

THE STATE OF NEW HAMPSHIRE
SUPREME COURT

NO. 2019-0629

LIBERTY UTILITIES (ENERGY NORTH NATURAL GAS) CORP.
d/b/a LIBERTY UTILITIES – KEENE DIVISION
PUBLIC UTILITIES COMMISSION CASE DG-17-068

APPEAL OF TERRY CLARK PURSUANT TO SUPREME COURT RULE 10

EMERGENCY MOTION OF APPELLANT TO SUBSTITUTE EXHIBIT

Terry Clark (“Clark”), the appellant in this appeal, hereby respectfully moves this Honorable Court to substitute Exhibit “B” of this motion for Exhibit “B” of the Emergency Motion of Appellant for Immediate Suspension of Commission Orders Pursuant to RSA 541:18 dated and e-filed yesterday, January 22, 2020. Clark requests this relief to correct a mistake by his counsel in inadvertently filing only the document identified as “Keene Conversion Plan” in the utility’s October 24, 2019 filing, recorded at Tab 34 in Commission Docket No. DG 17-068. As discussed in paragraph 8 of yesterday’s suspension motion, Exhibit “B” should be the entire filing of a “Cover Letter,” “CNG Operating Procedures” and “CNG Maintenance Procedures,” as well as the “Keene Conversion Plan.” *See id.* Exhibit “B” to this motion is the actual complete October 24, 2019 filing identified as Exhibit “B” in the suspension motion and should be substituted for the Exhibit “B” filed with that motion, accordingly. Clark requests this relief on an emergency basis because the suspension motion was filed on an emergency basis to prevent immediate, continuing, irreparable harm to Clark and preserve the *status quo* and, as the suspension motion should be considered with the correct Exhibit “B,” the same reasons support filing this motion on an emergency basis to ensure that the two motions are brought to the Court’s attention contemporaneously. Clark’s counsel apologizes for his mistake and any confusion it may have caused the Court.

WHEREFORE, for the reasons expressed, Clark respectfully requests that this Honorable Court:

- A. Grant this Motion; or
- B. Provide such other relief as is just and reasonable.

Respectfully submitted,

Terry Clark,

Dated: January 23, 2020

By: /s/ Richard M. Husband
Richard M. Husband, Esquire
10 Mallard Court
Litchfield, NH 03052
(603) 883-1218
RMHusband@gmail.com
N.H. Bar No. 6532

CERTIFICATE OF SERVICE

I, Richard M. Husband, Esquire, hereby certify that on the 23rd day of January, 2020, I served copies of the foregoing motion and this notice of filing on the Attorney General and all counsel and parties registered with the electronic filing system via the system, and on the Public Utilities Commission via first-class mail, postage prepaid, copies of the foregoing motion served on Attorney Fabrizio and Executive Director Howland.

/s/ Richard M. Husband
Richard M. Husband, Esquire

EXHIBIT “B”



Michael J. Sheehan, Esq.
Senior Counsel
603-724-2135
Michael.Sheehan@libertyutilities.com

October 24, 2019

NHPUC 24OCT'19PM4:23

Via Hand-Delivery and Electronic Mail

Debra A. Howland, Executive Director
New Hampshire Public Utilities Commission
21 South Fruit Street, Suite 10
Concord, NH 03301-2429

Re: Docket No. DG 17-068; Liberty Utilities (EnergyNorth Natural Gas) Corp. -- Keene Division

Dear Ms. Howland:

On behalf of Liberty Utilities (EnergyNorth Natural Gas) Corp., d/b/a Liberty Utilities – Keene Division, I write to provide the information required by Order No. 26,274 (July 26, 2019) (the “Order”), as clarified by Order No. 26,294 (Sept. 25, 2019) (the “Rehearing Order”).

First, the Order required the Company to file “its operations and maintenance plans for the conversion and operation of the proposed natural gas system.” Order at 15. Enclosed with this letter are seven copies of the following documents:

- CNG Operating Procedures
- CNG Maintenance Procedures
- Keene Conversion Plans

Second, the Rehearing Order directed the Company “to file a comprehensive report of the costs associated with the Company’s efforts to convert the initial portion of the system to CNG (at the Monadnock Marketplace).” Rehearing Order at 15.

The table below itemizes the costs incurred to date to install of the CNG station itself (which will be available to serve current and future CNG customers), to install the new main and associated infrastructure that runs from the CNG station to the existing distribution system (which will serve all future natural gas customers from the planned Production Avenue facility), and for the just-completed conversion of the Monadnock Marketplace customers from propane-air to CNG. A detailed description of the cost categories can be found beneath the table. Note that charges are still coming in from the recent work, so the “Total Estimated Spend” column was added to indicate the Company’s expectation of final costs.

	Internal Labor	Materials	Vouchers	Burden	AFUDC	Total to Date	Total Estimated Spend
43C18821-18301 CNG Station	\$96,624.06	\$4,032.04	\$484,329.84			\$584,985.94	\$675,000
43C18821-18303 New Main	\$55,312.50	\$5,642.93	\$231,814.53	\$151.63	\$21,729.51	\$314,651.10	\$330,000
43C18821-18304 Conversion	\$4,738.03		\$74,029.98			\$78,768.01	\$90,000
Grand Total	\$156,674.59	\$9,674.97	\$790,174.35	\$151.63	\$21,729.51	\$978,405.05	\$1,095,000

43C18821-18301- CNG Station (COG). This job number tracks all charges associated with the new CNG station at 43 Production Ave. It includes the design, permitting, and installation of the CNG decompression skid along with costs for fencing, lighting, piping, and site paving to the property line.

43C18821-18303- CNG Conversion Outside (Capital). This job number tracks all charges associated with the installation of the main from the property line (CNG skid) to the existing propane air system on Ashbrook Road. Charges also included the installation of valves and purge points prior to the conversion. For the conversion itself, this job number tracks charges to purge the propane air out of the gas main, pressure testing, and the purge in with natural gas from the CNG station. This number was also used to track charges associated with rebuilding all meter sets associated with the conversion.

43C18821-18304- Customer Conversion Inside (Expense). This job number tracks all conversions of customer appliances from propane air to natural gas.

Thank you.

Sincerely,



Michael J. Sheehan

Enclosures
cc: Service List

Liberty Utilities CNG Facility – 43 Production Ave Keene, NH

CNG Skid Operating Procedures

Liberty Utilities OQ & O &M requirements & References

1. Document stored in Liberty Utilities online library labeled “NH Keene Division Compressed Natural Gas Facility Operation and Maintenance Manual”
2. OQ Requirements #3LU and 70 for connecting and disconnection of hose from trailer.
3. References
 - a. Apex-P & ID Decompression Skid and CNG Skid Components
 - b. Lincoln Hexagon CNG Trailer
 - c. Quantum Fuel System Trailer

1. Trailer Arrival and Connection to Liberty Site

a. Arrival

- i. Call into Liberty Gas Control to notify that you are on-site and will be opening gates (603-216-3617)
- ii. Ensure Liberty Keene Technician is present before opening gates
- iii. Open truck gate fully and secure in open position.
- iv. Turn on site lighting using site lighting on front of LIBERTY regulation building (decompression skid)
- v. Enter site and back into empty bay Back into position, set brakes, chock trailer wheels.

b. Trailer Preparation.

- i. Drop landing gear, disconnect brake line, open kingpin, pull tractor forward.
- ii. Open and secure trailer doors. Verify type of trailer delivering to site (see below).

*Lincoln Hexagon T4 & T53	*Quantum Fuel Systems
Check fire protection system pressure gauge and ensure that pressure is 90-110 psig. If it is not, notify XNG Dispatch (857-366-7981) to log in trailer maintenance record.	Check motive gas regulator for frosting condition. If frosted, notify XNG Dispatch (857-366-7981) to log in trailer maintenance record.
Check motive gas regulator for frosting condition. If frosted, notify XNG Dispatch (857-366-7981) to log in trailer maintenance record.	Verify that all both unload manifold valves are closed
Verify that all 4 cylinder valves are closed and both manifold valves are closed	Verify that the hose manifold pressure gauge is at 0 psig. If it is not, open trailer hose vent to vent pressure to 0 psig. Close trailer hose vent
Verify that the hose manifold pressure gauge is at 0 psig. If it is not, open trailer hose vent to vent pressure to 0 psig. Close trailer hose vent	Verify trailer hose vent is closed
Verify trailer hose vent is closed	Remove cap and inspect trailer nozzle for cleanliness
Unlatch brake interlock and rotate arm around to lowest position	
Remove cap and inspect trailer nozzle for cleanliness	

Liberty Utilities CNG Facility – 43 Production Ave Keene, NH

CNG Skid Operating Procedures

*See Lincoln Hexagon and Quantum Fuel System documents for component information

- c. Hose Station Preparation. See Apex Design Drawing P003 for part numbers reference.
 - i. Verify the ID of the bay the new full trailer was delivered to in the Truck Station - Unload Station (A/B) of the decompression skid
 - ii. Verify that line valve V-100 A or B on the Truck Module – Unload Station (A/B) of the decompression skid is closed in the bay with the new delivery
 - iii. Verify PIT-201 A or B is at 0 psig (which ever bay is not feeding the system). If not, slowly open the correct V-101 A/B to vent hose pressure to 0 psig. Close V-101 A/B when at 0 psig. Monitor to ensure pressure does not rise.
 - iv. Verify hose station vent valve (V-101 A and B) is closed.
 - v. Inspect hose condition and ground wire/clamp condition.
 - vi. Remove hose from holder and inspect hose-end coupling for cleanliness.
- d. Trailer Connection. See Apex Design Drawing P-003 for part numbers reference.
 - i. Confirm trailer pressure does not exceed 4250 psig (Do not connect hose if greater than 4250 psig).
 - ii. Connect static ground to trailer grounding ball.
 - iii. Connect hose to trailer and verify HC-308 (C-100A and B) collar is fully seated and locking mechanism is engaged.
 - iv. Re-verify trailer manifold vent valve is closed.
 - v. Re-verify that hose station vent valve (V-101 A and B) is closed.
- e. Valve Opening.
 - i. Slowly open manual station valve V-100 A or B See Apex Design Drawing P-003

*Lincoln Hexagon T4 & T53	*Quantum Fuel Systems
Slowly open each trailer manifold valve (2 total). This will pressurize the hose	Slowly open each trailer unload manifold valve (2 total). This will pressurize the hose
Inspect hose and connections for leaks	Inspect hose and connections for leaks
Slowly open each tank's manual valve (4 total). Use handle extension bar, as needed	Place the unloading switch/knob in the on position. <u>Pressure must rise 80-120 psig on the gauge directly above it.</u>
Verify pressure in trailer equals hose station pressure (PIT-201 A/B) and the pressure indicators located next to PIT-201 A/B (Apex-P-003)	Verify actuated valves are in the open position by viewing the yellow valve position indicators being in the horizontal position
Verify all 6 trailer valves are fully open	Verify pressure in trailer equals hose station pressure (PIT-201 A/B) and the pressure indicators located next to PIT-201 A/B (Apex-P-003)
	Verify both trailer manifold valves are fully open

*See Lincoln Hexagon and Quantum Fuel System documents for component information

- ii. Verify that V-100 truck station valve is fully open.
- iii. Inspect piping/valves for leaks.

Liberty Utilities CNG Facility – 43 Production Ave Keene, NH

CNG Skid Operating Procedures

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2. Control System Acknowledgement of Full Trailer. See Apex design drawing M-102 for control panel reference.
 - a. Go to Control Panel – Skid Door combo 2+4, then 3
 - b. Go to **Truck Queue page**
 - i. Verify the “Add” Button is indicated at the trailer station being delivered.
 - ii. Hit the “add” button on the bay the full delivery is in.
 - iii. Enter the Trailer ID #100-150 on the number pad and hit enter.
 - iv. Check truck queue in the upper left of the page to verify the newly entered station has been added to the queue.
 - c. Take delivery photos of rear of trailer and truck station valving, send to OCC. Call OCC operator to approve confirmed delivery.
 - d. See step 7 for trailer disconnection procedure

 3. System Re-pressurization. See Liberty Utilities and XNG Emergency Plans for 43 Production Ave, Keene (Appendix J)
 - a. If PIT-214 (Apex P-004) is less than 150 psig, then:
 - i. Open N2 cylinder valve.
 - ii. Check pressure on N2 cylinder to ensure we have motive gas present. Ensure manual valve downstream of SOV-504 (Apex P-004) is open.
 - b. Test run heaters 700A/B (Apex M-102) and verify storage tank is at temperature.
 - i. Adjust set point 5 °F above current tank temperature to start boiler. Monitor boiler start sequence, operation, and shutdown to confirm operation.
 - ii. Dis-able HTP controller on heater that just operated.
 - iii. Adjust set point to desired operational temperature or 5 °F above current temperature in order to get boiler to fire. Monitor boiler start sequence, operation, and shutdown to confirm operation.
 - iv. Re-enable first tested boiler.
 - v. Reset PLC temperature controller to desired temperature.
 - c. Test run P-600A/600B to heat up piping and heat exchanger. Apex M-102
 - d. Ensure all pressures in skid (PIT-203) Apex P-004 (PIT-214) Apex P-004 (PIT-232) Apex P-005 are “low” and matching the customer line pressure.
 - i. If pressures are not low:
 1. Close manual valves upstream of FCVs-205A/B (V-204A/B) Apex P-004
 2. Close manual valves upstream of FCVs-219A/B (V-246A/B). Apex P-005
 3. Close manual valves downstream of PRV-222A/B (V-223A/B). Apex P-005
 4. Close valves upstream of flow meter (V-251 & V-234). Apex P-004
 5. Open SOV-504 Apex P-004 to pressurize motive gas (nitrogen) system, which will cause FCV-205A/B Apex P-004 and FCV-219A/B Apex P-005 to open.
 6. Slowly open V-246A/B Apex P-005 to allow regulator to lock-up.
 7. Slowly open V-204A/B Apex P-004 to allow regulator to lock-up.
 - ii. If the pressures are low, open SOV-504 Apex P-004 to apply motive gas to valves which will cause them to open.
 1. Close manual valves downstream of PRV-222A & PRV 222B labeled (V-223A/B). Apex P-005
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Liberty Utilities CNG Facility – 43 Production Ave Keene, NH

CNG Skid Operating Procedures

2. Close valves upstream of flow meter (V-251 & V-234). **Apex P-005**
- e. On control panel, press “Re-pressurization” button.
 - i. By-pass SOV opens and pressurizes the system at a controlled rate.
 - ii. Ensure pressures upstream, downstream of 1st cut, and downstream of 2nd cut equalize to their normal pressure.
- f. Quickly and partially crack open the valves downstream of PRV-222A/B **Apex P-005** to allow regulator to fully lock-up with operating gas pressures.
- g. Slowly open valve upstream of flow meter and allow downstream pressure to equalize without over-spinning the meter.
4. Shutdown Procedure. **See Liberty Utilities and XNG Emergency Plans for 43 Production Ave, Keene (Appendix J)**
 - a. To put CNG system into “Shutdown Status”: **See control panel in boiler room.**
 - i. Remove trucks from waiting Queue.
 - ii. Verify LIBERTY is ready for CNG system to shut down.
 - iii. Close operating trailer(s) cylinder valves and allow CNG system to depressurize into LIBERTY’s system. System should end up at 45 psig.
 - iv. CNG system will shut down on “Truck Queue Empty”.
 - v. LIBERTY close the high and low pressure sense lines.
 - vi. LIBERTY close the regulator hut isolation valves.
5. **To remove a trailer running in dual unload mode- See control panel in boiler room.**
 - a. On the Truck queue page press the blue “Remove Single Truck” button
 - b. A window will pop up and ask for you to enter the pressure of the truck you would like to remove, press the 0 in the box and a pin pad will pop up. Enter pressure and hit the green enter arrow
 - c. Buttons will pop up next to trailer slots asking which trailer you would like to remove, select the desired trailer to be removed
 - d. An “Action is Protected” will pop up, confirm by pressing the green arrow.
 - e. Truck will be removed and system will only run off of one truck.
6. **Force Swap- See control panel in boiler room.**
 - a. Truck Queue page, make sure 1st in queue has a full truck and is present in the queue.
 - b. Press “GO TO NEW TRUCK” (This starts normal truck swap preheat sequence.)
 - c. Once the swap is confirmed complete, disconnect the truck.
7. **Trailer Disconnection and Removal from Site. See Apex P003 for part numbers reference.**
 - a. Verify condition of trailer to be disconnected. Normally, pressure in trailer is low (near 200 psig) and that station is not flowing/valve closed.

Liberty Utilities CNG Facility – 43 Production Ave Keene, NH

CNG Skid Operating Procedures

*Lincoln Hexagon T4 & T53	*Quantum Fuel Systems
Close all 4 cylinder valves on trailer. Use handle extension bar, as needed. Tank valves must be closed during transportation	Place the unloading switch/knob in the off position. <u>Pressure will decrease to 0 psig on the gauge directly above it.</u>
Close both manifold valves on trailer	Verify actuated valves are in the closed position by viewing the yellow valve position indicators being in the vertical position
	Close both unload manifold valves on trailer

***See Lincoln Hexagon and Quantum Fuel System documents for component information**

- b. Close hose station valve V-100 A or B for trailer being removed from the site.
- c. Slowly crack open hose station vent valve V-101 A or B to depressurize hose and piping between the trailer manifold and V-100 A or B. Vent until pressure at PIT-201 A or B is at 0 psig.
- d. Disconnect hose by disengaging locking mechanism.
- e. Disconnect ground cable reel and walk it back to truck.
- f. Place hose in hose caddy to protect from weather.
- g. Close V-101 A or B.

*Lincoln Hexagon T4 & T53	*Quantum Fuel Systems
Rotate brake interlock bar into position and securely clip with pin	Visually inspect condition of rear of trailer
Check fire protection system pressure gauge and ensure that pressure is 90-110 psig. If it is not, notify dispatch to log in trailer maintenance record	
Visually inspect condition of rear of trailer	

***See Lincoln Hexagon and Quantum Fuel System documents for component information**

- h. Disconnect and stow door securing chains.
- i. Close and secure trailer doors.
- j. Perform walk-around on trailer to make sure unit is ready for connection and removal.
- k. Back tractor in, connect kingpin, connect brake line, and raise landing gear.
- l. Conduct pre-trip inspection.
- m. Remove wheel chocks and hang on bollards
- n. Pull trailer out of site.
- o. Turn off site lighting using switch on front of LIBERTY regulation building (decompression skid)
- p. Close and lock gate.
- q. **Call into Liberty Gas Control to notify that you have closed gates and are off-site (603-216-3617)**

**CNG Maintenance Procedures
43 Production Ave-Keene NH
Liberty Utilities Decompression Skid
Updated: January 2019**

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 - 8.15. Proximity switch at truck unloading station
 - 8.16. Flame detector
 - 8.17. Gas detector

1. Introduction

- 1.1. This is the general maintenance guide for the XNG decompression skid located at 43 Production Ave Keene, NH 03431. This guide will lead you to the necessary information needed for general maintenance activities.

2. Purpose

- 2.1. The purpose of the maintenance manual is to act as a quick reference for pertinent information regarding equipment within the skid. This manual will be the basis for planning, scheduling, and executing schedule maintenance. The goal of this guide is to minimize equipment breakdowns and ensure compliance with state and federal requirements with regards to inspections and maintenance.

3. Operator Qualifications

3.1. Covered Tasks - CNG Decompression Skid – Keene

Covered Tasks - CNG Decompression Skid – Keene			
Leak Survey and Leak Investigation			
	XNG	EnergyNorth	Keene
18 Conducting gas leakage surveys		☒	☒
19 Patrolling and inspecting pipeline		☒	☒
20 Investigating leak/odor complaints		☒	☒
Pressure Regulation			
	XNG	EnergyNorth	Keene
59 Controlling and monitoring gas pressures and flows	☒	☒	☒
60 Operation of remote control valves	☒	☒	☒
61 Inspect recording gauge	☒	☒	
62 Inspect and test pressure regulator station	☒	☒	☒
63 Testing overpressure protection	☒	☒	☒
64 Inspect telemetering equipment at a pressure limiting or regulator station	☒	☒	
65 Bypass a regulator	☒	☒	☒
66 Field interpretation of pressure recording charts	☒	☒	
67 Inspecting a pressure regulator vault	☒	☒	
Abnormal Operating Conditions			
	XNG	EnergyNorth	Keene
70 Properties of natural gas and abnormal operating conditions	☒	☒	☒
3LU Connection and Disconnection of CNG Trailer at CNG Decompression Skid	☒		☒
Legend XNG: - Maintenance personnel shall have tasks 59, 60, 61, 62, 63, 64, 65, 66, 67, and 70. - Drivers making the hose connection shall have tasks #3LU and 70. Liberty Utilities EnergyNorth: - I & R Maintenance personnel shall have the operator qualifications listed above. Liberty Utilities Keene: - Keene Maintenance personnel shall have the operator qualifications listed above. S.Furey 1/20/2019			

4. Maintenance Schedules

4.1. The CNG Decompression skid shall be treated as a City Gate Station and shall follow Liberty Utilities O & M section 12-Maintenance-12G-Pressure Limiting and Regulating-Procedures, 49 CFR Part 192 Subpart M, and PUC 500 rules.

4.2. In addition to 4.1 additional maintenance for the decompression skid is required by XNG as specified in sections 5 through 8 of this document.

4.2.1. Liberty Utilities personnel shall be present for the first 6 months (up to 1 year from day 1 of flowing gas to customers) for all maintenance activities performed by XNG. Liberty personnel shall verify qualifications of XNG technicians prior to XNG working at the site.

5. Records and Documentation

5.1. XNG will perform, document, and create a record of maintenance performed. Inspection sheets shall have dates and signatures. Liberty personnel to sign all XNG inspections. XNG shall provide all documentation to Liberty Utilities I & R.

5.2. Liberty Utilities I&R group will collect and maintain documentation of all required maintenance performed under 49 CFR Part 192, Subpart M and PUC 500.

6. System Description

The decompression skid regulates pressure from bulk CNG trailers down to Liberty Utilities required pressure and temperature at 105 PSIG MAOP at 50 degrees. The system has two unloading bays for New Hampshire compliant Titan IV trailers. There are 3 open bays and two hose hookups.

6.1 Design Data Table

	Min	Max
Trailer Inlet Condition	200 PSIG @ -70 DEGF	4250 PSIG @ 120 DEGF
Required Outlet Condition	60 PSIG @ 28 DEGF	90 PSIG @ 150 DEGF
Required Flow	2 MCFH	40 MCFH
Required Enthalpy Rise	35.5 BUT/LBM	69.7 BTU/LBM
Required Heat Load	4,680 BTU/H	103,680 BTU/H
Estimated Boiler Size (Assuming 65% Efficiency of overall system)	7,200 BTU/H	160,000 BTU/H
Boiler Selection	20,000 BTU/H (W/20% turndown)	2 x 150,000 BTU/H
Glycol Loop Flowrate	1 GPM	9.5 GPM

Note: Table reflects outlet of XNG Decompression Skid to inlet of Liberty Utilities regulators

6.2- Relief Capacity

6.2.1- PSV-213 is set at 1350 psig and is a Anderson Greenwood 81 series valve
See Apex drawing # P-004

6.2.2- PSV-232 is set at 100 psig and is a Team Ferminite relief valve- See Apex drawing # P-005

7. **Key Components:**

7.1. **See “Apex-P & ID Decompression Skid and CNG Skid Components” for information referenced below**

- Regulator (PRV-211 A/B)
 - Swagelock RSH4 Regulator
 - Size- ½ inch
 - Apex drawing # P-004
 - Part information found on Apex pages 174 to 184
- Relief Valve (PSV-213)
 - Anderson Greenwood 81 series
 - Size- 2 inch
 - Apex drawing # P-004
 - Part information found on Apex pages 219 to 223
- Air Separator/Buffer Tank (T-700)
 - Boiler Buddy
 - Size-Not applicable
 - Apex drawing # P-006
 - Part information found on Apex pages 812 to 821
- Boiler (700A/B)
 - HTP Elite Premier Residential and Commercial Boilers
 - Apex drawing # P-006
 - Part information found on Apex pages 578 to 669
- Heat exchanger (HX-400A-F)
 - Exergy
 - Size-3/4 inch
 - Apex drawing # P-003
 - Part information found on Apex pages 141 to 147
- Regulator (PRV-222 A/B)
 - Swagelok RDH15 Regulator
 - Size- 1 inch
 - Apex drawing # P-005
 - Part information found on Apex pages 198 to 208
- Relief Valve (PSV-232)
 - Team Ferminite Relief Valve
 - Size- 1.5 to 3 inch

- Apex drawing # P-005
 - Part information found on Apex pages 217 to 218
- Expansion Tank (ET-700)
 - Pro Flex 2 Flexcon Hydronic expansion tank
 - SXH90
 - Apex drawing # P-006
 - Part information found on Apex page 675
- Gas Meter (FE-233)
 - FMG Rotary Gas Meter Type FMR
 - Size-4 inch
 - Apex drawing # P-005
 - Part information found on Apex page 55 to 70
- PLC/HMI
 - Fitch Controls
 - Apex drawing # Apex M-102 (CP1 and P1)
- Quick Release Oasis fittings @ CNG Hose (C-100 A/B)
 - Oasis HC-308
 - Size- 1 inch
 - Apex drawing # P-003
 - Part information found on Apex pages 34 to 35
- Titeflex Hoses (H-100 A/B)
 - R147-16
 - Size- 1 inch
 - Apex drawing # P-003
 - Part information found on Apex page 36
- Truck Station Valves on Decompression Skid (V-100A/B, V-102 A/B, & V-101A/B)
 - Swagelok valves
 - Size- ½ and 1 inch
 - Apex drawing # P-003
 - Additional information found on Apex pages 26 to 29

8. **Maintenance Activities**

8.1. Boiler (700A/B)

- 8.1.1. HTP Elite Premier Residential and Commercial Boilers (reference part 4)
- 8.1.2. Apex drawing # P-006
- 8.1.3. Part information found on Apex pages 578 to 669
- 8.1.4. **Frequency-Annual**

8.2. Expansion Tank (ET-700)

- 8.2.1. Pro Flex 2 Flexcon Hydronic expansion tank
- 8.2.2. SXH90
- 8.2.3. Apex drawing # P-006
- 8.2.4. Part information found on Apex page 675

- 8.2.5. Frequency-Annual
- 8.3. Maintaining Glycol Level
 - 8.3.1. Apex drawing # P-006
 - 8.3.2. Freeze point should not be above -20 degrees. Ideally the system should run at -27 degrees
 - 8.3.3. Frequency-Annual
- 8.4. Flow switch
 - 8.4.1. Apex drawing # P-006
 - 8.4.2. Series FS-250 General Purpose Liquid Flow Switch
 - 8.4.3. McDonnell & Miller
 - 8.4.4. Visual inspection
 - 8.4.5. Replace flow switch every 5 years or 100,000 cycles, whichever occurs first
 - 8.4.6. Frequency-Annual
- 8.5. Fuel gas train for boilers
 - 8.5.1. Apex drawing # P-006
 - 8.5.2. Sizing- See Apex drawings for sizing
 - 8.5.3. Visual inspection and leak check
 - 8.5.4. Frequency-Annual
- 8.6. PLC/HMI Cabinet
 - 8.6.1. Apex drawing # M-102
 - 8.6.2. Verify cabinet heater is working on the HMI
 - 8.6.3. Check PLC cabinet for blown fuses
 - 8.6.3.1. Check for red lights. All lights should be green
 - 8.6.4. Verify backup battery charge on PLC (DCPS1)
 - 8.6.4.1. In the PLC cabinet, check the Phoenix contact. If a DCUPS alarm, alarms on the HMI the battery needs to be replaced or serviced
 - 8.6.5. Check the heater in the PLC cabinet
 - 8.6.5.1. Make sure the Hoffman heater is warming the cabinet
 - 8.6.6. Verify cabinet heater is working on the HMI
 - 8.6.7. Frequency-Annual
- 8.7. Fuel gas in processing room inside skid and trailer station outside skid
 - 8.7.1. Apex drawing #'s P-003, P-004, P-005, P-006
 - 8.7.2. Sizing-See Apex drawings for sizing
 - 8.7.3. Visual inspection and leak check
 - 8.7.4. Frequency-Annual
- 8.8. Gas Meter (FE-233)
 - 8.8.1. FMG Rotary Gas Meter Type FMR
 - 8.8.2. Size-4 inch

- 8.8.3. Apex drawing # P-005
- 8.8.4. Part information found on Apex page 55 to 70
- 8.8.5. No maintenance or inspection needed while the meter is under pressure
- 8.8.6. Frequency-None
- 8.9. Relief Valve (PSV-232)
 - 8.9.1. Team Ferminite Relief Valve
 - 8.9.2. Size- 1.5 to 3 inch
 - 8.9.3. Apex drawing # P-005
 - 8.9.4. Part information found on Apex pages 217 to 218
 - 8.9.5. Visual inspection and leak check
 - 8.9.6. Frequency-Annual
- 8.10. Relief Valve (PSV-213)
 - 8.10.1. Anderson Greenwood 81 series
 - 8.10.2. Size- 2 inch
 - 8.10.3. Apex drawing # P-004
 - 8.10.4. Part information found on Apex pages 219 to 223
 - 8.10.5. Visual inspection and leak check
 - 8.10.6. Frequency-Annual
- 8.11. Transmitter Maintenance (PIT and TIT)
 - 8.11.1. Apex drawing # P-003, P-004, P-005,
 - 8.11.2. Clean the exterior of the meters, make sure the cleaning agent used does not corrode the housing surface and the gaskets
 - 8.11.3. Frequency-Annual
- 8.12. Nitrogen check
 - 8.12.1. Apex drawing #P-004
 - 8.12.2. Visual inspection and leak check
 - 8.12.3. Check Nitrogen pressure. Make sure the tank reads above 200 psig. If the tank is below 200 psig, replace immediately
 - 8.12.4. Frequency-Annual
- 8.13. Titeflex Hoses (H-100 A/B)
 - 8.13.1. R147-16
 - 8.13.2. Size- 1 inch
 - 8.13.3. Apex drawing # P-003
 - 8.13.4. Part information found on Apex page 36
 - 8.13.5. Visual inspection and leak check
 - 8.13.6. Frequency-Annual
- 8.14. Quick Release Oasis fittings @ CNG Hose (C-100 A/B)
 - 8.14.1. Oasis HC-308

- 8.14.2. Size- 1 inch
- 8.14.3. Apex drawing # P-003
- 8.14.4. Part information found on Apex pages 34 to 35
- 8.14.5. Visual inspection and leak check. Clean oasis fittings with a rag and inspect internal for wear
- 8.14.6. Frequency- Annual
- 8.15. Proximity switch at truck unloading station
 - 8.15.1. Apex drawing # P-003
 - 8.15.2. Check proximity switch to make sure it is making contact and the contact is confirming on the HMI
 - 8.15.3. Frequency- Annual
- 8.16. Flame detector
 - 8.16.1. Sanborn Head drawing # SS 1
 - 8.16.2. Visual inspection
 - 8.16.3. Frequency- Annual
- 8.17. Gas detector
 - 8.17.1. Sanborn Head drawing # SS 1
 - 8.17.2. Visual inspection
 - 8.17.3. Frequency- Annual

**KEENE – CNG CONVERSION
PROPOSED PURGE PLAN
CONVERSION SECTION 1**

(To be used in conjunction with O&M Manual sections Chapters 5, 6, 7, and 9)

Job Order Number: 43C18821-18304

Two Way Feed: ☐ One Way Feed: ☒ (Flow Arrows Indicated on Sketch)

Bypass Needed? No Size: Choose size"

Tie-In Reference Locations: Chili's

Originator Signature: *Brian R. Frost*

1. SEE SOP call Gas Control at beginning of Phase 1 Conversion.
2. Person in charge will review purge plan with crew performing job and will determine the number of crew members needed.
3. Close all valves on risers within scope of work and disconnect service after valve.
4. Begin converting all customer appliances and meter fits within scope to accommodate natural gas.
5. Close valves V1, V2, V3, V4, V13, and buried service line valve to Chili's.
6. Install flare set up on Long Horn Steakhouse service (PB-R1), insure flare set up is 50' from any structure.
7. Install nitrogen injection set up at I-1.
8. Begin flaring operation, then open valve V2.
9. Inject nitrogen at I-1 and purge main towards flare PB-R1. Once flame goes out confirm CGI reading of 1% or less gas at flare point.
10. Temporarily stop injecting nitrogen at I-1, disconnect flare set up at Long Horn and secure service.
11. Install flare set up at PB-R8, insure flare set up is 50' from any structure.
12. Begin flaring operation, then open valve V13.
13. Resume nitrogen injection at I-1, and purge main towards flare PB-R8. Once flame goes out confirm CGI reading of 1% or less gas at flare point. Secure service.
14. Install flare set up at Chili's server (PB-R9), insure flare set up is 50' from any structure.
15. Begin flaring operation, then open buried service line valve to Chili's.
16. Resume nitrogen injection at I-1, and purge main towards flare PB-R9. Once flame goes out confirm CGI reading of 1% or less gas at flare point.
17. Stop injecting nitrogen at I-1, disconnect flare set up at PB-R9 and secure service.
18. Close valve V2.
19. Each riser valve in the conversion section shall be replaced before completing the pressure test. Valve replacement may be completed at any time before the test as long as the gas service is depressurized. Before testing open riser valves and plug or blind flange ends.

20. Conduct 2 hour 90 psig pressure test on mains and services within scope to establish 60 psig MAOP. Use air as the test medium. After test depressurize pipe.
21. Once pressure test is complete, open valve V2. Close valve V13 and buried service line valve to Chili's.
22. Open purge point at PB-R1, and inject 1 tank slug of nitrogen at I-1 to start purge into service.
23. Slowly open valve V1 and continue purge into service with natural gas towards purge point PB-R1. Continue until three readings of 95-100% gas at purge point.
24. Remove purge point set up at PB-R1.
25. Open purge point PB-R8, then slowly open valve V13 to purge main into service with natural gas. Confirm three readings of 95-100% gas at purge point.
26. Remove purge point set up at PB-R8.
27. Open purge point PB-R9, then slowly open buried service line valve to Chili's to purge service into service with natural gas. Confirm three readings of 95-100% gas at purge point.
28. Remove purge point set up at PB-R9, nitrogen/air injection set up, and cap fittings.
29. Reconnect all customers within scope of work and begin relights once customer conversions are complete.
30. Leak survey all gas mains and services within conversion section 1.
31. SEE SOP call Gas Control at completion of Phase 1 Conversion.

**KEENE – CNG CONVERSION
PROPOSED PURGE PLAN
CONVERSION SECTION 2**

(To be used in conjunction with O&M Manual sections Chapters 5, 6, 7, and 9)

Job Order Number: 43C18821-18304

Two Way Feed: ☐ One Way Feed: ☒ (Flow Arrows Indicated on Sketch)

Bypass Needed? No Size: Choose size"

Tie-In Reference Locations: Price Chopper

Originator Signature: *Kevin R. Frost*

1. SEE SOP call Gas Control at beginning of Phase 2 Conversion.
2. Person in charge will review purge plan with crew performing job and will determine the number of crew members needed.
3. Close all valves on risers within scope of work and disconnect service after valve.
4. Begin converting all customer appliances and meter fits within scope to accommodate natural gas.
5. Close valves V5 and V6. Verify that valves V3 and V4 remain closed from the last phase.
6. Install flare set up on Old Party Store service (PB-R2), insure flare set up is 50' from any structure.
7. Install nitrogen injection set up at I-2.
8. Begin flaring operation.
9. Inject nitrogen at I-2 and purge main towards flare at PB-R2. Once flame goes out confirm CGI reading of 1% or less gas at flare point PB-R2. Temporarily stop injecting nitrogen at I-2 and secure service.
10. Move flare setup to I-5. Resume nitrogen injection at I-2 and purge towards flare at I-5. Once flame goes out confirm CGI reading of 1% or less gas at flare point I-5. Secure I-5.
11. Each riser valve in the conversion section shall be replaced before completing the pressure test. Valve replacement may be completed at any time before the test as long as the gas service is depressurized. Before testing open riser valves and plug or blind flange ends.
12. Conduct 2 hour 90 psig pressure test on mains and services within scope to establish 60 psig MAOP. Use air as the test medium. After test depressurize pipe.
13. Once pressure test is complete, open valve V4.
14. Open purge point at PB-R2, and inject 1 tank slug of nitrogen at I-2 to start purge into service.
15. Slowly open valve V3, and continue purge into service with natural gas towards purge point PB-R2. Continue until three readings of 95-100% gas at purge point.
16. Simultaneously close purge point at PB-R2 and open purge point at I-5. Continue purge into service at I-5 until three readings of 95-100%.
17. Remove purge point set ups, nitrogen injection set up, and cap fittings.

18. Reconnect all customers within scope of work and begin relights once customer conversions are complete.
19. Leak survey all gas mains and services with conversion section 2.
20. SEE SOP call Gas Control at completion of Phase 2 Conversion.

**KEENE – CNG CONVERSION
PROPOSED PURGE PLAN
CONVERSION SECTION 3**

(To be used in conjunction with O&M Manual sections Chapters 5, 6, 7, and 9)

Job Order Number: 43C18821-18304

Two Way Feed: ☐ One Way Feed: ☒ (Flow Arrows Indicated on Sketch)

Bypass Needed? No Size: Choose size"

Tie-In Reference Locations: NH Liquor Store

Originator Signature: *Chim R. Frost*

1. SEE SOP call Gas Control at beginning of Phase 3 Conversion.
2. Person in charge will review Purge plan with crew performing job and will determine the number of crew members needed.
3. Close all valves on risers within scope of work and disconnect service after valve.
4. Begin converting all customer appliances and meter fits within scope to accommodate natural gas.
5. Close valves V7 and V8. Verify that valves V5 and V6 remain closed from the last phase.
6. Close buried service line valve to Michael's.
7. Install flare set up on NH Liquor Store service (PB-R3), insure flare set up is 50' from any structure.
8. Install nitrogen injection set up at I-3.
9. Begin flaring operation.
10. Inject nitrogen at I-3 and purge main towards flare at PB-R3. Once flame goes out confirm CGI reading of 1% or less gas at flare point.
11. Temporarily stop injecting nitrogen at I-3, disconnect flare set up from NH Liquor Store meter fit and secure service.
12. Install flare set up on Michaels's service (PB-R4), insure flare set up is 50' from any structure.
13. Begin flaring operation, then open buried service line valve to Michael's.
14. Resume nitrogen injection at I-3, and purge main with air towards flare at PB-R4. Once flame goes out confirm CGI reading of 1% or less gas at flare point. Secure service.
15. Each riser valve in the conversion section shall be replaced before completing the pressure test. Valve replacement may be completed at any time before the test as long as the gas service is depressurized. Before testing open riser valves and plug or blind flange ends.
16. Conduct 2 hour 90 psig pressure test on mains and services within scope to establish 60 psig MAOP. Use air as test medium. After test depressurize pipe.
17. Once pressure test is complete, open valve V6 and close the buried service valve to Michael's.
18. Open purge point at PB-R3, and inject 1 tank slug of nitrogen at I-3 to start purge into service.
19. Slowly open valve V5 and continue purge into service with natural gas towards purge point PB-R3. Continue until three readings of 95-100% gas at purge point.

20. Open purge point PB-R4, then slowly open buried service valve to Michael's to purge service into service with natural gas. Confirm three readings of 95-100% gas at purge point.
21. Remove purge point set ups, and nitrogen/air injection set up and cap fittings.
22. Reconnect all customers within scope of work and begin relights once customer conversions are complete.
23. Leak survey all gas mains and services with conversion section 3.
24. SEE SOP call Gas Control at completion of Phase 3 Conversion.

**KEENE – CNG CONVERSION
PROPOSED PURGE PLAN
CONVERSION SECTION 4**

(To be used in conjunction with O&M Manual sections Chapters 5, 6, 7, and 9)

Job Order Number: 43C18821-18304

Two Way Feed: ☐ One Way Feed: ☒ (Flow Arrows Indicated on Sketch)

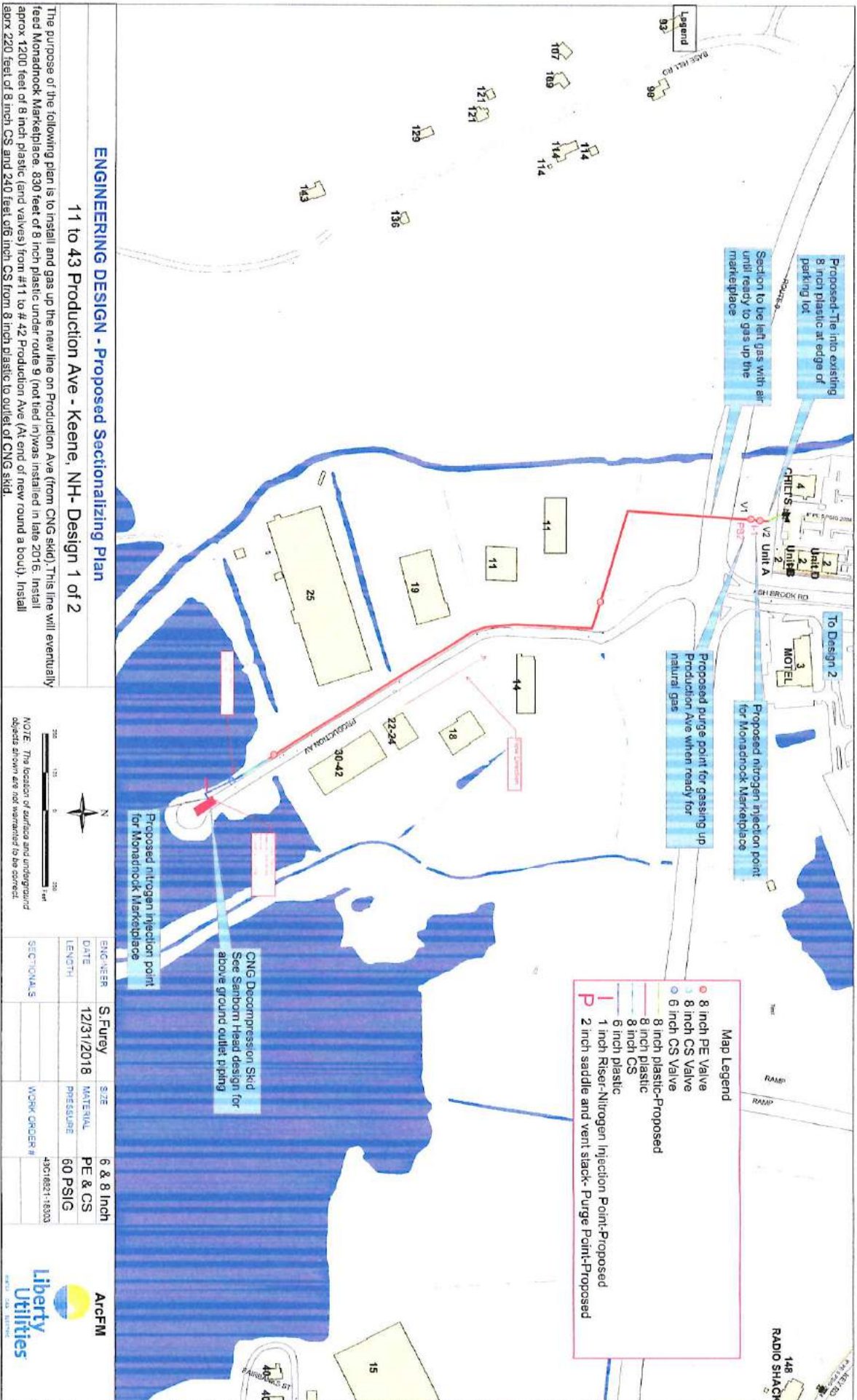
Bypass Needed? No Size: Choose size"

Tie-In Reference Locations: Key Rd

Originator Signature: *Chris R. Frost*

1. SEE SOP call Gas Control at beginning of Phase 4 Conversion.
2. Person in charge will review purge plan with crew performing job and will determine the number of crew members needed.
3. Close all valves on risers within scope of work and disconnect service after valve.
4. Begin converting all customer appliances and meter fits within scope to accommodate natural gas.
5. Close valves V9, V10, V11 and V12. Verify that valves V7 and V8 remain closed from the last phase.
6. Install flare set up on PB1 on Key Rd, insure flare set up is 50' from any structure.
7. Install nitrogen injection set up at I-4.
8. Begin flaring operation, then open valve V8.
9. Inject nitrogen at I-4 and purge main towards flare at PB1. Once flame goes out confirm CGI reading of 1% or less gas at flare point.
10. Temporarily stop injecting nitrogen at I-4 and secure PB1.
11. Install flare set up at PB-R7 on Planet Fitness service, insure flare set up is 50' from any structure.
12. Begin flaring operation, then open valve V12.
13. Resume nitrogen inject at I-4 and purge main towards flare at PB-R7. Once flame goes out confirm CGI reading of 1% or less gas at flare point.
14. Temporarily stop injecting nitrogen at I-4 and secure service.
15. Install flare set up at PB-R6 on Target Store service, insure flare set up is 50' from any structure.
16. Begin flaring operation, then open valve V11.
17. Resume nitrogen injection at I-4, and purge main towards flare at PB-R6. Once flame goes out confirm CGI reading of 1% or less gas at flare point.
18. Stop nitrogen injection at I-4 and secure service.
19. Close valve V8.
20. Each riser valve in the conversion section shall be replaced before completing the pressure test. Valve replacement may be completed at any time before the test as long as the gas service is depressurized. Before testing open riser valves and plug or blind flange ends.
21. Conduct 2 hour 90 psig pressure test on mains and services within scope to establish 60 psig MAOP. Use air as test medium. After test depressurize pipe.
22. Once pressure test is complete, open valve V8, and close valves V11 and V12.

23. Open purge point at PB1, and inject 1 tank slug of nitrogen at I-4 to start purge into service.
24. Slowly open valve V7 and continue purge into service with natural gas towards purge point PB1. Continue until three readings of 95-100% gas at purge point.
25. Remove purge point setup at PB1.
26. Open purge point PB-R7, then slowly open valve V12 to purge main into service with natural gas. Confirm three readings of 95-100% gas at purge point.
27. Remove purge point setup at PB-R7.
28. Open purge point PB-R6, then slowly open valve V11 to purge main into service with natural gas. Confirm three readings of 95-100% gas at purge point.
29. Remove purge flare set up at PB-R6, and nitrogen/air injection set up and cap fittings.
30. Reconnect all customers within scope of work and begin relights once customer conversions are complete.
31. Leak survey all gas mains and services with conversion section 4.
32. At interface of propane air system and natural gas system located at valves V9 and V10, cut and cap system between valves to separate system.
33. Open valves V9 and V10.
34. SEE SOP call Gas Control at completion of Phase 4 Conversion.



11 to 43 Production Ave - Keene, NH - Design 1 of 2

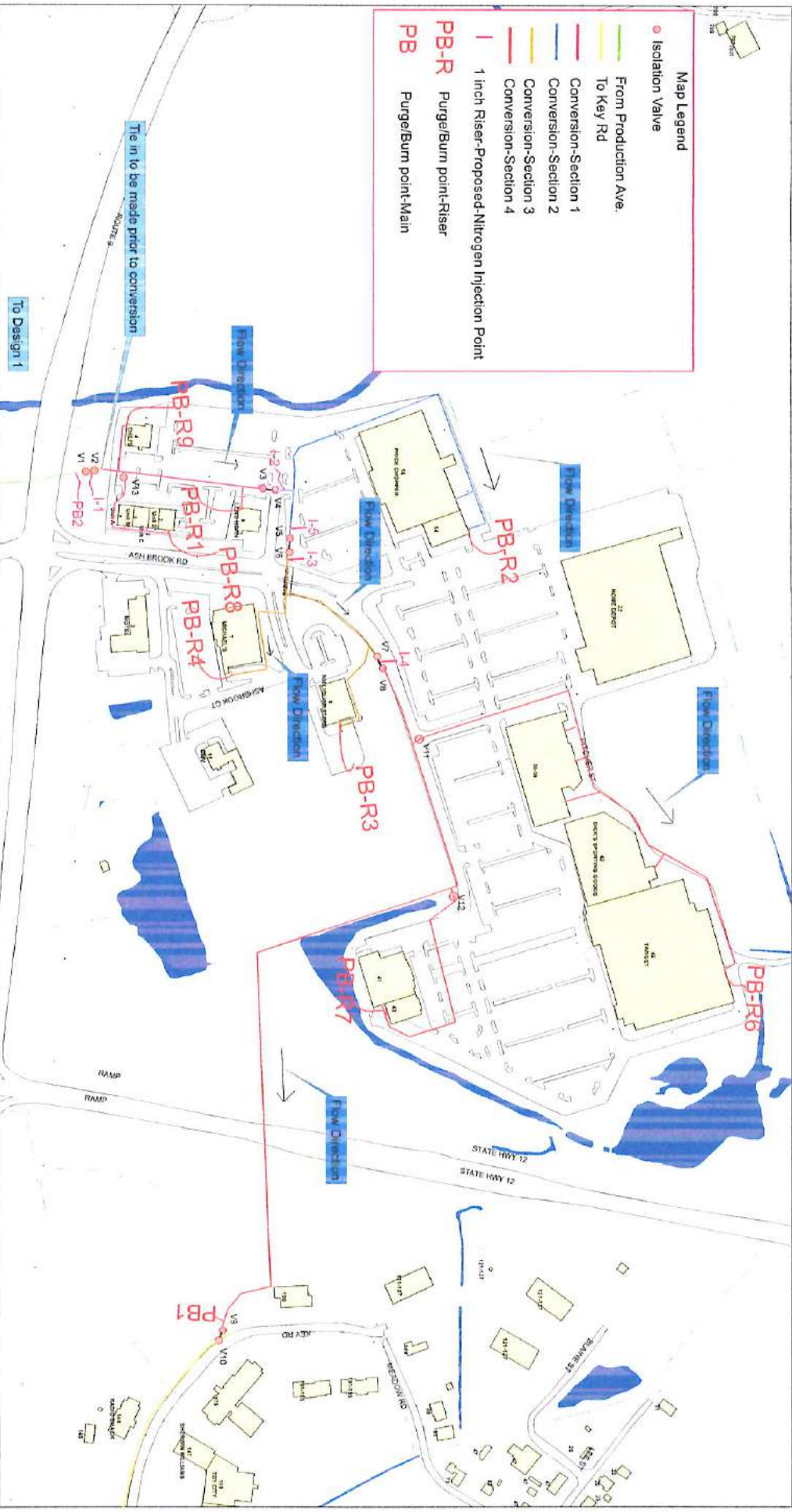
The purpose of the following plan is to install and gas up the new line on Production Ave (from CNG skid). This line will eventually feed Mesquite Markelbach. 830 feet of 8 inch plastic under route 9 (not fed in) was installed in late 2016. Install approx 1200 feet of 8 inch plastic (end valves) from #11 to # 42 Production Ave (A) end of new round a bou). Install approx 220 feet of 8 inch CS and 240 feet of 8 inch CS from 8 inch plastic to outlet of CNG skid.



ENGINEER	S. Furey	SIZE	6 & 8 inch
DATE	12/31/2018	MATERIAL	PE & CS
LENGTH		PRESSURE	60 PSIG
SECTIONALS		WORK ORDER #	49C10621-18300

Map Legend

- Isolation Valve
- From Production Ave.
- To Key Rd
- Conversion-Section 1
- Conversion-Section 2
- Conversion-Section 3
- Conversion-Section 4
- 1 inch Riser-Proposed Nitrogen Injection Point
- PB-R Purge/Burn point-Riser
- PB Purge/Burn point-Main



ENGINEERING DESIGN - Proposed Sectionalizing Plan			
Monadnock Marketplace, Keene NH (Design 2 of 2)			
The purpose of the following plan is to sectionalize sections of Monadnock Marketplace in order to convert the system from propane air to natural gas. Double valves and 1 inch risers in valve boxes will be utilized for sectionalizing, and purging			

**KEENE – CNG CONVERSION
CONTINGENCY PLAN
CONVERSION SECTION 1**

(To be used in conjunction with O&M Manual sections Chapters 5, 6, 7, and 9)

Job Order Number: 43C18821-18304

Two Way Feed: ☐ One Way Feed: ☒ (Flow Arrows Indicated on Sketch)

Bypass Needed? No Size: Choose size"

Tie-In Reference Locations: Chili's

Originator Signature: *Brian R. Frost*

1. This procedure applies in the event the pressure test on conversion section 1 is unsuccessful. It is intended to restore gas service as soon as possible.
2. Isolate conversion section 1 into multiple pieces by closing V13 and buried service valve to Chili's.
3. Conduct 2 hour 90 psig pressure test on isolated conversion section 1 to establish 60 psig MAOP. Use air as the test medium. After test depressurize pipe.
4. If pressure test is successful then proceed with purging and energizing isolated main section. Otherwise start relay or repair of conversion section 1 gas mains.
5. To start purge of isolated section 1 open valve V2. Install nitrogen tank at I-1 and open purge riser at PB-R1.
6. Inject nitrogen (1 tank slug), immediately slowly open valve V1 so natural gas follows after nitrogen slug, and purge main into service through purge stack located at I-2. Purge until three readings of 95-100% gas at purge point.
7. Once purge is complete fully open valve V1, and remove purge stack at PB-R1.
8. To reinstate gas services, and main at V13, disconnect and test each section separately. Work with customers to reinstate service in a manner that provides least disruption to businesses (for example reinstate service to restaurants first, then to space heating customers second).
9. To reinstate service at Chili's disconnect the service pipe at the buried service valve, retest service according to O&M requirements, make any required repairs or relay service, and purge from main to riser valve.
10. To reinstate service to main downstream of valve V13, disconnect main at V13, pressure test according to O&M requirements, make any required repairs or relay main and services. Shut all buried service valves and purge from V13 to PB-R8. After gas main is energized, purge each service from the buried service valve to the riser.

**KEENE – CNG CONVERSION
CONTINGENCY PLAN
CONVERSION SECTION 2**

(To be used in conjunction with O&M Manual sections Chapters 5, 6, 7, and 9)

Job Order Number: 43C18821-18304

Two Way Feed: ☐ One Way Feed: ☒ (Flow Arrows Indicated on Sketch)

Bypass Needed? No Size: Choose size"

Tie-In Reference Locations: Price Chopper

Originator Signature: *Brian R. Frost*

1. This procedure applies in the event the pressure test on conversion section 2 is unsuccessful. It is intended to restore gas service as soon as possible.
2. Isolate mains and services on conversion section 2 by cutting and capping the 4" PL 5# (2005) main just upstream of the service connection for Price Chopper.
3. Conduct 2 hour 90 psig pressure test on conversion section 2 from V5 to cut and cap point to establish 60 psig MAOP. Use air as the test medium. After test depressurize pipe. Retest services to Price Chopper and old party store separately. After test depressurize pipe.
4. Relay or repair gas facilities where the leak is observed. Once completed connect services back to the main and start purge into service.
5. Set up nitrogen tank at I-2 and open purge point at PB-R2
6. Open valve V4 and inject 1 tank of nitrogen to begin purge into service. Immediately introduce natural gas by opening valve V3 and purging to PB-R2 until three readings of 95-100% gas are observed at purge point PB-R2.
7. Remove purge stacks and nitrogen setup. Cap all fittings.
8. Reconnect all customers and relight.

**KEENE – CNG CONVERSION
CONTINGENCY PLAN
CONVERSION SECTION 3**

(To be used in conjunction with O&M Manual sections Chapters 5, 6, 7, and 9)

Job Order Number: 43C18821-18304

Two Way Feed: ☐ One Way Feed: ☒ (Flow Arrows Indicated on Sketch)

Bypass Needed? No Size: Choose size"

Tie-In Reference Locations: NH Liquor Store

Originator Signature: *Brian R. Frost*

1. This procedure applies in the event the pressure test on conversion section 3 is unsuccessful. It is intended to restore gas service as soon as possible.
2. Isolate section 3 by closing buried service valves to Michael's and the NH Liquor Store.
3. Conduct 2 hour 90 psig pressure test on isolated conversion section 3 to establish 60 psig MAOP. Use air as the test medium. After test depressurize pipe.
4. If pressure test is successful then proceed with purging and energizing isolated main section. Otherwise start relay or repair of conversion section 3 gas mains.
5. To start purge of isolated section 1 open valve V6 and V7. Install nitrogen tank at I-3 and open purge riser at I-4.
6. Inject nitrogen (1 tank slug), immediately slowly open valve V5 so natural gas follows after nitrogen slug, and purge main into service through purge stack located at I-4. Purge until three readings of 95-100% gas at purge point.
7. Once purge is complete, completely close valve V7, fully open valve V5, remove purge stack at I-4, and cap nitrogen connection at I-3.
8. To reinstate gas services, disconnect and test each section separately. Work with customers to reinstate service in a manner that provides least disruption to businesses.
9. To reinstate service at Michael's and the NH Liquor Store disconnect the service pipe at the buried service valve, retest service according to O&M requirements, make any required repairs or relay service, and purge from main to riser valve.

**KEENE – CNG CONVERSION
CONTINGENCY PLAN
CONVERSION SECTION 4**

(To be used in conjunction with O&M Manual sections Chapters 5, 6, 7, and 9)

Job Order Number: 43C18821-18304

Two Way Feed: ☐ One Way Feed: ☒ (Flow Arrows Indicated on Sketch)

Bypass Needed? No Size: Choose size"

Tie-In Reference Locations: Key Rd

Originator Signature: *Brian R. Frost*

1. This procedure applies in the event the pressure test on conversion section 4 is unsuccessful. It is intended to restore gas service as soon as possible.
2. Isolate conversion section 4 into three pieces by closing valves V11 and V12. Conduct 2 hour 90 psig pressure test on primary piping run from V8 to V9 to establish 60 psig MAOP. Use air as the test medium. After test depressurize pipe.
3. If pressure test is successful on primary piping run between valves V11 and V12 then proceed with purging and energizing isolated main section. Otherwise start relay or repair of gas mains.
4. To start purge of the primary piping run of section 4 open valve V8. Install nitrogen tank at I-4 and open purge riser at PB1.
5. Inject nitrogen (1 tank slug), immediately slowly open valve V7 so natural gas follows after nitrogen slug, and purge main into service through purge stack located at PB1. Purge until three readings of 95-100% gas at purge point.
6. Once purge is complete, completely close the valve on purge stack PB1, fully open valve V7, and remove purge stack at PB1.
7. To reinstate service to main downstream of valve V11, disconnect main at V11, pressure test according to O&M requirements, after test depressurize pipe, and relay or repair main and services. Shut all buried service valves and purge from V11 to PB-R6. After gas main is energized, purge each service from the buried service valve to the riser.
8. To reinstate service to main downstream of valve V12, disconnect main at V12, pressure test according to O&M requirements, after test depressurize pipe, and relay or repair main and services. Shut all buried service valves and purge from V12 to PB-R7. After gas main is energized, purge each service from the buried service valve to the riser.

Supervisors can print a copy of this APPROVED SOP and review with field personnel.

Gas Control should check the GREEN box in the "SOP STEPS" section to change this SOP to INPRG. SAVE then close form

APPROVED

Author

Created	9/11/2017	SOP Status	APPROVED
SOP/WO#	43C18821-18303	Rev #	4
Emp	Brian.Frost@libertyutilities.com	Emp #	9784
Cell #	603-475-9143	Dept.	Engineering

Job Location

Division	Southern	Town	Keene
On Street	KNE Monadnock Marke...	Cross St #1	
Cross St #2		Cross St #3	

SOP Details

Est. Start Date	9/23/2019	Job Type	Supply
System Pressure	60 PSI	Nature of Work	Other

Within 200' of a regulator Station or new main is > 2500'

Are there multiple pressures within work zone: YES

Scope

Convert Monadnock Market Place from Propane-Air to Natural Gas and purge new main into service on Production Ave.

43C18821-18303	4	SOP STEPS
----------------	---	------------------

Gas Control 603-216-3621

In Progress ☒ In Progress By

STEP

1 Critical Step, Mobilization - Notify Gas Control the first day on site GAS CONTROL - (603) 216-3621

Is this a critical step YES contact gas Control prior to execution Min Pressure / Min Temp

Are there multiple pressures in work zone YES 40 # / 20 F

STEP

2 NOTE: Prior to this SOP, CNG Skid to be brought online and purged with gas through regulators up to 60 psig distribution system regulator inlet block valves. Confirm with I&R before continuing with steps contained within in this SOP.

Is this a critical step NO, call to Gas Control is required Min Pressure / Min Temp

Are there multiple pressures in work zone YES 40 # / 20 F

STEP

3 Make sure blocking valves (V1 and V2) separating Propane-Air system from newly active Keene Natural Gas system are closed and properly marked to prevent inadvertent opening.

Is this a critical step NO, call to Gas Control is required Min Pressure / Min Temp

Are there multiple pressures in work zone YES 40 # / 20 F

STEP

4 Install purge riser at PB2 the end of newly installed 8" PE (see attached map).

Is this a critical step NO, call to Gas Control is required Min Pressure / Min Temp

Are there multiple pressures in work zone YES 40 # / 20 F

STEP

5	Open purge riser at PB2 to depressurize air blanket that existed on gas main from CNG skid to valve V2. Keep purge riser PB2 open. Inject 1 tank slug of nitrogen on downstream side of 60 psig distribution system regulators. Immediately after nitrogen injection, open inlet block valves to 60 psig distribution regulators to flow gas and purge main into service until three reading of 95-100% gas reading are obtained at purge point. CALL GAS CONTROL once purge is complete.	Is this a critical step	☒ YES contact gas Control prior to execution	Min Pressure / Min Temp	
	Are there multiple pressures in work zone	☒ YES	40 #	/	20 F
STEP					
6	The following conversions must be completed in order to ensure natural gas is available for conversion from Propane-Air to natural can occur. See attached "Combined Purge Plan" CALL GAS CONTROL prior to each conversion phase and once each conversion phase is completed. Prior to each conversion phase, ensure all personal are in place needed for conversion prior to customer shutdowns.	Is this a critical step	☒ NO, call to Gas Control is required	Min Pressure / Min Temp	
	Are there multiple pressures in work zone	☒ YES	40 #	/	20 F
STEP					
7	Call Gas Control Begin Phase 1 Conversion	Is this a critical step	☒ YES contact gas Control prior to execution	Min Pressure / Min Temp	
	Are there multiple pressures in work zone	☒ YES	40 #	/	20 F
STEP					
8	Call Gas Control Phase 1 conversion Complete	Is this a critical step	☒ YES contact gas Control prior to execution	Min Pressure / Min Temp	
	Are there multiple pressures in work zone	☒ YES	40 #	/	20 F
STEP					
9	Call Gas Control begin Phase 2 Conversion	Is this a critical step	☒ YES contact gas Control prior to execution	Min Pressure / Min Temp	
	Are there multiple pressures in work zone	☒ YES	40 #	/	20 F
STEP					
10	Call Gas Control Phase 2 conversion Complete	Is this a critical step	☒ YES contact gas Control prior to execution	Min Pressure / Min Temp	
	Are there multiple pressures in work zone	☒ YES	40 #	/	20 F
STEP					
11	Call Gas Control begin Phase 3 Conversion	Is this a critical step	☒ YES contact gas Control prior to execution	Min Pressure / Min Temp	
	Are there multiple pressures in work zone	☒ YES	40 #	/	20 F
STEP					
12	Call Gas Control Phase 3 conversion Complete	Is this a critical step	☒ YES contact gas Control prior to execution	Min Pressure / Min Temp	
	Are there multiple pressures in work zone	☒ YES	40 #	/	20 F
STEP					
13	Call Gas Control begin Phase 4 Conversion	Is this a critical step	☒ YES contact gas Control prior to execution	Min Pressure / Min Temp	
	Are there multiple pressures in work zone	☒ YES	40 #	/	20 F
STEP					
14	Call Gas Control Phase 4 conversion Complete	Is this a critical step	☒ YES contact gas Control prior to execution	Min Pressure / Min Temp	
	Are there multiple pressures in work zone	☒ YES	40 #	/	20 F
STEP					
15	Critical Step, Notify Gas Control on job completion.	Is this a critical step	☒ YES contact gas Control prior to execution	Min Pressure / Min Temp	
	Are there multiple pressures in work zone	☒ YES	40 #	/	20 F
ADD STEP					

Comments		
Gas Planning	i:\0#\.w\utilities\amills	2018-12-31
no issues, Gas Engineering personnel or designee to be onsite for purge in/out steps		
Minimum Pressure	40 #	Minimum Temperature
		20 F
I & R	i:\0#\.w\utilities\gclement	2017-09-27
no issues, I & R personnel will be onsite		
Gas Control	i:\0#\.w\utilities\jridge	2017-09-29
Reviewed		
Mapping	i:\0#\.w\utilities\arenauld	9/28/2017

FIELD CHANGES	
	Not Approved
	☐
	i:\0#\.w\utilities\bfrost