



COMMONWEALTH OF MASSACHUSETTS

OFFICE OF CONSUMER AFFAIRS AND BUSINESS REGULATION

**DEPARTMENT OF
TELECOMMUNICATIONS & ENERGY**

PIPELINE ENGINEERING AND SAFETY DIVISION

INCIDENT REPORT

82 Marsh View Road, Chatham, Massachusetts
October 30, 2002

INCIDENT REPORT:

82 Marsh View Road, Chatham, Massachusetts

October 30, 2002

TABLE OF CONTENTS

I.	<u>INTRODUCTION</u>	Page 1
A.	<u>Scope of this Investigation</u>	Page 1
B.	<u>Overview of the Incident</u>	Page 2
II.	<u>THE DEPARTMENT'S INVESTIGATION</u>	Page 3
A.	<u>Description of the Site</u>	Page 3
B.	<u>Description of the Scene</u>	Page 4
C.	<u>KeySpan Energy Delivery Company</u>	Page 5
D.	<u>The Contractor</u>	Page 5
E.	<u>The Maintenance Man</u>	Page 6
F.	<u>Examination of the Pipe</u>	Page 7
III.	<u>FINDINGS AND CONCLUSIONS</u>	Page 7
A.	<u>Findings</u>	Page 7
B.	<u>Conclusions</u>	Page 8
IV.	<u>LIST OF EXHIBITS</u>	Page 9

I. INTRODUCTION

A. Scope of this Investigation

The Pipeline Engineering and Safety Division of the Massachusetts Department of Telecommunications and Energy (“Department”), pursuant to G. L. c. 164, § 105A and G. L. c. 82, § 40 (“Dig Safe”) has investigated a natural gas (“gas”) explosion (“incident”) at 82 Marsh View Road, Chatham, that occurred on October 30, 2002. The incident resulted in a flash fire, damaging the house at that address. One person, a maintenance man working for the homeowner, was hospitalized with smoke inhalation. KeySpan Energy Delivery Company (“KeySpan” or “Operator”), the operator of the pipeline reported the incident to the U.S. Department of Transportation/Office of Pipeline Safety (Exh. 1).

The Department’s investigation included a review of compliance with the Dig Safe law. The procedures to determine the nature and extent of Dig Safe violations are contained in 220 C.M.R. §§ 99.00 et seq. In addition, these regulations set forth the standards used to determine the amount of civil penalties to be imposed. On December 30, 2002, the Department issued a Notice of Probable Violation (“NOPV”) to Solid Earth Technologies (“SET” or “Contractor”) (Exh. 2). In the NOPV, the Department alleged that a violation of the Dig Safe law occurred on October 30, 2002 on Marsh View Road, Chatham. SET signed a Consent Order (Exh. 3) on January 7, 2003.

As part of the Department’s annual certification process by the United States Department of Transportation (“DOT”), the Department must report to the DOT

“[e]ach accident or incident . . . involving a fatality, personal injury requiring

82 Marsh View Road, Chatham, Massachusetts (October 30, 2002)

hospitalization, of property damage of loss of more than an amount the Secretary establishes, any other accident the [Department] considers significant, and a summary of the investigation by the authority of the cause and circumstances surrounding the accident or incident.”

See 49 U.S.C. § 60105(c)(1)(B).

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

The Department has established procedures for determining the nature and extent of the violations of codes and regulations pertaining to the safety of pipeline facilities and the transportation of gas, including, but not limited to, 220 C.M.R. §§ 101.00 through 113.00.

See 220 C.M.R. §§ 69.00 et seq. The Department also enforces the DOT safety standards for gas pipeline systems and the drug and alcohol testing regulation as set forth in 49 C. F. R. §§192.00 et seq. and §§ 199.00 et seq. and 220 C.M.R. § 69.12.

B. Overview of the Incident

At approximately 8:30 p.m. on October 30, 2002, KeySpan attempted to notify the Department of a fire at 82 Marsh View Drive, Chatham. On October 31, 2002, KeySpan reported that a Contractor, SET, had punctured the one-inch diameter plastic service line¹ while constructing a walkway to the house. The resulting failure allowed gas to leak into the house causing a fire where one person was hospitalized. The Department sent an investigator to the scene.

On October 28, 29 and 30, 2002, SET was constructing the plank walkway or

1 A service line is a distribution line that transports gas from a common source of supply to a customer meter . . . 49 C.F.R. §192.3: Definitions.

82 Marsh View Road, Chatham, Massachusetts (October 30, 2002)

footbridge over marshy terrain to the house at 28 Marsh View Road. The walkway was anchored by metal stakes or piers. While drilling a pier into the marshy ground, SET contacted the high pressure² plastic service line, owned and operated by KeySpan. The service line was encased in a plastic conduit. The pier penetrated the conduit and the plastic service line. The small service line puncture allowed gas to enter the basement. The ignition source may have been a light switch operated by a maintenance man as he was leaving the half-basement (Exh. 4). Some of the insulation and the electrical wiring in the house was damaged by the resulting fire.

The Department's investigation finds that the contractor, SET, failed to notify Dig Safe prior to excavating in the vicinity of KeySpan's underground facilities. The Dig Safe law requires that notification be tendered at least 72 hours before excavating.

II. THE DEPARTMENT'S INVESTIGATION**A. Description of the Site**

Marsh View Road is located in a residential area of Chatham adjacent to a salt water marsh. The houses are single family and are supplied with gas by means of a two-inch diameter plastic gas main (Exh 5). On the day of the incident, the main was operating at approximately 52 pounds per square inch gauge ("psig") (Exh. 6).

The house at 82 Marsh View is located on an island in the marsh (Exh. 7). A wooden walkway connects the island to Marsh View Road. The house is a one-story wood-frame

2 A high pressure system is a system in which the pressure in the main is higher than the pressure provided to the customer. 49 C.F.R. §192.3: Definitions.

construction, with a half-basement (Exh. 8).³

KeySpan tied the 608-foot plastic service line to the two-inch diameter plastic main in March 2002 (Exh. 9). The section of the service line that traversed the marsh was encased in a black plastic conduit. The conduit had been placed in the marsh by means of directional drilling. Similar conduits were installed nearby to carry telephone and electric cables (Exhs. 10a, b). The gas service line exited the conduit about 20 feet from the house (Exh. 11) and entered the half-basement through the northwest foundation wall. The customer meter and regulator were located outside of the building (Exh. 12).

B. Description of the Scene

On October 31, 2002 at about 12:30 p.m., an investigator from the Department's Pipeline Engineering and Safety Division ("Division") arrived at 82 Marsh View Road. He met with representatives from KeySpan and the Contractor.

The Division investigator observed that there was some fire and smoke damage in the half-basement. There was fire damage to the wood structure, electrical wiring and insulation in the half-basement (Exhs. 13a, b). The upper level of the house displayed no visible damage (Exh. 14).

The Department inspector observed that the curb valve⁴ was closed and the service line had been cut and capped near the house (Exh. 15). On October 31, 2002, KeySpan excavated

3 A half basement is a basement with a height of approximately 4 feet.

4 A curb valve is a manually operated valve on a service line located at or near the property line. Department regulations require that all high pressure service lines have a curb shutoff. 220 C.M.R. 101.06(14).

82 Marsh View Road, Chatham, Massachusetts (October 30, 2002)

and disconnected the service line downstream of the curb valve, capping the live end. Then the service line was pulled out of the conduit (Exh. 16). The service line pipe had a puncture in it. There were some scuff marks on the pipe near the puncture (Exh. 17). Both the marks and the hole were located about 83 feet from the street end of the conduit.

C. KeySpan Gas Company

KeySpan was notified by the Chatham Fire Department (CFD) at 4:52 p.m. on October 30, 2002, of a fire and gas odor at 82 Marsh View Road. The service person that arrived found a gas reading of 30 percent gas in air at the foundation wall. In the lawn and garden in front of the house, the crew found 97 percent gas in air (Exh. 18). The gas concentration in the half-basement was 25 percent of the lower flammable limit (LFL).⁵ The crew shut the gas off at the curb valve after locating the probable area of the leak (Exh. 19). The service was also cut and capped near the house. After making the area safe, the crew left for the day.

D. The Contractor

The homeowner hired SET to reconstruct the walkway connecting the island to mainland. The walkway paralleled and was close to the gas service line (Exh. 9). The piers were drilled into the marsh (Exh. 20). Most of the piers were installed about six months prior to the incident (Exh. 4).

On Monday October 28, 2002, SET began installing additional new piers. SET told the

5 The LFL of natural gas is five percent gas in air; the upper flammable limit is 15 percent gas in air.

82 Marsh View Road, Chatham, Massachusetts (October 30, 2002)

Department investigator that the pier at the location of the service line damage was drilled on Monday, October 28, 2002 (Exh. 21). SET continued working at the site the following two days. SET admitted that it had failed to tender notification to Dig Safe prior to installing the piers (Exh. 4).⁶ Instead, SET called the homeowner's maintenance man on Wednesday afternoon. The maintenance man said that the Contractor asked him where the gas line was located. SET told the maintenance man that they had to do some additional work on the piers (Exh. 4).

E. The Maintenance Man

After visiting the house on October 30, the homeowner called the maintenance man and asked him "... to check an unknown odor at the house." (Exh. 4). The maintenance man arrived at the house at about 3:15 p.m. The maintenance man smelled no gas outside or in the first floor of the house. After opening a hatch from the bedroom to the half-basement, he turned on the light switch and went down stairs. He stated that he smelled something, but he did not think it was natural gas. While going upstairs, he turned off the light switch (Exh. 22), and he saw a flash and some burning paper. He went upstairs and called the Chatham Fire Department. Upon seeing flames and smoke coming from the half-basement hatch, he

6 The Dig Safe Law, G. L. C. 82, § 40, requires an excavator to use care when excavating near underground utilities. G. L. c. 82, § 40C states, in the relevant part:

When excavating in close proximity to the underground facilities of any company when such facilities are to be exposed, non-mechanical means shall be employed, as necessary to avoid damage in locating such facility and any further excavating shall be performed employing reasonable precaution to avoid damage to the underground facilities, including but not limited to, . . . penetrating or destruction of any pipe . . . protective coating thereof, or damage to any pipe. . . .

82 Marsh View Road, Chatham, Massachusetts (October 30, 2002)

unsuccessfully employed a small fire extinguisher and a garden hose. The dark smoke then forced him from the house. Shortly after, the Chatham Fire Department extinguished the fire. The maintenance man was admitted to Cape Cod Hospital overnight for treatment of smoke inhalation.

F. Examination of the Pipe

The service pipe was examined on the day after the incident by the Department investigator, representatives of KeySpan, and representatives of the Contractor. The service pipe had been cut and capped near the house on the previous day by KeySpan to make the area safe. The street end of the service pipe and the conduit had not been exposed (Exh. 21).

Once the street end of the service pipe and the conduit were exposed, the service pipe was extracted. There were scuff marks on the service pipe surface and there was also a hole in the service pipe (Exh. 17). The scuff marks and the hole were located 83 feet from service line cut made on the island (Exh. 21). On October 30, 2003, KeySpan excavated a small hole near the pier in question and a pool of water formed. KeySpan observed bubbles in the water. These were located in the marsh and were 83 feet from where the service line had been cut. (Exhs. 23a, b).

III. FINDINGS AND CONCLUSIONS**A. Findings**

- (1) KeySpan Energy Delivery installed a two-inch diameter plastic main under Marsh View Road, Chatham in 2000.
- (2) KeySpan Energy Delivery installed the plastic service line to #82 Marsh View Road, Chatham, on May 12, 2002.
- (3) A one-inch diameter plastic service line connected the house at #82 Marsh View Road to the two-inch diameter plastic main on Marsh View Road.

Incident Report

Page 8

82 Marsh View Road, Chatham, Massachusetts (October 30, 2002)

- (4) The service line was inserted in a plastic conduit in the marsh area.
- (5) Dig Safe was not notified by the Contractor of the work that began on October 28, 2002.
- (6) The Contractor was drilling piers for a new walkway.
- (9) The Homeowner first noticed an odor of gas in the house two days after the pier was installed.
- (10) The Maintenance man was in the house when the flash fire occurred.
- (11) The Maintenance man attempted, unsuccessfully, to put out the fire.
- (12) The Maintenance man suffered smoke inhalation, requiring hospitalization.
- (13) The flash fire damaged the wood structure, electrical wiring and insulation in the half-basement of the house.
- (14) The odorant level in the gas meet regulatory requirements.

B. Conclusions

- (1) The contractor, Solid Earth Technology is found to be in violation of the notification provisions of G. L. c. 82, § 40.
- (2) A pier, drilled by the Contractor on October 28, 2002, punctured the service line and the conduit in which it was located..
- (3) The puncture allowed gas to escape into the conduit.
- (4) Some of the gas flowed through the conduit to the island and into the ground.
- (5) The gas flowed into the half-basement of the house through penetrations in the foundation wall.
- (5) The gas was ignited by the maintenance man turning off the light switch.
- (6) The flash fire was attributable to hazardous gas concentrations in the house.