

The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

INCIDENT REPORT

1415 Osterville Road, West Barnstable, Massachusetts
Cape Cod Animal Hospital
March 9, 2009

PIPELINE ENGINEERING AND SAFETY DIVISION

Accident File

Location: West Barnstable, Massachusetts

Date of Accident: March 9, 2009

Gas Company: National Grid

Estimated Property Damage: \$350,000*

Injuries: 0

Report Issued: July 14, 2010

*Estimated by National Grid

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I. INTRODUCTION

A. Scope of this Investigation

The Massachusetts Department of Public Utilities (“Department”), Pipeline Engineering and Safety Division (“Division”), pursuant to G.L. c. 164, § 105A and a Federal Certification Agreement as provided for in 49 U.S.C. § 60105, has investigated a natural gas (“gas”) release at 1415 Osterville Road, West Barnstable, that occurred on March 9, 2009 (“Incident”).¹

As part of the Department’s annual certification process by the United States Department of Transportation (“U.S. DOT”), the Department must report to the US DOT each accident or incident . . . involving a fatality, personal injury requiring hospitalization, or property damage or loss of more than an amount the Secretary establishes...and any other accident the [Department] of the cause and circumstances surrounding the accident or incident.
49 U.S.C. § 60105(c).

The Department has established procedures for determining the nature and extent of violations of codes and regulations pertaining to safety of pipeline facilities and the transportation of gas, including but not limited to, 220 C.M.R. §§ 101.00 through 113.00. See 220 C.M.R. § 69.00 et seq. The Division also enforces the U.S. DOT safety standards

¹ Incident means any of the following events:

1. An event that involves a release of gas from a pipeline or liquefied natural gas or gas from an LNG facility and,
 - a. A death, or personal injury necessitating in-patient hospitalization; or
 - b. Estimated property damage, including cost of gas lost, of the operator or others, or both, of \$50,000 or more.
2. An event that results in an emergency shutdown of an LNG facility.
3. An event that is significant in the judgment of the operator, even though it did not meet the criteria of paragraphs (1) or (2). 49 C.F.R. Part 191, § 191.3.

for gas pipeline systems as set forth in 49 C.F.R. Part 192 (“Part 192”). G.L. c. 164, § 105A.

B. Overview of Incident

At approximately 8:04 p.m., on March 9, 2009, the Centerville Osterville Marstons Mills Fire Department received a report of an explosion and fire at the Cape Cod Animal Hospital, located at 1415 Osterville Road, West Barnstable (Exh. 1).

The operator of the natural gas system is Colonial Gas Company, d\|b\|a National Grid Company (“National Grid” or “Operator”). At approximately 10:06 p.m., National Grid reported the Incident to the Division (Exh. 2).²

On March 10, 2009, the Department sent two investigators to the scene (Exh. 3). The Cape Cod Animal Hospital (“Animal Hospital”) had an apartment above, and was a wood frame structure with an asphalt shingle roof. The structure received substantial damage (Exh. 4). There were no injuries, but three cats and one dog died (Exh. 1).

Heat from an electrical failure in the underground electrical service line apparently melted the plastic gas service line.³ Gas was released into the Animal Hospital and was ignited by an undetermined source (Exh. 5).

² In a letter to all operators, the Director of the Division has requested that operators inform the Department of any incident promptly, but no more than two hours after the incident.

³ A distribution line transports gas from a common source of supply to an individual customer, or two adjacent or adjoining residential or small commercial customers, or to multiple residential or small commercial customers served through a meter header or manifold. A service line ends at the outlet of the meter or at the connection to a customer’ piping, whichever is further downstream, or at the connection to customer piping if there is not a meter.

II. THE DEPARTMENT INVESTIGATION

A. Description of the Site

The property at 1415 Osterville Road consists of a residential home close to the street (Exh. 3). Behind this home, and across a driveway, is the Animal Hospital, which has an apartment above (id.). The Animal Hospital consisted of offices, examination rooms and boarding facilities (id.). The building was two story wood frame construction, with an asphalt shingle roof and a partial basement (id.). It appears that there was a main building, with other buildings as wings, all were attached.

In 1972, the Operator installed a four inch coated steel gas main⁴ under Osterville Road (Exh. 6). The Animal Hospital property had two gas services (id.). One service was for the residential home, and the other service was for the Animal Hospital (id.). The Animal Hospital service was one inch plastic pipe installed in 1997 (Exh. 7). National Grid's equipment, meters, regulators and valves were located outside, at the front of the building.⁵ The distribution system was high pressure⁶ and on March 9, 2009, the system pressure was operating at approximately 54 psig (Exh. 8).⁷

⁴ A main is a distribution line that serves as a common source of supply for more than one service line. Part 192, § 192.3.

⁵ A service regulator is a valve which reduces the pressure in the service line from the pressure in the main to the pressure provided to the customer.

⁶ A high pressure system is where the pressure in the main is higher than the pressure provided to the customer. Part 192, § 192.3.

⁷ Pounds per square inch gauge refer to the pressure expressed in pounds exerted on one square inch of surface area. The designation "gauge," indicates the readings are already adjusted to ignore the surrounding atmospheric pressure, which is 14.7 psi at

The investigators from the Division were at the scene along with representatives of the West Barnstable Police and Fire Departments, National Grid, CNA (the homeowners insurance company), the State Fire Marshall, and his electrical consultant.

The Division investigators observed that the main portion of the building had been completely destroyed. The roof, the second and first floors had collapsed in the front left portion of the main building. Windows had been blown out and were approximately 75 feet from the building (Exh. 9). National Grid estimated the damage to be \$350,000 (Exh. 10).

B. National Grid

1. National Grid Response

On March 9, 2009, at 8:12 p.m., the West Barnstable Fire Department requested National Grid to assist with a working fire at 1415 Osterville Road (Exh. 2). The Operator dispatched a technician who arrived at the scene at 8:22 p.m. (id.). The on call supervisor was notified at 8:49 p.m. and arrived at the scene at 10:00 p.m. (Exh. 11). The area manager arrived on scene between 10:45 and 11:00 p.m. (id.). The Operator shut off the gas at approximately 9:30 p.m. (id.).

2. Odorization

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

sea level. If psig gauge were not connected to any pressure source, it would read zero even though it is actually sensing 14.7 psi at sea level.

National Grid conducts odorant sampling throughout its system on a monthly basis. On March 10, 2009, the Operator conducted two odorant tests at two locations in West Barnstable (Exh. 12). The results (in percent gas and air) are as follows:

1. 1415 Osterville Road West Barnstable: Reading actual 0.09; 0.09; 0.10
2. 2160 Meetinghouse Way West Barnstable: Reading actual 0.07; 0.07; 0.06

The odor detection levels, which ranged from 0.06 percent to 0.10 percent gas in air, indicates that the odorant was within the limit prescribed by the state regulation. The odorant level also met the federal pipeline safety requirement, contained in Part 192, § 192.625, which requires that gas be odorized so that it can be detected at a level of one percent gas and air.

3. National Grid Facilities

National Grid installed a four inch coated steel main under Osterville Road in 1972 (Exh. 8). The main has a maximum allowable operating pressure of 60 psig (pounds per square inch gauge) and on March 9, 2009, the main was operating at 54 psig (id.). There were no reports of leaks in the street around this area within the past two years (id.).

The service to the front building was a $\frac{3}{4}$ inch plastic service installed in 1993 (Exh. 6). The service to the Animal Hospital was a one inch plastic service the Operator installed in December 1997 (id.). There were no leakage reports for either service for the past five years (Exh. 13).

4. National Grid Leakage Surveys

After the Incident, National Grid conducted a leak survey of the main under Osterville Road 1,000 feet in each direction of the incident location (Exh. 3). The Operator also leak surveyed the service to the front house (id.). Both surveys were negative (id.). The Operator

could not leak survey the service to the Animal Hospital because it was shut off at the curb valve near the street on March 9, 2009, the date of the Incident.

The Operator had previously conducted a leak survey of the gas main and services on September 22, 2008, and no leaks were discovered (Exh. 14).

5. Other Facilities

National Grid provided copies of the Town of Barnstable permit documents (Exh. 15). The permit documents state that the electric service to the Animal Hospital was replaced in 2005 (id.).

National Grid installed the gas service line to the Animal Hospital in 1997 (Exh.7). The Operator's Operation & Maintenance manual (O&M) states that normally, pipe shall have a minimum clearance of six inches from other underground facilities. (Exh. 16)

C. Department of State Police, Fire and Explosion Investigation Section

The Fire and Explosion Investigation Section of the State Fire Marshal's Office ("SFM") excavated where the Operator found the leakage (Exh. 17). The excavation revealed that a number of utilities entered the building in the same area (id.). The telecommunication conduits, the electrical service line, and the gas service line intersected in this area (Exh. 18). The telecommunication conduits, which were located above the electric line, were burned through on the bottom (id.). The gas service line, which was located in close proximity and below the electric line, was burnt through on the top (id.).

The SFM electrical consultant evaluated the electric service (Exh. 5). The consultant determined that an electrical failure in the electric service cables created excessive heat (id.). He also determined that the heat could have damaged the other conduits and the gas service

line (id.). The SFM stated that the explosion and fire was caused by melting of the gas service by the electrical service feed (Exh. 5). The natural gas subsequently ignited inside the building (id.). The SFM could not determine the cause of the ignition.

III. FINDINGS AND CONCLUSIONS

A. Findings

1. A four inch steel main was laid under Osterville Road, West Barnstable in 1972.
2. The operating pressure in the main on March 9, 2009 was approximately 54 psig.
3. A one inch plastic service line to the Animal Hospital at 1415 Osterville Road was installed in 1997.
4. National Grid responded to the report of a working fire and was at the scene at 8:22 p.m. on March 9, 2009.
5. National Grid's records indicate that the gas was odorized to meet the state and federal requirements.
6. Leakage surveys prior to and after the explosion were negative.
7. The electric service to the Animal Hospital at 1415 Osterville Road was replaced in 2005.
8. A portion of the electric line was buried above, and in close proximity to the gas service line.
9. An electrical failure in the electric line caused excessive heat.
10. The plastic gas service line near the failed electric service line was burnt.
11. The gas service line failed at the burnt point and released gas.
12. Gas most likely flowed into the building through the melted conduits or the basement window.
13. Gas accumulated in the building and was ignited by an unknown source in the building.

B. Conclusions

The SFM consultant's conclusion that the plastic gas service failed due to excessive heat is reasonable and based upon substantial and specific evidence. A likely source of the heat was an electrical failure in the electric service line. The excessive heat from this failure caused the melting of the plastic gas service and the telecommunication conduits. The gas most likely flowed into the building through the melted conduits, or a poorly sealed window, and was ignited by an unknown source in the building or the electric generator.

EXHIBIT 1

West Barnstable Fire Department Report

01920

MA

03

09

2009

1

09-0000702

000

Change

Basic

FDID *

State *

Incident Date *

Station

Incident Number *

Exposure *

No Activity

Check this box to indicate that the address for this incident is provided on the Wildland Fire Module in Section B "Alternative Location Specification". Use only for Wildland fires.

Census Tract

B Location*

Street address

Intersection

In front of

Rear of

Adjacent to

Directions

1415 OSTRVL W BARN RD

MARSTONS MILLS MA 02648

Cross street or directions, as applicable

C Incident Type *

111 Building fire

Incident Type

D Aid Given or Received*

- Mutual aid received, Automatic aid recv., Mutual aid given, Automatic aid given, Other aid given, None

01919 Their FDID Their State

E1 Date & Times

Midnight is 0000

Check boxes if dates are the same as Alarm Date. Alarm * 03 09 2009 20:04:01

Arrival * 03 09 2009 20:11:16

Controlled

Last Unit Cleared 03 10 2009 17:53:20

E2 Shift & Alarms

Local Option

2 COM31 Shift or Alarms District Platoon

E3 Special Studies

Local Option

Special Study ID# Special Study Value

F Actions Taken *

11 Extinguishment by fire

Primary Action Taken (1)

12 Salvage & overhaul

Additional Action Taken (2)

51 Ventilate

Additional Action Taken (3)

G1 Resources *

Check this box and skip this section if an Apparatus or Personnel form is used.

Apparatus Personnel

Suppression 0022

EMS

Other 0025

Check box if resource counts include aid received resources.

G2 Estimated Dollar Losses & Values

LOSSES: Required for all fires if known. Optional for non fires. None

Property \$ 500,000

Contents \$ 500,000

PRE-INCIDENT VALUE: Optional

Property \$ 500,000

Contents \$ 600,000

H1* Casualties

None

- Fire-2, Structure-3, Civil Fire Cas.-4, Fire Serv. Cas.-5, EMS-6, HazMat-7, Wildland Fire-8, Apparatus-9, Personnel-10, Arson-11

Deaths Injuries Fire Service Civilian

H2 Detector Required for Confined Fires. 1 Detector alerted occupants 2 Detector did not alert them Unknown

H3 Hazardous Materials Release

- Natural Gas, Propane gas, Gasoline, Kerosene, Diesel fuel/fuel oil, Household solvents, Motor oil, Paint, Other

I Mixed Use Property

- NN Not Mixed, 10 Assembly use, 20 Education use, 33 Medical use, 40 Residential use, 51 Row of stores, 53 Enclosed mall, 58 Bus. & Residential, 59 Office use, 60 Industrial use, 63 Military use, 65 Farm use, 00 Other mixed use

J Property Use* Structures

- Church, place of worship, Restaurant or cafeteria, Bar/Tavern or nightclub, Elementary school or kindergarten, High school or junior high, College, adult education, Care facility for the aged, Hospital

- Clinic, clinic type infirmary, Doctor/dentist office, Prison or jail, not juvenile, 1-or 2-family dwelling, Multi-family dwelling, Rooming/boarding house, Commercial hotel or motel, Residential, board and care, Dormitory/barracks, Food and beverage sales

- Household goods, sales, repairs, Motor vehicle/boat sales/repair, Gas or service station, Business office, Electric generating plant, Laboratory/science lab, Manufacturing plant, Livestock/poultry storage (barn), Non-residential parking garage, Warehouse

- Outside: Playground or park, Crops or orchard, Forest (timberland), Outdoor storage area, Dump or sanitary landfill, Open land or field

- Vacant lot, Graded/care for plot of land, Lake, river, stream, Railroad right of way, Other street, Highway/divided highway, Residential street/driveway

Lookup and enter a Property Use code only if you have NOT checked a Property Use box:

Property Use 593

Office: veterinary or NEIRS-1 Revision 03/11/99



Handwritten signature and date 3-12-09

K1 PERSON/ENTITY INVOLVED

Local Option _____ Business name (if applicable) _____ Area Code _____ Phone Number _____

Check This Box if same address as incident location. Then skip the three duplicate address lines.

Mr., Ms., Mrs. First Name _____ MI _____ Last Name _____ Suffix _____

Number _____ Prefix _____ Street or Highway _____ Street Type _____ Suffix _____

Post Office Box _____ Apt./Suite/Room _____ City _____

State _____ Zip Code _____

More people involved? Check this box and attach Supplemental Forms (NFIRS-1S) as necessary

K2 Owner Same as person involved? Then check this box and skip the rest of this section.

Local Option _____ Business name (if Applicable) _____ Area Code _____ Phone Number _____

Check this box if same address as incident location. Then skip the three duplicate address lines.

Mr., Ms., Mrs. First Name SCOTT MI E Last Name MUNSON Suffix _____

Number 1411 Prefix _____ Street or Highway OSTERVILLE WEST BARNSTABLE Street Type RD Suffix _____

Post Office Box _____ Apt./Suite/Room _____ City MARSTONS MILLS

State MA Zip Code 02668

L Remarks

Local Option

Caller Name : HEIDI MACMURO
 Caller Phone : (508) 420-3821 COID=VERIZ
 Caller Address : SAME
 OIC : CAPT.ELDRIDGE
 Pats. : 0

- rcrosby ; 2009/03/09 20:11:16 - 307 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:11:20 - 321 AT EVENT MANNING IS 1
- rcrosby ; 2009/03/09 20:12:36 - 301 AT EVENT MANNING IS 1
- rcrosby ; 2009/03/09 20:12:39 - 306 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:12:58 - 303 AT EVENT MANNING IS 2
- rcrosby ; 2009/03/09 20:18:13 - 305 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:19:40 - E-296 AT EVENT MANNING IS 4
- rcrosby ; 2009/03/09 20:19:43 - 320 AT EVENT MANNING IS 1
- rcrosby ; 2009/03/09 20:19:48 - 324 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:23:02 - (RB) - R-204 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:25:36 - E-823 AT EVENT MANNING IS 4
- rcrosby ; 2009/03/09 20:25:38 - 304 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:28:12 - C-291 AT EVENT MANNING IS 0
- rcrosby ; 2009/03/09 20:33:03 - E-205 AT EVENT MANNING IS 4
- rcrosby ; 2009/03/09 20:33:10 - E-355 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:33:18 - E-453 AT EVENT MANNING IS 4
- rcrosby ; 2009/03/09 20:40:12 - E-45 AT EVENT MANNING IS 0
- rcrosby ; 2009/03/09 20:42:05 - 322 AT EVENT MANNING IS 1
- rcrosby ; 2009/03/09 20:42:31 - L-206 AT EVENT MANNING IS 0
- rcrosby ; 2009/03/09 20:44:21 - R-458 AT EVENT MANNING IS 3

J Authorization

8260 ELDRIDGE, BYRON L. CAPT Shift Comm 03 11 2009
 Officer in charge ID Signature Position or rank Assignment Month Day Year

check 8260 ELDRIDGE, BYRON L. CAPT Shift Comm 03 11 2009
 Member making report ID Signature Position or rank Assignment Month Day Year

Narrative:

Caller Name : HEIDI MACMURO
Caller Phone : (508) 420-3821 COID=VERIZ
r Address : SAME
OIC : CAPT.ELDRIDGE
Pats. : 0

- rcrosby ; 2009/03/09 20:11:16 - 307 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:11:20 - 321 AT EVENT MANNING IS 1
- rcrosby ; 2009/03/09 20:12:36 - 301 AT EVENT MANNING IS 1
- rcrosby ; 2009/03/09 20:12:39 - 306 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:12:58 - 303 AT EVENT MANNING IS 2
- rcrosby ; 2009/03/09 20:18:13 - 305 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:19:40 - E-296 AT EVENT MANNING IS 4
- rcrosby ; 2009/03/09 20:19:43 - 320 AT EVENT MANNING IS 1
- rcrosby ; 2009/03/09 20:19:48 - 324 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:23:02 - (RB) - R-204 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:25:36 - E-823 AT EVENT MANNING IS 4
- rcrosby ; 2009/03/09 20:25:38 - 304 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:28:12 - C-291 AT EVENT MANNING IS 0
- rcrosby ; 2009/03/09 20:33:03 - E-205 AT EVENT MANNING IS 4
- rcrosby ; 2009/03/09 20:33:10 - E-355 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:33:18 - E-453 AT EVENT MANNING IS 4
- rcrosby ; 2009/03/09 20:40:12 - E-45 AT EVENT MANNING IS 0
- rcrosby ; 2009/03/09 20:42:05 - 322 AT EVENT MANNING IS 1
- rcrosby ; 2009/03/09 20:42:31 - L-206 AT EVENT MANNING IS 0
- rcrosby ; 2009/03/09 20:44:21 - R-458 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/09 20:46:03 - E-407 AT EVENT MANNING IS 0
- rcrosby ; 2009/03/09 20:51:38 - E-25 AT EVENT MANNING IS 0
- rcrosby ; 2009/03/09 20:55:27 - C-801 AT EVENT MANNING IS 0
- rcrosby ; 2009/03/09 21:03:50 - E-451 AT EVENT MANNING IS 4
- rcrosby ; 2009/03/09 22:11:24 - R-828 AT EVENT MANNING IS 3
- rcrosby ; 2009/03/10 00:05:40 - R-293 AT EVENT MANNING IS 3
- jgifford ; 2009/03/10 08:14:39 - 303 AT EVENT MANNING IS 4
- jgifford ; 2009/03/10 08:14:42 - 322 AT EVENT MANNING IS 1

911 ; 2009/03/09 20:04:02
Time of Call : 2009/03/09 20:04:00
Phone Number : (508) 420-3821 COID=VERIZ
Caller Name : MUNSON, SCOTT
Street Number : 1411
Street Name : OSTERVILLE-W BARNSTABLE RD
Service Municipality : MARSTONS MILLS
ESN : ESN=509 MTN:508-420-3821

rcrosby ; 2009/03/09 20:09:48
50 % INVOLVEMENT VIA WB 299

rcrosby ; 2009/03/09 20:10:29
UTILITIES ADVISED

rcrosby ; 2009/03/09 20:12:12
1 1/2 STORY WF 30 X 100' 2 WINGS ATTACHED

Narrative:

rcrosby ; 2009/03/09 20:12:19
1) 75% INVOLVED

rcrosby ; 2009/03/09 20:12:28
307 W/ 2 2 1/2"

rcrosby ; 2009/03/09 20:15:09
205 TO STA 1

rcrosby ; 2009/03/09 20:15:13
2ND ALARM

rcrosby ; 2009/03/09 20:20:54
3RD ALARM

rcrosby ; 2009/03/09 20:35:20
1 & 2 ALARM COMPANIES WORKING 5 LINES & LADDER PIPE 3 HYDRANTS

rcrosby ; 2009/03/09 20:36:31
WD NOTIFIED

rcrosby ; 2009/03/09 20:40:32
322 W/ LIGHT TOWER

rcrosby ; 2009/03/09 20:48:54
REQ ADDITIONAL CRUISERS FOR TRAFFIC CONTROL

rcrosby ; 2009/03/09 21:13:45
EVERYONE WORKING- 1 ENGINE IN STAGING

rcrosby ; 2009/03/09 21:26:50
GAS OFF AT THE STREET PER NATIONAL GRID

rcrosby ; 2009/03/09 21:51:02
PAR COMPLETE - FIRE KNOCKED DOWN - ALL COMPANIES WORKING

rcrosby ; 2009/03/09 22:12:00
STATE FIRE MARSHALL ADVISED ENROUTE FROM DUXBURY

rcrosby ; 2009/03/09 23:18:03
REQ WATER DEPT TO SHUT DOWN SERVICE TO BUILDING--JAMIE ENROUTE

rcrosby ; 2009/03/09 23:19:42
320 CLEAR SCENE TO HQ

rcrosby ; 2009/03/10 00:18:20
CONTINUING WITH OVER HAUL, MOST 2ND AND THIRD CO RELEASED, 305 PICKING UP, 821, 302, 303,
305, 325, 306 REMAINING ON SCENE

rcrosby ; 2009/03/10 00:52:11

Narrative:

229 CLEAR

by ; 2009/03/10 01:21:55
RELEASE OPS

jgifford ; 2009/03/10 08:05:33
322/303 ON TO THE FIRE SCENE FOR FIRE WATCH

jgifford ; 2009/03/10 08:39:12
BUILDING INSP.OFFICE NOTIFIED TO COME TO THE SCENE

jgifford ; 2009/03/10 08:42:05
321/32/307 CLEAR OF SCENE AND 303 HAS FIRE WATCH

jgifford ; 2009/03/10 14:30:46
CAPT.ELDRIDGE REQUESTS A SUPERVISOR FROM N-STAR TO THE SCENE

jgifford ; 2009/03/10 14:33:01
N-STAR CALLING BACK W/ETA

jgifford ; 2009/03/10 14:38:32
N-STAR REP.ENROUTE W/20 MINUTE ETA

DISPATCHER CROSBY RECIEVED A 911 CALL FROM 1411 OSTERVILLE WEST BARNSTABLE ROAD, MARSTONS
REPORTING AN EXPLOSION AND FIRE AT THE CAPE COD ANIMAL HOSPITAL.

RESPONDED IN 321(1) WITH A FIRST ALARM ASSIGNMENT TO THE CAPE COD ANIMAL HOSPITAL, 1415
OST. W. BARNS. RD., MM.

ENROUTE, WEST BARNS. CAR 299 REPORTED THE BUILDING 50% INVOLVED.

UPON ARRIVAL, I PARKED OFF THE DRIVEWAY AND WENT TO THE A SIDE OF THE STRUCTURE AND OBSERVED
AN APPROX. 100'X30' 11/2 STORY WOOD FRAME STRUCTURE WITH APPROX. 75% INVOLVEMENT WITH HEAVY
FIRE SHOWING FROM MOST OF THE WINDOWS AND DOORS. I THEN DID AS MUCH OF A WALK AROUND OF THE
BUILDING AS I COULD, OBSERVING THAT THE STRUCTURE HAD MULTIPLE WINGS OFF OF BOTH ENDS OF THE
BUILDING EXTENDING OUT OF THE SIDE AND ACROSS THE BACK FORMING A CIRCLE WITH A 10' BREAK AT
THE B/C CORNER, MAKING THE STRUCTURE APPROX. 100'X100'. I OBSERVED SEVERAL PEOPLE RELEASING
DOGS FROM THE KENNEL AREA'S ON SIDE B AND C, THEY REPORTED ALL DOGS OUT.

I ASSUMED COMMAND AND ASSIGNED THE FIRST ALARM COMPANIES FOR AN EXTERIOR ATTACK. FIRST DUE
LADDER 307 TOOK THE A/D CORNER AND STRETCHED A 2 1/2 HANDLINE TO THE A SIDE. ENGINE 303(3)
LAYED A 4" SUPPLY LINE FROM A HYDRANT BEFORE THE DRIVEWAY UP TO L-307 AND ESTABLISHED A WATER
SUPPLY. ENGINE 306 PUMPED THE SUPPLY LINE INTO L-307. ENGINE 305(4) LAYED A 4" SUPPLY LINE IN
FROM THE NEXT HYDRANT ON OST. W. BARNS. RD INTO THE DRIVEWAY OF THE YOUTH RANCH AND AROUND TO
THE SIDE C AND STRETCHED A 2 1/2" HANDLINE INTO SIDE C. COTUIT ENGINE 263 LAYED A 4" SUPPLY
LINE FROM A HYDRANT ON RACE LANE IN THROUGH THE HORSE FIELD TO SIDE B AND STRETCHED A 2 1/2 "
HANDLINE TO SIDE B.

CHIEF FARRINGTON TOOK SIDE C, DEPUTY MELANSON TOOK SIDE B, CAPT. GREENE TOOK SIDE D, CHIEF
OLSEN TOOK ACCOUNTABILITY AND CHIEF MARUCCA TOOK WATER SUPPLY.

AFTER THE INITIAL SIZE-UP, IT APPEARED THAT MORE RESOURCES WOULD BE NEEDED TO EXTINGUISH THE
FIRE SO A SECOND ALARM WAS REQUESTED. I OBSERVED A FLAME COMING FROM THE GROUND IN FRONT OF
THE FRONT WALL ON SIDE A OF THE MAIN BUILDING AND ALSO OBSERVED A SECTION OF THE FRONT WALL
APPEARED TO HAVE BLOWN OUT SEVERAL FEET IN FRONT OF THE BUILDING. FURTHER OBSERVATION
REVEALED WHAT APPEARED TO BE SEVERAL WINDOW SASHES WERE APPROX. 75'-100' FROM THE FRONT OF
THE BUILDING IN THE YARD OF THE OWNER'S HOUSE.

AS THE SECOND ALARM COMPANIES ARRIVED, HYFD E-823 WAS ASSIGNED TO PUMP THE HYDRANT SUPPLYING

Narrative:

E-263 AND Wbfd ET-296 WAS ASSIGNED TO PUMP THE HYDRANT SUPPLYING E-305. HYFD HR-821 WAS ASSIGNED DEDICATED RIT.

I HANDLINES WERE PUT INTO OPERATION AND LADDER 307'S LADDERPIPE WAS PUT INTO OPERATION. AFTER OBSERVING THAT THE FIRE WAS NOT DARKENING DOWN, A THIRD ALARM WAS REQUESTED. UPON ARRIVAL OF THE THIRD ALARM COMPANIES, THEY WERE ASSIGNED TO VARIOUS TASKS IN THE SECTORS AROUND THE BUILDING.

AS THE FIRE BEGAN TO DARKEN DOWN THE GAS METER ON SIDE A TO THE LEFT OF THE FRONT DOOR COULD BE ACCESSED AND THE SUPPLY WAS SHUT OFF BELOW THE METER. AT THIS POINT THE FIRE AROUND THE REGULATOR WENT OUT, BUT THE FIRE OBSERVED EARLIER COMING FROM THE GROUND CONTINUED TO BURN UNTIL NATIONAL GRID SHUT OFF THE GAS AT THE STREET.

COMPANIES CONTINUED WITH EXTINGUISHMENT AND OVERHAUL UNTIL ALL VISIBLE FIRE WAS SUPPRESSED. CREWS WERE REHABED AND OVERHAUL CONTINUED.

I SPOKE WITH DETECTIVE JOHN YORK, BARNSTABLE PD FIRE INVESTIGATOR, HE ADVISED THE HOMEOWNERS AND OWNERS OF THE ANIMAL HOSPITAL, DR. SCOTT E. MUNSEN AND DR. HEIDI MCMORROW STATED THEY WERE EXPERIENCING A FLICKERING AND DARKING OF THE LIGHTS IN THE RESIDENCE APPROX. A 1/2 TO 3/4 OF HOUR PRIOR TO THE FIRE. WHEN DR. MUNSEN WENT OUTSIDE HE HEARD THE BACK-UP GENERATOR RUNNING. WHEN HE LOOKED AROUND AT THE OTHER HOUSES IN THE AREA HE DIDN'T SEE ANYONE ELSE'S LIGHTS DIMMING. HE THEN WENT BACK IN THE HOUSE AND ABOUT A 1/2 HOUR LATER AN EXPLOSION SHOOK THE HOUSE, HE THEN OBSERVED THE FIRE IN THE ANIMAL HOSPITAL WHICH IS BEHIND THE HOUSE. DR. MCMORROW CALLED 911 TO REPORT THE FIRE AND DR. MUNSEN WENT OUT TO THE ANIMAL HOSPITAL AND OBSERVED FIRE AND SMOKE COMING FROM THE FRONT OF THE BUILDING. HE THEN BEGAN TRYING TO GET THE ANIMALS OUT OF THE BUILDING AND DID SO AT THE REAR OF THE BUILDING.

I CALLED DISPATCH AND REQUESTED THE STATE FIRE MARSHALL'S OFFICE NOTIFIED AND REQUESTED AN INVESTIGATOR.

AFTER THE FIRE WAS EXTINGUISHED, 2ND AND 3RD ALARM CO'S WERE RELEASED AND OVERHAUL WAS CONTINUED WETTING DOWN HOT SPOTS AS THEY WERE FOUND.

I SPOKE WITH DR. MUNSEN AS TO HOW MANY ANIMALS WERE IN THE BUILDING BEFORE THE FIRE AND HE STATED 8-12 DOGS AND 3-4 CATS. THREE DECEASED CATS AND ONE DOG WERE REMOVED FROM THE BUILDING.

UPON THE ARRIVAL OF TPR JEANNE STEWART, INVESTIGATOR WITH THE OSFM, CAPT. GREENE ADVISED HER OF THE SITUATION AND THAY DID A WALK AROUND OF THE BUILDING. TPR STEWART ADVISED SHE WOULD RETURN AT 0930 HRS ON 3/10/09 TO CONTINUE THE INVESTIGATION INTO THE ORIGIN AND CAUSE OF THE FIRE.

ALL UNITS LEFT THE SCENE WITH THE EXCEPTION OF MYSELF AND L-307 WITH 5 FF'S FOR FIRE WATCH UNTIL RELIEVED IN THE MORNING.

3/10/2009, 0815 HRS CAPT. GREENE RETURNED TO THE SCENE WITH E-303 AND 2 FF'S TO TAKE OVER FIRE WATCH AND AWAIT THE ARRIVAL OF THE INVESTIGATORS.

MYSELF AND L-307 CREW THEN CLEARED THE SCENE AND RETURNED TO QTRS AND RETURNED THE TRUCK TO SERVICE.

UPON THE ARRIVAL OF TPR STEWART, TPR BRALEY AND TPR PETERS, DET. YORK ALONG WITH CAPT. GREENE THE SCENE WAS EXAMINED AND ORIGIN AND CAUSE DETERMINED.

DAMAGE: THE MAIN BUILDING CONSISTING OF THE HOSPITAL, OFFICES AND STORAGE AREAS WITH A SECOND FLOOR ABOVE SUSTAINED HEAVY FIRE, SMOKE AND WATER DAMAGE. THE AJJOINING WINGS OF THE BUILDING WHICH EXTEND OFF THE B AND D SIDES OF THE MAIN STRUCTURE SUFFERED MODERATE TO HEAVY SMOKE AND WATER DAMAGE, THESE AREAS CONSISTED MAINLY OF KENNELS AND A WASH AREA AND A LAUNDRY ROOM.

THE BUILDING LOSS IS APPROX. \$500,000. AND THE CONTENTS LOSS IS APPROX. \$500,000. THIS IS PRELIMINARY AND A BETTER ESTIMATE WILL BE FORTHCOMING.

ORIGIN AND CAUSE: THE FIRE ORIGINATED IN THE MAIN STRUCTURE IN THE AREA OF THE OPERATING ROOM AND THE CAUSE IS AN UNKNOWN ELECTRICAL EVENT THAT CAUSED AN EXTERIOR GAS LEAK INTO THE

01920
FDID *

MA
State *

3 9
Incident Date *

2009

1
Station

09-0000702
Incident Number *

000
Exposure *

Complete
Narrative

Narrative:

BUILDING, WHICH FOUND AN UNKNOWN IGNITION SOURCE CAUSING AN EXPLOSION AND FIRE.
THROUGHOUT THE NIGHT, A COUPLE OF HOT SPOTS WERE WET DOWN.

03/12/2009 01:30:57 belldridge

B Property Details

0001 Not Residential
 Estimated Number of residential living units in building of origin whether or not all units became involved

B2 001 Buildings not involved
 Number of buildings involved

B3 None
 Acres burned (outside fires) Less than one acre

C On-Site Materials or Products None

Enter up to three codes. Check one or more boxes for each code entered.

724 Veterinary
 On-site material (1)

On-site material (2)

On-site material (3)

Complete if there were any significant amounts of commercial, industrial, energy or agricultural products or materials on the Property, whether or not they became involved

- 1 Bulk storage or warehousing
- 2 Processing or manufacturing
- 3 Packaged goods for sale
- 4 Repair or service
- 1 Bulk storage or warehousing
- 2 Processing or manufacturing
- 3 Packaged goods for sale
- 4 Repair or service
- 1 Bulk storage or warehousing
- 2 Processing or manufacturing
- 3 Packaged goods for sale
- 4 Repair or service

D Ignition

D1 34 Surgery area - major
 Area of fire origin *

D2 13 Electrical arcing
 Heat source *

D3 65 Flammable liquid/gas -
 Item first ignited * Check Box if fire spread was confined to object of origin

D4 11 Natural gas
 Type of material first ignited Required only if item first ignited code is 00 or <70

E1 Cause of Ignition

Check box if this is an exposure report. Skip to section G

- 1 Intentional
- 2 Unintentional
- 3 Failure of equipment or heat source
- 4 Act of nature
- 5 Cause under investigation
- U Cause undetermined after investigation

E2 Factors Contributing To Ignition

34 Unspecified None
 Factor Contributing To Ignition (1)

Factor Contributing To Ignition (2)

E3 Human Factors Contributing To Ignition

Check all applicable boxes

- 1 Asleep None
- 2 Possibly impaired by alcohol or drugs
- 3 Unattended person
- 4 Possibly mental disabled
- 5 Physically Disabled
- 6 Multiple persons involved

7 Age was a factor
 Estimated age of person involved

1 Male 2 Female

F1 Equipment Involved In Ignition

None If Equipment was not involved, Skip to Section G

Equipment Involved

Brand

Model

Serial #

Year

F2 Equipment Power

Equipment Power Source

F3 Equipment Portability

- 1 Portable
- 2 Stationary

Portable equipment normally can be moved by one person, is designed to be use in multiple locations, and requires no tools to install.

G Fire Suppression Factors

Enter up to three codes. None

NNN None
 Fire suppression factor (1)

Fire suppression factor (2)

Fire suppression factor (3)

H1 Mobile Property Involved

None

- 1 Not involved in ignition, but burned
- 2 Involved in ignition, but did not burn
- 3 Involved in ignition and burned

H2 Mobile Property Type & Make

Mobile property type

Mobile property make

Mobile property model Year

Use Plate Number State VIN Number

Local Use

Pre-Fire Plan Available
 Some of the information presented in this report may be based upon reports from other Agencies

- Arson report attached
- Police report attached
- Coroner report attached
- Other reports attached

<p>If Fire was in enclosed building or a portable/mobile structure complete the rest of this form</p> <p>1 <input checked="" type="checkbox"/> Enclosed Building</p> <p>2 <input type="checkbox"/> Portable/mobile structure</p> <p>3 <input type="checkbox"/> Open structure</p> <p>4 <input type="checkbox"/> Air supported structure</p> <p>5 <input type="checkbox"/> Tent</p> <p>6 <input type="checkbox"/> Open platform (e.g. piers)</p> <p>7 <input type="checkbox"/> Underground structure (work areas)</p> <p>8 <input type="checkbox"/> Connective structure (e.g. fences)</p> <p>9 <input type="checkbox"/> Other type of structure</p>	<p>1 <input type="checkbox"/> Under construction</p> <p>2 <input checked="" type="checkbox"/> Occupied & operating</p> <p>3 <input type="checkbox"/> Idle, not routinely used</p> <p>4 <input type="checkbox"/> Under major renovation</p> <p>5 <input type="checkbox"/> Vacant and secured</p> <p>6 <input type="checkbox"/> Vacant and unsecured</p> <p>7 <input type="checkbox"/> Being demolished</p> <p>8 <input type="checkbox"/> Other</p> <p>9 <input type="checkbox"/> Undetermined</p>	<p>Height</p> <p>Count the ROOF as part of the highest story</p> <p style="text-align: center;">002</p> <p>Total number of stories at or above grade</p> <p style="text-align: center;">001</p> <p>Total number of stories below grade</p>	<p>Main Floor Size*</p> <p style="text-align: center;">006 , 042</p> <p>Total square feet</p> <p style="text-align: center;">OR</p> <p>Length in feet BY Width in feet</p>	<p>Structure Fire</p>
---	--	---	---	-----------------------

<p>J1 Fire Origin *</p> <p style="text-align: center;">001</p> <p>Story of fire origin</p> <p><input type="checkbox"/> Below Grade</p>	<p>J3 Number of Stories Damaged By Flame</p> <p>Count the ROOF as part of the highest story</p> <p>Number of stories w/ minor damage (1 to 24% flame damage)</p> <p>Number of stories w/ significant damage (25 to 49% flame damage)</p> <p>Number of stories w/ heavy damage (50 to 74% flame damage)</p> <p style="text-align: center;">002</p> <p>Number of stories w/ extreme damage (75 to 100% flame damage)</p>	<p>K Material Contributing Most To Flame Spread</p> <p><input type="checkbox"/> Check if no flame spread OR same as material first ignited OR unable to determine Skip To Section L</p> <p>K1 UU Undetermined Item contributing most to flame spread</p> <p>K2 UU Undetermined Type of material contributing most of flame spread Required only if item contributing code is 00 or <70</p>
<p>J2 Fire Spread *</p> <p>1 <input type="checkbox"/> Confined to object of origin</p> <p>2 <input type="checkbox"/> Confined to room of origin</p> <p>3 <input type="checkbox"/> Confined to floor of origin</p> <p>4 <input checked="" type="checkbox"/> Confined to building of origin</p> <p>5 <input type="checkbox"/> Beyond building of origin</p>		

<p>L1 Presence of Detectors *</p> <p>(In area of the fire)</p> <p>N <input type="checkbox"/> None Present Skip to section M</p> <p>1 <input checked="" type="checkbox"/> Present</p> <p>U <input type="checkbox"/> Undetermined</p>	<p>L3 Detector Power Supply</p> <p>1 <input type="checkbox"/> Battery only</p> <p>2 <input type="checkbox"/> Hardwire only</p> <p>3 <input type="checkbox"/> Plug in</p> <p>4 <input type="checkbox"/> Hardwire with battery</p> <p>5 <input type="checkbox"/> Plug in with battery</p> <p>6 <input type="checkbox"/> Mechanical</p> <p>7 <input checked="" type="checkbox"/> Multiple detectors & power supplies</p> <p>0 <input type="checkbox"/> Other _____</p> <p>U <input type="checkbox"/> Undetermined</p>	<p>L5 Detector Effectiveness</p> <p>Required if detector operated</p> <p>1 <input type="checkbox"/> Alerted Occupants, occupants responded</p> <p>2 <input type="checkbox"/> Occupants failed to respond</p> <p>3 <input type="checkbox"/> There were no occupants</p> <p>4 <input type="checkbox"/> Failed to alert occupants</p> <p>U <input type="checkbox"/> Undetermined</p>
<p>Detector Type</p> <p>1 <input type="checkbox"/> Smoke</p> <p>2 <input type="checkbox"/> Heat</p> <p>3 <input type="checkbox"/> Combination smoke - heat</p> <p>4 <input type="checkbox"/> Sprinkler, water flow detection</p> <p>5 <input checked="" type="checkbox"/> More than 1 type present</p> <p>0 <input type="checkbox"/> Other _____</p> <p>U <input type="checkbox"/> Undetermined</p>	<p>L4 Detector Operation</p> <p>1 <input type="checkbox"/> Fire too small to activate</p> <p>2 <input type="checkbox"/> Operated (Complete Section L5)</p> <p>3 <input type="checkbox"/> Failed to Operate (Complete Section L6)</p> <p>U <input checked="" type="checkbox"/> Undetermined</p>	<p>L6 Detector Failure Reason</p> <p>Required if detector failed to operate</p> <p>1 <input type="checkbox"/> Power failure, shutoff or disconnect</p> <p>2 <input type="checkbox"/> Improper installation or placement</p> <p>3 <input type="checkbox"/> Defective</p> <p>4 <input type="checkbox"/> Lack of maintenance, includes cleaning</p> <p>5 <input type="checkbox"/> Battery missing or disconnected</p> <p>6 <input type="checkbox"/> Battery discharged or dead</p> <p>0 <input type="checkbox"/> Other _____</p> <p>U <input type="checkbox"/> Undetermined</p>

<p>M1 Presence of Automatic Extinguishment System *</p> <p>N <input checked="" type="checkbox"/> None Present Complete rest of Section M</p> <p>1 <input type="checkbox"/> Present</p>	<p>M3 Automatic Extinguishment System Operation</p> <p>Required if fire was within designed range</p> <p>1 <input type="checkbox"/> Operated & effective (Go to M4)</p> <p>2 <input type="checkbox"/> Operated & not effective (M4)</p> <p>3 <input type="checkbox"/> Fire too small to activate</p> <p>4 <input type="checkbox"/> Failed to operate (Go to M5)</p> <p>0 <input type="checkbox"/> Other</p> <p>U <input type="checkbox"/> Undetermined</p>	<p>M5 Automatic Extinguishment System Failure Reason</p> <p>Required if system failed</p> <p>1 <input type="checkbox"/> System shut off</p> <p>2 <input type="checkbox"/> Not enough agent discharged</p> <p>3 <input type="checkbox"/> Agent discharged but did not reach fire</p> <p>4 <input type="checkbox"/> Wrong type of system</p> <p>5 <input type="checkbox"/> Fire not in area protected</p> <p>6 <input type="checkbox"/> System components damaged</p> <p>7 <input type="checkbox"/> Lack of maintenance</p> <p>8 <input type="checkbox"/> Manual Intervention</p> <p>0 <input type="checkbox"/> Other _____</p> <p>U <input type="checkbox"/> Undetermined</p>
<p>M2 Type of Automatic Extinguishment System *</p> <p>Required if fire was within designed range of AES</p> <p>1 <input type="checkbox"/> Wet pipe sprinkler</p> <p>2 <input type="checkbox"/> Dry pipe sprinkler</p> <p>3 <input type="checkbox"/> Other sprinkler system</p> <p>4 <input type="checkbox"/> Dry chemical system</p> <p>5 <input type="checkbox"/> Foam system</p> <p>6 <input type="checkbox"/> Halogen type system</p> <p>7 <input type="checkbox"/> Carbon dioxide (CO₂) system</p> <p>8 <input type="checkbox"/> Other special hazard system</p> <p>9 <input type="checkbox"/> Undetermined</p>	<p>M4 Number of Sprinkler Heads Operating</p> <p>Required if system operated</p> <p>Number of sprinkler heads operating</p>	<p>NFIRS-3 Revision 01/19/99</p>

EXHIBIT 2

National Grid – DPU Incident Report

D.P.U. INCIDENT REPORT

TODAY'S DATE: March 16, 2009
 DATE/TIME OF INCIDENT: 03/09/2009 @ 21:30

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

INCIDENT LOCATION	TYPE OF INCIDENT	# PEOPLE AFFECTED	DATE/TIME CALLED	DOT NOTIFIED
1415 Osterville Road W. Barnstable, MA Dispatched @ 20:12 On Site @ 20:22	Leak: Outage: Evacuation: X Time Out: 20:10 Time In: N/A	2 people	To Dispatch: 20:12 To D.P.U.: 22:06	Yes ____ Time __ __ No.: X

PROBABLE CAUSE: National Grid received a call from the fire department at approximately 8:12 p.m. to respond and turn the gas off due to a working fire. National Grid responded and shut the gas off at outside meter set. The Massachusetts Fire Marshall Office determined that an electrical failure was the cause of fire.

PERSON(S) INJURED	TYPE OF EMERGENCY CARE
N/A	N/A

PROPERTY DAMAGES:

LOCATION OF DAMAGE	TYPE OF DAMAGE
N/A	N/A

TOTAL DURATION EVACUATION: N/A
 TOTAL DURATION OUTAGE:

NATIONAL GRID PERSONNEL RESPONSE:

EVACUATED BY:

FIRE DEPT. X
 POLICE _____
 SELF _____
 NATIONAL GRID _____



 NATIONAL GRID
 LEGAL SERVICES
 (781) 907-1854

EXHIBIT 3

DPU Investigator Notes

1415 Osterville Road West Barnstable

March 9, 2009

Notes

On March 10, 2009 at 8:00 AM I received a call from the State Fire Marshall's office concerning an explosion and fire at the above address. Lt Jeanne M. Stewart requested the DPU assist the SFM in the investigation as to the cause of the explosion and fire. This information was reported to the DPU office and Chris Bourne requested I respond. I arrived at the location at approximately 9:30 AM.

At the location I met with the SFM, the West Barnstable FD and National Grid.

Facts;

The owner's house is in the front portion of the property. In the rear is an animal hospital with an apartment above.

There was a 4" coated steel main installed in 1972 under the street. The property had 2 services, one to each building. The rear service was 1" plastic plexco yellow pipe installed in 1997. The MAOP was 60 psig and the operating pressure at the time of the incident was 54.8 psig.

The rear building had an automatic start generator (8 cylinders) that was fueled by natural gas. The generator starts automatically every Tuesday as an operational test. The SFM stated that the owner stated that the generator had its annual maintenance on March 4, 2009.

On March 9, 2009 after the explosion and fire the service to the rear building was cut off near the curb valve.

The SFM stated that the front service did not appear to be a problem. I requested the N-Grid leak survey the main under the street in both directions and the service to the front house. The main was leak surveyed using a mobile leak survey vehicle and the service was completed by making bar holes and using a CGI to take readings. The results were negative for the main and the front service. No gas leakage detected.

N-Grid conducted odorant tests on March 9, 2009 and stated the readings were adequate. I requested that they make the test record available.

The rear service was pressure tested from where it was cut on March 9, 2009 (just downstream of the curb valve) to the HPC on the outside service riser. The test was conducted at 55 psig. The test did not hold and there was a leak indication near the corner of the building behind the air conditioning unit (upstream of the HPC). The rear service was installed under the driveway in a conduit. The service was then excavated on the other side of the driveway (away from the rear building) and pressure tested from near the curb valve to this point (approx 295 feet) and the test held at 55% psig for 18 minutes.

The service line was then excavated in the area of the leakage. The service line was found burned and melted with holes. In the excavation were a number of other cables conduits and wires. The underground direct buried electric service (2 services for 2 meters, 6 cables) was also burned and completely severed. Some of the other cables and conduits were also burned or showed heat damage. There was also an electric ground close to the electric service and the gas service. There were areas of burned or heat affected earth (see picture). The SFM determined that the electric service had a malfunction and melted the gas service causing a leak.

The remaining two sections of service, from the damaged area to the HPC and from the damaged area to the cut made on the other side of the driveway were pressure tested and did not indicate leakage.

The meter facilities from the HPC to the end of the meter manifold were pressure tested and leakage was found, 1. At the first regulator (the regulator cap had been melted and pushed out by the spring, air was passing through the cap and air was passing through the regulator vent). 2. There were soap bubbles at the top tap (second take off, see picture) at the union and the insulating valve. This slight leakage (soap bubbles) is believed to be caused by heat exposure.

The SFM stated that in an interview with the owner, the owner stated; the lights in his house flickered, he then heard the explosion, he then looked out his back door and saw a fire near the generator.

The gas may have entered the building through the buried conduits which were in the ground near the gas service and terminated in the building or through the basement window. The owner stated that the window was removed (see picture) and was sealed with a type of insulation board. There were two copper lines and one electric line attached to the air conditioner, which penetrated the insulation board. There were also two old dryer vents in the insulation board (not being used) that were stuffed with newspaper.

In the basement were sources of ignition which included a furnace and hot water tank. Outside of the building was the generator which also could have been a source of ignition.

The SFM has the section of 1" plastic pipe and the tracer wire. The pipe was 4 feet 2 inches long.

The SFM determined that the electric service failed. This failure caused the gas service to fail. Gas leaked into the building and was ignited by sources inside or outside the building causing the resulting explosion and fire.

Submitted by

Paul G. Grieco, Public Utilities Engineer, Pipeline Engineering and Safety Division,
Department of Public Utilities

March 18, 2009

EXHIBIT 4

Damage to 1415 Osterville Road



EXHIBIT 5

SFM Electrical Investigation Report

J. Kevin Payton
Electrical Investigations
Post Office Box 214
Monument Beach Massachusetts 02553-0214

Home – 508-759-7602
Cell – 508-726-9267

Date of Fire 03 -09 -2009

Time of Fire: 20:30 hrs

Address of Fire: 1415 OSTERVILLE-BARNSTABLE ROAD BARNSTABLE, MA

Date(s) of inspection by J. K.P.: 3 -10 -2009

Time of Inspection 12:00 NOON

Trooper Assigned: JEANNIE STEWART MSP Case Number: 2009-117-0394

Utility company serving building: NSTAR

A. ELECTRICAL SERVICE SYSTEM INSPECTION

Electric service feed. Overhead Underground Other

Wires cut? Yes No

Where? POLE By Whom? NSTAR

Power Disconnected?

Yes By Whom: Utility Fire Department Other

No Power On-System is energized

How many wires feed building? 3

Do electrical conductors (wires) feed the building from more than one place (pole or pad mounted transformer)? Yes No

Explain:

Do they attach to the building at different places? Yes No

If yes, adjacent to each other or separated some distance? Adjacent Separated

Are there transformers on the utility company's pole or on a cement pad outside the building? Pole Pad

J. Kevin Payton
Electrical Investigations

Was any work being performed on the electrical service or utility company's poles outside of the building? Yes No

By whom? _____

What is the condition of the conductors? Are they frayed or worn? Yes No

Are there any bent or broken conduits around the wire or fittings? Yes No

Does the electrical service look like a new or an old installation? New Old

Have the utility company's seals been cut on the electrical meters? Yes No

If no, what is the color of the seal? _____

B. INTERIOR ELECTRICAL SYSTEM INSPECTION

If power was off or not present prior to the fire, this section can be skipped.

Type of service disconnects: Fuses Circuit Breakers

Main service disconnect: AMP Rating 200

Electric service systems voltage: (Check one or more)

110 220 440 Other

Main Disconnects 200 # of Circuits 40

Tripped YES

of Circuits Rated a: 5 amp 10 amp 15 amp YES

20 amp YES 25 amp 30 amp YES

50 amp YES Other

Photographed location of fuses or circuit breakers?. Yes No

Service box damaged? Yes No

Describe: HEAT AND DEMO

Any indications of unusual discoloration, heating or arcing in panel? Yes No

Describe: EXTERNAL

J. Kevin Payton
Electrical Investigations

Indications of recent work? Yes No

Describe:

Any fuses blackened (may or may not be indicative of short circuit)? Yes No

Any fuse links open (may or may not be indicative of overload)? Yes No

Any pennies or foreign objects behind fuses or in panel? Yes No

Explain:

If bus fuses are present, are the interior links evaporated or do they have a melted mid-section?

Evaporated Melted Intact

Record or photograph the position of all circuit breakers ON, Off or RESET. – see page 10

Is service panel in area of origin? Yes No

Any indications of unusual discoloration, heating or arcing in panel? Yes No

Are grounds in panel tight? Yes No

Any indications of unusual discoloration, heating or arcing in panel? Yes No

Location of system ground wire? WATER PIPE Condition? Good Bad

Are there wires temporarily hanging all over the place (other than fire damage)?
Yes No

Does the job look neat and workmanlike? Yes No

Is the area about the service free and clear, or is the area cluttered with storage material indicating poor housekeeping?

Free and Clear Cluttered

Is it poor housekeeping or is it an attempt to extend the fire damage?

Housekeeping Attempt N/a

Are there time clocks mounted on the service panel (to control night lights, access to secure areas, etc.)? If so, record the times the clock(s) stopped (may be important for time sequence, burn times, relation to last person out of building, fire movement, etc.).

Time Clock mounted to service panel? Yes No Time?

Does the wire size of the branch circuits correspond to the size of fuse or circuit breaker to which it is connected?

Yes No

J. Kevin Payton
Electrical Investigations

C. INSPECTION OF ELECTRICAL SYSTEM OUTSIDE AREA OR ORIGIN

(Review the building away from the area of origin, assuming that the area of origin has been established).

Type of wiring methods used to wire the building:

- Knob-and-tube
- Armored cable (bx)
- Nonmetallic-sheathed cable (Romex)
- Electrical metal conduit
- Rigid metal conduit
- Flexible metal conduit
- Other

Condition of wiring? FAIR

Approximate age of wiring? 20-40 YRS

Underwriters certificate? Yes No

If yes, date

Inspector

Professional-style installation? Yes No

Document if there are numerous extension cords, their locations and/or do-it yourself wiring within the structure? N/A

Are there any signs of wiring tampering or unusual timing devices? Yes No

If yes, explain

Record times of all clocks, in order to establish a time sequence as fire moved through the building and electrical circuits to the clocks failed. N/A

Does any wire installation show heat-stress (brittle, melting, sleeving)? Yes No

At certain points? Yes No

For the entire length (Indicative of an overload condition)? Yes No

If yes, explain UNDERGROUND DIRECT BURIAL CONDUCTORS DAMAGED IN A CONFINED AREA.

J. Kevin Payton
Electrical Investigations

D. ELECTRICAL SYSTEM INSPECTION AT THE AREA OF POINT OF ORIGIN

Is a V-pattern present and originating at an electrical source? Yes No

Number of devices in area of origin?

Switches N/A

Ceiling fixtures N/A

Wall fixtures N/A

Receptacles N/A

TV Antenna Outlet N/A

Cable TV N/A

Other N/A

Type of wattage of connected appliances in area of origin (list)? N/A

Connected load on the circuit in fire area (list)? ENTIRE SERVICE

Protective devices on circuit in area of origin?

Circuit breaker

Fuse

Amperage

Make

Position-ON

OFF

RESET

Condition? N/A

Any light bulbs in area of origin?

Incandescent (#) N/A

Wattage 25 50 60 75

100 200 300

Other N/A

Recessed Lamp? Yes No

Permitted wattage in fixture? Yes No

Is filament black? Yes No

J. Kevin Payton
Electrical Investigations

Fluorescent lamps (#) N/A (Any evidence of starter/ballast can be checked by experienced person for short circuit).

Was bulb or lamp in contact or near combustibles to cause the damage as viewed?

Yes No

Explain:

If receptacles or switches are in area of origin, is there a loose connection in box?

Yes No

Is there evidence of arcing in box?

Yes No

Did any damage in box come in contact with combustibles?

Yes No

If yes, what type: N/A

Wiring in area of origin.

Is wiring damaged by external heat?

Yes No

Is insulation burned off?

Yes No

Is wiring damaged localized?

Yes No

Is wiring damaged by internal heat?

Yes No

Does insulation sleeve on conductor (Is it loose)?

Yes No

Is it brown, discolored or burned from the inside?

Yes No

Is the wire damaged along its length?

Yes No

(From the damage to the power source, loose connection or splice).

Does copper appear thinner at some point?

Yes No

Did wire break from heat or stress?

Yes No

(Heat would have thinned wire and possibly melted it to leave beads at broken ends. Stress breaks would generally leave jagged end).

Did any wires fuse together?

Yes No

Is any copper wiring bright red?

Yes No

(Indicative of high heat exposure)?

J. Kevin Payton
Electrical Investigations

Are there any ruptures (burn through or blow-out holes) in the conduits or metal casings on the wires?

Yes No

Are any copper balls (BB style) present in the area?

Yes No

(Several of the above, if answered yes, will tell you that the power was still ON in the area of origin at the time of the fire.)

Is any of the arcing in close proximity to easily ignitable combustions to allow fire spread?

Yes No

Can any arcing be related to the point of origin, deep char, hottest point, longest burn, etc., to be considered the cause of the fire?

Yes No

Is there any aluminum wiring present?

Yes No

Is it connected to copper at some point?

Yes No

Is there corrosion buildup at any of the connections?

Yes No

Did the aluminum melt?

Yes No

Any electrical extension cords in the area of origin?

Yes No

If so, what condition are they in? N/A

What size are they? N/A

How old are they? N/A

Were they frayed?

Yes No

Were they coiled?

Yes No

Were they obstructed by placement behind or under furniture or rug?

Yes No

Were they overloaded?

Yes No

(Size of extension cord wire is usually #18 AWG, rated at 7 amps. Example, a 20 amp circuit breaker is connected to a #12 AWG wire feeding a receptacle to which a #18 wire extension cord is plugged, which leads to an 1200 watt heater. Using an application of Ohm's law, the current (amperage) of the heater is 10 amps, feeding through a wire (#18) rated for 7 amps. This could lead to overheating and, under certain conditions, a fire.)

Electrical motors in area of origin?

Yes No

J. Kevin Payton
Electrical Investigations

Does motor shaft turn? Yes No

Frozen shaft can be caused by melted parts that have exceeded 1200°. Was there high enough external heat to freeze shaft? Yes No

~~Frozen shaft can also be the result of lodged fire debris or rusted parts.~~
Was it in proximity of easily ignitable combustibles to allow fire spread? Yes No

Other electrical appliances in area of origin? Yes No

If so, what? N/A

Was appliance on or off at time of fire? Yes No

Did it burn from inside or outside? Yes No

Was it clean or obstructed by items (like newspaper)? Yes No

Was it in proximity of combustibles? Yes No

Name of Lab for testing, if necessary

E. INTERVIEWS RELATIVE TO ELECTRIC SERVICE
(Owners, occupants, neighbors)

When was wiring and service last worked in prior to fire? N/A

Who performed the work? N/A

What was done? N/A

Where was work done? N/A

Why was work done? N/A

Any electrical problems? N/A

Dimming or blinking lights? Yes No

Strange noises in the area of origin or electrical service? Yes No

Brownouts or power outages? Yes No

Fuses blowing or circuits stripping? Yes No

Water problems (leaks, floods, etc)? Yes No

If yes, did it contact the electrical system components? Yes No

J. Kevin Payton
Electrical Investigations

Equipment is area of origin? Yes No

Any time clocks in area of origin? Yes No

(Time:)

Anything hanging on wire? Yes No

(What)

Any extension cords or lights in area of origin? Yes No

F. ELECTRICAL SYSTEM CONCLUSIONS

Attempt to reconstruct electrical system in order to support your findings. Whenever possible, take the necessary components as evidence in order to accomplish this. Remember the fire causes should not be ruled as electrical in nature simply because it is at the area of origin and no other cause can be determined..

Was component within electrical system the cause of the fire? Yes No

If yes, briefly explain: AN ELECTRICAL FAILURE TOOK PLACE IN THE UNDERGROUND SERVICE ENTRANCE CABLES THAT CREATED EXCESSIVE HEAT.. THIS HEAT COULD HAVE DAMAGE COMBUSTABLES IN THE AREA.ELECTRICITY CAN NOT BE RULED OUT AS AHEAT SOURCE FOR THIS FIRE.

J. Kevin Payton
Electrical Investigations

On Off Tripped

J. Kevin Payton
Electrical Investigations

Investigators Narrative:

SEE PAGE 9 OF 13

Respectfully Submitted,

J. Kevin Payton 7-6-09

J. Kevin Payton

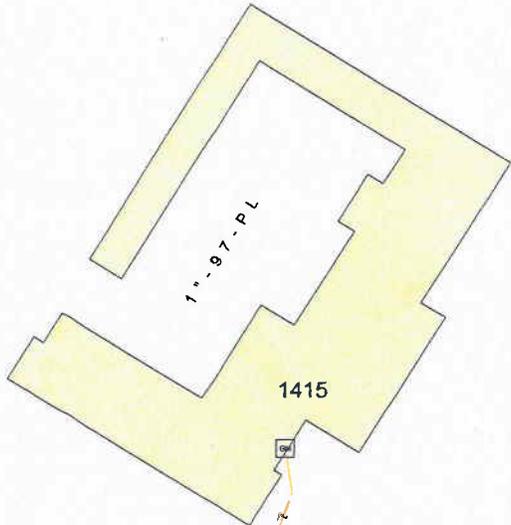
Note: The last page of this document is administrative only and may be missing.

EXHIBIT 6

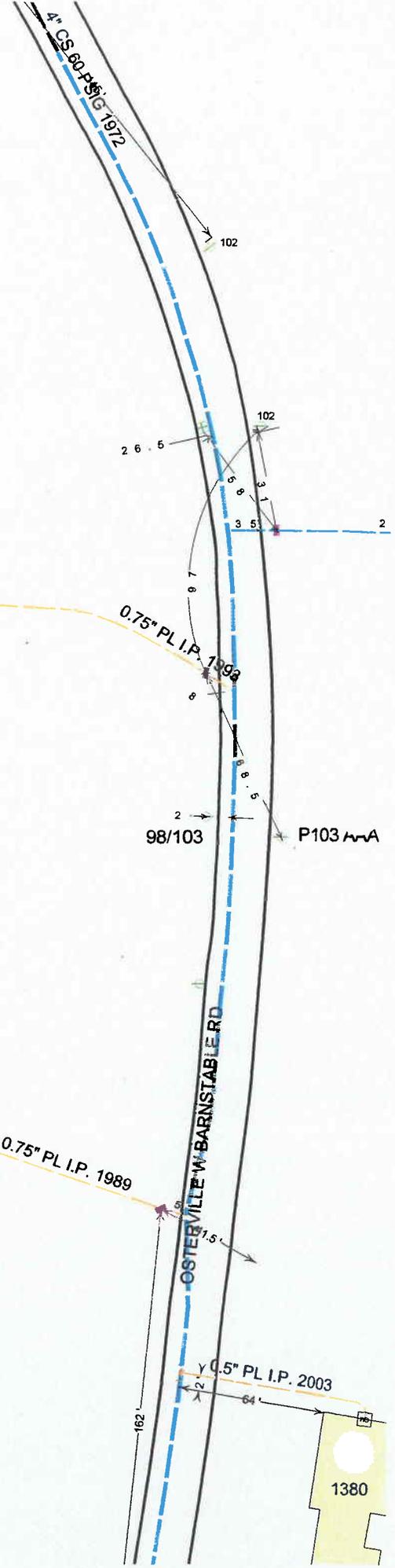
National Grid – Diagram of Main and Services

1" PL I.P. 2003

4" CS 60 PSI G 7972



MARSTONS MILLS



1415

1423

26.5

170

0.75" PL I.P. 1998

98/103

P103 MA

373 0.75" PL I.P. 1989 1''-97-PL

0.5" PL I.P. 2003

1380

102

102

2

5

3.1

6

3.5

2

6.7

8

8

8.8

5

2

8.5

1.5

162'

2

64'

EXHIBIT 7

Gas Service Information

11-12

641988571

WFO0076 JANTELE WORK MANAGEMENT SYSTEM DATE: 11/12/97 PAGE: 1

BRANDTABLE CSC JOB ORDER

Est: NEW CONSTRUCTION SERVICE Job Title: 1415 OSTE V BARRIS RD Type: COMMERCIAL / INDUSTRIAL Add/Loc: 1415 OSTE V BARRIS RD ... Schedule Code: CSI ...

STC DATE: Expires On: 11 Start On: 11/19 Time: 10 AM Clear Util: 9714161451371 Nearest St: WATER

EXISTING FACILITY: REFERENCE MAPS: Tie-ins Material: ST Pressure Class: 2-60 Pipe Size: 4.00

PROPOSED FACILITY: Pressure Test: 100 Lbs for 1 (Burst/Min) SERVICE: LS/RS: BS Service Length: 400.0 Insert Size: Inst. Class: I ...

JOB DESCRIPTION: BRING 400' OF 1" TO FRONT OF CAPE COD ANIMAL HOSPITAL. WANTS TO COORDINATE WITH WATER DEPARTMENT TO PUT IN SAME DITCH.

FIELD INSTRUCTIONS: INSTALL 400' OF 1" PL SS CORR SERVICE PER SKETCH. NO ANODE RING'S. S.S. & S.D.

Table with 3 columns: PERMITTED, CONDITION, RECEIVED. Includes 'TOWN/MUNICIPAL' and 'NEEDED ON-SITE'.

12-16-97 351' PLUM SERVICE ONLY

STOCK MATERIALS

Table with columns: STOCK NO, ITEM DESCRIPTION, UOM, EST QTY, QTY, INED, LOT #. Lists items like 645.F 3/4 INS METER COCK, 647.FM 3/4 WELD X 1 CTS X 1/2 TAP TEE, etc.

V Permit

SERVICE FIELD RECORD

Customer Account #

H.P. I.P. L.P. Tag # _____ Side SHORT Job Order No. 032889
 Street 1415 RST. W. BARRIE RD Town W. BARRISTOWN

Location: 5' OFF MAIN
 Valve Manufacturer: PERFECTION

Between _____ St. & _____ St.
Installation Data

Model: 45080 Date Inst'd: 12-16-92
 Size: 1" Access: Box vault other _____

Service Pipe Data
 Pipe Manufacturer: PLEXLO
 Pipe Mfg Lot #: FD06912 02723
 Specification of Pipe: D2513
 Pipe Material: Plastic: High Ethyl Steel
 Pipe Wall Type: IPS CTS
 SDR # 12.5 Wall Thick: 0.200 Diam. 1"
 Piped: Yes No Japped: Yes No
 Type Coating: _____ Length: 381'
 Depth: 2 Feet _____ Inches

Main Pipe Data
 Pipe Manufacturer: _____
 Pipe Material: Plastic: High Med Steel CI
 SDR #: _____ Wall Thick: _____ Diam. 4"
 Type Coating: X-TRA
 Depth: 2 Feet 6 Inches
 Location: _____ ft. _____ in. of line of _____

Pressure Class: 150 300 600
 Type End: fused stub socket weld mech.
 Number Turns To Close: 1/2 right left
 Type: Ball Gate Plug other _____
 Comments: _____

Test Information
 Line Tested to: 100 lbs.
 Test Duration: 15 Min. _____ Mrs.
 Chart: _____ Gauge: _____ MAOP: _____
 Test Medium: Air _____ Other _____
 Test Witnessed By: PLUMMER

Daily Readings
 Date Footage Inspector
12-16-92 381'

Flow Limiter Closes: No Location _____
 Mfg Model: _____ Size Tap _____
 Location: _____ ft. _____ in. of line of _____

Comments

Year **Size/Type** **Footage** **Inspector**

Farm Tap: yes no Size Tap (in.) _____
 Reg. name _____ model _____ Press. Set (in./lbs) _____

Contractor: R.H. WHITE
 Foreman: PLUMMER
 Welder: BUMBA
 Fuser: _____
 Date: 12-16-92

EXTERNAL EXPOSED PIPE WALL EXAMINATION

Meter Set and/or Riser Installation Requires Protection:
 During Site Construction: yes no
 After Site Construction: yes no

Location A: <u>Main</u>	Location B:
Pipe: <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	Pipe: <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor
Type: <input type="checkbox"/> CI <input type="checkbox"/> ST <input type="checkbox"/> PE	Type: <input type="checkbox"/> CI <input type="checkbox"/> ST <input type="checkbox"/> PE
Density: <input type="checkbox"/> High <input type="checkbox"/> Med	Density: <input type="checkbox"/> High <input type="checkbox"/> Med
Coating: <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	Coating: <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor
Coating Type: <input checked="" type="checkbox"/> xtra <input type="checkbox"/> none	Coating Type: <input type="checkbox"/> xtra <input type="checkbox"/> none
<input type="checkbox"/> Coal Tar Other _____	<input type="checkbox"/> Coal Tar Other _____
Soil Type: <u>GRAVEL</u>	Soil Type: _____
Condition: _____	Condition: _____

Corrosion Control Data
 Insulated at: main meter other _____
 Remarks: _____
 No. Anodes Installed: _____ 1# _____ 3# _____ 17# _____
 Loc. of Anode: saddle service tee
 valve riser other _____
 comments: _____

Original Installation Date: 12-16-92
 Inspector: _____
 Direct Burial Insert New Renew
 Relocation Partial Renewal Transfer

INTERNAL EXPOSED PIPE WALL EXAMINATION

Pipe	Comments
<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	<u>BB</u>
Type: <input type="checkbox"/> CI <input type="checkbox"/> ST <input type="checkbox"/> PE	
Density: <input type="checkbox"/> High <input type="checkbox"/> Med	
<input type="checkbox"/> Coat. & Maint. <input type="checkbox"/> Eng. <input type="checkbox"/> Corrosion <input type="checkbox"/> Mapping	

Meter Location
 meter: inside outside other _____
 regulator: inside outside other _____
 Set installed: yes no reason _____

Customer Account # 641988571

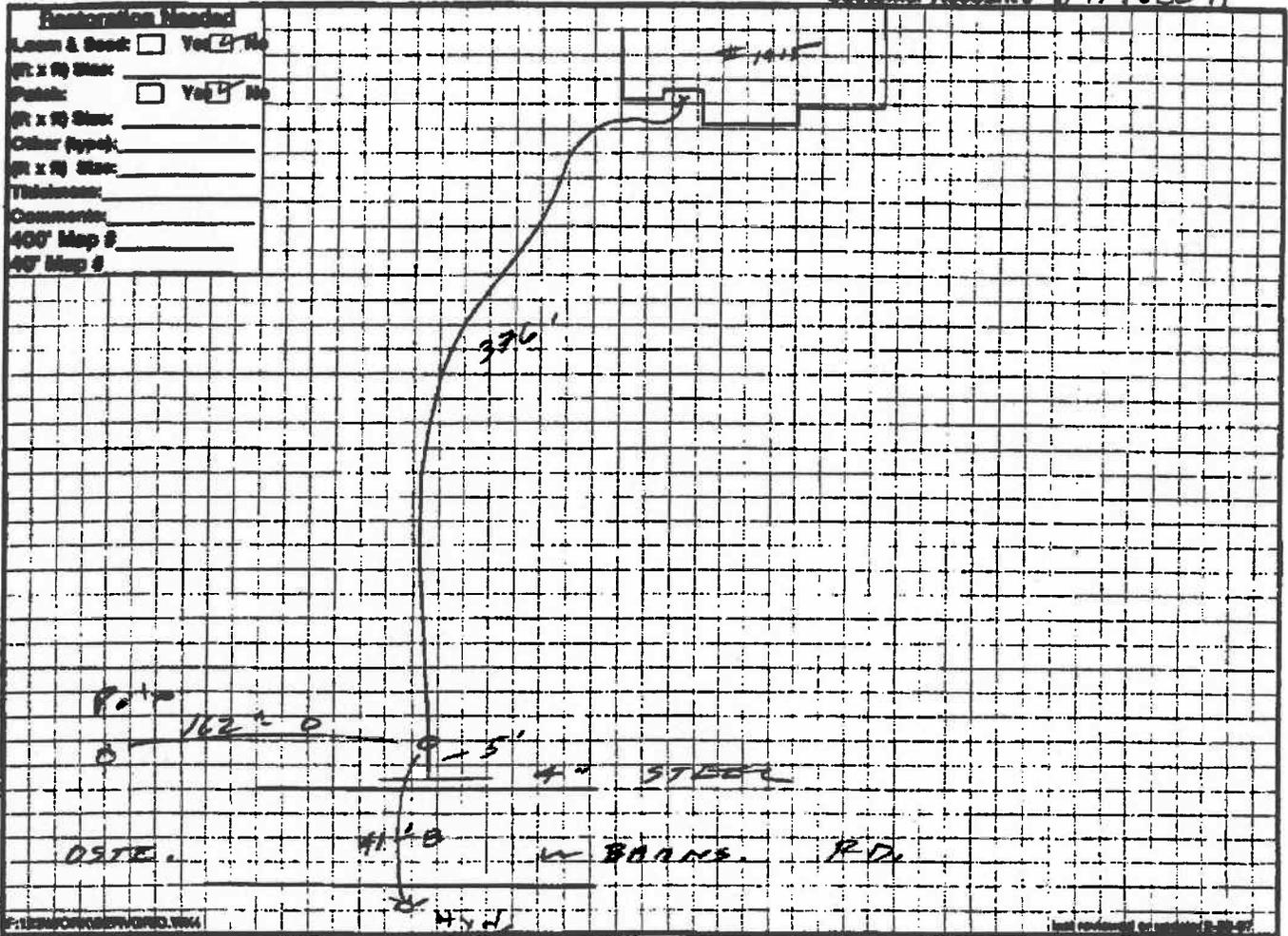


EXHIBIT 8

Operating Pressure at Time of the Incident

National Grid

National Grid's Responses to the Department's First Set of Information Requests

Information Request PL 1-3

Respondent: Eileen Ormond/James Hughes

Request: Provide records for the main on Osterville Road, including but not limited to, installation date, MAOP, maps, leak history and operating pressure at the time of the Incident.

Response: A four inch steel main was installed on Osterville Road in 1972. The MAOP is 60 P.S.I.G. and the operating pressure at the time of the Incident was approximately 54 P.S.I.G. There were no reports leaks on the main for the past 2 years.

EXHIBIT 9

Photo of Debris Blown From 1415 Osterville Road

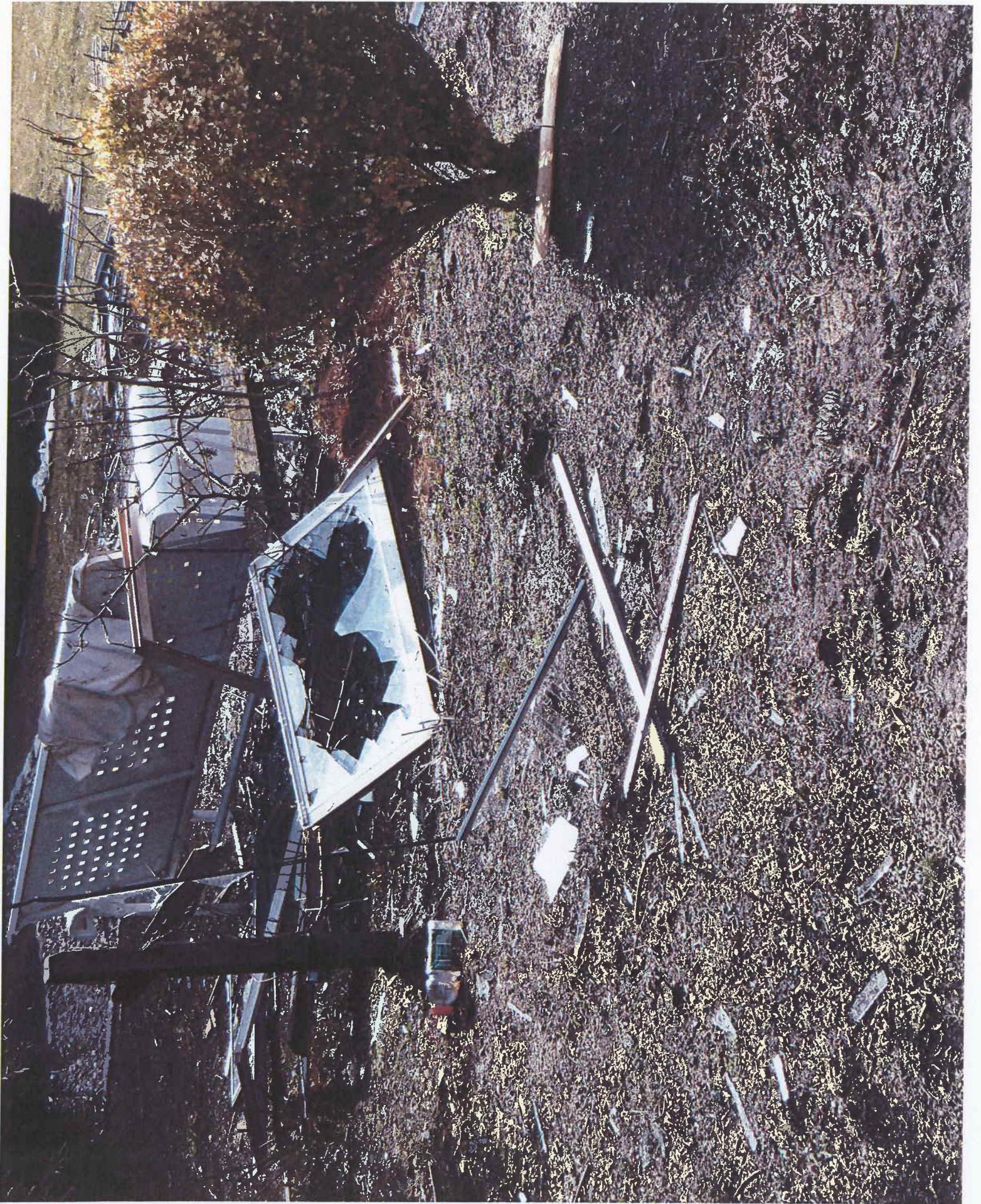


EXHIBIT 10

National Grid Incident Report to PHMSA (F-7100.1)

NOTICE: This report is required by 49 CFR Part 191. Failure to report can result in a civil penalty not to exceed \$100,000 for each violation for each day the violation continues up to a maximum of \$1,000,000 for any related series of violations as provided in 49 USC 60122.

Form Approved
OMB No. 2137-0522



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

INCIDENT REPORT - GAS DISTRIBUTION SYSTEM

Report Date _____
No. _____
(DOT Use Only)

INSTRUCTIONS

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

PART A - GENERAL REPORT INFORMATION

Check: Original Report Supplemental Report Final Report

1. Operator Name and Address

- a. Operator's 5-digit Identification: Number 2 / 0 / 6 / 6 / 1
- b. If Operator does not own the pipeline, enter Owner's 5-digit Identification Number / / / / /
- c. _____
- d. Name of Operator Colonial Gas Company d/b/a National Grid
- e. Operator street address 52 Second Avenue
- f. Operator address Waltham, Middlesex County, MA 02451
City, County or Parish, State and Zip Code

2. Time and date of the incident

2 / 10 / 11 / 21 / 09 / 10 / 9
hr. month day year

3. Incident Location

- a. 1415 West Osterville Road
Street or nearest street or road
- b. West Barnstable
City and County or Parish
- c. Massachusetts
State and Zip Code
- d. Latitude: / / / / / Longitude: / / / / /
(if not available, see instructions for how to provide specific location)
- e. Class location description
 Class 1 Class 2 Class 3 Class 4
- f. Incident on Federal Land Yes No

4. Type of leak or rupture

- Leak: Pinhole Connection Failure (complete sec. F5)
Puncture, diameter or cross section (inches) _____
- Rupture (if applicable):
Circumferential - Separation
Longitudinal
- Tear/Crack, length (inches) _____
- Propagation Length, total, both sides (feet) _____
- N/A
- Other:

5. Consequences (check and complete all that apply)

- a. Fatality Total number of people: / / / / /
Employees: / / / / / General Public: / / / / /
Non-employee Contractors: / / / / /
- b. Injury requiring inpatient hospitalization
Total number of people: / / / / /
Employees: / / / / / General Public: / / / / /
Non-employee Contractors: / / / / /
- c. Property damage/loss (estimated) Total \$350,000
Gas loss \$ _____ Operator damage \$ _____
Public/private property damage \$ 350,000
- d. Gas ignited Explosion No Explosion
- e. Gas did not ignite Explosion No Explosion
- f. Evacuation (general public only) / / / / / people
Evacuation Reason:
 Unknown
 Emergency worker or public official ordered, precautionary
 Threat to the public
 Company policy

6. Elapsed time until area was made safe:

1 / 1 / 9 hr. 11 / 9 min.

7. Telephone Report

8 / 9 / 19 / 15 / 2 / 1 10 / 3 / 11 / 0 / 10 / 9 / 1
NRC Report Number month day year

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

54 PSIG

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

c. MAOP established by:

- Test Pressure 60 psig
- 49 CFR § 192. 619 (a)(3)

PART B - PREPARER AND AUTHORIZED SIGNATURE

Christopher S. Aronson, Senior Counsel
(type or print) Preparer's Name and Title

781-907-1854
Area Code and Telephone Number

Christopher.aronson@us.ngrid.com
Preparer's E-mail Address

781-907-1659
Area Code and Facsimile Number

[Signature]
Authorized Signature

Christopher S. Aronson 2/9/09

781-907-1854

PART C - ORIGIN OF THE INCIDENT

1. Incident occurred on
 Main Meter Set
 Service Other: _____
 Pressure Limiting and Regulating Facility
2. Failure occurred on
 Body of pipe Pipe Seam
 Joint Component
 Other: _____
3. Material involved (pipe, fitting, or other component)
 Steel
 Cast/Wrought Iron
 Polyethylene Plastic (complete all items that apply in a-c)
 Other Plastic (complete all items that apply in a-c)
 Plastic failure was: a. ductile b. brittle c. joint failure
 Other material: _____
4. Year the pipe or component which failed was installed: 1997

PART D - MATERIAL SPECIFICATION (if applicable)

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

PART E - ENVIRONMENT

1. Area of incident
 Under pavement In open ditch
 Under ground Above ground
 Inside/under building Under water
 Other: _____
2. Depth of cover: 24 inches

PART F - APPARENT CAUSE

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

F1 - CORROSION

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

a. Pipe Coating
 Bare Localized Pitting
 Coated General Corrosion
 Unknown Other: _____

b. Visual Examination
 Localized Pitting
 General Corrosion
 Other: _____

c. Cause of Corrosion
 Galvanic Stray Current
 Improper Cathodic Protection
 Microbiological
 Other: _____

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

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

1. External Corrosion
2. Internal Corrosion

F2 - NATURAL FORCES

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

F3 - EXCAVATION

8. Operator Excavation Damage (including their contractors) / Not Third Party
9. Third Party Excavation Damage (complete a-d)
- a. Excavator group
 General Public Government Excavator other than Operator/subcontractor
- b. Type: Road Work Pipeline Water Electric Sewer Phone/Cable/Fiber Landowner Railroad
 Building Construction Other: _____
- c. Did operator get prior notification of excavation activity?
 No Yes: Date received: / / / mo. / / / day / / / yr.
 Notification received from: One Call System Excavator General Contractor Landowner
- d. Was pipeline marked?
 No Yes (If Yes, check applicable items i - iv)
 i. Temporary markings: Flags Stakes Paint
 ii. Permanent markings: Yes No
 iii. Marks were (check one) Accurate Not Accurate
 iv. Were marks made within required time? Yes No

F4 - OTHER OUTSIDE FORCE DAMAGE

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

F5 - MATERIAL OR WELDS

Material

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

Weld

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

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

a. Type of failure:

- Construction Defect ⇒ Poor Workmanship Procedure not followed Poor Construction Procedures
- Material Defect

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

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

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

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

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

F6 - EQUIPMENT OR OPERATIONS

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

23. Incorrect Operation

- a. Type: Inadequate Procedures Inadequate Safety Practices Failure to Follow Procedures Other: _____
- b. Number of employees involved in incident who failed post-incident drug test: ___/___/___ Alcohol test: ___/___/___
- c. Was person involved in incident qualified per OQ rule? Yes No d. Hours on duty for person involved: ___/___/___

F7 - OTHER

24. Miscellaneous, describe: .

25. Unknown

- Investigation Complete Still Under Investigation (submit a supplemental report when investigation is complete)

PART G - NARRATIVE DESCRIPTION OF FACTORS CONTRIBUTING TO THE EVENT

(Attach additional sheets as necessary)

The Massachusetts Fire Marshall determined that cause of fire was the arching of electrical lines that compromised gas service line.

EXHIBIT 11

Sequence of Events

National Grid

National Grid's Responses to the Department's First Set of Information Requests

Information Request PL 1-1

Respondent: William McCroft

Request: Provide a sequence of events and a description of the Incident. Include all records that demonstrate: (1) the time Grid was notified of the incident; and (2) when Dispatch notified the first responder, street crew and supervisor(s) to report to 1415 Osterville Road. Include in your response documentation on their arrival times; and when Grid initiated an Emergency Notification to staff.

Response: At 8:12 p.m on March 9, 2009, National Grid was requested by the Barnstable Fire Department to assist with a working fire at the Cape Cod Animal Hospital. National Grid immediately dispatched a technician who arrived at 8:22 p.m. Dispatch supervisor Victor Santana was notified at 8:45 pm. On call supervisor Scott Hitchcock was notified and dispatched at 8:49 pm, and arrived at approximately 10:00 pm. A field crew was dispatched at 8:54 p.m and arrived at approximately 9:45 pm. Area manager Bill Peck arrived on scene between 10:45 and 11:00 pm. Service to the premise was shut off by 9:30 pm by the first responder.

National Grid notified the Massachusetts Pipeline Safety Division at 10:06 p.m. and notified the U.S. D.O.T. on March 10, 2009. Attached as Exhibit IR PL 1-1 is the written notification that National Grid provided the Massachusetts Pipeline Safety Division.

EXHIBIT 12

Odor Level Test Results



**Inter-office Memo
Instrumentation & Regulation NE**

To: File
From: Gary Munroe
Date: March 11, 2009
Subject: **1415 Osterville Road, West Barnstable**

On Monday, March 9 at approximately 11:15 p.m. John Talbot, Senior Supervisor, Instrumentation & Regulation was notified by Gas Control regarding an incident that occurred at 1415 Osterville Road, West Barnstable. John Talbot and Jack Ebert, Senior Supervisors, Instrumentation & Regulation, and Richard Healey (Instrumentation & Regulation Technicians) went to the site to perform odor level tests. Tests were conducted at 1415 Osterville Road and at the West Barnstable Fire Station, 2160 Meetinghouse Way. These buildings are located in close proximity to the incident.

The results of these tests are listed below:

Date	Time	Location	Threshold Odor Level (% Gas in Air)	Distinct Odor Level (% Gas in Air)	Test Equip. ID	Test Equip. Calibration Date	Test By
3/10/2009	1:10 a.m.	1415 Osterville Road West Barnstable	0.06	0.09	3218-5	1/29/2009	R.H.
			0.05	0.09			J.E.
			0.05	0.10			J.T.
3/10/2009	2:30 a.m.	2160 Meetinghouse Way West Barnstable West Barnstable Fire Station	0.05	0.07	3218-5	1/29/2009	R.H.
			0.05	0.07			J.E.
			0.04	0.06			J.T.

Key to testing: R.H. – Richard Healey
J.E. – Jack Ebert
J.T. – John Talbot

cc: J. Higgins
G. Munroe
J. Gatherum
P. Vigeant
C. Aronson
J. Barrett
J. Ebert
M. Eagan

EXHIBIT 13

Leak Survey Results (Service)

National Grid

National Grid's Responses to the Department's First Set of Information Requests

Information Request PL 1-4

Respondent: Eileen Ormond

Request: Provide the records for the service line to 1415 Osterville Road and the residential dwelling on the same property, including but not limited to: installation date, service line size and material, number of meters, leak history and maintenance. Include in your response the service cards for the services.

Response: A one (1) inch plastic service was installed to 1415 Osterville Road in December, 1997 and a ¾ inch plastic service was installed to residential dwelling (1411 Osterville Road) in 1993. There was one meter for each 1415 and 1411 Osterville, Road. Please see service card attached as Exhibit IR PL 1-4. There were no leaks reported over the last 5 years on these services.

EXHIBIT 14

Leak Survey Results (Main & Services)

National Grid
National Grid's Responses to the Department's First Set of Information Requests

Information Request PL 1-7

Respondent: Brian Cotting

Request: Provide the date and results of the most recent leakage survey of the main and services underlying Osterville Road prior to the Incident (1,000 feet in each direction of 1415 Osterville Rd).

Response: National Grid performed a walking survey on September 22, 2008 of the main and service and no leaks were found.

EXHIBIT 15

Town Permit for Electric Line (August 4, 2004)



Application	79637	Applicant	
Status	C COMPLETE	Owner	90694
Department	6300 - BUILDING DEPARTMENT	Contractor	MUNSON, SCOTT E TR
Project/Activity	800 - ELECTRIC RES. ADD/ALTER	Business	COLEMAN, DAVID
Description 1	CONTINUE SERVICE FROM POLE TO ST HOSPITAL	Fees effective	10/01/2004
Description 2		Assigned to	

Property/Use	Non-Conforming	Dates/Misc	Permits
Location	1415	Unit	
Street	DST. W. BARN. RD	Existing use	3400 GENERAL OFFICE BUILDING
Parcel	126035	zoning	RF - RESID F
Municipality	MM - MARSTONS MILLS	metro	
Subdivision		flood zone	
Lot/Section/Phase		Proposed use	3400 GENERAL OFFICE BUILDING
Between		zoning	RF - RESID F
and		metro	
Location desc		flood zone	

<input type="checkbox"/> Prerequisites	<input type="checkbox"/> Hazrd/Restr	<input type="checkbox"/> Names	<input type="checkbox"/> Bonds	<input type="checkbox"/> Sub-Auths	<input type="checkbox"/> Text	<input type="checkbox"/> Plan Review
<input type="checkbox"/> Prior History	<input type="checkbox"/> Inspections	<input type="checkbox"/> Violations	<input type="checkbox"/> Reviews	<input type="checkbox"/> Open Items	<input type="checkbox"/> Warnings	<input type="checkbox"/> Find Related

5 0 2 9

Maintain project/activity detail for the current application.

781-341-4484



Inspection ID	39038	Source	CONV
Originating dept	6300 - BUILDING DEPARTMENT	Violation ref	
Parcel	126036	Application ref	73637
Location	MUNSON, SCOTT E TR	Project/Activity	ELECTRIC RES. ADD/ALTER
Street	1415	Business ID	
Municipality	DIST. W/ BARN. RD	Inspection Area	
	MARSTONS MILLS	License number	

Main Fees			
Scheduled			
Inspection type	ESRV	RESULTS	PASS
Requested on	10/27/2004	Performed on	10/27/2004
Scheduled for	11/2 at 12:00	Travel time	0
Inspector	WAMA	Onsite time	0
Permit	0	Create reinspect	0
Contractor	AMARA, WILLIAM	Reinspection of	
		C of I reference	
		Insp result	WDRH
			Insp score
			0

Comment

Comment code

Checklist

Text

1 of 1

Request No	20043206691	Ref. Request No		Company	CCC
Received Date	04-AUG-2004 01:48:PM	Reference	NO	Type	N NORMAL
Transmission Date	04-AUG-2004 01:49:PM	Premarked	Y	Town	BARNSTABLE
Target Date	09-AUG-2004 01:48:PM	Locator	20213	Status	C
Address	1411 OSTERVILLE RD			Mains	
To Address				BAR	MA
Nearest Cross St 1	RACE LN				
Nearest Cross St 2					
Location	IN WEST BARNSTABLE				
Nature of Work	MOVE SERVICE FOR HOSPITAL			Latitude	
Extent of Work	WAND UPGRADE HSE SERVICE FROM HANDHOLD TO POLE T98/1			Longitude	
Start Date	08/09/2004	Start Time	13:45		
Caller	JOAN COLEMAN	Title	JOAN COLEMAN		
Phone#	508-428-7446	Fax#	508-428-7499		
Return Call	ANYTIME	Email Id			
Contractor	COLEMAN ELECTRIC				
Contractor Address	52 FLEETWOOD PATH, MARSTONS MILLS, MA 02648				
Excavator	SAME				

Completion Details

Locators

Navigation buttons: << < > >> Query

MARKOUT DETAILS - HISTORY

DISPLAY

Date: 11-MAR-2009

Request No	20044906528	Ref. Request No		Company	CCC
Received Date	01-DEC-2004 01:52:PM	Reference	NO	Type	NORMAL
Transmission Date	01-DEC-2004 01:53:PM	Premarked	Y	Town	BARNSTABLE
Target Date	06-DEC-2004 01:52:PM	Locator	20213	Status	C
Address	1411 OSTERVILLE RD			Mains	BAR MA
To Address	1415				
Nearest Cross St 1	RACE LN				
Nearest Cross St 2					
Location	WRKG IN THE WEST BARNSTABLE AREA				
Nature of Work	INSTALL ELEC LINE			Latitude	41.6732234
Extent of Work	FROM HOME, ACROSS PARKING LOT TO GENERATOR AT ANIM			Longitude	-70.3888782
Start Date	12/06/2004	Start Time	13:45		
Caller	JOAN COLEMAN	Title			
Phone#	508-428-7415]]	Fax#	508-428-74199]		
Return Call	ANYTIME	Email Id			
Contractor	COLEMAN ELECTRIC				
Contractor Address	62 FLEETWOOD PATH, MARSTONS MILLS, MA 02648				
Excavator	SAME				

Completion Details	Locators	<<	<	>	>>	Query
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MARKOUT DETAILS - HISTORY

DISPLAY

Date: 11-MAR-2009

Request No	00051509086	Ref. Request No		Company	CCC
Received Date	07-APR-2005 11:47:AM	Reference	YES	Type	NORMAL
Transmission Date	07-APR-2005 11:47:AM	Premarked	Y	Town	BARNSTABLE
Target Date	12-APR-2005 11:47:AM	Locator	20213	Status	C
Address	OSTERVILLE-WEST BARNSTABLE RD				Mains
To Address				BAR	MA
Nearest Cross St 1	RACE LN				
Nearest Cross St 2					
Location	WKG @ 1411 & 1415 OSTERVILLE WEST BARNSTABLE RD				
Nature of Work	TRENCH FOR ELEC LINE				Latitude
Extent of Work	PRIV PROP THE TWO BUILDS				Longitude
Start Date	04/12/2005	Start Time	11:45:AM		
Caller	JOAN COLEMAN	Title	TREAS		
Phone#	508-428-74[45]	Fax#	508-428-74[99]		
Return Call	ANYTIME	Email Id			
Contractor	COLEMAN ELECTRIC INC				
Contractor Address	62 FLEETWOOD PATH, MARSTONS MILLS, MA 02648				
Excavator	SAME				

Completion Details

Locators

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Query

ENC Completion Details

Reference Details

EXHIBIT 16

National Grid O&M 6.16: Installation of Pipe

g. When, in the opinion of the Company supervisor responsible for the job, the natural bottom of the trench does not provide a suitable foundation for the pipe, enough material shall be removed from the trench and replaced by a thoroughly compacted sand bed to provide six inches of foundation for the pipe.

6.1.6 INSTALLATION OF PIPE

6.1.6.1 Pipe shall conform to the trench contour without unnecessary strain on the pipe. When sections of pipe that have been welded or fused alongside the trench are lowered in, care shall be taken not to kink or put a permanent bend in the pipe. Precautions shall be taken to ensure that the inside of the pipe is free of foreign material (see §6.1.8.1). The open ends of the line shall be securely capped at the end of each day.

6.1.6.2 Normally, the pipe shall have a minimum clearance of six inches from other underground facilities or structures not used in conjunction with the installation of the gas distribution facility. Where this distance cannot be maintained, rock shield, or its equivalent, shall be used to protect the gas distribution facility.

6.1.6.3 Steel pipe shall be joined by welding or by mechanical couplings, as specified. Plastic pipe shall be joined by fusion or mechanical couplings, as specified. Fittings shall be installed in accordance with the manufacturer's written procedures. The joining of pipe shall be performed by qualified personnel.

6.1.6.4 All pipe shall be handled and installed to ensure against damage. Coatings shall be visually inspected, and should also be tested for holidays by electronic devices (i.e., "jeeping"). Any damage to the coating found shall be repaired prior to backfilling. Plastic pipe damaged prior to or during installation shall be replaced (e.g., kinks, buckles, scratches, and gouges that reduce the wall thickness by 10% or more).

6.1.6.5 Welding Of Steel Pipe

All welding shall be performed by certified welders in accordance with §4.1. All welders shall meet the requirements of Section 3 of API Standard 1104.

6.1.6.6 Corrosion Control

Cathodic Protection shall be installed in accordance with §8. Steel mains and service lines, including welds, valves, and fittings, shall be properly coated. No primer or mastic should be allowed to come in contact with plastic pipe when coating steel pipe or fittings. If coating materials do come in contact with the plastic pipe or

components, it shall be wiped off as soon as practicable.

6.1.6.7 Warning Tape

a. Warning tape shall be placed over all pipe during backfilling, approximately 12 inches below finished grade.

b. For EBBO installations, sufficient backfill shall be installed prior to installing warning tape. The crew installing the pipe shall install the warning tape:

c. Warning tape installed above pipelines that will have an MAOP greater than 200 psig shall have a width of at least eight inches.

6.1.7 INSTALLATION OF PLASTIC PIPE

6.1.7.1 Qualification For Plastic Pipe Joiners

All heat fusion of plastic pipe, including electrofusion, shall be performed by individuals qualified in heat fusion procedures that conform to the manufacturer's procedures or those adopted by the Company (see §5.1).

6.1.7.2 Equipment

All fusion tools and equipment shall be maintained in good working order in accordance with the manufacturer's recommendations.

6.1.7.3 Direct Burial

a. In a trench, the bending radius of plastic pipe that includes a joint (e.g., butt or socket fusion) shall be greater than 125 times the nominal pipe diameter, and a pipe without fittings or joints shall have a bending radius greater than 20 times the nominal pipe diameter.

b. Plastic pipe may be joined either above ground or in the trench. Joining done in the trench shall be performed when there is enough space available to allow for proper alignment of the pipe. In either case, care shall be taken in handling the pipe.

c. Protective sleeves shall be installed at service line branch connections, transition fittings, where plastic pipe emerges from sleeves/casings, and other locations in accordance with the manufacturer's recommendations.

d. Plastic pipe shall not be installed within 18 feet of steam lines¹, unless approved otherwise by the Company supervisor responsible for the job. In addition, plastic pipe shall not be installed near

¹ See IGT Report 40332-02 (8/95)

EXHIBIT 17

State Fire Marshal Report

617 478 2589



*The Commonwealth of
Massachusetts*

Department of State Police

Fire and Explosion Investigation Section

P.O. Box 1025, State Road

Stow, Ma 01775

(978) 567-3310

(978) 567-3119

DEVAL L. PATRICK
GOVERNOR

TIMOTHY F. MURRAY
LT. GOVERNOR

KEVIN M. BURKE
SECRETARY

COLONEL MARK F. DELANEY
SUPERINTENDENT

FAX NUMBER (978) 567-3119

TO: Paul Grieco

FROM: Lt. Jeanne M. Stewart

DATE: September 15, 2009

SUBJECT: Cape Cod Animal Hospital Report

PAGES: 9

(Including Cover Sheet)

NOTES:
Paul,

Here is the report for the Cape Cod Animal Hospital Explosion and Fire. Sorry for the delay. Thank you for all of your help with this case.

Jeanne

Confidentiality Notice: This facsimile transmission cover sheet and any documents which may accompany it contains information from the Massachusetts State Police Fire and Investigation Section/Office of the State Fire Marshal that is intended only for the use of the individual or entity to whom it is addressed and may contain information that is privileged, confidential, or otherwise exempt from disclosure, dissemination, distribution, copying or other use or retention of this communication, its contents or its substance is strictly prohibited. If you have received this communication in error, please immediately notify us by telephone to arrange for the destruction of the communication or its return to us at our expense.



Massachusetts State Police Report of Investigation

Case Number: 2009-117-0394	Controlling Case Number:
Author:	Created On: 03/11/2009
Lead Investigator: STEWART Jeanne	Assisted by:
Team: South	
Agency Assist: A25 MA FD	K-9:

Date of Incident 03/09/2009	Time of Incident 20:40 PM (approximate)
Requested By:	Requested On:
Organization Centerville Osterville Marston Mills Fire Department	Date 03/09/2009
Representative Chief John Farrington	Time 22:00 PM
Email Address	

Case Type (codes) F50 Fire - Post Blast/Commercial
Warrant None
Property Type Commercial/Business

Technical Assistance Electrical Inspector DFS Electrical Consultant Kevin Peyton
Other

Street Address 1415 Osterville Barnstable Road
City / Town Marstons Mills
State MA
Zip Code

Case Status C8 Closed Completed
Approved By
Approved On
Adult(s) Charged <input checked="" type="checkbox"/> 0
Juv. Charged <input checked="" type="checkbox"/> 0

Comments This incident involved a explosion and fire in an animal hospital. Scene exam revealed a failure of the underground electrical feed that caused a failure of the one inch plastic gas service. This compromise of the gas service allowed gas to escape and enter the structure, eventually being ignited by an unidentified

ignition source. There were no civilian or firefighter casualties. However, three cats and one dog were killed, while another dog remains missing.

People Allowed to Edit this [Supervisors]
Document:

Created: 03/11/2009 10:01 AM by Jeanne Stewart

Revision History 07/24/2009 02:21 PM by CN=Jeanne Stewart/OU=MSP/O=DFS
07/24/2009 02:21 PM by CN=Jeanne Stewart/OU=MSP/O=DFS

09/09/2009 10:27 VARKAS Mark P changed Case Status from O1 Open Active I to C8 Closed Completed.

Attach external file(s) here:

Fire Investigation Summary Report

Case Number: 2009-117-0394
Controlling Case Number: None
Case Type: F50 Fire - Post Blast/Commercial

Report Creator: Jeanne Stewart
Lead Investigator(s): Jeanne STEWART Team: South

FIU Requested By: Chief John Farrington from Centerville Osterville Marston Mills Fire Department

FIU Requested On:

Date and Time of Incident: 03/09/2009 at approximately 20:40 PM
Address/ Location of Incident: 1415 Osterville Barnstable Road Marstons Mills, MA

Type of Investigation: Explosion
Type of Property: Commercial

Protection Systems:

Smoke Detector: Operational

Comments: The property involved in this incident was a two story, wood framed commercial property, currently occupied by the Cape Cod Animal Hospital. The main part of the building was a 24 ft by 38 ft, two story colonial style structure. This part of the structure was covered with wood shingles and the gable roof was asphalt shingled. A 22 ft by 36 ft two story wing extended off the D side while a 32 ft by 44 ft, one story wing extended off the B side. Over sixty feet of one story kennel space ran off the back of the building at the B and D sides, extending again across 89 ft off the D side kennel toward the B side, creating a courtyard area between the kennels and the main building. A ten foot section of fencing was the only break in the surround. The structure was serviced by two 200 amp electrical service panels, located in the AB corner of the basement of the main building. Natural Gas entered the structure at the AB corner of the main building and gas fueled generator was located at the exterior of the structure at the AB corner of the main building.

Fire Source

Cause of Fire: Accidental

Ignition: Possible sources of ignition include: a natural gas fueled hot water heater, a natural gas fueled furnace and an auxiliary generator.

Material Ignited: Natural gas, followed by available combustible materials.

Explanation:

I. NOTIFICATION AND RESPONSE:

1. On March 9, 2009 at 2004 hours, the Centerville Osterville Marstons Mills (COMM) Fire Department received a report of an explosion and fire at the Cape Cod Animal Hospital, located at 1415 Osterville W. Barnstable Road. The report was received by 911 phone call from the owner's home located next door to the animal hospital facility. An alarm was struck and fire units responded to the scene, under the command of Captain Byron Eldridge.

2. The property involved in this incident was a commercial property, currently used as a veterinary hospital. The front of the building faced south on Osterville W. Barnstable Road. For the purposes of this report, this front side shall be referred to as Side A. Side B, Side C and Side D shall correspond to subsequent sides, clockwise. First arriving firefighters found heavy fire showing throughout seventy five

Fire Investigation Summary Report

per cent of the main, center portion of the building. Suppression operations were immediately begun, but due to the heavy volume, the fire was not quickly extinguished. The incident required two additional alarms, however the bulk of the fire was knocked down by 2151 hours. There were no injuries as a result of this incident and the fire did not extend to adjacent properties. Three cats and one dog perished in the blaze.

3. On March 9, 2009 at 2215 hours, this officer was contacted by State Police Communications, with regard to this incident. I responded to the scene and met with Chief John Farrington of the COMM Fire Department and Detective John York of the Barnstable Police Department. Together, we initiated an investigation into the origin and cause of the incident. Due to the extensive damage, ongoing suppression operations and the need for heavy equipment, it was agreed to meet 0930 hours the next morning to conduct the scene examination. We were assisted in this endeavor by Captain Byron Eldridge and Captain Sean Greene of the COMM Fire Department and Troopers Michael Peters and Kenneth Braley of the State Police Fire and Explosion Investigation Section. The scene was documented with photographs taken by Tpr Brian Sullivan of the State Police Crime Scene Services Section. Department of Fire Services Electrical Consultant Kevin Payton and Department of Public Utilities Engineers Paul Grieco and George Santi assisted with their technical expertise. Based upon the information developed through this investigation, the explosion and resulting fire has been ruled accidental and the case has been closed at this time.

II. FINDINGS:

1. Prior to securing from the scene on the night of March 9, 2009, this officer had conversation with the owner of the property, Scott E. Munson. Munson has owned the property since 1994, when he purchased the business for \$395,000 and the property for \$233,000. The property is insured by CNA. Munson lives in the Cape Cod style home adjacent to the animal hospital property. He advised that he had been eating dinner with his wife, Heidi McMorrow at around 7 p.m. when he noticed the lights in his house "flickering." He said that this continued for about 30 minutes, when he looked outside to see if any of the neighbor's lights were flickering and they were not. He said that when he let his house dogs outside, he could hear the generator to the animal hospital was running. Munson advised the generator turns on automatically if the animal hospital loses power. The generator also runs a routine test every Tuesday between 10:30 a.m. and 11:00 a.m. Munson said that about 15 to 20 minutes had passed since he noticed the generator running, when there was a great explosion. He said that he initially thought lightning had struck the house, although there had been no lightning in the area. He told me that he ran outside, looked toward the generator and saw fire between five and ten feet high coming from the ground up in the area "where the gas comes into the building." He said that Heidi called 911 while he grabbed his keys and ran to the unlock the kennel door. He advised that he entered the building through the A side door of the "kennel" portion of the building, the portion of the building the extends off the main building at the D side. Upon entering he said that he encountered too much smoke to reach the animals inside. He noticed that the woodworking and door trim had been blown off the walls of the center hallway. Munson said that he retreated from the kennel building and noticed a smell of gas as he went back outside. He was joined at this time by his neighbor Kenny LaCasse. Together, they ran around to the back side of the building and tried to enter the kennel through the C side door to the B side dog runs. According to Munson, they used a concrete block to break the door lock and enter the dog run area. They then released all the dogs and whisked them outside as the fire department arrived.

2. First arriving Firefighter Captain Byron Eldridge provided this investigation with an account of his observations and a summary of the suppression operations. According to Captain Eldridge, he arrived and proceeded to the A side of the structure. He said that the building was 75 per cent involved, with heavy fire showing from most of the windows and doors. He did a walk around, noting the multiple wings that housed the dog kennels, making the overall dimensions of the building approximately 100 ft. by 100 ft. Captain Eldridge encountered Mr. Munson and Mr. LaCasse at the BC corner, releasing the last of the dogs from the kennel. Upon assuming command, Captain Eldridge ordered the first alarm companies to an exterior attack. Ladder 307 took the AD corner and stretched a 2 1/2 inch handline to the A side. Engine 303 laid a 4 inch supply line from a hydrant at the driveway up to Ladder 307 and established a water supply. Engine 306 pumped this supply line. Engine 305 laid a 4 inch supply line from the next available hydrant

Fire Investigation Summary Report

stretched a 2 1/2 inch handline into Side C. Cotuit Engine 263 laid a 4 inch supply line off of Race Lane, through the horse field to the B side and stretched a 2 1/2 inch handline to Side B.

3. After the initial size up, Captain Eldridge realized that more resources would be needed, so a second alarm was requested. He advised that he observed a flame coming from the ground in front of the A side of the building. He also noticed that a section of the A side wall appeared to be blown out and several window sashes were located on the ground approximately 75 ft. from the front of the building. As the second alarm companies arrived, he ordered Hyannis Engine 823 to pump the hydrant supplying Engine 263 and West Barnstable Engine 296 to pump the hydrant supplying Engine 305. Hyannis Fire unit 821 was assigned the RIT. More handlines and Ladder 307's ladder pipe were put into operation. After realizing that the fire was not darkening down, a third alarm was requested. Upon the arrival of third alarm companies, they were assigned various tasks.
4. The fire began to darken down and the gas meter on the A side, to the left of the front door, could be accessed. Captain Greene shut the gas supply off below the meter. At this time, the fire around the regulator went out, however the fire coming from the ground continued to burn until National Grid arrived on scene and shut the gas supply off at the street. Fire companies continued with extinguishment and overhaul after the bulk of the fire was brought under control at 2151 hours. Captain Eldridge remained on firewatch with a five man crew from Ladder 307 overnight.
5. I returned to the scene at 0930 hours on March 10, 2009. An examination of the fire scene was conducted. This examination was conducted in a systematic method, beginning areas of least amounts of fire burning and damage and proceeding to areas of greatest amounts of fire burning and damage. The heaviest fire damage was located in the two story, main portion of the building. Fire damage extended to the one and one half story kennel office area on the D side and the one story kennel area on the B side. The greatest fire damage was located in the B side half of the main portion of the building. The A side wall had been blown outward and was resting on the ground and the several windows and window frames were located on the ground approximately 75 feet from the building. All remaining windows in the main portion of the building self vented during the fire. They all exhibited overlapping fire damage. A second floor deck on the B side of the building had blown off the wall and was resting partially in a tree and partially on an eight cylinder auxiliary generator. The first floor of this AB corner housed the "surgical suite" for the animal hospital. The second floor in the AB corner sustained heavy fire damage and the roof had collapsed into the first floor which, in turn, collapsed into the basement below.
6. The property owner's insurance company (CNA) provided this investigation with heavy equipment, which was used to remove some of the overhead hazards, such as the deck and the tree it was resting on. Under the deck was the eight cylinder compressor. This natural gas fueled compressor was fed by a separate service installed downstream of the meter in 2006. A second line downstream feeds the furnace and hot water heater. The Kohler auxiliary generator (model # 50RZ282) was purchased and serviced by South Shore Generator Service, Inc. in East Wareham. South Shore Generator President Harry Clark responded to the scene to assist in this investigation. According to Mr. Clark, the generator had undergone routine service on March 2, 2009 and no issues were discovered or reported. The system is designed to automatically start upon the signal of a 88-90 per cent voltage drop. The system also conducts an automatic self test, weekly. This is the test that Dr. Munson reports occurs on Tuesday mornings. The fire damage to the generator appeared to be external and directional to the building.
7. Several tests were conducted on the gas service to the property. The gas service was supplied by National Grid. Representatives of National Grid John Higgins and William Peck, along with a work crew were on scene to assist with the testing. All testing was done under the control of the State Police Fire and Explosion Investigation Section and the Commonwealth of Massachusetts Department of Public Utilities. Refer to the report of DPU Public Utilities Engineer Paul Grieco for details.
8. According to Mr. Grieco, the property was serviced by a four inch steel main, installed under the street in 1972. The property had two services, one to the home and one to the animal hospital. The one inch plastic Plexco yellow pipe was installed to the animal hospital in 1997. The MAOP was 60 psig and the

Fire Investigation Summary Report

operating pressure at the time of the incident was 54.8 psig. Mr. Grieco ordered a leak survey of the main under the street and the service to the house. These leak surveys were conducted using a mobile leak survey vehicle on the main and by making bar holes and taking readings on the service to the home. The results were negative, with no gas leakage detected on the main or the service to the home. Odorant tests were conducted on the night of the incident by National Grid with adequate readings. Those records were to be made available to Mr. Grieco.

9. The service to the animal hospital was pressure tested from where it was cut on the previous night, just downstream of the curb valve, to the High Pressure Cock (HPC) on the outside service riser. It should be noted that the service riser and meter were located on the A side wall to the right of the blown out wall. The pressure test was conducted a 55 psig. The test did not hold and there was a leak indication near the corner of the building near the air conditioning unit, upstream of the HPC. The service to the animal hospital was installed in a conduit that ran under the driveway. The service was then excavated and pressure tested from the curb valve to the point on the other side of the driveway. (approximately 295 feet.) The test held at 55 psig for eighteen minutes.

9. The area of the leakage indication was excavated by hand. The leakage during the pressure test was visible, as particles dirt were being blown upward. Upon digging in this area, this investigation first uncovered a white tracer wire. One section of the wire was charred and burned through. Two red conduits were next unearthed. The bottom side of these conduits were charred, melted and burned through, creating an opening in the conduit. This investigation later learned that these conduits had been installed by Comcast. This investigation next excavated the two direct buried, electrical service feeds. Each of these three cable feeds serviced the two meters on the A side wall of the building. The service was cut just below the meters and the meters placed aside to prevent spallation during the excavation process. One of the electrical feeds was heavily damaged. One section of feed was burned so badly that it had solidified the soil around it. One cable of this feed was nicked and the conductor was burned in that location. Excavation of the area continued with the one inch Plexco gas line being located directly under this electric feed. The gas line was charred and melted on the top of the pipe and three holes were visible, burned through the pipe. The excavation of this area revealed that all the utilities entered the structure in the same proximity, where at this point, the Comcast conduits, the electrical service feeds and the gas line cross paths.

10. The electrical service was examined and documented by Department of Fire Services Electrical Consultant J. Kevin Payton. NStar representative Peter Mamey was on scene. He advised that the electrical service to the property is supplied by three services, one to the house and two to the animal hospital. These feeds were the only feeds off a pole located on Osterville/West Barnstable Road and this pole was equipped with a transformer. According to Mr. Mamey, the cut outs at this pole did not activate on the previous evening and NStar responded to the scene at 1 a.m. to terminate power to the animal hospital and restore power to the home. Mr. Payton examined the two 200 amp electrical service panels, which were removed from the basement in the AB corner of the main structure. Refer to his report for details of the examination of the electrical service to the property.

11. The two remaining sections of service, from the damaged area to the HPC and from the damaged area to the cut made on the other side of the driveway were pressure tested and no leaks were detected. The meter facilities from the HPC to the end of the meter manifold were pressure tested and some leakage was found. According to Mr. Grieco, the first regulator had been melted and pushed out by the by the spring and there were soap bubbles at the top tap at the union and at the insulating valve. It is the belief of this investigation that these leakages were the result of the heat damage.

12. At the request of the Department of Public Utilities, some items were secured as evidence for examination at a later date. This officer took initial custody of a two pieces of tracer wire, melted in four places, a four foot section of yellow Plexco piping dated 8-8-97, melted through in three places, three sections of burned electrical feed and a bag of charred remains of the conductors, burned into the soil. The tracer wire and gas line were released to George Santi of the DPU, for further testing on June 2, 2009 and the electrical components were turned over to the property owner, Dr. Munson for examination by interested insurance parties on June 5, 2009

Fire Investigation Summary Report

13. Based upon the information developed through the excavation and pressure tests, this investigation formed several opinions. An electrical event occurred in one of the electrical feeds to the animal hospital. This event generated enough heat to burn the feed into the earth. The heat of the cable was enough to melt the plastic gas line and two red plastic conduits, where the conduits, gas line and electrical feed crossed paths. Once the three holes were burned through the gas line, natural gas was released and flowed into the structure. The most likely path of travel was through the now open red conduits. However, it is possible that gas flowed through a nearby cellar window. The glass had been removed from this window and replaced with insulated board. Two former dryer vents were located in this window, sealed only with newspaper. Once the natural gas flowed into the basement area of the structure, the gas was ignited by either the hot water heater or the furnace. Due to the extensive damage, this investigation was unable get into the basement to determine conclusively which was the source of ignition. Also, the exterior generator could not be definitively ruled out as a source of ignition, however the blast and fire damage is consistent with the ignition coming from within the structure.

III. CONCLUSIONS:

1. Based upon the information developed through this investigation, it is the opinion of this officer that this explosion and subsequent fire originated with the ignition of natural gas vapors, released from the gas line which was melted by the electrical service feed. The cause was accidental. This officer respectfully requests that this case be considered closed-completed.

Evidence

Gathered By: Fire Marshal's Office

Description / Explanation / Comments:

Items secured at scene and custody transferred to Department of Public Utilities:
one four foot section yellow plexico gas pipe
two pieces of white tracer wire
Items secured at scene and custody transferred to property owner:
box with burned remains of electrical conductor

Photos

Taken By: Other (see comments)

Description / Explanation / Comments:

Scene documented with photos taken by Tpr Brian Sullivan of the State Police
Crime Scene Services Section

K-9

K-9 Not Used

Occupants

No Known Occupants

Injuries

No Known Injuries

Fire Investigation Summary Report

Owner

Doing Business As: Cape Cod Animal Hospital

Munson, Scott E. (Trustee-Osterville W. Barnstable Road REalty Trust) – 1411 Osterville W.
Barnstable Road Marstons Mills, MA 02648
DOB: ████████ SSN: ████████, Phone: 508 420-3821 home, 508 681-5233 cell

Reported By

McMorrow, Heidi – 1411 Osterville W. Barnstable Road Marstons Mills, MA 02648
DOB: ████████ SSN: ████████ Phone: 508 420-3821

Discovered By

Munson, Scott E – 1411 Osterville W. Barnstable Road Marstons Mills, MA 02648
DOB: ████████ SSN: ████████ Phone: 508 420-3821 home, 508 681-5233 cell

Witnesses

No Known Witnesses

EXHIBIT 18

Photos of Electric, Gas, Comcast Conduit and
Damage to Gas Pipe





