

U.S. Department of Transportation
Research and Special Programs Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

Mr. Christopher J. Bourne
Acting Director, Pipeline Engineering and Safety Division
Massachusetts Department of Telecommunications & Energy
One South Station
Boston, MA 02110

Dear Mr. Bourne:

We have considered your letter of October 13, 2004, notifying us that the Massachusetts Department of Telecommunications & Energy (MDTE) has granted KeySpan Energy Delivery Services Company (KeySpan) a waiver from compliance with the Federal pipeline safety regulation at 49 CFR 192.619(a)(2)(ii). The waiver permits KeySpan to uprate approximately 8.2 miles of its Bourne distribution main line from 200 psig to a maximum allowable operating pressure (MAOP) of 270 psig without additional pressure testing.

Section 192.619(a)(2)(ii) requires that no person may operate a segment of pipeline at a pressure of 100 psig (689 kPa) or greater, unless the pipe has been properly pressure tested. For the Bourne line, which is in a Class 3 location, the regulation requires pressure tests to 1.4 or 1.5 times the desired MAOP, depending on the installation date of various pipe sections.

KeySpan sought the waiver because of difficulties in pressurizing the line segment above 270 psig. The primary difficulty is that the 8.2 mile Bourne line is one of only two gas mains serving Cape Cod. A shutdown of the Bourne line for pressure testing would disrupt Cape Cod's gas supply and affect approximately 95,000 customers.

KeySpan has taken steps to ensure the safety of this pipeline by coating and cathodically protecting all of its buried pipe, including the Bourne line. The Bourne line has not suffered any corrosion leaks since being placed into service. The line also has an automatic shutdown valve upstream and a check valve downstream of the Bourne Bridge to automatically stop the flow of gas in the event of a failure. All valves and fittings on the Bourne line will be checked to ensure that they are rated at 270 psig or greater. Replacement valves and fittings will be installed as required. Finally, the 8.2 mile segment of pipeline will be uprated in accordance with the requirements of 49 CFR Subpart K, Uprating.

Therefore, we have no objection to the waiver as granted by the MDTE.

If we can be of further assistance in this matter, please contact me or James Reynolds of my staff at (202) 366-2786.

Sincerely,
Stacey Gerard
Associate Administrator
for Pipeline Safety

Massachusetts Department of Telecommunications & Energy
One South Station
Boston, MA 02110

October 5, 2004

Ms. Stacey Gerard
Associate Administrator for Pipeline Safety (DPS-1)
Research and Special Programs Administration
Department of Transportation
400 Seventh Street, S.W.
Washington, D.C. 20590

RE: Waiver of Pipeline Safety Regulations

Dear Ms. Gerard:

Being a certified agent under section 60105, Public Law 103-272, the Massachusetts Department of Telecommunications and Energy has approved a waiver to Keyspan Energy Delivery ("Keyspan") from the requirements of Title 49 C.F.R. Part 192, § 192.619(a).

The waiver allows Keyspan to establish a new M.A.O.P. of 270 psig for a portion of their Bourne line without meeting the pressure test requirements of Title 49 C.F.R. Part 192, §192.619(a)(2)(ii). The main is one of only two feeder lines serving the Cape Cod area. It cannot be removed from service to be pressure tested because of supply requirements. Keyspan will conduct an uprating in accordance with Title 49 C.F.R. Part 192, Subpart K - Uprating.

As required by section 60118(d), Public Law 103-272, I am forwarding a copy of the waivers to your office with the understanding that the waivers will be effective within 60 days of notification unless the Secretary objects to the waiver in writing before the effective date. Thank you for your support in this matter.

Very truly yours,
Christopher J. Bourne
Acting Director, Pipeline Engineering and Safety Division

Commonwealth of Massachusetts
Office of Consumer Affairs and Business Regulation
Department of Telecommunications & Energy

October 4, 2009

D.T.E. 04-67

Petition of KeySpan Energy Delivery for approval by the Department of Telecommunications and Energy for a waiver, pursuant to 220 C.M.R. § 101.02(2), from the requirements in 49 C.F.R. Part 192, §192.619(a), inclusive, for uprating the maximum allowable operating pressure of a high pressure pipeline traversing through the Town of Bourne, Massachusetts.

APPEARANCE: Patricia J. Crowe, Esq., Senior Counsel
KeySpan Energy Delivery
52 Second Avenue Waltham, MA 02451
-and-
David E. Weber, Manager - Regulatory Compliance
KeySpan Energy Delivery
52 Second Avenue
Waltham, MA 02451

I. INTRODUCTION

On June 29, 2004, Colonial Gas Company d/b/a KeySpan Energy Delivery ("KeySpan"), an intrastate natural gas distribution company that operates in Massachusetts, filed a petition with the Department of Telecommunication and Energy ("Department") seeking a waiver of the pressure testing requirement for the determination of the maximum allowable operating pressure ("MAOP") of a twelve-mile long portion of a pipeline. The request was made pursuant to 220 C.M.R. § 101.02(2). On August 19, 2004, KeySpan amended its petition by reducing the length of pipeline subject to the waiver from twelve miles to 8.2 miles. KeySpan seeks to elevate the MAOP of a steel pipeline to a pressure of 270 pounds per square inch gauge ("psig") without subjecting the pipeline to a test pressure of 1.5 times the new MAOP.

II. REGULATORY REQUIREMENTS

The minimum federal safety standards for transportation of natural gas by pipeline are contained in Title 49 C.F.R. Part 192 ("Part 192").¹ The Department may grant a waiver of any provision of Part 192. The Department's regulations, specifically 220 C.M.R. §101.02(2), state:

The [Department] may issue a waiver to a gas corporation or municipal gas department from the provision of Part 192 in Title 49 of the Federal regulations providing that the waiver pertains to an intrastate facility and the D.P.U. gives notice of such waivers to the Department of Transportation at least 60 days before the waiver becomes effective.

Any waiver of any of the provisions of Part 192 granted by the Department is subject to the approval of the U.S. Department of Transportation's Office of Pipeline Safety ("OPS"). 49 U.S.C. § 60118(d) states in relevant part that:

the State authority may waive compliance with a safety standard to which the certification . . . applies in the same way and to the same extent the Secretary may waive compliance . . . However, the authority must give the Secretary written notice of the waiver at least 60 days before its effective date. If the Secretary makes a written objection before the effective date of the waiver, the waiver is stayed

III. THE COMPANY'S PROPOSAL

According to Keyspan, Cape Cod is the fastest growing area of its service territory. In addition to the year-round population, there is a large influx of tourists every summer. As a result, the normal load demand and peak load demand for gas on Cape Cod has been steadily increasing. Currently, KeySpan serves approximately 95,000 natural gas customers on Cape Cod (Petition at 3).

KeySpan explained that it has met part of the increased demand by increasing the MAOP in the Sagamore Line, one of the two major distribution lines on Cape Cod. In 2002, KeySpan increased the MAOP of the Sagamore Line to 270 psig.² During the severe cold in the winter of 2003-2004, however, KeySpan experienced peak demand for gas on Cape Cod. Portable liquefied natural gas and compressed natural gas units were placed into temporary service to maintain system pressures and prevent customer outages. In spite of these measures and the increased MAOP of the Sagamore Line, KeySpan experienced some customer outages due to low-system pressures. In order to continue to meet the increased normal and peak demands, KeySpan stated that it needed to uprate a portion of the other major distribution line on Cape Cod (id. At 3,4).

¹ Part 192.619 sets out four methods for determining the MAOP of a pipeline. A pipeline's MAOP may not be set higher than the lowest of the four values determined below using:

- (1) the design pressure of the weakest part (of each valve, fitting, and piece of pipe);
- (2) pressure testing of the pipeline after it is built to a pressure higher than the MAOP (determined by multiplying the MAOP by a factor of 1.5);
- (3) the highest pressure at which the pipeline was operated between July 1, 1965 and July 1, 1970 (applicable to pipelines built before Part 192); and the safest MAOP based on a review of the history of a pipeline, including investigating known corrosion and the operating pressure of the pipeline.

² On September 3, 2002, the Department granted a waiver of § 192.619(a) which allowed KeySpan to increase the MAOP of the Sagamore Line from 200 psig to 270 psig without conducting a pressure test at 150 percent of the new MAOP. D.T.E 02-16-J.OPS approved this waiver by letter dated January 28, 2003.

Two major distribution lines supply gas to KeySpan customers on Cape Cod: the Sagamore Line and the Bourne Line. The Sagamore Line extends from one of Algonquin gas Transmission Company's ("Algonquin") meter stations in the Town of Bourne, crosses over the Cape Cod Canal on the Sagamore bridge, and extends to KeySpan's LNG plant in the Town of Yarmouth. The Sagamore Line is 23.9 miles long. This line's MAOP was updated from 200 PSIG to 270 PSIG in 2002. This line services about 60 percent of KeySpan's customers on Cape Cod (id.)

The second line, the Bourne Line, begins at another Algonquin meter station in Bourne. This line crosses the Cape Cod Canal on the Bourne Bridge. On the other side of the Cape Cod Canal, the line extends through the Otis Air National Guard Base ("Otis ANGB"), also in Bourne. It continues through the Towns of Falmouth and Mashpee and into the Town of Barnstable. The line is approximately 27.6 miles long (Petition at 4; Exh. 1). In order to maintain system reliability, KeySpan proposes to increase the MAOP of an 8.2 mile-long section of the Bourne Line from 200 psig to 270 psig (Amendment Letter at 1, Table 1A; Exh. 1A). KeySpan will build a district regulator station at Connery Avenue and West Truck Road on the Otis ANGB. This district regulator station will reduce the MAOP from 270 psig to 200 psig (Amendment Letter at Table 1A; Exh. 1A).

About 6.3 miles of pipe is twelve-inch nominal diameter (Amendment Letter at Table 1A). The remaining 1.9 miles of pipe is eight-inch and ten-inch nominal diameter (id.). Nearly all of the pipe was installed after 1971, when Part 192, the Federal gas pipeline safety code, went into effect. During 2003 and 2004, KeySpan replaced nearly three miles of bare steel pipe with coated steel pipe (Petition at 3, Amendment Letter at Table 1A). About 4.1 miles of pipe was installed between 1980 and 1993 (Amendment Letter at Table 1A). The remaining 1.1 miles of pipe was installed circa 1963 (Amendment Letter at Table 1A).

According to KeySpan, all of the buried pipe is coated and cathodically protected in accordance with Part 192 and 220 C.M.R. § 101.00 et seq., the Massachusetts gas pipeline safety code (Petition at 4). The pipe located on the Bourne Bridge is coated, except where it rests on pipe supports. The pipe is painted at those locations (id.). There have been no corrosion leaks on the line during its entire service history (id. at 7).

KeySpan stated that all of the valves and fittings on the line will be inspected to ensure that they have a design pressure of at least 270 psig. Any of these components that have a design pressure of less than 270 psig will be replaced before the update begins (Petition at 5). According to the design formula contained in Part 192, the weakest portion of the line has a maximum design pressure of 686 psig, which is well above the proposed MAOP of 270 psig. KeySpan explained that, after the update is completed, the weakest portion of the line will be at 19.7 percent of its specified minimum yield strength ("SMYS") (Petition at Table 3). This is below the 20 percent of SMYS limit set for distribution lines contained in Part 192.3.

The pipeline crosses one bridge, the Bourne Bridge which is over the Cape Cod Canal. An expansion loop in the pipe relieves thermal expansion stresses. An automatic shutdown valve is located upstream of the bridge and a check valve is located downstream of the bridge. These valves would automatically stop the gas flow if the pipe on the bridge failed (Petition at 7).

There are eight main line valves in the pipeline. Each of these valves has been designated as a primary valve by KeySpan (Petition at 5; Amendment Letter at Exh. 2A). Each primary valve must be inspected and serviced at least once each calendar year to comply with Part 192.747(a), which states:

Each valve, the use of which may be necessary for the safe operation of a distribution system, must be checked and serviced at intervals not exceeding 15 months, but at least once each calendar year.

There are four district regulator stations connected to the Bourne Line (Amendment Letter at Exhibit 2A). KeySpan has designated the inlet valves to these stations as primary valves (Petition at 5). These valves will also be inspected and serviced annually as previously described (id.).

IV. ANALYSIS AND FINDINGS

After the update is completed, KeySpan's Bourne Line will meet three of the four requirements of Part 192.619(a). The design pressure of the weakest part is 686 psig, well above the proposed MAOP of 270 psig. That design pressure was determined using the formula contained in Part 192.105(a) (Petition at 8).

The history of the line has been reviewed by KeySpan. All of the nearly three miles of unprotected, bare steel pipe was replaced in 2003 and 2004 (id. at 3). All butt welds on the replacement pipe were radiographically inspected in accordance with 220 C.M.R. 109.10(3) (id.). These replacement sections of pipe were pressure-tested to 415 psig which is above the pressure required to establish an MAOP of 270 psig (id.).

The remaining 5.2 miles of pipe was installed between 1963 and 1993. All of this pipe was coated and

cathodically protected from the time of installation. No corrosion leaks have ever occurred on this pipe (id. at 7). All of the pipe was pressure tested to establish an MAOP of 200 psig (Amendment Letter at Table 1A).

All of the valves and fittings on the line will be checked before the uprate begins to ensure that they are rated to operate at 270 psig or more. Any valve or fitting which is not rated for 270 psig or more will be replaced (Petition at 5).

KeySpan intends to uprate the pipeline in accordance with the requirements of part 192, Subpart K (Petition at 1). These requirements include increasing the pressure in stages from 200 psig to 270 psig. The entire line will be leak surveyed after each pressure increase stage. Any leaks that are located will be repaired before the uprating continues.

The only requirement which would prevent KeySpan from operating the Bourne Line at an MAOP of 270 psig would be the lack of a pressure test to 150 percent of the new MAOP. The line would have to be removed from service in order for KeySpan to perform this pressure test. This would leave the Sagamore Line as the only supply source for KeySpan's 95,000 customers on Cape Cod. That line, by itself, is not large enough to provide the required amount of gas for all customers (Petition at 3). Therefore, the Department grants Keyspan's request for a waiver of the pressure-testing requirements of Part 192, pursuant to our authority under 220 C. > M.R. § 101.02(2), and subject to the conditions discussed below.

Massachusetts and other states have previously granted waivers of the pressure testing provision, which have been subsequently approved by OPS. As previously noted, the Department granted a waiver later approved by OPS in 2002. That waiver allowed KeySpan to establish a new MAOP for the Sagamore Line of 270 psig.

OPS also approved waivers of the pressure testing requirement granted by Washington, Missouri, and Iowa. The Washington Transportation and Utilities Commission allowed an operator to uprate a pipeline to an MAOP of 250 psig, without conducting a pressure test (OPS Approval Letter to Washington Transportation and Utilities Commission, dated March 11, 1997).³ A gas distribution company in Missouri received a waiver from the Missouri Public Service Commission ("MPSC") allowing the uprating of a pipeline to 175 psig. The pipeline could not be taken out of service and pressure tested because it was the sole supply of gas for a city. OPS approved this waiver, in part, because the MPSC required the company to leak survey the line annually, a requirement that is more stringent than the federal requirement leak surveying the line once every five years (OPS Approval Letter to Missouri Public Service Commission, dated October 22, 1988). The Iowa Utilities Board waiver was approved in part because of the same annual leak survey imposed on the pipeline operator (OPS Approval Letter to Iowa Utilities Board, dated May 17, 2002).

In Massachusetts, leak surveys are required by regulation. 220 C.M.R. § 109.13(5) mandates that:

each pipeline shall be leak surveyed at least once each calendar year but at intervals of no more than 15 months. Leakage surveys shall be done with flame ionization detectors or equivalent devices.

The Bourne Line will have to be leak surveyed annually to comply with this regulation after its MAOP is increased to 270 psig

The Bourne Line's eight mainline valves and four regulator station inlet valves will be designated as primary valves (Petition at 5, Exh. 2A). KeySpan will be required by federal and state regulations to inspect and service each of these valves at least once each calendar year, in compliance with Part 192.747(a), which states:

Each valve, the use of which may be necessary for the safe operation of a distribution system, must be checked and serviced at intervals not exceeding 15 months, but at least once each calendar year.

With an operating pressure of 270 psig, the Bourne Line will approach transmission line classification. Primary valves on transmission lines must be partially operated annually to comply with part 192.745(a), which states:

Each transmission line valve that might be required during any emergency must be inspected and partially operated at intervals not exceeding 15 months, but at least once each calendar year.

In the interest of providing an extra margin of safety to the public, the Department finds that the twelve primary valves should be subject to the same maintenance requirement as transmission line valves. Thus, the valves should be partially operated at least once each calendar year, but no more than 15 months apart.

³ Approval Letters are available on the WinDOT database.

V. ORDER

Accordingly, after due consideration, it is:

ORDERED: KeySpan Energy Delivery is hereby exempted from the pressure testing requirement in 49 C.F.R. Part 192 and authorized to establish an MAOP of 270 psig for the Bourne Line in the Town of Bourne.

The foregoing exemption is granted subject to the following conditions:

1. Each of the twelve primary valves on the line shall be partially operated at least once each calendar year, but no more than 15 months apart. A record shall be made of the annual valve maintenance function to document keySpan's compliance with this requirement. Each such record shall be kept for at least five years.
2. Concurrent with the requirements of 220 C.M.R. §109.13, KeySpan shall perform leakage surveys annually.
3. KeySpan will submit a copy of the uprating procedure for the Bourne Line to the Department's Pipeline Engineering and safety Division for review at least seven days before the uprate begins.
4. KeySpan will notify the Department's Pipeline Engineering and Safety Division at least 48 hours before the uprate begins.

The foregoing waiver is granted with an effective date of December 1, 2004, provided that the Secretary of Transportation or his designee does not object to the waiver prior to the effective date.

By Order of the Department,
Paul G. Afonso, Chairman
James Connelly, Commissioner
W. Robert Keating, Commissioner
Eugene J. Sullivan, Jr., Commissioner
Deirdre k. Manning, Commissioner

Appeal as to matters of law from any final decision, order or ruling of the Commission may be taken to the Supreme Judicial Court by an aggrieved party in interest by the filing of a written petition praying that the Order of the Commission be modified or set aside in whole or in part.

Such petition for appeal shall be filed with the Secretary of the Commission within twenty days after the date of service of the decision, order or ruling of the Commission, or within such further time as the Commission may allow upon request filed prior to the expiration of twenty days after the date of service of said decision, order or ruling. Within ten days after such petition has been filed, the appealing party shall enter the appeal in the Supreme Judicial Court, sitting in Suffolk County by filing a copy thereof with the Clerk of said Court. (Sec. 5, Chapter 25, G.L. Ter. Ed., as most recently amended by Chapter 485 of the Acts of 1971).

KeySpan
52 Second Avenue
Waltham, Massachusetts 02451

June 29, 2004

Ms. Mary L. Cottrell
Secretary
Department of Telecommunications and Energy
Commonwealth of Massachusetts
One South Station
Boston, MA 02110

Subject: Petition for Waiver from the Provisions of 49 C.F.R. 192 for Upraffttg the
Maximum Allowable Operating Pressure ("MAOP") of Segments Of the Bourne Line, Cape Cod

Dear Ms. Cottrell:

Keyspan Energy Delivery New England ("KeySpan") hereby submits the attached Petition for Waiver, which requests the Department of Telecommunications and Energy ("the Department") to allow KeySpan to increase the MAOP of segments of a high-pressure, gas distribution main on Cape Cod, referred to as the Bourne Line, from 200 psig to 270 psig. Specifically, the waiver relates to 5.2 miles of the Bourne Line.

The waiver would exempt KeySpan from pressure testing specific main segments according to provisions of 49 C.F.R. Part 192, § 192.619, and authorize KeySpan to operate the main at 270 psig, as described in the Petition.

Historically, various state public utility commissions, including the Department, have granted such waivers. The Department's rule 220 C.M.R 101.02(2) specifically allows for waivers relating to uprating. These waivers are reviewed by the U. S. Department of Transportation, Office of Pipeline Safety. The waiver sought does not derogate from the safety objectives of Part 192. Therefore, KeySpan believes that granting this waiver is a prudent means to reliably and economically serve customers on Cape Cod.

Should the Department have any questions or concerns, please contact me in writing or at 781-466-5250. In the event that you are unable to reach me, feel free to call Patricia Crowe at 781-466-5131.

Enclosed is a check for the filing fee in the amount of \$100.00 payable to the Commonwealth of Massachusetts.

Respectfully,
David E. Weber, P.E.
Principal Engineer

NE Manager – Regulatory Compliance

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY
PETITION FOR WAIVER
WAIVER REQUEST DATE: June 29, 2004

Waiver Summary:))	Petitioner:
))	KeySpan Energy Delivery
Petitioner requests a waiver fro))	52 Second Avenue
49 C.F.R Part 192, §192.619(a) for uprating))	Waltham, MA 02451
The Maximum Allowable Operating Pressure))	
("MAOP") of a high-pressure main traversing))	Contact:
The Towns of Bourne and Falmouth,))	David E. Weber, P.E.
Massachusetts))	Principal engineer
))	KeySpan Energy delivery
))	(781)466-5250

I. Introduction

Pursuant to 220 C.M.R. 101.02(2), KeySpan Energy Delivery ("KeySpan" or "the Company") hereby petitions the Department of Telecommunications and Energy ("the Department") for a waiver from the provision of 49 C.F.R. Part 192, § 192.619, paragraph (a)(2)(ii), to uprate specific segments of an existing high-pressure distribution main, commonly referred to as the Bourne Line in its Cape Cod Division, to a Maximum Allowable Operating Pressure ("MAOP") of 270 pounds per square inch gauge ("psig") from an MAOP of 200 psig. Specifically, the request for waiver relates to 5.2 miles of the 27.6-mile Bourne Line.

Therefore, if this waiver were granted, KeySpan would not have to test specific segments of pipe to 1.4 or 1.5 times its MAOP; that is, 378 or 405 psig, respectively, to comply with § 192.619. Instead, the Company would increase pressures in these existing segments to 270 psig in accordance with the pertinent requirements of §§ 192.553 and 192.557, under Part 192, Subpart K - Uprating.

The Company understands that a waiver of the provision of Part 192 granted by the Department is subject to the approval by the federal Office of Pipeline Safety, which has 60 days to consider and act upon the Department's Order granting such a waiver.

II. Regulatory Requirements

The minimum federal safety standards for transportation of natural gas by pipeline are contained in Part 192. Specifically, § 192.619 Maximum Allowable Operating Pressure: Steel and Plastic Pipelines, in pertinent part, states:

- (a)...no person may operate a segment of steel or plastic pipeline at a pressure that exceeds the lowest of the following:
 - (1) The design pressure of the weakest element in the segment, determined in accordance with subparts C [Pipe Design] and D [Design of Pipeline Components] of this part [192]...
 - (2) The pressure obtained by dividing the pressure to which the segment was tested after construction as follows....
- (ii) For steel pipe operated at 100 p.s.i. (689kPa) gage or more, the test pressure is divided by a factor determined in accordance with the following table [Note: only the applicable part of the table is shown below]:

Class Location	Factors – segment Installed before Nov 12, 1970	Factors – segment Installed after Nov. 11, 1970
3	1.4	1.5

All of the segments of the pipeline are located in Class 3 locations. According to §192.5 Class Locations, paragraph (b)(3), a Class 3 location is:

- (ii) Any class location unit that has 46 or more buildings intended for human occupancy; or
- (ii) An area where the pipeline lies within 100 yards (91 meters) of either a building or a small, well-defined outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period. (The days and weeks need not be consecutive.)

Some of the pipe segments to be uprated were installed before 1970 and some after 1970 (see Table 1). Therefore, without a waiver, the pre-1970 pipe would have to be tested to at least 378 psig (the new MAOP of 270 psig x 1.4) and the post-1970 pipe would have to be tested to at least 405 psig (the new MAOP of 270 psig x 1.5).

The Department's regulation at 220 CMR § 101.02(2) states:

The [Department] may issue a waiver to a gas corporation or municipal gas department from the provision of Part 192 in Title 49 of the Federal regulations providing that the waiver pertains to an intrastate facility and the [Department] gives notice of such waivers to the [U. S.] Department of Transportation at least 60 days before the waiver becomes effective.

If the Secretary of the U. S. Department of Transportation makes a written objection 60 days before the effective date of the waiver, the waiver is stayed. 49 U.S.C.S. § 60118.

The Company will comply with the applicable parts of the requirements for uprating the Bourne Line, which appear at 49 CFR § 192.553 General Requirements and § 192.557 Uprating: Steel Pipelines to a Pressure that will Produce a Hoop Stress less than 30 percent of SMYS: Plastic, Cast Iron, and Ductile Iron Pipelines. A written uprating plan will be developed in accordance with § 192.553(c), which will be available to the Department.

All of the uprated segments of the Bourne Line will have a hoop stress that is less than 30 percent of SMYS (Specified Minimum Yield Strength). In fact, all of the segments will have a hoop stress less than 20 percent of SMYS, which will allow the pipeline to continue to be classified as a main as opposed to a transmission line (see Table 3). Consequently, the Bourne Line will be considered a pipeline that is subjected to low stress.

III. Reasons for Waiver Request

The Bourne Line cannot be shutdown to perform a pressure test at 378 psig or 405 psig, which is required by § 192.619(a) to establish an MAOP of 270 psig because it is one of two primary mains across the Cape Cod Canal. The two mains across the Cape Cod Canal - one across the Bourne Bridge (the Bourne Line) and the other across the Sagamore Bridge (the Sagamore Line) - serve approximately 95,000 customers on Cape Cod. These customers can only be served with an adequate and reliable gas supply if both mains are in continuous operation. Therefore, the Bourne Line cannot be shutdown to perform testing to comply with § 192.619(a). Moreover, additional pipelines cannot be readily built across the Cape Cod Canal and extended to locations to supplement the gas supply provided by the Bourne and Sagamore Lines.

Cape Cod's population has grown more rapidly than most areas in Massachusetts. Consequently, there is a growing demand for gas on the peninsula. In 2002, part of this demand was met by increasing the capacity of the Sagamore Line. This was accomplished by increasing the Sagamore Line's MAOP to 270 psig from 200 psig after a similar waiver of § 192.619(a) was granted by the Department. D.T.E. 02-16-J.

The Company's objective is to continue to provide an adequate and reliable gas supply to Cape Cod. In order to meet this objective, 5.2 miles of the Bourne Line must be uprated. KeySpan believes that granting this waiver is in the best interest of serving its existing and future customers in its Cape Cod Division.

IV. Replacement of Older Segments of the Bourne Line

In addition to the proposed uprating, the Company is replacing all of the older, noncathodically protected, 8-inch, bare steel pipe on the Bourne Line with new, coated, cathodically protected, 12-inch steel pipe. The segments of 12-inch pipe are being pressure tested at 415 psig to produce an MAOP of 275 psig. These segments are shown in Table 1. All of the joint welds of this pipe are radiographically tested and, if such tests indicate inadequacy, the welds are repaired or removed. These main replacements are scheduled to be completed in 2004.

The installation of new replacement pipe is being performed in compliance with the Massachusetts Energy Facilities Siting Board's Order in EFSB 02-1, which was issued by the Board on May 8, 2003.

V. Growing Demand and Reliability of Supply

KeySpan continually evaluates the ability of its assets to meet the demands of its existing and future customers by Stoner network analysis. Cape Cod is one of the fastest growing areas in Massachusetts and, subsequently, the fastest growing gas load for the Company. Cape Cod was, and still is, a resort and vacation mecca for hundreds of thousands of tourists a year. It has also become a retirement community, which is still growing. Today, it continues to develop as a suburban area.

After the extraordinarily cold winter in early 2004, the Company determined that peak-day load growth can be met by distribution system reinforcements and the increase of the MAOP for specific segments of pipe along 12 miles of the Bourne Line from its beginning at the Bourne Take Station in the Town of Bourne to Sandwich Road near Route 151 in the Town of Falmouth. A new regulator station would be installed at this location to reduce pressure from the uprated pressure to 200 psig.

VI. Description of Pipeline to be Uprated and its Route

The Bourne Line is a main that traverses the Towns of Bourne, Falmouth, Mashpee, and Barnstable for a total distance of approximately 27.6 miles. The main has an MAOP of 200 psig, based upon the lowest MAOP of pipe installed. Details describing the segments of main that shall be uprated follow. A summary of the segments of main involved in this petition appears in Table 1. Maps of the main and its components appear as Exhibits 1 and 2.

The total length of pipe to be operated at 270 psig, provided a waiver is granted and the subsequent uprating procedure is performed, is approximately 63,403 feet or 12 miles (see Table 1, Line 20).

The pipe subject to formal uprating totals 27,673 feet or 5.2 miles, which was installed before 2000. This pipe was initially tested at 280 to 300 psig to establish its existing MAOP of 200 psig (see table 1, Lines 1-3, 5-8, 11, 17).

The remaining 35,730 feet or 6.8 miles of pipe, which were installed from 2000 through 2004, were tested at approximately 415 psig and, therefore, have an MAOP of approximately 275 psig (see Table 1, Lines 4, 9, 10, 12-15, 18). Therefore, this 6.8 miles of pipe, technically, is not subject to uprating. However, it will be part of the uprating procedure because of the location and design of the various other pipe segments and the new district regulator station that will be installed on Sandwich Road near Route 151 in Falmouth.

Although the MAOP for the 12-inch pipe installed from 2000 through 2004 is 275 psig, it cannot be operated at that pressure after uprating is completed. It can only be operated at 270 psig to reflect the lower maximum operating pressure imposed by the uprating of the pipe segments installed before 2000. This complies with federal regulations.

All buried pipe is coated and cathodically protected in accordance with Part 192, Subpart I - Requirements for Corrosion Control. The pipe across the Bourne Bridge is coated, except at pipe supports. The pipe is painted at these locations.

There is an 8-inch lateral main (see Table 1, Lines 17, 18) from the 12-inch primary main to supply the Cataumet district regulator station at the Company's Cataumet Plant property. There are three other district regulator stations connected to the Bourne Line; namely, the Wareham regulator station adjacent to the Bourne Take Station at the north side of the Bourne Bridge, the Bourne regulator station located at the south side of the Cape Cod Canal under the bridge, and the Flight Line regulator station located at the Otis ANGB near the 102nd Fighter Wing. A district regulator station will also be installed at the terminus of the uprated Bourne Line on Sandwich Road near Route 151 in Falmouth to reduce upstream pressures to 200 psig. The latter pressure is the current, downstream MAOP for the remainder of the Bourne Line route to Centerville and Hyannis in the Town of Barnstable. The approximate locations of the five district regulator stations are shown in Exhibit 2. To summarize, these stations are:

- Wareham Regulator Station
- Bourne Regulator Station
- Cataumet Regulator Station
- Flight Line Regulator Station
- Sandwich Rd. Regulator Station

The inlet pipes to each of these regulator stations are included in the testing for uprating the Bourne Line.

The pertinent regulators and fittings of all existing district regulator stations have been inspected to ensure that their design pressure is at least 270 psig. Replacement of components that do not meet the design criteria will be made.

There are nine farm tap regulators connected to the Bourne Line segments to be uprated. These regulators and related fittings will be inspected to ensure that their design pressure is at least 270 psig. Replacement of components that do not meet the design criteria will be made.

There are 11 valves in the pipeline from the Bourne Take Station to the Sandwich Road district regulator station. These valves were designated as primary valves in 2004 and will be partially operated annually in accordance with 220 C.M.R. 109: Design, Construction, Operation, and Maintenance of Intrastate Pipelines Operating in Excess of 200 psig. The size and approximate locations of these valves are shown in Table 2 (see Lines 1-11) and Exhibit 2.

KeySpan also designates the inlet valve to each district regulator station as a primary valve. The size and approximate locations of these five valves are shown in Table 2 (see Lines 12-16) and Exhibit 2.

Table 1
Bourne Line to be Uprated to 270 psig from 200 psig
Lines 1 - 3, 5 - 8, and 17

Line	Bourne Line Route Description	Pipe Diameter (inches)	Current MAOP	Year Installed	Estimated Length(feet)
1	Bourne Take Station to Primary valve, Rt. 28, Bourne	8 12	200	Not Available	48 23
2	Primary Valve to Bourn Bridge North Abutment	10	200	1963 est.	810
3	Bourne bridge Crossing to Regulator Station at South Side of Bridge	10	200	1963	1478
4	South Side of Bourne Bridge	12	275	2004	150
5	To and along Gen. MacArthur Blvd./Route 28 to 180' before Colonel Dr.	12	200	1992	5270
6	Gen. MacArthur Blvd. to 500' Before Harbor Hill Dr.	10	200	1980	3780
7	Gen. MacArthur Blvd. to 500' Before #530	12	200	1991	5133
8	Gen. MacArthur Blvd. to Barlows Landing Rd.	12	200	1993	4885
9	Gen. MacArthur Blvd. from Barlows Landing Rd. to Dockser Av.	12	275	2004	2100
10	Gen. MacArthur Blvd. from Dockser Av. To 12" Line Installed in 1992 on Connery Av., Otis ANGB (see Line 10)	12	275	2003	11760
11	Connery Av., Otis ANGB	12	200	1992	2832
12	Connery Av. From 12" Line Installed in 1992 to W. Truck Rd., Otis ANGB (See Line 10)	12	275	2004	918
13	W. Truck Rd., W. Inner Rd., S. Truck Rd. to Simpkins Rd., Otis ANGB	12	275	2004	10100
14	Simpkins Rd. to Sandwich Rd. at Currier Rd.	12	275	2000	5711
15	Sandwich Rd. from Currier Rd. to new regulator station Near Rt. 151, Falmouth	12	275	2004	4541
16	Total Primary Main				59467
17	Near Otis ANGB Rotary to Cataumet Plant Entrance	8	200	Not Available	3336
18	Cataumet Plant Entrance to Cataumet Regulator Station	8	275	2004	600
19	Total 8" Lateral Main				3936
20	Grand Total				63403

There is an existing 12-inch automatic shutdown valve at the Bourne Take Station and a 12-inch check valve on the south side of the Bourne Bridge to stop the flow of gas into the 10-inch main across the bridge in the event of a failure. The check valve on the south side of the Cape Cod Canal will be replaced with a new 12-inch check valve when the 150-foot, buried segment of 10-inch pipe is replaced with 12-inch pipe (see Table 1, Line 4). In addition, two new 12-inch valves will be installed on either side of the check valve. A bypass line of these three valves will be installed, which includes another 12- inch valve.

Table 2
Bourne Line Valve Locations

Line	Size (inches)	Location
1	12	Bourne Take Station outlet: 12" automatic/manual shutdown valve
2	12	South side of Cape Cod Canal; upstream of 12" check valve
3	12	South side of Cape Cod Canal: 12" check valve
4	12	South side of Cape Cod Canal: downstream of 12" check valve
5	12	South side of Cape Cod Canal: in pipe bypassing 3 valves described in Lines 2-4
6	12	Near 160 Gen. MacArthur Blvd.: north of Colonel Dr.
7	12	South of 370 MacArthur Blvd.
8	12	790 Gen. MacArthur Blvd.: south of Dockser Av.
9	12	Otis ANGB: Connery Av. Near pump house
10	12	Otis ANGB: West Truck Rd. at South Truck Rd.
11	8	Route 28A at Otis ANGB Rotary: in 8" lateral main to Cataumet Regulator Station
12	6	Wareham Regulator Station: Inlet valve
13	4	Bourne Regulator Station: Inlet valve
14	6	Cataumet Regulator Station: Inlet valve
15	4	Flight Line Regulator station: Inlet Valve
16	12	Sandwich Rd. Regulator Station: Inlet valve

As previously stated, 6.8 miles of the Bourne Line are new pipe installed from 2000 through 2004. The remaining 5.2 miles of the pipe are in very good physical condition. No corrosion leaks have occurred in the 12 miles of main described herein since the pipe was commissioned.

VII. Hoop Stress

In pertinent part, § 192.3 Definitions defines a transmission line as a pipeline that operates at a hoop stress of 20 percent or more of SMYS. As previously stated, the uprated segment of the Bourne Line will retain its designation as a main because it will be operating at a hoop stress of less than 20 percent of SMYS. The data to corroborate this appears in Table 3.

Hoop stress is computed according to the following formula:

$$H = PD/2t$$

Where H = Hoop stress in psig

P = Maximum operating pressure, or 270 psig in this case

D = Outside diameter of the pipe in inches

t = Wall thickness in inches

Hoop stress as a percentage of SMYS is obtained by dividing hoop stress by the yield strength. These results are shown in the last column of Table 3. The smaller diameter pipe sizes are part of Table 3 because regulator stations include such pipe (see Lines 8-12).

The different wall thickness for the same pipe diameter are included because buried pipe installed before 1970 varies from Schedule 20 to, and including, Schedule 40 pipe specifications (see Table 3, Lines 1, 2, 4-7). It has been determined that the wall thickness of the pipe across the Bourne Bridge is Schedule 40 pipe with a wall thickness of 0.365 inches

(see Table 3, Line 4).

The specification for the 12-inch pipe installed since 2000 is API 5L, Grade X42, with a yield strength of 42,000 psig (see Table 3, Line 3). The specification for the pipe installed before 2000 is API 5L, Grade B, with a yield strength of 35,000 psig.

Table 3
Hoop Stress as a Percentage of SMYS

Line	Nominal Pipe Diameter (inches)	Outside Pipe Diameter (inches)	Pipe Wall Thickness (inches)	Yield Strength (psig)	Hoop Stress (psig)	Hoop Stress as %SMYS
1	12	12.750	0.375	35000	4590	13.1
2	12	12.750	0.250	35000	6885	19.7
3	12	12.750	0.250	42000	6885	16.4
4	10	10.750	0.365	35000	3976	11.4
5	10	10.750	0.250	35000	5805	16.6
6	8	8.625	0.322	35000	3616	10.3
7	8	8.625	0.250	35000	4658	13.3
8	6	6.625	0.280	35000	3194	9.1
9	4	4.500	0.237	35000	2363	7.3
10	2	2.375	0.154	35000	2082	6.0
11	1	1.315	0.133	35000	1335	3.8
12	¾	1.050	0.113	35000	1254	3.6

VIII. Summary

The demand for gas in the Company's Cape Cod Division has increased due to the expanded population base, commercial use, and tourist business. The most efficient way to meet this demand and maintain system reliability is to replace smaller diameter pipe in the Bourne Line and increasing the MAOP of the Bourne Line from the Bourne Take Station to Sandwich Road at Route 151 in Falmouth. The Company has installed, or is in the process of installing, 12-inch pipe to replace 8-inch pipe along certain segments of the existing Bourne Line. The Company proposes to increase the MAOP of the aforementioned segment of the Bourne Line by uprating it from 200 psig to 270 psig.

The Bourne Line cannot be shutdown to perform the pressure test required by federal regulations. Therefore, to accomplish the uprating, KeySpan requests the Department to grant a waiver of 49 C.F.R. 192.619(a). This would exempt KeySpan from testing the segment of the Bourne Line at a pressure that is 1.5 times the new MAOP of 270 psig. Consequently, KeySpan would be allowed to elevate the MAOP by incremental pressure increases to 270 psig in accordance with 49 C.F.R. 192, Subpart K - Uprating.

The waiver sought does not derogate from the safety objectives of 49 C.F.R. 192. KeySpan believes that granting this waiver is a prudent means to reliably and economically serve its existing and future customers on Cape Cod.

KeySpan Energy Delivery
52 Second Avenue
Waltham, Massachusetts 02451

August 19, 2004

Mr. Christopher J. Bourne
Acting Director
Pipeline Engineering and Safety Division
Department of Telecommunications and Energy
Commonwealth of Massachusetts
One South Station
Boston, MA 02110

Subject: D.T.E. Docket No. 04-67: Petition for Waiver from the Provisions of
49 C.F.R. 192 for Uprating the Maximum Allowable Operating Pressure ("MAOP") of Segments of the
Bourne Line, Cape Cod

Dear Mr. Bourne:

On June 29, 2004, Keyspan Energy Delivery New England ("KeySpan" or "the Company") submitted a Petition for Waiver ("Petition"), which requested the Department of Telecommunications and Energy to allow KeySpan to increase the MAOP of segments of a high-pressure, gas distribution main on Cape Cod, referred to as the Bourne Line, from 200 psig to 270 psig. The waiver relates to 5.2 miles of the Bourne Line.

Recently, the Company Modified the scope of various projects that will continue to provide reliable gas supply to the Cape Cod distribution system.

Therefore, KeySpan hereby modifies its Petition to apply to the 8-inch and 12- inch gas mains from the Bourne Take Station to Connery Avenue at West Truck Road in the Otis Air National Guard Base ("ANGB"), rather than to mains extending to Sandwich Road near Rt. 151 in Falmouth, as described in the Petition.

This is a result of changing the location of the district regulator station, which will reduce pressure from 270 psig to 200 psig. This regulator station will now be located on Connery Avenue at West Truck Road, rather than at Sandwich Road.

Consequently, the length of pipe that will be tested at 270 psig from the Bourne Take Station to the new regulator station is decreased from 63,403 feet (12.0 miles) to 43,051 feet (8.2 miles). Pertinent information is shown in Table 1A below, which is a revision of Table 1 in the Petition.

Table IA
Bourne Line to be Uprated to 270 psig from 200 psig

Lines 1 - 3, 5 - 8, 11, and 14

Line	Bourne Line Route Description	Pipe Diameter (inches)	Current MAOP	Year Installed	Estimated Length(feet)
1	Bourne Take Station to Primary valve, Rt. 28, Bourne	8	200	Not Available	48
		12			23
2	Primary Valve to Bourn Bridge North Abutment	10	200	1963 est.	810
3	Bourne bridge Crossing to Regulator Station at South Side of Bridge	10	200	1963	1478
4	South Side of Bourne Bridge	12	275	2004	150
5	To and along Gen. MacArthur Blvd./Route 28 to 180' before Colonel Dr.	12	200	1992	5270
6	Gen. MacArthur Blvd. to 500' Before Harbor Hill Dr.	10	200	1980	3780
7	Gen. MacArthur Blvd. to 500' Before #530	12	200	1991	5133
8	Gen. MacArthur Blvd. to Barlows Landing Rd.	12	200	1993	4885
9	Gen. MacArthur Blvd. from Barlows Landing Rd. to Dockser Av.	12	275	2004	2100
10	Gen. MacArthur Blvd. from Dockser Av. To 12" Line Installed in 1992 on Connery Av., Otis ANGB	12	275	2003	11760
11	Connery Av., Otis ANGB	12	200	1992	2832
12	Connery Av. From 12" Line Installed in 1992 to W. Truck Rd., Otis ANGB	12	275	2004	918
13	Total Primary Main				39115
14	Near Otis ANGB Rotary to Cataumet Plant Entrance	8	200	Not Available	3336
15	Cataumet Plant Entrance to Cataumet Regulator Station	8	275	2004	600
16	Total 8" Lateral Main				3936
17	Grand Total				43051

The actual pipe that must be uprated from 200 psig to 270 psig remains the same; that is, 5.2 miles (see Table 1A, Lines 1-3, 5-8, 11, 14).

The other three miles of pipe described in Table 1A were tested at approximately 415 psig after recent construction to yield an MAOP of approximately 275 psig. Therefore, this pipe, technically, is not subject to uprating.

Maps of the area showing the location of the mains that will be tested and uprated are attached hereto as Exhibits 1A and 2A, which are revisions of Exhibits 1 and 2 in the Petition.

Should you have any questions or concerns, please call me at 781-466-5250.

Very truly yours,
David E. Weber, P.E.
Principal Engineer
Manager - Regulatory Compliance