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ORIGINAL

***Cullen and Dykman LLP***

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March 10, 2006

Magalie R. Salas, Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Room 1A  
Washington, D.C. 20426

FILED  
OFFICE OF THE  
SECRETARY  
2006 MAR 10 P 12:05  
FEDERAL ENERGY REGULATORY COMMISSION  
WASHINGTON, D.C. 20426

**Re: Broadwater Energy LLC, Docket No. CP06-54-000  
Broadwater Pipeline LLC, Docket Nos. CP06-55-000 & CP06-56-000**

Dear Secretary Salas:

Enclosed for filing please find an Original and fourteen (14) copies of the KeySpan Delivery Companies Motion To Intervene, Comments And Request For Technical Conference in the above referenced docket.

Please date stamp the designated copies and give to the messenger for return to our office. Thank you for your cooperation in this matter.

Yours truly,

*Christopher M. Keyroad*

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

<b>In The Matter Of:</b>	)	
	)	
<b>Broadwater Energy LLC</b>	)	<b>Docket No. CP06-54-000</b>
	)	
<b>Broadwater Pipeline LLC</b>	)	<b>Docket Nos. CP06-55-000 &amp; CP06-56-000</b>

**MOTION TO INTERVENE, COMMENTS  
AND REQUEST FOR TECHNICAL CONFERENCE  
OF THE KEYSpan DELIVERY COMPANIES**

The Brooklyn Union Gas Company d/b/a KeySpan Energy Delivery NY; KeySpan Gas East Corporation d/b/a KeySpan Energy Delivery LI; and Boston Gas Company, Colonial Gas Company, EnergyNorth Natural Gas, Inc., and Essex Gas Company (collectively "KeySpan Energy NE"), all subsidiaries of KeySpan Corporation, hereby jointly and severally move to intervene, comment and request a technical conference in the above captioned proceedings.

In support of this motion to intervene, KeySpan Energy NY, KeySpan Energy LI and KeySpan Energy NE, (collectively "the KeySpan Delivery Companies" or "KeySpan") respectfully state:

1. KeySpan Energy Delivery NY is a corporation duly organized and existing under the laws of the State of New York, with its principal office located at One MetroTech Center, Brooklyn, New York.
2. KeySpan Energy Delivery LI is a corporation duly organized and existing under the laws of the State of New York, with its principal office at 175 East Old Country Road, Hicksville, New York.
3. KeySpan Energy NE includes four corporations: Boston Gas Company, Colonial Gas Company, and Essex Gas Company, all corporations duly organized and existing under the laws of the Commonwealth of Massachusetts, with their principal offices located at 52 Second Avenue, 4<sup>th</sup> Floor, Waltham; Massachusetts 02451; and EnergyNorth Natural Gas, Inc., a corporation duly organized and existing under the laws of the State of New Hampshire, with its principal office at 1260 Elm Street, Manchester, New Hampshire, 03105.

4. The following persons are designated to receive service in this proceeding:

Dolores D. Chezar  
KeySpan Corporate Services  
One MetroTech Center, 13<sup>th</sup> Floor  
Brooklyn, New York 11201  
[dchezar@keyspanenergy.com](mailto:dchezar@keyspanenergy.com)

Kenneth T. Maloney  
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**Statement Of Issues**

A. May the KeySpan Delivery Companies intervene and comment in the captioned proceeding? Under Rules 213 and 214 of the Commission’s Rules of Practice and Procedure, timely motions to intervene and answers in reply to certificate applications are permissible.<sup>1</sup>

B. Should the Commission establish a technical conference in the captioned proceedings to consider gas quality and interchangeability issues raised by the filed applications? Under Section 7 of the Natural Gas Act (“NGA”), the Commission has an obligation to ensure that the facilities Broadwater Energy LLC (“Broadwater Energy”) and Broadwater Pipeline LLC (“Broadwater Pipeline”) propose to construct and operate are in the public convenience and necessity.<sup>2</sup> The Commission has broad authority to impose reasonable conditions on such certificates, and the Commission should establish appropriate procedures to enable it to address legitimate safety, reliability and system integrity concerns raised in this proceeding. Such procedures may include technical conference procedures.<sup>3</sup>

C. Should the Commission approve Broadwater Pipeline’s request for a waiver of the Commission’s regulations that require the filing of rates, tariffs and contracts? Given the significance of the gas interchangeability issues raised in this proceeding, KeySpan believes that the public interest would not be served by exempting Broadwater Pipeline from regulations that require pipelines to file with

<sup>1</sup> 18 C.F.R. §§385.213(3), 214(c).

<sup>2</sup> 15 U.S.C. 717f.

<sup>3</sup> The Commission has used technical conference proceedings to examine issues raised in certificate proceedings, including gas interchangeability issues. *Dominion Cove Point LNG, LP*, Notice of Procedural Conference And Order On Late Interventions, CP05-130, *et al.* (February 2, 2006).

the Commission the terms and conditions of the services it will provide. Broadwater Pipeline should be required to publicly file, monitor and enforce in a non-discriminatory manner gas quality specifications that will ensure that any gas delivered by Broadwater Pipeline is appropriately merchantable and interchangeable.<sup>4</sup> KeySpan does not object to Broadwater Pipeline's other proposed waivers.

#### Motion To Intervene

5. The KeySpan Delivery Companies are engaged primarily in the purchase and distribution at retail of natural gas, serving 1.7 million customers in New York City and Long Island and 800,000 customers in Massachusetts and New Hampshire.

6. By notice issued February 17, 2006, the Commission announced the filing by Broadwater Energy of an application pursuant to Section 3 of the NGA and Part 153 of the Commission's Rules and Regulations seeking authorization to site, construct and operate an offshore LNG receiving terminal and associated facilities ("Floating Storage and Regasification Unit" ("FSRU")) in Long Island Sound. The proposed FSRU would be located approximately nine miles from the shore of Long Island in New York State waters, and would serve as a place of entry for the importation of LNG. Broadwater Energy's proposed terminal is intended to facilitate the importation of LNG into the United States.

7. Also on January 30, 2006, Broadwater Pipeline concurrently filed an application requesting (i) in Docket No. CP06-55-000, a certificate of public convenience and necessity, pursuant to Subpart A of Part 157 of the Commission's regulations, authorizing Broadwater Pipeline to construct, own, operate and maintain a 30-inch, 22 mile subsea lateral (and related facilities) as a single-use pipeline; and (ii) in Docket No. CP06-56-000, Broadwater Pipeline requests a blanket certificate under authorities in connection with future construction, operation and maintenance of the proposed 22-mile pipeline. Broadwater Pipeline seeks authorization to permit its proposed pipeline to be operated as a single-use pipeline. That is, it would be used for one purpose – to transport natural gas approximately 25 miles from the FSRU to a subsea interconnection with Iroquois Gas Transmission System, L.P. ("Iroquois").

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<sup>4</sup> See e.g., *AES Ocean Express LLC v. Florida Gas Transmission Co.*, 107 FERC ¶61,274, paras. 29-32 (2004) (Commission determined that all gas quality standards must be contained in a pipeline's open access tariff in order to ensure that all shippers may comment on the impact of the proposed standards and that such standards are uniformly applicable.).

8. The KeySpan Delivery Companies ("KeySpan") include contract customers of Iroquois pursuant to the findings and orders of the Commission. Iroquois apparently will be the sole outlet for gas revaporized and delivered through the proposed Broadwater facilities, and the proposed interconnection between Broadwater Pipeline and Iroquois will be located immediately upstream of certain KeySpan delivery points. Therefore, KeySpan will receive revaporized LNG from the proposed facilities.

9. For the reasons discussed above, KeySpan has substantial interests which may be directly affected by Commission action in this proceeding, and KeySpan will not be adequately represented by any other party. Unless permitted to intervene and participate fully, the KeySpan Delivery Companies may be bound by and adversely affected by the Commission's orders herein without an opportunity to have their views heard and considered. Accordingly, the public interest will be served by granting this motion to intervene.

#### **Comments And Request For Technical Conference**

10. KeySpan strongly supports proposals to make new sources of supply available to natural gas consumers, including proposals by LNG project developers to construct and operate facilities for the importation, storage, regasification and transportation of imported LNG supplies. In the long run, these projects will, if properly designed, constructed and operated, help to ensure that gas consumers have access to sufficient supplies of natural gas at reasonable prices. However, while it is important for the Commission to encourage the development of new supply alternatives, it is equally important for the Commission to ensure that incremental LNG supplies do not compromise the safety, reliability or system integrity of existing distribution systems or other facilities, such as electric generation plants, that may be affected by the introduction of such supplies.

11. Broadwater's applications propose to construct and operate facilities capable of transporting up to 1 Bcf/d of incremental LNG. The sole outlet for Broadwater's LNG is a proposed underwater interconnection with Iroquois under the Long Island Sound that is located immediately upstream of KeySpan's delivery points on Iroquois' system. As a result, KeySpan will receive most of the LNG delivered by Broadwater regardless of who actually purchases these incremental supplies. As a consequence, LNG from Broadwater's facility must be merchantable and interchangeable with the gas

supplies that historically have been delivered to KeySpan's system. KeySpan submits that the Commission must utilize its authority in this proceeding in order to ensure that any supplies delivered by Broadwater are appropriately merchantable and interchangeable.

12. KeySpan and its customers utilize natural gas for a number of purposes including (i) as a fuel for residential and commercial space and water heating and cooking; (ii) as a fuel to generate electricity; (iii) as a feedstock for various industrial purposes; (iv) as a source of feedstock for LNG peak shaving liquefaction facilities, such as those that KeySpan owns and operates in order to meet its customers' peak day needs, and (v) as a fuel for natural gas vehicles. All of these applications are potentially affected by deliveries of imported LNG to KeySpan's distribution system.<sup>5</sup> In Docket No. PL04-3, the proceeding in which the Commission is currently examining gas quality and interchangeability issues, the Natural Gas Council ("NGC") has presented a White Paper addressing interchangeability issues ("Interchangeability White Paper"). In the Interchangeability White Paper, the NGC recommends specific Interim Guidelines that are intended to ensure that new sources of gas supply will not adversely affect the majority of end use applications. These Interim Guidelines provide for:

a. A range of plus and minus 4% Wobbe Number Variation from Local Historical Average Gas or, alternatively, Established Adjustment or Target Gas for the service territory, subject to (i) a Maximum Wobbe Number Limit: 1,400; and (ii) a Maximum Heating Value Limit: 1,100 Btu/mcf;

b. Additional Composition maximum limits: (i) Maximum Butanes+: 1.5 mole percent; (ii) Maximum Total Inerts: 4 mole percent.

13. In addition, the Interchangeability White Paper recognizes that specific pipeline systems may need to develop compositional limits for other gas constituents, and that further action is necessary to evaluate the impact of changes in gas composition on applications that utilize gas as, for example, (i) a

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<sup>5</sup> For example, imported LNG that has heating values in excess of 1,100 Btu/Mcf can cause a variety of changes in the gas stream, including yellow tipping and incomplete combustion, which is indicative of soot emission and which could lead to the blockage of flue passages and a rise in dangerous carbon monoxide emissions. In addition, the introduction of imported LNG may create a need to "re-tune" modern low emission combustion turbines. Finally, to the extent that nitrogen is used to reduce the heating value of imported LNG, the addition of high levels of nitrogen can create significant inefficiencies in the operation of LNG peak shaving plants and may lead to the shutdown of such plants.

feedstock for LNG liquefaction, and (ii) as a fuel for electric generation.<sup>6</sup> The Interchangeability White Paper also recognizes that capital expenditures may be necessary to retrofit certain existing end-use applications in order to enable those applications to utilize new sources of supply, and that the funding of such expenditures should be addressed during the regulatory process.<sup>7</sup> Specifically, Recommendation No. 10 to the Interchangeability White Paper states:

The work group recognized that compositional limits for specific gas constituents may be needed in addition to the proposed Interim Guidelines to address non-combustion feedstock issues including but not limited to domestic LNG peak shaving liquefaction plants. The work group also recognizes that imposing general constituent limits would be inappropriate because the design bases for these facilities vary with the historical supplies delivered at the time of the facilities' construction. These constituents include:

**Non-Methane Hydrocarbons**

- Ethane
- Propane
- Butane(s)
- Pentane(s)
- Hexanes+

**Inerts**

- Nitrogen
- Carbon Dioxide

Furthermore, the work group recommends that each facility/process impacted by changing supply composition be evaluated on an individual basis. Facilities that will receive supplies exceeding design feedstock constituent limits will require retrofit to maintain design capacity and efficiency of operation. Retrofits will likely vary from facility to facility and will incur new and unplanned operating and capital expenditures. Evaluation of these retrofits and associated cost burdens must be considered during the regulatory approval process.

14. The Interchangeability White Paper specifically avoids recommending the establishment of nationwide gas specifications and/or lowest common denominator gas quality standards. Instead, the Interchangeability White Paper's recommendations proceed from a recognition of the fact that different regions have become accustomed to gas supplies having different compositions. The Interchangeability White Paper sensibly focuses on developing standards that will permit the introduction of the broadest possible array of supplies of differing composition that can be used for the majority of end-use

<sup>6</sup> *White Paper On Natural Gas Interchangeability And Non-Combustion End Use*, Docket No. PL04-3, Recommendations 4, 10 at pp. 21-22 (February 28, 2005).

<sup>7</sup> *Id.* at Recommendation 10, p. 23.

applications, while also recommending the establishment of a process that can be used to address the needs of other applications in an equitable manner; *i.e.* by determining the needs of these applications and providing a process for them to obtain funding for necessary retrofits.

15. As discussed *supra*, KeySpan's concerns about the impact that regasified LNG from the Broadwater facility may have on its distribution systems have previously been recognized in the Interchangeability White Paper<sup>8</sup> and/or are the product of KeySpan's own prior experiences. As the Commission is aware, KeySpan has, in the past, experienced performance problems on its distribution system as a result of the impact of changes in natural gas composition on the elastomer seals contained in certain mechanical couplings used on its system.<sup>9</sup> While KeySpan is not at this time suggesting that LNG received from Broadwater would necessarily have a similar impact on KeySpan's system, past experience certainly supports the establishment of a process to consider the matter further.

16. Since Broadwater is proposing to interconnect with Iroquois, KeySpan anticipates that Iroquois will require regulatory approval from the Commission to construct and operate facilities needed to effectuate the receipt and redelivery of Broadwater volumes. At such time as Iroquois files an application to connect with Broadwater Pipeline, KeySpan proposes that Iroquois' application be consolidated with the Broadwater applications herein and that a technical conference be established to address, both procedurally and substantively, interchangeability issues that arise as a result of Broadwater's proposals herein. This technical conference process should be designed to resolve the following issues:

- What is the likely impact of the introduction of imported LNG on distribution systems and their customers or other end users that receive natural gas deliveries from Iroquois?

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<sup>8</sup> See Interchangeability White Paper, Second Finding No. 22, p. 19 ("Gas system infrastructure impacts must be considered when supply compositions change for extended periods of time. The impacts when shifting to a dry, leaner supply source may include failure of certain gas transmission and distribution piping component seals and gaskets in valves, pipe clamps, joint sealants and other mechanical components. Additional infrastructure issues include impacts to custody transfer gas measurement techniques (thermal vs. volumetric billing) and related gas accounting issues.")

<sup>9</sup> Attached as Appendix A is the order issued by the Public Service Commission of the State of New York concerning Case 93-G-0401. This order describes circumstances experienced by the Long Island Lighting Company, predecessor to KeySpan Gas East Corporation. This order has been introduced into the records of other Commission proceedings in which LNG-related interchangeability issues are being considered.

- What interchangeability/gas quality parameters must be incorporated into tariffs by Broadwater Pipeline and Iroquois in order to ensure that gas supplies ultimately delivered by Iroquois are appropriately interchangeable for the majority of end-use applications?
- Are there other impacts associated with the introduction on LNG on facilities such as LNG peak shaving plants and electric generation facilities that should be considered in the regulatory process in the manner contemplated by Recommendation No. 10 of the Interchangeability White Paper? If so, what process should be instituted for addressing these concerns and considering proposals for the equitable assignment of costs associated with any needed retrofits or other end use modifications?

17. In an effort to expedite this process, KeySpan is attaching to this pleading as Appendix B, a set of gas quality specifications that KeySpan believes would:

- (a) implement the Interim Guidelines set forth in the Interchangeability White paper;
- (b) include other gas quality parameters, as described in Recommendation No. 10 of the Interchangeability White Paper, that are fully consistent with the gas supply that is presently being delivered on Iroquois' system; and
- (c) permit most of the LNG currently produced throughout the world to be delivered to Iroquois' system.

KeySpan believes that these proposed gas quality specifications provide a useful starting point for resolving gas quality and interchangeability issues raised by the Broadwater project.<sup>10</sup>

18. In addition, KeySpan would request that the Commission require Iroquois and Broadwater to develop and provide to affected parties prior to the technical conference the following information:

- (a) From Broadwater, an analysis of the gas that it proposes to import and redeliver to Iroquois;

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<sup>10</sup> KeySpan reserves the right to withdraw or modify these standards based on the outcome of the technical conference process proposed herein.

- (b) From Iroquois, flow model diagrams showing the areas of its system which may receive regasified LNG from Broadwater and specific data on expected changes in gas composition at delivery points receiving Broadwater LNG as a result of Broadwater's deliveries to Iroquois.

KeySpan believes that the requested information will enable all affected parties to commence the process of establishing gas quality specifications that will be acceptable in the majority of cases. Such information will also enable parties to identify (i) gaps in knowledge that must be addressed through further research, and (ii) individual applications or circumstances that will require unique solutions including individual retrofits and cost sharing/assignments.

19. KeySpan submits that the Commission should expedite this process so that essential gas quality/interchangeability parameters can be incorporated in appropriate conditions to the Commission's final orders in this proceeding. As Broadwater is seeking an NGA Section 7 certificate, the Commission is required to determine whether Broadwater's proposed facilities are or will be "required by the present or future public convenience and necessity."<sup>11</sup> In evaluating such applications, the Commission employs "a flexible balancing process in the course of which all the factors [bearing on the public interest] are weighed prior to final determination."<sup>12</sup> Among these factors, the Commission is "fundamentally concerned" about the effect that the issuance of a certificate will have on a pipeline's present services and customers, and the Commission can refuse to certificate new services if they would seriously decrease or interfere with existing service.<sup>13</sup> Therefore, the Commission must put in place a process that will permit it to resolve interchangeability issues in a manner that will ensure that parties which receive delivery of LNG from Broadwater's proposed facilities will not be adversely affected. Such a process will benefit all

<sup>11</sup> 15 U.S.C. 717(e).

<sup>12</sup> *Midcoast Interstate Transmission v. FERC*, 198 F.3d 960, 964 (D.C. Cir. 2000) citing *FPC v. Transcontinental Gas Pipe Line Corp.*, 365 U.S. 1, 7 (1961).

<sup>13</sup> *Reynolds Metals Co. v. FPC*, 534 F.2d 379, 384 (D.C. Cir. 1976); *Granite City Steel Co. v. FPC*, 320 F.2d 711, 713 (D.C. Cir. 1976); *In the Matter Of Transcontinental Gas Pipe Line Corp.*, 16 F.P.C. 429, 434 (1956)(See also, *Kern River Gas Transmission Co.*, 100 FERC ¶61,056, para. 7 (2002)("The Natural Gas Act requires the Commission to weigh all relevant factors in identifying what course is required by the public convenience and necessity. The Commission's Policy Statement regarding major construction projects states that the possibility of service degradation for existing customers is one of the factors to be balanced in assessing the public convenience and necessity.").

stakeholders and enable the marketplace to make a fully informed decision as to the costs and benefits of Broadwater's project.

**The Commission Should Deny Broadwater Pipeline's  
Request For A Waiver Of Tariff And Contract Filings**

20. As discussed *supra*, Broadwater Pipeline requests that the Commission waive various regulations, including those that would require it to file a tariff and/or its shipper contracts. KeySpan has no objections to Broadwater Pipeline's request for waivers of (i) the Commission's open access regulations, (ii) cost of service and revenue data requirements, and (iii) accounting and financial regulations. However, as discussed *supra*, the public interest in this proceeding requires Broadwater Pipeline to develop gas quality parameters that should be included in a filed, publicly available tariff. Broadwater Pipeline has offered no compelling reason why it should be relieved of this requirement.

21. There does not appear to be any meaningful precedent that supports exempting Broadwater Pipeline from the Commission's tariff filing requirement.<sup>14</sup> Broadwater Pipeline will not be "essentially a tailgate facility," it will be a 30-inch, 22-mile subsea lateral capable of delivering 1 Bcf of gas per day.<sup>15</sup> Moreover, Broadwater Pipeline does not have the characteristics of the "single-use" pipelines which the Commission has partially exempted from its jurisdiction; those pipelines are relatively small laterals from existing jurisdictional pipelines and are intended to serve just one industrial customer.<sup>16</sup> Additionally, unlike the pipelines proposed pursuant to the Deepwater Port Act which have sought "single use" status, Broadwater proposes to deliver gas directly into a major interstate pipeline located immediately upstream of the nation's most heavily populated region. For all these reasons, KeySpan urges that the Commission deny Broadwater's request for waiver of tariff and contract filing regulations.

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<sup>14</sup> While Broadwater Pipeline cites cases in which the Commission has permitted storage operators to operate facilities and to charge market-based rates for storage services (See Broadwater Pipeline Application, p. 6, fn. 4), the cited cases do not include instances where the Commission waived its Tariff filing regulations as to any of the storage facilities. In addition, Broadwater Pipeline's application derives no support from its citation to *Oneok Midstream Pipeline, Co* 93 FERC ¶ 61,042 (2000) in which the Commission denied the pipeline's request to abandon its entire 27-mile system, including its rate schedules and tariff sheets.

<sup>15</sup> Broadwater Pipeline Application, p 5.

<sup>16</sup> See, *White Rock Pipeline, LLC*, 98 FERC ¶ 61,220 (2002); *B-R Pipeline Co.* 89 FERC ¶ 61, 312 (1999).

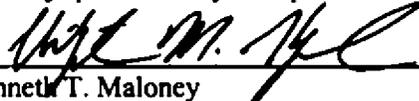
**Conclusion**

WHEREFORE, the KeySpan Delivery Companies respectfully request that the Commission:

- a. issue an order permitting the KeySpan Delivery Companies to intervene in this proceeding with full rights as parties hereto;
- b. convene a technical conference in this docket to establish a process to address existing gas quality and interchangeability issues; and
- c. grant the KeySpan Delivery Companies such other and further relief as may be required to protect their interests and the interests of the gas consumers they serve.

Respectfully submitted,

The KeySpan Delivery Companies

/s/ 

Kenneth T. Maloney

Christopher M. Heywood

Cullen and Dykman LLP

1101 Fourteenth Street, NW, Suite 550

Washington, D.C. 20005

(202) 223-8890

Dated: March 10, 2006

# **Appendix A**

STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION

At a session of the Public Service  
Commission held in the City of  
Albany on February 24, 1994

COMMISSIONERS PRESENT:  
Peter Bradford, Chairman  
Lisa Rosenblum  
Harold A. Jerry, Jr.  
William D. Cotter  
Raymond J. O'Connor

CASE 93-G-0401- In the Matter of the Consumer Protection Board  
Petition to Establish a Prudence Proceeding  
Against the Long Island Lighting Company  
Related to the Replacement of Approximately  
45,000 Natural Gas Service Lines equipped with  
Norton-McMurray Couplings.

ORDER CONCLUDING PROCEEDING  
(Issued and Effective May 2, 1994)

BACKGROUND AND SUMMARY

By Notice issued December 7, 1993, the Commission sought comments on the staff report on the causes of leaks on Long Island Lighting Company (LILCO or the company) service lines with Norton-McMurray (NORMAC) couplings. Only the company submitted comments. Based upon our review of staff's report and LILCO's response, we have decided that no further investigation is warranted and that the proceeding should be closed.

In early February 1992, soon after the Iroquois Gas Transmission System Pipeline began operation, LILCO began to

CASE 93-G-0401

experience an increase in the amount of reported gas leaks in its Western Suffolk County Division. By October 1992 the number of leaks had tripled in comparison to 1991. It was determined that the increased leakage activity was due to leaking gas service line NORMAC compression couplings that had been purchased and installed by LILCO in the mid-to-late 1950s. These compression couplings are normally located approximately 20 feet from a building's front wall.

Testing performed by an independent laboratory attributed the failure of these couplings to the desorption of heavy wet hydrocarbons from the coupling gaskets, which provided an avenue of escape for the gas passing through the coupling. This shrinkage of the coupling gaskets was compounded by the introduction of drier Canadian natural gas into the LILCO gas distribution system via the Iroquois pipeline, beginning in January 1992. As discussed in its report, staff did not find fault with the company regarding the cause of the problem.

On May 5, 1993, the Consumer Protection Board (CPB) petitioned the Commission pursuant to Sections 65(1), 66(2), 66(3), 66(8), 66(9), 66(12), 71, and 72 of the Public Service Law, requesting an investigation to determine whether LILCO's actions concerning the failure of NORMAC compression couplings were prudent, and asserting that LILCO stockholders be charged for all imprudently incurred costs to replace the defective couplings.

CASE 93-G-0401

LILCO'S RESPONSE

In its comments, LILCO concurred with staff's evaluation of the company's conduct. Specifically, the company reviewed the actions it took prior to delivery of Iroquois Pipeline Gas into its system. Those actions included: 1) review of test results of the quality of the gas; 2) a determination that the gas met all specifications set forth in FERC approved tariffs; and 3) verification that the Iroquois pipeline gas would be drier than the gas it received from its other interstate supplier--a fact accepted throughout the gas industry as a "plus." Subsequent to its determination that the leaks were attributable to the NORMAC couplings, the company, after extensive consultation with staff, embarked upon and completed a program to eliminate the couplings from its system.

DISCUSSION AND CONCLUSION

LILCO, like many of the other utilities scheduled to receive Iroquois pipeline gas, verified that the gas met all required federal specifications. The company was aware that the Iroquois pipeline gas was drier than the gas it had been receiving, but did not test its specific system to ascertain whether the drier gas could be safely accommodated. It appears that no utility other than LILCO experienced a problem with the introduction of the drier Iroquois gas. Given LILCO's experience

CASE 93-G-0401

in this case, however, specific system testing should be performed in the future in circumstances such as these.

Staff concluded that elimination of the couplings from LIICO's system would provide for the safe operation of the system. Based upon our evaluation of the staff report and the company's submission, we have concluded that no further examination of this issue is warranted and the matter should be closed.

The Commission orders:

1. Long Island Lighting Company is directed to perform sample testing of its system components in circumstances similar to those presented here, where gas with a different moisture content is introduced into its system.
2. This proceeding is closed.

By the Commission,

(SIGNED)

JOHN J. KELLIHER  
Secretary

**FILE COPY**

STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION

*Not to be taken away*

**CASE 93-G-0401 - In the Matter of the Consumer Protection Board  
Petition to Establish a Prudency Proceeding  
Against Long Island Lighting Company Related to  
the Replacement of Approximately 45,000 Natural  
Gas Service Lines Equipped With Norton-McMurray  
Couplings**

**NOTICE REQUESTING COMMENTS REGARDING  
FINDINGS OF STAFF THAT LONG ISLAND LIGHTING COMPANY  
ACTED REASONABLY IN ITS EVALUATION AND ACTIONS RELATED TO  
LEAKS ON SERVICE LINES WITH NORTON-McMURRAY COUPLINGS**

(Issued December 7, 1993)

NOTICE is hereby given that the Commission seeks comments from interested parties regarding the findings of staff contained in the attached report that Long Island Lighting Company (LILCO) acted reasonably in its actions to handle the substantial increase in the number of gas leaks on its customers' service lines. LILCO began to experience the increase in gas leaks in early February 1992, shortly after the introduction of gas supply from the Iroquois Gas Transmission System (IGTS) pipeline.

The increased leakage activity was found to be due to the failure of Norton-McMurray (NORMAC) compression couplings installed on gas service lines in the LILCO distribution system during the 1950's. Subsequent testing determined that the coupling design allowed shrinkage of the rubber gaskets due to the effects of drier IGTS gas, resulting in the loss of a gas tight seal and eventual leakage.

To eliminate the leakage problem, LILCO undertook a program to eliminate the NORMAC couplings from its gas system by replacing the service lines. The cost to replace some 45,000 service lines containing NORMAC couplings is estimated at approximately \$37 million.

On May 5, 1993, the Consumer Protection Board (CPB) petitioned the Commission, pursuant to Sections 55, 66, 71 and 72 of the Public Service Law, requesting an investigation to determine whether LILCO's actions concerning the failure of NORMAC compression couplings were proper, and asserting that LILCO stockholders be charged for all imprudently incurred costs to replace the defective couplings. The Commission will review the comments received before replying to the CPB petition.

Parties wishing to comment should submit five (5) copies of their comments to John J. Kelliher, Secretary, New York State Public Service Commission, Three Empire State Plaza, Albany, New York, 12223, by January 12, 1994. Additional information may be obtained from Edward J. Murphy, Deputy Director, Energy & Water Division at (518) 474-8665.

  
John J. Kelliher  
Secretary

FILED-SESSION OF DEC 1 1993

STATE OF NEW YORK  
DEPARTMENT OF PUBLIC SERVICE

November 22, 1993

**TO:** THE COMMISSION

**FROM:** ENERGY & WATER DIVISION, SAFETY & RELIABILITY AREA

**SUBJECT:** CASE 93-G-0401 - In the Matter of the Consumer Protection Board Petition to Establish a Prudency Proceeding Against the Long Island Lighting Company Related to the Replacement of Approximately 45,000 Natural Gas Service Lines equipped with Norton-McMurray Couplings.

**RECOMMENDATION:** Staff's investigation to date finds that the Long Island Lighting Company acted reasonably in its evaluation and actions related to natural gas leaks on service lines with Norton-McMurray couplings, but recommends that this memorandum be sent to interested parties for comments.

SUMMARY

In early February 1992, Long Island Lighting Company (LILCO) began to experience an increase in the amount of gas leaks reported by the public in their Western Suffolk County Division. By October 1992 the number of leaks had tripled in comparison to 1991. It was determined that the increased leakage activity was due to leaking gas service line compression couplings. These compression couplings are normally located approximately twenty

feet from a building's front wall.<sup>1</sup>

The identified leaking couplings were manufactured by Guardian Products Corp. until December 1958, and were marketed and sold by Norton-McMurray (NORMAC). These couplings were purchased and installed by LILCO in the mid- to late- 1950s. Testing performed by an independent laboratory, after the problem had surfaced, has indicated that the failure of these couplings is attributed to the desorption of heavy wet hydrocarbons from the coupling gaskets, thus providing an avenue of escape for the gas passing through the coupling. The most plausible cause of the desorption of the heavy wet hydrocarbons is the introduction of drier Canadian natural gas into the LILCO gas distribution system via the Iroquois Gas Transmission System (IGTS) pipeline, beginning in January 1992. After extensive discussions with staff, LILCO proposed, and staff agreed, that the most effective way to stop both the existing and potential leakage from the NORMAC couplings would be to eliminate<sup>2</sup> them from its system. LILCO has estimated

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1 The purpose of the installation of a compression coupling was two-fold. One was to make the connection of two pieces of pipe quickly and more economically than welding. The second was to provide a link in the service, which in the event of the service being damaged by a third party excavator, would allow a pullout away from the building, rather than inside the building.

2 We say eliminate rather than remove because the agreed means of solving the problem was to insert plastic tubing inside the existing steel service pipe. Therefore, the coupling is still in the ground but is no longer in use.

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that the service line replacement costs are approximately \$37 million.

On May 5, 1993, the Consumer Protection Board (CPB) petitioned the Commission pursuant to Sections 65(1), 66(2), 66(3), 66(8), 66(9), 66(12), 71, and 72 of the Public Service Law, requesting an investigation to determine whether LILCO's actions concerning the failure of NORMAC compression couplings were prudent, and asserting that LILCO stockholders be charged for all imprudently incurred costs to replace the defective couplings.

Staff Review

On January 25, 1992 at 8:00 a.m., LILCO began to receive Canadian natural gas, through the IGTS pipeline, at its South Commack Gate Station in western Suffolk County. Prior to that time, the majority of LILCO's gas supply was delivered through the Transcontinental Gas Pipeline (Transco) system. Shortly thereafter, in February 1992, the company began receiving an increased number of "leak" calls from the public. LILCO's Gas Engineering Department devised and implemented a plan in early March 1992 to investigate the cause for the increase in leaks on the gas service lines.

On May 4, 1992, staff attended a meeting held for the purpose of discussing LILCO's findings and proposed actions relative to the increase in leaks. LILCO reported that the majority of service line leaks were due to leaking NORMAC compression couplings installed in the service lines. LILCO also reviewed system operating pressures before and after the

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introduction of IGTS gas and noted no abnormalities that affected the distribution system with service lines containing NORMAC compression couplings.

LILCO had originally identified 24,000 services containing NORMAC couplings as being affected. The company requested that it be permitted to incorporate services containing NORMAC couplings into its existing gas service replacement program. By adding 8,000 of these services to the pre-existing annual service replacement program of 5,000, LILCO identified a replacement schedule of 13,000 per year. This proposal would have removed the 24,000 originally identified services with NORMAC couplings in three years. It was also proposed that staff permit LILCO to replace only part of the service, namely from the curb valve to the building. By doing so, the company claimed it would maintain safety and at the same time save enough money to pay for the additional 8,000 services to be replaced annually over the ensuing three years. Staff approved the request and replacement work commenced.

In October 1992, LILCO's Western Suffolk and Central Divisions began to experience an increase in leakage activity. Total leaks reported had increased to 23,226 in 1992 up from 7,537 in 1991. One-third of these leaks (7,340) were classified as Type

1 leaks<sup>1</sup> due to the relative proximity of the leaking NORMAC compression couplings to a building front wall.

LILCO's Gas Engineering Department commenced a re-evaluation of the NORMAC leaks and the results indicated that the population of services affected was greater than the initial study had indicated. LILCO's update determined that NORMAC fitted services were installed in more years than originally thought and the total number in service on its system was 45,000.

LILCO contacted staff and stated that due to the increased population and NORMAC failure rate, they would replace all identified services containing NORMAC couplings by the end of 1993. The total cost of this replacement program (from the curbline to the building) including replacements completed prior to October of 1992, has been estimated at \$37 million. When complete, approximately 45,000 NORMAC compression couplings will have been eliminated. The cost of the replacement program has been funded by shifting money allocated for other 1993 proposed construction projects. The projects placed on hold consist of construction projects which, although necessary, pose no immediate safety hazards if postponed to 1994 and 1995.

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1 A Type 1 leak, as defined in 16 NYCRR 255.811, poses the greatest potential hazard and therefore requires immediate action to protect life and property. The leaks were either repaired when found or surveilled daily until they were corrected (usually within the next day or so). The most common way of effectuating repair was to "tube" the service.

Safety Code Compliance

Current remedial actions to address the present leaking coupling problem and related safety concerns have exceeded the requirements of our gas safety code, 16 NYCRR 255.

Synopsis of LILCO's Actions

On August 11, 1987, LILCO received correspondence from IGTS containing a gas chromatographic analysis of the natural gas from the TransCanada Pipeline System. This analysis showed that the composition of gas to be supplied to LILCO would be within the range of acceptability for natural gas.<sup>1</sup> In March, 1992,<sup>2</sup> as part of the company's gas engineering study into the cause of the increase in leakage, LILCO sent seven samples of gas to an independent testing laboratory, Atlantic Analytical Laboratory, for gas chromatography analysis. The analysis corroborated the information from IGTS, i.e., all samples tested were well within acceptable limits.

Also in March 1992, LILCO sent eight NORMAC couplings to another independent testing laboratory, Lucius Pitkin, Inc. (LPI), for analysis. The purpose of this examination was to determine the

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1 In accordance with 16 NYCRR 229 and Federal Energy Regulatory Commission (FERC) Gas Tariff CP89-634.009 as filed November 29, 1991.

2 The attachment to the memorandum depicts a chronology of related events and actions from February 1992 through September 15, 1993.

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nature, and if possible, probable cause of the reported coupling leaks. The LPI report dated March 31, 1992 stated in part:

Results of our examination indicated that four of the eight submitted gas service couplings had sustained gas leaks as a result of insufficient gasket compression, i.e., the gasket material had sustained deformation (creep) during long-term service (35 years).

The leaks in the four couplings were estimated to be several mls per second or about 0.01 cu.ft/min at 60 psi. Torque tests clearly indicated that the leaking coupling exhibited a loosening torque of 10 to 17 ft-lb. It appears that at the time of installation the tightening torque had been significantly higher (recommended at 100 ft-lbs) and looseness occurred due to deformation (creep) sustained by the rubber gaskets during the 35 years of service. Re-assembly of the coupling and torquing to 100 ft-lb sealed the coupling assembly when tested at 80 psi.

No evidence of corrosion or mechanical damage of the coupling components, which, if present, could have contributed to leaks was found.

On February 17, 1993 LILCO began to collect IGTS natural gas samples for analysis of its heavy hydrocarbon content. It had been observed since the flow of the Canadian gas through the IGTS system first began that the gas contains less in the way of wet, heavy hydrocarbons than the Transco gas. With this in mind, the objective of a study by LPI was:

... to determine, if possible, the probable cause of the recent increase in leaks sustained by the gas service couplings. Further, this evaluation was to determine the extent, if any, the natural gas heavy hydrocarbons levels contributed to the coupling leaks.

This study, completed in April 1993, noted the following:

Results of the gas and condensate exposure tests and associated weight, dimensional, and load relaxation analysis, indicate that the recent increase in gas leaks from NORMAC couplings - after introduction of Iroquois gas in 1992 - appears to be related to the out-gassing of heavy hydrocarbons

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from the coupling rubber gaskets into the relatively dry Iroquois gas. Exposure tests of the rubber gaskets to Transco gas condensate revealed that the gaskets readily absorb heavy hydrocarbons (condensate) which, in turn, increases both the weight and dimensions of the gaskets. In contrast, gasket weight and dimensional changes were found to be negligible for rubber gaskets exposed to methane gas and slight for gaskets exposed to Iroquois gas. Liberation of heavy hydrocarbons after exposure to air and subsequent vacuum degassing restored the rubber gaskets to their weights and dimensions prior to testing. In addition, load relaxation tests indicated that rubber gaskets exposed to condensate exhibited less load drop or, in other words, were more resilient due to absorption of heavy hydrocarbons.

Visual examination of the NORMAC coupling after disassembly revealed the rubber gaskets had cold flowed due to long-term creep (visco-elastic) deformation. However, cold flow in and of itself did not cause the recent significant increase in coupling leaks. Rather, dimensional changes of the rubber gaskets due to out-gassing apparently prevented the gaskets from adequately filling the annular space between the service pipe and coupling body.

That is, absorption of heavy hydrocarbons from the Transco gas apparently maintained the size of the cold flowed rubber gaskets sufficiently to sustain the gasket seals. When Iroquois gas, with significantly lower heavy hydrocarbon content (i.e., drier gas) was introduced, heavy hydrocarbons which had been previously absorbed by the gaskets, out-gassed into the drier Iroquois gas. As the gaskets out-gassed a corresponding reduction in rubber gasket size occurred thereby providing a path for gas to leak.

#### LILCO's Response to Problem

LILCO has been conducting accelerated leakage surveys in the areas where NORMAC couplings have been identified as being installed on service lines (i.e., surveys at much shorter intervals than required by 16 NYCRR 255). These include, at staff's request, additional surveys of Type 2A and Type 2 leaks.<sup>1</sup>

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<sup>1</sup> Classification per 16 NYCRR 255.813 and 815, respectively. The classes are distinguished in the amount of gas-in-air-mixture found and how close to a building it is found.

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In addition to instituting programs to identify the NORMAC compression couplings and systematically replacing them through insertion, LILCO has been in contact with other utilities that are purchasing Canadian gas to determine if any have used NORMAC couplings.

Finally, as a result of the April 1993 LPI report, LILCO has had tested samples of other non-metallic components that are found in its gas distribution system to determine whether they are also subject to the same off-gassing as the NORMAC rubber gaskets. Preliminary findings indicate that other non-metallic components exhibit no adverse reaction to the drier gas.

Shortly after the introduction of Canadian natural gas into its gas system, LILCO experienced a significant increase in leaks on customer service lines that utilize NORMAC compression couplings. The failure of the NORMAC couplings was ascribed to three factors: 1) its overall design which allows for the extensive cold flow of its sealing gasket, 2) drier Canadian gas, and 3) the length of time the couplings have been in service. The Canadian gas is well within the tariff limits for the properties of natural gas. Despite this, problems were encountered and LILCO made extensive efforts to determine the cause of the NORMAC compression coupling failures, and has committed itself to removing all NORMAC compression couplings from its system by the end of 1993.

LILCO has already eliminated over 90% of the NORMAC couplings from its system, with the balance to be done by the end

of 1993.<sup>1</sup> In the meantime, LILCO continues to perform increased leakage surveys throughout its system. As soon as a leak is found on a service line, it is either corrected immediately by tubing the line or surveilled in accordance with Code requirements to assure that there is no imminent hazard to life or property until the tubing takes place.

#### Consumer Protection Board (CPB) Position

By petition dated May 5, 1993, the Consumer Protection Board (CPB) asserts that it would be premature to allow LILCO to charge these replacement costs to the ratepayers until the Commission has fully examined the prudence of LILCO's actions. The position of the CPB is based on the fact that the NORMAC couplings began to fail soon after the introduction of one significant change in LILCO's gas supply system in early 1992, i.e., the introduction of "drier" Canadian gas.

The CPB argues that LILCO should have anticipated the effect of the drier gas on the rubber gaskets of the NORMAC couplings prior to flowing the gas through its system. In summary, the CPB urges the Commission to:

1. establish a prudency proceeding to examine the cause of the recent failures of the NORMAC couplings.

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<sup>1</sup> Of those already done, about one-third were actually leaking. As noted earlier, all NORMAC couplings are being eliminated as a precautionary measure.

2. deny LILCO any recovery of the costs incurred to correct this problem pending completion of the prudence investigation.
3. retain an independent consultant to determine whether LILCO was responsible in whole or in part for the massive failure of the NORMAC couplings.
4. require LILCO's shareholders to absorb any imprudently incurred cost of replacing the NORMAC couplings.

#### DISCUSSION

In February 1992, Staff began an investigation of the increase in gas service leaks in LILCO's territory that occurred shortly after IGTS gas was introduced into its system, and has conducted a preliminary evaluation of LILCO's actions before and after the increase in leaks occurred.

Under a tariff agreement regulated by the Federal Energy Regulatory Commission (FERC), the quality specifications of IGTS gas supplies must fall within specific parameters. LILCO determined prior to initial deliveries that IGTS gas met tariff specifications and was aware that the supply contained a somewhat lower level of entrained moisture (wet hydrocarbons) than supplies received from the Transco pipeline system. The relatively drier IGTS gas fell within tariff specifications.

The New York facilities group<sup>1</sup> met (at least) twice on technical matters that would involve the Iroquois project. On June 26, 1989, the details of the gas quality (including the fact that it was "drier" than gas typically coming into the New York metropolitan area in the past) were, among other things, presented to the group. At neither this meeting nor another held with the same group on February 27, 1990, were questions raised that suggested that the "dryness" of the gas might pose any problems. This is not surprising since it is common practice in the industry to install "scrubbers" at points of entry to do exactly that, i.e., remove as many of the heavy hydrocarbons as possible to make the gas "drier." Thus, drier gas is usually preferred.

Delivery of Iroquois gas began in January 1992. In February, the company noted an increase in the number of gas service line leaks it was receiving in western Suffolk County in February of 1992. The company immediately commenced two simultaneous evaluation efforts to determine whether any changes in system pressures or gas quality were a causative factor.

LILCO also contacted other gas utilities receiving IGTS gas supplies to determine if any similar increase in leaks had occurred. While deliveries of IGTS supplies to LILCO commenced on January 30, 1992, upstream pipeline operation actually commenced on

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<sup>1</sup> A group composed of BUG, Con Edison and LILCO that operates an extensive gas transmission system in the New York metropolitan area to help balance the flow of gas to those three LDC's from the various interstate suppliers.

December 1, 1991. Consequently, several gas utilities served by the pipeline were receiving supplies for up to two months prior to LILCO's initial deliveries. None of the gas utilities contacted by LILCO reported any unusual leakage problems or other operational changes subsequent to the introduction of IGTS gas into their systems.

Several studies conducted thus far have indicated that the leaks are a result of the shrinkage of NORMAC coupling gaskets compounded by the evaporative effect of the drier Iroquois gas.

The Commission has articulated its standard of prudent utility conduct as follows:<sup>1</sup>

[a] company's conduct should be judged by asking whether the conduct was reasonable at the time, under all the circumstances, considering that the company had to solve its problems prospectively rather than in reliance on hindsight.

LILCO's conduct in planning for, testing, and taking delivery of IGTS gas supplies must be measured against this standard.

LILCO took action to verify that IGTS gas met all required specifications and was aware that the IGTS gas was somewhat drier than the gas it had been supplying previously. Other utilities scheduled to receive IGTS gas took action similar to LILCO's. None apparently tested its specific system to ascertain whether or not the drier gas could safely be accommodated and none had a problem like LILCO's.

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<sup>1</sup> Case 27123, Consolidated Edison Company of New York, Inc., Opinion No. 79-1 (issued January 16, 1979) p. 6.

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While our preliminary evaluation suggests that LILCO undertook appropriate actions to ascertain the physical characteristics of the IGTS gas and that the company responded rapidly and expeditiously once the problem was diagnosed, staff believes this report should be served on LILCO and the CPB for their comments before final action is taken on the CPB's petition. LILCO should address specifically in its comments the issue of the appropriateness of the review conducted prior to the receipt of IGTS gas.

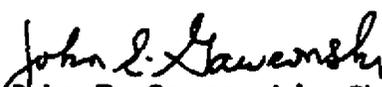
RECOMMENDATION

It is recommended that this report be served upon LILCO and the CPB for their comments before the Commission responds to the CPB petition. LILCO is directed to respond to the open question identified as to whether it took all reasonable steps before the introduction of the drier IGTS gas to ensure that its system could safely accommodate the change in the characteristics of the gas, without further action on its part.

Respectfully submitted,

  
Thomas J. Munnelly  
Assistant Utility Engineer

Reviewed by:

  
John E. Gawronski, Chief,  
Operating Performance Analysis Section

Approved:

  
Edward J. Murphy  
Deputy Director  
Safety & Reliability Area  
Energy & Water Division

ATTACHMENT

**CHRONOLOGY OF LILCO SERVICE LINE LEAK INVESTIGATION**

February 1992 LILCO Gas Design & Construction and Gas Customer Service  
LILCO report an unusual increase in leak activity, particularly with gas services, since the IGTS supply began.

March 5, 1992 Gas Engineering (GE) implements plan to investigate increase in leaks on gas services, predominantly at compression coupling location on service. The study is to evaluate:

- condition of compression couplings
- quality of Iroquois gas
- pressure of gas system
- similar problems with other IGTS customers

March 6, 1992 LILCO Gas Supply and Planning asked for specifications of IGTS gas and other takers of gas.

March 9, 1992 Requisitions issued for laboratory analysis of samples of leaking compression couplings and samples of gas removed from services with leaking couplings.

Began collecting data as to location of leaking services, location of leaks on service, age of service.

March 10, 1992 Began collecting samples of leaking couplings. Information received from Gas Supply and Planning on gas specification and other takers of gas.

March 12, 1992 Two other takers of IGTS gas (So. Conn Gas and Conn Natural Gas) are not having any problems with leaks on their systems.

March 13, 1992 COA (Lab/Shoreham) given five samples of leaking couplings to evaluate.

March 16, 1992 NYSEG is not having any problem with IGTS gas.

- March 20, 1992 Report from Atlantic Analytical Laboratory on collected gas samples indicates gas meets the required quality specifications.
- Central Hudson Gas & Electric is not having any problems with IGTS gas.
- March 1992 Operating Departments report that leak activity is decreasing with warmer weather.
- March 23, 1992 Plotting of location of services shows leaks are clustering in areas, primarily in the Western Suffolk Division.
- March 25, 1992 Pressures on gas system are verified to be normal and not increased over previous winters.
- March 26, 1992 Age of services affected are predominantly in the 1950's range.
- April 1, 1992 Lucius Pitkin Inc. (LPI) report on leaking compression couplings received. Leaks in couplings are due to plastic deformation of the rubber gasket.
- April 2, 1992 Norton McMurray reports the NORMAC couplings that are leaking were first designed around 1950 and were supplied until 1959. No records of how many LILCO purchased, only a dollar sales value. LILCO also has no records of how many of these couplings were purchased.
- April 3, 1992 COA (Lab/Shoreham) report of investigation of 5 couplings found all leaked at pressures under 60 psi. COA also confirms that the deformation of the gasket is the cause of the leaking.
- April 6, 1992 GE report on investigation into the causes for 1992 increase in leak activity is issued. Findings are that the NORMAC couplings installed in services during the period from 1955 through 1957 are failing due to deformation of the rubber gasket material. Recommendation course of action is to replace the service.
- April 1992 Management decision to partially replace 24,000 services installed between 1955 through 1957 over a 3 year period.

- April 24, 1992 Pilot program to partially replace services with leaking couplings initiated in Centereach.
- May 1992 Meetings with Commission staff to discuss investigation results and recommended course of action.
- May 6, 1992 GE begins to prepare work orders to replace 8,000 services during 1992. Work will be concentrated in the areas with most leaks. Brentwood, Plainview, Commack, Centereach and scattered areas in Eastern Suffolk.
- May 31, 1992 Pilot program completed indicated the feasibility of partial replacement.
- June 1992 Work begins on the replacement of 8,000 gas services.
- Fall 1992 Operations indicates the number of leaking services is increasing rapidly and is affecting more than the 1955 to 1957 services.
- Oct. 22, 1992 GE begins to reevaluate the April 1992 study. Primary concentration is on the population of leaking services.
- Dec. 23, 1992 GE follow-up study completed. Results indicate the population of services affected to be greater than initial study indicated, and includes services installed from 1954 through 1958. Study reaffirms that system pressures are not higher than normal, and that only LILCO is experiencing this problem. Because of sharp increase in leak activity, decision is made to replace all services installed from 1954-1958 by the end of 1993.

GE issues Gas Material Bulletin that stresses the importance of proper tightening of new compression couplings.
- Dec. 28, 1992 Gas distribution system pressures are lowered approx. 10 psi in areas of high leak rates.
- Jan. 4, 1993 Gas System Operations & Production (GSO&P) begins laboratory testing of leaking couplings to determine the effect of varying pressures and temperatures.

- Jan. 8, 1993            GSO&P raises outlet temperature of gas heaters at Commack M&R Station, but there is little increase in temperature at local regulator station, due to low ground temperatures.
  
- Jan. 12, 1993        Meeting with Commission staff , Melville, to discuss leaking couplings and capital program issues.
  
- Jan. 26, 1993        GSO&P study entitled "Testing of NORMAC Compression Coupling" completed. Results indicate that leak rates are greater at higher pressures and lower temperature and, conversely, less at lower pressure and higher temperatures. Feb. 1993  
  
 GP&C condensate injection test conducted at Elwood Regulator Station to test the effect of injected condensate on the coupling leak rate. After 8 days, the test was discontinued due to customer complaints of "strange smells."
  
- Feb. 2, 1993         OGS issues Gas Leak Fact sheet to assist employees in understanding the gas system and to answer questions regarding gas leak repair efforts.
  
- Feb. 10, 1993        LILCO and Commission staff meet to review status of leaks, leak repairs, and leak investigations.
  
- Feb. 17, 1993        GE and GSO&P met with Lucius Pitkin Inc. (LPI) representatives to review previous LILCO test results and to review a preliminary proposal for performing coupling testing and analyses.
  
- Feb. 17, 1993        Collection of samples for LPI tests begins.
  
- Feb. 22, 1993        Additional coupling samples and cylinders of gases brought to LPI labs in NYC.
  
- Feb. 24, 1993        Final proposal received from LPI to perform laboratory analysis and testing of compression fittings (Phase I). These tests shall include visual examination, photographic examination, pressure and temperature testing, adsorption/drying testing, stress/relaxation testing of the rubber gaskets and report.
  
- Feb. 26, 1993        LILCO Environmental Engineering investigation completed on the effect of IGTS and Transco gas on coupling gaskets. Results indicated that gaskets exposed to IGTS has had a larger weight loss than those exposed to Transco gas.

- March 3, 1993            Meeting held with LILCO and LPI to review the status of tests. Preliminary results of some tests discussed. GE prepared a summary of Transco and IGTS gas compositions, which was given to LPI at meeting.
- March 16, 1993        GE prepared a list of non-metallic materials in the gas system and forwarded this to LPI.
- March 17, 1993        Meeting held between LILCO, LPI, and the PSC staff in which results of the Phase I investigation are presented by LPI. Results indicate that "dry" IGTS gas and rubber gasket cold flow are the two main contributing factors to the leak problem. Rubber coupling gaskets that have been exposed to Transco supplied gas for some 35-40 years are "outgassing" the heavy hydrocarbons which result in gasket shrinkage and weight loss. The NORMAC coupling design lacks a gasket retaining ring which contributes to the cold flow problem. Some degree of cold flow is typical of rubber gaskets that have been in service for this period of time.
- March 23, 1993        Meeting held between LILCO and LPI to review requirements and schedule for additional testing.
- March 30, 1993        Meeting held between LILCO and LPI, and PSC staff at LPI's offices to review results of LPI Phase I investigation.
- March 30, 1993        GE prepares a list of collection sites for non-metallic materials for the LPI Phase II work.
- March 31, 1993        Final proposal received from LPI to perform additional analysis to determine the type and quantity of components evaporated from the non-metallic coupling materials (Phase II)
- April 2, 1993         Perfection Corp. provides presentation on their products and the non-metallic materials they use.
- April 28, 1993        Draft report on Phase I coupling investigation received from LPI. Report further describes results presented during 3/17/93 meeting that "dry" Iroquois gas and rubber gasket cold flow are the two main contributing factors to the leak problem.

April 1993

Testing by the LILCO labs of gaskets that are exposed to a propane/natural gas mixture and IGTS gas begins.

April 1993

A test stand to evaluate couplings, other gas system components, non-metallic materials, and the effect of various gases and condensates on these components is designed for installation at the Riverhead Gas Plant. Purchase of materials begins.

Work starts on LPI Phase II investigation to specifically identify the "outgassing" hydrocarbons through mass spectrography. Twelve NORMAC couplings removed from system and forwarded to LPI. Identification of these heavy hydrocarbons may allow for the injection of hydrocarbons into the gas system in the future to stop the drying process. GP&C and GE have completed the issuance of material requisitions to set up a compression coupling test stand at the Riverhead plant to test the affect of injecting different heavy hydrocarbons on leaking NORMAC couplings and other non-metallic components used in the gas system.

May 4, 1993

Dresser Industries reviewed their gas system components, non-metallic materials and the research and testing that they have performed on their materials.

May 7, 1993

The last of the samples required for the Phase II project were collected and turned over to LPI.

July 8, 1993

Additional information regarding the continuing investigation of NORMAC and other non-metallic materials in the gas system was reviewed at a NORMAC Investigation group meeting

GD&C is working with GCS and GSO to identify a geographic area where pressures may be raised to so-called "winter settings" (close to maximum normal operating pressure) in an attempt to identify potential problems and correct them before the colder weather. However, it appears that system pressures in most areas are already at or close to this point. Thus, few, if any, additional leaks are expected in these areas this winter.

July 23, 1993

GE released their report, "Dresser Style 90 Compression Coupling Engineering Analysis and Recommendations". The report provides information on LILCO tests that show that re-tightening of Dresser Style 90 couplings is a cost effective method of stopping the leakage in such a coupling. In addition, gasket materials removed from Style 90 couplings installed in the 1960's were tested and found not to have degraded.

Aug. 4, 1993

The NORMAC Investigation Group met again to review additional testing that LPI is conducting. The testing will include measurements of new gaskets produced by various companies and installed in other gas fittings. Tests will be conducted to determine performance characteristics by measuring weight loss, rather than using the expensive analytical methods of previous tests. Results of these and previous Phase II tests will be incorporated in a single report.

Construction of the test stand at Riverhead has been completed ahead of schedule. GE will develop testing procedures to determine the effects of changing conditions, such as temperature, pressure, gas composition, and nut torque, on a fitting's leakage rate.

It was found that there are 99 gas services with NORMAC couplings on the 124 psig system. Although none of these were found to be leaking, all will be replaced by the end of 1993. In addition, replacement of 4,500 services with NORMAC couplings on the low pressure system was discussed. Few of these have been found to be leaking.

Aug. 11, 1993

A meeting was held with PSC staff to review the NORMAC situation. LILCO agreed to eliminate all the NORMAC couplings on the low pressure system by the end of 1993.

Aug. 13, 1993

A Gas Material Bulletin on repair of leaking Dresser couplings on gas services is issued by GE. This bulletin is based on the prior GE report on this subject.

- Aug. 25, 1993 Detailed test procedures developed by GE were discussed at a NORMAC Investigation group meeting. The procedures address the testing of old and new Dresser couplings under various conditions.
- It was reported that approximately one half of the NORMAC services on the 124 psig system have been replaced.
- Sept. 10, 1993 A meeting was held with PSC staff to update the leak activity and progress for establishing resources to complete service replacements by the end of November. The capital program was reviewed and indicated that replacements should be complete by year's end.
- Sept. 15, 1993 The NORMAC Investigation Group meets to further review progress. The final LPI testing has been completed and a report incorporating all the results of the Phase II study should be released in October
- Nov. 4, 1993 No other components on LILCO's system indicate any problem with the drier gas. Normac elimination program still expected to be complete by end of 1993.

# Appendix B

Component / Parameter	Tolerance	Recommended Tariff Values / Units <sup>1</sup>	Typical Ranges Received Today	Current Tariff Values
<b>Hydrocarbons</b>		<b>Mole %</b>	<b>Mole %</b>	<b>Mole %</b>
Methane	Minimum	88.0	92 - 98	N/S
Ethane	Maximum	6.0	1-2	N/S
Propane	Maximum	1.7	0.1-0.2	N/S
C4+	Maximum	1.0	ND-0.1	N/S
<b>Inerts</b>		<b>Mole %</b>		
Total Inerts	Maximum	4.0	4.0	4.0
CO2	Maximum	2.0	<1	3.0
Nitrogen	Maximum	2.0	.9 - 2.0	N/S
<b>Sulfur / Sulfur Compounds</b>				
Hydrogen Sulfide	Maximum	Retain existing tariff value <sup>2</sup>	<0.1 grain/100 scf	1 grain/100scf
Total Sulfur	Maximum	Retain existing tariff value	<0.5 grain/100 scf	20 grains/100scf
<b>Mercaptan</b>		<b>As Required</b>	<b>As Required</b>	<b>As Required</b>
<b>Other</b>				
Oxygen	Maximum	.20%	<.1%	.20%
Water Content	Maximum	4 lbs/MMscf	1-4 lbs/MMscf	4 lbs/MMcfc
Temperature	Maximum	120°F	< 120°F	120°F
Hydrocarbon Dew Point (CHDP °F)	Maximum	<15°F	<15°F	N/S
Heating Value (HHV) <sup>3</sup>	Range	967 - 1110 Btu/scf	1004 - 1030 Btu/scf	950 Btu/scf (minimum)
Wobbe Number <sup>4</sup>	Range	1269 - 1373 <sup>5</sup>	1315 - 1345	N/S
Objectionable <sup>6</sup> Matter	Commercially Free	Commercially Free	Commercially Free	Commercially Free

**KeySpan Recommended Gas Quality Receipt/Delivery Point Specification Constituent & Parameter Limits For IGT 3/6/06**

<sup>1</sup> Represents average daily values. Not all gas compositions within the stated constituent ranges are interchangeable. Limits represent requirements of most DLE turbines, NGV's and combustion processes. Feedstock processes would require individual evaluation. Most Liquefaction Plants would require retrofits. Some constituent limits may change and/or may not require specification pending completion of research stated in the NGC+ Interchangeability White Paper.

<sup>2</sup> Retain existing tariff value, practical experience suggests delivered gas into the market area meets current end use requirements

<sup>3</sup> Dry, Real @ 60°F and 14.73 PSIA

<sup>4</sup> Per NGC+ Interim Guideline Recommendations

<sup>5</sup> Based on +/- 4% of historically acceptable Wobbe ( 1321 +/-4%).

<sup>6</sup> Objectionable includes solids, gums, tars, bacteria, free liquids, etc..

**CERTIFICATE OF SERVICE**

I hereby certify that I have this day served the foregoing document upon all parties to this proceeding in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure.

Dated at Washington, D.C. this 10<sup>th</sup> day of March, 2006.

/s/   
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