The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

PIPELINE ENGINEERING AND SAFETY DIVISION

INCIDENT REPORT

88 Waltham Street, Maynard, Massachusetts
January 3, 2008

PIPELINE ENGINEERING AND SAFETY DIVISION

Accident File

Explosion

Location: Maynard, Massachusetts

Date of Accident: January 3, 2008

Gas Company: NSTAR Gas Company

Estimated Property Damage: $152,449*

Report Issued – May 12, 2010

* Estimated by NSTAR Gas Company

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I. INTRODUCTION

A. Scope of the Investigation

The Massachusetts Department of Public Utilities ("Department"), 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 ("gas") at 88 Waltham Street, Maynard, Massachusetts ("Incident").[1] The release of gas contributed to a fire and over $150,000 in property damage to the dwelling, as estimated by the operator of the natural gas facilities, NSTAR Gas Company ("NSTAR" or "Operator") (Exh. 1).

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(c).

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

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[1] Incident means any of the following events:

1. An event that involves a release of gas from a pipeline or liquefied natural gas or gas from an LNG facility and,
   a. A death, or personal injury necessitating in-patient hospitalization; or
   b. 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.

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

B. Overview of Incident

On January 3, 2008, the owner of the residence ("owner") placed two kerosene-fired torpedo heaters in the home's crawl space to thaw frozen water pipes (Exh. 2). In the vicinity of the heaters was a ½ inch plastic gas line inserted into a ¾ inch steel gas service line (id.).[2] The approximate length of the service line in the crawl space was twenty six feet (Exh. 3). The operating pressure of the service line was 45 pounds per square inch gauge ("psig")[3] (Exh. 4).

At approximately 6:21 p.m., the Maynard Fire Department received an alarm. They arrived at the site at 6:23 p.m. to find a working fire (Exh. 5). According to the Maynard Fire Department report, "[f]irst attempts to contain the fire seemed successful but a broken gas line

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2 "Service line" means a distribution line that transports gas from a common source of supply to an individual customer, to two adjacent or adjoining residential or small commercial customers, or to multiple residential or small commercial customers served through a meter header or manifold. A service line ends at the outlet of the customer meter or at the connection to a customer's piping, whichever is further downstream, or at the connection to customer piping if there is no meter.

3 The term, "psig," 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 though it is actually sensing 14.7 psi at sea level.

from the street flashed twice, command ordered the building evacuated and requested the gas company to respond as soon as possible (id.)." The Maynard Fire Department report concluded that the cause of the fire was likely the use of a space heater in a confined area to thaw frozen pipes (id. at 2).

II. BACKGROUND

Waltham Street is in a residential area of Maynard. The neighborhood consists of multi-family two and three-story dwellings and some single family, one-story dwellings. The Incident occurred in a two-story, single family building at 88 Waltham Street. NSTAR stated that a two inch steel gas main,[4] installed in 1924, underlay Waltham Street (Exh. 4). The operating pressure of the gas main at the time of the incident was 45 psig (id.). The main was installed at a depth of 30 inches (Exh. 6). A 21 foot section of bare steel service line with a plastic insert supplied gas to 88 Waltham Street (Exh. 7).

III. THE DEPARTMENT'S INVESTIGATION

A. Description of the Scene

On Wednesday, January 9, 2008, at 8:54 a.m., the Division received a call from an independent fire investigator (Exh. 8). The investigator reported that at around 6 p.m., on January 3, 2008, a "gas related" fire had occurred at 88 Waltham Street, Maynard, MA (id.). The investigator also reported that a 30 foot gas line existed in the basement/crawl space, before the meter (id.).

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[4] "Main" means a distribution line that serves as a common source of supply for more than one service line.

On Friday, January 11, 2008, at approximately 8:45 a.m., two investigators from the Department's Pipeline Engineering and Safety Division arrived at the scene. Upon arrival at the scene, the investigators met with Jonathan Pfister, NSTAR Compliance and Corrosion Manager, and Chief Stephen J. Kulik of the Maynard Fire Department.

The investigators then entered the building basement and observed that the meter in the original basement had been removed by NSTAR (Exh. 11). The investigators also observed two bullet type space heaters in a crawl space facing the gas service (id.).

Also observed in the crawl space was an approximately twenty-six foot section of steel pipe which carried the inserted ½ inch plastic pipe from the stone foundation, through the crawl space, to the meter in the original basement (id.). The investigators observed a threaded coupling and two fittings on the service line approximately three feet from the wall entry point. The investigators also observed that the threaded couplings at the fittings appeared to be loose (id.). The investigators also observed water pipes and several other pipes in the crawl space.

1. Records of the Service Line to 88 Waltham Street

The original ¾ inch bare steel service line was installed in 1924 (Exh. 7). A 21 foot section of the service line was relayed with one inch bare steel on August 24, 1949 (id.). On February 5, 1982, the entire service was inserted with ½ inch plastic (id.). The company has no records of leaks on the service pipe (id.).

2. Leak Surveys of Service Line to 88 Waltham Street and the Street Main

On March 6, 2007, a mobile leak survey was conducted on Waltham Street and the surrounding area; there were no leaks found (Exh. 9). NSTAR conducted a walking leak

survey on the service line to 88 Waltham Street on January 11, 2008, gas readings were recorded from one percent gas to three percent[5] gas at the building foundation and ten percent gas a short distance from the foundation in the vicinity of a 90 degree bend in the service approximately ten feet outside the north side of 88 Waltham Street (Exh. 10). Also, a reading of ten percent gas was recorded in the street at the main (id.).

IV. FAILURE ANALYSIS OF THE PIPE SAMPLE

Altran Solutions ("Altran") conducted the failure analysis of the service line segment for this investigation. Department representatives observed all aspects of the failure analysis. In May, 2009, Altran submitted its results to the Department ("Altran Report").[6] Altran's analysis composed six subsections: Visual, Boroscopic, Sectioning and Examinations, Tensile Testing, Analytical Analyses, and Pressure Testing (id.). The purpose of the testing was to document the condition of the plastic service line, identify leaks, characterize deposits, leaks, and fracture surfaces.

Based on these tests results, a summary of Altran's major conclusions are as follows:

> The results of the testing and evaluation indicate the leakage failure of the pipe was due to application of localized high temperature, resulting in polymer melting and material flow. Several thermal and chemical analyses were performed on polymeric material from the leak site and, for reference, from distant portions of the pipe. No evidence of contamination or manufacturing defects was found, and no burning (charring) was seen. The mechanical, analytical and

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5 "Percent gas" includes all concentrations (measured as a percent of volume in air) of a flammable gas or vapor that will propagate flame when exposed to a source of ignition. Many common flammable liquids have very wide explosive ranges. The explosive range of all flammable gases and vapors will vary with temperature and pressure.

6 Copies of Altran's report may be purchased from Altran Solutions Corporation, 80 Fargo Street, Boston, Massachusetts 02210-2122, (617) 204-1000

pressure tests suggest the material was not defective or measurably degraded from age. The noted deformation from twisting and bursting are consistent with softening of the material to the point where the internal gas pressure exceeded the lowered strength of the pipe wall causing the burst (id. at 12).

V. FINDINGS AND CONCLUSIONS

A. Findings

(1) The Maynard Fire Department received an alarm at 6:21 p.m. on January 3, 2008, reporting a building fire at 88 Waltham Street, Maynard, MA.

(2) An approximately twenty-six foot section of plastic gas service line was encased in steel and ran through a crawl space to the basement of 88 Waltham Street, Maynard.

(3) Water pipes also occupied the same crawl space.

(4) Department investigators found two bullet type space heaters in the crawl space.

(5) The space heaters were facing the gas service pipe.

(6) Department investigators observed a loose union on the steel gas service pipe in the crawl space.

(7) The Maynard Fire Department stated the unofficial cause was the use of a space heater in a confined area to thaw frozen pipes.

B. Conclusions

The Altran Report's conclusion that the plastic pipe failed due to the application of localized high temperature, resulting in polymer melting and material flow is reasonable, and based upon substantial and specific evidence. The likely source of the damage to the plastic service pipe was heat from two bullet type space heaters. The location of the release of gas into the atmosphere was possibly at the loose fittings of the steel pipe in the crawl space. The two space heaters are possible sources for the ignition of the released gas.

VI. NSTAR ACTIONS

On April 12, 2010, the Division issued a Warning Letter to the Operator. NSTAR Gas Company, 08-PLW-14. 220 C.M.R. § 69.03(1). The Division reviewed the circumstances of the Operator's post-Incident leak investigation, and had reason to believe that NSTAR may not have completed a leak investigation of certain leak locations the Operator identified after the Incident, consistent with its Operating and Maintenance Procedures. The Division requested that NSTAR provide records to demonstrate that it has notified all personnel that they must always implement, and follow, NSTAR Leak Investigation procedures.

EXHIBIT 1

Nstar Gas Incident Report

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 / 0 / 2 / 6 / 5 / 2 /

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

c. Name of Operator NSTAR Gas Company

d. Operator street address One NSTAR Way

e. Operator address Westwood, Norfolk, Massachusetts 02090
City, County or Parish, State and Zip Code

2. Time and date of the incident

/ 1 / 8 / 2 / 1 / hr. / 0 / 1 / month / 0 / 3 / day / 0 / 8 / year

3. Incident Location

a. 88 Waltham Street
Street or nearest street or road

b. Maynard, Middlesex County
City and County or Parish

c. Massachusetts 01754-2437
State and Zip Code

d. Latitude: / 4 / 2 / . / 4 / 3 / Longitude: / - / 7 / 1 / . / 4 /
(if not available, see instructions for how to provide specific location)

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

X Other: Unknown; 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 $152,449

Gas loss $949 Operator damage $1500

Public/private property damage $150,000

d. X Gas ignited O Explosion X 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:

/ 0 / 2 / hr. / 3 / 9 / min.

7. Telephone Report

/ 8 / 5 / 9 / 4 / 5 / 9 / NRC Report Number / 0 / 1 / month / 1 / 1 / day / 0 / 8 / year

8. a. Estimated pressure at point and time of incident:

45 *PSIG*

b. Max. allowable operating pressure *(MAOP):* 60 *PSIG*

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

PART B – PREPARER AND AUTHORIZED SIGNATURE

Jonathan Pfister, Manager, Compliance and Corrosion
(type or print) Preparer's Name and Title

781-441-8421
Area Code and Telephone Number

Jonathan.Pfister@nstar.com
Preparer's E-mail Address

781-441-8436
Area Code and Facsimile Number

Authorized Signature

Jonathan Pfister
Manager, Compliance and Corrosion
(type or print) Name and Title

2/8/08
Date

781-441-8421
Area Code and Telephone Number

PART C - ORIGIN OF THE INCIDENT

1. Incident occurred on
   - O Main
   - O Meter Set
   - X Service Line
   - O Other: _____
   - O Pressure Limiting and Regulating Facility
2. Failure occurred on
   - O Body of pipe
   - O Pipe Seam
   - O Joint
   - O Component
   - X Other: Unknown; under investigation
3. Material involved *(pipe, fitting, or other component)*
   - X Steel
   - O Cast/Wrought Iron
   - X 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: /1/9/8/2/

PART D - MATERIAL SPECIFICATION (if applicable)

1. Nominal pipe size *(NPS)* /0/0/./5/ in.
2. Wall thickness /0/./0/9/ in.
3. Specification PE 2406 – Aldyl A SMYS / / / / / /
4. Seam type N/A
5. Valve type N/A
6. Pipe or valve manufactured by DuPont in year / / / / /

PART E - ENVIRONMENT

1. Area of incident
   - O In open ditch
   - O Under pavement
   - O Above ground
   - O Under ground
   - O Under water
   - X Inside/under building
   - O Other: _____
2. Depth of cover: N/A 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 ⇒ O Dent O Gouge O Wrinkle Bend O Arc Burn O Other: _____
15. ☐ Component ⇒ O Valve O Fitting O Vessel O Extruded Outlet O Other: _____
16. ☐ Joint ⇒ O Gasket O O-Ring O Threads O Fusion O Other: _____

Weld

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

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

a. Type of failure:

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

☐ Material Defect

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

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

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

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

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

F6 – EQUIPMENT OR OPERATIONS

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

23. ☐ Incorrect Operation

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

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

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

F7 – OTHER

24. ☐ Miscellaneous, *describe:* _____
25. X Unknown

O Investigation Complete X 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)*

NSTAR Gas was notified of a house fire by the Maynard Fire Department at 6:50 pm and requested to shut the gas to the building at the street. It was believed that gas may be fuelling the fire in the crawl space area of the basement. The homeowner had been using kerosene-fired torpedo heaters to thaw frozen water pipes in the crawl space, in the vicinity of the gas service piping passing through the crawl space. The fire involved timber framing and flooring adjacent to and above the heater location. The gas service piping was was bare steel installed in 1911 and inserted with plastic in 1982. After the area was made safe NSTAR personnel observed bubbling from a pool of water on the dirt crawl space floor, at a threaded union in the steel casing pipe. It is unclear whether a leak in the plastic piping caused the fire or whether the fire damaged the plastic service piping, causing the leak. The service piping will be examined by an independent laboratory to determine the cause of failure

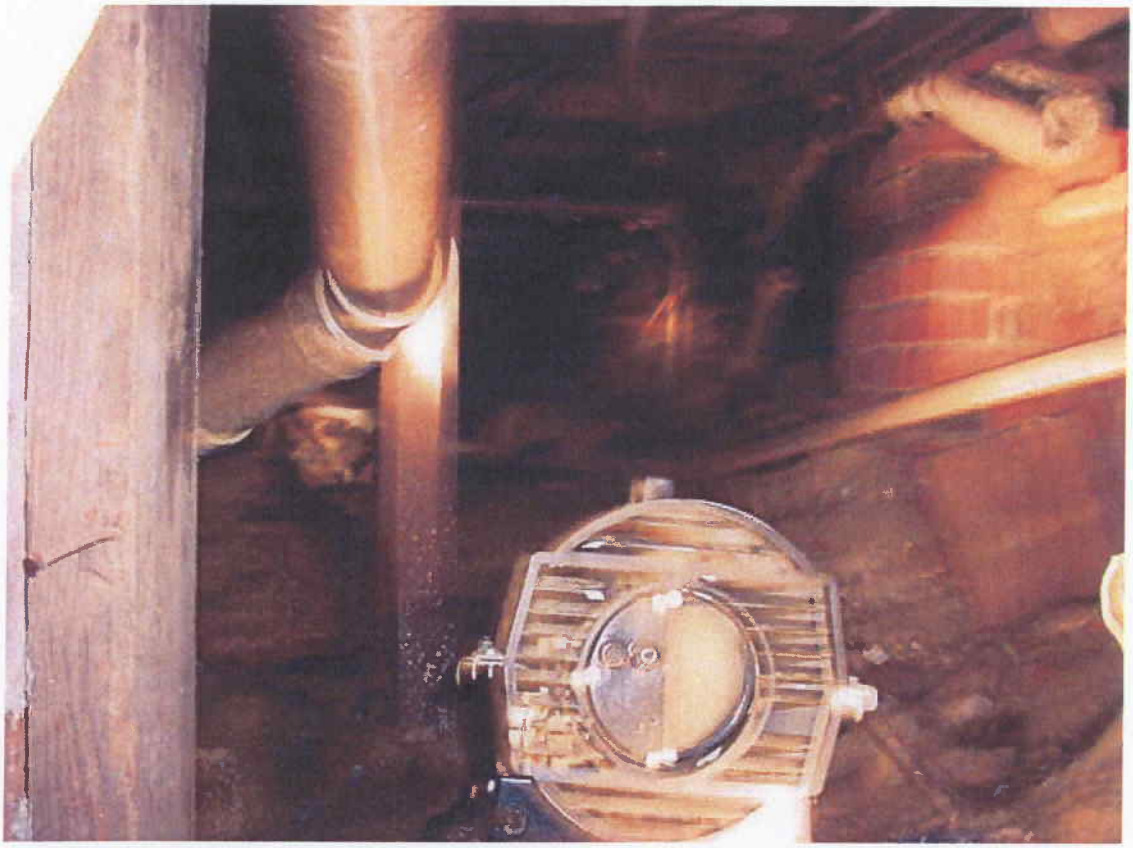
EXHIBIT 2

Photographs of Space Heaters

1. Steel service line with inserted plastic line looking from the inside meter set going through the crawl space.

2. Space heater positioned towards service line.

Heater #1 at crawl space entry



Heater #2 inside the crawl space

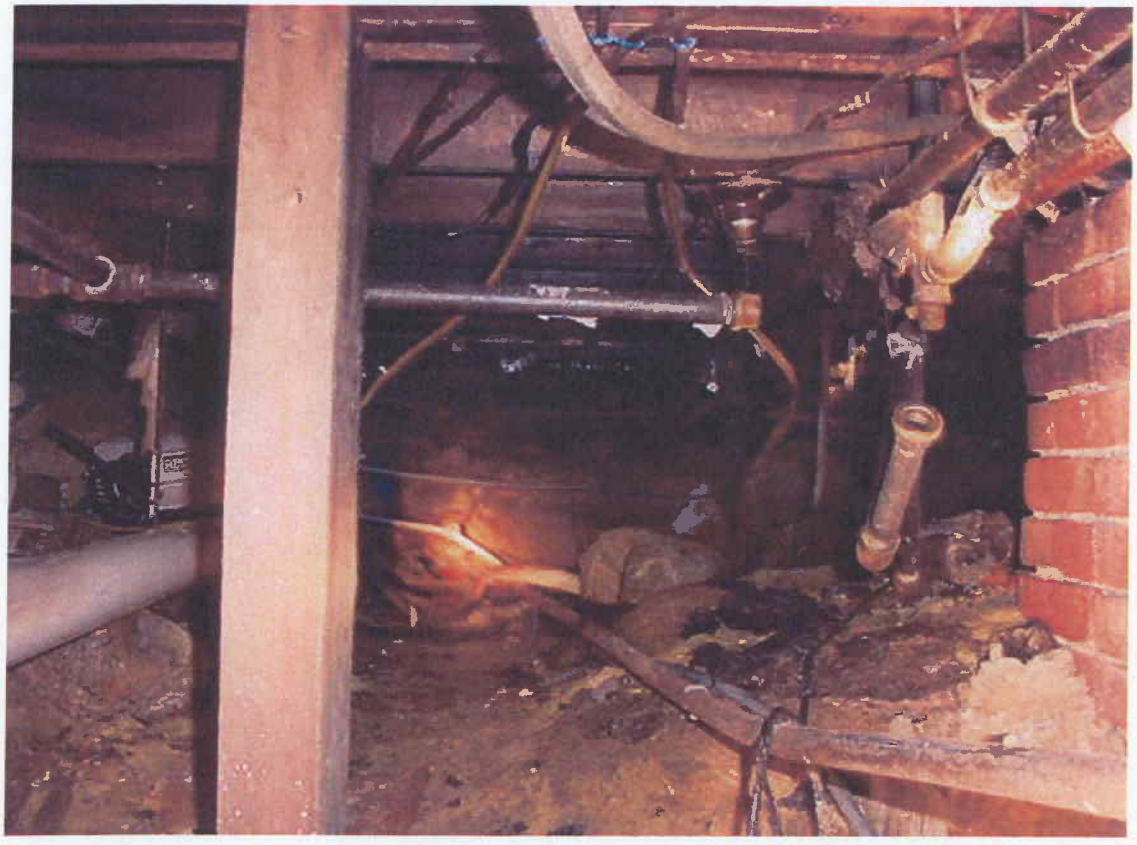


EXHIBIT 3

Service Line from 88 Waltham Street

NSTAR Gas Company service line recovered from 88 Waltham Street, Maynard.

Portion of gas service line recovered from crawl space of 88 Waltham Street, Maynard.

EXHIBIT 4

Operating Pressure of Service Line

IR PL 1-5 Provide records for the main on Waltham Street, including but not limited to, installation date, MAOP, leak history (over the last 2 years) and operating pressure at the time of the incident. Include in your response a description of any maintenance or replacement work on the main within the last 2 years

Response

GIS records indicate that the 2-inch steel main on Waltham Street was installed in 1924. No other records related to the main installation exist. Please see Exhibit 1-5-1. The MAOP of the main is 60 psig. Over the two years prior to the incident, two Class III leaks were found on Waltham Street, as follows:

September 11, 2006 @ Powder Mill Rd. (Leakage Control Report# 172857, Exhibit 1-5-2);

November 20, 2007 @ Hemlock Lane; recheck of previously known leak discovered (August 31, 2001. (Leak Management System Leak# 182249, Exhibit 1-5-3)

The operating pressure at the approximate time of the incident was 45 psig per the SCADA pressure log, Exhibit 1-5-4.

No maintenance or replacement work has been performed on the main on Waltham Street within the last two years

EXHIBIT 5

Maynard Fire Department Report

Maynard Fire Department | 01/03/2008 | 8000016 | 0

K1 Person / Entity Involved

Business name (if applicable) | Phone

Prefix	First Name	MI	Last Name	Suffix
MR	Aaron		Jeanson	

Check if same address as incident

Number	Prefix	Street or Highway	Street Type	Suffix
88		Waltham	ST	

Post Office Box | Apt./Suite/Room | City: Maynard

State: MA | Zip: 01754

K2 Owner — Same as Person Involved

Business name (if applicable) | Phone

Prefix	First Name	MI	Last Name	Suffix

Check if same address as incident

Number	Prefix	Street or Highway	Street Type	Suffix

Post Office Box | Apt./Suite/Room | City | Insurance Co.

State | Zip | Total Insurance

L Remarks

Comments for this incident have been printed on an additional comments page.

M Authorizatcn

00817	X Stephen J. Kulik	Chief	Incident C	01/04/2008
Officer in charge ID		Position or Rank	Assignment	Date
00825	X William H. Soar	Capt.	Shift Comm	01/04/2008
Member Making Report		Position or Rank	Assignment	Date

Maynard Fire Department

A

FDID	State	Incident Date	Station	Incident Number	Exposure
17174	MA	01/03/2008	HQ	8000016	000

☐ Delete ☐ Change ☐ No Activity

NFIRS-1 Basic

B. Location

☐ Address on Wildland Form Census Tract

☑ Street Address ☐ Intersection ☐ In front of ☐ Rear of ☐ Adjacent to ☐ Directions

Number	Prefix	Street	Type	Suffix
88		Waltham	ST	

Apt/Suite	City	State	Zip Code
	Maynard	MA	01754

Cross Street or Directions, as applicable

C Incident Type
1110 Building Fire

D Aid Given or Received
1 ☑ Received
2 ☐ Automatic Rec'vd
3 ☐ Given
4 ☐ Automatic Given
5 ☐ Other Aid Given
N ☐ None

Their FDID
Their State
0000000 Their Incident

E1 Dates & Times

		Mon. Day	Year	Time
Alarm		01/03/08		18:21
Arrival	☑ Arrival	01/03/08		18:23
Control	☑ Control	01/03/08		21:30
Last Unit Clear	☑ Last Unit Clear	01/04/08		00:46

E2 Shifts / Alarms

Shift	Alarms	Dist.
1	3	01

E3 Special Studies

ID# Value

MA Only ☐ Critical Incident ☐ Team Mobilized Circumstances

F Actions Taken
11 Extinguish
Primary Action Taken (1)
12 Salvage & overhaul
Additional Action Taken (2)
Additional Action Taken (3)

G1 Resources

	Apparatus	Personnel
Suppression	12	0
EMS	1	0
Other	2	0

☐ Check if counts include mutual aid resources

G2 Dollar Loss & Values

LOSSES:		NONE
Property	150000	☐
Contents	75000	☐
PRE-INCIDENT VALUE		
Property	350000	☐
Contents	100000	☐

Completed Modules
☑ Fire-2
☑ Structure-3
☐ Civ. Casualty-4
☐ Fire Casualty-5
☐ EMS-6
☐ Hazmat-7
☐ Wildland-8
☑ Apparatus-9
☐ Personnel-10
☐ Arson-11

H1 Casualties
☑ None

	Deaths	Inj.
Fire Service	0	0
Civilian	0	0

H2 Detector Alerted Occupants
1 ☐ Yes
2 ☐ No
U ☑ Unknown

H3 Hazmat Release
N ☑ None
1 ☐ Natural Gas
2 ☐ Propane Gas
3 ☐ Gasoline
4 ☐ Kerosene
5 ☐ Diesel Fuel/Fuel Oil
6 ☐ Household Solvents
7 ☐ Motor Oil
8 ☐ Paint
0 ☐ Other

I Mixed Use Property
NN ☑ Not Mixed
10 ☐ Assembly Use
20 ☐ Education Use
33 ☐ Medical Use
40 ☐ Residential Use
51 ☐ Row of Stores
53 ☐ Enclosed Mall
58 ☐ Business & Resid.
59 ☐ Office Use
60 ☐ Industrial Use
63 ☐ Military Use
65 ☐ Farm Use
00 ☐ Other Mixed Use

1st Company to Arrive: E-1

**Alarm 911- Tie Line

J Property Use
419 1 or 2 family dwelling

17174	MA	01/03/2008	HQ	8000016	000	☐ Delete ☐ Change	NFIRS Comments
FDID	State	Incident Date	Station	Incident Number	Exposure		

.We received a call on 911 reporting a Bld. Fire at 88 Waltham St. Struck Box 44 and responded with E1,E4, L1. E4 reported off with smoke showing and the occupants out of the Bld. E1 dropped a 4 inch supply line from the hydrant at Waltham and wood Ln. and proceeded to the scene . On arrival a working fire was requested. E1 advanced a 1.75 hand line into the structure to the basement where the fire originated. C10 arrived at 1823 and assumed command .E2 on arrival was told to help E1 with the fire attack. E3 on arrival streched a second line to back up the other line. command requested a second alarm at 1831 bringing mutual aid from Acton , Stow, and Sudbury , concord covered the station. First attempts to contain the fire seemed successful but a broken gas line from the street flashed twice and command ordered the bld. evacuated and requested the gas company to respond as soon as possible. Both Nstar gas and electric responded . A Third alarm was requested at 1855 bringing a Concord and sudbury engine to the scene. The power was cut however shut down of the gas was delayed due to location of the street main. Several companies were released by command while waiting for the gas shut down. however during this aprox. 35-40 minute time frame the fire intensified and started to run the walls with the possibility of overtaking the structure. command had the dismissed companies return to the scene and interior operations resumed with the gas still leaking. Acton fire R-29 was on scene at 2049 for air supply . Operations continued and the fire was knocked down and declared under control at 2130. Salvage and overhaul continued while 2nd and 3rd alarm companies picked up. At 2208 the 1st alarm companies were dismissed with the exception of E2 which was held for detail company . The 1st alarm companies returned to quarters and were returned to service . At that time the Hudson cover company was released. Off duty members were released at 0003 and at 0046 E2 was clear from the detail and returned to Quarters and placed back in service and the off duty members released.

Equipment used 250 Ft. 4 inch supply line, 3 -1.75 inch hand lines, multiple air packs, multiple hand tools , 4 power saws, 1 30 ft. ground ladder, Generator and portable lights.

Insurance Agency Gallant and Brock 199 Great Rd. Acton Ma. 01720

Insurance Carrier Cambridge Mutual Ins. 95 Old River Rd. Andover Ma.

Policy # Hp 2525522 Effective date 8-14-07- 8-14-08

Dwelling $214,000

Property $107,000

Personal Liability $ 1,000,000

The unoffical cause is the use of space heater in a confined area to thaw frozen pipes,

The offical cause is still pending the outcome of the F.I.U. Investigation.

Maynard Fire Department

A

17174	MA	01/03/2008	HQ	8000016	000
FDID	State	Incident Date	Station	Incident Number	Exposure

☐ Delete ☐ Change ☐ No Activity

NFIRS-2 Fire

B. Property Details

B1 1 — No. of residential units in building of origin ☐ Not Residential

B2 1 — No. of buildings involved ☐ Bldgs not involved

B3 0 — Acres burned (outside fire) ☑ None ☐ Less than one acre

C On-Site Materials or Products ☑ None

NNN — On-site materials (1)
1 ☐ Bulk storage or warehousing
2 ☐ Processing or manufacturing
3 ☐ Packaged goods for sale
4 ☐ Repair or Service

On-site materials (2)
1 ☐ Bulk storage or warehousing
2 ☐ Processing or manufacturing
3 ☐ Packaged goods for sale
4 ☐ Repair or Service

On-site materials (3)
1 ☐ Bulk storage or warehousing
2 ☐ Processing or manufacturing
3 ☐ Packaged goods for sale
4 ☐ Repair or Service

D Ignition

D1 71 Area of origin: Substructure area or space, cra

D2 12 Heat Source: Radiated, conducted heat from

D3 17 Item first ignited: Structural member or framing

D4 63 Type of material first ignited: Sawn wood, including all finishe

☐ Confined to item

E1 Cause of Ignition ☐ Exposure Report
1 ☐ Intentional
2 ☑ Unintentional
3 ☐ Failure of equipment
4 ☐ Act of nature
5 ☐ Cause under investigation
U ☐ Undetermined after invest.

E2 Factors Contributing ☐ None

12 Heat source too close to combustibles. — Factor contributing to ignition (1)

Factor contributing to ignition (2)

E3 Human Factors Contributing to Ignition
1 ☐ Asleep ☑ None
2 ☐ Possibly impaired by alcohol or drugs
3 ☐ Unattended person
4 ☐ Mentally disabled
5 ☐ Physically disabled
6 ☐ Multiple persons
7 ☐ Age was a Factor

Estimated age
1 ☐ Male 2 ☐ Female

F1 Equipment Involved in Ignition ☐ None

143 Heater, oil filled — Equipment involved

Brand
Model
Serial #
Year

F2 Equipment Power

11 Electrical line voltage (> 50 vol — Equipment Power Source

F3 Equipment Portability
1 ☑ Portable
2 ☐ Stationary

Portable equipment normally can be moved by one person, is designated to be used in multiple locations.

G Fire Suppression Factors ☑ None

NNN None — Fire suppression factor (1)

Fire suppression factor (2)

Fire suppression factor (3)

H1 Mobile Property Involved ☑ None
1 ☐ Not involved in ign, burned
2 ☐ Involved in ign, did not burn
3 ☐ Involved in ignition and burned

H2 Mobile Property Type & Make

Mobile property type

Mobile property make

Mobile property model — Year

License Plate Number — State — VIN Number — Car Stolen

Local Use
☐ Pre-Fire Plan Available

Some of the nformation presented in this report may be based upon reports from other agencies:
☐ Arson report attached
☐ Police report attached
☐ Coroner report attached
☐ Other reports attached

Maynard Fire Department | 01/03/2008 | 8000016 | 0

I1 Structure Type
1 [✓] Enclosed Building
2 [ ] Portable/mobile structure
3 [ ] Open structure
4 [ ] Air supported
5 [ ] Tent
6 [ ] Open platform (e.g. piers)
7 [ ] Underground structure
8 [ ] Connective structure
0 [ ] Other type of structure

I2 Building Status
1 [ ] Under construction
2 [✓] Occupied & operating
3 [ ] Idle, not routinely used
4 [ ] Under major renovation
5 [ ] Vacant and secured
6 [ ] Vacant and unsecured
7 [ ] Being demolished
0 [ ] Other
U [ ] Undetermined

I3 Bldg Height
2 Stories at or above grade level
1 Stores below grade level

I4 Main Floor Size
NFIRS-3 Structure Fire
700 Total square feet
OR
0 Length (ft) BY 0 Width (ft)

J1 Fire Origin
1 [✓] Below grade
Story of Fire Origin

J2 Fire Spread
2 [ ] Confined to room of origin
3 [ ] Confined to floor of origin
4 [✓] Confined to building of origin
5 [ ] Beyond building of origin

J3 No. of Stories Damaged by Flame
Count the ROOF as part of the highest story
1 Number of stories w/ minor damage (1 to 24% flame damage)
1 Number of stories w/ significant damage (25 to 49% flame damage)
0 Number of stories w/ heavy damage (50 to 74% flame damage)
0 Number of stories w/ extreme damage (75 to 100% flame damage)

K Material Contributing Most to Flame Spread
[ ] No flame spread OR same as material first ignited OR unable to determine
K1 10 Structural component or finish, ot
Item contributing most
K2 63 Sawn wood, including all finished l
Type of material contributing most

L1 Presence of Detectors
N [ ] None Present
1 [✓] Present
U [ ] Undetermined

L2 Detector Type
1 [✓] Smoke
2 [ ] Heat
3 [ ] Combination smoke - heat
4 [ ] Sprinkler, water flow detection
5 [ ] More than 1 type present
0 [ ] Other_____
U [ ] Underdetermined

L3 Detector Power Supply
1 [ ] Battery only
2 [ ] Hardwire only
3 [ ] Plug in
4 [ ] Hardwire with battery
5 [ ] Plugin with battery
6 [ ] Mechanical
7 [ ] Multiple Detectors & PS
0 [ ] Other_____
U [✓] Undetermined

L4 Detector Operation
1 [ ] Fire too small to activate
2 [✓] Operated
3 [ ] Failed to operate
U [ ] Undetermined

L5 Detector Effectiveness
1 [ ] Alerted occupants they resonded
2 [ ] Occupants failed to respond
3 [ ] There were no occupants
4 [ ] Failed to alert occupants
U [✓] Undetermined

L6 Detector Failure Reason
1 [ ] Power failure, shutoff
2 [ ] Improper installation or placement
3 [ ] Defective
4 [ ] Lack of maintenance, cleaning
5 [ ] Battery missing or disconnected
6 [ ] Battery discharged or dead
0 [ ] Other _____
U [ ] Undetermined

M1 Presence of Auto. Exting. System
N [✓] None Present
1 [ ] Present

M2 Type of Automatic Extinguishment
1 [ ] Wet pipe sprink.
2 [ ] Dry pipe sprink.
3 [ ] Other sprink sys
4 [ ] Dry chem. sys
5 [ ] Foam system
6 [ ] Halogen sys
7 [ ] CO2 system
0 [ ] Other system
U [ ] Undetermined

M3 Automatic Extinguishment System Operation
1 [ ] Operated & effective
2 [ ] Operated & not effective
3 [ ] Fire too small to activate
4 [ ] Failed to operate
0 [ ] Other
U [ ] Undetermined

M4 Number of Sprinklers
0

M5 Failure Reason
1 [ ] System shut off
2 [ ] Not enough agent
3 [ ] Agent discharged but did not reach fire
4 [ ] Wrong type of system
5 [ ] Fire in unprotected area
6 [ ] System damaged
7 [ ] Lack of maintenance
8 [ ] Manual intervention
0 [ ] Other _____
U [ ] Undetermined

EXHIBIT 6

Depth of Main on Waltham Street

Exhibit 2-3-3

915083056901 01:12:05 p.m. 05-20-2008 12/27

D40543

NSTAR GAS
COMPANY ACTIVITY REPORT
COMPANY 200

DIG-SAFE # 20081706714

PERMIT #

SHEET 1 OF 1

ADDRESS 88 WALTHAM ST TOWN MAY DATE 5.19.08 COST AREA 34310 WORK ORDER

TYPE OF WORK: New Serv ORDER NUMBER

ACCOUNT NUMBER: 01647587

OLD SERVICE SIZE	MATRL	MIN YR PRESS	LENGTH	OLD MAIN SIZE	MATRL	MIN YR PRESS	LENGTH

LEAK REPORT #

LEAK CLASS

SOAP TESTED: X

PRESSURE TESTED @ PSIG FOR 99 LB 17 MIN HRS

AN OD RS

SIZE	#	BARRICADES #	PLATES - NUMBER	SIZE
				X
				X
				X

DEPTH OF PITS:

CONDITION OF PIPE: FAIR TO POOR

PAVING L	W	TH	TYPE	LOC	SOD / LS. L	W	PIPELINE FOOTAGE	SIZE	MAT	PRESS	DEPTH	SAND, HT OR GRAVEL	LEDGE / BOULDERS L	W	D	HOLES L	W	D	MAIN VALVES
6	4	4	T	ST	3½	2'	55	½	PL	IP	2'-6"								
8	2	4	T	ST															
4	4	4	T	DRIVE															

TYPE OF PAVING TO BE PUT BACK IF DIFFERENT:

DEPTH OF PAVING TO BE PUT BACK IF DIFFERENT:

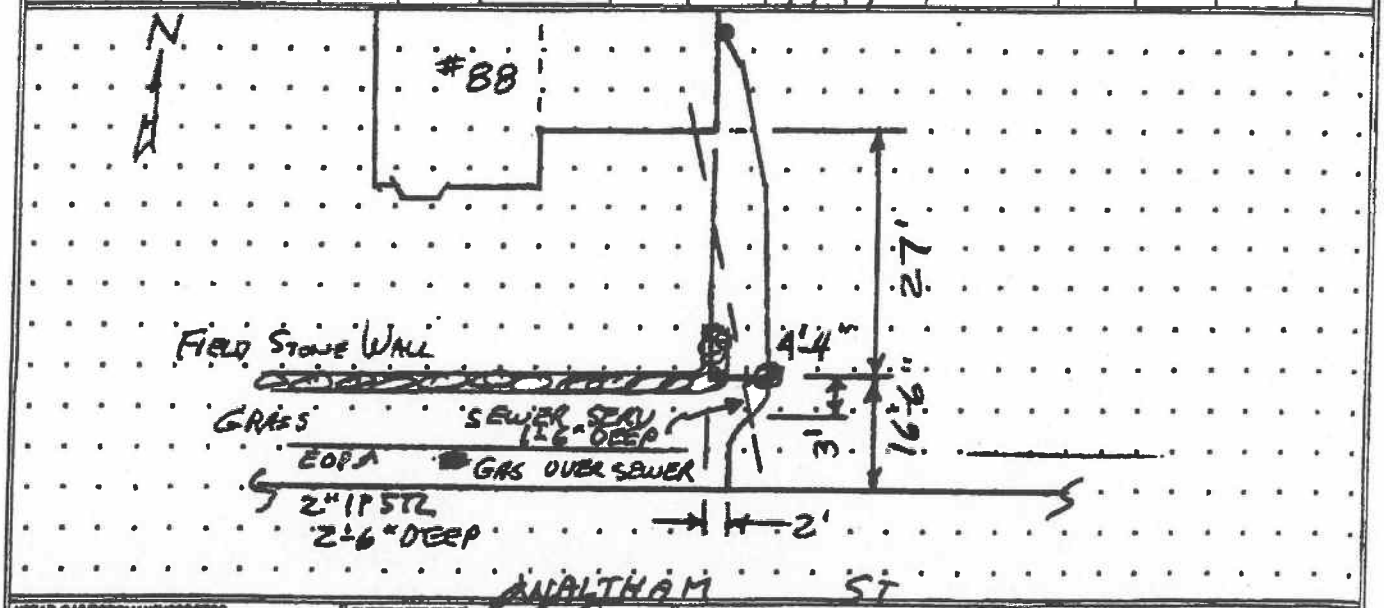
REMARKS: New Serv main to Bld.

NOTE Hit sewer serv. Not marked. Town repaired

PERSONNEL AND EQUIPMENT

EQUIPMENT & VEHICLES	NAME OR JOB TITLE	HOURS
6140	MINASIAN	
	DANGHVE	
74110	GARDZINA	

MATERIAL	PLAS	STL	SIZE	QUAN	MATERIAL	PLAS	STL	SIZE	QUAN	MATERIAL	PLAS	STL	SIZE	QUAN
PIPE	✓		½	55	TEE WELD		✓	½	1	REDUCER				
PIPE					T.D.W. TOP					L.W. COOK				
METER FIT		✓	3/4	1	T.D.W. TEE					ELBOW				
RISER	✓	✓	½x3/4	1	EXP PLUG					CLAMP				
COUPLING MST	✓		½	4	PLUG					PLCB KIT				
VALVE	✓		½	1	CAP					MAXI CPLNG				
WIRE				55	VALVE BOX	✓			1	FLOW LIMITER	✓		½	1
TAPE				55	TRNS FIT					EL FUSION CPLG				
POSI LOCK					ANODES			17	1					



NSTAR GAS/FOREMAN/INSPECTOR: GARDZINA

SUPERINTENDENT

CONTRACTOR

CONTRACTOR FOREMAN

EXHIBIT 7

Service Line Installation

PIPE RUN: 2205 WALTHAM ST MAY INTERMEDIATE

PAR. #1 13-
1911

INSTALLED PIPE ID. 7675 RETIRED PERCENT: 100%
NEW MAIN 367' of 4.00" Uncoated Steel
Description: NORTH SIDE FROM MAIN ST TO PARKER ST

INSTALLED PIPE ID. 7676 RETIRED PERCENT: 20%
NEW MAIN 996' of 3.00" Uncoated Steel
Description: NORTH SIDE FROM PARKER ST TO HAYES ST

INSTALLED PIPE ID. 7677 RETIRED PERCENT: 2%
NEW MAIN 816' of 2.00" Uncoated Steel
Description: NORTH SIDE FROM HAYES ST TO #74

REFERENCE:
BK 7 - PG 90 / BK 8 - PG 95,119 / PLAN

####################

PAR. #2 13-
1924

INSTALLED PIPE ID. 7678
NEW MAIN 542' of 2.00" Uncoated Steel
Description: NORTH SIDE FROM #74 TO #95

REFERENCE:
SAUND. BK 10 - PG 20 / PLAN

####################

PAR. #3 13-6046 4180
1965

INSTALLED PIPE ID. 7679
NEW MAIN 782' of 2.00" Uncoated Steel
Description: NORTH SIDE FROM #95 E'RLY TO #120

REFERENCE:
BK 9 - PG 112

####################

PAR. #4 13-8500
1973

INSTALLED PIPE ID. 7680
NEW MAIN 744' of 2.00" Coated Steel
Description: SOUTH SIDE FROM #120 E'RLY TO DUMPSIDE GARDEN APTS.

1975 ± 618' OF 2" IP Running behind #'s 141 → 145
188' OF 2" IP Running behind #'s 145 & 147
(stage coach Apt's)

ORIGINAL

Distribution Record

Street & No. 88 Waltham St., Maynard   Tax District 122.04.2-86125   Service Order № 2737

Name-Owner

Address-Owner   Date 8/24/49 19

Name-Occupant Joseph Congami   Service-New ☐   Relay—" ☑

COST SUMMARY	Public	Private
Material		
Labor		
Car Checks		
Auto		
Compressor		
Total Direct		

SERVICE DATA

Main to St. Line 17 Ft. 0 In.

St. Line to Bldg. 4 Ft. 0 In.

P.Ovr Total 21 Ft. 0 In.

CHARGE CUSTOMER

Min. Charge	No charge	
Excess Ft.		
Amount		

Abandoned- 21 - 1" 3/4 yds

Ft. @ laid before 1918

GAS MATERIAL	Size or Number	Private Property	Public Property	Cost Unit	COST Private Property	COST Public Property
Pipe-Ft.	1"		21			
"	3/4"		2			
" I.d. fiber	5"		2	OBSOLETE INFO		
Caps	3/4"		1	THIS MAIN ON		
"						
Elbows	1"x3/4"		1	Traced		
"						
Gate						
" Box	7+		1			
Stop Clock M.n.c.c	1"		1	1 – (1 1/8)		
Plugs						
"						
Nipples	3/4"x2"		3			
"						
Tees	3/4"		1			
"						
Unions						
"						
Dresser Coupling	3/4"x12"		1			
Coupling	1"x3/4"		1			
TOTALS	—	—	—			

MY05260

COMPLETED

Service from 2" H.P." Main on South side Waltham St. 8-24 1949 By Cook

CA-21C-15T

IR PL 1-6 Provide records for the service line to 88 Waltham Street, including but not limited to: installation date, line size, material, pressure, number of meters, service line leak history and maintenance history of company owned property (meters, regulators, piping)

Response

Records indicate the original ¾inch bare steel service was installed in 1911 (Exhibit 1-6-1). A 21-foot section was relayed with 1-inch bare steel on August 24, 1949 (Exhibit 1-6-2). On February 5, 1982 the entire service was inserted with ½inch plastic (Exhibit 1-6-3).

At the time of the incident there were two meters at 88 Waltham St. The second meter was installed in 2000 (Service Call Management system service record, Exhibit 1-6-4) and was shut off on October 23, 2006 at the request of the customer (Service Call Management system service record, Exhibit 1-6-5; Gas Mobile–Work Order History Report, Exhibit 1-6-6).

The Company has no record of service leaks at 88 Waltham St. The Company performed a seven-year meter exchange on June 13, 2003 (Exhibit 1-6-7).

EXHIBIT 8

Department Notification of the Incident

Stevens, William (DPU)

From: Stevens, William (DPU)
Sent: Wednesday, January 09, 2008 8:54 AM
To: Bourne, Christopher (DPU)
Subject: 88 Waltham Street, Maynard, MA- Jan. 3, 2008 Incident?

Chris,

I just got a call from Tim Delaney, 603-819-3191 from EFI investigators. He reported that around 6 p.m. January 3, 2008, a "gas related" fire at 88 Waltham Street, Maynard, MA - a two story and single family house. Tim reported that there is about a 30 foot gas line running inside the house, before the meter. Part of the line passes through a small crawl space (before the meter). There was an ignition, and there is house fire damage where the crawlspace was.

Tim stated that a witness saw a flash in the crawl space. The Fire Department vented the gas by cutting a hole in the floor. Tim also reported that there was a second flash. NSTAR has the meters, and Tim reported that NSTAR is doing work on the premises in the driveway.

Tim reported that NSTAR has the materials and wondered whether there would be any testing of the pipes.

William Stevens
Assistant General Counsel
Pipeline Engineering and Safety Division
Commonwealth of Massachusetts
Department of Public Utilities
One South Station
Boston, MA 02110
tel 617.305.3620
fax 617.345.9103

EXHIBIT 9

Leak Survey Prior to Incident

IR PL 1-9 Provide the date and results of the last leakage survey of the mains and the gas service to 88 Waltham Street, conducted prior to the incident. Provide the date and results of the last atmospheric corrosion survey of the exposed service line.

Response

Prior to the incident, a mobile leakage survey was last conducted on the main on Waltham Street in the area of the incident on March 6, 2007. There were no leaks found during the mobile survey.

Services in the Town of Maynard were scheduled for walking survey in 2005 and the Company is currently searching its archives to attempt to locate the records of those surveys.

EXHIBIT 10

Post-Incident Leak Survey

IR PL 1-10 Provide the date and results of the leakage survey conducted after the incident.

Response

A walking leakage survey was conducted on the service piping at 88 Waltham Street on January 11, 2008. Gas readings ranged from 1% gas to 3% gas at the building foundation and 10% gas a short distance from the foundation in the vicinity of the 90-degree bend in the service. In the street, a reading of 10% gas was observed at the main. The leak was referred to gas distribution as a Class I leak at 2:05 pm on January 11, 2008 (Special Request Survey form dated 1-11-08, Exhibit 1-10-1; Leakage Control Report # 182263, Exhibit 1-10-2).

A walking leakage survey was conducted over the main and services on Waltham Street between Third Street and Wood Lane on January 17, 2008. Two class III leaks were discovered during that survey (Special Request survey form dated 1-17-08, Exhibit 1-10-3):

92 Waltham Street (Leakage Control Report # 181393, Exhibit 1-10-4);

Waltham Street @ First Street (Leakage Control Report # 181392, Exhibit 1-10-5)

EXHIBIT 11

Photographs of Incident Site and Residence

Location of Meter set in basement.

Service line and shutoff located in original basement entering from crawl space.

Threaded coupling where gas may have escaped

88 Waltham Street

Space heater used in crawl space