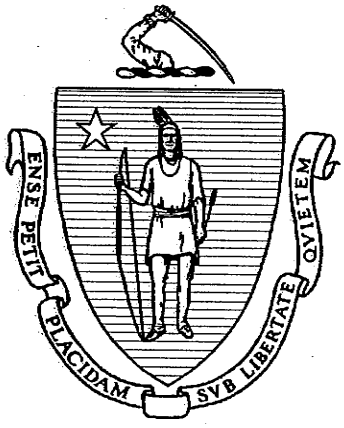
COMMONWEALTH OF MASSACHUSETTS

OFFICE OF CONSUMER AFFAIRS AND BUSINESS REGULATION

DEPARTMENT OF
TELECOMMUNICATIONS & ENERGY

PIPELINE ENGINEERING AND SAFETY DIVISION



INCIDENT REPORT

65 Main Street, Hopkinton, Massachusetts
July 24, 2002

Date of Issue: November 6, 2003

TABLE OF CONTENTS

I. INTRODUCTION

A. Scope of This Investigation

The Massachusetts Department of Telecommunications and Energy ("Department" or "DTE"), pursuant to G.L. c. 164, § 105A and a Federal Certification Agreement as provided for in 49 U.S.C. § 60105, has investigated a natural gas ("gas") explosion ("incident"),[1] that occurred at approximately 1:41 a.m. on July 24, 2002. The incident resulted in the death of two young girls and extensive damage to the multi-family dwelling at 65 Main Street, Hopkinton ("dwelling" or "structure"). NSTAR Gas Company ("NSTAR" or "Operator"), the operator of the distribution system, estimated the property damage to be between $300,000 and $400,000[2] (Exh. 1).

Upon notice of an incident, the Department conducts an investigation to determine the operator's compliance with the Minimum Federal Safety Standards contained in 49 C.F.R. Part 192 and the Massachusetts pipeline safety regulations contained in 220 C.M.R. §§ 100-113. The Department also enforces the drug and alcohol testing requirements contained in 49 C.F.R. Parts 40 and 199. Subsequent to this incident, the operator did not drug test employees due to the

---

[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. § 191.3.

[2] NSTAR informed the Department that the property owner's insurance carrier assessed the structure at a value of $282,000.

exclusion in 49 C.F.R. § 199.105(b), which states:

> "Each operator shall conduct the following drug tests for the presence of a prohibited drug:
> . . . .
> (b) *Post-accident testing*. As soon as possible but no later than 32 hours after an accident, an operator shall drug test each employee whose performance either contributed to the accident or cannot be completely discounted as a contributing factor to the accident. An operator may decide not to test under this paragraph but such a decision must be based on the best information available immediately after the accident that the employee's performance could not have contributed to the accident or that, because of the time between that performance and the accident, it is not likely that a drug test would reveal whether the performance was affected by drug use."

49 C.F.R. § 199.105(b). Because the last NSTAR service visits were to turn on gas and relight a water heater on June 5, 2002, NSTAR has complied with 49 C.F.R. § 199.105(b).

The Department has established procedures for determining the nature and extent of violations of regulations pertaining to the safety of pipeline facilities and the transportation of gas. These procedures also set forth the standards used to determine the amount of applicable civil penalty. The procedures are set forth in 220 C.M.R. §§ 69.01-69.12. Concurrent with the release of this report, the Department has issued a Notice of Probable Violation ("NOPV") stating that the Department has reason to believe violations of state and federal pipeline safety regulations may have occurred. The issuance of the Incident Report and NOPV commences an enforcement action as specified in 220 C.M.R. §§ 69.01-69.12. An operator served with a NOPV has a variety of response options. The operator may: (1) pay any proposed civil penalty; (2) submit an offer in compromise; (3) request an informal conference; or (4) submit a written reply disputing the alleged violations. 220 C.M.R. § 69.04. In addition, an operator served with a NOPV may request an adjudicatory hearing, 220 C.M.R. § 69.06, or enter into a consent order,

220 C.M.R. § 69.08. If the Department finds, after an adjudicatory hearing, that the operator has violated any provisions of any applicable codes, it may issue a remedial order. 220 C.M.R. § 69.07.

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

This Incident Report is submitted to U.S. DOT in DTE's fulfillment of this regulatory obligation and to inform U.S. DOT, to the extent possible, of the cause and circumstances surrounding the incident.

B. Overview of the Incident

On the evening of July 23, 2002, eleven of the twelve residents of the four apartments at 65 Main Street, Hopkinton retired before midnight.[3] Two members of the Webster Family, residents of the first floor, and Mr. Maijs, a single resident on the upper level, awoke to a loud sound coming from the basement (Exhs. 2a; 2b; 2c; 2d). In an interview with a Department investigator ("DTE Investigator"), Ms. Janet Webster described the sound as a loud motor which she initially thought was a car outside, but then thought sounded as if it came from the basement (Exh. 2a). She said the sound woke her about five minutes before she called 911 on her cell

---

[3] This information was taken from the statements submitted to the Hopkinton Police by many of the adult residents of the building (Exh. 2).

phone (id.). Ms. Webster noticed a strong odor of gas in the first floor hallway by the basement door (Exh. 2b). On the second floor, Mr. Maijs smelled a strong odor of gas near the pipe entering his bathroom floor (Exh. 2c). In addition, those residents who were awake prior to the explosion described the sound as "similar to the malfunctioning sump pump" (Exh. 2b); "like a tea kettle ready to burst" (Exh. 2d); "like the house was alive … vibration going through the house … like someone was in the basement in a car and had the gas pinned to the floor" (Exh. 2e). The Webster Family fled to their car and parked it across the street (Exh. 2b). Ms. Webster dialed 911 and while talking with the Hopkinton Fire Department ("Fire Department") by cell phone, the house exploded (id.). The time was approximately 1:41 a.m. (Exh. 1).

Most residents were able to work their way out of the collapsed building; however, the entire Carey Family, who resided on the second floor, was trapped. Mr. Carey extracted himself and his wife, but they were unable to free their children, two girls ages four and five (Exh. 2f). Rescue personnel recovered one of the Carey children and transported her to the hospital, where she was later pronounced dead (Exh. 3). The second Carey child was pronounced dead by a paramedic who entered the rubble (Exh. 4). The removal of the deceased victim required cutting and removal of rubble which could not immediately be accomplished given that gas was entering the dwelling from a broken gas line (id.). The Hopkinton Fire Chief ordered the evacuation of all emergency personnel until NSTAR could shut down the gas line (id.). At 5:07 a.m., NSTAR stopped the gas flow to the building, and the emergency personnel completed recovery of the remaining victim at 6:13 a.m. (id.).

C. Eliminating the Hazard

The following chronology was taken from NSTAR's Chronological Summary of Events (Exh. 5). On July 24, 2002, at 1:49 a.m., NSTAR dispatch office received a call regarding an explosion and building collapse at 65 Main Street, Hopkinton. At 2:12 a.m., an NSTAR service representative and a distribution technician arrived at 65 Main Street. Upon their arrival, the Fire Department ordered the NSTAR personnel to shut off the service line[4] to the damaged structure. Between 2:35 a.m. and 2:55 a.m., NSTAR shut off the gas service to 63, 66, 67, and 70 Main Street. NSTAR checked these buildings for evidence of gas. No gas was detected in any of these buildings. Between 3:05 a.m. and 3:30 a.m., NSTAR leak surveyed the area sewer lines and catch basins for the presence of gas. All readings were negative. NSTAR also barholed[5] the street, and at 3:30 a.m. determined that there was no gas underlying the street surface in the vicinity of the distribution lines.

Since a section of the collapsed structure overlay the service line value ("curb valve"),[6] the valve was inaccessible and NSTAR was unable to immediately shut off the gas flowing into the collapsed structure. The NSTAR personnel summoned additional help to the scene to assist

---

4 *"Service line* means a distribution line that transports gas from a common source of supply to (1) a customer meter or the connection to a customer's piping, whichever is farther downstream, or (2) the connection to a customer's piping if there is no customer meter. A customer meter is the meter that measures the transfer of gas from an operator to a consumer." 49 C.F.R. § 192.3.

5 "Barholing" is the act of driving holes into the ground or street surface over a pipeline followed by insertion of a probe attached to a combustible gas indicator to detect or measure gas concentrations below the ground.

6 "Curb valve" is a valve inserted into a service line, below grade, and is used to stem the flow of gas to the customer.

with locating and closing valves on the distribution main.[7] At approximately 3:20 a.m., an NSTAR distribution crew arrived and began locating the valves on the distribution main. The crew also began excavating two points along the main, east and west of the service line entry to the structure, approximately 86 feet apart. They intended to isolate the 86-foot main segment and the service line, squeeze off[8] the plastic main, and then cut it and cap the ends. The squeeze off was effected at 5:07 a.m., stopping the flow of gas to the structure (Exh. 6 (photo)).

II. BACKGROUND

The incident occurred in a two and one-half story structure at 65 Main Street, Hopkinton. This section of Main Street consists of residential and small commercial buildings, one to three stories. The service line entered the basement of the structure through its north wall, approximately 4½ feet from the building's west wall. In response to the Department's inquiry, NSTAR provided a map indicating a three-inch plastic gas main, installed in 1979, underlay Main Street (Exh. 7). The main had 3½ feet of cover as measured by a DTE Investigator. The operating pressure of the main was 57 pounds per square inch gauge ("psig") (Exh. 8).

The original service line was a one-inch steel line installed in 1947 (Exh. 9). In 1974, a ½-inch plastic service line was installed by its insertion into the steel service line from the curb valve to the interior of the basement (Exh. 10a). The remaining section of the service line was a 1979 direct buried installation of a ½-inch plastic segment which replaced the original steel

---

7 *"Main* means a distribution line that serves as a common source of supply for more than one service line." 49 C.F.R. § 192.3.

8 "Squeezing Off" is the process of collapsing the distribution main with a mechanical device to stem the flow of gas.

service line segment from the main to the curb valve (Exh. 10b).

A review of the NSTAR records indicates that there is no document demonstrating NSTAR tested for maximum operating pressure either the 1974 or the 1979 service line segments prior to placing them into service **(**Exhs. 11, 12**)**. Forty-nine C.F.R. Part 192 sets operating limits on pipelines placed into service after August 19, 1970, through the establishment of a maximum allowable operating pressure ("MAOP"):

> "(a) Except as provided in paragraph (c) of this section, no person may operate a segment of steel or plastic pipeline at a pressure that exceeds the lowest of the following:
> . . . .
> (2) The pressure obtained by dividing the pressure to which the segment was tested after construction as follows:
> (i) For plastic pipe in all locations, the test pressure is divided by a factor of 1.5."

49 C.F.R. § 192.619.

NSTAR has no records demonstrating that it had established an MAOP on either of the service line segments, as required by the General Provisions of 49 C.F.R. Part 192, Subpart L, Operations:

> "(a) No person may operate a segment of pipeline unless it is operated in accordance with this subpart.
> (b) Each operator shall keep records necessary to administer the procedures established under §192.605."

49 C.F.R. § 192.603(a)-(b).

The procedure that is set forth in 49 C.F.R. § 192.605 is:

> "(b) *Maintenance and normal operations*. The manual required by paragraph (a) of this section must include procedures for the following, if applicable, to provide safety during maintenance and operations.
> . . . .
> (1) Operating, maintaining, and repairing the pipeline in accordance with each of the requirements of this subpart and Subpart M of this part."

49 C.F.R. § 192.605(b). Because NSTAR was unable to produce documents demonstrating compliance with 49 C.F.R. § 192.619, which documents an operator is required to maintain pursuant to 49 C.F.R. § 192.603, the Department has reason to believe NSTAR may be in violation of 49 C.F.R. §§ 192.619 and 192.603.

III. THE INVESTIGATION

A. Description of the Scene

Upon arriving at the scene at 6:20 a.m. on July 24, 2002 (Exh. 13), two DTE Investigators observed a two and one-half story residential structure, partially collapsed. The north section of the structure's two lower levels had been completely destroyed. The top half story of the structure had collapsed onto the sidewalk and street (Exh. 14). The DTE Investigators observed windows blown out of the structures to the east and west of 65 Main Street. The explosion had blown debris from the first two stories of the structure at 65 Main Street onto the street (Exh.15). There were two excavations in the street that NSTAR had used to squeeze off the main.

The State Fire Marshal ("SFM") investigators removed debris to gain access to the basement (Exh. 16). Assisted by an excavator with a demolition claw, the SFM investigators eventually gained access to the basement where they recovered and took custody of natural gas appliances, meters,[9] regulator,[10] and interior piping (id.). Once the evidence and debris had been removed from the structure and basement, the foundation was filled in with gravel.

B. Pressure Testing of the Main and Service Line

---

9 "Meter" is a device used to measure the flow of natural gas to a customer.

10 "Regulator" is a device used to regulate the pressure of gas to a customer.

To determine any failure point in the distribution system, NSTAR prepared to isolate and pressure test the distribution system in proximity to 65 Main Street. The Department witnesses these tests in a post-incident environment. On July 24, 2002, at approximately 6:47 p.m. (Exh. 5), the SFM allowed NSTAR to excavate the service line to 65 Main Street. NSTAR also enlarged the two excavations at the main where the squeeze-off devices had been installed. This allowed NSTAR to cut out two sections of the main inside the squeeze-off points and install end caps on the termini of the 86-foot main segment. NSTAR also cut out a 39-inch section of the service line[11] where it entered the basement, turning over this evidence to the SFM (Exh. 17). NSTAR then capped off the end of the service line outside the foundation. The upstream end of the service line was still attached to the 86-foot section of the isolated main segment.

Between 7:30 p.m. and 9:50 p.m., NSTAR prepared to pressure test the isolated segment of the distribution system (Exh. 5). This included the 86 feet of three-inch plastic main, the service line to 65 Main Street, and the service line to 66 Main Street, where an air compressor was tied into the service riser to infuse air into the isolated piping segment (id.). After the DTE Investigators reviewed the pressure test configuration, the DTE Investigators observed while NSTAR pressurized the disconnected line segment to 58 psig (Exhs. 18; 19). The DTE Investigators witnessed that the line pressure held stable from 10:15 p.m. to 11:20 p.m. (Exh. 5). Therefore, the pressure test eliminated the 86-foot main segment and the two service line segments as possible sources of gas leakage. The jurisdictional piping inside the structure was

---

[11] This 39-inch segment is listed by Massachusetts Materials Research, Inc. as Items 17 and 18 in MMR Table I.

not tested at this time nor was the non-jurisdictional piping downstream of the meter.[12] The DTE Investigators then directed their attention to the piping inside the foundation of 65 Main Street.

C. Service Calls to 65 Main Street

The Department reviewed documentation regarding NSTAR service visits to 65 Main Street, from June 1, 2001 to June 5, 2002, and identified the following[13]:

1. On June 1, 2001, there was a faint gas odor at the dryer in the Carey apartment (Exh. 20a). NSTAR repaired a leak in the flex hose on the dryer. In addition, the work order indicates that the service person red-tagged[14] the appliance due to an illegal dryer vent (Exh. 20b).
2. On February 22, 2002, NSTAR visited 65 Main Street for a seven-year meter replacement[15] for apartment 3, the DeFreitas' apartment (Exh. 20c).
3. On March 6, 2002, NSTAR performed a seven-year meter replacement for one of the Carey meters[16] (Exh. 20d). A short time later that day, the Careys reported a

---

12 The Department has jurisdiction over operator-owned piping. The customer-owned recovered materials are not jurisdictional to the Department and were not tested as part of this investigation.

13 Table I, below, summarizes the NSTAR work orders (Exh. 20).

14 In general, red-tagging means that the operator shall shut off service to a customer or close off a valve to an appliance until an unsafe condition is corrected.

15 "Each meter for measuring gas … shall, not later than seven years from the date of installation or replacement, be removed by the company … and replaced by it with such a meter which has been newly tested, sealed and stamped in accordance with law." G.L. c. 164, § 115A.

16 The Careys' apartment was served by two meters.

gas odor in the front of the house (Exh. 20e). No leak was found inside or outside the dwelling (Exh 20f).

4. On March 12, 2002, NSTAR performed a seven-year meter replacement for the Webster apartment (Exh 20g).

5. On May 23, 2002, NSTAR visited 65 Main Street once, completing seven-year meter replacements for Maijs (Exh. 20h) and the Careys (Exh. 20i).

6. On May 24, 2002, NSTAR returned to 65 Main Street to turn on the Maijs' gas and relight the Careys' appliances (Exhs. 20j; 20k).

7. On June 4, 2002, NSTAR visited 65 Main Street to shut off one of the Carey meters for non-payment (Exh. 20m).

8. NSTAR returned on June 5, 2002, to turn on the previously shut off Carey meter (Exh. 20n). NSTAR returned later that day to relight the Carey water heater (Exh. 20o).

In 2002, between February 22 and June 5, NSTAR entered 65 Main Street a total of nine times. The purpose of one of those visits was to investigate a reported gas odor which resulted in a negative gas finding. The remaining visits were statutorily required meter changes, and relights, one meter shut-off, and one meter turn-on. NSTAR personnel reported no leakage or odor in their comments while performing the work.

Table I

Visit Number	Date	Time	Work Order	Description of visit
1	06/01/2001	9:20pm-9:35pm	0102-72545	Repair leak on flex connector at dryer.
2	02/22/2002	2:10pm-2:40pm	0202-96521	7 year meter change out and relit appliances.
3	03/06/2002	2:45pm-3:15pm	0203-55159	7 year meter change out.
4	03/06/2002	4:30pm-5:00pm	0203-55717	Investigate odor complaint, no leak found.
5	03/12/2002	12:40pm-1:10pm	0203-82806	7 year meter change out.
6	05/23/2002	11:20am-11:45am	0207-53676	7 year meter change out.
	05/23/2002	11:45am-12:15pm	0207-53683	7 year meter change out.
7	05/24/2002	12:45pm-1:00pm	0207-58312	Relit appliances after meter change out.
	05/24/2002	1:00pm-1:15pm	0207-59243	Relit appliances after meter change out.
8	06/04/2002	7:50am-8:00am	0208-44930	Shut off meter for nonpayment.
9	06/05/2002	3:35pm-4:05pm	0208-44930	Turn on meter after shut off for nonpayment.
10	06/05/2002	8:00pm-8:25pm	0208-54895	Relit water heater after shut off for nonpayment.

D. Leakage Surveys

NSTAR performed a winter leakage survey in January 2002. This survey is in accordance with its Operating and Maintenance Plan ("O&M Plan"). The following is to be used as a guide for conducting additional leak surveys as frequently as experience and technology indicate necessary: "(1) Surveys during winter months when frost heave could result in leakage." O&M Plan OM-60g. A review of the leakage surveys of 65 Main Street, Hopkinton, revealed

there were no leaks observed in the walking or mobile surveys[17] conducted in January 2002. On January 10, 2002, the NSTAR leakage surveyor detected a non-hazardous leak on the service line to 74 Main Street, Hopkinton (Exh. 21). This was the only leak detected on the service lines located between 2 and 106 Main Street (id.). On July 2, 2002, NSTAR conducted a mobile survey of the distribution system underlying the roadway of Main Street, finding no leaks (Exh. 22). NSTAR also performed a business district leakage survey on July 15, 2002. On this date, NSTAR recorded that it leak surveyed sections of Main Street, and it leak surveyed meters in commercial buildings and buildings of assembly (Exh. 23). This record makes no reference to entry into any residence or building in which resided a gas meter (id.).

Forty-nine C.F.R. Part 192 requires that operators leak survey the distribution system periodically. The regulation defines intervals of frequency for leakage survey as stated below:

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

49 C.F.R.§ 192.723(a) and (b)(1) (emphasis added). NSTAR's O&M Plan defines the following terms with respect to leakage survey.

> "a. **Building**: Any structure which is normally or occasionally entered by humans for

---

[17] Leakage surveys are conducted using vehicle-mounted gas detectors to locate leaks underlying the street (mobile survey) or with hand-held units to survey the service lines running from the street to the meter (walking survey).

> business, residential or other purposes, and in which gas could accumulate.
> . . . .
> c. **Business District:** Areas with wall-to-wall paving and/or where the principal commercial activity of the city or town takes place.
> . . . .
> 1. **Leak Survey:** A search for possible gas leakage **in any area where gas facilities exist**, or where a gas leak is reported or suspected."

O&M Plan OM-60, at 1-2 (emphasis added). NSTAR conducted its leakage survey of the Hopkinton business district through its mobile survey on July 2, 2002, and its walking survey on July 15, 2002. There is no reference to any leakage survey performed on the interior service line piping of 65 Main Street during the July 15 walking survey.

In its O&M Plan, NSTAR requires leakage surveys to be performed where gas facilities exist. This encompasses any building housing NSTAR facilities, including residential structures, as stated by NSTAR, above. This provision of the O&M Plan is consistent with the applicable federal regulations. See 49 C.F.R. § 192.723(a) and (b)(1). Because NSTAR did not perform a leakage survey on the interior service line piping of 65 Main Street during its July 15 walking survey, the Department has reason to believe NSTAR may be in violation of 49 C.F.R. § 192.723(a) and (b)(1).

E. Odorant Levels

As part of any incident investigation, the Department requires an operator to verify that the odorant level of the gas meets the regulatory requirements. On the day of the incident, NSTAR took odorometer[18] readings to determine the intensity of the odorant in the natural gas

---

[18] An odorometer is an instrument which mixes gas and air to measurable concentrations. The tester increases the gas-air ratio to a point where he smells a change in the odor of the mixture (threshold reading) and increases the gas-air ratio until he smells a gas odor in the

(continued...)

flowing through Main Street. The Hopkinton Police Station and the Hopkinton Fire Station were chosen as representative sample points to conduct the tests because of their close proximity to 65 Main Street. Two NSTAR representatives performed the tests. At the Police Station, the readings at which the individuals detected a distinct gas odor were 0.05% and 0.10% gas in air (Exh. 24a). At the Fire Station, the readings by the same two individuals were 0.04% and 0.10% gas in air (id.). State regulation states, in relevant part:

> "A combustion gas in a distribution line shall have a distinctive odor of sufficient intensity so that a concentration of 0.15% gas in the air is readily perceptible to the normal or average olfactory senses of a person coming from fresh uncontaminated air into a closed room containing one part of the gas in 666 parts of air."

220 C.M.R. § 101.06(20)(a). Both NSTAR test personnel detected gas at much lower concentrations than the 0.15% gas-air mixture required in the above regulation. Given the detectability of gas at the lower gas-air concentrations, the odorant levels met the regulatory requirement.

In a review of the 2002 weekly odorant levels throughout the area surrounding Hopkinton, the record indicates that NSTAR met the regulatory requirements (Exh. 24b). Thus, gas odorant levels do not appear to have contributed to the incident.

F. Recovered Material

In the aftermath of the incident, the DTE Investigators worked with the SFM investigators to recover material in an effort to determine the cause and origin of this incident. The recovered material is divided into two categories. The first category is customer-owned equipment, such as

---

[18] (...continued)

appliances in the apartments, water heaters in the basement, and any piping emanating from the meters or piping feeding appliances. The second category is operator-owned piping, including the service line entry through the building wall, the regulator and associated vent line, the meters, and any piping or fittings connecting such. The separation point between the two categories is the outlet of each gas meter. Any equipment downstream, i.e., on the customer side of the meter, is external to the operator's distribution system and not jurisdictional to the Department pursuant to federal pipeline safety regulations. See 49 C.F.R. §§ 192.1(a) and 192.3.

Since the SFM could not rule out criminal activity as a cause of the incident,[19] that office took custody of all material recovered from the site to continue its criminal investigation. On November 15, 2002, the SFM shared physical custody of the operator-owned material with the Department, so that the Department could proceed with the metallurgical examination of the evidence. In accordance with 49 C.F.R. § 192.617, NSTAR selected Massachusetts Materials Research, Inc. ("MMR") of West Boylston, Massachusetts to conduct the testing of the Department jurisdictional piping and appurtenances ("recovered material").

G. Meter Readings and Gas Usage

The Department reviewed the post-incident meter readings and the meter reading records of the five meters at 65 Main Street. This analysis was performed to determine if any meter displayed excessive gas flow which could indicate a leak downstream of the gas meter. The Department Investigators compared the records for March through July of 2002 with the records

---

[19] Ms. Janet Webster stated to a DTE Investigator that when she investigated the loud sound from the basement prior to leaving the house on the morning of July 24, 2002, she noticed the basement door, located on a side porch, was open (Exh. 2a). She was certain that she had locked it prior to retiring (id.).

for the same time period in 2001 for all of the meters at 65 Main Street. (See Table II, below). The meter readings do not indicate anomalies that would indicate a massive volume of gas passing through a meter into a “failed” segment of house piping indicative of a gas leak prior to the incident.

TABLE II

USAGE MARCH-JULY, 2002

CUSTOMER	MARCH	APRIL	MAY	JUNE	JULY
Webster	7 ccf, 31 days, (A)	6 ccf, 30 days, (A)	5 ccf, 29 days, (A)	4 ccf, 32 days, (A)	2 ccf, 16 days, (L)
Maijs	21 ccf, 31 days, (A)	12 ccf, 30 days, (A)	6 ccf, 30 days, (E)	8 ccf, 62 days, (E)	1 ccf, 15 days, (L)
Carey (Heating)	347 ccf, 61 days, (A)	83 ccf, 30 days, (A)	52 ccf, 21 days, (F)	36 ccf, 33 days, (A)	13 ccf, 16 days, (L)
Carey	3 ccf, 31 days, (A)	2 ccf, 30 days, (A)	0 ccf, 29 days, (A)	5 ccf, 62 days, (E)	0 ccf, 9 days, (L)
DeFreitas	21 ccf, 31 days, (A)	21 ccf, 30 days, (A)	19 ccf, 29 days, (A)	22 ccf, 32 days, (A)	7 ccf, 16 days, (L)

USAGE MARCH-JULY, 2001

CUSTOMER	MARCH	APRIL	MAY	JUNE	JULY
Webster	6 ccf, 28 days, (A)	7 ccf, 31 days, (A)	8 ccf, 29 days, (A)	5 ccf, 32 days, (A)	5 ccf, 29 days, (A)
Maijs	22 ccf, 28 days, (A)	4 ccf, 31 days, (A)	4 ccf, 29 days, (A)	3 ccf, 32 days, (A)	4 ccf, 29 days, (A)
Carey (Heating)	136 ccf, 28 days, (A)	75 ccf, 31 days, (A)	62 ccf, 29 days, (A)	33 ccf, 32 days, (A)	31ccf, 29 days, (A)
Carey	2 ccf, 28 days, (A)	3 ccf, 31 days, (A)	0 ccf, 32 days, (E)	0 ccf, 30 days, (E)	3 ccf, 29 days, (E)
DeFreitas	25 ccf, 28 days, (A)	27 ccf, 31 days, (A)	16 ccf, 29 days, (A)	9 ccf, 32 days, (A)	8 ccf, 29 days, (A)

NOTES:

1. ccf: hundred cubic feet of gas
2. (A): Actual Meter Reading from a remote read meter
3. (E): Estimated gas usage
4. (F): Final, shut off or read/out
5. (L): Based on the meter reading on 7/24/02

H. Distribution Line Valves

Two NSTAR personnel arrived at 65 Main Street, Hopkinton at 2:12 a.m. on July 24, 2002, 22 minutes after the NSTAR Dispatcher received notice of the incident (Exh. 5). At 3:10 a.m., the two NSTAR personnel were trying to locate the curb valve to shut off the gas flowing into the wreckage of the house, where it was known that one deceased victim still lay (Exh. 25). The curb valve lay under the house wreckage, and NSTAR could not gain access to it to shut off the flow of gas to the house (id.). At 3:30 a.m., a distribution crew arrived at the scene and began to excavate with the intent to squeeze off the main and to locate the distribution valves needed to shut down gas flow to the system near the collapsed house (id.). At 4:03 a.m., the NSTAR Distribution Manager arrived at the site with the maps indicating the locations of the valves needed to isolate the system (Exh. 5). At 4:09, an NSTAR supervisor was informed of the valve locations and prepared to shut down the valves on the main to isolate the system (id.). At 4:28 a.m., the Distribution Manager notified the Department of the incident (id.).[20]

At 4:34 a.m., an NSTAR supervisor reported that he was unable to shut off one of the essential distribution line valves necessary to isolate the area (Exh. 25). This specific valve was located at the intersection of Hayden Rowe Street and Main Street (id.). The valve box was not centered over the valve, denying access to NSTAR (id.). NSTAR's map indicates that at least six distribution valves would have to be closed to isolate 65 Main Street (Exh. 26). Going from west to east along Main Street, the valves are identified and numbered as follows:

---

[20] In an annual letter to all operators, the Director of the Pipeline Engineering and Safety Division requests that operators inform the Department of any incident promptly, but no more than two hours after discovery of an incident.

Valve #	Location
083	Main Street just west of the Mt. Auburn Street intersection.
020	Grove Street on the northern intersection of Main Street.
052	Grove Street on the southern intersection of Main Street.
146	Walcott Street on the northern intersection of Main Street.
024	Church Street on the southern intersection with Main Street.
079	Main Street just east of Church Street; or
080	Main Street just west of Hayden Rowe Street.

For complete isolation, access to the first five valves and at least one of the last two valves was necessary (id.).

Forty-nine C.F.R. Part 192 requires that operators install valves on high pressure distribution systems to enable the operator to shut down the system in an emergency.

> "Each high-pressure distribution system[21] must have valves spaced so as to reduce the time to shut down a section of main in an emergency. The valve spacing is determined by the operating pressure, the size of the mains, and the local physical conditions."

49 C.F.R. § 192.181(a). A review of the distribution map indicates NSTAR has valves strategically located to enable isolation of any section of Main Street.

The design and installation regulation contained in 49 C.F.R. Part 192 also requires that a valve on a main be in a readily accessible location and the operating mechanism be accessible.

> "(c) Each valve on a main installed for operating or emergency purposes must comply with the following:
> (1) The valve must be placed in a readily accessible location so as to facilitate its

---

[21] *"High pressure distribution system* means a distribution system in which the gas pressure in the main is higher than the pressure provided to the customer." 49 C.F.R. § 192.3.

> operation in an emergency.
> (2) The operating stem or mechanism must be readily accessible."

49 C.F.R. § 192.181(c)(1)-(2).

Conversely, there is no requirement in 49 C.F.R. § 192.605 for an operator to have a maintenance program to preserve the accessibility of all distribution line valves. This is underscored in a September 12, 2003 Opinion Letter, issued by the U.S. DOT Office of Pipeline Safety (Exh. 27).

> "Section § 192.181(c)(1) is in Subpart D, *Design of Pipeline Components*. It addresses minimum requirements for the design and installation of pipeline components. It does not require an operator to maintain all valves in accordance with § 192.747."

Although one of NSTAR's valves was not accessible, there is no violation of 49 C.F.R. Part 192 because it does not require an operator to maintain the accessibility of distribution valves.[22]

IV. METALLURGICAL TESTING

A. General

On December 4, 2002, after NSTAR publicly noticed the prospective metallurgical testing, the Department and MMR held a procedural conference to announce the protocol for the testing of the recovered material subject to Department jurisdiction (Exh. 28). Because the customer-owned material is not jurisdictional to the Department, it was not included in the protocol (Exh. 29). See 49 C.F.R. §§ 192.1(a) and 192.3. The customer-owned material

---

[22] The following state statute became effective April 1, 2003: "[w]henever the commonwealth or a city or town undertakes the repair of streets, roads or sidewalks the appropriate gas company shall provide for the maintenance and improvements of its gate boxes located in the streets, roads or sidewalks to be repaired, so that the gate boxes are more easily and immediately accessible." G.L. c. 164, § 116B. Because the incident predates the effective date of this statute, there is no violation.

recovered from the site remains in the sole custody of the SFM. The Department allowed all interested persons the opportunity to comment on the testing protocol, suggest alternative testing, or suggest additional testing[23] (at the requestor's expense) as well as observe the testing (Exh. 30). The metallurgical testing began on January 6, 2003. MMR submitted a report on August 8, 2003 ("MMR Report").[24]

B. Non-Destructive Testing

MMR examined all piping and appurtenances recovered from the basement from the point of entry to the outlet of the meters. These items are listed in the December 4, 2002 MMR letter to the "Department" as items 6, 7, 8, 11, 12, 14, 15, 17, and 18 (Exh. 29). All the recovered material was examined visually, measured, photographed, leak tested, and analyzed for fractures.

Radiographic analysis of all metallic recovered material showed that none of the threaded fittings contained anomalies and were not the cause of the incident.[25] Leak testing under Protocol item 3 showed insignificant leaks in the system that were located in regions which would have been susceptible to damage in the incident.[26] Pressure/flow testing conducted on the service

---

[23] A revised Protocol was prepared on December 31, 2002 in response to the comments submitted by interested persons. An interested person did contract with MMR for the performance of a supplemental pull test of an exemplar fitting. MMR Report at 17.

[24] Copies of this report are available from MMR.

[25] MMR Report at 11.

[26] MMR Report at 13.

regulator confirmed that there was no malfunction in its operating mode.[27]

MMR conducted fracture analysis by microscopic examination of all metallic gas-carrying recovered materials. MMR determined that five fractures should be reviewed more closely with a scanning electron microscope to determine the cause of separation. Upon such review, MMR concluded the following:

> MMR #6 Fracture Surface - "This type of fracture feature is consistent with damage incurred during the incident under the single application of a force that exceeded the capability of the material. No features were observed that would indicate material defects."[28]
>
> MMR #9 Fracture Surface - "This piece possesses fracture features consistent with being caused by the incident. No features were observed that would indicate material defects."[29]
>
> MMR #10 (Male Thread End) - "This type of fracture is consistent with being caused by the incident. No features were observed that would indicate material defects."[30]
>
> MMR #11 (Meter #4231 outlet) - "The fracture features seen on this specimen are consistent with being caused by the event. No features were observed that would indicate material defects."[31]
>
> MMR #11 (Regulator relief pipe) - "[T]his fracture is consistent with having been caused by the incident. No features were observed that would indicate material defects."[32]

In summary, the MMR non-destructive testing concluded that the fractures were not the cause of

---

27 MMR Report at 13.

28 MMR Report at 40.

29 MMR Report at 41.

30 MMR Report at 42.

31 MMR Report at 43.

32 MMR Report at 44.

the incident.[33]

C. Transition Fitting

The MMR fracture analysis of recovered material indicates that the fractures occurred during the collapse of the building. A transition fitting[34] was located on the high pressure section of the service line.[35] The transition fitting was located just inside the basement wall prior to the explosion. It was found in two sections by SFM and DTE Investigators and documented by MMR as #18 (upstream segment) and #11 (downstream segment).[36] The fractured transition fitting is an adaptor (sometimes called a "basement adaptor") for PE tubing of ¾-inch FPT x 1-inch MPT x ½-inch CTS, manufactured by Inner-Tite Corporation (Exhs. 31; 32).

Although the noise heard by witnesses in the moments prior to the incident was not determined to have originated from a failure in the high pressure segment of the service line, the noise, accompanied by the odor of gas, warranted investigation of the only fractured high pressure service line segment. Because the witnesses who had been awake in the early morning of July 24, 2002 described a loud noise, accompanied by the odor of gas, prior to the explosion, MMR focused on the transition fitting. During the visual inspection, MMR noted that the:

---

33 MMR Report at 50.

34 A transition fitting is a fitting which joins a plastic pipe to a steel pipe. In the MMR Report, it is sometimes referred to as a basement adaptor.

35 The service regulator outlet is the dividing line between the high and low pressure segments of the service line. Any point on the service line before or upstream of the regulator outlet is on the high pressure segment of the service line.

36 MMR Report at 1-2.

> "Photographs of the foundation sleeve [also called a service sleeve][37] show a heavily corroded pipe with a portion of its wall missing at the six o'clock position (as installed in-service). Water seeping into the basement along this foundation sleeve and collecting to drip from the bottom (or 6 o'clock position) would produce this missing type of wall pattern through corrosion and gradual material wastage over time. This is also consistent with the corroded appearance of both transition fitting pieces and the "T" assembly to which they were in contact during service. Incoming water would have a much more difficult time running upwards onto a vertical basement riser pipe; however, and the piping and meters on the rest of MMR # 11 show markedly less corrosion than the transition fitting and other items near the gas inlet that were oriented in a horizontal way during service."[38]

The transition fitting displayed heavy corrosion around its outer surface. MMR describes this as "a friable[39] layer of corrosion."[40] One of the water heaters in the basement displayed heavy corrosion around its base. The fieldstone foundation and dirt floor basement of the structure contained a sump pump. These conditions led MMR to state in its report "that the basement was a humid, and at times wet, environment."[41] MMR states that the corrosion may have been the result of aggressive chlorine attack since the orientation and amounts of chlorine were consistent with soil runoff as opposed to human handling and water residue from the fire fighting effort.[42]

---

37 In this configuration, the plastic service line had been inserted into the original steel service line. The original steel service line was threaded into the upstream female transition fitting segment. The plastic pipe, housed inside the steel service line passed through the innards of the upstream and downstream segments of the transition fitting, held into place by a ferrule, a steel washer and a rubber gasket and compression.

38 MMR Report at 11.

39 *Friable* means "readily crumbled; brittle." American Heritage College Dictionary.

40 MMR Report at 10.

41 MMR Report at 11.

42 MMR Report at 23, 25.

The transition fitting was found in two sections in the incident site debris, one of which was a part of MMR #11, and the other part of MMR #18. MMR conducted leak testing of the transition fitting in two stages. The downstream segment, MMR #11, was adapted for pressure testing at 57 psig. The test indicated only minuscule leakage on the valve attached to the transition fitting, but not on the transition fitting segment itself. MMR next inserted item #18 into item #11 as described in the MMR Report.[43] The threaded mechanical attachment between the upstream and downstream sections had degraded to a point where the two pieces were not fastened. MMR attempted to determine if the operating pressure would cause separation of the joined transition fitting parts. The pressure test revealed that the line pressure would not force the two segments of the transition fitting apart.[44] In conclusion, MMR states that the transition fitting came apart as the result of either the explosion/and or collapse of the house, or the application of an unknown external force or forces (not necessarily directly applied to the jurisdictional piping) prior to the event.[45]

V. CORROSION REGULATORY REQUIREMENTS

A. Introduction

The MMR Report attributes the corroded state of the transition fitting to water contact. Although MMR did not determine that the failure of the transition fitting occurred prior to the explosion, DTE has reason to believe its corroded state presented a situation that should have

---

43 MMR Report at 29.

44 MMR Report at 51.

45 MMR Report at 51.

been addressed by NSTAR. As evidenced from the photos (Exhs. 31; 32), the visual appearance of the transition fitting warranted examination by NSTAR with appropriate remedial action, if required.

B. Initial Evaluation

Forty-nine C.F.R. Part 192 requires each operator of a natural gas distribution system to make an initial evaluation of any operator-owned piping exposed to the atmosphere for environments conducive to atmospheric corrosion. Specifically, it states:

> "*Pipelines installed after July 31, 1971.* Each aboveground pipeline or portion of a pipeline installed after July 31, 1971 that is exposed to the atmosphere must be cleaned and either coated or jacketed with a material suitable for the prevention of atmospheric corrosion. An operator need not comply with this paragraph, if the operator can demonstrate by test, investigation, or experience in the area of application, that a corrosive atmosphere does not exist."

49 C.F.R. § 192.479(a). NSTAR has no record of having made an initial evaluation in 1974 when it installed the transition fitting in the basement of 65 Main Street, Hopkinton. However, the federal code does not mandate retention of such a record for greater than five years. See 49 C.F.R. § 192.491(c). Therefore, the lack of a record of any initial evaluation does not constitute a violation.

C. Reevaluation and Remedial Action

Pursuant to 49 C.F.R. Part 192, operators must monitor pipelines for the presence of atmospheric corrosion and take appropriate action when necessary. Forty-nine C.F.R. § 192.481 states:

> "After meeting the requirements of § 192.479 (a) and (b), each operator shall, at intervals not exceeding 3 years for onshore pipelines … reevaluate each pipeline that is exposed to the atmosphere and take remedial action whenever necessary to maintain protection

against atmospheric corrosion."

49 C.F.R. § 192.481.

NSTAR has produced no record demonstrating that had met the reevaluation requirements of 49 C.F.R. § 192.481 with reference to the jurisdictional metal piping in the basement of the structure. Although MMR did not specifically identify the corrosion of the transition fitting as atmospheric corrosion, NSTAR's maintenance records for the interior piping at 65 Main Street omit any reference to compliance with 49 C.F.R. § 192.481. In response to a Division request (Exh.11) for the corrosion records of 65 Main Street, NSTAR responded that it was not required to retain corrosion records because the steel main and service had been renewed with plastic (Exh.12). NSTAR is correct in its interpretation of the regulation in that replacement of all underground piping for 65 Main Street with plastic relieved NSTAR of the burden of corrosion monitoring and protection. NSTAR is incorrect in its interpretation of the regulation with respect to the portion of the service line located inside the basement of 65 Main Street, which was steel pipe exposed to the atmosphere. NSTAR's response also implies that it was not required to monitor the remaining steel section of the service line. NSTAR produced no record that it had performed any monitoring of the interior metal piping exposed to the atmosphere within the three-year interval specified in the regulation.

The federal regulations further require that certain corrosion control records be maintained. 49 C.F.R. § 192.491. The reevaluation required by 49 C.F.R. § 192.481 must be maintained as described below:

> "Each operator shall maintain a record of each test, survey, or inspection required by this subpart in sufficient detail to demonstrate the adequacy of corrosion control measures or

> that a corrosive condition does not exist. These records must be retained for at least 5 years, except that records related to §§ 192.465 (a) and (e)[46] and 192.475(b)[47] must be retained for as long as the pipeline remains in service."

49 C.F.R. § 192.491(c). NSTAR produced no documentation to demonstrate that it had reevaluated the metal segment of the service line inside 65 Main Street, Hopkinton within the last five years. Even if NSTAR had performed the reevaluation, the corroded metal pipe segment reveals that no remedial action had been taken to maintain protection as required by 49 C.F.R. § 192.481. Because of the presence of visible friable corrosion, some type of remedial action as provided by 49 C.F.R. §§ 192.479(a) and 192.481 was required. Therefore, the Department has reason to believe NSTAR may be in violation of 49 C.F.R. §§ 192.481 and 192.491.

D. O&M Plan

Forty-nine C.F.R. Part 192 also requires operators of gas distribution systems to follow a manual of written procedures in operations, maintenance and emergency response.

> **"**(a) *General*. Each operator shall prepare and follow for each pipeline, a manual of written procedures for conducting operations and maintenance activities and for emergency response."
> . . . .
> "(b*) Maintenance and normal operations.* The manual required by paragraph (a) of this section must include procedures for the following, if applicable, to provide safety during maintenance and operations.
> (1) Operating, maintaining, and repairing the pipeline in accordance with each of the requirements of this subpart and subpart M of this part.
> (2) Controlling corrosion in accordance with the operations and maintenance requirements of subpart I of this part."

---

[46] Forty-nine C.F.R. § 192.465 refers to monitoring of external corrosion controls of underground piping.

[47] Forty-nine C.F.R. § 192.475 refers to internal corrosion.

49 C.F.R. § 192.605 (b)(1) and (2).

Corrosion control is a function specified in 49 C.F.R. § 192.605(b)(2). The NSTAR O&M Plan is the written manual of procedures that NSTAR employs in meeting the requirements of 49 C.F.R. § 192.605(a). In its O&M Plan, NSTAR states the following with reference to atmospheric corrosion:

> "4. Remedial Measures for Corroded Pipe
>
> General
> Pipelines installed after July 31, 1971, that are or have any ponion [sic] exposed to the atmosphere will be cleaned and either coated or jacketed with a material suitable for the prevention of atmospheric corrosion. Although operator need not comply with this requirement if he can demonstrate by test, investigation or experience in the area of application, that a corrosive atmosphere does not exist, it is suggested that coating be undertaken.
>
> For pipelines installed after August 1, 1971, that are or have any portion exposed to the atmosphere, the operator must determine the areas of atmospheric corrosion on the pipeline. If atmospheric corrosion is found, apply remedial measure. These areas of atmospheric corrosion on the pipeline must be cleaned to bright metal, and coated or jacketed with a material suitable for the prevention of atmospheric corrosion.
>
> Monitoring
> After meeting the requirements of(kn~r~1 [sic] above, the operator shall, at intervals not exceeding three (3) years for onshore pipelines, reevaluate each pipeline that is exposed to the atmosphere and take remedial action whenever necessary to maintain protection against atmospheric corrosion."

O&M Plan OM-66.

As stated above, 49 C.F.R. § 192.491(c) specifies that the record retention period for the General and Monitoring requirements, as stated in the NSTAR O&M Plan, is five years. Within that five-year period set forth in 49 C.F.R. 192.491(c), there should have been at least one record in which NSTAR monitored the condition of the interior service line piping located in the basement of 65 Main Street, Hopkinton. There is no record of any such inspection, nor has

NSTAR stated that it had met the requirement (Exh.12). Therefore, the Department has reason to believe NSTAR may not be in compliance with its O&M Plan which may be a violation of 49 C.F.R. § 192.605(a).

VI. FINDINGS AND CONCLUSIONS

A. Findings

1. Historical

a. On June 30, 1947, a one-inch bare steel service line was installed to 65 Main Street, Hopkinton.
b. On October 8, 1974, a ½-inch plastic service line was inserted into the one-inch steel service line from the curb valve into the basement of 65 Main Street, Hopkinton.
c. On October 8, 1974, an Inner-Tite transition fitting (basement adaptor) was installed in the basement of 65 Main Street, Hopkinton.
d. In October of 1979, a three-inch plastic main was installed in front of 65 Main Street, Hopkinton.
e. On October 25, 1979, a ½-inch plastic service line was installed connecting the three-inch plastic main to the curb valve on the service line to 65 Main Street, Hopkinton.
f. There are no records to demonstrate that NSTAR tested the sections of service line installed on October 8, 1974 and on October 25, 1979 to establish an MAOP.
g. NSTAR's business district leakage survey did not include entry into 65 Main Street, Hopkinton on July 15, 2002.
h. Between January 2002 and July 2002, NSTAR entered 65 Main Street, Hopkinton nine times.
i. The odorant levels within the Main Street, Hopkinton distribution piping met the state and federal detection levels in the months prior to and including July 24, 2002.

2. The Incident

a. In the early morning of July 24, 2002, several residents of 65 Main Street heard a loud, unidentifiable noise.
b. In the early morning of July 24, 2002, several residents of 65 Main Street detected the odor of natural gas.
c. At approximately 1:41 a.m. on July 24, 2002, approximately ten minutes after the loud noises woke some residents, the structure at 65 Main Street, Hopkinton, exploded.
d. Most of the residents escaped from the remains of the demolished structure with the exception of the two Carey children.
e. Shortly after their arrival, rescue personnel were able to retrieve one seriously injured

victim from the debris and determine that the remaining victim was deceased.
f. NSTAR arrived at the site of the explosion at 2:12 a.m., July 24, 2002.
g. The service line curb valve could not be closed because the debris of the house lay over it.
h. NSTAR shut off the service lines to the neighboring houses by 2:55 a.m.
i. None of the neighboring houses measured positive for the presence of gas.
j. By 3:30 a.m., NSTAR had completed its gas surveys in the drainage and sewer lines and the ground beneath the street for gas with no positive readings.
k. NSTAR could not shut off the flow of gas to the incident site because at least one valve was inaccessible.
l. NSTAR notified the Department of the incident at 4:28 a.m.
m. NSTAR squeezed off the flow of gas to the demolished structure at 5:07 a.m.
n. The incident resulted in two fatalities.

3. Post-Incident

a. Emergency personnel recovered the last deceased victim at 6:13 a.m.
b. The distribution system, external to the foundation of 65 Main Street, sustained line pressure of 58 psig for 65 minutes, ruling out any distribution line leakage in proximity to the structure.
c. The SFM took custody of all recovered appliances, piping, and appurtenances.
d. NSTAR selected MMR as the laboratory to perform the testing to meet the requirements of 49 C.F.R. § 192.617.
e. As part of the Department investigation, MMR restricted its testing to those segments of recovered materials that were owned and operated by NSTAR and jurisdictional to the Department.
f. MMR observed no material defects in the fractured segments of recovered material and concluded through its non-destructive testing that some fractures in the recovered material had occurred as a result of the event.
g. MMR found only one failure on the service line on the high pressure side of the service regulator.
h. MMR found the transition fitting to be heavily corroded on its outer surface.
i. MMR concluded that the transition fitting would not have failed under line pressure without the application of external forces.
j. MMR concluded that the transition fitting came apart as the result of either the explosion/and or collapse of the house, or the application of an unknown external force or forces (not necessarily directly applied to the jurisdictional piping) prior to the event.
l. NSTAR had no records to demonstrate that it had monitored the interior piping of 65 Main Street, Hopkinton for atmospheric corrosion within the last five years.

B. Conclusions

1. NSTAR has no records to demonstrate that the service line segments, installed in 1974 and 1979, were tested to establish an MAOP. NSTAR should have tested each service line segment to 1.5 times the MAOP. Therefore, the Department has reason to believe that NSTAR may be in violation of 49 C.F.R. Part 192:

> "(a) Except as provided in paragraph (c) of this section, no person may operate a segment of steel or plastic pipeline at a pressure that exceeds the lowest of the following:
> . . . .
> (2) The pressure obtained by dividing the pressure to which the segment was tested after construction as follows:
> (I) For plastic pipe in all locations, the test pressure is divided by a factor of 1.5."

49 C.F.R. § 192.619(a)(2)(i).

2. In failing to meet the requirements of Subpart L, the Department has reason to believe that NSTAR may be in violation of 49 C.F.R. § 109.603(a), which states: "(a) No person may operate a segment of pipeline unless it is operated in accordance with this subpart." 49 C.F.R. § 192.603(a).

3. NSTAR did not monitor the steel service line in the basement of 65 Main Street, Hopkinton for atmospheric corrosion in the five-year period prior to July 24, 2002. Therefore, the Department has reason to believe NSTAR may be in violation of 49 C.F.R. Part 192:

> "After meeting the requirements of § 192.479 (a) and (b), each operator shall, at intervals not exceeding 3 years for onshore pipelines … reevaluate each pipeline that is exposed to the atmosphere and take remedial action whenever necessary to maintain protection against atmospheric corrosion."

49 C.F.R. § 192.481.

4. NSTAR failed to perform leakage surveys of its service lines located inside 65 Main Street, Hopkinton, as required by 49 C.F.R. Part 192:

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

49 C.F.R. § 192.723. Therefore, the Department has reason to believe NSTAR may be in violation of 49 C.F.R. § 192.723.

5. In failing to follow its written procedures in 1, 2, 3, and 4 above, the Department has reason to believe NSTAR may be in violation of 49 C.F.R. Part 192:

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

49 C.F.R. § 192.605(a).

List of Exhibits

Exhibit 1: Incident Report-Gas Distribution System, Form RSPA F 7100.1.

Exhibit 2: Statements by witnesses
- **2a** Janet Webster statement to Department Investigator on July 26, 2003
- **2b:** Janet Webster statement to Hopkinton Police Department on July 24, 2002
- **2c:** Richard Maijs statement to Hopkinton Police Department on July 30, 2002
- **2d:** Emily Webster statement to Hopkinton Police Department on July 30, 2002
- **2e:** Matthew Webster Statement to Hopkinton Police Department on August 2, 2002
- **2f:** Tara Carey state to Hopkinton Police Department on August 6, 2002

Exhibit 3: Hopkinton Police Department incident report narrative by Officer Patrick O'Brien and Dispatcher Meaghan Deraad.

Exhibit 4: Hopkinton Fire Department Report.

Exhibit 5: Chronology of events by NSTAR Gas.

Exhibit 6: Photograph of squeeze-off tool installed on 3" plastic gas main installed below Main Street, Hopkinton.

Exhibit 7: Engineering drawing of tie in of 3" plastic gas main to 4" steel gas main installed below Main Street, Hopkinton.

Exhibit 8: Pressure charts from the regulator stations feeding the Main Street, Hopkinton area.
Pressure print out for the regulator stations feeding the Main Street, Hopkinton area from the Framingham Plant, Milford Regulator Station, and Hopedale Regulator Station.

Exhibit 9: Engineering drawing for the service line to 65 Main Street, Hopkinton installed June 30, 1947. (Note: address changed from 79 Main Street to 65 Main Street, date of change unknown.)

Exhibit 10a: Engineering drawing of 1/2" plastic service line installed, from the curb cock to to the basement of 65 Main Street, Hopkinton, October 8, 1974.

10b: Engineering drawing of 1/2" plastic service line installed, from the main to the curb cock, October 25, 1979, for 65 Main Street, Hopkinton.

Exhibit 11: Letter from Department investigator to NSTAR Gas dated June 16, 2003

Exhibit 12: Letter from NSTAR to Department investigator, dated July 7, 2003.

Exhibit 13: Incident investigation report by Richard C. Wallace, for 65 Main Street, Hopkinton, dated July 24, 2002.

Exhibit 14: Photograph of collapsed structure, 65 Main Street, Hopkinton, July 24, 2002.

Exhibit 15: Photograph of debris scattered onto Main Street, Hopkinton.

Exhibit 16: Photograph of the demolition of 65 Main Street, Hopkinton.

Exhibit 17: Photograph of service line penetration through basement wall, 65 Main Street.

Exhibit 18: Photograph of dead weight tester and pressure chart.

Exhibit 19: Photograph of pressure gauge showing a test pressure of 58 psig.

Exhibit 20: Summary Table of NSTAR visits to 65 Main Street, Hopkinton between June 2001 and June 2002.

20a: Work order number 0102-72545 dated June 6, 2001.
20b: Work order number 0202-96521 dated February 22, 2002.
20c: Work order number 0203-55159 dated March 6, 2002.
20d: Work order number 0203-55717 dated March 6, 2002.
20e: Work order number 0203-82806 dated March 12, 2002.
20f: Work order number 0207-53676 dated May 23, 2002.
20g: Work order number 0207-53683 dated May 23, 2002.
20h: Work order number 0207-58312 dated May 24, 2002.
20i: Work order number 0207-59243 dated May 24, 2002.
20j: Work order number 0208-44930 dated June 4, 2002.
20k: Work order number 0208-44930 dated June 5, 2002.
20m: Work order number 0208-54895 dated June 5, 2002.

Exhibit 21: Annual business district walking survey dated January 10, 2002

Exhibit 22: Mobile leakage survey daily activity report dated July 2, 2002.

Exhibit 23: Business District Survey for Hopkinton town center dated July 15 ,2002.

Exhibit 24: Odorant reports from NSTAR Gas, January through August, 2002.
Odorant test taken July 24, 2002, in the area of 65 Main Street, Hopkinton.

Exhibit 25: Statement by William E. Leathem III, NSTAR Gas.

Exhibit 26: Map of distribution system.

Exhibit 27: Opinion letter from Office of Pipeline Safety, dated September 12, 2003.

Exhibit 28: Announcement of Protocol for testing of evidence from 65 Main Street, Hopkinton.

Exhibit 29: Protocol for the testing of evidence from 65 Main Street, Hopkinton. Table II from Massachusetts Materials Research, Inc. Report dated December 4, 2002.

Exhibit 30: Revised Protocol for testing of evidence from 65 Main Street, Hopkinton, dated December 31, 2002.

Exhibit 31: Photographs of Inner-Tite transition fitting removed from 65 Main Street, Hopkinton.

Exhibit 32: Photograph of an exemplar.

Exhibit
1

NSTAR ELECTRIC GAS
NSTAR Gas
One NSTAR Way, Westwood, Massachusetts 02090-9230

July 29, 2002

Information Resources Manager, Office of Pipeline Safety
Research and Special Programs Administration
U. S. Department of Transportation, Room 7128
400 Seventh Street, SW.
Washington, DC 20590

To whom it may concern,

Enclosed you will find an Incident Report-Gas Distribution System, Form RSPA F 7100.1, regarding an incident which occurred in our natural gas distribution system on July 24, 2002 at 65 Main Street, Hopkinton, Massachusetts. This report is being filed as a result of two fatalities resulting from the incident and property damage in excess of $50,000.

Please note that as of the writing of this letter there has been no conclusive evidence as to the cause of the incident. This report is being submitted as a follow up to the telephonic report made to Mr. Flach at 05:52 a.m. on July 24, 2002.

Should you need further assistance or information regarding this report or the incident please feel free to contact my office.

Sincerely,

Darrell W. Hobart
Manager Gas Distribution

NOTICE: This report is required by 49 CFR Part 191. Failure to report can result in a civil penalty not to exceed $1,000 for each violation for each day that such violation persists except that the maximum civil penalty shall not exceed $200,000 as provided in 49 USC 1678. Form Approved OMB No. 2137-0522

U.S. Department of Transportation
Research and Special Programs Administration

INCIDENT REPORT - GAS DISTRIBUTION SYSTEM

Report Date 07/26/02

No. 617643 (RSPA)

SEE INSTRUCTIONS

PART 1: GENERAL REPORT INFORMATION

1. a. Operator's 5 digit Identification Number / 0 / 2 / 6 / 5 / 2 /
   b. Name of Operator NSTAR Gas Company
   c. One NSTAR Way (Number and Street)
   d. Westwood, MA 02090 (City, County, State and Zip Code)
2. Location of incident
   a. 65 Main Street (Number and Street)
   b. Hopkinton, Middlesex (City and County)
   c. MA, 01748 (State and Zip Code)
   d. Class location ☐ 1 ☐ 2 ☐ 3 X 4
   e. Incident on Federal land ☐ Yes X No
3. Time and date of incident / 0 / 1 / 4 / 1 / hr. / 0 / 7 / mo. / 2 / 4 / day / 0 / 2 / yr.
4. Reason for reporting
   X Fatality Number / / / 2 / persons
   ☐ Injury requiring inpatient Hospitalization Number / / / / persons
   X Property damage/loss Estimate $ 300,000 – 400,000
   ☐ Operator judgment/emergency action
   ☐ Supplemental Report
5. Elapsed time until area was made safe / 0 / 3 / hr. / 2 / 5 / min.
6. Telephone Report / 0 / 7 / mo. / 2 / 4 / day / 0 / 2 / yr.
7. a. Estimated pressure at point and time of incident *(PSIG)_57.5_psig_*
   b. Maximum allowable operating pressure *(MAOP)(PSIG)__60_psig_*
   c. MAOP established by:
   (1) Test pressure _90_ *(PSIG)*
   (2) 49 CFR § 192.619 (a)(3) ☐

PART 2: APPARENT CAUSE

☐ Corrosion *(Continue in Part A)*
☐ Damage by Outside Forces *(Continue in Part B)*
☐ Construction/Operating error *(Continue in Part C)*
X Other Under investigation
☐ Accidentally caused by operator *(Continue in Parts B and/or C)*

PART 3: NARRATIVE DESCRIPTION OF FACTORS CONTRIBUTING TO THE INCIDENT

(Attach additional sheet(s) as necessary)

See Attached

PART 4: ORIGIN OF THE INCIDENT

1. Part of system where incident occurred
   ☐ Main ☐ Meter Set Assembly
   ☐ Service Line X Other Under investigation
2. Component which failed
   a. Part
   ☐ Body of pipe ☐ Valve
   ☐ Joint type ☐ Regulator/meter
   ☐ Fitting ☐ Weld(Specify)_____ *(girth, longitudinal, fillet)*
   ☐ Drip/Riser ☐ Other _____
3. Material involved:
   ☐ Steel ☐ Cast iron
   ☐ Polyethylene plastic ☐ Other plastic:_____
   ☐ Other _____
   Nominal pipe size *(NPS)* / / / / / in. Wall thickness / / / / / in.
4. Specification _____ Manufacturer _____ Yr Manufactured / / / / Yr Installed / / / /

PART 5: ENVIRONMENT

Area of Incident
XWithin/Under bldg ☐Under pavement ☐Above ground ☐Under ground or Under water ☐Other _____

PART 6: PREPARER AND AUTHORIZED SIGNATURE

Darrell W. Hobart - Manager Distribution
(type or print) Preparer's Name and Title

(508) 305-6885
Area Code and Telephone Number

Authorized Signature

07/29/02
Date

Area Code and Telephone Number

Form RSPA F 7100.1 (3-84)

Reproduction of this form is permitted.

PART A - CORROSION

1. Where did the corrosion occur?
   - ☐ Internally
   - ☐ Externally

2. Visual Description
   - ☐ Localized pitting
   - ☐ General corrosion
   - ☐ Other _____

3. Cause
   - ☐ Galvanic
   - ☐ Other _____

4. Pipe coating information
   - ☐ Bare ☐ Coated

5. Was corroded part of pipeline considered to be under cathodic protection prior to discovering incident?
   - ☐ Yes Year protection started / / / / /
   - ☐ No

6. Additional Information:

PART B - DAMAGE BY OUTSIDE FORCES

1. Primary cause of incident
   - ☐ Damage resulted from action of operator or his agent.
   - ☐ Damage resulted from action by outside party/third party.
   - ☐ Damage by earth movement
     - ☐ Subsidence
     - ☐ Landslide/washout
     - ☐ Frost
     - ☐ Other _____
   - ☐ Damage by lightning or fire

2. Locating information (for damage resulting from action of outside party/third party)
   a. Did operator get prior notification that equipment would be used in the area?
      - ☐ Yes Date received / / mo. / / day / / yr.
      - ☐ No

   b. Was pipeline location marked either as a result of notification or by markers already in place?
      - ☐ Yes ☐ Permanent markers ☐ Temporary stakes ☐ Other _____
      - ☐ No

   c. Does statute or ordinance require the outside party to determine whether underground facility (ies) exist?
      - ☐ Yes
      - ☐ No

3. Additional Information:

PART C - CONSTRUCTION DEFECT

1. Cause
   - ☐ Poor workmanship during construction
   - ☐ Physical damage during construction
   - ☐ Operating procedure inappropriate
   - ☐ Error in operating procedure application
   - ☐ Other _____

2. Additional Information:

PART D - OTHER

Brief Description:

As of the writing of this report there is no conclusive evidence as to the cause of the explosion. The incident is currently under investigation by NSTAR, The State of Massachusetts Fire Marshall's Office and The Department of Telecommunications and Energy.

This report is being filed as a follow up to the telephonic report made to Mr. Flach at 05:52 a.m. on July 24, 2002.

Attachment to Form RSPA F 7100.1 Report #6177643
Re: Incident at 65 Main St., Hopkinton, Massachusetts

At 01:49a.m. NSTAR Gas received a call from the Hopkinton Fire Department that there was a house explosion and building collapse at 65 Main St., Hopkinton and four persons were injured. It was also reported that one child was still in the building. NSTAR immediately dispatched personnel to the scene. The first NSTAR persons at the scene attempted to shut off the service at 2:12 a.m. but were unable to get access to the curb valve due to the structure collapsing over the service line. Distribution crews then began simultaneously locating valves and excavating the 3" plastic main on both sides of the building. NSTAR Gas personnel continually checked adjacent structures for gas readings. The main was squeezed off at 05:06 a.m. For the remainder of the day NSTAR personnel assisted the Hopkinton Fire Department, the State Fire Marshall's Office and the Department of Telecommunications and Energy with the investigation. When enough of the collapsed structure had been cleared away and NSTAR personnel were able to gain access to the service line they excavated at the foundation and cut and removed the service line at the foundation. This section of the service line was turned over to the State Fire Marshall's Office. The remainder of the service line and the main in front of 65 Main St. were capped and successfully pressure tested at 58 psig from 10:15 p.m. to 11:20 p.m. The pressure test was conducted using a calibrated gauge, a calibrated recording chart, and a certified dead weight tester.

As of the writing of this report there has been no conclusive evidence to determine the cause of the explosion.

Exhibit
2

Interviews

Conducted by Richard C. Wallace,Investigator
July 24, 2003 and July 26, 2002.

Peter Lajoie-(508-726-8390)
Operator of excavator that removed the demolished house at 65 Main St.-Hopkinton.

- Stated that the building seamed to have more damage in the right front section of 65 Main St.-Hopkinton. He stated that the walls and floors seamed to be in "splinters" as opposed to the rest of the structure.

- Stated that it seamed funny that the east wall of 65 Main St.-Hopkinton, was laying on the ground with the outside face of the wall facing in an upward position and the interior of the wall was facing the ground. He stated "that it looked as if the wall had been blown out at the base". This wall had struck the side wall of the building to the east.

- I inquired about a propane tank in the backyard, weather it was taken from the basement or form the structure prior to demolition. He stated that the tank was located on the back porch and was not located in the house or basement.

Janet Webster-(508-380-3488)
Resident of 1st floor apartment 65 Main St.-Hopkinton.

- She stated that approximately 5 minutes prior to her 911 call on her cell phone she was awoken by a loud noise which she thought "was coming from a car in front" of 65 Main St.-Hopkinton. She looked outside and did not see anything. She then said "it sounded as if it was coming form the basement", "like a motor".

- She went to the basement door, which was located on a side porch, and noticed that it was unlocked and slightly open. She stated that "I have this thing about the basement door being locked". She stated that "each night before I would go to bed I would check the door and make sure the door was closed and locked".

- She stated that "it was then that she smelled natural gas and a loud noise that was coming form the basement".

- She woke up her daughter, Emily, and instructed her to get her other daughter, Haley, up and get out of the house. She stated that "the noise was so loud that she had to yell to Emily to get Haley". Janet Webster, in

the mean time got Mathew, Janet Websters son, out of bed. They all left the house, and got into the family car, which was parked on the east side of the house.

- She stated that when she moved her car form the east side of the house to the north side of Main St., directly across form 65 Main St.-Hopkinton, she could still hear the noise while parked across the street.

- Janet Webster stated that while talking with her daughter, Haley, on Wednesday, July 24, 2002, some time in the afternoon, Haley indicated that she was awake around 1:00am, Wednesday, July 24, 2002, the day of the incident.

- She stated that, Heath Carey, form the second floor had smelled and odor of natural gas approximately 2 months ago. He checked the basement and reported the odor to the landlord. He never indicated to Janet Webster where the odor was coming from.

Emily Webster-
Daughter of Janet Webster.

- Emily stated that when she went into the bedroom located in the north west corner of the 1st floor apartment, to wake her sister Haley, she heard "a loud noise coming from the basement", and "that it felt like the floor was vibrating".

- Emily stated that she "smelled an odor of gas", and "the noise and vibration could heard and felt in the back of the apartment

7/24/02

I went to bed at 10pm on 7/23/02. I woke up approximately 3+ hours later by a very loud noise coming from the basement.

The house felt to me like it was slightly shaking. I looked out my bedroom window, which faced Main St, to see if it was coming from outside. It wasn't.

I got up and then realized it was definitely coming from the basement.

I walked into the kitchen and then my oldest daughter walked out and asked me what the noise was.

I asked her to come down in the basement with me. I thought it might be the sump pump.

(Less than a year ago I also woke up to a terrible noise in the basement. I called a friend who came over and turned off the sump pump. Later I called the Landlord to let him know what happened & please to check it out.)

I approached the basement door and smelled a very strong ~~odor~~ odor of gas.

I told my daughter to wake up my other 2 children while I grabbed my cell phone, purse and keys.

We left the house, I called 911 on my cell as we were backing out of the driveway.

First, I pulled into Colella's parking lot - the Hopk. Fire dept told me to meet them in front of the house - I pulled over across the street and before I hung up the cell phone & shut off my car - the house exploded.

Janet Webster

Janet Webster
7/24/02

Richard Mays

On the eve of Tuesday July 23 I came back from work at arround 5:00 PM. I put my back pack down next to my 3-seater and left the house shortly to get some groceries at Collela's. After I got back ± 15 minutes later I called my girlfriend in Germany while I let hot water in the tub. After staying in the tub for about an hour I turned on the microwave for some food. I hung out on my coach watching a movie, closing my eyes at times. At ± 9:45 PM my co-partner of the business called for a short business meeting. At ± 10:05 I got on the internet with my laptop doing research for a cooling-fan for our business. At about 11:20 I got ready for bed. Shortly after I fell a sleep in my bedroom.

I woke up in the middle of the night (time unknown at the time) hearing a very loud hissing noise coming from outside. My first thought was road construction (astfalt). I stayed in bed for another minute or two hoping the sound would dissappear. When this was not the case I opend my eyes and got on my feet. Right away I was overwelmed by a strong oder, clearly gas.

I got towards the window in my bedroom near my bathroom and noticed the smell being more pronounced where there was a pipe coming out of the floor. I kneeled down and was now totally aware that it was gas and it was not normal. I opened the window to look down at Matt Websters window but all was silent except for that hissing noise that was so loud and seemed to come from down out of his room. At this point I got alarmed and the first thought I had was: "the could be unconsious downstairs" "I have to warn them to get out of the house or get them out of the house". I walked to my living room where my shorts were laying on the loveseat. Put them on, thinking of not only warning the Websters, but also all my other neighbours who live across the hallway. I saw my shoes but could not find my shirt. As I was about to go back to the bedroom the house exploded. I was lifted up. The room got pitch dark with red sparks flying over my head. A split second later I went down with the floor hearing the wood screach. My thought was "this is it". As I came to a halt, the upstairs floor (my ceiling

came down on my head and I must have squeated down in between my love-seat and the three seater. The air got foul and toxic. I could not breath. My thought was "I am going to sofficate", "I need to get air". As I was down waiting what to do for a couple of seconds, I saw the outside where my livingroom window used to be. I saw my chance and pushed and crawled through the rubble falling out of the house seeing a small pile of wood on fire. I looked at the bank across the street and saw people (4). I walked towards them and when I got from the driveway to the street I recognized that it was the Websters.

Haley was sobbing, Matt was pacing and we looked arround us if anybody else was out of the house. A minute later 2 police offiers were at the window of the upstairs floor. One of the offiers got in the building. The hissing of the gas (noise) continued. 30 seconds later the police offiver came out carrying Poliana, follet a few seconds later by Brian and a little later Tony came out of the window wrapp in a blanket.

We were approached by a police officer if we

knew if anybody else was still in the building. Janet Webster told them about the Carey's. I seemed such a long time but to my guess. 5 to 7 minutes later also Heath and Tara came out, Tara being totally overwelmed and not having the kids.
Again an officer approached us and asked if we had seen anybody else at the house that might have been sleeping over.
We had to leave the drive through area of the bank because the hissing noise did not stop and were told to go to the dispatch lady to go to the police station, because of the danger of the gas and another possible exploding.

July 30th, 2002
3:30 PM.

~~[illegible]~~ July 30th, 2002 **2d**
3:30 PM

Gas Meter.

On an undetermined date ~~I~~ (to my records before May 23rd) I walked out to my car in our driveway and saw an NSTAR car standing in the parking lot of the driveway behind our house. The ~~g~~ NSTAR-person approached me and asked me if I had time to stay and have my gas meter replaced. I told him I was in a hurry and to come back later. He left me that day a business card with a number. I called the number that day and made an appointment for May 23. That day I showed him where the meters were and he asked me what meter was mine. Since I was on socks I did not go further than the stairs. He walked to the far wall (front of the house) and got working for about 10-15 minutes. After that we both walked out and around the house. Got upstairs and entered my appartment. I showed him where my stove and over was in the kitchen. He lit a match on an extractor and tried to lit the oven. It would not work immediately so he lit all 4 cooking burners trying to get the pilot flame to work on the stove. After that

worked her relit the over pilot, which took him several matches depleting his matchbook 3/4 from full.
After it stayed on we walked out of my appartment and he asked me who lived accross from me. I told him the Carey's and he wanted to know if they were home. I told him "I think so", we knocked and Heath opend the door. I left them going back into my appartment.

Over problems.:
Over the next couple of weeks when I got home to cook some dinner I've had a hard time using the over. Also to bake some croissants in the morning. I would have to relit the pilot and turn on the ~~stove~~ oven.
On June 25 throug July 7th I left from the USA to visit family and my girlfriend in Holland. The day after I came back on that Monday I tried to bake some croissants and had the same problems with the oven. The pilot ~~light~~ flame would go out and had to be re-lit several times. That day Tuesday July 23 I again had the same problem in the morning and ever thought about complaining to the Landlord. All those days there was no real draft in the house.

I had to close my store at the mall, so I arrived at my house around 11:15 at night. I then came into the back door, said "hi" to my little sister and went straight into the bathroom to get ready for bed. ~~I had thought~~ I had thought it was strange to see her still up and wide awake, but I figured maybe she just really missed me while I was at work.

We both went to bed. The next thing I remember is ~~both~~ of my eyes opening and my body in a sudden panic due to the loud unforgiving noise that was constant. The best I can do to compare ~~it~~ the noise is to say it was sort of like a tea kettle noise ~~before~~ as it starts screaming/ the water is boiling in other words/. I knew it wasn't my radio, so I went in Matt's room to see if his air conditioner was malfunctioning and it wasn't because I turned it off and the noise was still there.

I went and found my mother and was told to wake Matt and hayley up. I did and here we are.

August 6, 2002 11:30

Emily Ashcraft

It was about 6:00 pm Tuesday Night and I arrived home on 65 Main st. I was with my girlfriend Krissy Randolfino. The day before I got stung by a bee on my forehead, so my face was all swollen. I had gone to the red sox game earlier that day. They had a double header. around 10:00 pm I drove Krissy R. home and I came back to my house. I was lying in my bed watching the second game of the double header with an ice pack on my head. I fell asleep early that night b/c of my head, usually I would of been up until 1:00 pm - 2:00 pm but I fell asleep around 11:00 pm. I was woken up at 1:30 pm by my old sister Emily Webster, I put on a pair of shorts and walked out to the car where my mom & my sisters were waiting. We drove and parked in front of the Soviergn bank. When I was in my house the noise was so loud and weird it was almost like the house was alive. When I stood up in my room there was a vibration going through the house. It was almost like someone was in the basement in a car and had the gas pined to the floor. As my mom was talking to the police or firemen

before she hung up the house blew. My Air condition blew airborne across the street and hit our Car that we were in. A lot of other debre hit our car too. Then we all got out and saw our house no longer.

Matt K Webster
August 2, 2002

STATEMENT OF TARA CAREY

I, Tara Carey, make the following statement concerning the incident of July 24, 2002.

I confirm that the day preceding the explosion is as described by Heath in his statement. In addition to that, prior to putting the children to bed I gave them a bath that evening. I noticed in giving them a bath as I had for the preceding weeks, I had difficulty in regulating the water temperature. In fact, I recall that the water temperature in filling the bath did not seem to get hot. In the weeks prior to the explosion, I had similar problems in regulating the water temperature. Specifically, either the hot water either came out extremely hot or cold.

Following putting the children to bed and spending some time with Heath I went to sleep at about 11:00 p.m. The next thing I recall is seeing an orange and blue flash and feeling intense heat. I felt myself subsequent to that time trapped under a significant amount of debris and was having difficulty in breathing. I could feel the face of one of my children and attempted to wipe debris from their face in order to create an air pocket.

At some point subsequent to that, Heath managed to free himself of the debris and moved enough of the debris from my body allowing me to follow him in exiting the building.

I certify that the facts contained in this statement are true and accurate.

Tara A. Carey

Tara Carey

Dated: August 6, 2002

Exhibit
3

Narratives for Incident Number 2002000006547 ? Yes
Other Narratives not authorized for print? None
Narratives this user authorized to print:

Narrative by: Patrick O'Brien

Seq No: 1 Date & Time 7/25/2002 9:50:00AM

2002000006547
07/24/02
House Explosion, Fatalities
O'Brien

On 07/24/02 at approximately 0140 hours Officers DeBoer and VanRaalten were on patrol in the Main Street area. Both officers heard and felt a loud explosion. At approximately the same time Sergeant Michael Sutton was in the rear parking lot of the police station. Sergeant Sutton heard, saw and felt a loud explosion that came from 65 Main Street. Sergeant Sutton notified Dispatcher Deraad who dispatched the cruisers to that location.

Officer DeBoer and VanRaalten arrived at 65 Main Street and found parts of the house to be separated from the main building. The Officers heard people screaming and out in the street. The officers assisted residents exiting the building. Hopkinton Fire department arrived at the scene and began a search for missing residents.

I was called and requested to report to 65 Main Street. I spoke to Sergeant Sutton who gave me a list of known residents of 65 Main Street. The list showed that there was four apartments. The following is a list of residents of each apartment.

Apartment 1st floor
Janet Webster 02/10/55
Emily Webster 01/20/77
Matthew Webster 08/28/82
Haley Webster 07/31/86

2nd floor left
Tara Carey 09/08/74
Heath Carey 01/26/76
Violet Carey Age 5
Iris Carey Age 4

2nd floor right
Richard Maijs 02/13/65

3rd floor
Antonio Defreitas 11/22/69
Poliana Compos 20 years
Brian Defreitas 5 years

Owner of house
Leonard Pearson Ashland
Ann Marie Pearson Hopkinton

Sergeant Sutton told me that all the residents were accounted for except Violet and Iris Carey. The scene was now under the direction of the Hopkinton Fire Department.

I spoke to Mrs. Webster and asked her what she remembered. Mrs. Webster told me that she was awakened by a "loud,

Narrative by: Patrick O'Brien

Seq No: Date & Time
1 (continued) 7/25/2002 9:50:00AM

horrible" noise coming from the basement. Mrs. Webster recognized the noise to be from a sump pump. Mrs. Webster said that when the floater on the sump pump froze it would make the noise. Mrs. Webster went to the cellar door where she smelled a very strong odor of natural gas. Mrs. Webster said that she did not open the door. Mrs. Webster woke her three children and left the house. Mrs. Webster dialed 911 from her cell phone as she was backing out of her driveway. Mrs. Webster was connected to the State Police who transferred her to the Hopkinton Fire Department. Mrs. Webster was now in the parking lot of Colella's Supermarket. Mrs. Webster was asked to meet the fireman in front of her house. Mrs. Webster parked her car across the street from 65 Main Street in front of the Sovereign Bank. Mrs. Webster said before she was able to hang up the phone with the Hopkinton Fire Department the house "exploded". EMS workers checked out Janet, Emily, Matthew and Haley Webster.

I spoke to Mr. Richard Maijs. Mr. Maijs told me that he woke up and heard a hissing noise and smelled natural gas. Mr. Maijs put his pants on and then the house exploded. EMS workers checked out Mr. Maijs.

I spoke to Antonio Defreitas who told me that he was sleeping until the house "went down". Mr. Defreitas escaped the house with his son and Poliana Compos. Ms. Compos was nine months pregnant and was transported to the hospital.

I spoke to Mr. and Mrs. Carey. I made sure that they did not have and serious injuries. I did not question them about the incident because they were in an emotional state.

I was advised that one of the Carey children had been extricated from the house and was being transported to the hospital. Arrangements were made to transport Mr. and Mrs. Carey and Mrs. Carey's mother and sister to the hospital.

The search for the second child continued. I was notified that the second child had been found and had passed away. That information was passed onto officer Griffin who advised the parents. Officer Griffin advised me that the child that was transported to the hospital was Iris and that she was pronounced deceased by Dr. Linden.

I called the Medical Examiners Office and spoke to Michael. I advised him that the body of a 5-year-old female was located in the house. I told Michael the paramedics at the scene had found obvious signs of death. Michael told me that he would notify the Medical Examiner and call me back. Michael called back a short time later and said they would be coming out to pick up the body.

At approximately 0600 hours Mr. Marc Daudelin from the Medical Examiners Office arrived on scene. The body of Violet Carey was loaded into his vehicle. Mr. Daudelin cleared the scene at approximately 0616 hours. Mr. Daudelin stated he was going to Milford Hospital to pick up the body of Iris.

I went to the fire station with trooper Craig Boudreau of the State Fire Marshall's Office to speak to Mrs. Webster. Mrs. Webster repeated her statement that she gave to me earlier. Mrs. Webster added that in the beginning of the summer Mr. Carey came to her apartment to use the cellar stairs. The Webster's apartment is the only entry to the cellar. Mr. Carey told Mrs. Webster that he smelled gas. Mrs. Webster said Mr. Carey went downstairs to check the smell. When Mr. Carey came back he told Mrs. Webster that he would be contacting the landowner.

I contacted Mr. Pearson the owner of the property and requested he come to the scene. Mr. Pearson arrived a short time later. Mr. Pearson spoke to Chief Irvin and Daugherty about the removal of the house. I asked Mr. Pearson if Mr. Carey had called or notified him about the smell of gas in the cellar earlier this year. Mr. Pearson told me that Mr. Carey had not mentioned anything about a smell of gas in the house. Mr. Carey told me that he did remember Mrs. Webster mentioning to him that she smelled gas last summer. Mr. Pearson told me that he told Mrs. Webster to call the Gas Company if she smelt gas.

After the body of Violet was removed the scene was turned over to the State Police assigned to the State Fire Marshall's Office. The officer in charge was Sergeant Martin Foley. An excavator was brought in to start removing parts of the house. The property was placed in dumpsters provided by Harvy's. The goal was to take away all debris from on top of the area of the cellar where the gas line was located. Eventually the hot water heaters and furnaces were removed. The

Narrative by: Patrick O'Brien

Seq No:	Date & Time
1 (continued)	7/25/2002 9:50:00AM

Fire Marshall's Office kept some of those items as evidence.

As the day progressed personal items of the residents were found and turned in to me. I collected these items and brought them back to the station. I contacted the owners and returned them to the Websters and the Defreitas'. I contacted an aunt of Mrs. Carey and advised her that I had some pictures of Violet and Iris. I told her that she or someone else could pick up the pictures anytime.

During the day I took several pictures with the department's digital camera. I downloaded the pictures onto the computer. A Trooper assigned to Crime Scene Services was on scene and took photographs throughout the day.

Trooper William Donoghue assigned to the Middlesex District Attorney's Office arrived at the scene in the morning. Trooper was on scene for the removal of Violet Carey. Trooper Donoghue cleared the scene and traveled into Boston to speak to the Medical Examiner.

After the water heaters and furnaces were removed, Nstar Gas began to dig in the area of 65 Main to do some testing of their own. The crew that was working on the heavy equipment continued to take down the remainder of the house.

Signature - Reporting Officer *Signature - Reviewing Officer*

Incident Notes:

Create User ID:

Seq No:	Date & Time

No Incident Notes Listed

Hopkinton Police Department
Incident Narrative Report

Print Date: July 30, 2002

Narratives for Incident Number 2002000006547 ? Yes

Other Narratives not authorized for print? None

Narratives this user authorized to print:

Narrative by: Meaghan Deraad

Seq No:	Date & Time	
3	7/30/2002 4:41:00AM	True

On Wednesday July 24, 2002 I, Meaghan DeRaad, was assigned to the duty of Police Dispatcher for the Hopkinton Police Department from the hours of 12:00 am to 8:00 am. At approximately 01:41 I was sitting at the desk after I had just finished detailing an incident my officers had just cleared from when I heard the loudest bang and rumble I have ever heard. The front door of the police station swung open and shut from the blast. My first thought was that the police station had just been struck by lightening. The first thing I did was turn around and looked at our Doppler radar weather computer. I was looking to see if there were any storms in our area, since some had just passed through the Hopkinton area. When I looked at the computer monitor and saw no storm activity in our area so I knew it was not lightening. I immediately got on the radio and called the two officers that were on the road and told them to "code one." This is our department's code for returning to the station. I then saw the off duty Sergeant running from the back lot toward the front of the building. I ran to our employee entrance on the side of our building, Sgt. Michael Sutton was at the end of the police station driveway looking in an easterly direction. I immediately yelled to Sgt. Sutton asking him what had happened. At this point I thought that a car had hit the telephone pole that is right near the police station driveway, and at the same time I thought the noise was too loud to be a car accident. When Sgt. Sutton responded to me the Fire Department, which is located across the street from the Police Department, started to tone out the box alarm. Due to the fact the fire horn is loud, I could not hear what Sgt. Sutton was trying to tell me.

I then went back into the building, still not knowing what had happened, and all the phones were ringing. I fielded many E911 calls immediately following the blast and many calls on the department's business line as well. Almost every caller I talked to stated that they heard a bang and wanted to know what happened. I advised the first callers that I heard and felt it also and I was not sure exactly what had happened. Shortly after the blast, Dispatcher Mary Gibney, who was also in the employee parking lot prior to the blast, came in to the lobby and told me that a house exploded. I asked her which one and she stated she did not know the number of the house. I know that there are only three houses in this area of Main Street and asked her to describe which house it was in the line of them. She told me the one in the middle, as the three houses are right in a row. I asked her if it was number 65, she said that she did not know what number the house was. I then asked her if it was the yellow one, and she responded yes. I knew the address of this house as we have responded to different apartments for different reasons over the four years I have been with the Hopkinton Police Department.

I ran out the front door for a quick minute to see the scene for myself. I ran out and looked to the east and saw the roof of 65 Main Street in the middle of the street. I could not believe my eyes. At this point many fire trucks were arriving on the scene. I came back into the police station, to field many more calls.

I was advised by officers on the scene to call NStar Gas, NStar Electric, to notify the Chief of Police, and the Upton and Ashland Police Departments to assists us with roadblock. I called Ashland Police and asked their Dispatcher to send us a car or two and put one on Main Street and Hayden Rowe Street to divert traffic from going down Main Street. Next I contacted the Upton Police. I advised their Dispatcher of the same and asked them to put a car at Main Street at Pleasant Street and divert traffic up Pleasant Street. At 0152 I contacted Chief Thomas Irvin by telephone and advised him of the call we had. I then called the two NStars and told them to get to the scene as soon as possible. Next Det. O'Brien requested I call the State Fire Marshall's office. I called the State Police in Framingham and asked them to put a page into the Fire Marshall and have them call me. They stated they would and at 0230 the State Fire Marshall's Office called me. I advised him of the situation and advised him that my detective was requesting him to respond to the scene. He told me he would respond and gave me an estimated time of arriving of forty-five minutes from that moment. At 0315 I was advised that he was on the scene. The last of the calls to be made were a call to the owner of Star Package Store and a representative from the Sovereign Bank to advise both persons that the windows in their businesses were blown out of the building. Disp. Gibney made these calls. She spoke with the Bank's security office and left a message with Aubrey Doyle, an owner of the package store. Mr. Doyle called the police station later to advise me that he had been to the scene and was aware of what was happening near his store.

Shortly after this Dispatcher Gibney came into the lobby of the police station with residents of the house that exploded. She had a piece of paper and was taking the names and dates of birth of all residents, and asking them which apartment they lived in, how many people lived in the apartment with them and if everyone made it out of the house. The Webster family stated that the four of them that Disp. Gibney spoke with were the only four occupying the entire first floor. Mr. Maijs confirmed that he lived alone in his second floor apartment and he was the only one in his apartment. When Disp. Gibney spoke with the Carey Family, they advised her that their two daughters, ages four and five, were still in the house. The Carey Family occupied the other half of the second floor, next to Mr. Maijs. They also advised Disp. Gibney that the four family members were the only ones in their apartment that night. Lastly Disp. Gibney spoke with Antonio

Seq No: Date & Time
3 (continued) 7/30/2002 4:41:00AM True

DeFreitas, who occupied the third floor apartment. He stated that his pregnant girlfriend, his five-year-old son, and himself were the only ones in their apartment that evening. When I did not see a pregnant woman anywhere I asked Disp. Gibney where she was, she advised the that they immediately took her to the hospital as a precaution.

Next the lobby of the police station became the triage area for the victims that were in the house. Southborough and Westborough Emergency Medical Personal looked at each person taking their vitals and asking them multiple times if they were sure they did not want to be taken to the hospital. This whole process took about two hours. The phones had slowed down at this point and I stayed at the window to the lobby to make sure the medical personal and victims had anything they needed. Mostly all they wanted was cups of water for the victims.

While this triage was happening in the lobby Disp. Gibney was giving me updates of the status of the two children in the house. For about two hours every time Disp. Gibney came into the station I would ask her "Did they find them yet"? Finally I was advised that the first child was taken out and being worked on by EMS on the way to the hospital. The next bit of information that I had heard was that the child that was already out of the house had been pronounced dead at the hospital and that the other child that was still in the house was pronounced dead in the house and rescuers were pulled out of the house until NStar had gotten the gas shut off. Then the firefighters were going to be going back in on a recovery mission and not a rescue mission.

At approximately 0439 Detective Patrick O'Brien advised me that the Medical Examiner's office will be calling me and I was to keep them on the line and advise Det. O'Brien when they called. The medical examiner's office called me at 0442. They told me to advise Det. O'Brien that Violet Carey was the child that was pronounced dead in the house and Iris Carey was the child that was pronounced dead at the hospital. They also advised me that they need an hours notice to respond to the scene. I then put the man on hold and contacted Det. O'Brien via Nextel. I advised Det. O'Brien what the Medical Examiner's office said about which child was where and that the needed the hours notice. Det. O'Brien then told me to tell them to start coming out. When I went back to the phone, I advised the man from the Medical Examiner's office that they can start to come out. He told me he had to make a phone call and would call me back. I relayed this to Det. O'Brien and he told me that if they did not call back within twenty minutes to call them back and tell them to come out. Twenty minutes later at 0500 I placed a call to the Medical Examiner's office and was advised that they were already on their way and would be out in an hour. I advised Det. O'Brien of this news. I was advised at 0600 that the Medical Examiners were on the scene and at 0614 the body of Violet Carey was removed from the house.

At 0700 I was relieved on the desk by Disp. Clemons and went into an incident debriefing meeting with Officer van Raalten, Officer DeBoer, Sgt. Sutton, and Disp. Gibney.

Meaghan DeRaad
Signature - Reporting Officer

Signature - Reviewing Officer

Exhibit
4

17139	MA	7/24/2002		2000815	0	NFIRS - 1
FDID	State	Incident Date	Station	Incident Number	Exposure	Notes

Notes **Title:** 63 MAIN ST. 02-0815

Hopkinton Fire Department received a report of gas leak at 63 Main St. Hopkinton, MA. via 9-1-1 tranfer call from the Mass. State Police dispatcher. The caller was the first floor occupant Janet Webster. While preparing to dispatch the assignment, an explosion occured at the residence reporting the gas leak. Engine #2 was the first arriving unit. Upon arrival Lt. Steve Slaman reported a major explosion involving a multi-family dwelling with reported occupants trapped, he requested a second alarm upon arrival. While Lt. Slaman continued his initial size-up of the scene, the crew fron Engine #2 hand drifted a 4" supply line to the hydrant in front of 74 Main St. (Hopkinton PD). The crew stretched a 2 1/2" hand line to the "D" side of the structure. A master stream was set up in the street and (2) 3" supply lines were connected to the master stream. C-1 Chief Daugherty arrived and conferred with Lt. Slaman. After conferring with Lt. Slaman, Chief Daugherty assumed command of the incident striking a third alarm. A special call was also placed to the Southern Fire District #14 Technincal ResuceTeam. Occupants trapped in the dwelling could be heard calling for help at this time. Engine #2 was assigned to control vapors and stand-by for fire protection purposes.

Second arriving Engine #1 took the hydrant at the corner of Grove and Main St. laying a 4" supply line to the "B" side of the structure. An 1 3/4" hand line and a 2 1/2" hand line were stretched from this truck. The 1 3/4" line was taken to the "A" side of the building and the 2 1/2" remained on the "B" side.. Lt. Ken Clark was assigned the position of Operations Officer upon his arrival with Engine 1.

Rescue 1 arrived on the scene and set-up on the "B" side of the structure. Lt. Fran Clark, was assigned to command the Rescue Sector. Rescue crew made an initial assement of the dwelling. As they were conducting their assessment an occupant of the the second floor apartment Heath Carey appeared in a void space apparently self extricating himself. He reported that his wife and two children were still trapped in the structure in the area of the dwelling that had been their bedroom. While the initial rescue company began to enter the collapsed area to continue the assessment, they encountered Tara Carey, wife of the first occupant to emerge from the dwelling. She was assisted from the dwelling by crews from Rescue 1 and Engine 1. She reported that the children were in the general area from which she had just exited. As the initial crew continued into the structure the techinical rescue crews began shoring up and stablizing the structure. Resuce crews located the first victim and after removing some debris, they were able to remove the victim from the collapse area. She was in cardiac and respiratory arrest. CPR and othe BLS care was started by the rescue crew as they removed her from the dwelling. She was turned over to the paramedic's for ALS care and transport to Milford-Whitinsvillle Hospital.

Ashland Engine #3 and Rescue #1 (special called on the second alarm) arrived on the scene and the crews from both units were assigned to the rescue sector. Milford Engine #6 (second alarm) was assigned to assist the rescue sector with equipment staging and shoring for the technical rescue team. Ashland C-1 (William Kee) arrived on the scene from the east side of the incident and encountered one of the occupants that had exticated from the "A" side of the dwelling via a window. She was pregnant and was requesting to be transported to the hospital. Ashland Ambulance #2 arrived on scene and transported her to Metro-West Medical Center at Framingham. Chief Kee was assigned the position of Safety Officer after checking in with command.

Notes **Title:**

Two additional command officers Chief Mauro-Southborough arrived on scene as was assigned to liaison between the gas company and command. Chief John Touhey-Milford Fire was assigned to coordinate between the technical rescue team and the safety officer.

ALS unit LP-1 arrived on the scene and Paramedic Don Collins was assigned to command the rescue sector. Initial assessment indicated that possibly 12 victims were trapped in the building. Third alarm department Westborough was requested to send two ALS ambulances and an engine. Southborough fire was dispatched to the scene with an engine and ambulance. The ambulances were staged by EMS command. Southborough Engine #22 (third alarm) and Westborough Engine #4 (third alarm) were staged at fire headquarters. An additional paramedic unit MP-2181 was also requested to the scene and U-Mass Med. Flight was placed on stand-by.

Regional Technical Rescue Team memebrs assembled on the "B" side of the structure to begin planning their attempt to extricate the second occupant still trapped in the building. The initial rescue crew reported that they had a general idea where the occupant was, but there was a large amount of debris in the area. A tech team crew entered the dwelling and located the second trapped victim. The paramedic who had entered with the crew reported that the trapped occupant had no pulse or other signs of life. This was also confirmed by Lt. Clark, from the rescue sector. They reported that they would need to do some cutting and lifting of debris to remove her. As crews prepared to contine with the extrication, Lt. Slaman on Engine #2 reported that the N-Star gas crew was unable to shut down the gas leak and that a large amount of gas was leaking into the dwelling from an apparent broken gas pipe on the "D" side of the dwelling.

After conferring with Operation and Safety Officers, Chief Daugherty ordered the evacuation of all personnel from within structure until the gas company could shut off the gas.

At this point a special call was made to the Marlborough for their technical rescue unit. They would be assigned as the RIT team for the district #14 team. They also assisted with air monitoring and entry team monitoring.

At 0507 hrs. the gas was confirmed to be shut-off by the N-Star gas crews. The Technical Rescue Crew, had already devised a plan to finish the extrication of the remaining victim from the dwelling. At this time, the Technical Rescue Team was notified that they could redeploy and begin the process of removing the victim from the dwelling. The team re-enterd the dwelling at 05:16 hrs to begin the removal. At 06:13 hrs. the second victim had been removed from the dwelling by the Technical Rescue Team. She was again assessed by EMS personnel of the scene who again reconfirmed that there was no pulse or respiratory acitivity. Patient was placed in a body bag and turned over to the Medical Examiner. At 06:30 hrs. situation was declared under control

Following the removal of the second victim, the process of removing the debris from the site and the investigation into the cause of the explosion was started the State Fire Marshal and the State Police. Also on scene were representatives of N-Star and the State Pipeline

Notes **Title:**

enforcement agency.

Debris removal and evidence collection continued throughout much of the day and into the early evening hrs. Debris from the dwelling not needed for investigation purposes was transported to E.L. Harvey's in Westboro, Mass. for disposal. At one point during the debris removal, the oil line that fed the oil burner was accidentally pulled out from the bottom of the tank. As a result, approximately 200 gallons of #2 heating oil spilled into the basement area. DEP was called and Bill Phillips from DEP responded to assess the site. It was determined, that the oil posed no immediate threat and the the investigation could be completed before the spill was cleaned up.
At 23:00 hrs. C-1 terminated command of the incident all units to quarters.

ZECCO enviromental was contracted by the DEP to handle the clean-up which was completed the next morning at approximately 10:00 hrs. Site clean-up continued until approximately 13:00 hrs on July 25, 2002. when the site was declared clear by the DEP. At this point the site was backfilled.

Dwelling Occupants:

1st. Floor

Janet Webster	DOB 2/10/1955
Emily Webster	DOB 1/20/1977
Matthew Webster	DOB 8/28/1982
Hayley Webster	DOB 7/31/1986

2nd Floor Right

Richard Maijs	DOB 2/13/1965

2nd Floor Left

Tara Carey	DOB 9/08/1974
Heath Carey	DOB 1/26/1976
Violet Carey	
Iris Carey	

3rd Floor

Antonio Defritas	DOB 11/11/1969
Poliana Compos	
Brian Defritas	

Exhibit
5

Chronological Summary of Events at 65 Main Street, Hopkinton
On July 24, 2002

01:49 am - Initial call received by Sue Henderson in Service Dispatch from the Hopkinton Fire Department reporting a house explosion and building collapse at 65 Main St., Hopkinton, 4 persons injured.

01:50 am – NSTAR Serviceman (Unit 30) dispatched to the scene.

02:00 am - Incident page sent to Area Managers, Directors and VP Gas Operations.

02:02 am - Distribution on-call Supervisor Steve Cobb notified. Supervisor Cobb dispatches Distribution Technician Peter Coskie to the scene. Peter Coskie was called in earlier to perform an emergency Dig Safe markout.

02:05 am - Gas Supply Manager John Rafferty notified by SCADA.

02:07 am - Manager Rafferty instructs SCADA to call in Gas Supply Technician Jon White.

02:10 am - Manager Rafferty en route to 65 Main St., Hopkinton.

02:11 am - Jon White en route to incident.

02:12 am – Unit 30 and Peter Coskie arrive at 65 Main St. and were instructed by the Fire Department to shut off the gas service. They attempted to locate the curb valve but discovered that the building had collapsed on top of the service line and prevented access to the curb valve and the service tee at the main. Supervisor Cobb was informed that the house collapsed over the service line. Unit 30 instructs Service Dispatch to notify on-call Service Supervisor Larry Stone.

02:20 am - Steve Cobb instructs SCADA to call in a Distribution Planner to assist with locating facilities.

02:25 am - On Call Service Supervisor Larry Stone notified via phone call from Service Dispatch. Supervisor Stone instructs dispatcher to complete an incident form. She informs him it is already done.

02:29 am – Supervisor Cobb instructs SCADA to call in a Backhoe Operator and another Distribution Technician.

02:30 am - Manager Rafferty instructs SCADA to trend and print area pressures and odor ratios.

02:35 am – 02:55am - Unit # 30 shuts off service lines to surrounding buildings per order of Hopkinton Fire Dept. Gas Services to 63, 66, 67, and 70 Main St. were shut off. Also checked these four buildings for gas readings. No readings were detected.

02:42 am - Southboro Distribution Manager Bill Leatham notified of incident by telephone.

02:44 am - Southboro Distribution Director Don Bean notified of incident by telephone.

02: 48 am - Southboro Distribution Manager Bill Hobart notified of incident by telephone.

02:55 am - Service Department Manager Tim Fatcheric notified of incident via phone. Tim called Larry Stone for informational update and checked in with Jeff Johnson, Manager of Service Dispatch, who is already en route to his office.

02:55 am - Gas Supply Technician Jon White on scene.

03:00 am - Gas Supply Manager John Rafferty on scene.

03:02 am - Fire Department Operations Officer requests the presence of Distribution Supervisor Scott Alexander to the scene as Scott lives in the immediate area.

03:05 am – On-call Service Supervisor Larry Stone arrives on scene and is informed by Unit # 30 that the gas to all surrounding buildings has been shut off. Larry and unit # 30 begin checking the sewer system on Main St. Hopkinton. There are no gas readings found in any surrounding manholes or catch basins. Supervisor Stone informs the Incident Commander of same and begins a leak investigation with bar holes. There are no gas readings found in or around the affected area.

03:08 am - Distribution Supervisor Scott Alexander arrives on scene to assist with incident.

03:10 am - Company Spokesman Mike Monihan notified of incident by Director Don Bean.

03:13 am - Manager Rafferty meets with Incident Commander (Chief Daugherty) who informs Rafferty that there are four persons injured and two reported dead.

03:20 am - Distribution Crew arrives and begins simultaneously excavating a trenchon the west side of the building and locating main valves to shut down the gas main and isolate the affected area.

03:29 am - Hopkinton Fire Department West Main St. Odor Samples taken. Results with Gas Supply report.

03:30 am - Service Supervisor Larry Stone completes bar holing. No readings detected. Stone and Unit # 30 begin rechecking surrounding buildings with CGI meters and find no gas readings.

03:40 am - Service Manager Tim Fatcheric arrives on scene and repeats Leak Investigation of surrounding buildings with Unit # 30, once again, no gas readings found.

03:40 am - Manager Rafferty calls out Gas Supply Tech Terry Jordan to change charts at Pond St. Crystal Pond and Route (9& 20) Regulator Stations.

04:03 am – Manager Hobart arrives at scene with main plans showing main valves to isolate area.

04:09 am – Manager Hobart reviews isolation valve locations with Supervisor Alexander and instructs him to start shutting down main valves.

04:10 am – Distribution crew squeezes off plastic main on west side of building.

04:16 am – Distribution cuts pavement and begins excavating main on east side of 65 Main St.

04:20 am – Supervisor Alexander shuts down first valve on Church St. @ Main St.

04:15 am - Unit # 30 is assisting Gas Supply with taking pressure test reads at # 67 Main St. Hopkinton. Gas pressure in Distribution system is holding at 57.5 psi.

04:21 am - Manager Rafferty photographs area.

04:28 am - Reporting Manager Bill Hobart notifies DTE, Angela Motley of the incident.

04:30 am - The surrounding buildings are checked again and no gas readings are found.

04:34 am – Supervisor Alexander reports he cannot get valve wrench on valve on Hayden Rowe @ Main St. due to the box being misaligned from the valve.

05:06 am - Distribution squeezed off main on east side of building shutting down the main in front of 65 Main St.

05:06 am - Service Dept. Manager instructs Unit # 30 to go back to addresses that were shut off at riser locations and lock and seal the meters.

05:46 am - Service Dept Manager Tim Fatcheric finds regulator vent piping through the outside wall in debris. Photographed same.

05:52 am - Bill Hobart notifies DOT. Speaks with Mr. Flach of the incident.

06:15 am - Manager Rafferty clears scene.

06:30 am - DTE Inspector Rich Wallace arrives on scene.

06:30 am - Gas Supply Tech reports all pressure reads taken are normal during chart change outs.

07:00 am - Director Jim Devereaux notifies Call Center Manager Tony Simas of the incident at 65 Main St. Hopkinton.

07:00 am - Manager Rafferty returns to Southboro Gas Supply for chart, trends and data processing.

07:30 am - Director Don Bean notifies Wayne Berry of the Safety Dept. and Dan Roach at 07:35 am.

09:12 am - Distribution Walking Survey is completed, no gas leaks found.

09:13 am – 06:44 pm - Throughout the remainder of the day and into the evening NSTAR personnel assisted the Hopkinton Fire Department, the State Fire Marshall's Office, and the Department of Telecommunications and Energy with the investigation of the incident.

06:45pm – Enough of the rubble from the collapsed building has been removed so that NSTAR Distribution Crews can now continue working.

06:47 pm – 10:12pm - Distribution Crews excavate at foundation and enlarge squeeze off holes around main. Approximately one foot of the ½" plastic service pipe is cut and removed from the foundation wall. This section of service pipe is turned over to the State Fire Marshall's Office. Distribution then capped the service line and the main on the east and west side of 65 Main St. to prepare for the pressure test.

07:30 pm – Meter disconnected from outside riser on service line to 66 Main St., located directly across the street from 65 Main St., and pressure test fittings and instruments connected to riser. Instruments connected to conduct the pressure test were a calibrated gauge, a calibrated recording chart, and a certified dead weight tester.

07:35 pm – Pressure test set up reviewed with Rich Wallace from the D. T. E.

09:50 pm – Compressor hose connected to pressure test set up.

10:00 pm – 10:15 pm – Injected compressed air through service line to 66 Main St. to 58psig to test the ½" plastic service to 65 Main St., the ¾" plastic service to 66 Main St., and approximately 86' of 3" plastic main located in front of 65 Main St.

10:15 pm – 11:20pm – Pressure test held stable at 58psig. Test witnessed by D.T.E. Inspectors Wallace and Greco.

11:25 pm – Pressure test removed.

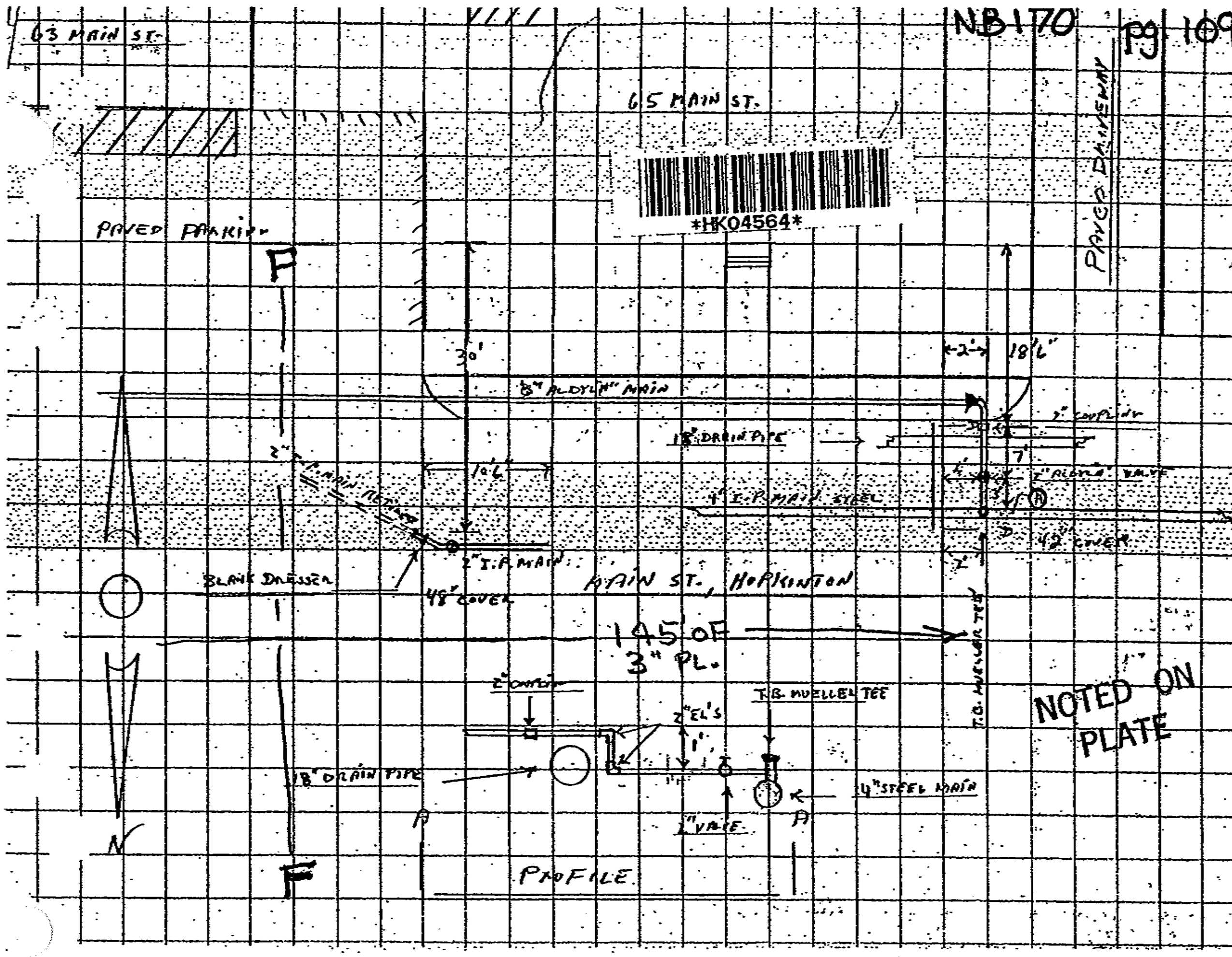
11:35 pm – Personnel from the Hopkinton Fire Department, the State Fire Marshall's Office, and the Department of Telecommunications and Energy clear the scene.

11:57 pm – Excavations are secured with steel street plates for the night and the remainder of NSTAR personnel leave scene.

Exhibit
6

Photograph of squeeze-off tool installed in the easterly excavation Main Street, Hopkinton
July 24, 2002

Exhibit
7



ST. 65 MAIN ST. TOWN HOPKINTON
JOB TIE-IN 3" ALDYL-A T. 4" STEEL MAIN I.P.
DATE 10-27-79 BY DECOMINU - DEVELEAUX

65 MAIN ST. HOPKINTON

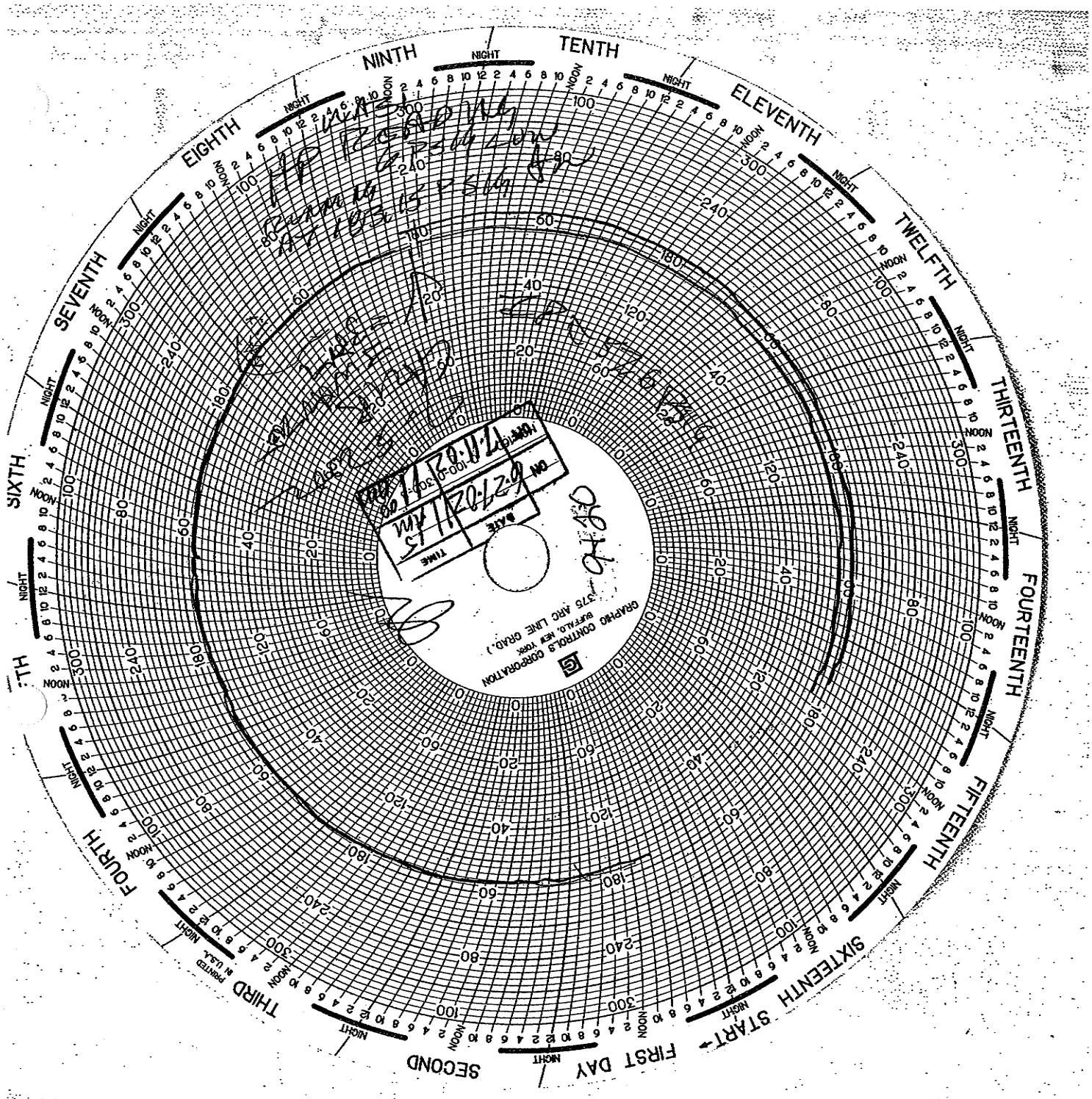
OD 154

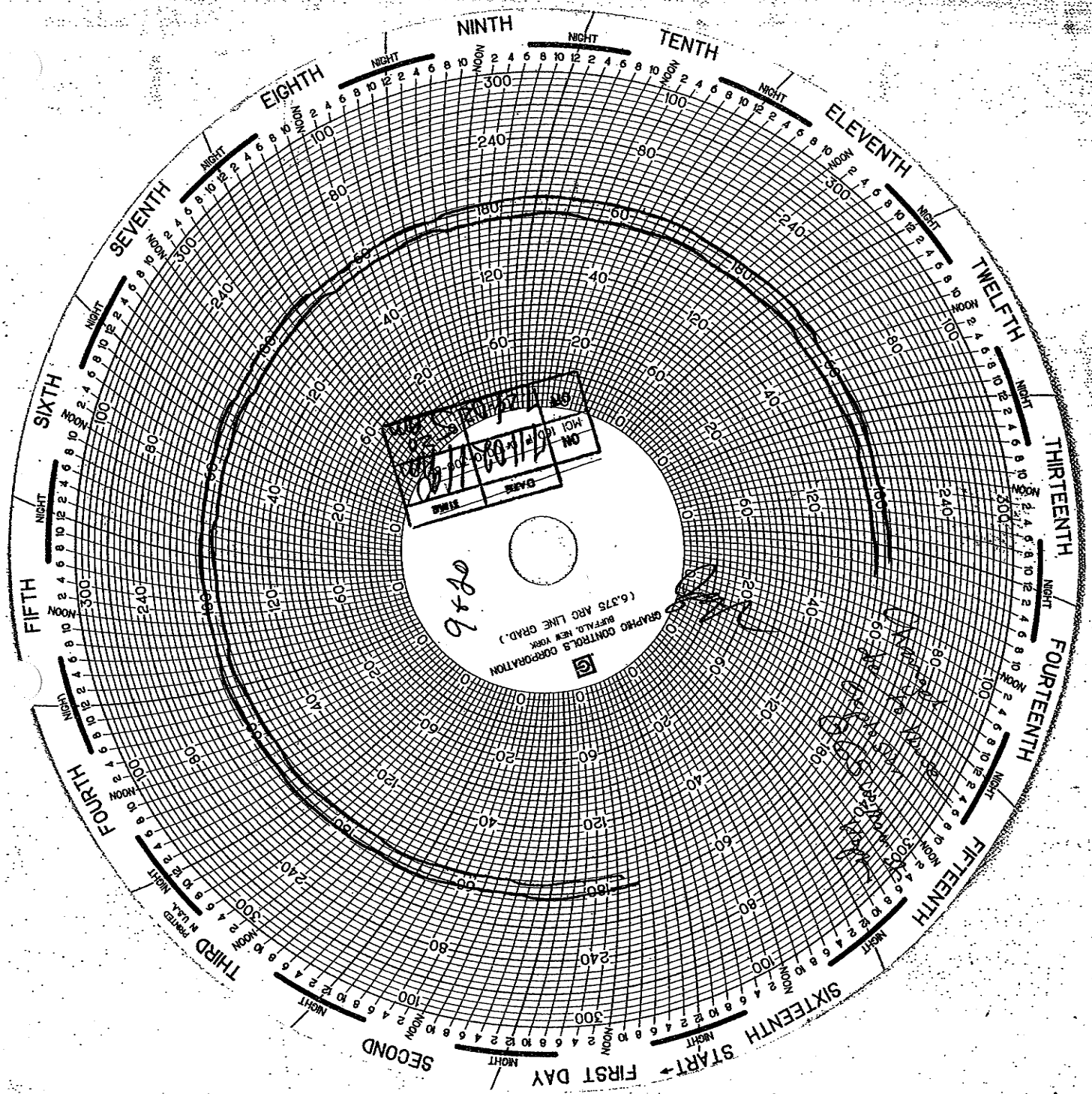
8' 2" ALDYL-A
8' TRACER WIRE
8' TERRA TAPE
3 2" ALDYL-A COUPLINGS
1 2" " VALVE
2 " " ELS 90°
1 2" TRANSITION FITTING
1 2" T.B. MUELLER TEE
1 17 LB. ANODE

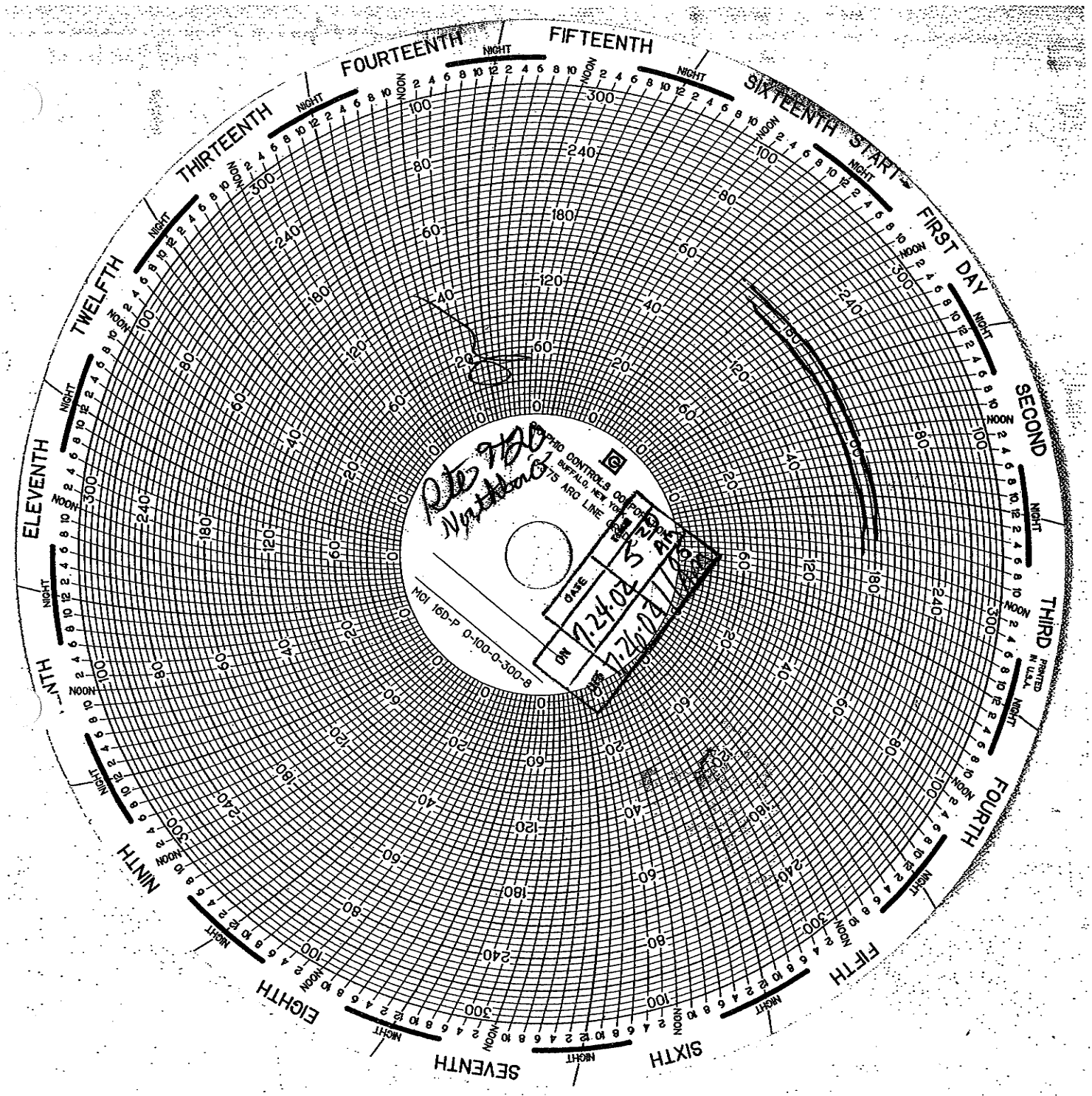
STOCK FOR CUT OFF OF 2" MAIN
1 2" DRESSER STYLE #38
1' 2" PIPE WITH BLANKED END

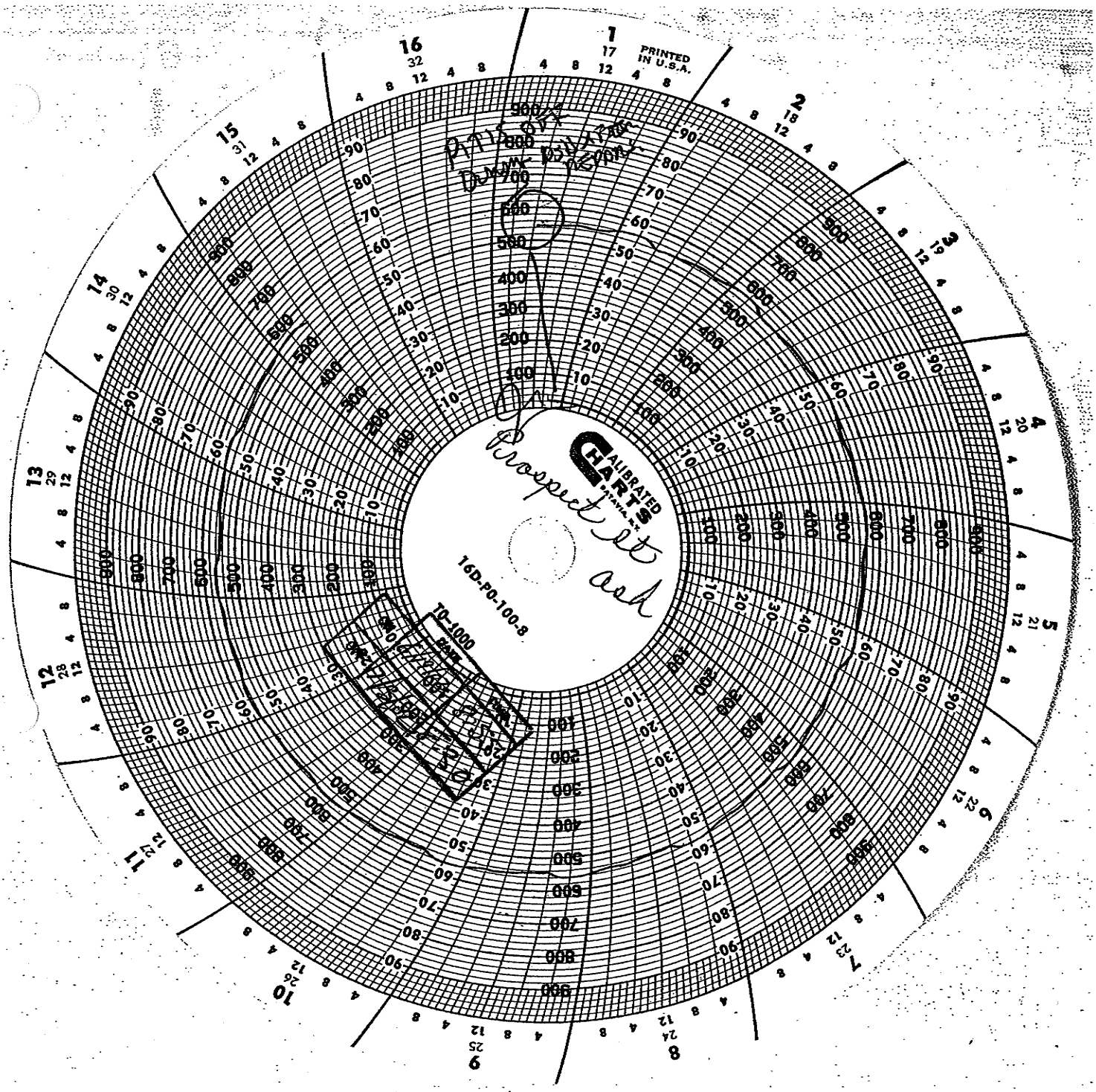
Exhibit
8

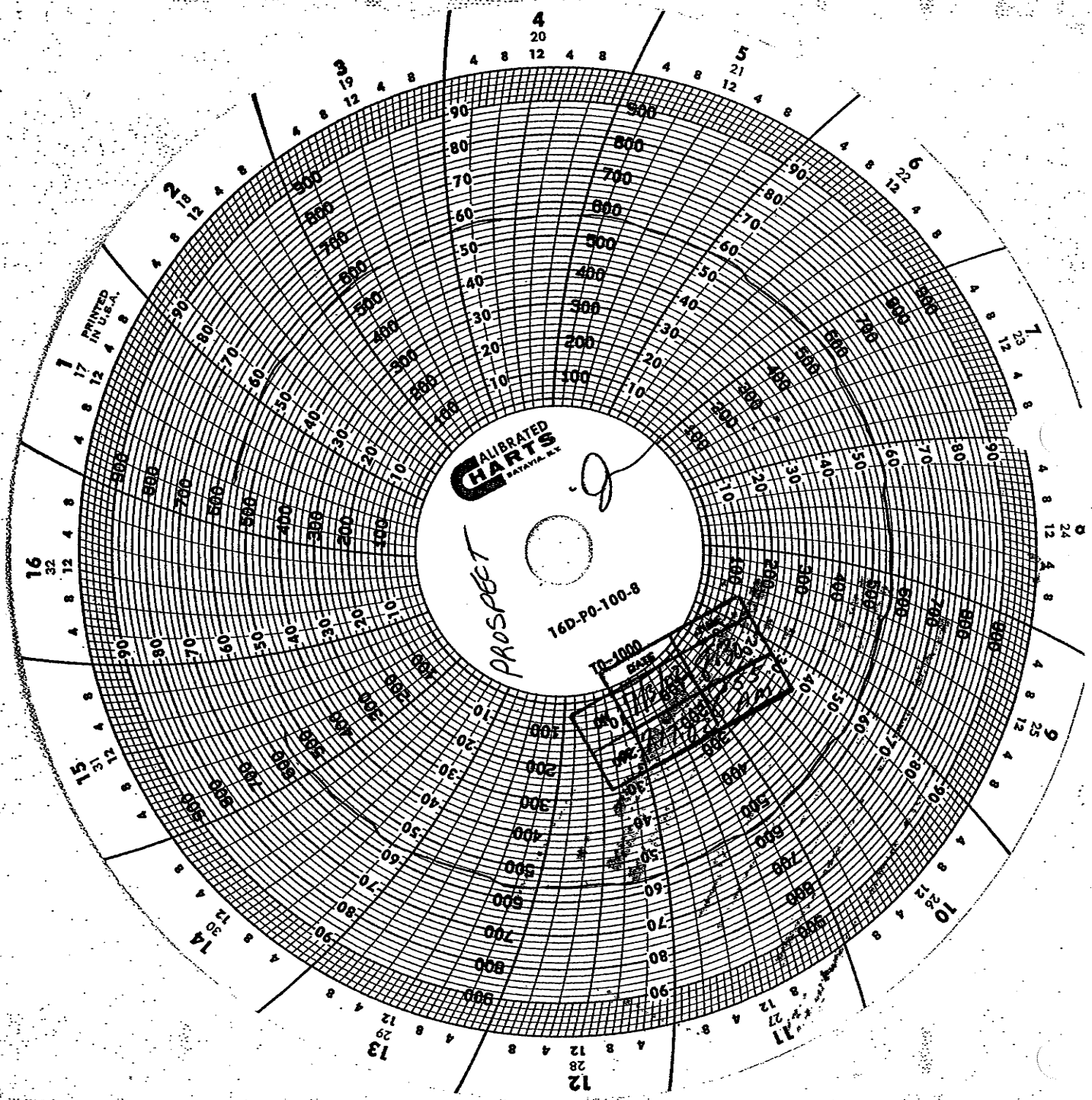
	FRAMINGHAM PLANT			MILFORD STATION			HOPEDALE STATION		
DATE	HIGH	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH	LOW	AVERAGE
01-Jul	58.72	57.65	58.23	57.78	56.44	57.04	59.46	58.49	58.91
02-Jul	58.75	57.65	58.22	57.88	56.23	56.83	59.50	58.63	58.99
03-Jul	58.75	57.65	58.21	57.91	56.26	57.02	59.48	58.49	58.94
04-Jul	58.72	57.67	58.19	57.66	56.14	56.90	59.39	58.52	58.91
05-Jul	58.75	57.62	58.30	58.18	56.50	57.38	59.46	58.68	59.03
06-Jul	58.77	57.65	58.23	58.73	57.30	58.01	59.50	58.95	59.28
07-Jul	58.75	57.67	58.18	58.67	56.62	57.79	59.36	58.49	58.90
08-Jul	58.72	57.65	58.20	58.67	56.72	57.72	59.48	58.49	58.88
09-Jul	58.72	57.65	58.30	58.79	56.65	57.78	59.48	58.59	58.93
10-Jul	58.84	57.55	58.34	58.58	56.53	57.71	59.39	58.59	58.94
11-Jul	58.77	57.62	58.24	58.52	56.62	57.63	59.46	58.61	58.99
12-Jul	58.75	57.69	58.22	58.70	56.84	57.80	59.48	58.61	59.02
13-Jul	58.72	57.65	58.24	57.81	55.80	56.69	59.46	58.70	59.03
14-Jul	58.77	57.62	58.24	57.23	55.92	56.52	59.41	58.59	58.93
15-Jul	57.90	57.72	57.82	56.68	56.11	56.34	58.86	58.59	58.72
16-Jul	58.75	57.62	58.26	58.61	56.44	57.64	59.46	58.54	58.91
17-Jul	58.40	58.33	58.37	57.63	56.78	57.36	59.23	59.13	59.18
18-Jul	58.77	57.65	58.24	57.69	55.83	56.74	59.34	58.56	58.94
19-Jul	58.70	57.65	58.31	58.06	56.93	57.30	59.50	58.77	59.09
20-Jul	58.75	57.65	58.34	58.76	57.11	57.97	59.50	58.59	59.02
21-Jul	58.75	57.67	58.16	58.82	56.90	57.78	59.39	58.40	58.87
22-Jul	58.72	57.69	58.21	57.88	56.32	56.98	60.00	59.00	59.48
23-Jul	58.72	57.67	58.25	57.78	55.92	56.88	59.25	57.42	58.94
24-Jul	58.77	57.69	58.20	58.61	56.59	57.54	59.29	58.31	58.77
25-Jul	58.72	57.65	58.17	58.67	56.59	57.61	59.62	58.68	59.08
26-Jul	58.75	57.65	58.21	58.82	56.84	57.83	59.64	58.61	59.20
27-Jul	58.72	57.69	58.35	58.94	57.02	58.07	59.80	59.09	59.45
28-Jul	58.72	57.69	58.30	58.85	56.75	57.90	59.62	58.91	59.25
29-Jul	58.72	57.65	58.25	59.28	55.89	57.62	59.73	56.75	59.10
30-Jul	58.75	57.67	58.22	58.97	56.99	57.83	60.42	58.81	59.39
31-Jul	58.75	57.00	58.25	58.79	56.99	57.72	59.66	58.10	58.74

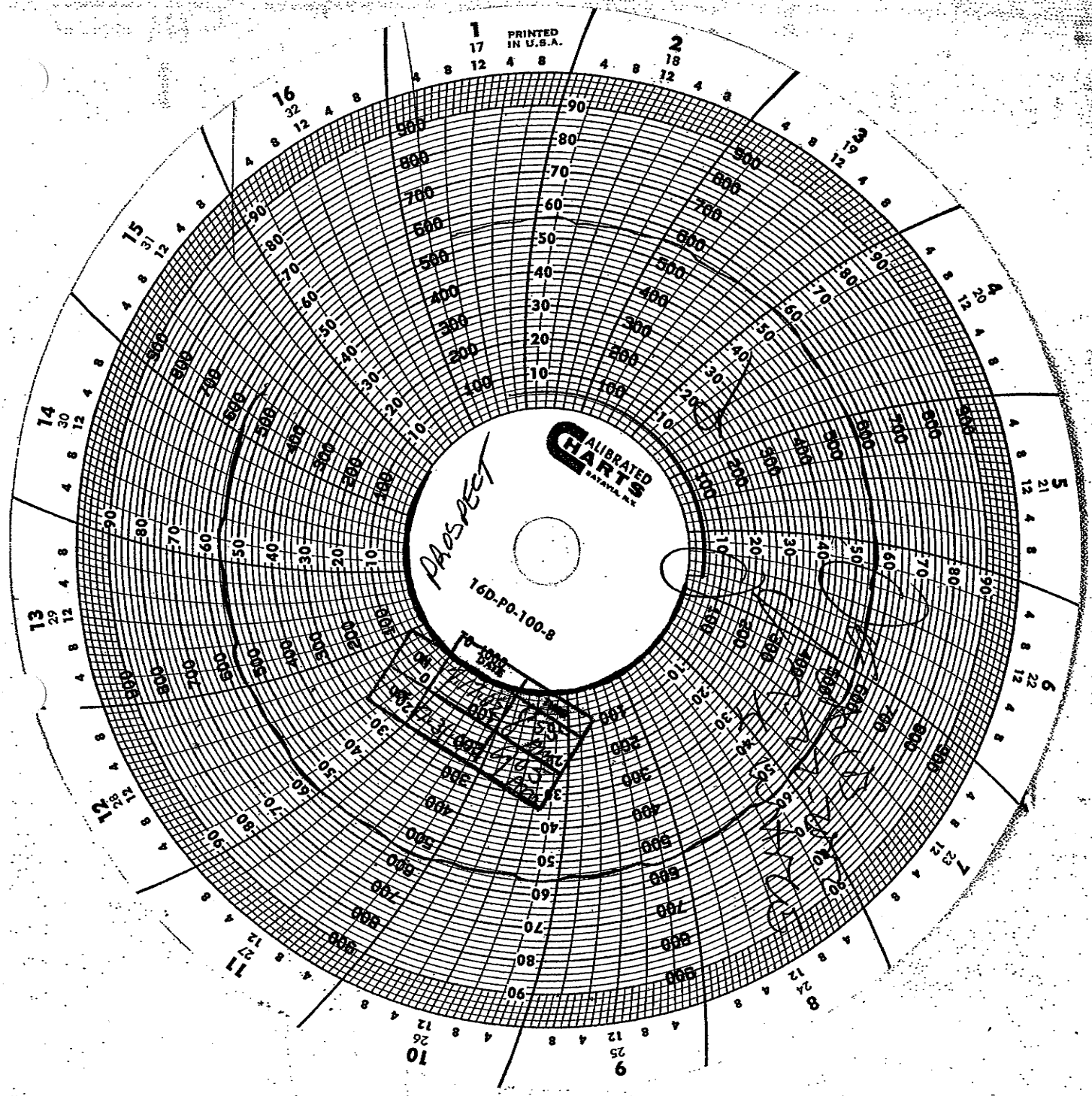

FIRST DAY
SECOND
THIRD
FOURTH
FIFTH
SIXTH
SEVENTH
EIGHTH
NINTH
TENTH
ELEVENTH
TWELFTH
THIRTEENTH
FOURTEENTH
FIFTEENTH
SIXTEENTH
START
NIGHT
NOON
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
375 ARC LINE GRAD.)
TIME
DATE
PRINTED IN U.S.A.

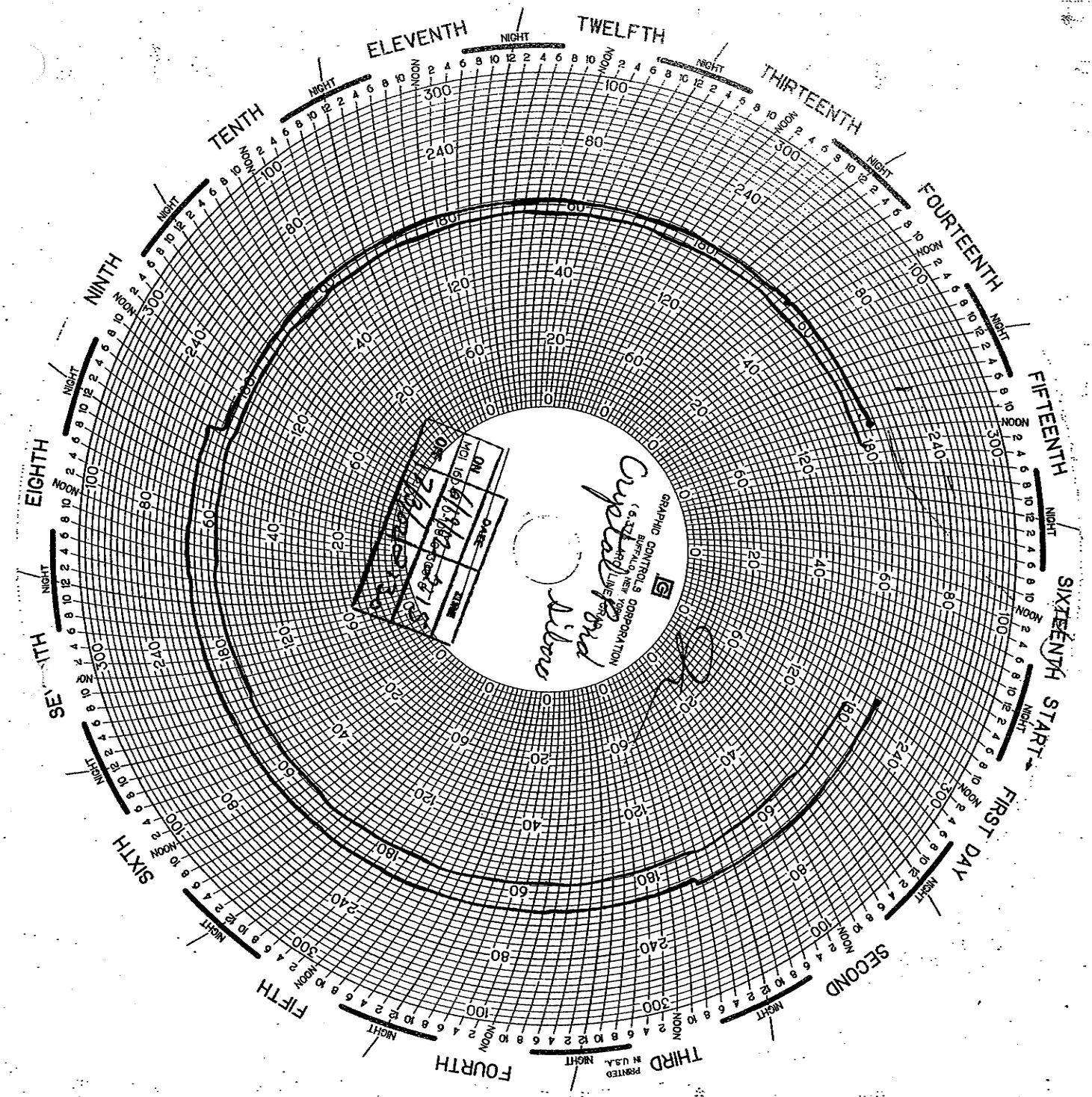

FIRST DAY
SECOND
THIRD
FOURTH
FIFTH
SIXTH
SEVENTH
EIGHTH
NINTH
TENTH
ELEVENTH
TWELFTH
THIRTEENTH
FOURTEENTH
FIFTEENTH
SIXTEENTH
START
NIGHT
NOON
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
(6.375 ARC LINE GRAD.)
PRINTED IN U.S.A.

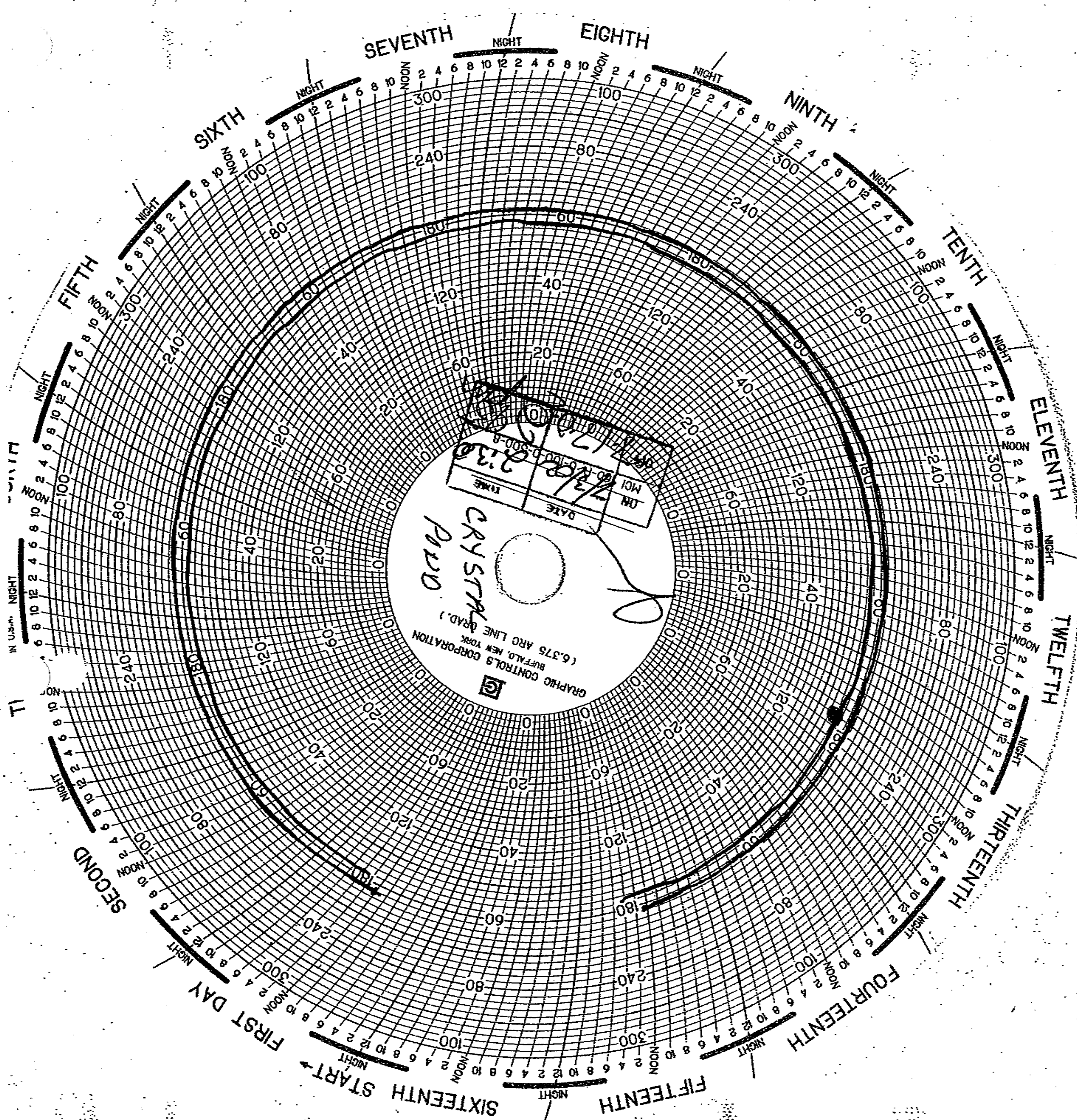

FIRST DAY
SECOND
THIRD
FOURTH
FIFTH
SIXTH
SEVENTH
EIGHTH
NINTH
TENTH
ELEVENTH
TWELFTH
THIRTEENTH
FOURTEENTH
FIFTEENTH
SIXTEENTH
START
NIGHT
NOON
MCI 16D-P 0-100-0-300-8
PRINTED IN U.S.A.


PRINTED IN U.S.A.
CALIBRATED CHARTS
Prospect Ash
16D-P0-100-8
TO-1000

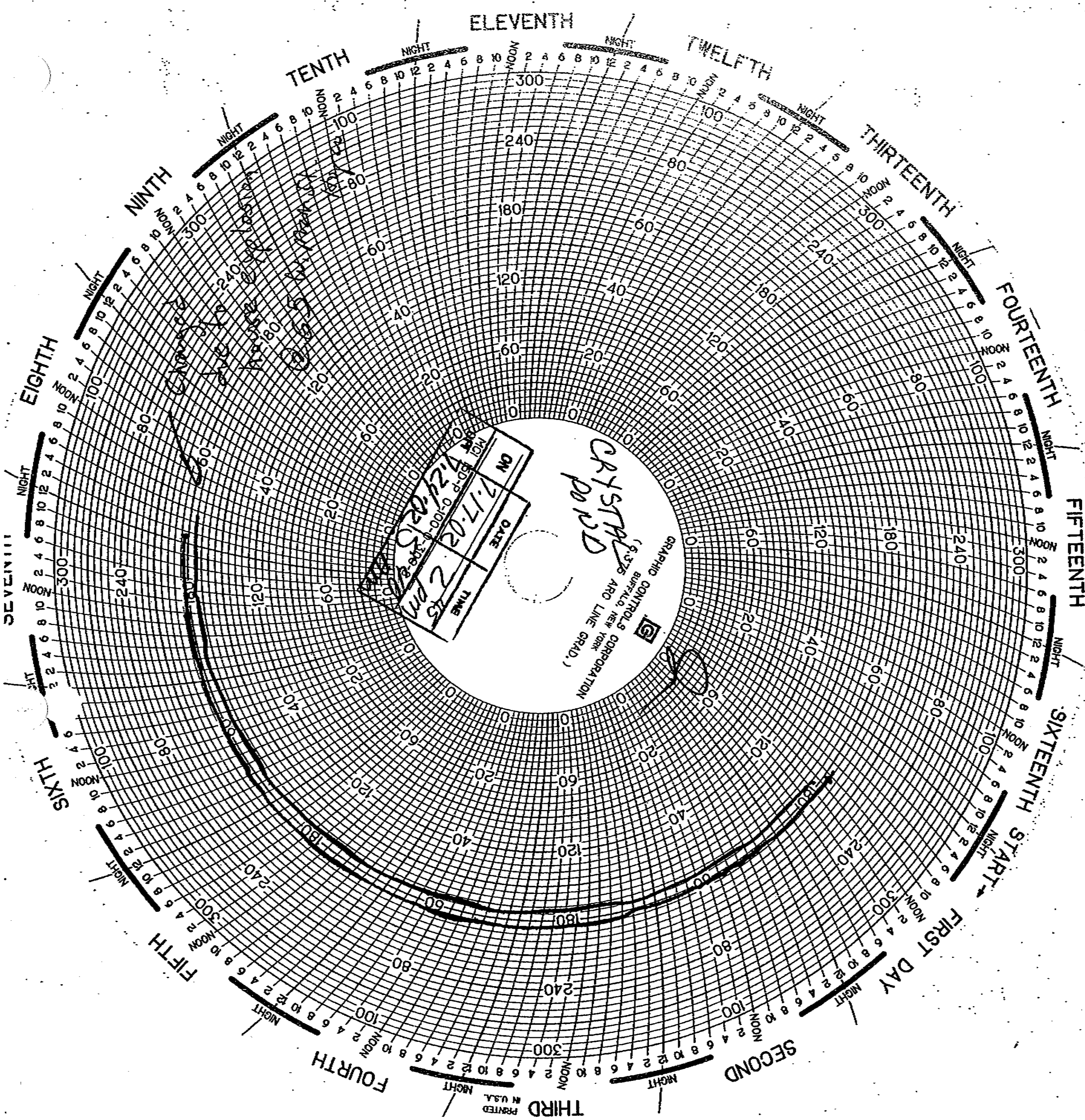

CALIBRATED CHARTS
BATAVIA, ILL.
PRINTED IN U.S.A.
PROSPECT
16D-P0-100-8
TD=4000
BASE


PRINTED IN U.S.A.
CALIBRATED CHARTS BATAVIA, N.Y.
prospect
16D-P0-100-8


ELEVENTH
TWELFTH
THIRTEENTH
FOURTEENTH
FIFTEENTH
SIXTEENTH
SEVENTH
EIGHTH
NINTH
TENTH
FIRST DAY
SECOND
THIRD
FOURTH
FIFTH
SIXTH
START
NIGHT
NOON
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK, U.S.A.
PRINTED IN U.S.A.



FIRST DAY
SECOND
FIFTH
SIXTH
SEVENTH
EIGHTH
NINTH
TENTH
ELEVENTH
TWELFTH
THIRTEENTH
FOURTEENTH
FIFTEENTH
SIXTEENTH
START
NIGHT
NOON
DATE
TIME
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
(6.375 ARC LINE GRAD.)
CRYSTAL POND


FIRST DAY
SECOND
THIRD
FOURTH
FIFTH
SIXTH
SEVENTH
EIGHTH
NINTH
TENTH
ELEVENTH
TWELFTH
THIRTEENTH
FOURTEENTH
FIFTEENTH
SIXTEENTH
START→
NIGHT
NOON
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
ARC LINE GRAD.
CRYSTAL POND
ON
DATE
TIME
PRINTED IN U.S.A.

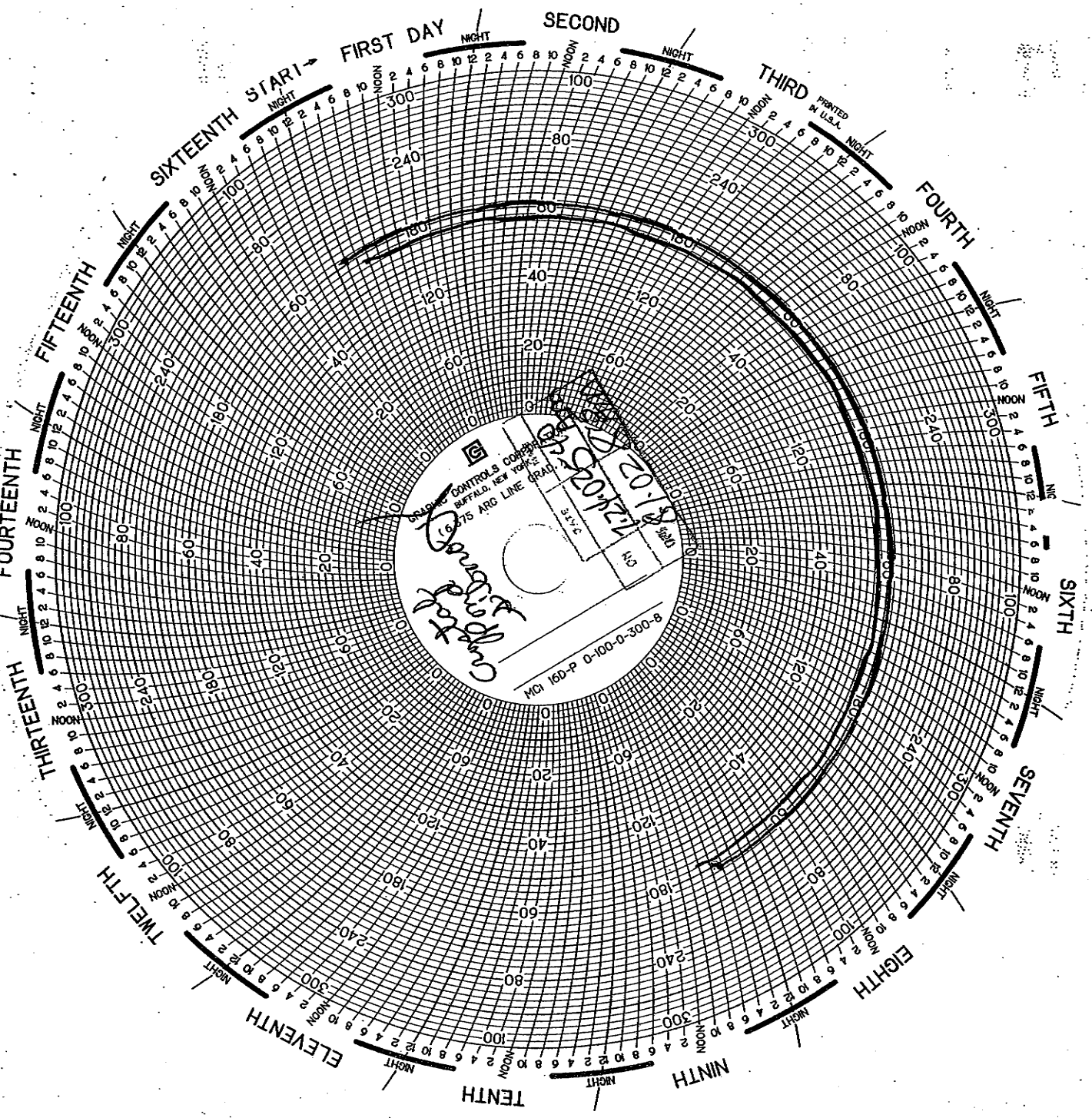

FIRST DAY
SECOND
THIRD
FOURTH
FIFTH
SIXTH
SEVENTH
EIGHTH
NINTH
TENTH
ELEVENTH
TWELFTH
THIRTEENTH
FOURTEENTH
FIFTEENTH
SIXTEENTH START
NIGHT
NOON
CALIBRATED CONTROLS CORP.
BUFFALO, NEW YORK
ARC LINE GRAD.
MCI 16D-P 0-100-0-300-8
PRINTED IN U.S.A.

Exhibit 9

ORIGINAL DISTRIBUTION RECORD

Street & No. (#79) Main St. Hopk. | Tax District: Hopkinton | Service Order **Nº 3465**

Name Owner: Francis J. Hayward

Address Owner: 79 Main St. Hopk. | C.O. 75566 | Date 6/30/47 19

Name Occupant: Francis J. Hayward | W.O. 62779 | Service-New ☐ Relay ☒

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

GAS MATERIAL	Size or Number	Private Property	Public Property	Cost Unit	Cost Private Property	Cost Public Property
Pipe-Ft.	1"		22			
"						
"						
Caps	1"		2			
"						
Elbows						
"						
Gate New Cut	1"		1			
" Box	77		1			
Stop Cock L.W.	1"		1			
Plugs	3/4		1			
"						
Nipples	1 x 2		2			
"						
Tees Welded	1"		1			
"	1"		1			
Unions						
Lite pipe	5"		3			
TOTALS	—	—	—			

SERVICE DATA

Main-to St-Line 12 Ft. ___ In.

St. Line to Bldg. 10 Ft. ___ In.

Total 22 Ft. ___ In.

CHARGE CUSTOMER

Min. Charge: No chg

Excess Ft.

Amount

Abandoned:- Ft. @

20Ft. No Charge
1" H.P. 2 Families

OBSOLETE INFO THIS MAIN ON

NOTED ON PLATE

BILLED 8/6/47

HK01837

Form CA21C

Service from 2" Main on Main St. COMPLETED July 13 1947 By Army

LABOR RECORD

	Rate	Public Property HRS.	HRS.	HRS.	HRS.	TOTAL HRS.	Amount	Private Property HRS.	HRS.	HRS.	HRS.	TOTAL HRS.	Amount
3465 / 465 6/30/47													
Russell						2							
Army						6							
St. Pierre						2							
Goldmann						8							
Gray						8							
Tosti						6							
Total Labor 6003													
Auto 4850						6							
Compressor						2							
Car Checks													
Total													

SUPPLY DATA

Factory ☐

Business Block ☐

2 Family House ☒

Cover on Main 3

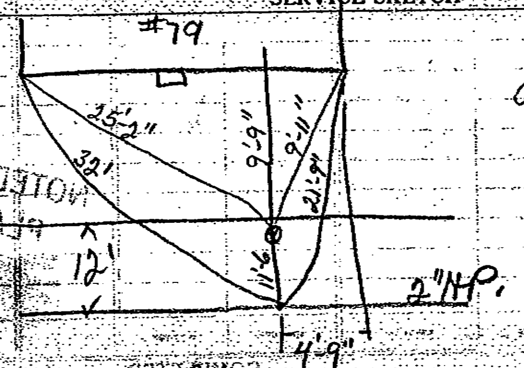
Kind of Pavement gravel

Kind of Digging gravel

Condition of Main Good

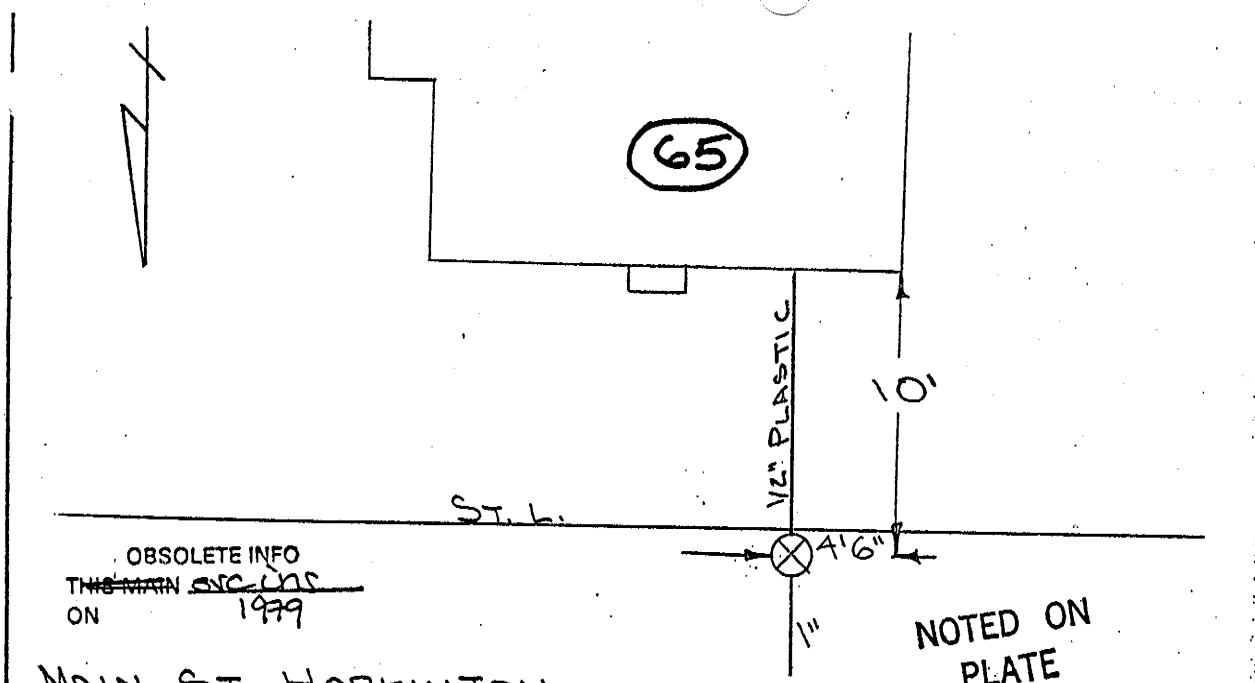
Remarks dryed main

SERVICE SKETCH



OBSOLETE INFO
~~THIS MAIN~~ services
ON 1987

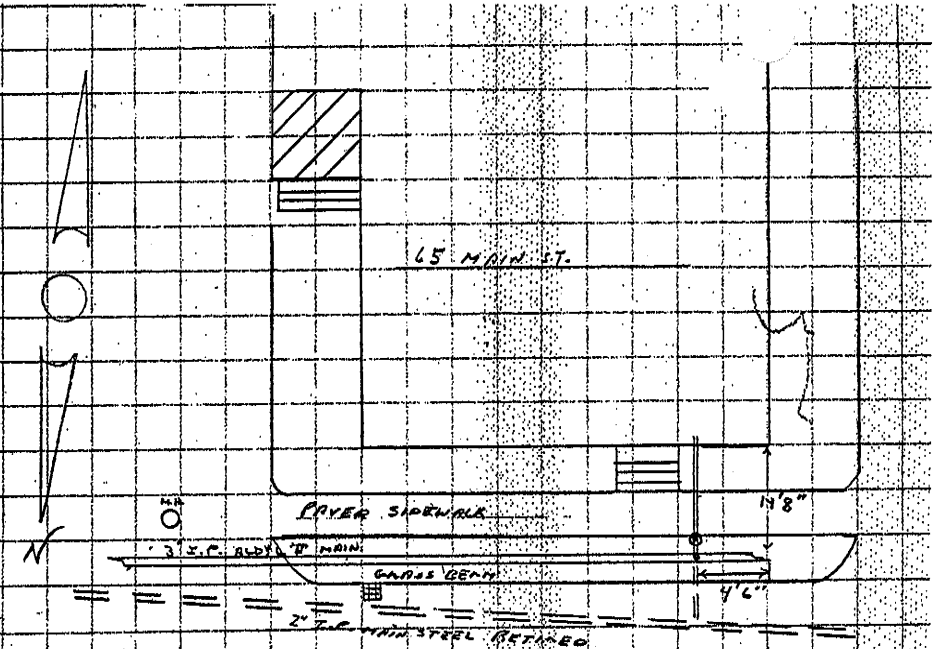
Exhibit
10



1/2" PLASTIC RELAY C.C. TO WALL.

BERGMAN 10-8-'74

M	½" ALOYLA"
1	½" STYLE 880 COUPLING
1	½" x ¾" REO COUPLING ALOYLA"
1	¾" VALVE "
1	3" x ¾" PUNCH IT TEE "
1	CURB BOX
1	3" x ¾" ALOYLA" PUNCH-IT TEE



MAIN ST., HOPKINTON

NOTED ON PLATE

ST. 65 MAIN ST. TOWN HOPKINTON
JOB ½" PLASTIC TIE OVER OF EXISTING ½" INSERT
DATE 10-25-79 BY DE CONINC - DEVELENUX

OD 154

Exhibit
11

THE COMMONWEALTH OF MASSACHUSETTS

OFFICE OF CONSUMER AFFAIRS AND BUSINESS REGULATION

DEPARTMENT OF TELECOMMUNICATIONS & ENERGY

ONE SOUTH STATION

BOSTON, MA 02110
(617) 305-3500

MITT ROMNEY
GOVERNOR

KERRY HEALEY
LIEUTENANT GOVERNOR

BETH LINDSTROM
DIRECTOR
FFICE OF CONSUMER AFFAIRS
AND BUSINESS REGULATION

PAUL B. VASINGTON
CHAIRMAN

JAMES CONNELLY, ESQ.
COMMISSIONER

W. ROBERT KEATING
COMMISSIONER

EUGENE J. SULLIVAN, JR.
COMMISSIONER

DEIRDRE K. MANNING
COMMISSIONER

June 16, 2003

Mr. Samy H. Ibrahim
Vice President - Gas Operations
NSTAR Electric and Gas Company
One NSTAR Way, NE-350
Westwood, MA 02090-9230

Dear Mr. Ibrahim:

The Department of Telecommunications and Energy ("Department"), requests the following information be forwarded to the Pipeline Safety Division ("Division"). This information request is part of the ongoing investigation into the incident of July 24, 2002, located at 65 Main St., Hopkinton.

Please forward the following information:

1. All corrosion control records describing the results of inspections, surveys, or monitoring of the service line at 65 Main St., Hopkinton, as they pertain to corrosion control. The records of such inspections, surveys, or monitoring shall be for the period from October 8, 1974 to July 24, 2002.

2. All leakage survey records for 65 Main St., Hopkinton for the period of March 12, 1970 to July 23, 2002.

3. The list of materials used for the service renewal for 65 Main St., Hopkinton, on October 8, 1974.

4. Copies of all pressure tests performed on the service line for 65 Main St., Hopkinton, from October 8, 1974 to July 23, 2002.

5. Any documentation pertaining to the establishment of the maximum allowable operating pressure("MAOP"), for the service line to 65 Main St. Hopkinton.

6. A copy of the Incident Report form (OMB No.2137), as filed with the Office of Pipeline Safety, Washington, DC.

The above requested information shall be forwarded to the Division, no later than 10 business days from the receipt of this letter. If you have any questions feel free to contact this office.

Sincerely Yours,

Richard C. Wallace
Public Utilities Engineer

cc: Robert Smallcomb

Exhibit
12

NSTAR ELECTRIC GAS

NSTAR Gas
One NSTAR Way, Westwood, Massachusetts 02090-9230

July 7, 2003

Mr. Richard C. Wallace
Public Utilities Engineer
Department of Telecommunications and Energy
One South Station
Boston, MA 02110

Dear Mr. Wallace,

Enclosed you will find copies of records in response to your information request regarding 65 Main St., Hopkinton dated June 16, 2003. Please note the following:

Item #1 – The location of anodes on the service line to 65 Main St., Hopkinton is included on a record for a service leak repair on September 28, 1973. No other corrosion control records have been discovered. Since the service line and main were fully renewed with plastic pipe in 1979 and the steel service line and main retired, there is no requirement to retain corrosion control records. CFR 192.491(c) states corrosion control records "...must be retained for as long as the pipeline remains in service."

Item #2 – The most recent leakage survey records are enclosed for 65 Main St., Hopkinton. The only requirement to retain leakage survey records is "....for a period of time not less than the interim between successive surveys" per 220 CMR 101.06(21)(f).

Item #3 – A listing of materials for the service insert performed on October 8, 1974 is enclosed.

Item #4 – Pressure test records for the service line to 65 Main St., Hopkinton have not been discovered. A pressure test of the main and service line for 65 Main St., Hopkinton was conducted on July 24, 2002 as directed and witnessed by DTE representatives. A test pressure of 57.5 lbs. held for just over an hour. Records of this test were previously submitted.

Item #5 – Pressure test records for the main in front of 65 Main St., Hopkinton for the establishment of MAOP is enclosed. In addition to pressure tests MAOP has been established in accordance with CFR 192.619.

Item #6 – A copy of Office of Pipeline Safety Report, OMB No. 2137, is enclosed.

Should you require further information regarding this response please feel free to contact my office.

Sincerely,

Samy H. Ibrahim
Vice President Gas Operations

Exhibit 13

Incident Investigation
for
65 Main St., Hopkinton
Massachusetts
July 24, 2002

Written by:
Richard C. Wallace
Public Utilities Engineer

Time Line

Wednesday, July 24, 2002:

01:49am-
Nstar Gas notified by Hopkinton fire department of a house explosion at 65 Main St., Hopkinton.

01:50am-
Nstar Gas serviceman dispatched to scene.

02:12am-
Nstar serviceman arrives at scene. He attempted to locate the curb valve for the service to 65 Main St.-Hopkinton, the serviceman discovered that the house had collapsed on the curb valve and a section of main.

02:35-02:55am-
Service lines to 63, 66, 67 and 70 Main St.-Hopkinton were shut off at the request of Hopkinton Fire Department.

03:05am-
The area around 65 Main St.-Hopkinton is inspected for any additional natural gas leaks, using and flame ionization unit, this included the storm and sewer systems, with negative results. The area was also inspected using a combustible gas indicator, again with negative results.

03:20am-
Distribution crew arrives on scene and begins excavation to the west of 65 Main St.-Hopkinton, other members of the Nstar Gas began to locating shut off valves for the main, passing by 65 Main St.-Hopkinton.

03:29am
Odor samples taken at the Hopkinton Fire Department building approx. 200' west of 65 Main St.-Hopkinton.

04:09am-
Nstar Gas begins shutting of the main line valves, to isolate the section of main in front of 65 Main St.-Hopkinton.

04:10am-
Nstar Gas squeezes off the 4" plastic main on the west side of 65 Main St.-Hopkinton

05:06am-
Nstar Gas squeezes off the 3" plastic main on the east side of 65 Main St.-Hopkinton.

04:30am-
Call form A. Motley Public Utilities Engineer(on call person) & R. Smallcomb(Director Pipeline Safety Division, Department of Telecommunications & Energy. Informed me that there was and incident at 65 Main St., Hopkinton, MA. I was informed that there were two fatalities. Two children ages 4 &5.

04:45am-
Called P. Grieco, Public Utilities Engineer, requested his assistance at 65 Main St.

06:20am-
Arrived at scene. Located Chief Steve Cohen, State Fire Marshall's Office, and informed him that we were at the scene. He informed us that Sgt. Martin Foley was the officer in charge.

10:45am-
Removed a four burner stove form the second floor of the structure. One of the knobs that operates the left rear burner was in the on position. The stove was placed in the right side yard of 65 Main St. It was not left in a secure location. The police line had been breached by a number of individuals.

01:20pm-
The meters were located in the right front of 65 Main St. The meters, five in total, were in a hap-hazard pile. The collapse of the structure caused some damage to the meter bars and the piping associated with them. The meters and the associated assemblies were taken into custody by the Fire Marshal's office. At this time the service pipe was located in the basement wall. The only thing visible was half of an Inner-tite fitting and a short section of plastic pipe with an internal stiffener. The other half of the Inner-Tite fitting was located on the basement riser attached to the basement valve.

The fire marshal continued to remove the remaining structure and any appliances from the destroyed structure.

05:45pm-
Nstar Gas began preparing the excavations to install the end caps to pressure test the section of main and the services lines into the bank and 65 Main St.

10:00-10:15pm-
A pressure test of 58 pounds per square inch gauge, was applied to the isolated section of plastic main and the plastic service lines to 65 Main St. and the service line to the Sovereign Bank directly across the street from 65 Main St. The pressure test was monitored using a certified gauge that had half pound increments, 0 to 100 p.s.i.g., a recording chart, and a dead weight tester. The test lasted for 1 hour and 15 minutes. This time included the stabilization period and chart run over time. The test indicated that there were no leaks on the pipe being tested.

11:25pm-
Pressure test removed from the service and main.

01:05am- Thursday, July 25, 2002
Departed scene. Nstar Gas was finishing the cleaning up and backfilling the excavations made through out the previous day.

Exhibit
14

Photograph of collapsed house at 65 Main Street, Hopkinton
July 24, 2002

Exhibit
15

Photograph of debris in front of 65 Main Street, Hopkinton
July 24, 2002

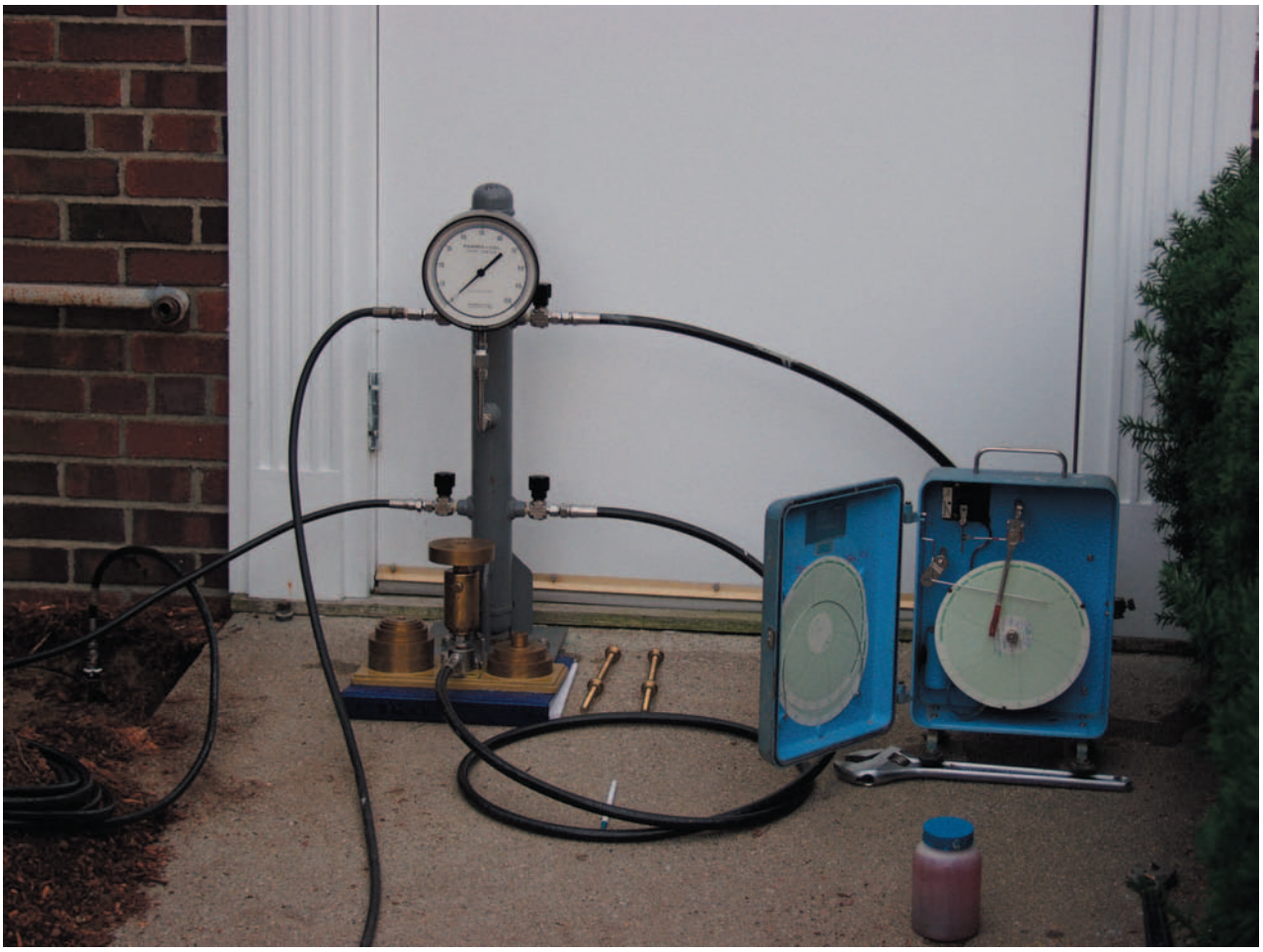
Exhibit
16

Demolition of the house at 65 Main Street,
Hopkinton
July 24, 2002

Exhibit
17

Service line penetration through basement wall
65 Main St., Hopkinton
July 24, 2002

Exhibit
18



Photograph of dead weight tester set up
behind 66 Main Street, Hopkinton
July 24, 2002

Exhibit
19

Photograph of test gauge showing a test pressure of 58#. The test gauge was installed on the riser to 66 Main Street, Hopkinton July 24, 2002

Exhibit
20

ORDER NO.: ~~9 9 9 0 2 4 7 5 5~~ 010 272545

NSTAR GAS **20a**

COMMITTED TO SERVING THE CUSTOMER AND THE COMMUNITY

1-800-572-9300

ACCOUNT NO:	
NAME: Carey	PHONE:
ADDRESS: 65 MAIN ST	APT.:
TOWN/ZIP: Hopkinton	

BILLING ADDRESS:

ACCOUNT NO:	
NAME:	PHONE:
ADDRESS:	APT.:
TOWN/ZIP:	

PREVIOUS STOP TIME: AM PM

WORK STATUS

CHARGE	✓	METER WORK	
WARRANTY		ODOR INVEST.	
NO CHARGE		COMPLETE	
RECALL		INCOMPLETE	
ODOR DETECTED:		YES / NO	

SERVICE DATE: 6/1/01	START: AM PM	STOP: AM PM	AREA/FUNC. 15-2013
PERFORMED BY: 4	START: AM PM	STOP: AM PM	AREA/FUNC.

DESCRIPTION OF WORK PERFORMED Repaired leak at flex Hose on Dryer Dryer has plastic vent red tagged same

QTY	STOCK CODE	DESCRIPTION OF MATERIALS	UNIT PRICE	AMOUNT $

LABOR CALC.:	$ / HR	LABOR $	TOTAL MATERIAL	
1st 15 min.			SALES TAX	
Add'l ________			TOTAL LABOR	
SR / OTHER DISCOUNT	FLAT RATE $	QTY	FLAT RATE ODOR	
❑ Yes ❑ No			FLAT RATE PUMP	
CUSTOMER SIGNATURE X [signature]			TOTAL BILLING	55

PAYMENT: ❑ **MASTERCARD/VISA** ❑ **BILL ME**

MasterCard/Visa # ______________________ Exp. Date __/__

COMPONENTS CHECKED/ADJUSTED

GENERAL		WARM AIR	
MAIN BURNER		FAN CONTROL	
PILOT		LIMIT CONTROL	
RELAY		BLOWER MOTOR	
GAS VALVE		PULLEY/BELT	
THERMOSTAT		FAN HOUSING	
FLUE PIPE		AIR FILTER	
DRAFT			
MODULE			
TRANSFORMER			
VENT DAMPER			
DIVERTER			
HOT WATER		STEAM	
AQUASTAT		PRESSURETROL	
PRESSURE GAUGE		PRESSURE GAUGE	
EXPANSION TANK		GAUGE GLASS	
CIRC PUMP		LOW WATER CUTOFF	
ZONE VALVES		SWITCH LWCO	
PRESSURE RELIEF		PRESSURE RELIEF	

MAINTENANCE CONTRACT CUSTOMERS ONLY (if applicable):

I hereby acknowledge receipt of notification from Commonwealth Gas Company that the heating / hot water equipment identified below and installed at the above service address does not qualify for coverage under the Home Heating Protection Plan for the following reason(s): ____ Sized to large ____ Poor condition ____ Type not covered. I further acknowledge that, until such time as the equipment is deemed acceptable by Commonwealth Gas Company, all requested service on such equipment will be chargeable at the current standard rates for both parts and labor.

Appliance: __________ Make: __________ Model: __________ Serial #: __________

CUSTOMER SIGNATURE: ______________________ DATE: __________

METER INVESTIGATION:	EXISTING METER NO.	READ	NEW METER NO.	READ	ERT NO.
SAFETY COMMENT/RED TAG NO.	METER LOC.	PLEASE CIRCLE	SHUTOFF / TURN ON	EXCHANGE CH WH RG DR	REMOVE SH KH / SET OTH

FORM: RO-1 CAT ID 13768 REV. 2/01

OFFICE COPY

08/04/2002 WED 11:10 FAX

002/004 **20b**

ORDER NO.: 0 2 0 2 9 6 5 2 1

FEB 27 2002

NSTAR GAS

COMMITTED TO SERVING THE CUSTOMER AND THE COMMUNITY

1-800-572-9300

ACCOUNT NO:

NAME: Defreitas PHONE:

ADDRESS: 65 Main ST APT.: 3RD

TOWN/ZIP: Hopkinton

BILLING ADDRESS:

ACCOUNT NO:

NAME: PHONE:

ADDRESS: APT.:

TOWN/ZIP:

PREVIOUS STOP TIME: AM PM

WORK STATUS			
CHARGE		METER WORK	
WARRANTY		ODOR INVEST.	
NO CHARGE		COMPLETE	
RECALL		INCOMPLETE	
ODOR DETECTED:		YES	NO

SERVICE DATE: 2/22/02 START: 210 AM PM STOP: 240 AM PM AREA/FUNC. 15-2608

PERFORMED BY: 20 START: AM PM STOP: AM PM AREA/FUNC.

DESCRIPTION OF WORK PERFORMED

7 4 X Relit

QTY	STOCK CODE	DESCRIPTION OF MATERIALS	UNIT PRICE	AMOUNT $

LABOR CALC.:	$/HR	LABOR $		
1st 15 min.			TOTAL MATERIAL	
Add'l ______			SALES TAX	
			TOTAL LABOR	
SR / OTHER DISCOUNT ☐ Yes ☐ No	FLAT RATE $	QTY	FLAT RATE ODOR	
			FLAT RATE PUMP	
CUSTOMER SIGNATURE X			TOTAL BILLING	

PAYMENT: ☐ MASTERCARD/VISA ☐ BILL ME

MasterCard/Visa # ________________ Exp. Date ___/___

MAINTENANCE CONTRACT CUSTOMERS ONLY (if applicable):

I hereby acknowledge receipt of notification from NSTAR Gas that the heating / hot water equipment identified below and installed at the above service address does not qualify for coverage under the Home Heating Protection Plan for the following reasons: ___ Sized to large ___ Poor condition ___ Type not covered. I further acknowledge that, until such time as the equipment is deemed acceptable by NSTAR Gas, all requested service on such equipment will be chargeable at the current standard rates for both parts and labor.

Appliance: ______ Make: ______ Model: ______ Serial #:

CUSTOMER SIGNATURE: DATE: 1019

COMPONENTS CHECKED / ADJUSTED			
GENERAL		WARM AIR	
MAIN BURNER		FAN CONTROL	
PILOT		LIMIT CONTROL	
RELAY		BLOWER MOTOR	
GAS VALVE		PULLEY/BELT	
THERMOSTAT		FAN HOUSING	
FLUE PIPE		AIR FILTER	
DRAFT			
MODULE			
TRANSFORMER			
VENT DAMPER			
DIVERTER			
HOT WATER		STEAM	
AQUASTAT		PRESSURETROL	
PRESSURE GAUGE		PRESSURE GAUGE	
EXPANSION TANK		GAUGE GLASS	
CIRC. PUMP		LOW WATER CUTOFF	
ZONE VALVES		SWITCH-LWCO	
PRESSURE RELIEF		PRESSURE RELIEF	

METER INVESTIGATION:	EXISTING METER NO: Q020009	READ 1019	NEW METER NO: W000965	READ 6857	ERT NO:
SA	COMMENT/RED TAG NO:	METER LOC: C	PLEASE CIRCLE	SHUTOFF / TURN ON	EXCHANGE / REMOVE / SET — CH (WH) RG DR SH KH OTH

FORM: RO-1 CAT ID 18768

REV 7/01

OFFICE COPY

ORDER NO.: 0203551159

MAR 15 2002

NSTAR GAS

COMMITTED TO SERVING THE CUSTOMER AND THE COMMUNITY

1-800-572-9300

ACCOUNT NO:

NAME: Carey PHONE:

ADDRESS: 65 Main ST APT.: 2ND L

TOWN/ZIP: Hopkinton

BILLING ADDRESS:

ACCOUNT NO:

NAME: PHONE:

ADDRESS: APT.:

TOWN/ZIP:

PREVIOUS STOP TIME: AM PM

WORK STATUS			
CHARGE		METER WORK	
WARRANTY		ODOR INVEST.	
NO CHARGE		COMPLETE	
RECALL		INCOMPLETE	
ODOR DETECTED:		YES	NO

SERVICE DATE: 3/6/02 START: 245 AM PM STOP: 315 AM PM AREA/FUNC. 15-2608

PERFORMED BY: 20 START: AM PM STOP: AM PM AREA/FUNC.

DESCRIPTION OF WORK PERFORMED

744

QTY	STOCK CODE	DESCRIPTION OF MATERIALS	UNIT PRICE	AMOUNT $

LABOR CALC.:	$/HR	LABOR $	TOTAL MATERIAL	
1st 15 min.			SALES TAX	
Add'l ______			TOTAL LABOR	
SR / OTHER DISCOUNT	FLAT RATE $	QTY	FLAT RATE ODOR	
☐ Yes ☐ No			FLAT RATE PUMP	
CUSTOMER SIGNATURE X			TOTAL BILLING	

PAYMENT: ☐ MASTERCARD/VISA ☐ BILL ME

MasterCard/Visa # ______________________ Exp. Date ___/___

COMPONENTS CHECKED / ADJUSTED			
GENERAL		WARM AIR	
MAIN BURNER		FAN CONTROL	
PILOT		LIMIT CONTROL	
RELAY		BLOWER MOTOR	
GAS VALVE		PULLEY/BELTS	
THERMOSTAT		FAN HOUSING	
FLUE PIPE		AIR FILTER	
DRAFT			
MODULE			
TRANSFORMER			
VENT DAMPER			
DIVERTER			
HOT WATER		STEAM	
AQUASTAT		PRESSURETROL	
PRESSURE GAUGE		PRESSURE GAUGE	
EXPANSION TANK		GAUGE GLASS	
CIRC. PUMP		LOW WATER CUTOFF	
ZONE VALVES		SWITCH LWCO	
PRESSURE RELIEF		PRESSURE RELIEF	

MAINTENANCE CONTRACT CUSTOMERS ONLY (If applicable):

I hereby acknowledge receipt of notification from NSTAR Gas that the heating / hot water equipment identified below and installed at the above service address does not qualify for coverage under the Home Heating Protection Plan for the following reasons: ___ Sized to large ___ Poor condition ___ Type not covered. I further acknowledge that, until such time as the equipment is deemed acceptable by NSTAR Gas, all requested service on such equipment will be chargeable at the current standard rates for both parts and labor.

Appliance: Make: ________ Model: ________ Serial #: ________

CUSTOMER SIGNATURE: DATE:

METER INVESTIGATION:	EXISTING METER NO.	READ	NEW METER NO.	READ	ERT NO.
	1542487	0168	0021571	7496	

SAFETY COMMENT/RED TAGE NO.: METER LOC.: C PLEASE CIRCLE: SHUT OFF / TURN ON EXCHANGE REMOVE SET OH WH RG DR SH KH OTH

FORM: RO-1 CAT ID 13760 REV 7/01

OFFICE COPY

GAS LEAK TEMPORARY ORDER

Name Carey Order # 020355717

Address 65 Main St 2L Meter #

Town Hopkinton Zip Grid #

Tel. # 544-8208 Degree of Odor: Faint ☐ Medium ☐ Strong ☐

Location In front of house

2nd no reading

Length of Time Since Noticed

Comments

For Dispatcher Use Only

Dispatcher CW

Assigned to unit 13

Time 354

Other Notifications 430

Unit Time

Unit Time

IMPORTANT: Have you verified — Name — Address — Town — Zip — Phone # — ? Yes ☐ No ☐

Date 3/6 Time 350 Operator Tina

CD 435 CG CAT ID 13587 Rev. 7/97

20d

ORDER NO.: 0203-55717

NSTAR GAS

COMMITTED TO SERVING THE CUSTOMER AND THE COMMUNITY

1-800-572-9300

ACCOUNT NO:

NAME: PHONE:

ADDRESS: 65 MAIN ST APT.:

TOWN/ZIP: HOPK

BILLING ADDRESS:

ACCOUNT NO:

NAME: PHONE:

ADDRESS: APT.:

TOWN/ZIP:

PREVIOUS STOP TIME: AM PM

WORK STATUS			
CHARGE	✓	METER WORK	
WARRANTY		ODOR INVEST.	
NO CHARGE	X	COMPLETE	X
RECALL		INCOMPLETE	
ODOR DETECTED:		YES	X NO

SERVICE DATE: 3 6 02 START: 430 AM PM STOP: 500 AM PM AREA/FUNC. 15-2029

PERFORMED BY: 13 START: AM PM STOP: AM PM AREA/FUNC.

DESCRIPTION OF WORK PERFORMED

✓ INSIDE & OUTSIDE

QTY	STOCK CODE	DESCRIPTION OF MATERIALS	UNIT PRICE	AMOUNT $	

LABOR CALC.:	$/HR	LABOR $	TOTAL MATERIAL	
1st 15 min.			SALES TAX	
Add'l			TOTAL LABOR	
SR / OTHER DISCOUNT ☐ Yes ☐ No	FLAT RATE $	QTY	FLAT RATE ODOR	
			FLAT RATE PUMP	
CUSTOMER SIGNATURE X			TOTAL BILLING	

PAYMENT: ☐ MASTERCARD/VISA ☐ BILL ME

MasterCard/Visa # _____ Exp. Date ___/___

COMPONENTS CHECKED / ADJUSTED			
GENERAL		WARM AIR	
MAIN BURNER		FAN CONTROL	
PILOT		LIMIT CONTROL	
RELAY		BLOWER MOTOR	
GAS VALVE		BELT/BELT	
THERMOSTAT		FAN HOUSING	
FLUE PIPE		AIR FILTER	
DRAFT			
MODULE			
TRANSFORMER			
VENT DAMPER			
DIVERTER			
HOT WATER		STEAM	
AQUASTAT		PRESSURETROL	
PRESSURE GAUGE		PRESSURE GAUGE	
EXPANSION TANK		GAUGE GLASS	
CIRC. PUMP		LOW WATER CUTOFF	
ZONE VALVES		SWITCH LWCO	
PRESSURE RELIEF		PRESSURE RELIEF	

MAINTENANCE CONTRACT CUSTOMERS ONLY (If applicable):

I hereby acknowledge receipt of notification from NSTAR Gas that the heating / hot water equipment identified below and installed at the above service address does not qualify for coverage under the Home Heating Protection Plan for the following reasons: ___ Sized to large ___ Poor condition ___ Type not covered. I further acknowledge that, until such time as the equipment is deemed acceptable by NSTAR Gas, all requested service on such equipment will be chargeable at the current standard rates for both parts and labor.

Appliance: _____ Make: _____ Model: _____ Serial #: _____

CUSTOMER SIGNATURE: DATE:

METER INVESTIGATION:	EXISTING METER NO.:	READ	NEW METER NO.:	READ	ERT NO.:
SAFETY COMMENT/RED TAGE NO.:	METER LOC.:	PLEASE CIRCLE: SHUT OFF / TURN ON	EXCHANGE CH WH RG DR	REMOVE SH	SET KH OTH

v: RO-1 CAT ID 13768

REV 7/01

OFFICE COPY

03/04/2002 WED 11:10 FAX ☑003/004 **20e**

ORDER NO.: 0203-82866

MAR 18 2002 / MAR 19 2002

NSTAR GAS

COMMITTED TO SERVING THE CUSTOMER AND THE COMMUNITY

1-800-572-9300

ACCOUNT NO:

NAME: Webster PHONE:

ADDRESS: 65 Main ST APT.: 1

TOWN/ZIP: Hopkinton

BILLING ADDRESS:

ACCOUNT NO:

NAME: PHONE:

ADDRESS: APT.:

TOWN/ZIP:

PREVIOUS STOP TIME: AM PM

WORK STATUS			
CHARGE		METER WORK	
WARRANTY		ODOR INVEST.	
NO CHARGE		COMPLETE	
RECALL		INCOMPLETE	
ODOR DETECTED:		YES	NO

SERVICE DATE: 3/12/02 START: 12:40 AM PM STOP: 1:10 AM PM AREA/FUNC. 15-2608

PERFORMED BY: 20 START: AM PM STOP: AM PM AREA/FUNC.

DESCRIPTION OF WORK PERFORMED

744

QTY	STOCK CODE	DESCRIPTION OF MATERIALS	UNIT PRICE	AMOUNT $

LABOR CALC.:	$/HR	LABOR $	TOTAL MATERIAL	
1st 15 min.			SALES TAX	
Add'l ______			TOTAL LABOR	
SR / OTHER DISCOUNT ☐ Yes ☐ No	FLAT RATE $	QTY	FLAT RATE ODOR	
			FLAT RATE PUMP	
CUSTOMER SIGNATURE X			TOTAL BILLING	

PAYMENT: ☐ MASTERCARD/VISA ☐ BILL ME

MasterCard/Visa # ______________________ Exp. Date ___/___

COMPONENTS CHECKED / ADJUSTED			
GENERAL		WARM AIR	
MAIN BURNER		FAN CONTROL	
PILOT		LIMIT CONTROL	
RELAY		BLOWER MOTOR	
GAS VALVE		PULLEY/BELT	
THERMOSTAT		FAN HOUSING	
FLUE PIPE		AIR FILTER	
DRAFT			
MODULE			
TRANSFORMER			
VENT DAMPER			
DIVERTER			
HOT WATER		STEAM	
AQUASTAT		PRESSURETROL	
PRESSURE GAUGE		PRESSURE GAUGE	
EXPANSION TANK		GAUGE GLASS	
CIRC. PUMP		LOW WATER CUTOFF	
ZONE VALVES		SWITCH LWCO	
PRESSURE RELIEF		PRESSURE RELIEF	

MAINTENANCE CONTRACT CUSTOMERS ONLY (if applicable):

I hereby acknowledge receipt of notification from NSTAR Gas that the heating / hot water equipment identified below and installed at the above service address does not qualify for coverage under the Home Heating Protection Plan for the following reasons: ___ Sized to large ___ Poor condition ___ Type not covered. I further acknowledge that, until such time as the equipment is deemed acceptable by NSTAR Gas all requested service on such equipment will be chargeable at the current standard rates for both parts and labor.

Appliance: ______ Make: ______ Model: ______ Serial #: ______

CUSTOMER SIGNATURE: DATE:

METER INVESTIGATION:	EXISTING METER NO.	READ	NEW METER NO.	READ	ERT NO.
	P045613	0451	W005220	6525	

SAI	COMMENT/RED TAGE NO.	METER LOC.	PLEASE CIRCLE:	SHUT OFF / TURN ON	EXCHANGE	REMOVE	SET
		C		CH	(WH) (RG)	DR SH KH	OTH

FORM: RO-1 CAT ID 13768 REV 7/01

OFFICE COPY

ORDER NO.: 0207+5+3676

JUL 05 2002

NSTAR GAS

COMMITTED TO SERVING THE CUSTOMER AND THE COMMUNITY

1-800-572-9300

ACCOUNT NO:

NAME: PHONE:

ADDRESS: 65 Main ST APT.: 2C

TOWN/ZIP: Hopkinton

BILLING ADDRESS:

ACCOUNT NO:

NAME: PHONE:

ADDRESS: APT.:

TOWN/ZIP:

PREVIOUS STOP TIME: AM PM

WORK STATUS			
CHARGE		METER WORK	
WARRANTY		ODOR INVEST.	
NO CHARGE		COMPLETE	
RECALL		INCOMPLETE	
ODOR DETECTED:		YES	NO

SERVICE DATE: 5/23/02 START: 1120 AM PM STOP: 1145 AM PM AREA/FUNC. 15-2608

PERFORMED BY: ZO START: AM PM STOP: AM PM AREA/FUNC.

DESCRIPTION OF WORK PERFORMED

74x S/O cgT Left card

QTY	STOCK CODE	DESCRIPTION OF MATERIALS	UNIT PRICE	AMOUNT $	

LABOR CALC.:	$/HR	LABOR $	TOTAL MATERIAL		
1st 15 min.			SALES TAX		
Add'l _____			TOTAL LABOR		
SR / OTHER DISCOUNT	FLAT RATE $	QTY	FLAT RATE ODOR		
☐ Yes ☐ No			FLAT RATE PUMP		
CUSTOMER SIGNATURE X			TOTAL BILLING		

COMPONENTS CHECKED / ADJUSTED			
GENERAL		WALL/AIR	
MAIN BURNER		FAN CONTROL	
PILOT		LIMIT CONTROL	
RELAY		BLOWER MOTOR	
GAS VALVE		PULLEY/BELT	
THERMOSTAT		FAN HOUSING	
FLUE PIPE		AIR FILTER	
DRAFT			
MODULE			
TRANSFORMER			
VENT DAMPER			
DIVERTER			
HOT WATER		STEAM	
AQUASTAT		PRESSURE TROL	
PRESSURE GAUGE		PRESSURE GAUGE	
EXPANSION TANK		GAUGE GLASS	
CIRC. PUMP		LOW WATER CUTOFF	
ZONE VALVES		SWITCH LWCO	
PRESSURE RELIEF		PRESSURE RELIEF	

PAYMENT: ☐ MASTERCARD/VISA ☐ BILL ME

MasterCard/Visa # _____ Exp. Date ___/___

MAINTENANCE CONTRACT CUSTOMERS ONLY (if applicable):

I hereby acknowledge receipt of notification from NSTAR Gas that the heating / hot water equipment identified below and installed at the above service address does not qualify for coverage under the Home Heating Protection Plan for the following reasons: ___ Sized to large ___ Poor condition ___ Type not covered. I further acknowledge that, until such time as the equipment is deemed acceptable by NSTAR Gas, all requested service on such equipment will be chargeable at the current standard rates for both parts and labor.

Appliance: _____ Make: _____ Model: _____ Serial #: _____

CUSTOMER SIGNATURE: DATE:

INVESTIGATION:	EXISTING METER NO.	READ	NEW METER NO.	READ	ERT NO.
	E99445C	8953	0002231	8195	

SAFETY COMMENT/RED TAGE NO.	METER LOC.	PLEASE CIRCLE: SHUT OFF / TURN ON	EXCHANGE			REMOVE		SET	
			CH	WH	RG	DR	SH	KH	OTH

FORM: RO-1 CAT ID 13768

REV 7/01

OFFICE COPY

20g

ORDER NO.: 02075368 3

JUL 05 2002

NSTAR GAS

COMMITTED TO SERVING THE CUSTOMER AND THE COMMUNITY

1-800-572-9300

ACCOUNT NO:

ATT: PHONE:

ADDRESS: 65 Main ST APT.: 2R

TOWN/ZIP: Hopkinton

BILLING ADDRESS:

ACCOUNT NO:

NAME: PHONE:

ADDRESS: APT.:

TOWN/ZIP:

PREVIOUS STOP TIME: AM PM

WORK STATUS			
CHARGE		METER WORK	
WARRANTY		ODOR INVEST.	
NO CHARGE		COMPLETE	
RECALL		INCOMPLETE	
ODOR DETECTED:		YES	NO

SERVICE DATE: 5/23/02 START: 1145 AM PM STOP: 1215 AM PM AREA/FUNC. 15-2608

PERFORMED BY: JO START: AM PM STOP: AM PM AREA/FUNC.

DESCRIPTION OF WORK PERFORMED

74 S/O CGT left card

QTY	STOCK CODE	DESCRIPTION OF MATERIALS	UNIT PRICE	AMOUNT $	

LABOR CALC.:	$/HR	LABOR $	TOTAL MATERIAL		
1st 15 min.			SALES TAX		
Add'l _____			TOTAL LABOR		
SR / OTHER DISCOUNT ☐ Yes ☐ No	FLAT RATE $	QTY	FLAT RATE ODOR		
			FLAT RATE PUMP		
CUSTOMER SIGNATURE X			TOTAL BILLING		

COMPONENTS CHECKED / ADJUSTED			
GENERAL		WATER	
MAIN BURNER		FAN CONTROL	
PILOT		LIMIT CONTROL	
RELAY		BLOWER MOTOR	
GAS VALVE		PULLEY/BELT	
THERMOSTAT		FAN HOUSING	
FLUE PIPE		AIR FILTER	
DRAFT			
MODULE			
TRANSFORMER			
VENT DAMPER			
DIVERTER			
HOT WATER		STEAM	
AQUASTAT		PRESSURETROL	
PRESSURE GAUGE		PRESSURE GAUGE	
EXPANSION TANK		GAUGE GLASS	
CIRC. PUMP		LOW WATER CUTOFF	
ZONE VALVES		SWITCH LWCO	
PRESSURE RELIEF		PRESSURE RELIEF	

PAYMENT: ☐ MASTERCARD/VISA ☐ BILL ME

MasterCard/Visa # _____ Exp. Date ___/___

MAINTENANCE CONTRACT CUSTOMERS ONLY (if applicable):

I hereby acknowledge receipt of notification from NSTAR Gas that the heating / hot water equipment identified below and installed at the above service address does not qualify for coverage under the Home Heating Protection Plan for the following reasons: ___ Sized to large ___ Poor condition ___ Type not covered. I further acknowledge that, until such time as the equipment is deemed acceptable by NSTAR Gas, all requested service on such equipment will be chargeable at the current standard rates for both parts and labor.

Appliance: _____ Make: _____ Model: _____ Serial #: _____

CUSTOMER SIGNATURE: DATE:

METER INVESTIGATION:	EXISTING METER NO.	READ	NEW METER NO.	READ	ERT NO.
	62-29745	6184	0085070	6754	

SAFETY COMMENT/RED TAGE NO.	METER LOC.	PLEASE CIRCLE: SHUT OFF / TURN ON	EXCHANGE CH	WH	RG	DR	REMOVE SH	KH	SET OTH

FORM: RO-1 CAT ID 13768

REV 7/01

OFFICE COPY

20h

ORDER NO.: 0 2 0 7 5 8 3 1 2

NSTAR GAS

COMMITTED TO SERVING THE CUSTOME.. AND THE COMMUNITY

1-800-572-9300

ACCOUNT NO:	
NAME: Maiks	PHONE:
ADDRESS: 65 Main St.	APT.: 2R
TOWN/ZIP: Hopkinton	

BILLING ADDRESS:

ACCOUNT NO:	
NAME:	PHONE:
ADDRESS:	APT.:
TOWN/ZIP:	

WORK STATUS			
CHARGE		METER WORK	✓
WARRANTY		ODOR INVEST.	
NO CHARGE		COMPLETE	✓
RECALL		INCOMPLETE	
ODOR DETECTED:		YES	NO

PREVIOUS STOP TIME: AM PM

SERVICE DATE: 5/24/02	START: 1245 AM PM	STOP: 100 AM PM	AREA/FUNC. 2608
PERFORMED BY: 7	START: AM PM	STOP: AM PM	AREA/FUNC.

DESCRIPTION OF WORK PERFORMED: Turn on after Meter Change

QTY	STOCK CODE	DESCRIPTION OF MATERIALS	UNIT PRICE	AMOUNT $	

LABOR CALC.:	$/HR	LABOR $	TOTAL MATERIAL		
1st 15 min.			SALES TAX		
Add'l _____			TOTAL LABOR		
SR / OTHER DISCOUNT ☐ Yes ☐ No	FLAT RATE $	QTY	FLAT RATE ODOR		
			FLAT RATE PUMP		
CUSTOMER SIGNATURE X			TOTAL BILLING		

COMPONENTS CHECKED/ADJUSTED	
[illegible]	

PAYMENT: ☐ MASTERCARD/VISA ☐ BILL ME

MasterCard/Visa # _____ Exp. Date ___/___

MAINTENANCE CONTRACT CUSTOMERS ONLY (if applicable):

I hereby acknowledge receipt of notification from NSTAR Gas that the heating / hot water equipment identified below and installed at the above service address does not qualify for coverage under the Home Heating Protection Plan for the following reasons: ___ Sized to large ___ Poor condition ___ Type not covered. I further acknowledge that, until such time as the equipment is deemed acceptable by NSTAR Gas, all requested service on such equipment will be chargeable at the current standard rates for both parts and labor.

Appliance: _____ Make: _____ Model: _____ Serial #: _____

CUSTOMER SIGNATURE: DATE:

M INVESTIGATION:					
[illegible]					

FORM: RO-1 CAT ID 13768 REV 7/01

OFFICE COPY

NSTAR GAS

COMMITTED TO SERVING THE CUSTOMER AND THE COMMUNITY

1-800-572-9300

ORDER NO.: 0 2 0 2 5 9 2 4 3

ACCOUNT NO:	
[illegible]E:	B Caney
PHONE:	
[illegible]ESS:	65 Main St
APT.:	FL. 2 LEFT
TOWN/ZIP:	Hopkinton

BILLING ADDRESS:

ACCOUNT NO:	
NAME:	
PHONE:	
ADDRESS:	
APT.:	
TOWN/ZIP:	

PREVIOUS STOP TIME: AM PM

WORK STATUS

CHARGE		METER WORK	✓
WARRANTY		ODOR INVEST.	
NO CHARGE		COMPLETE	✓
RECALL		INCOMPLETE	
ODOR DETECTED:		YES	NO

SERVICE DATE:	5/24/02	START:	1:00	AM PM	STOP:	1:15	AM PM	AREA/FUNC. 2608
PERFORMED BY:	7	START:		AM PM	STOP:		AM PM	AREA/FUNC.

DESCRIPTION OF WORK PERFORMED

Lite up after Meter Change

QTY	STOCK CODE	DESCRIPTION OF MATERIALS	UNIT PRICE	AMOUNT $

LABOR CALC.:	$ / HR	LABOR $	TOTAL MATERIAL	
1st 15 min.			SALES TAX	
Add'l ________			TOTAL LABOR	
SR / OTHER DISCOUNT	FLAT RATE $	QTY	FLAT RATE ODOR	
☐ Yes ☐ No			FLAT RATE PUMP	
CUSTOMER SIGNATURE X			TOTAL BILLING	

PAYMENT: ☐ **MASTERCARD/VISA** ☐ **BILL ME**

MasterCard/Visa # ______________________________ Exp. Date ___/___

COMPONENTS CHECKED / ADJUSTED

GENERAL		WARM AIR	
MAIN BURNER		FAN CONTROL	
PILOT		LIMIT CONTROL	
RELAY		BLOWER MOTOR	
GAS VALVE		PULLEY/BELT	
THERMOSTAT		FAN HOUSING	
FLUE PIPE		AIR FILTER	
DRAFT			
MODULE			
TRANSFORMER			
VENT DAMPER			
IGNITER			
HOT WATER		**STEAM**	
AQUASTAT		PRESSURETROL	
PRESSURE GAUGE		PRESSURE GAUGE	
EXPANSION TANK		GAUGE GLASS	
CIRC PUMP		LOW WATER CUTOFF	
ZONE VALVES		SWITCH LWCO	
PRESSURE RELIEF		PRESSURE RELIEF	

MAINTENANCE CONTRACT CUSTOMERS ONLY (if applicable):

I hereby acknowledge receipt of notification from NSTAR Gas that the heating / hot water equipment identified below and installed at the above service address does not qualify for coverage under the Home Heating Protection Plan for the following reasons: ___ Sized to large ___ Poor condition ___ Type not covered. I further acknowledge that, until such time as the equipment is deemed acceptable by NSTAR Gas, all requested service on such equipment will be chargeable at the current standard rates for both parts and labor.

Appliance: ___________ Make: ___________ Model: ___________ Serial #: ___________

CUSTOMER SIGNATURE: DATE:

[illegible]TER INVESTIGATION:	EXISTING METER NO. G004231?	READ 8295?	NEW METER NO.	READ	VERT NO.

[illegible]FETY COMMENT/RED TAG NO.	METER LOC.	PLEASE CHECK: SHUT OFF (TURN ON)	EXCHANGE	REMOVE	SET
		CH WH (RG) DR SH KH OTH			

FORM: RO-1 CAT ID 13768 REV 7/01

OFFICE COPY

ORDER NO.: 020844930

NSTAR GAS

COMMITTED TO SERVING THE CUSTOMER AND THE COMMUNITY

1-800-572-9300

ACCOUNT NO:	
PHONE:	
ADDRESS: 65 Main St	APT.: 2L
TOWN/ZIP: Hopkinton	

BILLING ADDRESS:

ACCOUNT NO:	
NAME:	PHONE:
ADDRESS:	APT.:
TOWN/ZIP:	
PREVIOUS STOP TIME:	AM PM

WORK STATUS

CHARGE		METER WORK	
WARRANTY		ODOR INVEST.	
NO CHARGE		COMPLETE	
RECALL		INCOMPLETE	
ODOR DETECTED:	YES		NO

SERVICE DATE: 6,4,02	START: 750 AM PM	STOP: 800 AM PM	AREA/FUNC. 15-2101
PERFORMED BY: 15	START: AM PM	STOP: AM PM	AREA/FUNC.

DESCRIPTION OF WORK PERFORMED

SONP TW @61 Left phone mess

QTY	STOCK CODE	DESCRIPTION OF MATERIALS	UNIT PRICE	AMOUNT $

LABOR CALC.:	$ / HR	LABOR $	TOTAL MATERIAL	
1st 15 min.			SALES TAX	
Add'l ______			TOTAL LABOR	
SR / OTHER DISCOUNT	FLAT RATE $	QTY	FLAT RATE ODOR	
☐ Yes ☐ No			FLAT RATE PUMP	
CUSTOMER SIGNATURE X			TOTAL BILLING	

PAYMENT: ☐ **MASTERCARD/VISA** ☐ **BILL ME**

MasterCard/Visa # ____________________ Exp. Date ___/___

MAINTENANCE CONTRACT CUSTOMERS ONLY (if applicable):

I hereby acknowledge receipt of notification from NSTAR Gas that the heating / hot water equipment identified below and installed at the above service address does not qualify for coverage under the Home Heating Protection Plan for the following reasons: ___ Sized to large ___ Poor condition ___ Type not covered. I further acknowledge that, until such time as the equipment is deemed acceptable by NSTAR Gas, all requested service on such equipment will be chargeable at the current standard rates for both parts and labor.

Appliance: __________ Make: __________ Model: __________ Serial #: __________

CUSTOMER SIGNATURE: DATE:

COMPONENTS CHECKED / ADJUSTED

GENERAL		WARM AIR	
MAIN BURNER		FAN CONTROL	
PILOT		LIMIT CONTROL	
RELAY		BLOWER MOTOR	
GAS VALVE		PULLEY/BELT	
THERMOSTAT		FAN HOUSING	
FLUE PIPE		AIR FILTER	
DRAFT			
MODULE			
TRANSFORMER			
VENT DAMPER			
DIVERTER			
HOT WATER		STEAM	
AQUASTAT		PRESSURE TROL	
PRESSURE GAUGE		PRESSURE GAUGE	
EXPANSION TANK		GAUGE GLASS	
CIRC PUMP		LOW WATER CUTOFF	
ZONE VALVES		SWITCH LWCO	
PRESSURE RELIEF		PRESSURE RELIEF	

METER INVESTIGATION:	EXISTING METER NO.	READ	NEW METER NO.	READ	ERT NO.
SAFETY COMMENT/RED TAG NO.	METER LOC.	PLEASE CIRCLE	SHUT OFF / TURN ON	EXCHANGE: CH WH RG DR SH KH OTH	REMOVE SET

FORM: RO-1 CAT ID 13768 REV 7/01

OFFICE COPY

20k

ORDER NO.: 0 2 0 8 4 4 9 3 0

NSTAR GAS

COMMITTED TO SERVING THE CUSTOMER AND THE COMMUNITY

1-800-572-9300

ACCOUNT NO:

NAME: Carney PHONE:

ADDRESS: 65 Main St APT.: 2LFT.

TOWN/ZIP: Hopkinton

BILLING ADDRESS:

ACCOUNT NO:

NAME: PHONE:

ADDRESS: APT.:

TOWN/ZIP:

WORK STATUS			
CHARGE		METER WORK	✓
WARRANTY		ODOR INVEST.	
NO CHARGE		COMPLETE	✓
RECALL		INCOMPLETE	
ODOR DETECTED:	YES		NO

PREVIOUS STOP TIME: AM PM

SERVICE DATE: 6/5/02 START: 3:35 AM PM STOP: 4:05 AM PM AREA/FUNC. 2607

PERFORMED BY: 7 START: AM PM STOP: AM PM AREA/FUNC.

DESCRIPTION OF WORK PERFORMED

Shop T.O

QTY	STOCK CODE	DESCRIPTION OF MATERIALS	UNIT PRICE	AMOUNT $

LABOR CALC.:	$ / HR	LABOR $	TOTAL MATERIAL	
1st 15 min.			SALES TAX	
Add'l ______			TOTAL LABOR	
SR / OTHER DISCOUNT	FLAT RATE $	QTY	FLAT RATE ODOR	
☐ Yes ☐ No			FLAT RATE PUMP	
CUSTOMER SIGNATURE X			TOTAL BILLING	

PAYMENT: ☐ MASTERCARD/VISA ☐ BILL ME

MasterCard/Visa # ______________________ Exp. Date __/__

COMPONENTS CHECKED / ADJUSTED			
GENERAL		WARM AIR	
MAIN BURNER		FAN CONTROL	
PILOT		LIMIT CONTROL	
RELAY		BLOWER MOTOR	
GAS VALVE		PULLEY/BELT	
THERMOSTAT		FAN HOUSING	
FLUE PIPE		AIR FILTER	
DRAFT			
MODULE			
TRANSFORMER			
VENT DAMPER			
DIVERTER			
HOT WATER		STEAM	
AQUASTAT		PRESSURETROL	
PRESSURE GAUGE		PRESSURE GAUGE	
EXPANSION TANK		GAUGE GLASS	
CIRC. PUMP		LOW WATER CUTOFF	
ZONE VALVES		SWITCH/LWCO	
PRESSURE RELIEF		PRESSURE RELIEF	

MAINTENANCE CONTRACT CUSTOMERS ONLY (if applicable):

I hereby acknowledge receipt of notification from NSTAR Gas that the heating / hot water equipment identified below and installed at the above service address does not qualify for coverage under the Home Heating Protection Plan for the following reasons: ___ Sized to large ___ Poor condition ___ Type not covered. I further acknowledge that, until such time as the equipment is deemed acceptable by NSTAR Gas, all requested service on such equipment will be chargeable at the current standard rates for both parts and labor.

Appliance: __________ Make: __________ Model: __________ Serial #: __________

CUSTOMER SIGNATURE: DATE:

METER INVESTIGATION:	EXISTING METER NO. 9021571	READ 7786	NEW METER NO.	READ	ERT NO.

OTHER/COMMENT/LEAKAGE NO.	METER LOC. C	PLEASE CIRCLE	SHUT OFF / TURN ON	EXCHANGE	REMOVE	SET
				CO WFL	TG DR	SH KH OTH

FORM: RO-1 CAT ID 13768

REV 7/01

OFFICE COPY

20m

ORDER NO.: 02085489 5

NSTAR GAS

COMMITTED TO SERVING THE CUSTOMER AND THE COMMUNITY

1-800-572-9300

ACCOUNT NO:

PHONE:

ADDRESS: 65 MAIN ST 2L APT.:

TOWN/ZIP: HOK

BILLING ADDRESS:

ACCOUNT NO:

NAME: PHONE:

ADDRESS: APT.:

TOWN/ZIP:

PREVIOUS STOP TIME: AM PM

WORK STATUS			
CHARGE		METER WORK	
WARRANTY		ODOR INVEST.	
NO CHARGE	✓	COMPLETE	✓
RECALL		INCOMPLETE	
ODOR DETECTED:		YES	NO

SERVICE DATE: 6/5/02 START: 8:00 AM PM STOP: 8:25 AM PM AREA/FUNC. 15-260

PERFORMED BY: 3 START: AM PM STOP: AM PM AREA/FUNC.

DESCRIPTION OF WORK PERFORMED

LIT-UP AWH - ON SOAP RECONNECT - THIS WAS OVERLOOK ON FIRST RECONNECT

QTY	STOCK CODE	DESCRIPTION OF MATERIALS	UNIT PRICE	AMOUNT $	

LABOR CALC.:	$/HR	LABOR $	TOTAL MATERIAL	
1st 15 min.			SALES TAX	
Add'l ____			TOTAL LABOR	
SR / OTHER DISCOUNT ☐ Yes ☐ No	FLAT RATE $	QTY	FLAT RATE ODOR	
			FLAT RATE PUMP	
CUSTOMER SIGNATURE X			TOTAL BILLING	

PAYMENT: ☐ MASTERCARD/VISA ☐ BILL ME

MasterCard/Visa # _____ Exp. Date ___/___

1. CONTROLS CHECKED/ADJUSTED			
		WARM AIR	
AQUASTAT		FAN CONTROL	
PILOT		LIMIT CONTROL	
RELAY		BLOWER MOTOR	
GAS VALVE		PULLEY/BELT	
THERMOSTAT		FAN HOUSING	
FLUE PIPE		AIR FILTER	
DRAFT			
MODULE			
TRANSFORMER			
VENT DAMPER			
DIVERTER			
HOT WATER		STEAM	
AQUASTAT		PRESSURETROL	
PRESSURE GAUGE		PRESSURE GAUGE	
EXPANSION TANK		GAUGE GLASS	
CIRC. PUMP		LOW WATER CUTOFF	
ZONE VALVES		SWITCH LWCO	
PRESSURE RELIEF		PRESSURE RELIEF	

MAINTENANCE CONTRACT CUSTOMERS ONLY (if applicable):

I hereby acknowledge receipt of notification from NSTAR Gas that the heating / hot water equipment identified below and installed at the above service address does not qualify for coverage under the Home Heating Protection Plan for the following reasons: ___ Sized to large ___ Poor condition ___ Type not covered. I further acknowledge that, until such time as the equipment is deemed acceptable by NSTAR Gas, all requested service on such equipment will be chargeable at the current standard rates for both parts and labor.

Appliance: _____ Make: _____ Model: _____ Serial #: _____

CUSTOMER SIGNATURE: DATE:

METER INVESTIGATION:	EXISTING METER NO.	READ	NEW METER NO.	READ	ERT NO.
SAFETY COMMENT/RED TAGE NO.	METER LOC.	CIRCLE: SHUT OFF / TURN ON	EXCHANGE CH WH RG DR	REMOVE SH KH OTH	SET

FORM: RO-1 CAT ID 13768

REV 7/01

OFFICE COPY

Exhibit
21

COM/GAS - ANNUAL WALKING SURVEY - 2001

TOWN: HOPKINTON
STREET: MAIN

ZIP IF USED: _____
ST

DATE 1/10/02
TECHNICIAN Dave Peacock

HOUSE #	RESULTS POS	RESULTS NEG	METER PROTECTED Y/N	CUST NAME
2		✓	Y	HOPKINTON TOWN HALL
6		✓	Y	KOREAN PRESBYTERIAN
10		✓	Y	HOPKINTON ACACIA CLB
13		✓	Y	MIDDLESEX SAVINGS BA
14		✓	Y	HOPKINTON LIBRARY
15		✓	Y	BILL'S PIZZA & RESTA
17		✓	Y	EISELE
25		✓	Y	STATEWIDE REALTY MGM
28		✓	Y	25 MAIN ST REALTY TR
34		✓	Y	CTRNG CON CLASSE BY
35		✓	Y	KEEFE
42		✓	Y	35 MAIN ST REALTY
45		✓	Y	___VACANT CUSTOMER__
46		✓	Y	CARVER
59		✓	Y	HOPKINTON DRUG
61		✓	Y	STRATA BANK
63		✓	Y	COLELLAS MARKET INC
65		✓	Y	HITCHINGS
66		✓	Y	MAINS
67		✓	Y	SOVEREIGN BANK
70		✓	Y	WARD
73		✓	Y	MARSO
74			Y	HOPKINTON FIRE STATI
75	✓		Y	HOPKINTON POLICE
76		✓	Y	___VACANT CUSTOMER__
77		✓	Y	APEAL REALTY
78		✓	Y	THOMSON REALTY LP
79		✓	Y	HELLBERG
81		✓	Y	___VACANT CUSTOMER__
82		✓	Y	___VACANT CUSTOMER__
84		✓	Y	MACNABB
86		✓	Y	CLEERE
87		✓	Y	HARRIS
88		✓	Y	PALMER
89		✓	Y	GREENE
90		✓	Y	LITCHFORD
91		✓	Y	SHANE
92		✓	Y	___VACANT CUSTOMER__
93		✓	Y	DUFFY
97		✓	Y	KIMBALL
100		✓	Y	HILLERS CLEANERS
101		✓	Y	SCARLATA
103		✓	Y	GATELY
104		✓	Y	GENESIS 1 CORP
105		✓	Y	CONTINUED

Exhibit
22

NSTAR GAS

Gas Leak Detection Survey
Daily Activity Report

Bridges	
Bus. District	
C.I. Patrol	
Mobile	X

Wind 0-5

Other	
Public Bldg.	
Recheck	
Walking	

Date 7-2-02 Weather Hazy Sun Company Hawkeye

Town	Location (from ____ to ____)
HOPKINTON	Grove St. From Hayden Rowe St. To Main St.
	Maple St. From Pleasant St. To Hayden Rowe St.
	Pleasant St. From Hayden Rowe St. To Main St.
	Price St. From Grove St. To Church St.
	E. Main St. From Grove St. To Hayden Rowe St.
	Church St. From E. Main St. To Maple St.
	Walcott St. From E. Main St. To C St.
	Walcott Valley Dr. From Walcott St. To Walcott St.
	Cedar St. From E. Main St. To End Of Main
	A St. From Cedar St. To Walcott St.
	B St. From Cedar St. To Walcott St.
	C St. From Cedar St. To Walcott St.
	Main St. From Cedar St. To Pleasant St.
	Summer St. From Main St. To Davis Rd.
	Davis Rd. From Summer St. To Dead End
	Mayhew St. From Main St. To Dead End
	Mt. Auburn St. From Main St. To Mayhew St.
	Marshall Av. From Main St. To Dead End

ture Robert Williams Hrs worked 8

Nstar Gas Company

Weekly Totals

Technician: Robert Williams Company: Hawkeye

Division: Southboro

Date:	Town:	Survey Type	Leaks Found: 1	2	3	
						Sunday
7-1-02	Hopkinton	Mobile	0	0	0	Monday
7-2	Hopkinton	Mobile	0	0	0	Tuesday
7-3	Hopkinton	Mobile	0	0	1	Wednesday
7-4	—	—	—	—	—	Thursday
7-5-02	Hopkinton	Mobile	0	0	0	Friday
						Saturday
Weekly Total- - - - ->			0	0	1	

Comments: Thursday - Holiday

Signature: Robert Williams Total Hrs. Worked: 32

t:Survey form

Exhibit
23

BUSINESS DISTRICT SURVEY

R. Williams

TOWN/CITY: Hopkinton DATE: 7-15-02

STREET: Main St. (Rt. 135) CROSS ST: Church St NEG

AREA: Main St - Hayden Rowe St - Park St - Ash St

SPECIFICS OF SURVEY:

Town Square area / School on Ash St. - meters on side of bldg.

BUSINESS DISTRICT SURVEY

RWilliams

TOWN/CITY: Hopkinton

DATE: 7-15-02

NEG

STREET: West Main St.

CROSS ST: Lumber St.

AREA: 200ft. eastbound side of W.Main St.

SPECIFICS OF SURVEY:

"77 Main Street West" (minimall) - meters in rear of building

BUSINESS DISTRICT SURVEY

R. Williams

TOWN/CITY: Hopkinton DATE: 7-15-02

STREET: Main St. (Rt. 135) CROSS ST: Summer St
Price St

AREA: Junction of Rt. 85(Cedar St) & Rt. 135(Main St)
700ft on Main St.
200ft on both sides of Main St on Rt. 85
350ft on both sides of Route 85

POS

SPECIFICS OF SURVEY:

Brigham's - gas meter in rear
Cumberland Farms - meter located on left side
Police Station - meter located on right side
(individual meters on stores but stores are connected by concrete)

Class 3 Leak @ 25 Main St.


N
HOPKINTON RESERVOIR
RAFFERTY RD.
WILSON ST.
CEDAR ST.
CRITICAL VALVE NO. 85
HPK-180
CRITICAL VALVE NO. 84
CRITICAL VALVE NO. 152
HOPKINTON-ASHLAND 6" TRANSFER LINE
PHIPPS ST.
FRANKLAND
PEACH ST
RTE 135
EAST MAIN ST.
CURTIS RD
LINDEN ST.
I-495
SADDLE HILL RD
STONEY BROOK RD
APPALOOSA DR.
RIDGE RD.
CLYDESDALE LN.
PALOMINO DR.
PROCTOR ST
WOOD ST.
WALKER ST.
INDIAN BROOK
INDIAN LINE
DITCH
HPK-161
HPK-114
HPK-160
HPK-044
HPK-159
APPLETREE HILL
ELM ST.
MAIN ST.
HOUSING FOR THE ELDERLY
CEMETERY
TOWN COMMON
HPK-149
HPK-150
HPK-152
CLAFLIN AVE.
COMMONWEALTH AVE
WHALEN ST.
LEONARD
HPK-074
KERRY LN.
COLONIAL AVE.
HAZEL RD
HOWE
FENTON
OLD COACH RD. (CARRIAGE HILL RD)
HPK-238
ICE HOUSE POND
TRANSMISSION
HPK-045
HPK-046
HIGH ST
LUMBER ST
HPK-077
HPK-078
HPK-125
HPK-151
SOUTH ST
HPK-127
HPK-063
HPK-084
HPK-128
HAYWARD ST
DOWNEY
HILLCREST DR.
OLD TOWN RD
HILL TOP
HPK-059
HPK-070
HPK-060
HPK-021
RTE 85
CHAMBERLAIN
SANCTUARY LN.
COLELLA FARM RD
ANGELO
TERESA RD
NICHOLAS
MARIA LN.
HPK-089
HPK-141
HPK-137
HPK-097
HPK-003
HPK-004
HPK-005
HPK-138
HPK-073A
HPK-034
HPK-096
HPK-136
HPK-135
ALEXANDER RD
HPK-061
HPK-022
HAYDEN
HPK-062
HPK-008
HPK-140
HPK-093
BLUEBERRY LN.
HEMLOCK ST
HPK-068
HPK-017
THAYER
HPK-139
HPK-016
BRIAN LN.
BRIARCLIFF
HPK-157
HPK-156
WILD WOOD RD
CHESTNUT ST
HPK-197
HPK-023
HPK-210
HPK-181
HPK-182
HPK-183
BENSON
GORDON RD
KIMBALL
ASH ST.
OAK HILL RD

Exhibit
24

Odorant Sampling
Vicinity of 65 Main St., Hopkinton
July 24, 2002

Location	Test Equipment	Tester	Threshold Reading % gas/air	Distinct Reading % gas/air
Hopkinton Fire Dept. West Main St. at meter # 6273493	Bacharach Odorometer S/N TG0510	Jonathan White	0.04	0.05
		John Rafferty	0.075	0.1
Hopkinton Police Dept. West Main St. at meter # 6409615	Bacharach Odorometer S/N TG0510	Jonathan White	0.03	0.04
		John Rafferty	0.05	0.1

ODORANT TEST REPORT

Southboro Area

LP Points	Month 1 Jan				Month 2 Feb				Month 3 Mar				Month 4 Apr			
Sector 5 - (Marlb.)	Date&Time	Serial#	Init.	%LEL/%VOL	Date&Time	Serial#	Init.	%LEL/%VOL	Date&Time	Serial#	Init.	%LEL/%VOL	Date&Time	Serial#	Init.	%LEL/%VOL
Anthony's Liquors- 531 Lincoln St.	2/10:15		jw	.010/.070												
Meter																
98 Pleasant St. - Fire Dept.					1/1:30	184	jw	.000/.070								
Water heater																
Pastille Liquors - Main Street									1/12:05	184	jw	.000/.030				
Meter at alley																
Marlboro City Garage - 135 Neil St.													1/11:45	184	jw	.000/.010
Meter																
	Month 1 Jan				Month 2 Feb				Month 3 Mar				Month 4 Apr			
Sector 6 - (Hpdle/Mil.)	Date&Time	Serial#	Init.	%LEL/%VOL	Date&Time	Serial#	Init.	%LEL/%VOL	Date&Time	Serial#	Init.	%LEL/%VOL	Date&Time	Serial#	Init.	%LEL/%VOL
Draper School - Adin St., Hopedale	2/12:30?		jw	.000/.080												
Meter - Ind. Arts room																
250 Main St. - Police Dept. - Milford					4/	184	jw	.010/.040								
Meter																
15 Spruce Street - Fire Station - Milf.									1/2:45	184	jw	.000/.040				
Meter fit																
Hopedale Station-Skating Rink/Alt.													2/7:00	184	jw	.000/.040
Outside service																
	Month 1 Jan				Month 2 Feb				Month 3 Mar				Month 4 Apr			
Sector 7 - (Fram.)	Date&Time	Serial#	Init.	%LEL/%VOL	Date&Time	Serial#	Init.	%LEL/%VOL	Date&Time	Serial#	Init.	%LEL/%VOL	Date&Time	Serial#	Init.	%LEL/%VOL
Framnghm State/access off State St.	2/8:30		jw	.010/.120												
Boiler																
Ken's Steak Hse Rt. 9,95 Worc. Rd.					1/11:00	184	jw	.010/.050								
Meter																
Framnghm Police Stat./81 Union Ave.									1/9:00	184	jw	.010/.080				
Boiler room																
520 Concord St. - Fire Dept.																
Water heater													1/8:50	184	jw	.100/.140

Sector 8 - (Fram.)	Month 1 Jan				Month 2 Feb				Month 3 Mar				Month 4 Apr			
	Date&Time	Serial #	Init	ROL/DOL	Date&Time	Serial #	Init	ROL/DOL	Date&Time	Serial #	Init	ROL/DOL	Date&Time	Serial #	Init	ROL/DOL
St. Tarcisius 562 Waverly St.	2/8:30		jw	.000/.060												
Meter fit																
Framingham Plant - Irving St.																
RTU Room																
Replacement Auto Parts,113 Irving St.					1/10:15	184	jw	.020/.130								
Meter																
Bethany Hospital, 95-97 Bethany Hill									1/8:45	184	jw	.000/.040				
Meter																
													1/9:45	184	jw	.090/.090
Southboro Area	Month 1 Jan				Month 2 Feb				Month 3 Mar				Month 4 Apr			
Sector 9 - (Natick)	Date&Time	Serial #	Init	ROL/DOL	Date&Time	Serial #	Init	ROL/DOL	Date&Time	Serial #	Init	ROL/DOL	Date&Time	Serial #	Init	ROL/DOL
Leary's - 6 Worcester St.(1/3/01)																
Meter																
36 Summer - Middlesex Bank	2/8:00		jw	.000/.060	1/10:35	184	jw	.000/.060								
Natick Plant, Middlesex Ave.									1/8:00	184	jw	.010/.100				
Recorder																
H.H. Johnson School- 99 So. Main St.													1/8:15	184	jw	.000/.040
Meter																
	Month 1 Jan				Month 2 Feb				Month 3 Mar				Month 4 Apr			
IP Points (1X Each/Month)	Date&Time	Serial #	Init	ROL/DOL	Date&Time	Serial #	Init	ROL/DOL	Date&Time	Serial #	Init	ROL/DOL	Date&Time	Serial #	Init	ROL/DOL
The Grill Rest/35 Solomn Pond Rd. Nbro	2/12:15		jw	.010/.110	1/12:45	184	jw	.030/.110	1/10:50	184	jw	.090/.090	1/1:00	184	jw	.090/.090
Meter																
Bolton Manor - 400 Bolton St., Marl.	2/10:15		jw	.010/.070	1/1:10	184	jw	.010/.040	1/11:50	184	jw	.000/.040	1/12:00	184	jw	.090/.100
Dryer fuel line (also Braemore Nursing)																
Stow Gren Hse/84 Walcot St/Hudson Line	2/10:45		jw	.000/.010	1/11:55	184	jw	.000/.010	1/11:30	184	jw	.000/.010	1/12:15	184	jw	.090/.100
Meter																
Natick Plant - Middlesex Ave.	2/8:15		jw	.010/.110	1/10:45	184	jw	.010/.070	1/8:00	184	jw	.010/.100	1/8:30	184	jw	.020/.110
Recorder																
Rt. 85 - C/G Southboro - Schoolroom	2/9:30		jw	.010/.050	1/9:30	184	jw	.000/.060	1/9:50	184	jw	.010/.070	1/11:00	184	jw	.010/.080
Gas line																

Sector 8 - (Fram.)	Month 1 May				Month 2 Jun				Month 3 Jul				Month 4 Aug			
	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL
St. Tarcisius 562 Waverly St.	9/12:50	184	jw	.090/.100												
Meter fit																
Framingham Plant - Irving St.					4/9:00	TGO510	jw	.072/.082								
RTU Room																
Replacement Auto Parts,113 Irving St.									1/9:30	DTEX184	jw	.070/.080				
Meter																
Bethany Hospital, 95-97 Bethany Hill																
Meter																
Southboro Area	**Month 1 May**				**Month 2 Jun**				**Month 3 Jul**				**Month 4 Aug**			
Sector 9 - (Natick)	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL
Leary's - 6 Worcester St.(1/3/01)	6/10:25	184	jw	.090/.090												
Meter																
36 Summer - Middlesex Bank					5/11:30	TGO510	jw	.072/.082								
The Grill Rest/35 Solomn Pond Rd. Nbro																
Natick Plant, Middlesex Ave.									1/11:15	TGO510	jw	.070/.080				
Recorder																
H.H. Johnson School- 99 So. Main St.																
Meter																
	Month 1 May				**Month 2 Jun**				**Month 3 Jul**				**Month 4 Aug**			
IP Points (1X Each/Month)	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL
The Grill Rest/35 Solomn Pond Rd. Nbro	6/5:35	184	jw	.090/.100	5/9:45	TGO510	jw	.103/.113	1/3:40	TGO510	jw	.050/.060				
Meter																
Bolton Manor - 400 Bolton St., Marl.	9/2:00	184	jw	.090/.100	5/10:00	TGO510	jw	.062/.072	1/2:30	TGO510	jw	.070/.080				
Dryer fuel line (also Braemore Nursing)																
Stow Gren Hse/84 Walcot St/Hudson Line	6/6:15	184	jw	.090/.090	5/9:30	TGO510	jw	.082/.093	1/2:50	TGO510	jw	.090/.100				
Meter																
Natick Plant - Middlesex Ave.	6/10:35	184	jw	.090/.110	5/11:15	TGO510	jw	.062/.072	1/11:15	TGO510	jw	.070/.080				
Recorder																
Rt. 85 - C/G Southboro - Schoolroom	6/2:45	184	jw	.090/.100	4/11:30	TGO510	jw	.103/.113	1/2:00	TGO510	jw	.110/.120				
Gas line																

2002 ODORANT . / REPORT																
Southboro Area																
LP Points	Month 1 May				Month 2 Jun				Month 3 Jul				Month 4 Aug			
Sector 5 - (Marlb.)	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL
Anthony's Liquors- 531 Lincoln St.	6/4:00	184	jw	.090/.090												
Meter																
98 Pleasant St. - Fire Dept.					5/10:30	TGO510	jw	.093/.103								
Water heater																
Pastille Liquors - Main Street									1/2:20	TGO510	jw	.070/.080				
Meter at alley																
Marlboro City Garage - 135 Neil St.																
Meter																
	Month 1 May				Month 2 Jun				Month 3 Jul				Month 4 Aug			
Sector 6 - (Hpdle/Mil.)	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL
Draper School - Adin St., Hopedale	1/1:00	184	jw	.000/.010												
Meter - Ind. Arts room																
250 Main St. - Police Dept. - Milford					5/7:30	TGO510	jw	.062/.072								
Meter																
15 Spruce Street - Fire Station - Milf.									1/7:45	DTEX184	jw	.090/.090				
Meter fit																
Hopedale Station-Skating Rink/Alt.																
Outside service																
	Month 1 May				Month 2 Jun				Month 3 Jul				Month 4 Aug			
Sector 7 - (Fram.)	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL	Date&Time	Serial #	Init.	TOL/DOL
Framnghm State/access off State St.	6/11:20	184	jw	.090/.100												
Boiler																
Ken's Steak Hse Rt. 9,95 Worc. Rd.					5/11:00	TGO510	jw	.082/.093								
Meter																
Framnghm Police Stat./81 Union Ave.									1/9:15	DTEX184	jw	.090/.090				
Boiler room																
520 Concord St. - Fire Dept.																
Water heater																

DEPARTMENT OF TELECOMMUNICATIONS & ENERGY
State Office Building - Government Center
100 Cambridge St., Boston, MA 02202
Month of Jan 2002 - Odorization Record
NSTAR GAS SERVICES COMPANY

DATE	% GAS IN AIR	LOCATION OF TEST	TYPE OF GAS	TESTER	REMARKS
		Framingham	Natural	J. White	None
07-Jan	.010/.090				
14-Jan	.000/.020				
22-Jan	.000/.040				
28-Jan	.010/.030				
		Hudson	Natural	J. White	
07-Jan	.010/.040				
14-Jan	.010/.050				
22-Jan	.010/.050				
28-Jan	.000/.020				
		Rt. 85 Hopco	Natural	J. White	
07-Jan	.000/.040				
14-Jan	.010/.050				
23-Jan	.010/.050				
29-Jan	.000/.020				
		Ashland / GE Co.	Natural	J. White	
07-Jan	.000/.090				
14-Jan	.010/.090				
23-Jan	.010/.090				
29-Jan	.010/.030				
		Ashland / ACI	Natural	J. White	
07-Jan	.000/.020				
14-Jan	.010/.080				
22-Jan	.000/.070				
28-Jan	.010/.080				
		Dover	Natural	J. White	
07-Jan	.000/.090				
14-Jan	.010/.100				
22-Jan	.020/.090				
28-Jan	.010/.070				

DEPARTMENT OF TELECOMMUNICATIONS & ENERGY
State Office Building - Government Center
100 Cambridge St., Boston, MA 02202
Month of Jan 2002 - Odorization Record
NSTAR GAS SERVICES COMPANY

DATE	% GAS IN AIR		LOCATION OF TEST	TYPE OF GAS	TESTER	REMARKS
07-Jan	.080/.100	Threshold/Distinct	Farnumsville	Natural	C. Gibbons	None
14-Jan	.080/.110					
23-Jan	.070/.080					
28-Jan	.070/.110					
07-Jan	.030/.050		Hopedale	Natural	R. Piper	
14-Jan	.060/.110					
22-Jan	.030/.070					
29-Jan	.060/.110					
07-Jan	.030/.040		Milford	Natural	R. Piper	
14-Jan	.030/.050					
22-Jan	.020/.080					
27-Jan	.030/.070					
07-Jan	.020/.050		Upland Street	Natural	R. Piper	
14-Jan	.010/.030					
22-Jan	.020/.070					
28-Jan	.010/.030					
07-Jan	.080/.090		Worcester Feed	Natural	C. Gibbons	
14-Jan	.090/.120					
23-Jan	.090/.120					
28-Jan	.090/.110					

DEPART. .NT OF TELECOMMUNICATIONS & ENERGY
State Office Building - Government Center
100 Cambridge St., Boston, MA 02202
Month of Feb 2002 - Odorization Record
NSTAR GAS SERVICES COMPANY

DATE	% GAS IN AIR	LOCATION OF TEST	TYPE OF GAS	TESTER	REMARKS
		Framingham	Natural	J. White	None
04-Feb	.010/.040				
11-Feb	.010/.070				
19-Feb	.000/.030				
25-Feb	.020/.090				
		Hudson	Natural	J. White	
04-Feb	.000/.020				
11-Feb	.000/.040				
19-Feb	.000/.050				
25-Feb	.000/.040				
		Rt. 85 Hopkinton	Natural	J. White	
04-Feb	.000/.050				
11-Feb	.010/.070				
19-Feb	.000/.010				
25-Feb	.000/.020				
		Ashland Hopkinton	Natural	J. White	
04-Feb	.000/.050				
11-Feb	.010/.070				
19-Feb	.010/.050				
25-Feb	,010/.080				
		Ashland - ACT	Natural	J. White	
04-Feb	.000/.010				
11-Feb	.010/.060				
19-Feb	.010/.040				
25-Feb	.010/.040				
		Dover	Natural	J. White	
04-Feb	.010/.060				
11-Feb	.010/.060				
19-Feb	.010/.070				
25-Feb	.000/.050				

DEPARTMENT OF TELECOMMUNICATIONS & ENERGY
State Office Building - Government Center
100 Cambridge St., Boston, MA 02202
Month of Feb 2002 - Odorization Record
NSTAR GAS SERVICES COMPANY

DATE	% GAS IN AIR		LOCATION OF TEST	TYPE OF GAS	TESTER	REMARKS
04-Feb	.100/.120	Threshold/Distinct	Farnumsville	Natural	C. Gibbons	None
11-Feb	.100/.110					
19-Feb	.090/.110					
25-Feb	.100/.120					
05-Feb	.020/.060		Hopedale	Natural	R. Piper	
11-Feb	.010/.040					
19-Feb	.030/.070					
25-Feb	.030/.060					
04-Feb	.010/.020		Milford	Natural	R. Piper	
11-Feb	.020/.040					
19-Feb	.030/.050					
25-Feb	.010/.040					
06-Feb	.030/.050		Upland Street	Natural	R. Piper	
11-Feb	.010/.020					
19-Feb	.020/.040					
25-Feb	.010/.040					
04-Feb	.080/.090		Worcester Feed	Natural	C. Gibbons	
11-Feb	.060/.080					
19-Feb	.090/.110					
25-Feb	.080/.110					

DEPART NT OF TELECOMMUNICATIONS & ENERGY
State Office Building - Government Center
100 Cambridge St., Boston, MA 02202
Month of March 2002 - Odorization Record
NSTAR GAS SERVICES COMPANY

DATE	% GAS IN AIR	LOCATION OF TEST	TYPE OF GAS	TESTER	REMARKS
		Fire Station - Framingham	Natural	J. White	None
04-Mar	.000/.010				
11-Mar	.020/.070				
18-Mar	.000/.040				
25-Mar	.000/.030				
		Hudson	Natural	J. White	
04-Mar	.010/.050				
11-Mar	.000/.030				
18-Mar	.000/.060				
25-Mar	.000/.030				
		Rt. 85 HOPCO	Natural	J. White	
04-Mar	.000/.060				
11-Mar	.000/.020				
18-Mar	.000/.050				
25-Mar	.000/.030				
		Ashland - HOPCO	Natural	J. White	
04-Mar	.000/.040				
11-Mar	.000/.060				
18-Mar	.020/.110				
25-Mar	.000/.020				
		Ashland - ACT	Natural	J. White	
04-Mar	.000/.010				
11-Mar	.000/.030				
18-Mar	.000/.030				
25-Mar	.000/.010				
		Dover	Natural	J. White	
04-Mar	.090/.110				
11-Mar	.020/.070				
18-Mar	.010/.070				
25-Mar	.090/.100				

DEPARTMENT OF TELECOMMUNICATIONS & ENERGY
State Office Building - Government Center
100 Cambridge St., Boston, MA 02202
Month of March 2002 - Odorization Record
NSTAR GAS SERVICES COMPANY

DATE	% GAS IN AIR		LOCATION OF TEST	TYPE OF GAS	TESTER	REMARKS
04-Mar	.080/.100	Threshold/Distinct	Farnumsville	Natural	C. Gibbons	None
11-Mar	.110/.120					
18-Mar	.110/.130					
25-Mar	.100/.120					
04-Mar	.040/.050		Hopedale	Natural	R. Piper	
11-Mar	.040/.090					
18-Mar	.050/.090					
25-Mar	.050/.060					
04-Mar	.030/.060		Milford	Natural	R. Piper	
11-Mar	.020/.050					
18-Mar	.030/.050					
25-Mar	.020/.040					
04-Mar	.020/.050		Upland Street	Natural	R. Piper	
11-Mar	.010/.040					
18-Mar	.020/.030					
25-Mar	.010/.040					
04-Mar	.070/.090		Worcester Feed	Natural	C. Gibbons	
11-Mar	.080/.090					
18-Mar	.080/.090					
25-Mar	.060/.070					

DEPARTMENT OF TELECOMMUNICATIONS & ENERGY
State Office Building - Government Center
100 Cambridge St., Boston, MA 02202
Month of April 2002 - Odorization Record
NSTAR GAS SERVICES COMPANY

DATE	% GAS IN AIR	LOCATION OF TEST	TYPE OF GAS	TESTER	REMARKS
		Threshold District Framingham	Natural	J. White	None
01-Apr	.090/.140				
08-Apr	.000/.030				
16-Apr	.000/.010				
21-Apr	.090/.090				
29-Apr	.090/.110				
		Hudson	Natural	J. White	
01-Apr	.090/.100				
08-Apr	.010/.010				
16-Apr	.090/.120				
22-Apr	.080/.110			C. Gibbons	
30-Apr	.090/.090			J. White	
		R/ 85 HOPCO	Natural	J. White	
01-Apr	.010/.070				
08-Apr	.000/.120				
16-Apr	.000/.010				
22-Apr	.020/.050				
29-Apr	.000/.010				
		Ashland HOPCO	Natural	J. White	
01-Apr	.020/.090				
08-Apr	.000/.030				
16-Apr	.000/.020				
22-Apr	.000/.030				
29-Apr	.000/.010				
		Ashland ACT	Natural	J. White	
01-Apr	.090/.100				
08-Apr	.000/.020				
16-Apr	.000/.010				
24-Apr	.090/.110				
29-Apr	.090/.110				

	Dover	Laurel	Milford
01-Apr	.000/.040		
08-Apr	.000/.040		
16-Apr	.090/.100		
24-Apr	.090/.100		
29-Apr	.100/.140		

DEPARTMENT OF TELECOMMUNICATIONS & ENERGY
State Office Building - Government Center
100 Cambridge St., Boston, MA 02202
Month of April 2002 - Odorization Record
NSTAR GAS SERVICES COMPANY

DATE	% GAS IN AIR		LOCATION OF TEST	TYPE OF GAS	TESTER	REMARKS
01-Apr	.070/.090	Threshold/Distinct	Farnumsville	Natural	C. Gibbons	None
08-Apr	.080/.100					
16-Apr	.100/.120					
23-Apr	.110/.120					
29-Apr	.090/.110					
01-Apr	.030/.090		Hopedale	Natural	R. Piper	
09-Apr	.040/.120					
16-Apr	.030/.080					
22-Apr	.040/.070					
29-Apr	.090/.110				C. Gibbons	
01-Apr	.030/.050		Milford	Natural	R. Piper	
09-Apr	.020/.050					
16-Apr	.030/.060					
22-Apr	.020/.040					
29-Apr	.080/.100				C. Gibbons	
01-Apr	.020/.050		Upland Street	Natural	R. Piper	
10-Apr	.100/.120				C. Gibbons	
18-Apr	.080/.100					
22-Apr	.040/.080				R. Piper	
29-Apr	.100/.120				C. Gibbons	
01-Apr	.060/.070		Worcester Feed	Natural	C. Gibbons	
08-Apr	.060/.070					
16-Apr	.050/.080					
23-Apr	.080/.100					
29-Apr	.070/.080					

COMMON ⌐ALTH OF MASSACHUSETTS Office of Consumer Affairs and ⌐usiness Development
DEPARTMENT OF TELECOMMUNICATIONS & ENERGY
One South Station, Boston, MA 02110
Month of May 2002 - Odorization Record NSTAR Gas

DATE	% GAS IN AIR	LOCATION OF TEST	TYPE OF GAS	TESTER	REMARKS
		[illegible] Framingham	Natural	J. White	None
06-May	.100/.120				
13-May	.090/.100				
20-May	.082/.093				
29-May	.072/.082				
		Hudson	Natural	J. White	
06-May	.090/.140				
13-May	.000/.010				
20-May	.093/.103				
29-May	.082/.093				
		Rt. 85 HOPCO	Natural	J. White	
06-May	.010/.020				
13-May	.000/.040				
20-May	.082/.093				
29-May	.072/.082				
		Ashland HOPCO	Natural	J. White	
06-May	.010/.040				
13-May	.000/.010				
20-May	.093/.103				
29-May	.082/.093				
		Ashland ACT	Natural	J. White	
06-May	.090/.090				
13-May	.000/.010				
20-May	.072/.082				
27-May	.082/.093				
		Dover	Natural	J. White	
06-May	.090/.110				
13-May	.090/.100				
20-May	.090/.100				
27-May	.072/.082				

COMMONWEALTH OF MASSACHUSETTS Office of Consumer Affairs and Business Development
DEPARTMENT OF TELECOMMUNICATIONS & ENERGY
One South Station
Boston, MA 02110
Month of May 2002 - Odorization Record NASTAR Gas

DATE	% GAS IN AIR	LOCATION OF TEST	TYPE OF GAS	TESTER	REMARKS
06-May	.080/.110	Threshold/Distinct Farnumsville	Natural	C. Gibbons	None
13-May	.080/.100				
20-May	.080/.100				
28-May	.100/.120				
06-May	.030/.060	Hopedale	Natural	R. Piper	
13-May	.010/.050				
22-May	.050/.090				
28-May	.020/.050				
06-May	.040/.060	Milford	Natural	R. Piper	
13-May	.040/.080				
22-May	.020/.070				
28-May	.020/.050				
06-May	.010/.040	Upland Street	Natural	R. Piper	
13-May	.020/.040				
22-May	.010/.040				
28-May	.030/.070				
06-May	.060/.080	Worcester Feed	Natural	C. Gibbons	
13-May	.070/.090				
20-May	.060/.080				
28-May	.090/.110				

COMMONWEALTH OF MASSACHUSETTS Office of Consumer Affairs and Business Development
DEPARTMENT OF TELECOMMUNICATIONS & ENERGY
One South Station, Boston, MA 02110
Month of June 2002 - Odorization Record NSTAR Gas

DATE	% GAS IN AIR	LOCATION OF TEST	TYPE OF GAS	TESTER	REMARKS
		Hopkinton - Farmington	Natural	J. White	None
04-Jun	.072/.082				
11-Jun	.060/.070				
18-Jun	.090/.090				
24-Jun	.090/.100				
		Hudson	Natural	J. White	
05-Jun	.095/.103				
11-Jun	.070/.080				
18-Jun	.000/.010				
24-Jun	.000/.020				
		Marlboro	Natural	J. White	
04-Jun	.062/.072				
11-Jun	.050/.060				
18-Jun	.090/.100				
24-Jun	.000/.010				
		Ashland - Cedar	Natural	J. White	
04-Jun	.072/.082				
11-Jun	off				
18-Jun	off				
24-Jun	off				
		Ashland - Cliff	Natural	J. White	
04-Jun	.062/.072				
11-Jun	.050/.060				
18-Jun	.090/.090				
24-Jun	.090/.100				
		Dover	Natural	J. White	
04-Jun	.093/.103				
11-Jun	.060/.070				
18-Jun	.090/.100				
24-Jun	.000/.010				

COMMON ALTH OF MASSACHUSETTS Office of Consumer Affairs and Business Development
DEPARTMENT OF TELECOMMUNICATIONS & ENERGY
One South Station
Boston, MA 02110
Month of June 2002 - Odorization Record NASTAR Gas

DATE	% GAS IN AIR	LOCATION OF TEST	TYPE OF GAS	TESTER	REMARKS
03-Jun	.110/.120	Threshold/Distinct Farnumsville	Natural	C. Gibbons	None
11-Jun	.090/.110				
17-Jun	.080/.090				
24-Jun	.090/.100				
03-Jun	.050/.080	Hopedale	Natural	R. Piper	
10-Jun	.030/.060				
17-Jun	.050/.100				
24-Jun	.050/.100				
03-Jun	.030/.050	Milford	Natural	R. Piper	
10-Jun	.030/.070				
17-Jun	.040/.070				
24-Jun	.010/.040				
03-Jun	.020/.080	Upland Street	Natural	R. Piper	
10-Jun	.050/.080				
18-Jun	.040/.070				
24-Jun	.020/.040				
03-Jun	.060/.070	Worcester Feed	Natural	C. Gibbons	
11-Jun	.080/.090				
17-Jun	.070/.090				
24-Jun	.080/.100				

COMMON ALTH OF MASSACHUSETTS Office of Consumer Affairs and ' ness Development
DEPARTMENT OF TELECOMMUNICATIONS & ENERGY
One South Station, Boston, MA 02110
Month of July 2002 - Odorization Record NSTAR Gas

DATE	% GAS IN AIR	LOCATION OF TEST	TYPE OF GAS	TESTER	REMARKS
		Framingham	Natural	J. White	None
01-Jul	.090/.100				
08-Jul	.070/.080				
15-Jul	.110/.120				
22-Jul	.100/.110				
29-Jul	.090/.100				
		Hudson	Natural	J. White	
01-Jul	.080/.090				
08-Jul	.060/.070				
15-Jul	.090/.100				
22-Jul	.100/.110				
29-Jul	.050/.060				
		Rt 85 HOPCO	Natural	J. White	
01-Jul	.060/.070				
08-Jul	.060/.070				
15-Jul	.050/.060				
22-Jul	.080/.090				
29-Jul	.090/.100				
		Ashland HOPCO	Natural	J. White	
01-Jul	off				
08-Jul	off				
15-Jul	off				
22-Jul	off				
29-Jul	off				
		Ashland ACT	Natural	J. White	
01-Jul	.090/.150				
08-Jul	.070/.080				
15-Jul	.100/.110				
22-Jul	.110/.120				
29-Jul	.080/.090				
		Dover	Natural	J. White	
01-Jul	.100/.110				
08-Jul	.090/.100				
15-Jul	.080/.090				
22-Jul	.110/.120				
29-Jul	.070/.080				

COMMON. .ALTH OF MASSACHUSETTS Office of Consumer Affairs and .usiness Development
DEPARTMENT OF TELECOMMUNICATIONS & ENERGY
One South Station
Boston, MA 02110
Month of July 2002 - Odorization Record NASTAR Gas

DATE	% GAS IN AIR	LOCATION OF TEST	TYPE OF GAS	TESTER	REMARKS
01-Jul	.080/.110	Threshold/Distinct Farnumsville	Natural	R. Piper	None
08-Jul	.100/.130			C. Gibbons	
15-Jul	.110/.130				
23-Jul	.090/.110				
30-Jul	.080/.100				
01-Jul	.040/.050	Hopedale	Natural	R. Piper	
08-Jul	.020/.070				
15-Jul	.040/.090				
23-Jul	.030/.090				
29-Jul	.020/.060				
01-Jul	.020/.050	Milford	Natural	R. Piper	
08-Jul	.050/.060				
15-Jul	.020/.080				
23-Jul	.030/.060				
29-Jul	.010/.040				
01-Jul	.040/.070	Upland Street	Natural	R. Piper	
08-Jul	.020/.050				
15-Jul	.030/.040				
22-Jul	.050/.100				
29-Jul	.030/.060				
01-Jul	.040/.060	Worcester Feed	Natural	R. Piper	
08-Jul	.090/.110			C. Gibbons	
15-Jul	.060/.090				
23-Jul	.060/.080				
30-Jul	.060/.080				

Exhibit
25

65 Main St. Hopkinton,Ma. July 24,02

I received a call from Gas Supply dispatch at 2:42 a.m. of a possible explosion at 65 Main St. Hopkinton. In route to the location I spoke with Steve Cobb the on call Supervisor and asked if he had any more information. He stated he was in route himself and that he had Peter Coskie on his way because he was already in for an emergency mark out and that he had Gas Supply call in another technician and a digger operator.

I arrived at the location at 3:10 a.m. and met with Steve and Peter who were busy trying to locate the service valve gate that was buried under the debris. You could hear the gas blowing inside the building. They were unable to get at the service valve gate or service tap as both were buried under the debris. At 3:30 a.m. Bernie Gardzina and Mark Minasian arrived and they started digging a hole to try and squeeze the plastic main off to shut down the gas to this area. Meanwhile Service department Supervisor Larry Stone and Service technician Isidro Morais were busy checking surrounding homes and manholes for any gas readings. None was detected but the meters to the adjacent homes were shut down as a precaution.

I contacted Jim Bernie and William Hobart to see if we could isolate the area. They were putting together the plans for the Distribution mains in the area. The plans arrived at 4:03 a.m. and we began checking the valves needed to shut down the area. At 4:15 a.m. we proceeded to squeeze the main in the first hole dug. We then decided to dig the second hole as it was determined that we would be unable to shut off the needed downstream valves as one valve box was not centered over a main valve that needed to be shut. This box would need to be dug at a later date. Location Hayden Rowe at Main St.

William Hobart notified the D.T.E. of the situation at 4:30 a.m. The crew had the second hole dug and squeezed the main at 5:06 a.m. gas off. Note: Double squeezed both locations as a safety precaution.

Carl Krager and Paul Hynes were called in to deliver steel plates to cover the two holes dug for squeezing the main and assist the crew. They arrived at 6:00 a.m. with the plates.

Richard Wallace and Paul Grecko from the D.T.E. arrived at the location at 6:30 a.m. Mr. Wallace requested a copy of the service sketch to number 65 Main St. at 7:00 a.m. he also requested a list of appliances and the number of meters that were listed for this address. I provided both requests to Mr. Wallace, which I received from Tim Fatcheric of the service department. I also explained to Mr.Wallace that the list of appliances of record is not always accurate, as homeowners and tenants do not always inform us of added appliances or heating equipment. Mr. Wallace gave a copy of this list to the State Fire Marshall.

Removal of the building had started by this time and was being loaded out it 30 yard containers from Harveys. Not much care or attention was being given to all of the customer's fuel lines that ran through out the building as it was being ripped out with the loader.

At approximately 2:15 p.m. the gas meters were uncovered and pulled from the basement. It appeared that the posi lock fitting that attaches the plastic pipe to the steel sleeve going through the wall was broken. It appeared that at some point during the incident the pipe might have been pushed or pulled into the wall.

At various times during the removal of the debris an appliance was pulled out and set aside for the State Fire Marshall. There were several appliances a gas stove; two gas furnaces; and two or three hot water heaters.

After all the debris was removed we were then instructed by Mr.Wallace on how to proceed with the testing of our gas main and service line to number 65 Main St. See attached documents providing testing pressures and times with results.

Respectfully Submitted
William E. Leatham III

Exhibit
26

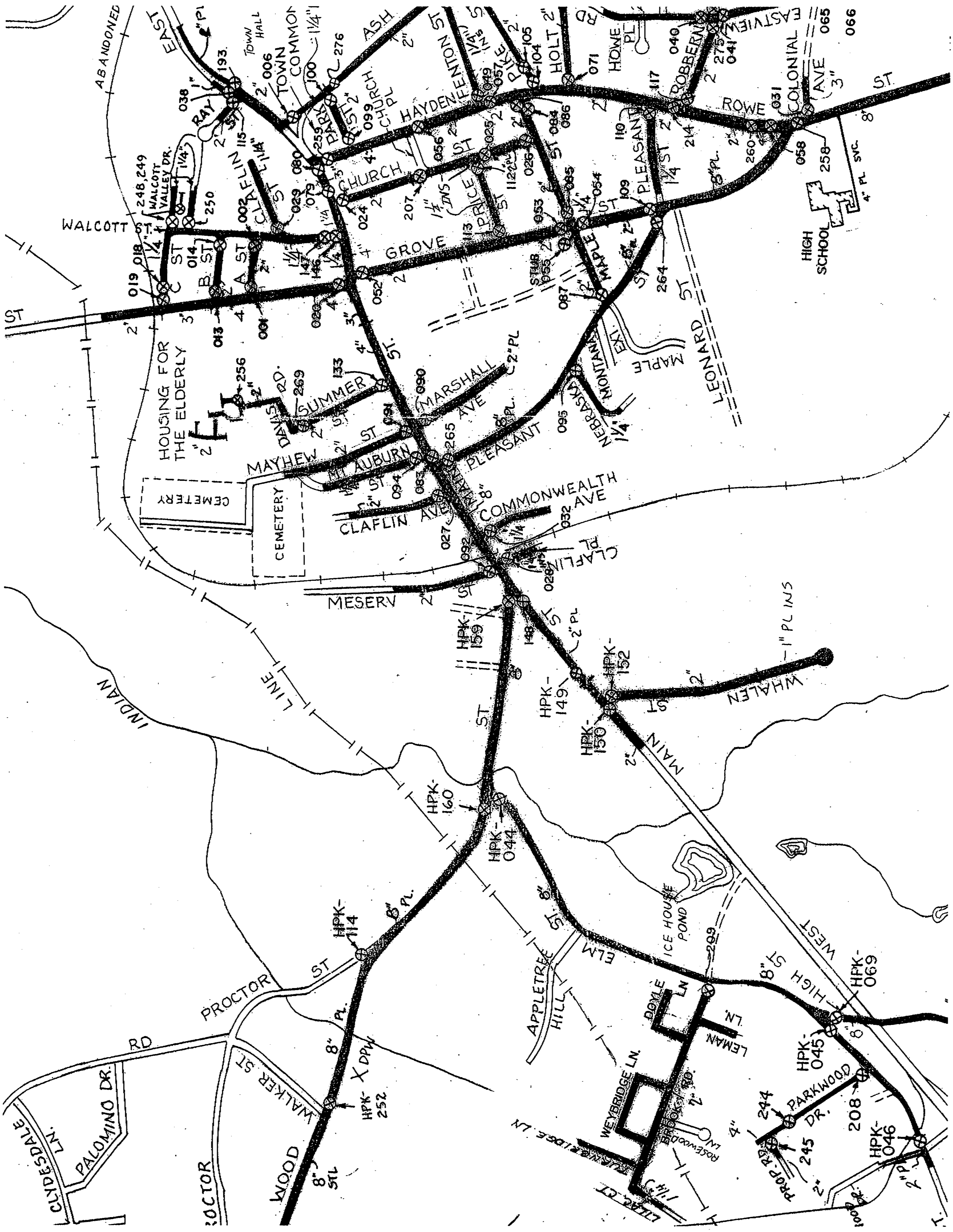

ABANDONED
EAST
TOWN HALL
TOWN COMMON
ASH
RAY ST
PARK ST
CHURCH PL
HAYDEN
FENTON ST
PIKE
HOLT
HOWE PL
RD
EASTVIEW
COLONIAL AVE
ROWE
ST.
CHURCH ST
PRICE ST
PLEASANT ST
MAPLE ST
GROVE
CLAFLIN ST
WALCOTT ST.
WALCOTT VALLEY DR.
C ST
B ST
A ST
HIGH SCHOOL
LEONARD ST
MAPLE EXT.
MONTANA
NEBRASKA
HOUSING FOR THE ELDERLY
DAVIS RD.
SUMMER
MARSHALL AVE
MAYHEW ST
MT AUBURN ST
PLEASANT
MAIN ST
CEMETERY
CEMETERY
CLAFLIN AVE
COMMONWEALTH AVE
CLAFLIN PL
MESERV ST
WHALEN ST
MAIN
INDIAN LINE
ST.
ICE HOUSE POND
ELM ST.
APPLETREE HILL
HIGH ST
WEST
PROCTOR ST
PROCTOR RD
WALKER ST
CLYDESDALE LN.
PALOMINO DR.
WOOD
DOYLE LN
LEMAN LN.
WEYBRIDGE LN.
BROOKSIDE RD.
PARKWOOD DR.

Exhibit
27

Mr. James F. Wunderlin, P.E.
Vice President/Engineering
Southwest Gas Corporation
5241 Spring Mountain Road
P.O. Box 98510
Las Vegas, NV 89193-8510

Dear Mr. Wunderlin:

This is in response to your August 13, 2003, request for an interpretation of the gas pipeline distribution system valve regulations at 49 CFR 192.181 and 192.747. Section 192.181 addresses spacing of emergency valves, location of emergency valves on the inlet piping to a regulator station, and accessibility and operability requirements for all valves installed on a main for operating or emergency purposes. Section 192.747 requires the operator to perform annual checks and service on these valves to ensure safe operation of the gas system.

You request a response to the following questions:

1) Does § 192.181(c)(1) require an operator to maintain every valve installed on a gas system, even if they are not identified as emergency "key valves" for operating or emergency purposes, . . . as readily accessible in accordance with § 192.747?

No. Section § 192.181(c)(1) is in Subpart D, *Design of Pipeline Components*. It addresses minimum requirements for the design and installation of pipeline components. It does not require an operator to maintain all valves in accordance with § 192.747.

Valve maintenance is addressed in § 192.747, *Valve Maintenance: Distribution Systems*. This section requires that "[e]ach valve, the use of which may be necessary for the safe operation of a distribution system, must be checked and serviced at intervals not exceeding 15 months, but at least once each calendar year." In compliance with this regulation, Southwest Gas has designated many, but not all, gas distribution system valves as "key valves."

2) Is an operator required to abandon, remove, or render inoperable valves not identified as emergency "key valves."

No. An operator is not required to "abandon, remove, or render inoperable valves" simply because they are not identified as "key valves." The pipeline safety regulations at 49 CFR Part 192 do not address this issue.

All valves installed in a gas pipeline system must comply with § 192.53, *General*, which requires that all components installed in a gas system must be structurally sound, chemically compatible with the gas transported, and qualified in accordance with the requirements of 49 CFR Part 192, Subpart B, *Materials*. Valves in gas systems must also meet the requirements of § 192.145, *Valves*, which requires that each valve be manufactured and tested in accordance with standard API 6D. In addition, an operator must also include all valves in leak inspection programs and corrosion control programs.

If you have any further questions about the pipeline safety regulations, please contact me at (202) 366-4565.

Sincerely,

Richard D. Huriaux, P.E.
Manager, Regulations
Office of Pipeline Safety

Enclosure

Exhibit
28

REVISED

NOTICE CONCERNING THE JULY 24, 2002 INCIDENT AT 65 MAIN STREET, HOPKINTON, MASSACHUSETTS

On July 24, 2002, an apparent release of natural gas within the structure located at 65 Main Street, Hopkinton, Massachusetts may have contributed to significant damage, including but not limited to, fatalities, personal injuries, and property damage. Pursuant to G.L. c. 164, § 105A and 220 C.M.R. §§ 69.00 et seq., the Department of Telecommunications and Energy ("Department") is investigating the incident.

As required by 49 C.F.R. §§ 192.605 and 192.617, the operator of the pipeline, NSTAR Gas Company, shall conduct a laboratory analysis of pipe specimens retrieved from the site. The analysis may include destructive testing of one or more of the pipe specimens. Any person that may be substantially and specifically affected by this testing may retain representation to determine a testing protocol and to witness such tests.

The Department will hold a procedural conference on December 4, 2002, beginning at 10:00 a.m. at Massachusetts Materials Research, 1500 Century Drive, West Boylston, Massachusetts 01583, solely to establish a testing protocol on the pipe specimens. Any person who wishes to participate in this investigation must file a written request to Robert F. Smallcomb, Director, Pipeline Engineering and Safety Division, Department of Telecommunications and Energy, One South Station, 2nd Floor, Boston, Massachusetts 02110 by November 29, 2002.

NSTAR Gas Company is required to give notice of such procedural conference by publication thereof fourteen days (14) days prior to December 4, 2002, in the Boston Herald or Boston Globe, and the MetroWest Daily News. NSTAR Gas Company also shall, no later than fourteen days (14) days prior to the date of the procedural conference, serve a copy of this notice on the Board of Selectmen and the Town Clerk of the Town of Hopkinton with a request that the municipal officer/recipient post a copy of this notice in the Hopkinton Town Hall. NSTAR Gas Company shall also serve a copy of this notice upon all persons who have contacted NSTAR Gas Company or the Office of the State Fire Marshal, who have a material interest in the results of the investigation, and any manufacturer of pipeline equipment, operated by NSTAR Gas Company which was located within the structure at 65 Main Street, Hopkinton. NSTAR Gas Company shall make return of service and publication to the Department at the time of the procedural conference.

November 15, 2002

By Order of the Department,

Mary L. Cottrell, Secretary
Department of Telecommunications
and Energy

Exhibit
29

A Subsidiary of THE MMR GROUP, INC.

Massachusetts Materials Research, Inc.

P.O. BOX 810 • 1500 CENTURY DRIVE • WEST BOYLSTON, MA 01583 • TEL. 508-835-6262 • FAX 508-835-9025

December 4, 2002

Mr. Robert Smallcomb
Department of Telecommunications and Energy
One South Station, 4th Floor
Boston, MA 02110

Re: Protocol for Analysis of Gas Pipes and Associated Equipment Removed from 65 Main Street, Hopkinton, Massachusetts
MMR Project No. J4471

Dear Mr. Smallcomb:

To follow is a summary of the protocol to be performed by Massachusetts Materials Research, Inc. (MMR) on the subject gas piping and equipment.

The following generic information and "standard operating procedures" are provided regarding the analysis:

- The location at MMR's West Boylston facility for the examination and tests has been established based upon the availability of appropriate space, required test instruments and access to a controlled environment.
- No smoking shall be permitted at any time in the building.
- All parties shall sign in, stating full name, address and whom they represent. Calling cards should also be presented for file. A copy of the sign in roster and calling cards will be provided to each attendee.
- The testing area shall consist of the following: the area will be well illuminated, clean and safe, and be open to inspection prior to testing by previously designated parties. Sufficient table space shall be made available for note taking and sketching. Adequate portable lighting shall be made available for viewing the pipes and equipment. The testing area shall be large enough to accommodate approximately 10 observers plus the testing personnel. Special care in safe handling and testing of the pipe units will be exercised at all times.
- Photography will be permitted of all the items of evidence and the tests in progress unless prohibited by MMR personnel due to proprietary aspects. All parties will be responsible for their own photography.
- When conducting the protocol, a running dialogue of what is taking place shall be conveyed to those present by those conducting the tests.

- All residue (mud, clay, dirt, stones, etc.) resulting from this examination shall be swept and properly preserved until full resolution of this matter.
- Following the completion of tests, the items, including any electron microscope samples, shall be preserved until full resolution of this matter.
- All evidence shall be stored in a safe and dry location so as to be protected against further deterioration.
- Any piece of evidence in which a change of hands from MMR to any other party is required, will be documented with appropriate 'chain of custody' signatures for notification of all involved parties.
- Other pre-approved tests may be permitted if requested in advance by others. However, the costs of these shall be born by the requester, and the results shall be shared by all participants.

To follow is a list of the items relative to the incident that are currently in the custody of MMR.

Table I
Items in Custody of MMR

MMR ID	Description
1	Water pipe ½" with Watts regulator reportedly part of Utica boiler.
2	Flue pipe 6" reportedly from Utica boiler.
3	Water pipe ½" with sprinkler head.
4	Water pipe ½" with check valve.
5	Gas pipe from basement.
6	Gas meter #5070 and associated ¾" piping and ¼-turn gas valve.
7	Gas meter #0965.
8	Gas meter #21571.
9	1" gas pipe with 1" x ¾" tee.
10	1" gas pipe with tee and swivel nut.
11	Piping assembly with two meters, #4231 and #5220, and two meter valves, with associated ¾"and 1" piping, regulator, portion of relief pipe, service line valve and portion of transition fitting.
12	1" foundation sleeve.
13	PVC piping with union, rubber compression sleeve and threaded end.
14	Regulator relief piping that protruded through sill of house.
15	Piece of regulator relief valve piping, ½".
16	Sump pump.
17	½" plastic service line, manufacturing by Drisco.
18	½" plastic service line, manufacturing by Drisco, with transition fitting.
N/A	Utica oil fired boiler.
N/A	Weil-McLain gas fired boiler.
N/A	Gas fired hot water heater.
N/A	Gas fired boiler.
N/A	New, unused transition fitting (slightly different configuration than other transition fittings described herein).
A	Exemplar transition fitting and associated piping, removed from service (not 65 Main Street, Hopkinton).
B	Exemplar transition fitting and associated piping, removed from service (not 65 Main Street, Hopkinton).
C	Exemplar transition fitting and associated piping, removed from service (not 65 Main Street, Hopkinton).

Test and Evaluation Protocol

Items 1 through 7 in the following protocol are nondestructive in nature. Other steps require cutting, removal of deposits, or other techniques that will alter the original condition of the pipe pieces and equipment.

ITEM	DESCRIPTION	PURPOSE
1	Visual inspection, photography, dimensional measurements, and identifying mating pipe segments.	Document condition, dimensions and relationships between pieces.
2	Radiographic inspection of selected components, including regulator and transition fitting.	Document internal conditions of components.
3	Perform leak tests on individual pieces with nitrogen gas, at line pressure. Note: this will be carried out to the extent possible without tearing down or cutting any piping assembly.	Identify potential for leakage.
4	Perform nitrogen gas flow tests on regulator relief piping.	Determine if obstructed.
5	Perform pressure test on regulator.	Functional check.
6	Perform leak tests with nitrogen gas on two exemplar transition fittings that have been modified to simulate the condition in which the transition fitting from the incident was found.	Identify potential for leakage.
7	Perform flow test through plastic tube end of transition fitting, using nitrogen gas at line pressure.	Determine flow rate through ½" plastic pipe.
8	Examine separated ends of transition fitting from the incident with binocular microscope, photodocument. As required, cut-off and prepare for Scanning Electron Microscope (SEM) examination in conjunction with Energy Dispersive X-ray Spectroscopy (EDS).	Determine the conditions of the mating surfaces and the threaded pieces of the transition fitting.
9	Fit-up the separated ends of transition fitting from the incident. Perform leak test with nitrogen gas on reinserted fitting. Full mock-up may be required.	Identify potential for leakage.
10	Cut seat end of transition fitting from the incident to remove rubber o-ring gasket. Analyze o-ring gasket for composition, hardness, degradation. Conduct similar analysis on exemplar and/or new transition fitting.	Characterize o-ring gasket material from transition fitting.

Test and Evaluation Protocol (continued)

ITEM	DESCRIPTION	PURPOSE
11	Cut and prepare metallurgical cross section of threaded portion of seat end of transition fitting from the incident. Evaluate material for material condition, degradation.	Characterize material on threaded portion on seat end of transition fitting.
12	Perform chemical analysis of threaded portion of seat end of transition fitting from the incident.	Determine composition.
13	Cut and prepare metallurgical cross section of threaded portion of plastic tube end of transition fitting from the incident. Evaluate material for composition, material condition, degradation.	Characterize material on threaded portion on tube end of transition fitting.
14	Perform chemical analysis of threaded portion of tube end of transition fitting from the incident.	Determine composition.
15	Examine all broken pipe ends using binocular microscope. As appropriate, cut-off fractured portions of pipe and prepare for fracture analysis in SEM. Examine fractures in SEM and analyze by EDS, as required.	Characterize fracture surfaces.
16	As required, cut through fractures and prepare metallurgical cross-sections. Examine.	Evaluate structure of metal adjacent to fractures.
17	As required, perform chemical analysis of fractured pipe pieces.	Determine composition.

As the investigation progresses, we may identify additional tests and/or modify the tests planned.

Sincerely,
MASSACHUSETTS MATERIALS RESEARCH, INC.

James J. Scutti, P.E.
Technical Director

Exhibit
30

Table II
Hopkinton Gas Pipe Investigation
Test and Evaluation Protocol

(Revised 31 December 2002)

ITEM	DESCRIPTION	PURPOSE
1	Visual inspection, photography, dimensional measurements, and identifying mating pipe segments.	Document condition, dimensions and relationships between pieces.
2	Radiographic inspection of selected components, including regulator and transition fitting.	Document internal conditions of components.
3	Perform leak tests on individual pieces with nitrogen gas at line pressure. Note: this will be carried out to the extent possible without tearing down or cutting any piping assembly.	Identify potential for leakage.
4	Perform either nitrogen gas flow testing on separated regulator relief piping (MMR ID #14 and #15), or other evaluation(s) to determine whether or not obstructions exist. Other evaluations can consist of, but are not limited to, x-ray data, visual inspection, etc.	Determine if obstructed.
5	Regulator pressure testing. <u>Set-up:</u> Decouple regulator piping from MMR ID #11 at the riser union downstream of the regulator. Decouple the "T" containing the Posilock transition fitting piece on the upstream side of the regulator riser pipe. Attach pressure gauge and flow meter to upstream end of riser pipe. Attach pressure gauge at riser union. Attach flow meter to regulator relief pipe. <u>Test 1:</u> Pressurize system to 57 psi upstream of regulator. Record pressure at downstream gauge, and flow, if any, at relief pipe. <u>Test 2:</u> Increase upstream pressure to the regulator trip pressure. Record resultant pressures and flows as per Test 1, above. These tests will also serve to determine whether or not the relief piping is blocked.	Functional check.
6	Perform leak tests with nitrogen gas on two exemplar transition fittings that have been modified to simulate the condition in which the transition fitting from the incident was found.	Identify potential for leakage.
7	Perform flow test through plastic tube end of transition fitting, using nitrogen gas at line pressure.	Determine flow rate through ½" plastic pipe.

Table II (continued)
Hopkinton Gas Pipe Investigation
Test and Evaluation Protocol

(Revised 31 December 2002)

ITEM	DESCRIPTION	PURPOSE
8	Examine separated ends of transition fitting from the incident with binocular microscope, photodocument. As required, cut-off and prepare for Scanning Electron Microscope (SEM) examination in conjunction with Energy Dispersive X-ray Spectroscopy (EDS).	Determine the conditions of the mating surfaces and the threaded pieces of the transition fitting.
9	Perform leak test on recovered fitting. Procedure, Part 1: Cap off the remnant of the "T" containing the downstream Posilock fitting piece. Slide the plastic tubing (MMR ID #18) into the foundation sleeve (MMR ID #12). Attach a flow meter and pressure gauge to the upstream end of the tubing. Slide the tubing/stiffener assembly into the Posilock transition fitting remnant from MMR ID #11 until the stiffener shoulder bottoms out on the integral ledge of the fitting remnant. Stabilize assembly to prevent movement. Pressurize set-up to 57 psi. Record any flow. Procedure, Part 2: Decouple plastic tubing (MMR ID #18) and foundation sleeve assembly from MMR #11. Attach a flow meter and pressure gauge to the upstream portion of the fitting remnant on MMR #11 with a compression fitting. Pressurize to 57 psi. Record any flow past the weld portion of the fitting.	Identify potential for leakage.
10	Cut seat end of transition fitting from the incident to remove rubber o-ring gasket. Analyze o-ring gasket for composition, hardness, degradation. Conduct similar analysis on exemplar and/or new transition fitting.	Characterize o-ring gasket material from transition fitting.
11	Cut and prepare metallurgical cross section of threaded portion of seat end of transition fitting from the incident. Evaluate material for material condition, degradation.	Characterize material on threaded portion on seat end of transition fitting.
12	Perform chemical analysis of threaded portion of seat end of transition fitting from the incident.	Determine composition.
13	Cut and prepare metallurgical cross section of threaded portion of plastic tube end of transition fitting from the incident. Evaluate material for composition, material condition, degradation.	Characterize material on threaded portion on tube end of transition fitting.

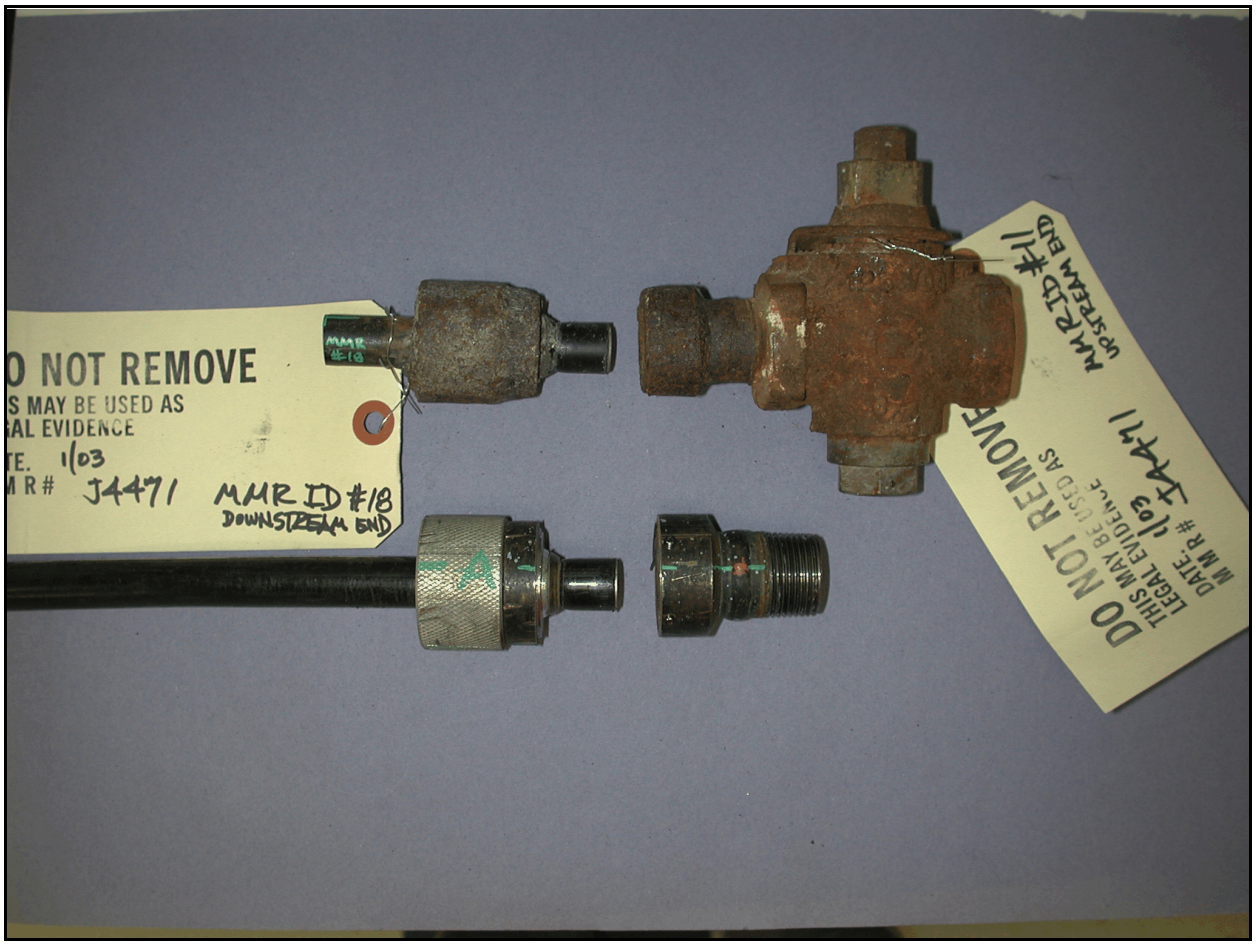
Table II (continued)
Hopkinton Gas Pipe Investigation
Test and Evaluation Protocol

(Revised 31 December 2002)

ITEM	DESCRIPTION	PURPOSE
14	Perform chemical analysis of threaded portion of tube end of transition fitting from the incident.	Determine composition.
15	Examine all broken pipe ends using binocular microscope. As appropriate, cut-off fractured portions of pipe and prepare for fracture analysis in SEM. Examine fractures in SEM and analyze by EDS, as required.	Characterize fracture surfaces.
16	As required, cut through fractures and prepare metallurgical cross-sections. Examine.	Evaluate structure of metal adjacent to fractures.
17	As required, perform chemical analysis of fractured pipe pieces.	Determine composition.

As the investigation progresses, we may identify additional tests and/or modify the tests planned.

Exhibit
31



MMR photo of Inner-Tite transition fitting sections and an intact exemplar of the same vintage.
65 Main Street, Hopkinton
July 24, 2002