLEY ST	00N915264
9 SHIRLEY ST	003232509
11 SHIRLEY ST	001723531
12 SHIRLEY ST	00R650580
15 SHIRLEY ST	00P675541
19 SHIRLEY ST	00A416544
19 SHIRLEY ST	004221694
20 SHIRLEY ST	002997302
29 SHIRLEY ST	005000949

30	SHIRLEY ST	002570861
31	SHIRLEY ST	003393382
33	SHIRLEY ST	004173581
33	SHIRLEY ST	004420034
32	SIMONDS RD	00N914204
135	SIMONDS RD	001334430
7	SLOCUM RD	00V098161
13	SOMERSET RD	00H261148
13	SOMERSET RD	00K222195
15	SOMERSET RD	002577432
23	SOMERSET RD	00K294677
24	SOMERSET RD	00H257887
141	SPRING ST	008465589
141	SPRING ST	008465589
7	STETSON ST	00N966258
7	STETSON ST	002243403
5	SUNNY KNOLL AVE	002583723
11	SUNNY KNOLL AVE	002748235
15	SUZANNE RD	00F053016
15	SUZANNE RD	00F802841
7	TEWKSBURY ST	00F996654
23	TUFTS RD	00N216643
1	TURNBURRY HILL RD	3612562
2	TURNBURRY HILL RD	009844031
3	TURNBURRY HILL RD	004165513
3	TURNBURRY HILL RD	004219956
5	TURNBURRY HILL RD	X147231
4	UPLAND RD	00E206014
27	VAILLE AVE	00F932022
29	VAILLE AVE	P415669
53	VAILLE AVE	004533457
1	VINEBROOK RD	00B870685
14	VINEBROOK RD	004143047
17	VINEBROOK RD	001046119
20	VINEBROOK RD	00D096357
30	VINEBROOK RD	002988762
45	WACHUSETT DR	007495179
47	WACHUSETT DR	00K615730
4	WADMAN CIR	0B0029224
52	WALTHAM ST	0B0017482
99	WALTHAM ST	007618833
125	WALTHAM ST	00M942000
125	WALTHAM ST	00N914958
130	WALTHAM ST	006260957
9	WINTHROP RD	00P918557
22	WOODLAND RD	001750618
29	WOODLAND RD	00V098021
141	WORTHEN RD	003979780

EXHIBIT 7

Work Package Containing Maps,
Service Cards, and Permits

PL 3-1



PIPELINE INTEGRITY DESIGN

Hancock Street, Lexington

As part of the 2005 Bare Steel/Wrought Iron Replacement Program Supplemental Budget, Corrosion Control recommends the relay of aprx. 550 feet of 6 inch BS (1960) with 6 inch PL from the exst 6 inch PL at #84 to Coolidge Av.

NOTE: The location of surface and underground objects shown are not warranted to be correct.

ENGINEER	JLH	SIZE	6 Inch
DATE	08/16/2005	MATERIAL	Plastic
LENGTH	550 Feet	PRESSURE	IP
SECTIONALS		WORK ORDER #	444904

AMMS

KEYSPAN

PURGING CHECKLIST

DATE 11/9/05

ADDRESS Hancock st. TOWN Lexingtn

COST CENTER #_____ G. L. ACTIVITY #_____ WORK ORDER # 444904

1) The size and length of the pipe to be purged:

6" Size 550 Length

2) The purge procedure needed based on size and length of piping:

✓ Natural gas purge
_____ Inert gas purge
_____ Air purge
_____ Special written procedure

3) If an inert gas purge or special procedure requires nitrogen, the number of bottles required (210 cu. ft. per bottle):

— Bottles required

4) Equipment required at job site:

✓ Ground Vent Stack
✓ Combustible Gas Indicator
✓ Fire extinguishers
_____ Cylinder regulator, if using nitrogen
✓ Two 2-way radios (one at each end and continuously attended) or other appropriate form of voice communication
✓ Fire Suit and Gloves

5) Plastic Main Y (Y/N) Plastic Main Static Ground _____

6) Inert gas introduced (if required):

_____ Time Started _____ Time Stopped

7) Natural Gas (purging into service) or air (purging out of service) introduced:

_____ Time Started _____ Time Stopped

8) Sample readings of 90% or higher, if purging into service, or of 1% or less, if purging out of service (using same CGI):

1) ____% GAS _____ Time
2) ____% GAS _____ Time
3) ____% GAS _____ Time

9) Main or service purged and, if purging into service, fully pressurized:

_____ Time

_____
Employee's signature

261ESAM.SQT

Street Main Authorization

Form No. 261E Rev 9/98

Workorder

WO #: 444904 City: Lexington Org:
Worktype: RM Relay main Date: 30-AUG-2005
Name: JH4 Location: 73-84 HANCOCK ST, LEX
Date Wanted: Submitted By: JH4
Estimated By: TDF Project #: Program ID: ACE107 MRCBS

Mains

Location	Size	Length	Material		Amount	GL Activity
73-84 HANCOCK ST, LEX	06	550	HD	$	40,024.25	008506
	Total Mains			$	40,024.25	

Notifications

Type	Status

Estimated Investment

Est. Inv. Direct	$	44,412.25
65 % of Total	$	28,867.96
Total Est. Inv.	$	73,280.21
Reimbursement	$	0.00
Total Company Cost	**$**	**73,280.21**

Services

Size	Units	Material	Amount	
<=2	3	PL	$	4,388.00
	Total Services		$	4,388.00

Total Est. Investment - Direct $ **44,412.25**

Coated Steel Review Required

DSD	Intials	Date	Yes	No
____	JLH	09-01-05	☐	☑

If YES:

	Intials	Date
Corr. Cont.		

General Comments (Attach Sketch)

As part of the 2005 Bare Steel/Wrought Iron Replacement Program Supplemental Budget, Corrosion Control recommends the relay of aprx. 550 feet of 6 inch BS (1960) with 6 inch PL from the exst 6 inch PL at #84 to Coolidge Av. □□

Approvals

P.C.S	Initials	Date
C.E.		
G.M.		
V.P.		
Sr V.P.		
Pres.		
____		
____		

O.E.	Initials	Date
ENG.	JLH	09-01-05
G.L.	JR1	9-1-2005
G.M.		
V.P.		
____		
____		
____		

261ESAM.S

Street Main Authorization

Form No. 261E Rev 9/98

Workorder

WO #: 444904 City: Lexington Org:
Worktype: RM Relay main Date: 16-AUG-2005
Name: JH4 Location: 73-84 HANCOCK ST, LEX
Date Wanted: Submitted By: JH4
Estimated By: Project #: Program ID: ACE107 MRCBS

Mains

Location	Size	Length	Material	Amount	GL Activity
Total Mains				$ 0.00	

Notifications

Type	Status

Estimated Investment

Est. Inv. Direct	$	0.00
60 % of Total	$	0.00
Total Est. Inv.	$	0.00
Reimbursement	$	0.00
Total Company Cost	**$**	**0.00**

Services

Size	Units	Material	Amount
	Total Services		$ 0.00

Total Est. Investment - Direct $ 0.00

Coated Steel Review Required

DSD	Intials	Date	Yes	No
			☐	☐

If YES:

	Intials	Date
Corr. Cont.		

General Comments (Attach Sketch)

As part of the 2005 Bare Steel/Wrought Iron Replacement Program Supplemental Budget, Corrosion Control recommends the relay of aprx. 550 feet of 6 inch BS (1960) with 6 inch PL from the exst 6 inch PL at #84 to Coolidge Av. □□

Approvals

P.C.S	Initials	Date
C.E.		
G.M.		
V.P.		
Sr V.P.		
Pres.		

O.E.	Initials	Date
ENG.		
G.L.		
G.M.		
V.P.		

07-SEP-2005

ABUTTER NOTIFICATION CHECK LIST

73	84	HANCOCK ST
# From	# To	Street

Lexington
City/Town

Zip Code

Reason for Work:
Relay main

Please provide background information to help answer customer calls (i.e. have we been at site recently):

As part of the 2005 Bare Steel/Wrought Iron Replacement Program Supplemental Budget, Corrosion Control recommends the relay of aprx. 550 feet of 6 inch BS (1960) with 6 inch PL from the exst 6 inch PL at #84 to

Date(s) work will be performed
through

Between what hours of the day and days of the week will the work be performed

please indicate if Saturday work is necessary NO

Who will do the work?
[X] Boston Gas Crews or
[ ] contractors

Will the street be?
[ ] open or
[] closed

Do you expect parking to be affected?
[] yes
[] no
[] times_____
[] arrangements made_____

Police detail necessary
[] yes
[] no

Will there be excavation in the area of the foundation of home or business?
[] yes [] no

If yes, how will the customers be notified of interruption of service? Please explain:

_____

_____

Which letters do you want sent and when?
[] Send Along the Main Letter (date _____)
[] Follow up letter (date _____)

DPW notified [] yes [] no Project #_____

Signature _____ Extension _____

Would you like your name and extension on the construction notification letters? [] Yes [] No

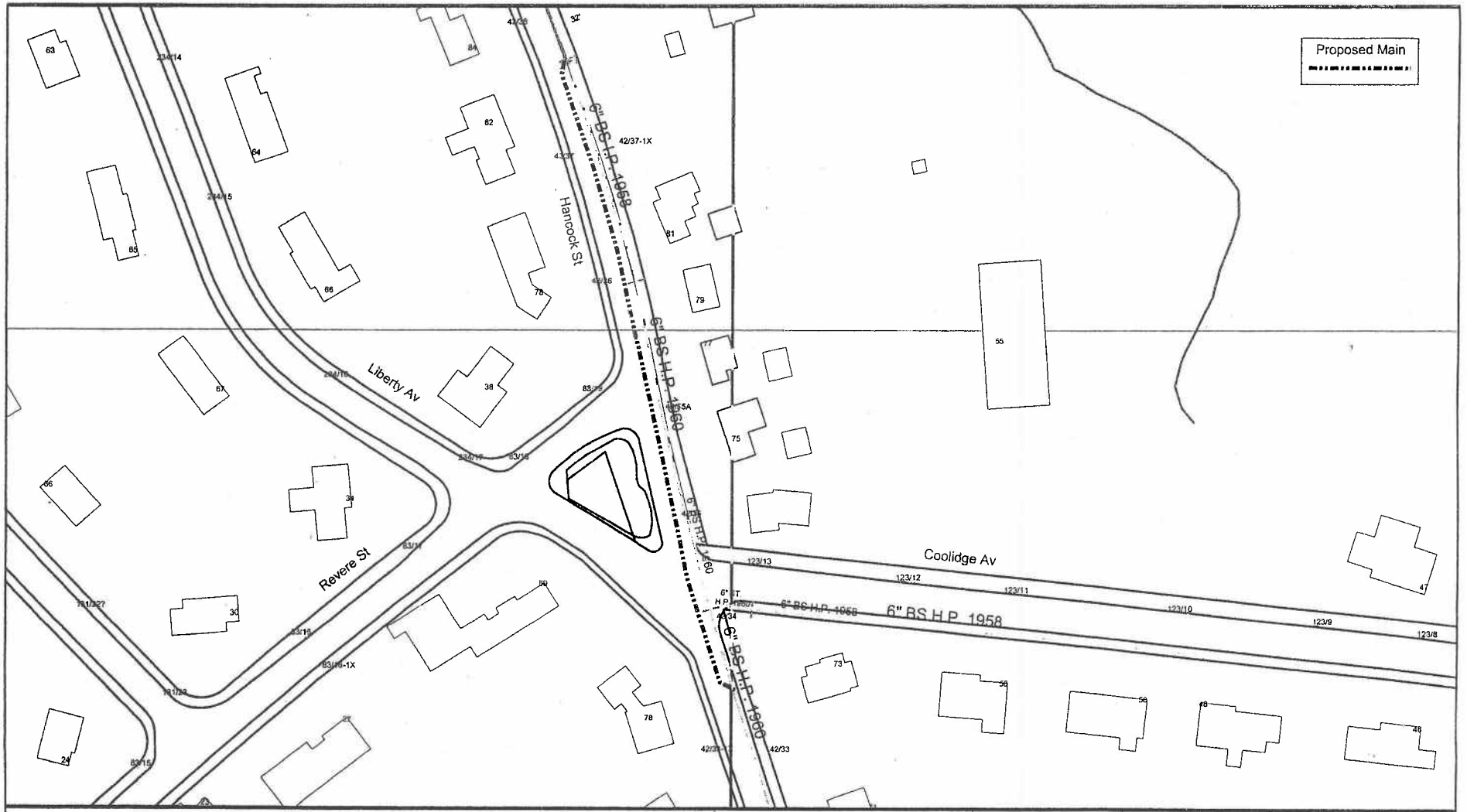
SUPRFORM.SQT

KeySpan-Work Order Completion Form

Work Order #:	444904	Work Type:	RM	Project:		Date Received:	16-AUG-2005
Location:	73-84 HANCOCK ST, LEX			Requestor:	JH4	Tel #:	550
Failure Class:	CORR	Problem Code:	B	Leak Reading(%Gas):		Upgrade Date:	
Contractor:		Job Plan:	RELMAIN	Organization:	PCS	Target Comp:	
Proj. Number:	444904			GL Account:		External Ref. #:	3.3M

Comments: As part of the 2005 Bare Steel/Wrought Iron Replacement Program Supplemental Budget, Corrosion Control recommends the relay of aprx. 550 feet of 6 inch BS (1960) with 6 inch PL from the exst 6 inch PL at #84 to Coolidge Av. □□

Notif. Type:	ABUTTER	Agency:	Notif.#:	Start Dt:	Exp Dt:



PIPELINE INTEGRITY DESIGN

Hancock Street, Lexington

As part of the 2005 Bare Steel/Wrought Iron Replacement Program Supplemental Budget, Corrosion Control recommends the relay of aprx. 550 feet of 6 inch BS (1960) with 6 inch PL from the exst 6 inch PL at #84 to Coolidge Av.

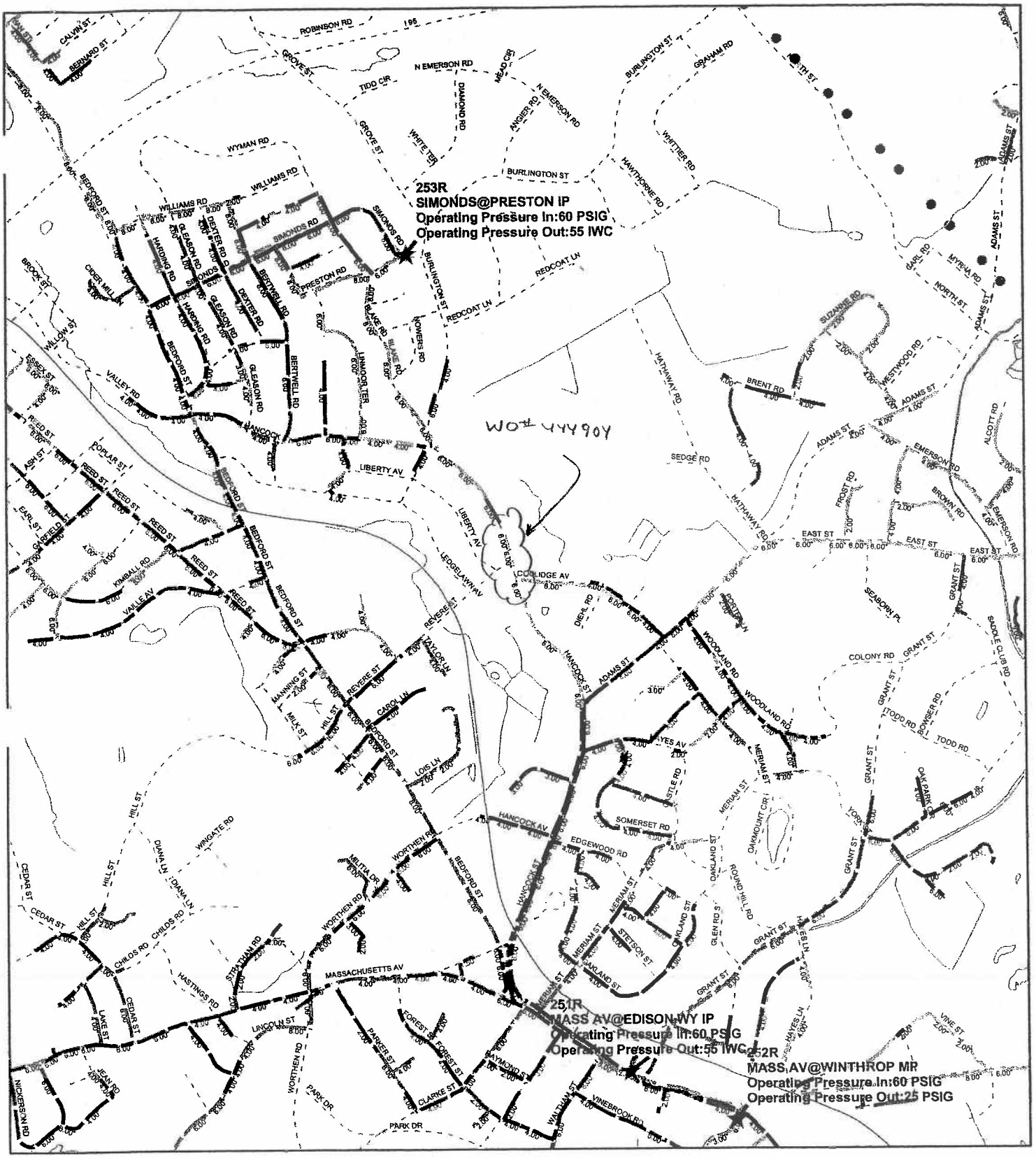
N

NOTE: The location of surface and underground objects shown are not warranted to be correct.

ENGINEER	JLH	SIZE	6 Inch
DATE	08/16/2005	MATERIAL	Plastic
LENGTH	550 Feet	PRESSURE	IP
SECTIONALS		WORK ORDER #	444904

AMMS

KEYSPAN



Distribution Main

<all other values>

Subtype, Pressure Class

- Bare Steel, High Pressure
- Bare Steel, Intermediate Pressure
- Bare Steel, Low Pressure
- Bare Steel, Transmission Pressure
- Cast Iron, High Pressure
- Cast Iron, Intermediate Pressure
- Cast Iron, Low Pressure
- Coated Steel, High Pressure
- Coated Steel, Intermediate Pressure
- Coated Steel, Low Pressure
- Coated Steel, Transmission Pressure
- Copper, Low Pressure
- High Density Plastic, High Pressure
- High Density Plastic, Intermediate
- High Density Plastic, Low Pressure
- High Density Plastic, Transmission Pressure
- Plastic, High Pressure
- Plastic, Intermediate Pressure
- Plastic, Low Pressure
- Plastic, Transmission Pressure
- Wrought Iron, High Pressure
- Wrought Iron, Intermediate Pressure
- Wrought Iron, Low Pressure

KEYSPAN

NOTE 1: The location of service pipes and corrosion components are not guaranteed to be correct. SPIPE as well as original record documents, should be utilized for this information.

NOTE 2: The mains in NH without dimensions are not drawn to scale. These mains are intended to show the existence of gas main on the street and do not reflect the exact location of the main in the street.

Tanya

TOWN OF LEXINGTON
DPW ENGINEERING DIVISION PERMIT

☐ WATER CONNECTION ☑ ROW - EXCAVATION ☐ ROW - SITING
☐ SEWER CONNECTION ☐ DRIVEWAY ☐ GRANT OF LOCATION
☐ DRAIN CONNECTION ☐ ROW - OBSTRUCTION NO HEARING

Permit Number 1940
Permit Date: 10/14/2005
Company: KEYSPAN Energy Delivery
Street HANCOCK ST
Address From 71 To 84
Cross Street From To
Map Lot

☑ Street ☐ Sidewalk ☐ Shoulder ☐ Private Property

Work Clas Gas Const. Typ Trench Work Typ Repair Dist. Typ Main
Trench: Length: 1.5 Width: 600
Work Desription Main Work
DigSafe: 2005-420-0709
WaterMarkout: Call 781-861-2757
StartDate 10/14/2005 Expiration Date 11/15/2005
StartTime 8:30:00 AM EndTime 4:30:00 PM

Status:

Conditions

Description	Street	Number
Written Notification to Abutters of Construction		

FEES

Type	Cost	Paid
ROW	205	0
Total	205	0

William P. Hadley

William P. Hadley, Director of Public Works

FIELD ESTIMATE WORK SHEET

TOWN: Lexington		JOB#:
ROAD: Hancock		
FIELD CHECK: Jubert		
WETLANDS: no	LENGTH: 500	MATERIAL: pl
VALVE: yes	SIZE: 6"	QUANTITY: 1
ROAD WIDTH: 35		BORE LENGTH:
ROAD BORE (S) —		
HOLE HOG LF: —		
PAVING LF: 600		PAVING SF: 1200
LOAM & SEED LF: —		LOAM & SEED SF: —
ELECTRIC OVERHEAD: yes		ELECTRIC UNDERGROUND: yes
TEST STATION (S):		TYPE (S):
LENTH OF JOB(in days): 8		
DETAIL COP(in hours): 128		

SUPERVISOR NOTES:

ledge - 25 cub yds.
(1) 6" williamson Top Tee + Tops
(2) 2" Bypasses steel To steel

New England Gas / Boston Gas Company
CONTRACTOR INVOICE

VO#:	444904	Version:	1
Project #:	444904	Program:	ACE107 MRCBS
ctor Name:	NEUCO	Area:	
Work Address:	73-84 HANCOCK ST, LEX	Town:	LEX
Field Engineer:			
Nature of Work:	Relay main		
NVOICE NO:_____	INVOICE DT:_____		
Related PO #s:	-		

Category	Activity#
MAINS	
Company Crew	
Contractor Labor	
Common Ledge Removal $/cu. yd.	008506
Main Relay connect - Williamson 3" - 4" pipe	008506
Relay main 6" - 0' - 499'	008506
SERVICES	
Company Crew	
Contractor Labor	
B&L Backhoe Operator $ /hr.	007561
B&L Dump Truck Operator $/hr.	007561
B&L Foreman $/hr.	007561
B&L Laborer $/hr.	007561
POLICE	
Police Detail	003699
PERMIT	
PAVING	
Hot Patch addtl 2" lifts > 4 sq yds	003698

Maximo Material Requisition Number: **80009589**
Deliver To Yard: **WMG**
Requested By: _____

Maximo Material Requisition Date: 26-OCT-2005
Deliver ToTruck: **NEUCO**
Material Date Required: 27-OCT-2005

Max Work Order Number: **444904**
Oracle Project #: **444904**
Requested By MJJ

Qty	Unit	Item	Description	Unit Price	Line Cost	Activity	Entered Date	Required Date	Act # Code
1000.00	FOOT	00199607	WIRE CU 14AWG 7 STR 600 VOLTS, HMW/PE 45 MIL YELLOW INSULATION TRACER WIRE. TO BE SUPPLIED	0.04	40.00	007561	10/26/2005	10/27/2005	110
3.00	EACH	00303163	FITTING TRANSITION 6" MD	77.81	233.43	008506	10/26/2005	10/27/2005	100
6.00	EACH	00304001	ANODE MAGNESIUM 17LB	27.80	166.80	008506	10/26/2005	10/27/2005	100
6.00	EACH	00311158	LINE CAP, VENTED, NON-RESTRAINING BOLTED, COMPRESSION, FOR STEEL, 6.625" O.D. PIPE,	92.48	554.88	008506	10/26/2005	10/27/2005	100
10.00	EACH	00316127	COUPLING-ELECTROFUSION-PE-6 IN.IPS	32.17	321.70	008506	10/26/2005	10/27/2005	100
3.00	EACH	00371094	TEE, 3-WAY, 6", CLASS 150, CONTOURED BASE, FLANGED TOP, COMPLETE WITH COVER FLANGE,	419.67	1259.01	008506	10/26/2005	10/27/2005	100
500.00	FOOT	00374021	FEET-TUBING-POLYETHYLENE-YELLOW-PLASTIC-PE-2406-1" CTS-1 1/8" X.099 IN WALL (SDR	0.15	75.00	007561	10/26/2005	10/27/2005	110
1.00	ROLL	00390013	TAPE 6 IN YELLOW CAUTION GAS MAIN	19.77	19.77	007561	10/26/2005	10/27/2005	110
20.00	ROLL	00390020	TAPE WAX BROWN TRENTON #1WAX FOR UNDERGROUD USE 4" x 9", 24 ROLLS/CASE TO BE USED WITH M&S	5.67	113.40	007561	10/26/2005	10/27/2005	110
2.00	GALL	00390021	PRIMER FOR BROWN WAX TAPE TRENTON #1WTPRIME, 4 GALLONS/CASE, MSDS #2731	19.50	39.00	007561	10/26/2005	10/27/2005	110
12.00	ROLL	00390052	TAPE 2" X 75' X 12 ROLLS MFG. TAPECOAT C#H35G GRAY PRODUCT #211021G	11.26	135.12	007561	10/26/2005	10/27/2005	110
					2958.11				

Purpose

Approved By: _____ Date: _____

To be used for request of materials from Gas & Electric T&D Warehouses

Inventory Material Request/Issue Form

KEYSPAN

NIGHT LOAD ☐ Please Check

Requestor: RON RAYMOND	Employee #: 1	Contractor Name: NELCO	
Contact Phone # (Nextel, Mobile, Office, Radio): 1186 NEXTEL			
Project Name or Location: HANCOCK ST. LEXINGTON			Cost Center #:
Project #: 444904	Task #: 8506	Work Order #: 444904	Tax Location Code #:
Truck #: 221		Trailer #:	Bin #:
Deliver to Yard (Hix, Canarsie, Malden, etc): WALTHAM			Need By Date:
Authorizing Signature (small tools; contractor issues): MIKE JUBERT			Auth Empl ID #:
Dept. Name (eg. MSF, PCS, Pressure - New England Only):			

Item ID	Description	UOM	Quantity	To be completed by Warehouse: Issued	Area	Row	Bin
00371536	6" WILLIAMSON Tee		3				
✓	6" TRANSFITTING		3				
✓	6" STEEL MAXI END CAP		6				
✓	6" ELEC FUSION COUPLING		10				
00371596	6"X6"X6" PLASTIC Tee		1				
00320261	6" PLASTIC 90° ELBOW		2				
00320680	6" PLASTIC 45° ELBOW		4				
00320496	6" STEEL 90° WELD ELBOW		3				
✓	TRACER WIRE		1,000'				
✓	CAUTION TAPE		1,000'				
00390020	Tee TAPE 2" 1 BOX		12 Rolls				
00340057	17 lb. ANODE		6				
	Lunn Type						
	6" PLASTIC PIPE						

To be completed by Warehouse Personnel:

Issued To: _____ Emp #: _____ Issued by: _____ Date Filled: _____

Notes: _____

Work Order	444904	Region/Company	NEGBGC	Work Type	RM
Location	542630	73-84 HANCOCK ST, LEX			
Direction From	PROG	Int. Street 1	COOLIDGE AV		
		Int. Street 2			
Belongs To					
Element					

Status	ESTIM
Status Due Date	
Date Received	2005-08-16-9.33.0
Town	LEX
Location Priority	5
WO Priority	6

Contact Information

Requestor	JH4
Customer	JH4
Phone	550
Role	

Violation/Delay | Notifications | CUE | Damages | Diary

Location Detail

Parking Reg			
Svc Seq #		Circuit #	Map/Grid
Billing Unit			Tax District: LEX

Problem

Failure Class	CORR
Problem Code	B
Leak Reading%	
Upgraded Date	

Classification

Job Plan	RELMAIN
Program	ACE107 MRCBS
Safety Plan	
PM	

Responsibility

Own. Org.	PCS	Scheduler	MJJ
Perf. Org.	PCS	Crew Leader	
Proj. Mgr.	MTC	Contr. Company	
Designer	TDF	Contr. Contact	

Associated Project/ Work Order Detail

Oracle Project #	
WMS Project #	
LMS #	
Ext Ref #	3.3M
Status 1703	

Scheduling Information

	Start	Completion
Target		
Scheduled		
Actual		
Customer Need/Appt. Date		

Est. Dur. 123:00 | Rem. Dur. | Plng./Sched? |

Follow-up Work

Originating WO:
Has Follow-up Work? N

Modified

By: MTC
Date: 2005-08-30-14.37

own Code: LEX

Address: 67 N Hancock St **Address No:** 219616
marks:
Spipe No: 1287726
urrent Status: ACTIVE **Entry Location:** OUTSIDE LEFT
Status Date: 08/10/2001

Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
1	1	DIRECT	1.000	PL	75.00	08/04/2000

Address: 70 Hancock St **Address No:** 218026
Remarks:
Spipe No: 279534
urrent Status: ACTIVE **Entry Location:** OUTSIDE LEFT
Status Date: 06/16/2005

Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
		UNKNOWN				

Spipe No: 279535
urrent Status: ACTIVE **Entry Location:** OUTSIDE RIGHT
Status Date: 06/18/1996

Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
1	1	DIRECT	1.250	PL	95.00	02/01/1993

Address: 71 Hancock St **Address No:** 760902
Remarks: DNE, NEW ADDRESS FROM CSS
Spipe No: 904463
urrent Status: ACTIVE **Entry Location:**
Status Date: 10/08/2004

Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
		UNKNOWN				

Address: 72 Hancock St **Address No:** 218027
marks:
Spipe No: 279536
urrent Status: ACTIVE **Entry Location:** OUTSIDE FRONT
Status Date: 07/15/2002

Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
1	1	DIRECT	1.250	PL	73.00	06/23/1992
2	2	DIRECT	1.000	PL	21.00	07/02/2002
99	3	ABANDONED	1.250	PL	21.00	06/23/1992

Address: 74 Hancock St **Address No:** 218028
Remarks:
Spipe No: 279537
urrent Status: ACTIVE **Entry Location:** OUTSIDE LEFT
Status Date: 04/21/2004

Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
1	1	UNKNOWN	1.000	CS	126.00	02/01/1970

Address: 75 Hancock St **Address No:** 218029
Remarks:
Spipe No: 279538
urrent Status: ACTIVE **Entry Location:** OUTSIDE FRONT
Status Date: 07/14/2005

Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
1	1	DIRECT	1.000	PL	6.00	02/01/1980
2	2	DIRECT	1.000	PL	10.00	06/08/2005
3	3	DIRECT	1.000	PL	26.00	02/01/1980
99	4	ABANDONED	1.000	PL	10.00	02/01/1980

ddress: 76 Hancock St **Address No:** 749103
Remarks: DNE, NEW ADDRESS FROM CSS

Service Pipe Summary Report

own Code: LEX

Address: 76 Hancock St **Address No:** 749103
marks: DNE, NEW ADDRESS FROM CSS
Spipe No: 882598
urrent Status: ACTIVE **Entry Location:**

Status Date: 11/06/2003	Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
			UNKNOWN				

Address: 77 Hancock St **Address No:** 218030
Remarks:
Spipe No: 279539
urrent Status: ACTIVE **Entry Location:** OUTSIDE LEFT

Status Date: 07/15/2004	Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
	1	1	DIRECT	1.000	PL	60.00	02/01/1996

Address: 78 Hancock St **Address No:** 750605
Remarks: DNE, NEW ADDRESS FROM CSS
Spipe No: 886048
urrent Status: ACTIVE **Entry Location:**

Status Date: 06/17/2005	Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
			UNKNOWN				

Address: 79 Hancock St **Address No:** 218031
Remarks:
Spipe No: 279540
urrent Status: ACTIVE **Entry Location:** OUTSIDE LEFT

tus Date: 10/14/2004	Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
	1	1	UNKNOWN	0.750	CS	82.00	02/01/1972

Address: 79 N Hancock St **Address No:** 1336377
Remarks: NEW ADDRESS FROM FWMS
Spipe No: 1373161
urrent Status: ACTIVE **Entry Location:** OUTSIDE RIGHT

Status Date: 10/02/2003	Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
	1	1	DIRECT	1.250	PL	43.00	05/31/2003

Address: 80 Hancock St **Address No:** 218032
Remarks:
Spipe No: 279541
urrent Status: ACTIVE **Entry Location:** INSIDE LEFT

Status Date: 03/24/2004	Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
	1	1	INSERT	1.000	PL	143.00	02/01/1979
	2	2	DIRECT	1.000	PL	8.00	08/29/2003
	99	3	ABANDONED	1.000	PL	8.00	02/01/1979

Address: 81 N Hancock St **Address No:** 219617
Remarks:
Spipe No: 281433
urrent Status: ACTIVE **Entry Location:** INSIDE FRONT

Status Date: 07/08/2005	Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
	1	1	UNKNOWN	1.500	NA	84.00	02/01/1959

dress: 82 Hancock St **Address No:** 1355362
Remarks:

own Code: LEX

Address: 82 Hancock St **Address No:** 1355362
emarks:
Spipe No: 1400376
urrent Status: ACTIVE **Entry Location:** OUTSIDE LEFT

Status Date: 07/09/2005	Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
	1	1	DIRECT	0.500	PL	72.00	08/11/2004

Address: 83 Hancock St **Address No:** 218033
Remarks:
Spipe No: 279542
urrent Status: ACTIVE **Entry Location:** OUTSIDE FRONT

Status Date: 10/08/2004	Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
	1	2	DIRECT	1.000	PL	3.00	05/01/1998
	2	1	UNKNOWN	1.500	NA	31.00	02/01/1955

Address: 83 N Hancock St **Address No:** 1116028
Remarks:
Spipe No: 1116029
urrent Status: ACTIVE **Entry Location:** OUTSIDE LEFT

Status Date: 01/05/2000	Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
	1	1	DIRECT	1.250	PL	89.50	08/17/1999

Address: 83A Hancock St **Address No:** 1269011
Remarks:
Spipe No: 1281376
r nt Status: ACTIVE **Entry Location:** OUTSIDE RIGHT

tus Date: 12/07/2000	Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
	1	1	DIRECT	1.000	PL	146.50	12/07/2000

Address: 85 Hancock St **Address No:** 1209638
Remarks:
Spipe No: 1213474
urrent Status: ACTIVE **Entry Location:** OUTSIDE RIGHT

Status Date: 08/17/2001	Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
	1	1	DIRECT	1.000	PL	0.00	07/14/2001
	2	2	DIRECT	1.000	PL	332.90	09/22/2000

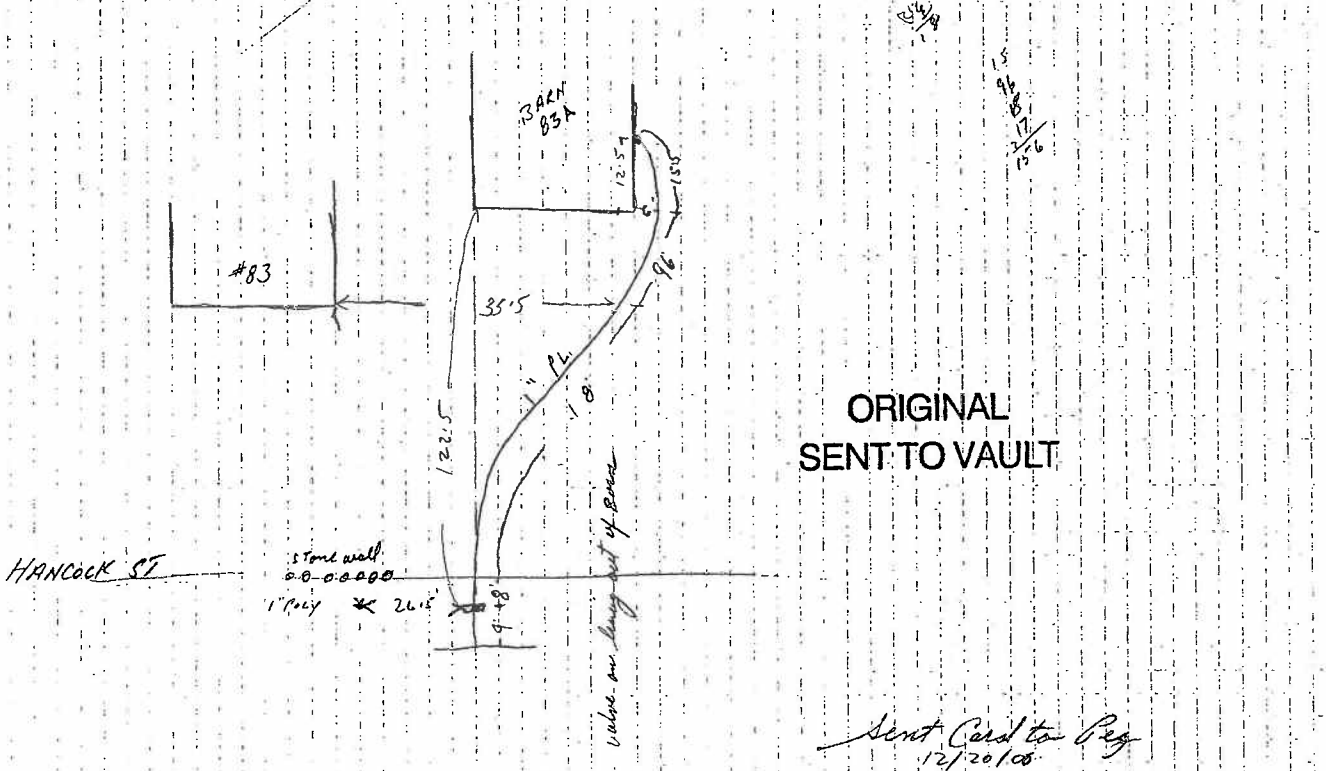
Address: 86 Hancock St **Address No:** 218034
Remarks:
Spipe No: 279543
urrent Status: ACTIVE **Entry Location:** OUTSIDE FRONT

Status Date: 11/06/1998	Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
	1	1	DIRECT	0.500	PL	92.00	02/01/1998

Address: 87 Hancock St **Address No:** 218035
Remarks:
Spipe No: 279544
urrent Status: CUT OFF **Entry Location:** INSIDE FRONT

Status Date: 04/24/2000	Sequence No	Segment No	Insert Indicator	Size	Material	Length	Install Year
	1	1	UNKNOWN	0.500	PL	0.00	01/01/2001
	2	2	ABANDONED	0.500	PL	20.00	01/01/2001

BL-11812



ORIGINAL
SENT TO VAULT

Sent Card to Reg
12/20/00

Bostongas
Eastern Enterprises

STREET 83 HANCOCK ST. TOWN LEX TYPE ___ NM# 126747 7521 126797 MAIN FOOTAGE 146.5 DIA. 1" MATERIAL PL

START DATE 12/7/00 COMPL DATE 12/7/00 SECT # ___/___ MAIN FOOTAGE ___ DIA. ___ MATERIAL ___

CREW/CONTR BGC FOREMAN B. CLARK SKETCH DATE ___/___/___ SKETCHER RJT MAIN FOOTAGE ___ DIA. ___ MATERIAL ___

PRESSURE TEST/PSI ___ TIME ___ PLOTTER ___ PLOT DATE ___/___/___ AMMS# ___ MAIN FOOTAGE ___ DIA. ___ MATERIAL ___

11-29-93 H.S.

4349 ✓

ST. OP. ___ GATE ___ DRIP ___ AUDIT ___ STOCK ___ ST. SK. ___ SECT. H-6 PLOTTED ___ W.M. ___ FILE ___

OFFSETS ___ CAPS-PLUGS ___

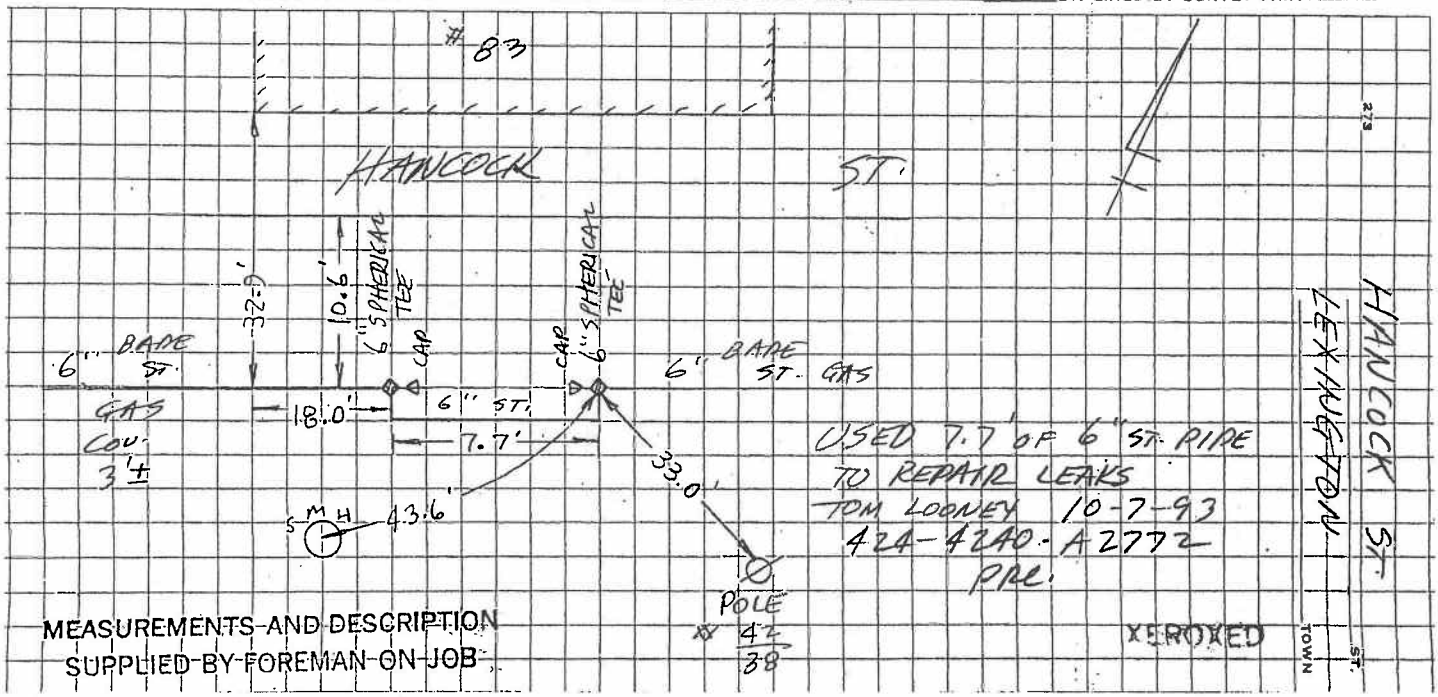
GATES ___ REDUCERS ___

DRIPS ___ SLEEVES ___ DR. COUP ___

BOXES ___ TEES ___

BENDS ___ MISC. ___

CONGESTED ___ CU. YDS. ROCK ___ SOIL GRAVEL EXCAV. ___ ST. LINES BY SURVEY PARTY ___



MEASUREMENTS AND DESCRIPTION SUPPLIED BY FOREMAN ON JOB.

XEROXED

New England Gas / Boston Gas Company
Issue Ticket

Source Code: M-444904 **Store House:** WMG **Work Order Number:** 444904 **Scheduled Start Date:** **Project #:** 444904 **Program:** ACE107 MRCBS

Part Number	Quantity Issued	Description	Quantity Requested
00199607		WIRE CU 14AWG 7 STR 600 VOLTS, HMW/PE 45 MIL YELLOW INSULATION TRACER WIRE.	300
00374021		FEET-TUBING-POLYETHYLENE-YELLOW-PLASTIC-PE- 2406-1" CTS-1 1/8" X.099 IN WAL	300
00390013		TAPE 6 IN YELLOW CAUTION GAS MAIN	300

GL Account: 007561

Customer: JH4
Job Location: 73-84 HANCOCK ST, LEX
Assigned To: Estimated By:

New England Gas / Boston Gas Company
Issue Ticket

Source Code: M-444904 **Store House:** WMG **Work Order Number:** 444904 **Scheduled Start Date:** **Project #:** 444904 **Program:** ACE107 MRCBS

Part Number	Quantity Issued	Description	Quantity Requested
00199607		WIRE CU 14AWG 7 STR 600 VOLTS, HMW/PE 45 MIL YELLOW INSULATION TRACER WIRE.	550
00303163		FITTING TRANSITION 6" MD	3
00304001		ANODE MAGNESIUM 17LB	3
00311158		LINE CAP, VENTED, NON-RESTRAINING BOLTED, COMPRESSION, FOR STEEL, 6.625" O	6
00316127		COUPLING-ELECTROFUSION-PE-6 IN.IPS	3
00320216		ELBOW, 6 INCH 90 DEGREES, LONG RADIUS, STEEL, WELD END, STD. WT. (0.280 INC	3
00371094		TEE, 3-WAY, 6", CLASS 150, CONTOURED BASE, FLANGED TOP, COMPLETE WITH COVE	3
00390013		TAPE 6 IN YELLOW CAUTION GAS MAIN	550
4125316		PIPE PLASTIC 6" IPS BLACK WITH YELLOWSTRIPE SDR 11 PE3408 40 FT LENGTHS (S	550

GL Account: 008506

Customer: JH4
Job Location: 73-84 HANCOCK ST, LEX
Assigned To:

Estimated By:

SERVICE INFORMATION FORM

154108

☐ New ☐ Insert ☐ Relay ☒ Reconnect *Aband. (see below)
☐ Relocate

☐ At Source
☐ At Other Location

FEB 02 1999
FEB 05 1999

Service Address: No: 83 Street: HANCOCK ST FWMS Town: LEX

Service Tap From: Street: SAME Date: 11.20.98

Service Type: [1] [2] [3] Size: 1" Matl: PL Tap Size: 3/4" Meter Location [In] [Out]

Installer: DELCO MCD Pressure: L I M H Main Size: 6" Matl: PL

A 18 M to V B 216 V to end

Offset to Tap: C 232 D 125

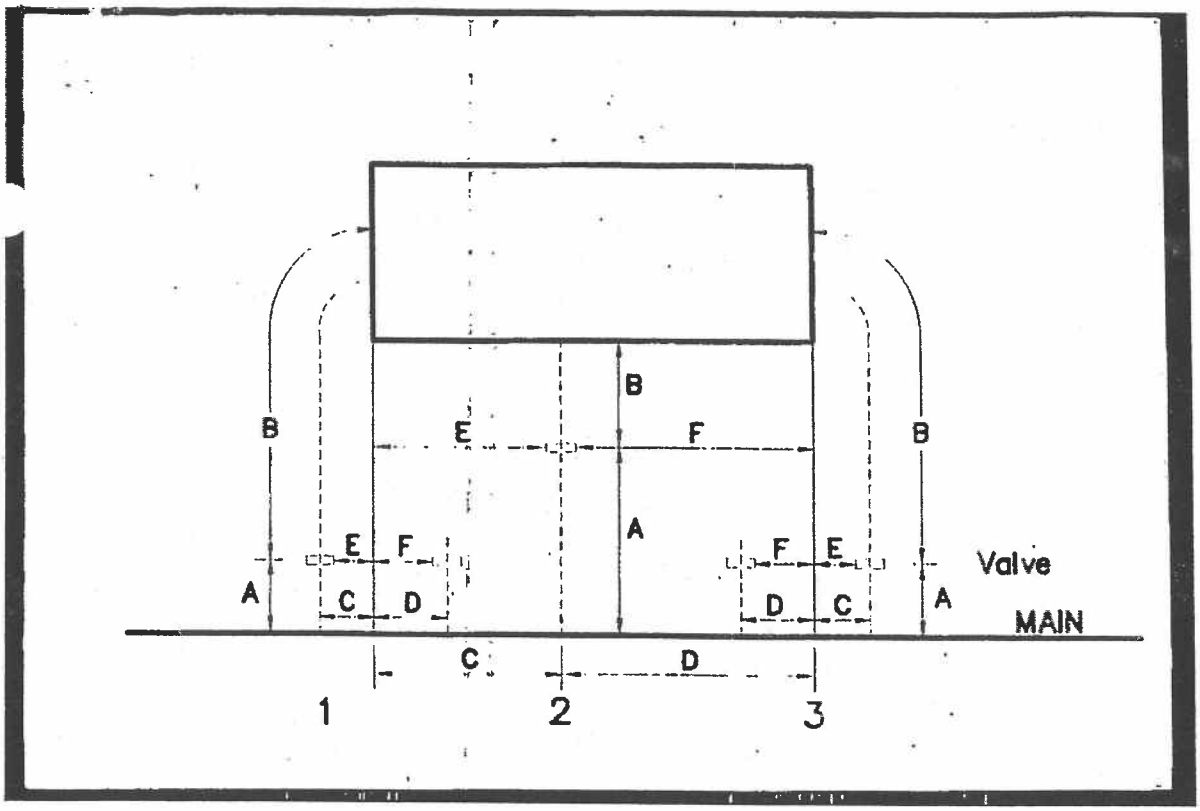
Offset to Valve: E 232 F 125

Press. Test: 16 Mins 90 Pressure

Installed Footage: 314

*Abandoned Size: ___ Matl: ___ Footage: ___

Other Data: ___


B
B
E
F
B
A
E
F
F
E
Valve
A
C
D
D
C
A
MAIN
C
D
1
2
3

AK 218033
SAI 279542

SERVICE INFORMATION FORM

☐ New ☐ Insert ☒ Relay ☒ Reconnect *Aband. ☐ At Source ☐ At Other Location

Service Address: No: 83 Street: HANCOCK ST Town: LEX

Service Tap From: Street: HANCOCK Date: 03.01.98

Service Type: 1 2 3 Size: 1" Matl: PL Tap Size: 1" Meter Location In Out

Installer: BGC Pressure: L I M H Main Size: 6" Matl: ST

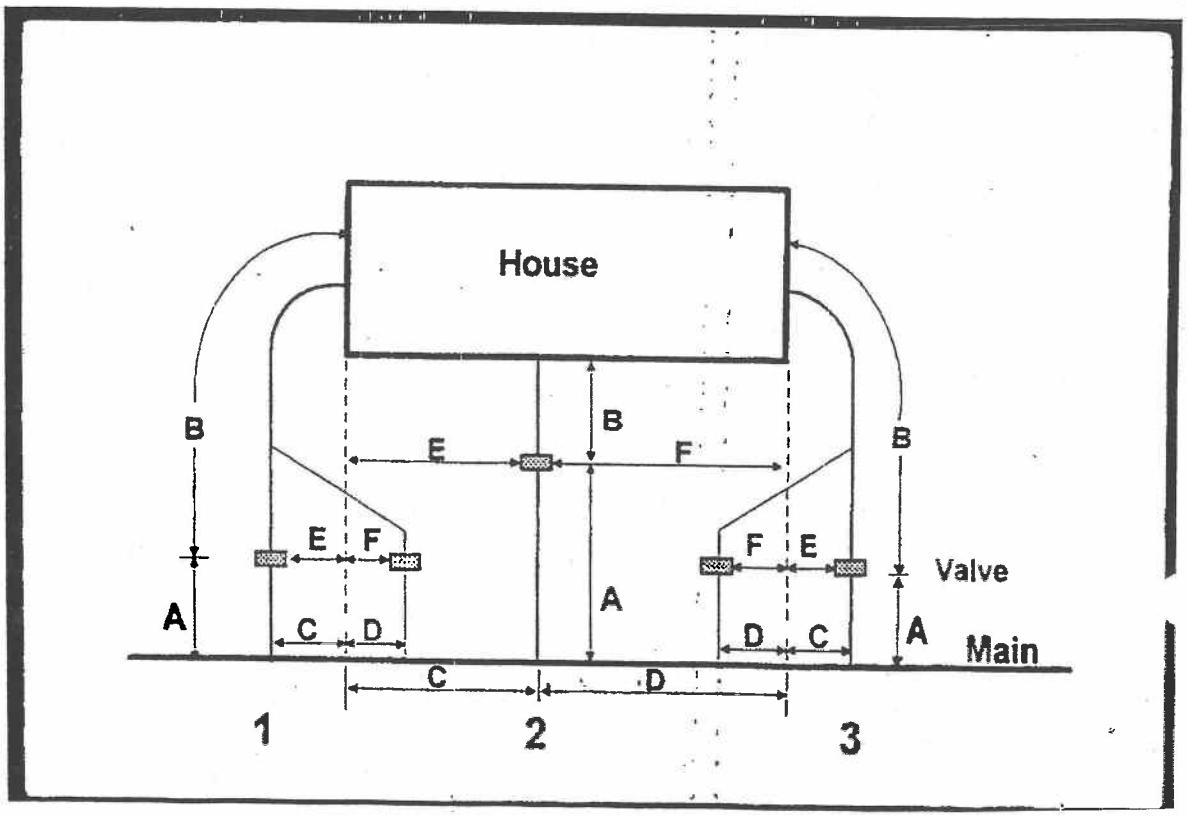
A 11.9 M to 22 B 23. to end Offset to Tap: C D

Offset to Valve: E F

Press. Test: 15 Mins 90 Pressure Installed Footage:

*Abandoned Size: Matl: Footage:

Other Data: SEE OLD CARD.
RECONNECT DAMAGED SERV. to 6" MAIN


House
B
B
B
E
F
E
F
F
E
Valve
A
A
A
C
D
D
C
C
D
Main
1
2
3

AK 1969011
SN 1281376

SERVICE INFORMATION FORM K1029

JAN 26 2001

NEW	STUB	STUB EXT.	INSERT	RELAY	RELOCATE	RECONNECT	ABANDON	
							AT SOURCE	OTHER LOC.
X								

Service Address: No.: 93A Street: HANCOCK ST. Town: LEXINGTON

Service Tap From: No.: ____ Street: SAME Date: 12/7/00 (MM/DD/YYYY)

SERVICE DATA	SIZE	MATL	TAP SIZE	LP	IP	HP	INSTALLED FOOTAGE	PRESSURE TEST	MINUTES	PRESSURE
	1"	PL.	1"			X	146'5			

ABANDON/ SLEEVE PIPE DATA	SIZE	MATERIAL	FOOTAGE	VINTAGE	MAIN DATA	SIZE	MATERIAL	DEPTH
						6"	PL.	

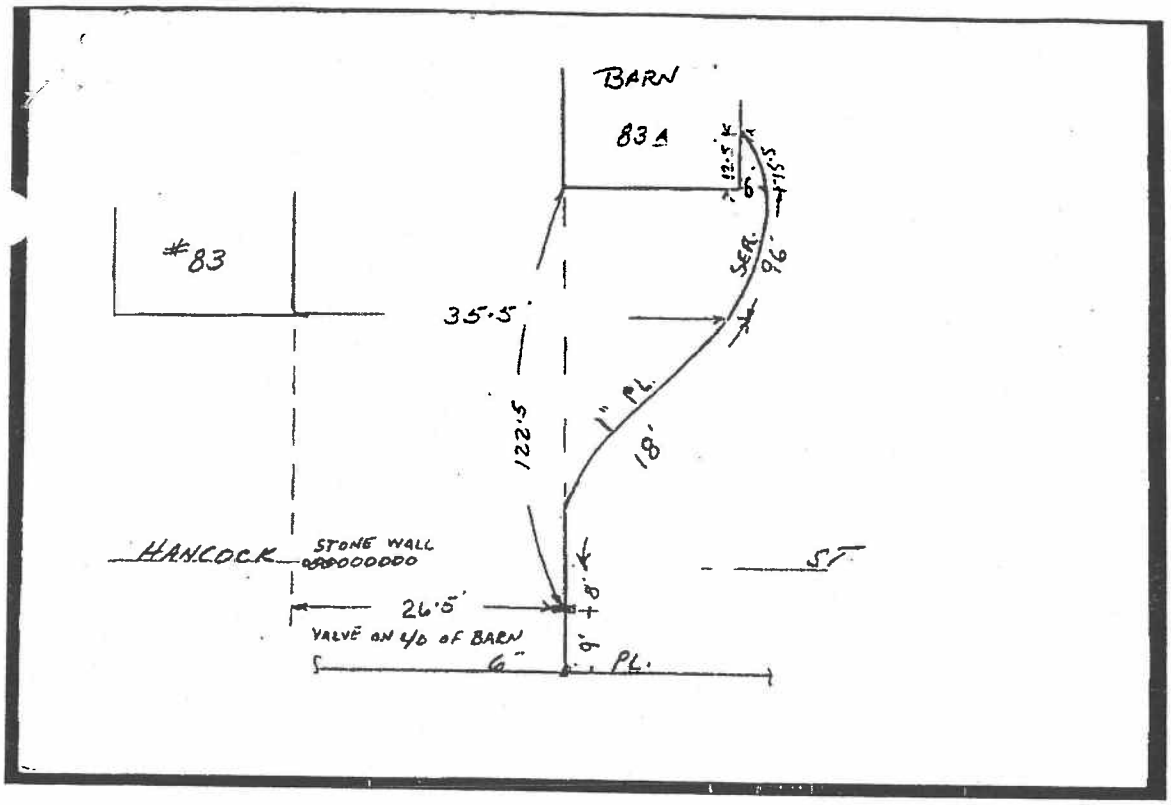
Installer: B.G.C. (B. CLARK)

Project 126747 Task 52 Work Order # 116747

METER	LOCATION		PROTECTION			NO. OF ACTIVE METERS	EXCESS FLOW VALVE		ANODE		INSULATED		
	IN	OUT	YES	NO	DATE MM DD YYYY		YES	NO	RISER	T.S.	MAIN	RISER	METER
		X		X	__/__/__			X					

Other Data: SERVICE TO BARN.

Form No. 246 Rev. 7/99


BARN
83A
#83
12.5'
15.5'
SER.
96'
35.5'
1" PL.
18'
122.5
HANCOCK
STONE WALL
ST
26.5'
8'
9'
VALVE ON L/D OF BARN
6"
PL.

J F M A M J J A S O N D J F M A M J J A S O N D

SERVICE RECORD: STREET AND NO. 83 Hancock Street CITY Lexington

OWNER / TENANT L. Bull DATE LAID 11-28-55 W.O. NO. 2866

OWNERSHIP: COMPANY FT. CUSTOMER FT.

MAIN: SIZE 6" KIND Steel DEPTH 3' TAPPED ON Top SIZE TAP 1 3/16"

MAIN TO PROPERTY LINE FT. PROPERTY LINE TO CURB FT. SOIL Gravel PAVEMENT Mac

OUTSIDE FITTINGS	NO.—SIZE	KIND OR LENGTH	SPECIAL DEVICES	NO.—SIZE	KIND OR REMARKS	INSIDE FITTINGS	NO.—SIZE	KIND OR LENGTH
ST'D TAP			CURB BOX	1		RISER		
SADDLE 6"	X 1 1/2"	Steel	CURB COCK	1 1/2"		RISER COCK	1 1/2"	I.S.Set
TEE								
ELL	1 1/2"	O.S.Set	HOUSE REGL'R	1"		RIGID SET*	5 Lt.	
						RIGID SET		
			DRIP			LEAD SET		
PIPE	1 1/2"	34'	DRIPS TOWARD	Main		FIRE VALVE		
COUPLING 1-	1 1/2"	Normac				METER COCK		
			VALVE			SEAL		
INSUL'N JOINT								

MAIN DRIP MAIN VALVE

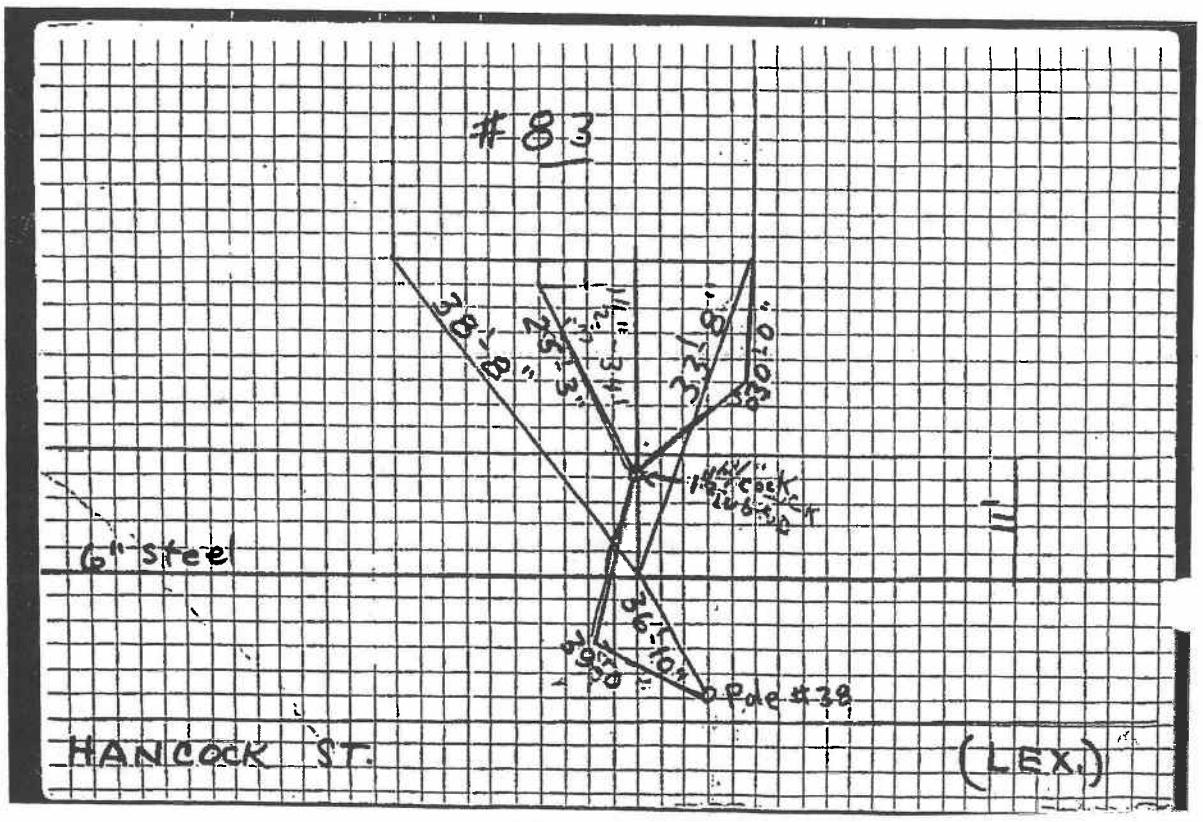
Installed 1½" Curb Cock + 1" Regulator 9/26/56 A.L. mcl

* INCLUDES FIRE VALVE AND METER COCK.

FORM 800-E2 47-9

SIGNED W. Paine DATE 11-28-55

PLOTTED C. Kirchner DATE 11-28-55


#83
38'-8"
23'-3"
1½" GAS
33'-8"
30'-0"
1" GAS COCK
6" STEEL
36'-10"
39'-0"
Pole #38
HANCOCK ST.
(LEX.)

SN# 1400376 **SERVICE INFORMATION FORM** SEP 28 2004

NEW	STUB	STUB EXT.	INSERT	RELAY	RELOCATE	RECONNECT	ABANDON		
							AT MAIN	AT VALVE	OTHER LOC
✓									

Service Address: No.: 82 Street: Hancock ST Town: Lexington

Service Tap From: No.: ____ Street: same Date: 8/11/2004 (MM DD YYYY)

Sketch Type: [X] 1 [ ] 2 [ ] 3 A M to V 010 B M to Bldg. 712 Offset to Tap: C 15 D 000 Offset to Valve: E 000 F 000

SERVICE DATA	SIZE	MAT'L	TAP SIZE	LP	IP	HP	INSTALLED FOOTAGE	PRESSURE TEST	MINUTES	PRESSURE
	1/2	PL	1/4			✓	72		19	98

ABANDON/ SLEEVE PIPE DATA	SIZE	MATERIAL	FOOTAGE	VINTAGE	MAIN DATA	SIZE	MATERIAL	DEPTH
						6"	ST	

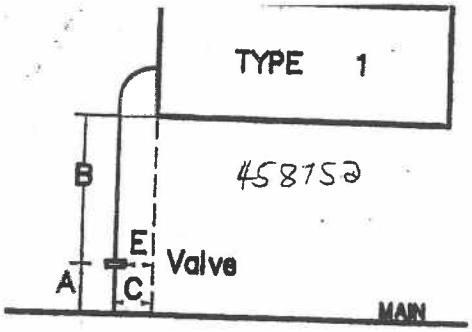
Installer: Riley Bros

Work Order# 3676907 Task 21 OP 16

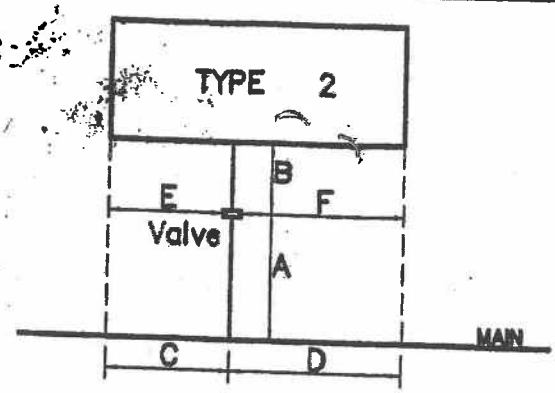
METER	LOCATION		PROTECTION			NO. OF ACTIVE METERS	EXCESS FLOW VALVE		ANODE		INSULATED		
	IN	OUT	YES	NO	DATE MM DD YYYY		YES	NO	RISER	T.S.	MAIN	RISER	METER
		✓		✓	__/__/__		✓						

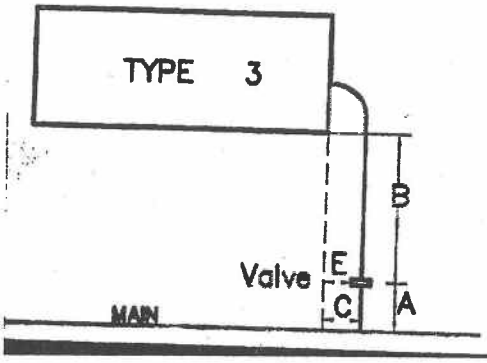
Other Data: Main to Bldg. 71.2

Form No. 248-1 Rev. 5/02



458752





SKETCH REQUIRED

(For Sketch, please use Form #246 Rev. 5/02)

MAIN

SERVICE CARD PLASTIC INSERT

NO. #80 HANCOCK ST. ST. (CITY) LEXINGTON

SERVICE FROM HANCOCK ST.

SIZE SERVICE	SIZE GATE	SIZE DRIP	PERMIT NO.	ST.
1" PL.	1¼ ST.			

NEW	RELAID	DATE LAID	MAIN TO L. L.	L. L. TO END
	X	8-8-79	93.5'	57.9'

MAIN DATA	SIZE	DEPTH	TAP SIZE	PRESSURE	CONDITION OF MAIN
	6" ST.	3'		LOW	
				INT.	
				HIGH X	

ROADWAY ASPH SIDEWALK DIRT

FEET ALLOWED ESTIMATE COTTAM R. D. FOREMAN

NO. 2 ORDER NO.	AIRTEST MIN'S. PRESSURE	AREA	FUNCTION	JOB NUMBER
	1,5 ,9,0	4,2,4	7,8,3,8	1,2,2,9,8

REMARKS.

INSERT 151.4' OF 1" PL. INSIDE 1½ STEEL PIPE

FORM NO. 245

M. & S. REC. ✓

DRAFTING PLASTIC INSERT

J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D

SERVICE RECORD: STREET AND NO. 79 HANCOCK ST. CITY LEXINGTON

OWNER TENANT OUTSIDE METER DATE LAID 2-8-72 W.O. NO. 1172-2

OWNERSHIP: COMPANY FT. CUSTOMER FT.

MAIN: SIZE 6" H.P. KIND WI. CI. DEPTH 3.5' TAPPED ON TOP SIZE TAP 3/8"

MAIN TO PROPERTY LINE FT. PROPERTY LINE TO CURB FT. SOIL PAVEMENT

OUTSIDE FITTINGS	NO.—SIZE	KIND OR LENGTH	SPECIAL DEVICES	NO.—SIZE	KIND OR REMARKS	INSIDE FITTINGS	NO.—SIZE	KIND OR LENGTH
ST'D TAP			CURB BOX	4JJ		RISER		
SADDLE			CURB COCK	3/4"	MUELLER	RISER COCK		
TEE PUNCH	3/4"	WELD	~~OUTSIDE~~					
ELL			~~HOUSE~~ REGL'R	YB		RIGID SET*		
						RIGID SET		
			DRIP	No		LEAD SET		
PIPE	3/4"	81.5'	DRIPS TOWARDS	MAIN		FIRE VALVE		
COUPLING						METER COCK		
			VALVE			SEAL		
INSUL'N JOINT								

MAIN DRIP MAIN VALVE

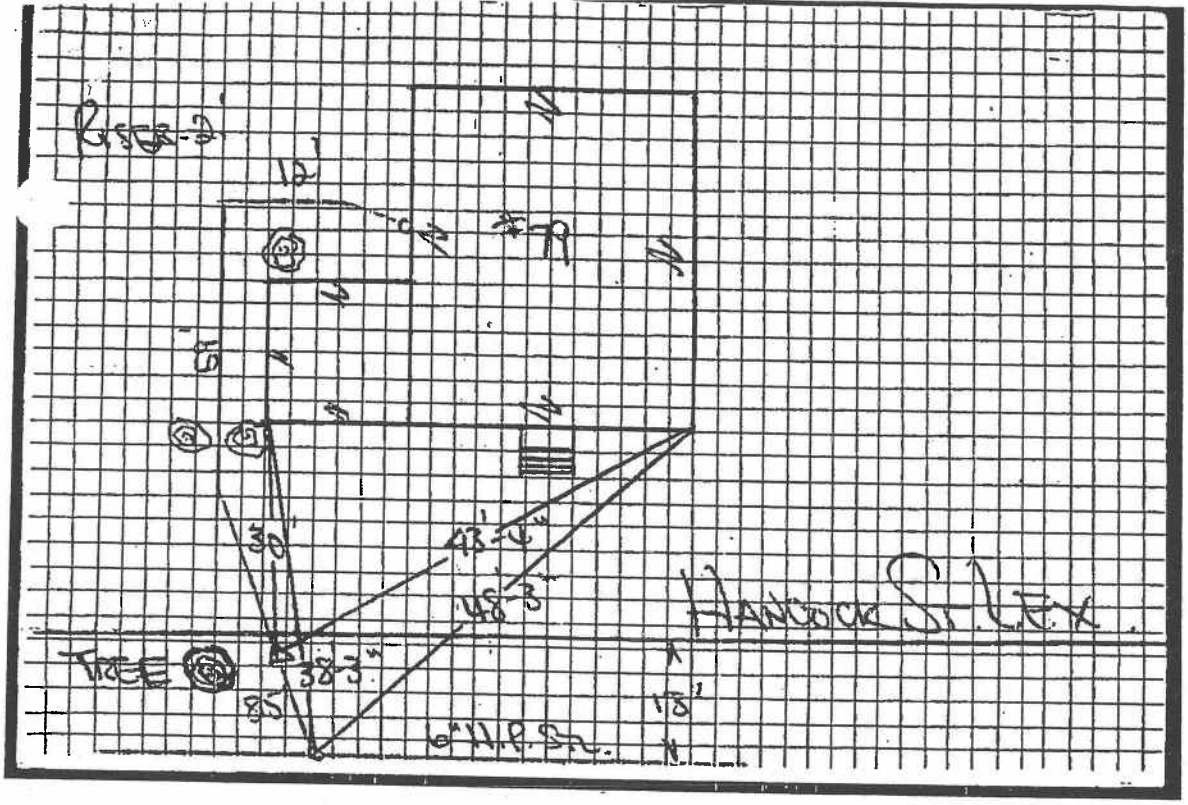
D&Q - MIKE IRWIN

* INCLUDES FIRE VALVE AND METER COCK.

SIGNED R. SIMONTON DATE 2-8-72

FORM 900-22 67-9

PLOTTED DATE 2-8-72


12'
58'
30'
43'-6"
48'-3"
38'-3"
85'
175'
HANCOCK ST. E.W.
TREE
6" W.P. SW.

SERVICE CARD

NO. 77 Hancock St SECT. 6 ST. (CITY) Lexington

SERVICE DATA	FROM							TAP SIZE 1"
	NEW	RELAID	INSERT	ABAND.	SIZE	MAT'L	GATE SIZE	PERMIT NO
	X				1"	PI	1"	

WORK DATE 3/21/96 M/LL 13' L/E ~~39'~~ 47' MAR 26 1996

MAIN DATA	SIZE	MAT'L	DEPTH	LP	IP	MP	HP
	6"	St	4'		X		

ROADWAY SIDEWALK gravel

CREW LEADER Cunningham

METER	LOCATION		PROTECTION		
	IN	OUT	YES	NO	DATE
		X		X	

PRESS TEST MIN'S	PRESSURE	AREA	FUNCTION	JOB NUMBER
0,1,5	0,9,0	~~145~~ 144	7,5,2,1	2,7,9,1,3

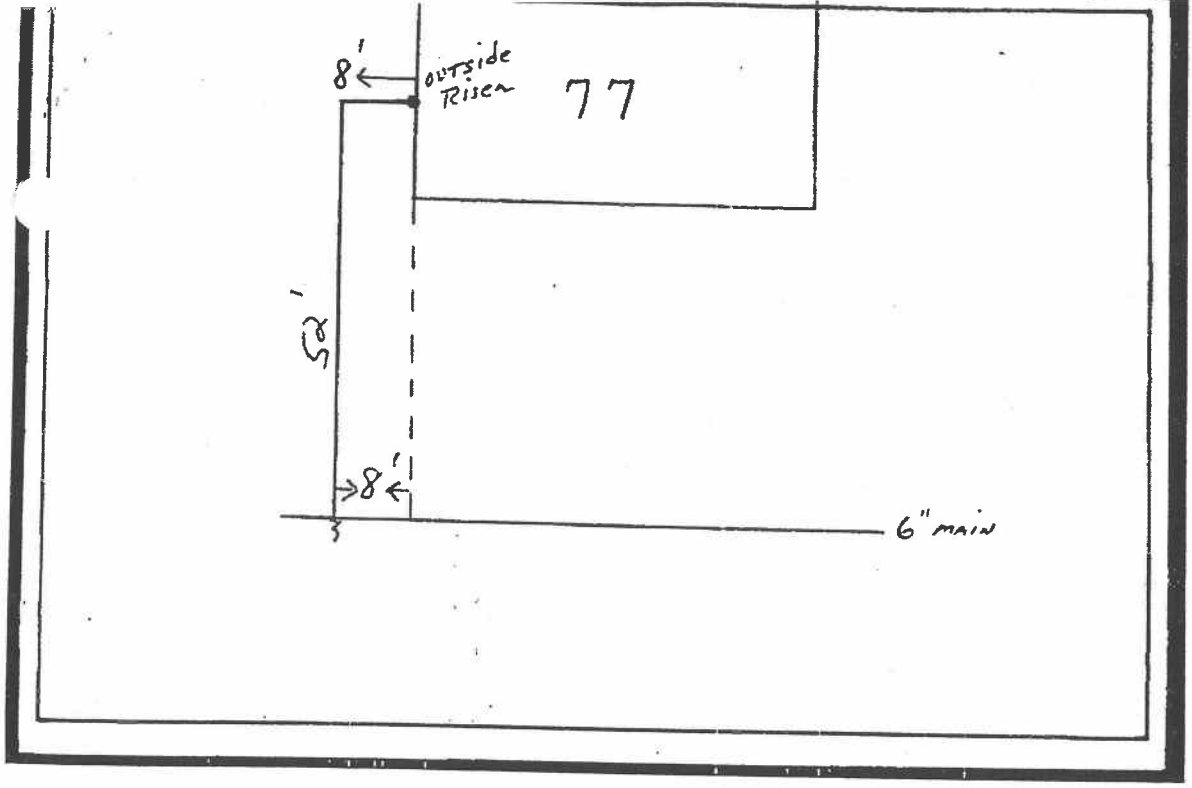
INSTALLED PIPE SIZE	TYPE	FOOTAGE	ABANDONED PIPE SIZE	TYPE	FOOTAGE	NO. 2 ORDER
1"	PI	60 FT			FT	

ANODE		INSULATED		
RISER	T.S.	MAIN	RISER	METER

REMARKS: Curb cock 1' off MAIN

DRAFTING

FORM MD 844 REV. 4/78


8'
outside
Riser
77
52'
8'
6" main

Earle M. Levine

6"IP STL (NO DATE) H6
12'S.S. 35'ST.

SERVICE CARD

NO. #75 HANCOCK STREET ST. (CITY) LEXINGTON

SERVICE FROM ST.

SIZE SERVICE	SIZE GATE	SIZE DRIP	PERMIT NO.
1"Pl	1"Pl		

		DATE LAID	MAIN TO L. L.	L. L. TO END
NEW	X	6-2-80	13'	29'
RELAID				

MAIN DATA	SIZE	DEPTH	TAP SIZE	PRESSURE	CONDITION OF MAIN
	ST. 6"	3.0'	3/8"	LOW / INT. X / HIGH	FAIR

MEROMET

ROADWAY ASPHALT SIDEWALK

FEET ALLOWED 60' ESTIMATE K. J MONTON FOREMAN

NO. 2 ORDER NO.	AIRTEST MIN'S. PRESSURE	AREA	FUNCTION	JOB NUMBER
	0,1,5,0,9,0	4,2	7,8,9,0	E,1,6,2,7

REMARKS: From 6" I.P. main Set AL 250 TC meter
1" 1813B Reg. w/½" orif.
1/2 - 1" Inside service

PLASTIC

ONE ANODES ...17... lb. ON MAIN.

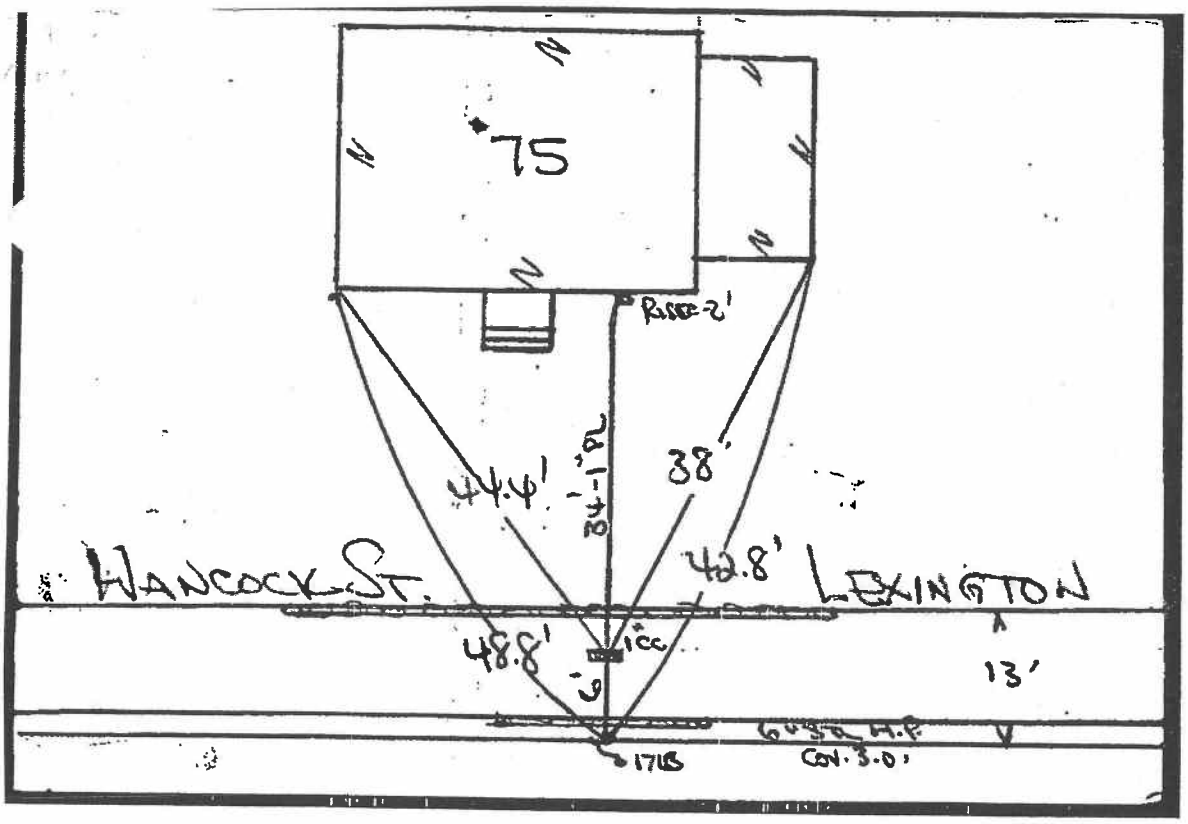
COR. 5-27-80 NTR

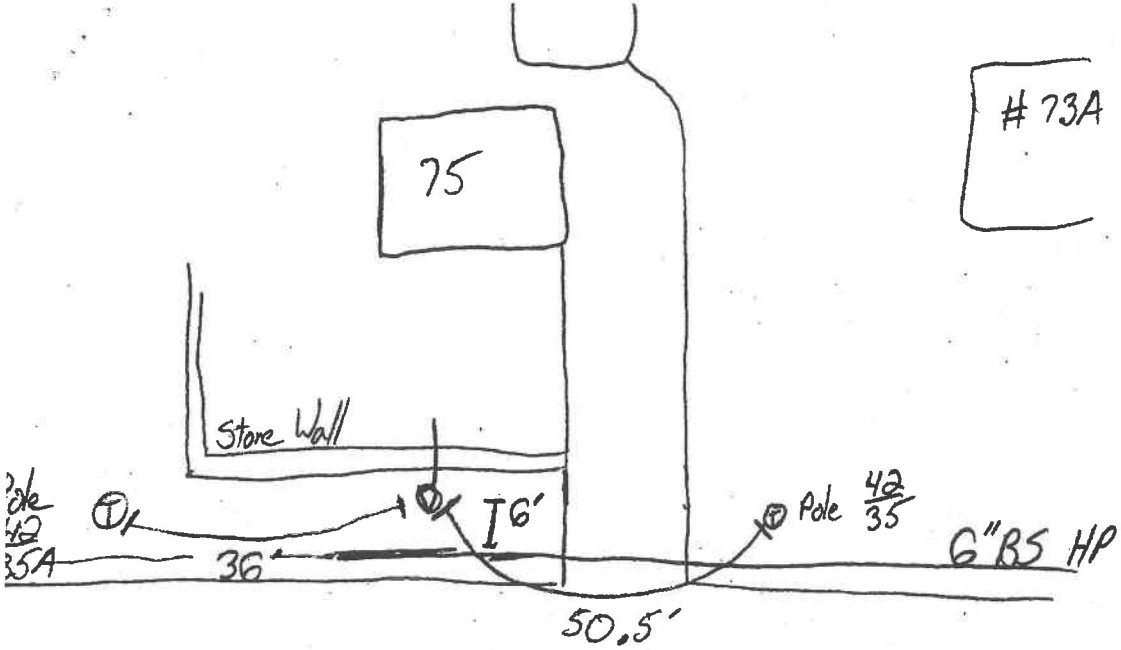
FORM NO. 248 M. & S. SEC. 44

DRAFTING

LOAM AND PAVING BY OWNER

DJS 5/13/80


75
RISE-2'
44.4'
84'-1"PL
38'
42.8'
HANCOCK ST.
LEXINGTON
48.8'
1CC
13'
6"SSD H.P.
1715
CON. 3.0'



main to valve 6'

J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D

SERVICE RECORD: STREET AND NO. 74 HANCOCK ST. CITY LEXINGTON

OWNER / TENANT OUTSIDE METER DATE LAID 3-24-70 W.O. NO. 9554-3

OWNER-SHIP: COMPANY FT. CUSTOMER FT.

MAIN: SIZE 6" M.P. KIND WLD STL DEPTH 3.5' TAPPED ON TOP SIZE TAP 3/4"

MAIN TO PROPERTY LINE FT. PROPERTY LINE TO CURB FT. SOIL PAVEMENT

OUTSIDE FITTINGS	NO.—SIZE	KIND OR LENGTH	SPECIAL DEVICES	NO.—SIZE	KIND OR REMARKS	INSIDE FITTINGS	NO.—SIZE	KIND OR LENGTH
ST'D TAP	¾ ¼		CURB BOX	45		RISER		
SADDLE	6X1	STL	CURB COCK	¾"	MUELLER	RISER COCK		
TEE			OUTSIDE					
ELL			~~METER~~ REGL'R	YES		RIGID SET*		
						RIGID SET		
	¼	1'	DRIP	NO		LEAD SET		
PIPE	1"	126	DRIPS TOWARD	SERV.		FIRE VALVE		
COUPLING						METER COCK		
			VALVE			SEAL		
INSUL'N JOINT								

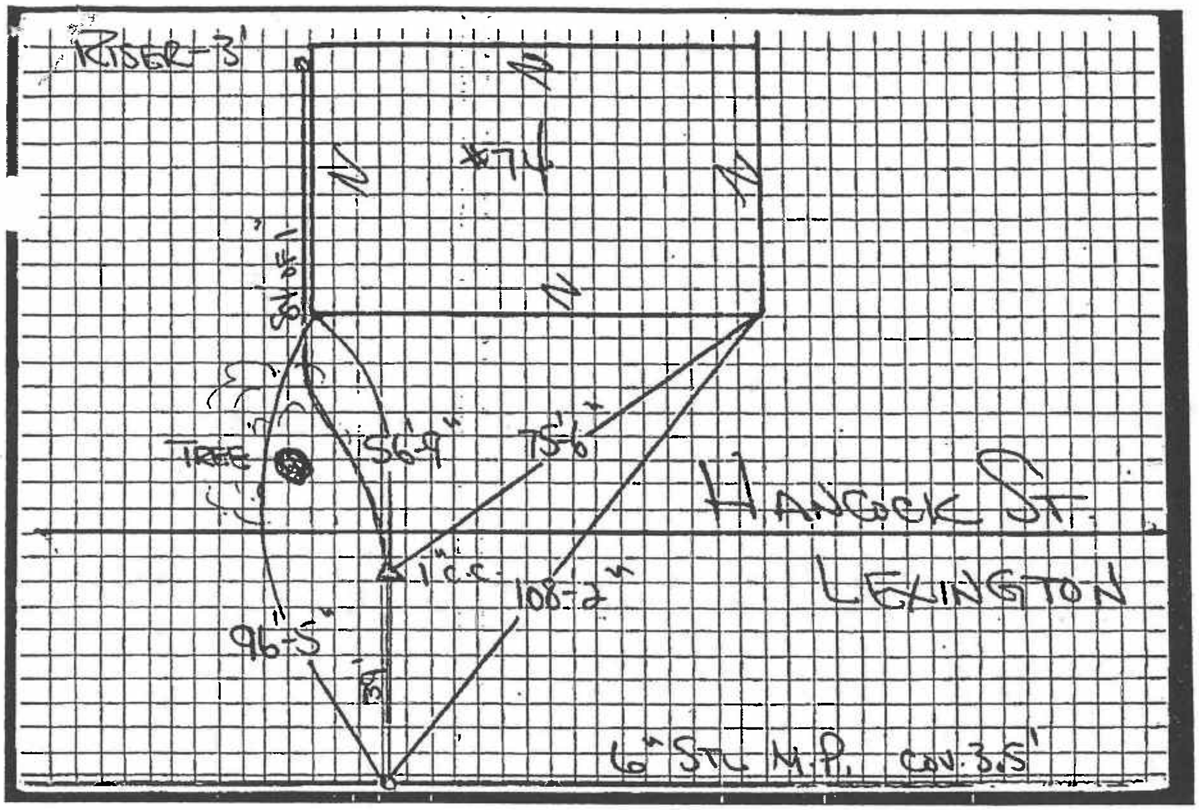
MAIN DRIP H. NAWN - PAUL KELLY MAIN VALVE

* INCLUDES FIRE VALVE AND METER COCK.

FORM 600-22 47-9

SIGNED K. DIAMONTON DATE 3-24-70

PLOTTED DATE 3-24-70


RISER-3'
#74
TREE
156'-9"
75'-6"
HANCOCK ST
1" C.C.
108'-2"
LEXINGTON
96'-5"
6" STL M.P. COV 3.5'

SN 1416645 SERVICE INFORMATION FORM AUG 2 2 2005

NEW	STUB	STUB EXT.	INSERT	RELAY	RELOCATE	RECONNECT	ABANDON			
							AT MAIN	WITH MAIN	AT VALVE	OTHER LOC.
✓										

Service Address: No.: 73 Street: Hancock St. Town: Lex

Service Tap From: No.: 4 Street: 4 Date: 8 / 4 / 05 (MM / DD / YYYY)

SERVICE DATA	SIZE	MAT'L	TAP SIZE	LP	IP	HP	INSTALLED FOOTAGE	PRESSURE TEST	MINUTES	PRESSURE
	1¼	PL	1		✓		95		19	96

ABANDON/ SLEEVE PIPE DATA	SIZE	MATERIAL	FOOTAGE	VINTAGE	MAIN DATA	SIZE	MATERIAL	DEPTH
						6	STL	3

Installer: KEY Work Order # 435342 Task 75211 OP PC5

METER	LOCATION		PROTECTION			NO. OF ACTIVE METERS	EXCESS FLOW VALVE		ANODE		INSULATED		
	IN	OUT	YES	NO	DATE MM DD YYYY		YES	NO	RISER	T.S.	MAIN	RISER	METER
		✓		✓	/ /			✓					

Other Data: Main to Bldg. 67

Form No. 246 Rev. 11/04

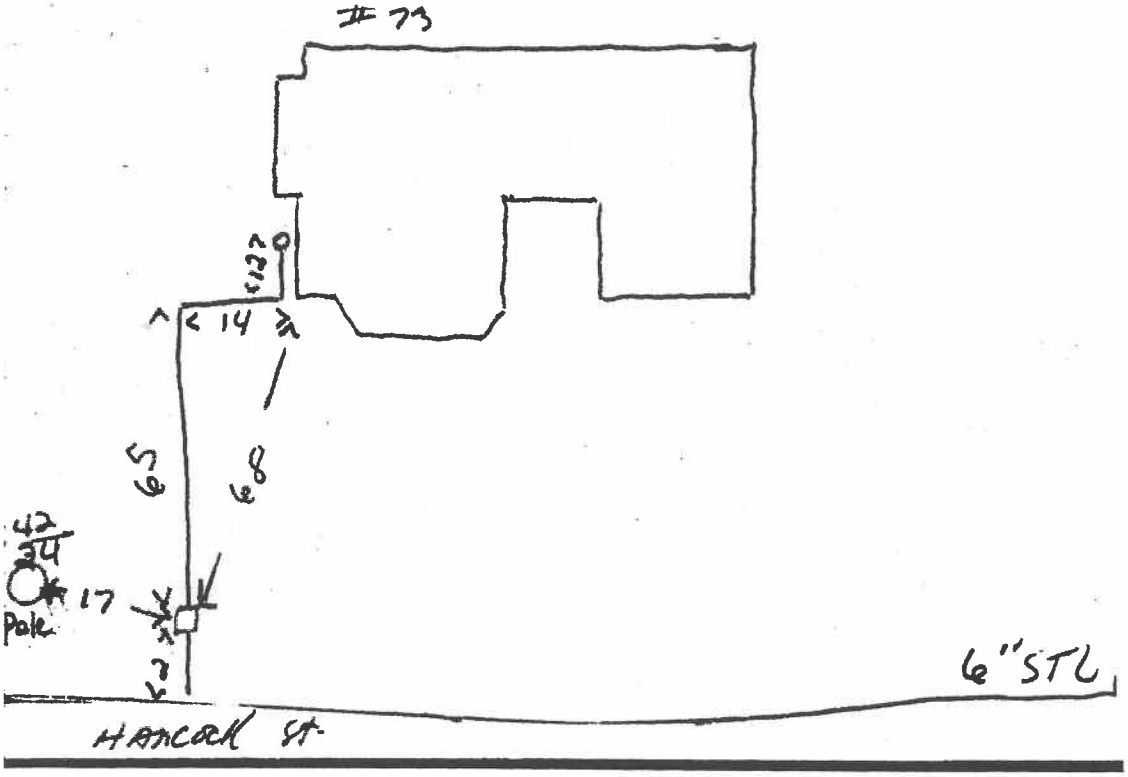

#73
12'
14
65
68
42
34
Pole
17
6"STL
HANCOCK ST.

EXHIBIT 8

Explanation of Maps

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

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

RE: System Over Pressurization, Lexington, MA, November 9, 2005

Respondent: Donald A. Doubleday, Jr.

PL 3-2: Refer to the Company's response to IR-PL-1-2. Please provide:

(a) an explanation of the process in which the map(s) Mr. Jubert relied upon were generated, and where the map(s) were generated;

(b) a detailed description the inconsistencies Mr. Jubert identified;

(c) an explanation for inconsistencies for that section of the map.

Response: (a) The map Mr. Jubert relied on was generated based on the distribution main history of leaks. The cluster of leaks within the address range of #75 to #82 brought the job to the attention of the system integrity group to generate a main replacement work order. This cluster was originally determined to require a relay of approximately 400 feet. When the system integrity group created a formal drawing the job was extended beyond the intersection of Coolidge Avenue to include a total relay distance of 550 feet to incorporate the steel tee, at Coolidge Avenue, and an additional recorded leak attributed to #73 Hancock. The map was generated by the system integrity group at 52 Second Avenue Waltham. See Response to Information Request PL 3-1 for color copy of map generated.

(b) Main segment ID 226004 between the limits of #81 and 82 Hancock St. was incorrectly attributed as 6 inch, intermediate pressure (IP) bare steel installed in 1958, Mr. Jubert refers to this section as being in front of #84 Hancock Street.

(c) To the north, this segment tied into the 6 inch, HP plastic installed in 1998. To the south this segment ties into 6 inch, HP bare steel installed in 1960. The segment, ID 226004 was incorrectly attributed as intermediate pressure.

EXHIBIT 9

Supervisor Interview Summary

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: Counsel

PL 1-2: Provide all statements made to Company representatives from KeySpan Energy Delivery supervisory personnel who responded to the emergency.

Response: The following are summaries of the interviews of KeySpan supervisory personnel who responded to 3 Hancock Avenue.

Michael Jubert, PCS Supervisor, KeySpan

Mike Jubert, KeySpan PCS Supervisor, was the PCS Supervisor responsible for the main relay work being performed at the intersection of Hancock Street and Coolidge Avenue on November 9, 2005. Mr. Jubert stated that prior to the incident he had reviewed the job to be performed at Hancock Street and Coolidge Avenue, Lexington. During his review he identified inconsistencies in the map, where a section of gas main had been labeled on the map as being intermediate pressure (i.e. 2 lbs.) in front of 84 Hancock Street. Consequently, he visually inspected the service to 84 Hancock Street, and he confirmed it was high pressure and not intermediate pressure. He also walked the other services from 84 Hancock Street down to Coolidge Ave. and concluded that the section of gas main in front of 84 Hancock Street was not labeled correctly on the map he received. Mr. Jubert stated that he visually identified that the service in front of 73 Hancock Street was new, but he did not review the service card information or walk up to it. Mr. Jubert stated that he did not become aware that the service to 73 Hancock Street was 2 lbs. until after the incident.

Mr. Jubert stated that the Hancock St. and Coolidge Ave. job appeared to be a fairly routine high-pressure tie over and that there would be no interruption of service as a result of the work. He believed the job was all high pressure (i.e. 60 lbs.) Mr. Jubert stated that because he believed the entire scope of the 550 foot main relay at Hancock St. and Coolidge Ave. was high pressure and that there was no interruption of gas service being performed and that this job did not require the use of gauges or a need for a main connection form.

On the day of the incident, Mr. Jubert was at another location (Lake Street, Arlington) and was not present at the job site at Hancock St. and Coolidge Ave. that day until after the incident had occurred.

On the date of the incident, Raymond Young, KeySpan PCS crew leader, first notified Mr. Jubert of a possible incident at somewhere around 11:15 AM via Nextel. Mr. Young then contacted Mr. Jubert back at approximately 11:30 AM and informed him that there had been an incident at 3 Hancock Avenue, and he was still unsure if it was related to the work at Hancock St. and Coolidge Ave.

Mr. Jubert proceeded to the KeySpan office at 160 Newton Street and reviewed the mapping system, then proceeded to the job site at Hancock St. and Coolidge Ave., Lexington. Mr. Jubert arrived on the scene at approximately 12:30 PM. After his arrival at the work site Mr. Jubert became aware that a 60 lb. gas main had been tied into a 2 lb. gas main.

Robert Elmstrom, MSF Supervisor, KeySpan

Robert Elmstrom, KeySpan MSF Supervisor, first became aware of a possible incident at 3 Hancock Avenue at somewhere around 11:15 AM via Nextel calls from Mr. Jubert and Raymond Young. Mr. Elmstrom was also notified of the incident by KeySpan Dispatch while he was en route to 3 Hancock Ave.

Mr. Elmstrom stated that he reported to 3 Hancock Ave. at approximately 11:55 AM. Mr. Elmstrom was the first supervisory employee on the scene. When he arrived, Mr. Elmstrom noticed that the PCS Crew Leader Raymond Young was on site as well as two other KeySpan crew members that had been working the main relay at Hancock St. and Coolidge Ave.

Mr. Elmstrom reported directly to the Lexington Fire Chief and offered his assistance. The Fire Chief requested that the gas main to Hancock Avenue be shut down. Mr. Elmstrom worked with the KeySpan Engineering Department to identify the best way to shut down the gas to 3 Hancock Avenue. Mr. Elmstrom had KeySpan maintenance crews bag off the gas main at the end of Hancock Ave. At approximately 1:45 PM the bagging procedure was complete and the flow of gas to Hancock Ave. was stopped.

Kevin Callahan, PFR Supervisor, KeySpan

Kevin Callahan, KeySpan PFR Supervisor, was the PFR Supervisor responsible for the PFR work being performed in the Waltham Division on November 9, 2005.

Mr. Callahan's first became aware of a possible incident sometime in the late morning while having a conversation with Mr. Elmstrom in the Waltham Yard at 160 Newton Street. Mr. Elmstrom had asked Mr. Callahan if he had heard about an explosion in Lexington. Mr. Callahan then called KeySpan Dispatch and confirmed there was an incident in Lexington.

Dispatch advised Mr. Callahan that he should head to the scene. Mr. Callahan brought Keith Lincoln, PFR Supervisor to the scene with him.

While en route to the incident Mr. Callahan contacted Mr. Jubert via Nextel and asked him if he had PCS crews working in that area. Mr. Jubert stated he did. Mr. Callahan stated that Mr. Jubert was in the office at 160 Newton St., Waltham when they spoke.

Mr. Callahan reported to the scene at 3 Hancock Ave., Lexington. Upon his arrival he noted the presence of Robert Elmstrom, MSF Supervisor, and William Haggerty, Field Operations Manager PFR. He also saw Tom Burke, PFR Technician, who was in the process of checking houses.

At some point, Chris Manning, Dispatch Supervisor, told Mr. Callahan that there was a possible system over pressurization involving 60 pounds into a 2 pound system and that 20 or more PFR employees were being dispatched to the scene.

Steven Bell, Manager Field Operations MSF, KeySpan

Steve Bell, KeySpan Manager Field Operations MSF was at Commercial Point when he was notified by Stan Allgor, Director Field Operations that there had been an explosion in Lexington and to report there immediately. Mr. Bell stated that he received the call at approximately 11:45 AM. Mr. Bell stated that he notified Pam O'Leary, Dispatch Supervisor, that he was en route. While he was en route Shawn Ward, Dispatch Supervisor notified him that a Company crew was working at Hancock Street, not Hancock Avenue. Mr. Bell arrived at 3 Hancock Ave. at approximately 12:30 PM.

Mr. Bell stated that upon his arrival he identified himself to the Woburn Fire Chief, who was there as mutual aid. Mr. Bell witnessed two KeySpan MSF crews working at the scene. Mr. Bell stated that KeySpan Supervisors Mr. Elmstrom and Mr. Morganto were also on the scene.

Mr. Bell stated that they could not locate a gate valve to 3 Hancock Avenue and that KeySpan crews dug a 5 by 4 hole at the top of the hill, on Hancock Avenue, put in 2 bags, and installed a gauge. The gauge read 1.25 lbs. Mr. Bell stated that the crew then dug out the service at the tee, and disconnected the service from the main. Water was coming through the service and the main. Mr. Bell then called Mike Smith, Field Operations Manager MSF, and requested that he arrange for Clean Harbors to pump out the main. After Clean Harbors arrived at the scene, the crew dug a hole at Carmella Way. They pumped water at the service at Hancock Avenue and took water out of the main.

Mr. Bell stated that William Haggerty arrived at the scene after him and that Mr. Haggerty took over the (PFR) service side. Mr. Bell directed MSF Supervisors Brian McCallum and Tom Sheehan to handle other reported leaks in the area. Later, the Lexington Fire Chief ordered him to shut off the system and he relayed that request to MSF Manager Mike Smith. Mr. Bell remained at 3 Hancock Avenue until he was relieved by Field Operations Manager Kevin Souza around midnight.

Moe Sarno, Manager Field Operations PCS, KeySpan

On the date of the incident, Moe Sarno, Manager Field Operations PCS, arrived at 3 Hancock Avenue at approximately 1:00 PM, where he met Supervisor Mike Jubert. Mr. Sarno stated that Mr. Jubert and Mr. Elmstrom were on the scene at 3 Hancock Ave. when he arrived. Mr. Elmstrom was bagging off the main and the fire was on-going.

Mr. Jubert informed Mr Sarno that a main relay was being done at Hancock and Coolidge. Mr. Sarno went to the job site. At the work site, Mr. Sarno obtained the work packet from Mr. Jubert. Mr. Sarno stated that Bill Sweeney, KeySpan Technician B heard a surge of gas that lasted for maybe a few minutes. Mr. Sarno looked at the job, and saw a Williamson's tee on the main. Mr. Sarno also reviewed the work package for the job. Mr. Sarno stated that, from working this area as a Field Engineer, he remembered that there was 2 lbs. in the area. He contacted Manager Robert Moorehead who determined from maps at the Malden office that there were two separate mains on Hancock Street, one a 60 pound high pressure main and the other a two pound intermediate pressure main.

Mr. Sarno stated that the purge stack was down at the dead end portion of the new main and had an end cap with a tee on it, and was not connected.

Mr. Sarno instructed that two pound main be dug up and cut off. Later, he directed the NEUCO and KeySpan crews that they were to go for drug testing. Mr. Sarno collected the work packet from Mr. Jubert and provided it to Thomas Hamilton, Director PCS KeySpan Energy Delivery New England.

Steve Morganto, PFR Supervisor, KeySpan

Mr. Morganto first became aware of a possible incident from Kevin Callahan, PFR Supervisor. Mr. Callahan was on site at 3 Hancock Avenue when he notified Mr. Morganto of the incident. Mr. Morganto stated that he arrived at 3 Hancock Avenue at approximately noon time.

Mr. Morganto stated that upon his arrival Mr. Callahan, William Haggerty, Manager, Field Operations PFR, Steve Bell, Manager Field Operations MSF and Tom Burke, PFR Technician were all at 3 Hancock Avenue as well as the Fire Department. Mr. Burke was checking houses and the Fire Department was applying water to the house.

Mr. Morganto stated that when he arrived he was making sure the surrounding houses were safe and that the house checks were being performed. He was also keeping in touch with KeySpan Dispatch.

Mr. Morganto stated that at some point he was told that the system had been overpressurized.

William Haggerty, Manager Field Operations PFR, KeySpan

Mr. Haggerty first became aware of a possible incident at approximately noon time while working in the Leominster area on a system upgrade. Mr. Haggerty did not recall who notified him. Mr. Haggerty arrived at 3 Hancock Avenue at approximately 1:00 PM. Mr. Haggerty stated that when he arrived on the scene he met with Steve Bell, Manager Field Operations MSF, who was already at the scene.

Mr. Haggerty stated that Mr. Bell informed him that Steve Morganto, PFR Supervisor, was on the scene and was providing direction to the PFR Technicians checking houses. Mr. Haggerty met up with Mr. Morganto and discussed the situation and asked if more manpower was required.

Mr. Haggerty remained at the scene of the 3 Hancock Avenue incident until he was directed to report to the DPW. Mr. Haggerty stated that Mr. Elmstrom and Mr. Jubert were also on site at the 3 Hancock Avenue incident but he had no conversations with either men.

EXHIBIT 10

KeySpan Construction Standards

STOP-5040: Installation of Gas Main Tie-in Connections and Stopping Off

Date:	07/01/04	Filed:	Yes	Application:	MA
		Review:	Annual	Lead Org:	Field Ops
Revision:					

DESCRIPTION

This procedure describes the requirements for planning and performing a main connection that requires the interruption of gas flow (e.g., stopper fitting, spool piece, full service line tee). The objective of this section is to prevent an outage or an over-pressurization of the distribution system. The requirements of this section may not necessarily apply to connections that are made during emergencies.

PROCEDURE

A. PLANNING A MAIN CONNECTION

1. The Construction or Field Operations supervisor responsible for the job shall complete a Main Connection form when planning a connection to a main that requires the interruption of gas flow, unless approved otherwise by a Construction or Field Operations Director. Information should include the following:
    a. Type of job (e.g., new main, relay main, new service line, maintenance work).
    b. Type of connection (e.g., stopper fitting, full line tee, spool piece).
    c. System pressure (e.g., LP, 2 psig, 5 psig, 10 psig, 25 psig, 60 psig, 100 psig).
    d. System configuration (e.g., integrated, one way).
    e. Valve information (e.g., adjacent valves in proper position).
    f. Drip information (e.g., adjacent drips checked/pumped).
    g. Bypass provisions (e.g., bypass required, Operations Engineering contacted).
    h. Pressure Control involvement (e.g., Field Services notified, personnel required on site). Field Services shall be notified when planning a main connection within 200 feet of a district regulator station.
    i. Sketch describing the job.
    j. Pertinent plans and drawings (e.g., 40 scale, 400 scale, main notes). In addition to the 40-scale or AMMS equivalent plan, a copy of the main notes, if available, should be included when a district regulator station is involved.
    k. The completed Main Connection form, pertinent plans, and specific instructions relating to the main connection shall be given to the personnel performing the work.

B. GENERAL MAIN CONNECTION PROVISIONS

1. Dispatch shall be notified shortly before starting the job.
2. Valves in the immediate vicinity of the job shall be in their proper position prior to making a main connection, if practicable.
3. Drips in the immediate vicinity of the job shall be checked/pumped, if practicable.
4. Pressure gauges shall be installed whenever the flow of gas in a main is interrupted, regardless of distribution system operating pressure. The gauges shall be installed in such a manner that the pressures upstream and downstream of the interrupted section of main can be monitored. Pressures shall be monitored before the flow of gas is interrupted, while the flow of gas is interrupted, and when the flow of gas is restored.

C. BYPASS PROVISIONS

1. Perform flow test in accordance with Standard Drawing MAIN6010. When required, a bypass shall be installed for connections requiring interruption of gas flow on low-pressure mains unless approved otherwise by a Construction or Field Operations Director or by Operations Engineering.
2. A bypass shall be installed between two sections of main being temporarily disconnected, regardless of the operating pressure, when customers would be adversely affected by the loss of system capacity (e.g., possibly cause an outage).
3. Scheduled Connections: The Construction or Field Operations supervisor responsible for the job shall evaluate the need for a bypass for all scheduled connections to mains requiring interruption of gas flow. If necessary, Operations Engineering should be consulted.
4. When consulted, Operations Engineering shall determine whether a bypass is needed. If a bypass is needed, Operations Engineering shall specify the appropriate diameter of the bypass(es) and any limiting conditions. In addition, Operations Engineering should send a copy of the "Bypass Analysis" form, or equivalent, to the person who requested the bypass evaluation, when appropriate (e.g., for scheduled connections).
5. Consideration should be given to the following when determining whether a bypass is needed.
    a. System pressure.
    b. Anticipated pressure loss, which should be determined from network analysis software.
    c. Daily and seasonal weather conditions.
    d. Distribution system configuration in the general area (e.g., integrated or dead-ended). A 40-scale, or AMMS equivalent plan, should be used as an aid to make this determination.
    e. Duration of gas flow interruption.
    f. Time of day.
    g. Affected customer load.

h. Other ongoing system work in the general vicinity of the job (e.g., district regulator station or system shutdowns, main work).

6. Pressure gauges shall be installed whenever a bypass is required, regardless of distribution system operating pressure. The gauges shall be installed in such a manner that the pressures upstream and downstream of the section of pipe being bypassed can be monitored. Pressures shall be monitored before gas is allowed to flow through the bypass, while the gas is flowing, and when the flow of gas is stopped.
7. Uncased plastic pipe may be used for aboveground bypasses under the following conditions.
    a. The duration of the installation shall not exceed one year.
    b. The pipe shall be located where damage by external forces is unlikely or it is otherwise protected against such damage.
8. Pipe used for bypasses shall be tested or pre-tested.

(End STOP-5040)

GCON-5100: KeySpan Energy Delivery System Operating Procedure (SOP) for Coordinating Gas Main Connections or Shutdowns

Date:	04/15/2006	Filed:	Yes	Application:	LI-MA-NH-NYC
		Review:	Annual	Lead Org:	Gas Control
Revision: New Procedure - This procedure supersedes Procedure Numbers: **GCON-5091-LI: Handling of Gas System Shutdowns - LI** **STOP-5010-NYC: Gas System Notifications - NY** **STOP-5040-MA-NH: Installation of Gas Main Tie-in Connections and Stopping Off - NE**					

DESCRIPTION

This procedure establishes KeySpan Energy Delivery's Policy for preparing and processing of System Operating Procedures (SOP's), including notifications, for performing shut downs or tie-ins on KeySpan Energy's gas transmission or distribution mains. It includes the responsibilites of organizations involved with the planning and execution of work to ensure the gas system is operated without incidents that jeopardize the integrity of the system, customers and/or operating personnel.

This procedure is to be implemented for any construction or maintenance requiring the shutdown or interruption of the gas transmission or distribution system, as well as all gas main tie-ins and main extensions. In addition it provides specific instruction regarding the need, purpose, requirements and use of SOP's while performing gas system work.

PROCEDURE

A. Organizational Responsibilities:

1. Gas Control – shall be responsible to:

   a. Review and approve all gas System Operations Procedures (SOP's) for shutdown or interruption of the gas transmission or distribution system, all live gas main connections for gas main tie-ins and main extensions, as well as all service connections that require a full tee tie-in.

   b. Approve all main valve operations on the KeySpan Gas Systems associated with the SOP's, other than curb cocks or meter sets.

   c. Review and approve all SOP's for all projects generated by Gas Engineering Department.

   d. Coordinate the review of complex SOP's with Gas Instrumentation & Regulation, Gas Engineering, Gas Maintain, Gas Construction and Gas Production Organizations and Gas Field Operations as required.

e. Notify Instrumentation and Regulation when construction is located within 200 feet of a regulator station, gate/take station, former gas plant, gas holder and compressor facility.

2. Instrument & Regulator Maintenance Section shall be responsible to:

   a. In addition to Gas Control, review and approve all SOP's which involve a regulator station or where the construction is located within 200 feet of a regulator station.

   b. Operate regulator station valves and/or system valves as directed by Gas Control during the SOP including shutdowns and restoration.

   c. Install and monitor pressure gauges and/or pressure recording charts as required.

   d. Review final approved SOPs with Instrumentation and Regulation crews prior to the execution of the SOP.

   e. Ensure that the most recent version of the SOP is at the field location by verifying the SOP number and the revision number with Gas Control when ready to begin work.

   f. Ensure that SOP steps are followed sequentially but only after approval from the Gas Control. Any changes to the SOP or sequence within the SOP shall be discussed and approved by Gas Control.

3. Gas Engineering shall be responsible to:

   a. Develop SOP's for major capital projects, generated by Gas Engineering. *(Reference; GCON-7010: KeySpan Energy Delivery Instructions for Completing the System Operating Procedure (SOP) Forms)*

   b. For major capital projects generated by Gas Engineering, draft SOP's must be created and forwarded for review and comment to Gas Instrumentation and Regulations, Gas Maintain, Gas Construction, and Gas Control as appropriate. Resolve comments prior to submitting the SOP to Gas Control for approval.

   c. Provide temperature and by-pass (jumper) sizing (if required) analyses for SOP's in which the proposed main connection would involve the disruption of gas flow or involve a Transmission Main.

   d. Support the Gas Maintain and Gas Construction Departments in the development and review of SOP's for gas system maintenance or expansion work as required.

e. Ensure that the Mapping Systems are updated from SOP Sketches when field work is complete.

f. Perform a final review of Field Historical Documents, and if necessary, coordinate the update the Mapping System based on actual field as built drawings.

4. Gas Maintain and/or Gas Construction Departments shall be responsible to:

a. Develop all SOP's for shutdown or interruption of the *gas* distribution system, all live gas main connections for gas main tie-ins, main extensions, as well as all service connections that require a full tee tie-in. The approved SOP is required prior to the start of field excavation, including pipe installation. *(Reference: ADMN-7000: Gas Main Work Package Process).*

b. Review with Maintain and/or Construction crew leaders, implementation of the SOP prior to execution of the work.

c. Prior to executing the SOP contact Gas Control and request permission to proceed with work in accordance with instruction set forth in: *(Reference; GCON-7010: KeySpan Energy Delivery Instructions for Completing the System Operating Procedure (SOP) Forms).*

d. Operate system valves as required and directed by Gas Control during execution of the SOP, including shutdowns and restoration.

e. Call Gas Control at least 48 hours prior to the start of the SOP when working near Gate/Take Stations, Transmission Mains, Regulator Stations, Power Plants, Critical Lines, LNG Plants, Etc.

f. Notify Gas Control prior to the start of the Shutdowns or Tie-ins and there after in accordance with the procedural steps or at the direction of Gas Control. In addition, Gas Control will request the Radio Number, Cell Phone Number and/or Nextel Number of the crew performing the work. Communications tests shall be coordinated as needed.

g. Whenever live mains are tapped pressure gauges shall be installed, regardless of system operating pressure. Sufficient gauges shall be installed, and utilized, to determine pressure of all mains associated with job.

h. Whenever bypasses are required pressure gauges shall be installed. The gauges shall be installed in such a manner that the pressures upstream and downstream of the section of pipe being bypassed can be monitored. Pressures shall be monitored before gas is allowed to flow through the bypass, while the gas is flowing, and when the flow of gas is stopped. When ever a LP main is going to be bagged off, **a bypass and/or flow test is required in accordance with instructions set forth in: *(Reference: MAIN-6010: Standard Flow Test Procedure for Main Bag-off Low Pressure Mains.)***

i. Pressure gauges readings shall be called into Gas Control prior to tie-ins at all connection points if required in the SOP or whenever pressure readings are not as expected based on known system information.

j. Ensure that the most recent version of the SOP is at the field location by verifying the SOP number and the revision number with Gas Control when ready to begin work.

k. Ensure that SOP steps are followed sequentially but only after approval from Gas Control. Any changes to the SOP or sequence within the SOP shall be discussed and approved by Gas Control.

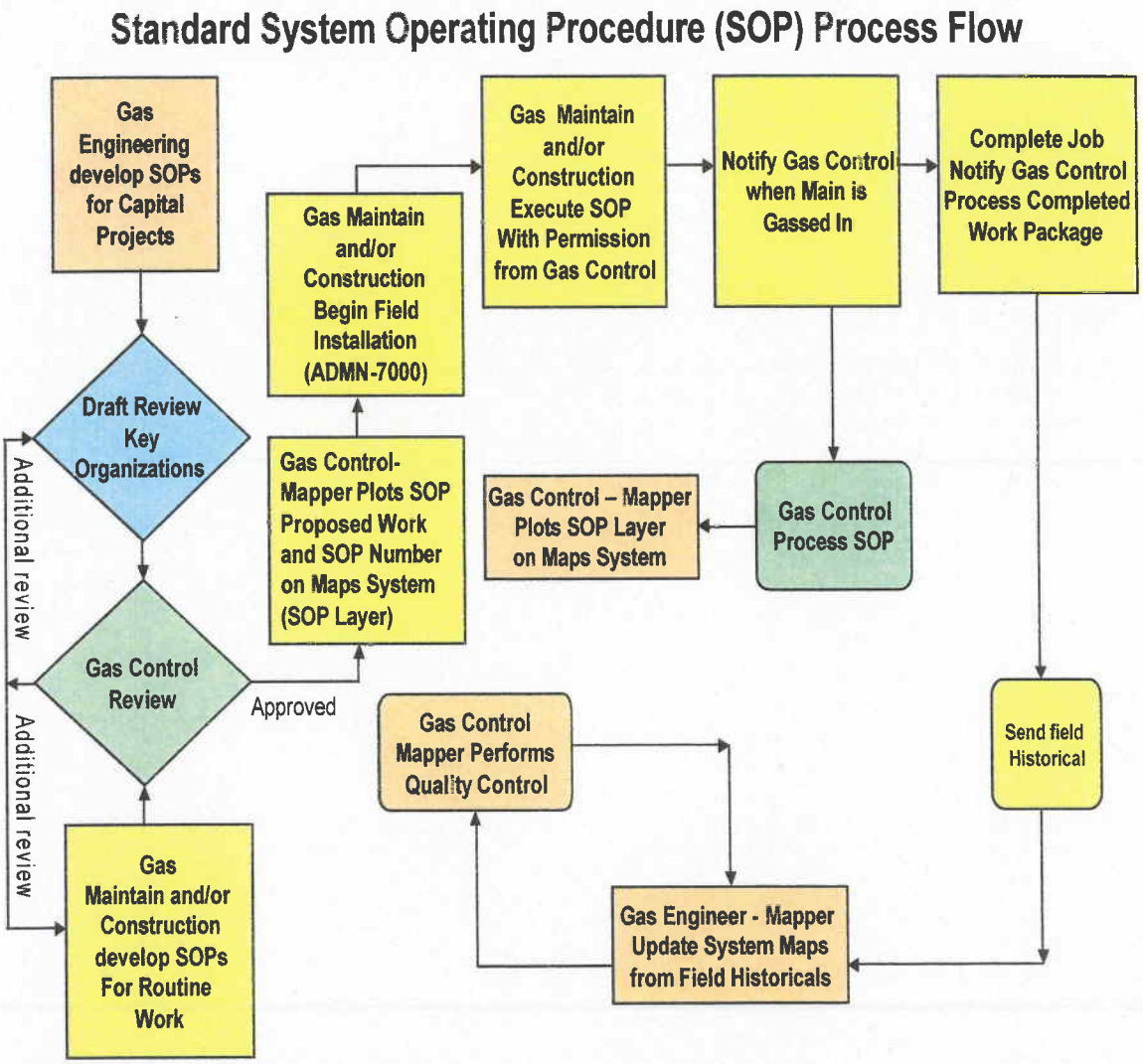
l. Prepare and perform a timely final review of Field Historical Documents and submit to Mapping in a timely fashion to update the Mapping System based actual field as-built drawings.

B. Exhibits

1. Exhibit A: Standard Operating Procedure (SOP Process Flow Chart)

Exhibit A

03/09/2006



(End GCON-5100)

CNST-5010: General Construction Requirements

Date:	07/01/04	Filed:	No	Application:	MA
		Review:	3 years	Lead Org:	Construct
Revision:					

DESCRIPTION

The following specification, and other general specifications, constructions standards, and project drawings, are intended to cover all supervision, labor, materials and equipment beyond what is provided, necessary to install gas mains and appurtenances to be operated at a pressure between Low pressure and 200 psi.

Work associated with the installation of gas mains shall include, but is not limited to, pavement removal, excavation, sheeting, shoring, bracing, welding on, fusing and tapping onto, pressurized or non-pressurized natural gas mains, pressure testing, purging, gassing in, temporary and permanent pavement, clearing and grading, restoration of topsoil and sod, the removal and replacement of trees, shrubbery, fencing or any other aboveground obstructions, operating valves, or any other work required in accordance with this specification or other applicable procedures.

PROCEDURE

A. General

1. Codes, specifications, standards and procedures

KeySpan energy specifications shall be strictly adhered to. Where KED requirements do not cover the situation, the local, state or federal regulations that is more stringent shall apply.

2. Training

Company personnel must be trained and qualified to perform the work covered in this document. Unless specified otherwise, the contractor is responsible for providing trained and qualified personnel.

3. Permits

The company crew or contractor is fully responsible for complying with the permit requirements. When allowed by the permits, local authorities and, with the consent of the field supervisor or company representative, a maximum of 200 feet of trench open during non-working hours. The company or contractor shall adhere to trench limits and sawcut pavement as may be required by the permits.

4. Safety and equipment

    a. In addition to this procedure all field personnel are to refer to the "work area protection manual" for specific details of performing work and the safeguarding of personnel, the public and property in traffic areas.

    b. The company crew or contractor shall be responsible for providing a safe work area for his crew and the public and shall adhere to all state, city, county, town (village) and KeySpan energy safety requirements.

    c. The company crew or contractor shall take precautions during construction through contaminated areas.

    d. All workmen, including visitors, delivery and supervisory personnel, are required to wear hardhats, safety glasses and safety shoes while on the jobsite.

    e. All personnel who are exposed to vehicular traffic shall wear an approved high-visibility vest. All personnel working within a roadway, or adjacent to a roadway, are considered to be exposed to vehicular traffic.

    f. The contractor shall be responsible for providing any other safety equipment that either the contractor or the KeySpan energy field representative deems necessary.

    g. The company crew or contractor shall restore the work area as close as possible to its original condition on a daily basis. The area shall be made safe for vehicular and pedestrian traffic.

5. One-call notification (Dig Safe)

    a. All excavations require Dig Safe notification.

    b. The contractor or company crew shall be responsible for requesting a markout from the one-call center. Test holes are required to determine the depth, size and exact location of all subsurface facilities, which may interfere with the retirement of the gas main. The contractor or company crew shall support any utility or structure encountered during the retirement and shall be responsible for any damage caused. The company crew or contractor shall also satisfy all OSHA requirements with regard to excavation and sheeting. An "OSHA competent" person must be on the jobsite at all times for evaluating soil conditions and sheeting requirements.

6. Maintenance and protection of traffic

a. Maintenance and protection of traffic shall be in accordance with the municipality's traffic control requirements. Maintenance and protection of traffic shall comply with applicable municipal requirements or the KED manual, whichever is more stringent.

7. Maintenance of site

   a. All materials, which are permanently removed from the existing construction by the contractor, in accordance with this specification, shall become his property and shall be lawfully disposed of by him away from the jobsite.

   b. During performance of the work, the company crew or contractor shall take all reasonable precautions to protect the adjoining facilities or structures. The contractor shall be responsible for any damage that may be caused by his work under this contract. This includes damage to KeySpan Energy facilities, as well as to any other public or private property.

   c. All excavated materials falling on roadways and sidewalks shall be promptly swept up and removed.

   d. Any plant and equipment no longer required for any portion of the work shall be removed from the jobsite when so ordered.

8. Materials - supplied by contractor

   a. It is the responsibility of the contractor to supply all materials that are not listed as required for the restoration of pavement and landscaping as shown on the drawings or as specified or as necessary for the proper performance of the job.

   b. The contractor shall bear all costs for obtaining and maintaining any materials, which the contractor must supply.

   c. KeySpan energy assumes no responsibility for work delays if materials supplied by the contractor are delayed.

9. Return of company materials

   a. At the completion of the project, all excess material that was furnished by the company shall be returned by the contractor to the designated company storeroom with a tabulation of the material including the following:

      - Work order number and location.
      - Purchase order and bill of material number.
      - Quantities, size, and brief description.

b. Notice must be given to the company storeroom at least 24 hours prior to the return of this material. If the contractor fails to do so, the company shall effect the removal and charge the cost of work to the contractor.

B. General construction requirements for installing gas pipelines

1. Description of work - The work to be done under this specification may include, but is not limited to, the following:
   a. Hauling and handling of material from storage to the job site, and the return of units of excess material.
   b. Excavating of trenches, including shoring.
   c. Installing mains, service lines, drips, valves, fittings, anodes, test leads, and other pipeline components.
   d. Pigging of facilities.
   e. Pressure testing of facilities.
   f. Connecting new installations to existing distribution piping.
   g. Purging new installations.
   h. Backfilling and compaction.
   i. Paving.
   j. Site restoration.
   k. Maintaining traveled ways.
   l. Protecting existing structures and utilities from potential damage.

2. Plans and specifications

   a. Depending on the nature of the work, detailed plans and/or specifications may be supplied.
   b. All required dimensions shall be taken from either the dimensions shown on the plans or by actual measurements at the work site; not by scaling the plans.
   c. When installing a gas distribution facility, any discrepancies between the drawings and the specifications shall be brought to the attention of the company supervisor responsible for the job.

3. Unloading, hauling, and handling of materials

   a. All material shall be handled safely and in a manner that shall protect the materials from damage.
   b. When hauling coated pipe, the pipe shall be properly supported. All chain, cables, or other equipment used for fastening or supporting the load shall be adequately padded.
   c. Coated pipe, valves, and other material shall be handled at all times with nylon or canvas slings or other suitable pipe handling equipment. At no time shall protruding bolts or rivets be permitted to come in contact with the coating.
   d. Plastic pipe and fittings shall be handled with care to avoid damaging the pipe wall. Plastic pipe and fittings shall not be dropped onto pavement or other

hard surfaces. There shall be no kinking or buckling of the plastic pipe. Plastic pipe shall not be pushed, pulled, or rotated over sharp projections.

e. Plastic pipe shall be visually inspected (including the verification of proper SDR ratio) prior to installation, and any section of pipe where the wall is scratched or gouged to a depth of 10% or more of the wall thickness shall not be used. When the depth of the scratch or gouge is uncertain, that section of pipe should not be used.
f. Excess units of material shall be returned to the company stores.

4. Excavation

All excavation activity should be in accordance with CNST-5011, "DTE Street Restoration Standards", unless other agreements are reached between the company and the municipality or other appropriate authority.

5. Depth of cover for mains

a. Mains in city streets shall have approximately 36 inches, but no less than 24 inches, of cover from the top of main to the finished grade.
b. Mains in private right-of-ways, DCR roadways, and state and federal highways, shall have a minimum depth of cover as required by specifications, permits, or licenses applicable to those ways, but no less than 24 inches. In the case of mains in highways under the jurisdiction and control of the Massachusetts highway department, the minimum depth of cover shall be 36 inches.
c. Mains that will have an MAOP greater than 200 psig shall have a minimum of 36 inches of cover.
d. When the specified minimum cover for mains cannot be provided as a result of an underground obstruction, the minimum cover available shall be determined and the main shall be protected from anticipated external loads as directed by the company supervisor responsible for the job. The installation of mains with less than 24 inches of cover requires DTE approval and shall be noted on appropriate company plans.

6. Depth of cover for service lines

a. Service lines shall have approximately 24 inches, but no less than 18 inches of cover below final grade in the street, and 18 inches, but no less than 12 inches of cover on private property.
b. If an underground structure prevents installation at the aforementioned depths, the installation shall be designed to withstand any anticipated external load.

7. Trench width

Unless otherwise specified, the normal trench should not exceed 18 inches in width for sizes up to and including 6-inch pipe, 24 inches in width for 8-inch pipe, and 30 inches in width for 10-

inch and 12-inch pipe. For sizes greater than 12-inch pipe, the company supervisor responsible for the job shall determine the trench width.

8. Pavement removal

    a. Pavement shall be removed before any excavation or trenching is performed. The pavement shall be cut to full depth along straight lines with a pneumatic hammer, pavement cutting saw or other means acceptable to the company and municipality.
    b. When the pavement remaining between the excavation and the edge of the roadway is less than two feet, the remaining pavement shall be removed and replaced in conjunction with the permanent pavement repair.
    c. The removed pavement material shall be properly disposed of by the excavator.

9. Trenching

    a. The bottom of the trench shall be graded (by hand, if necessary) to meet the specifications and to provide an even bed for the pipe. The trench shall be graded to pass under or over all existing pipelines, facilities of other utilities, railroads, or other impediments.
    b. When required by regulations, sheeting or bracing shall be used. Sheeting shall be removed, as the trench is backfilled, unless directed otherwise by the company supervisor responsible for the job or the municipality. If the sheeting is to be left in place, it shall be cut off two feet below the surface.
    c. Equipment and material for pumping and draining shall be available and used, when necessary.
    d. Vegetation, such as trees and shrubs, shall be protected during construction, and where necessary, hand excavation shall be used to protect such vegetation.
    e. The sod and loam in grass plots should be removed, stacked separately, and re-used to restore the grass plots.
    f. In rock excavation, the ledge shall be removed to a depth of six inches below the standard trench depth, unless specified otherwise. The bottom of the trench shall be free of protruding boulders or ledge.
    g. When, in the opinion of the company supervisor responsible for the job, the natural bottom of the trench does not provide a suitable foundation for the pipe, enough material shall be removed from the trench and replaced by a thoroughly compacted sand bed to provide six inches of foundation for the pipe.

10. Installation of pipe

    a. Pipe shall conform to the trench contour without unnecessary strain on the pipe. When sections of pipe that have been welded or fused alongside the trench are lowered in, care shall be taken not to kink or put a permanent bend

in the pipe. Precautions shall be taken to ensure that the inside of the pipe is free of foreign material. The open ends of the line shall be securely capped at the end of each day.

b. Normally, the pipe shall have a minimum clearance of six inches from other underground facilities or structures not used in conjunction with the installation of the gas distribution facility. Where this distance cannot be maintained, rock shield, or its equivalent, shall be used to protect the gas distribution facility.
c. Steel pipe shall be joined by welding or by mechanical couplings, as specified. Plastic pipe shall be joined by fusion or mechanical couplings, as specified. Fittings shall be installed in accordance with the manufacturer's written procedures. The joining of pipe shall be performed by qualified personnel.
d. All pipe shall be handled and installed to ensure against damage. Coatings shall be visually inspected, and should also be tested for holidays by electronic devices (i.e., "jeeping"). Any damage to the coating found shall be repaired prior to backfilling. Plastic pipe damaged prior to or during installation shall be replaced (e.g., Kinks, buckles, scratches, and gouges that reduce the wall thickness by 10% or more).

11. Corrosion control

Cathodic protection shall be installed in accordance with the appropriate standard. Steel mains and service lines, including welds, valves, and fittings, shall be properly coated. No primer or mastic should be allowed to come in contact with plastic pipe when coating steel pipe or fittings. If coating materials do come in contact with the plastic pipe or components, it shall be wiped off as soon as practicable.

12. Warning tape

a. Warning tape shall be placed over all pipe during backfilling, approximately 12 inches below finished grade.
b. Sufficient backfill shall be installed prior to installing warning tape. The crew installing the pipe shall install the warning tape.
c. Warning tape installed above pipelines that will have an MAOP greater than 200 psig shall have a width of at least eight inches.

13. Pigging, testing, and pressurizing

a. The company supervisor responsible for the job may require that a main or a large-diameter service line be pigged prior to pressure testing. Pigging shall be considered when there has been a possibility of water or foreign material entering a pipeline during construction (e.g., Pipe left exposed in trench overnight without end caps; or water in the trench). The use of the pig should be in accordance with the manufacturer's recommendations.
b. Pipelines shall be pressure tested in accordance with Main-5180 and MAIN-5190.

c. New distribution facilities shall be fully pressurized before placing them into service.

14. Backfilling

Backfilling shall be performed in accordance with CNST-5011.

15. Site restoration

a. Grass plots and lawns shall be restored, as close as possible, to the condition that existed prior to excavation, where required.
b. All debris, rubbish, and excess material shall be disposed of properly and the site left in good condition.

16. Preparation for pavement restoration

Preparation for pavement restoration shall be in accordance with CNST-5011, unless directed otherwise by the company supervisor responsible for the job.

17. Maintenance of traveled ways

a. All necessary precautions for the safety of the public shall be taken. All barriers, warning lights, and other devices or equipment required by federal, state, and local authorities shall be maintained. Police protection shall be provided, when required.
b. The excavated material shall be placed to ensure the safety of the public. Ready access to hydrants and private property shall be maintained at all times. Street gutters shall be kept clear for drainage.
c. When required, the trench shall be bridged in a proper, secure manner so as not to interrupt vehicular or pedestrian traffic.
d. Reasonable notice shall be given to owners of private ways and driveways before interfering with those ways.

18. Protection of existing utilities and structures

a. Issuance of the proper notification of construction in accordance with Chapter 82, section 40 ("dig safe" law) shall be observed.
b. All necessary precautions shall be taken to protect existing structures within the work area from damage, such as:
    - Gas pipelines.
    - Electric cable, conduits, and pole lines.
    - Telephone and cablevision lines.
    - Water pipelines.
    - Sewers, drains, and culverts.
    - Curbstones and other roadway and sidewalk facilities.

- Traffic control systems. If a traffic control system is disturbed or damaged it shall be repaired immediately.
- Pavement markings. Pavement markings shall be repaired or replaced within 10 days unless otherwise specified or agreed to by the municipality.

19. Backfill and compaction

a. The standards for backfill and compaction for use by company and contractor personnel can be found in Appendix 1. These standards shall apply to excavations in municipal, state and private ways, unless specified otherwise in the work permit or by the appropriate authority in the case of private ways.
b. Compaction equipment
c. Compaction equipment shall be approved by the company and meet the requirements of Appendix 1.
d. The compaction equipment used shall be one of the following:
e. Hand-held, pneumatic compacting equipment, such as, an air tamper, a "jumping jack," or a jackhammer with a foot attachment, which shall be operated in a vertical position for complete contact between its base and the soil surface.
f. Mechanical compacting equipment, such as vibratory/percussion rammers and tampers.
g. Heavy-duty vibratory plate compactors capable of producing at least 7000 lbs. of compacting force.

20. Compaction verification

a. Compaction verification shall be performed in accordance with Appendix 1 and the following:
   - Company crews shall record DCP test results on form 3001, or equivalent.
   - The company may specify that nuclear density testing, or other approved methods, be used to verify compaction.

21. Training

b. All field operations and construction field personnel involved in performing or inspecting backfill and compaction operations shall receive bi-annual training on the appropriate sections of CNST-5011.
c. The company shall be provided with documentation stating that contractor crews have been trained in the appropriate sections of CNST-5011.
d. [ref.: 220 CMR 109.09, DTE 98-22]

C. Pavement restoration

1. General

a. The acceptable methods of asphalt and cement pavement restoration operations performed by company and contractor personnel can be found in CNST-5011.
b. Backfilling and compaction of the excavation shall be in accordance with CNST-5011.
c. In most cases, a minimum of four inches of bituminous concrete shall be considered as permanent asphalt restoration.

2. Grind and inlay

a. The limits of the excavation plus an approximate additional six inches of sound material shall be milled to a minimum depth of one and one-half inches.
b. The milled surface shall be textured for better bonding to the new material and the sides cut vertical and straight.
c. The excavation, including the side and surface of the surrounding pavement, shall be swept clean. Special attention shall be given to the corners.
d. An asphalt emulsion tack coat shall be applied to the vertical sides of the old pavement so that the hot mix will bond to the existing material. The emulsion shall be applied by brushing or spraying, not by pouring from a container. Asphalt emulsion shall not be allowed to freeze.
e. Class I bituminous concrete, or approved alternative, shall be applied at a minimum temperature of 260°f in one course. When the air temperature is below 40°f, the minimum temperature of the applied mixture shall be 300°f.
f. The material shall be compacted by sufficient means to achieve a density approximately equal to the surrounding pavement.
g. Asphalt emulsion shall be applied, by brushing or spraying, to seal the surface of the joint between the new patch and the surrounding pavement and then covered with sand or stone dust.
h. The excavation area shall be left in a neat and presentable condition.
i. Infra-red treatment of asphalt pavement
j. If the grind &inlay method of pavement restoration can not be used, the following method of infrared treatment may be used or another pavement repair method mutually agreed to by both the company and the municipality.
k. The area to be heat-treated shall be swept clean prior to treatment.
l. Infrared heat, not to exceed 9,000 BTUs per square foot per hour, shall be applied long enough to soften the pavement to a depth of two inches without causing oxidation.
m. The softened area shall be raked to a workable condition. Additional class I bituminous concrete, or approved alternative, shall be applied, at a minimum temperature of 260°f (300°f when the air temperature is below 40°f), as required to achieve existing grade. The area raked to a workable condition shall not exceed one foot beyond the outer edges of the opening without the approval of a field operations supervisor.
n. The heated area shall be sufficiently compacted to achieve a density approximately equal to the surrounding pavement.

o. Asphalt emulsion shall be applied, by brushing or spraying, to seal the surface of the joint between the new patch and the surrounding pavement and then covered with sand or stone dust.
p. The excavation area shall be left in a neat and presentable condition.

3. Cement concrete sidewalk repair

a. Cement concrete sidewalk repair shall require that entire block units (flags) be replaced as follows and in accordance with CNST-5011.
b. Cement concrete shall be installed in sufficient quantity to ensure a minimum depth of four inches after the concrete is thoroughly consolidated. At driveways, a minimum of six inches shall be required.
c. After water sheen has disappeared and concrete has started to stiffen, the surface of the cement concrete shall be floated and then immediately steel-troweled.
d. The surface of the cement concrete shall be brushed with a soft-bristled pushbroom in order to produce a nonslip surface.
e. The surface of the cement concrete shall be uniformly scored into block units (flags), normally 36 ft^2 in area, to a depth of at least one quarter of the sidewalk thickness.
f. Completed sidewalk repairs shall be protected from pedestrian traffic for a minimum of three days.

4. Pavement inspections

a. Inspection location lists
- Construction supervisors shall be provided with a list, or generate one themselves, of completed permanent pavement restorations at least once each month.
- The field coordinator, or designee for each division, shall provide field operations supervisors with a list of completed permanent pavement restorations at least once each month.

b. Inspection intervals

- Paving inspections shall be conducted at intervals specified CNST-5011.
- Inspection and repair
- Construction supervisors and field operations supervisors, or their designees, shall inspect in accordance with CNST-5011, the restorations on the lists provided.
- Any restoration that does not meet the requirements of CNST-5011 shall be repaired as soon as practicable. Those repairs shall be inspected in accordance with CNST-5011.

D. Record keeping

1. Construction, field operations, and mandated programs shall maintain records to meet the requirements of CNST-5011.

2. Mandated programs shall file with DTE the statements and policies specified in CNST-5011.

(End CNST-5010)

EXHIBIT 11

Division Letter to All Operators Regarding
the Use of Pressure Gauges

The Commonwealth of Massachusetts

DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

TO: All Operators

FROM: Chris Bourne, Director, Pipeline Engineering and Safety Division

RE: Use of Pressure Gauges When Tapping Live Mains

DATE: January 6, 2006

CC: Andrew O. Kaplan, General Counsel
William H. Stevens, Jr., Assistant General Counsel
Pipeline Division Staff

Pursuant to 49 C.F.R. § 605(b)(8), the Pipeline Engineering and Safety Division of the Department of Telecommunications and Energy ("Pipeline Division") requests that all operators review - and revise if necessary - their respective written procedures regarding planning and performing all live gas main connections (e.g., tie-in connections, taps, and bypasses), in order to reduce the possibility of the over-pressurization of gas mains occurring in the future. If your operating procedures do not already provide so, I suggest that they expressly require the installation and utilization of sufficient pressure gauges whenever operators perform live main connections, regardless of distribution system operating pressure. I request that all operators file their procedures for installation of all live gas connections with the Pipeline Division no later than February 3, 2006.

Thank you for your cooperation.

EXHIBIT 12

KeySpan Training Records

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC UTILITIES
PIPELINE ENGINEERING AND SAFETY DIVISION

SIXTH SET OF INFORMATION REQUESTS FROM
THE PIPELINE ENGINEERING AND SAFETY DIVISION OF
THE DEPARTMENT OF PUBLIC UTILITIES TO
KEYSPAN ENERGY DELIVERY

RE: System over Pressurization, Lexington, MA, November 9, 2005

Respondent: Dan Dykes

IR PL 7-1: Attached find a student training summary for Christopher Dennehy. This summary indicates that Mr. Dennehy participated in course NE 1027 on October 6, 2005. Please provide documentation that demonstrates Mr. Dennehy's training with respect to the equipment used by KeySpan for tapping pipelines under pressure in Lexington, MA on November 9, 2005 (e.g. T.D. Williamson training records and supporting material). See 49 C.F.R. Part 192, § 192.627. Include in your response a brief summary and the date(s) of the training.

Response: On October 6, 2005, Mr. Dennehy participated in NE1027, which was an Operator Qualification testing session. He was tested on several covered tasks including Task #37. With respect to NE 1027, please see the attached Exhibit 7-1, which contains the Shared Services Technical Training Class Attendance Log, Task Verification List, Covered Task #37 Analysis, Covered Task #37 Answer Sheet, and Covered Task # 37 Demonstration Test scoring page from that testing session. With respect to the equipment used for tapping pipelines on November 9, 2005, Mr. Dennehy received field training under a more senior KeySpan welder, High Stress Welder Bob Schindler.

KEYSPAN

SHARED SERVICES TECHNICAL TRAINING
CLASS ATTENDANCE LOG

MONTH OCT
YEAR 2005

COURSE TITLE OP QUALS COURSE NUMBER NE1027

LOCATION Rivermoor ROOM OFF SITE START TIME 7:30 DURATION 4 HRS

INSTRUCTOR/VENDOR D. DYKES DATES: FROM 10/6 TO 10/6

PAGE 1 OF 1 SESSION # 0056 ENTERED IN PS ✓

	Print Name	Signature	Empl #	Area	DATE M	T	W	T	F	P/F
1/6	PAUL K. GROWIN	Paul K Growin	22903	Rivermoor St				X		
2/6	CHRIS DENNEHY		13518	River Moor St.				X		
3/6	ROBERT A. SCHINDLER	Robert A. Schindler	23212	Rivermoor				X		
4/2	KEVIN T. ROCHE	Kevin T. Roche	21613	Rivermoore St				X		
5/2	TOM O'KEEFE		22955	RIVERMOOR				X		
6/2	Mark Jagelski	Mark Jagelski	22621	Rivermoor St				X		
7/2	PATRICK O'DONNELL	Pat O'D	23009	Rivermore ST				X		
8/2	BRIAN CONDON	Brian Condon	22938	Rivermoor ST.				X		
9/2	RICH LAURETANO	Rich Lauretano	23345	Rivermoore St				X		
10/2	MARK A TRACEY	Mark A Tracey	22574	Rivermoor St				X		
11/2	ROBERT PORTER	Robert Porter	22596	Rivermoor St				X		
12/2	BILL GOODWIN	Bill Goodwin	02748	" "				X		
13/2	JAK. THOMPSON	J. Thompson	21828	Rivermoor				X		
14/2	TIM SULLIVAN	Tim Sullivan	22563	Rivermoor				X		
15/2	Clifton Lewis	Clifton Lewis	22907	Rivermoor				X		

REMARKS: TOTAL 42

Rev 2/04

APR-13-07 FRI 10:54 KEYSPAN NORWOOD FAX NO. 781 769 4891 P. 01

Operator Qualification

NAME Chris Donnehy

EMPL # 13518

AREA Rivermoor

DATE 10/6/05

TASK	PASS	FAIL	DATE OF TEST	Comments
28	✓		10/6/05	
29	✓		"	
35 W	✓		"	
35 P	✓		"	
36	✓		"	
37 W	✓		"	
37 P	✓		"	
70	✓		"	
39	✓		"	

All Incorrect answers have been reviewed with the Proctor

Student Signature

Proctor Signature

COVERED TASK #37: Tapping Pipelines Under Pressure

A. Task Description:
Cutting into a pipeline while the pipeline contains natural gas under pressure. Also referred to as a "hot tap".

B. Application of the four part test for covered tasks:
This task is performed on a pipeline facility.
This is an operations or maintenance task.
This task is performed as a requirement under 49 CFR 192.627
This task can affect the operation or integrity of the pipeline

C. Discussion:
192.627 requires that crews that make hot taps be qualified.

D. Subsequent Qualification Interval:
The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

E. Abnormal Operating Conditions:
Refer to Task 70

F. Evaluation Method(s)
1. Knowledge (Written or Oral for reasonable accommodations); and
2. Skill (Simulation, Demonstration, or other).

NEGA

NAME Chris Donnelly

COMPANY I.D. # 13518

DATE 10/6/05

Years Performing Task: 1½ yrs.

SHADE IN CORRECT ANSWER

1

A	1	2		4	5
B		2	3	4	5
C	1	2	3	4	
D	1		3	4	5
E	1	2	3		

2 a

3 Control Valve

4 b

5 b

6

a pressure

b Size of pipe

c Material of Pipe

7 a

8 a b d

9 a b d

10 b

11 a

12 b c d

13 b

2X Rags

NEGA

STOP, TAP AND REPLACE ELEVATED PRESSURE (>2 PSI) STEEL MAIN

PROCEDURE:

	DEMONSTRATED	POINTS	VALUE
CLEAN, PREPARE, AND INSPECT PIPE	✓		3.0
INSTALL GAUGES	✓		3.0
MONITOR PRESSURE *("What should you be monitoring?")*	✓		3.0
WELD TAP FITTING(S)	✓		3.0
INSTALL VALVE(S)	✓		3.0
AIR TEST FOR LEAKS	✓		10.0
SELECT AND INSTALL TAPPING EQUIPMENT AND TAP	✓		25.0
REMOVE TAPPING EQUIPMENT	✓		3.0
CHECK PRESSURE AT BOTH GAUGE LOCATIONS	✓		3.0
CLEAN AND PREPARE FIRST TAP HOLE FOR BAG INSTALLATION	✓		3.0

INSTRUCTOR: ***"All bags have already been tested and inspected"***

PREPARE, INSERT AND INFLATE THE FIRST BAG	✓		3.0
MONITOR PRESSURE *("What should you be monitoring?")*	✓		3.0
Instructor:" *At this point, how can you tell that everything is OK so far?"*	✓		3.0
PREPARE, INSERT AND INFLATE THE SECOND BAG	✓		3.0
MONITOR PRESSURE *("What should you be monitoring?")*	✓		2.0
Instructor:" *At this point, how can you tell that everything is OK so far?"*	✓		3.0

INSTRUCTOR: ***"Assume that all work has been completed"***

PLACE SEALANT ON BOTH PLUGS	✓		3.0
REMOVE FIRST BAG AND INSTALL PLUG	✓		3.0
MONITOR PRESSURE *("What should you be monitoring?")*	✓		3.0
REMOVE SECOND BAG AND INSTALL PLUG	✓		3.0
CLOSE VALVE(S) AND REMOVE	✓		3.0
PLACE SEALANT ON PLUGS FOR GAUGE LOCATIONS	✓		3.0
REMOVE BOTH GAUGES AND INSTALL PLUGS	✓		3.0
SOAP TEST PLUGS	✓		3.0

FINAL GRADE 100 100%

NAME: Chris Dewalt

COMPANY: Keyspan

LOCATION: Richmond

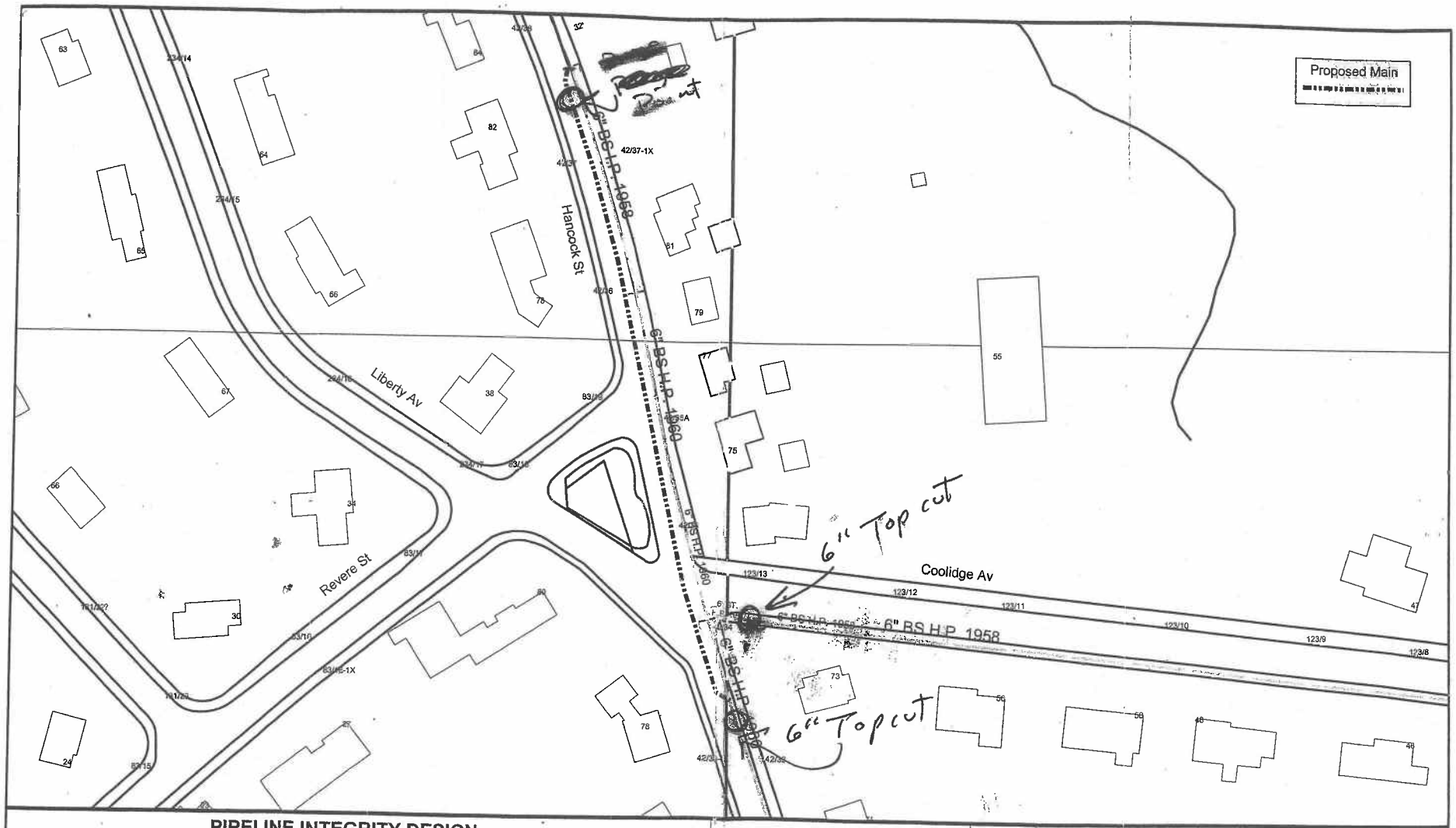
DATE: 10/6/05

INSTRUCTOR:

7/03

EXHIBIT 13

Distribution Systems Map Showing
Where the Hot Taps Were Made



PIPELINE INTEGRITY DESIGN

Hancock Street, Lexington

As part of the 2005 Bare Steel/Wrought Iron Replacement Program Supplemental Budget, Corrosion Control recommends the relay of aprx. 550 feet of 6 inch BS (1960) with 6 inch PL from the exst 6 inch PL at #84 to Coolidge Av.

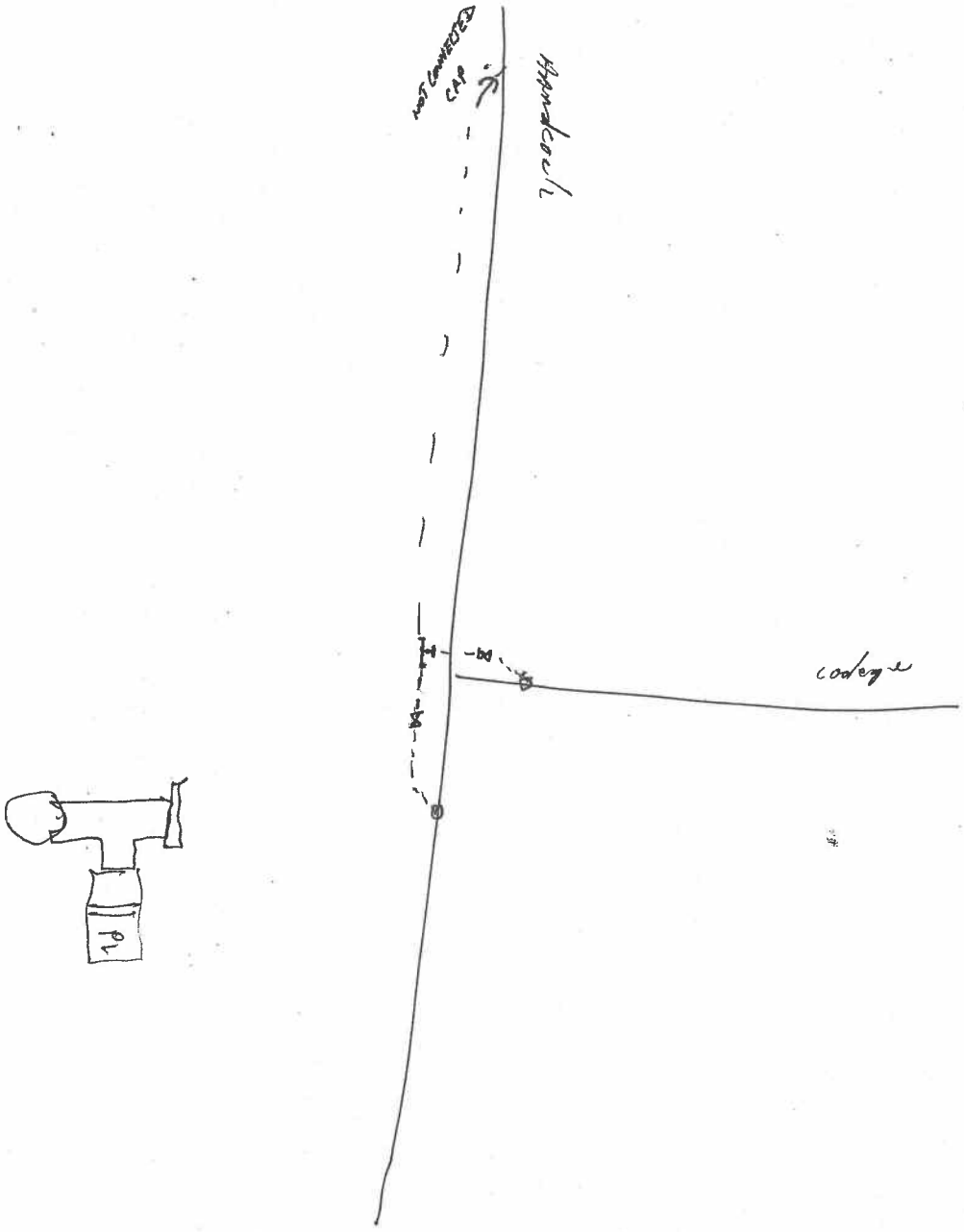
N

NOTE: The location of surface and underground objects shown are not warranted to be correct.

ENGINEER	JLH	SIZE	6 Inch
DATE	08/16/2005	MATERIAL	Plastic
LENGTH	550 Feet	PRESSURE	IP
SECTIONALS		WORK ORDER #	444904

AMMS

KEYSPAN


NOT CONNECTED
CAP
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