

New Hampshire State Updates



October 10, 2018

Annual Seminar

New England

Pipeline Safety Representatives

Meredith, New Hampshire

Randy Knepper

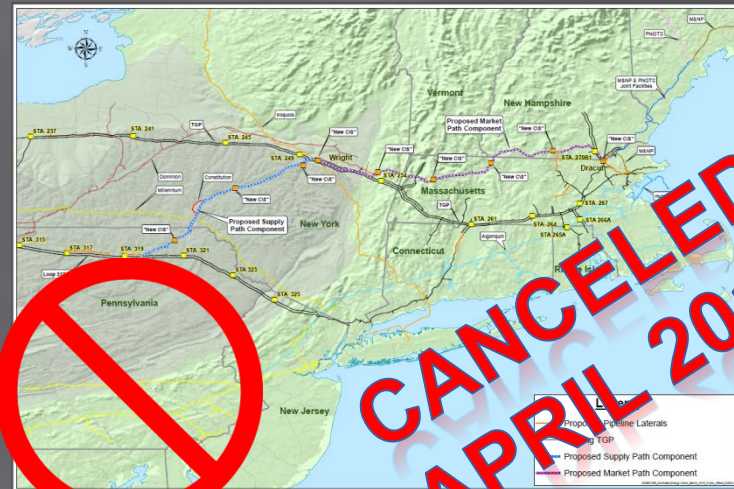
Director of Safety, NHPUC

NH Program Operational Overview

- ▣ No Interstate Operator nor Haz Liquid Operator Certification with PHMSA (5 operators in NH)
- ▣ No gathering lines
- ▣ No municipal gas operators
- ▣ Interstate Haz Liq Pipeline Ops: 1
- ▣ 75 miles Crude Oil
- ▣ Interstate Nat Gas Pipeline Ops: 4
- ▣ 230 miles

Proposed Kinder Morgan Interstate Considered Too Controversial with insufficient long term commitments

- ▣ It has been approximately 2.5 years since KED project was withdrawn
- ▣ Still wrestling with Long Term Gas Supplies
- ▣ Now have a new project proposed in NH named Granite Bridge and includes LNG Vaporization, Storage and Transmission



NH Program Operational Overview

- ▣ 3 gas LDCs (No new ones)
- ▣ 4 Intrastate Transmission Operators (including Landfill)
- ▣ 1 LNG Plant Operator (3 plants)
- ▣ 1 LP Plant Operator (3 plants)
- ▣ 1 Master Meter Operator
- ▣ Distribution mileage:
 - approx. 3,200 miles
- ▣ Distribution services:
 - approx. 93,755 services,
 - approx. 127,500 gas customers

NH Program Operational Overview

- ▣ Propane Systems:
 - 22 LPG Operators
 - Approximately 800+ jurisdictional LPG systems
 - Merger activity continues within industry
- ▣ 2 inspectors (1: 5 years & 1 vacancy)
- ▣ Well Established Underground Damage Prevention System > 33 years
 - Administered by Safety Division

NH 2017 Pipeline Asset Statistics

▣ Pipelines:

- Interstate Transmission: 232 miles
- Intrastate Transmission: 19 miles
- Distribution Mains: 1,963 miles
- Distribution Services: 93,750 services
- Equiv Dist Services: 1,240 miles

Aged Infrastructure Mains: 200 miles (2009) > 94 miles 2017 **47% Reduction**

Aged Infrastructure Services: 125 miles (2009) > 72 miles 2017 **42 % Reduction**

NH Program Operational Overview

▣ 2018/2019 External Focus:

1. Re-examining Operator fundamentals
 - Over Pressure Protection Settings,
 - Leak Surveys, Leak Records and Leak Reporting
 - Integration of Data into DIMP
 - Planning for Large Scale Emergencies
2. Continued Accelerated Replacement Leak Prone Pipe
 - 6 years left CI & BS proposed to be replaced for 1 operator – Schedule proposed by Utility
 - All CI& BS removed for 2nd operator as of 2017

NH Program Operational Overview

▣ 2018 Focus: *In Process*

1. **Internal Goals:** Migrating Safety Database to Cloud Base Solution and Improving Inspection Capability
Internal Goals: Maintain Website as repository of Metrics
Increase Transparency
2. **Internal Goals:** Less Lengthy Project Reviews

Top 4 **NH** Enforcement Issues in 2017 and 2018

- ▣ Failure to Follow Written Procedures
- ▣ Leak Surveys – Poor Documentation
- ▣ Poor Record Keeping for LP Operators on performing yearly maintenance
- ▣ Poor Record Keeping for LP Operators regarding Odorization Testing

Accelerated Replacement

- ▣ 2017 New Hampshire Cast Iron Bare Steel Replacement Program
- ▣ Eliminated Another 15 miles CI
- ▣ Eliminated Another 4 miles BS
- ▣ NH ranked 8th worst state for CI remaining
- ▣ NH ranked 30th worst state for BS remaining

Nations Worst

DC 1
RI 2
CT 3
MA 4
NJ 5
MD 6
NY 7
PA 8
ME 10

10 years of Bare Steel Replacement Reports

Transparency on PUIC Websites FY 2018

Address	4-26 Nutt St
Town	Nashua
Pipe Size	2"
Install Date	1924
Wall Thickness	0.154"
Age	93
Pressure	12 in water column
Ground PH	6
Pipe Condition	100% wall loss in pits Heavy Corrosion



2018/2019 **NH** Major Construction Activity

- ▣ Construction Activity – Liberty is pursuing a CNG Strategy to reach unserved areas by installing CNG Station. Plans to install Lebanon/Hanover
- ▣ Liberty will be converting a portion of Keene System to CNG from Propane/Air. Mulityear program initiated.
- ▣ Liberty has initiated expansion of Pelham and Windham mains programs
- ▣ Concord Steam conversion of customers nearly complete.

2018/2019 **NH** Major Other Activity

- ▣ Liberty has proposed securing a renewable gas as a resource to supplement a portion of its gas supply portfolio
- ▣ The renewable gas would originate in New Hampshire and delivered to New Hampshire distribution systems. This is under current review at the Commission.
- ▣ Liberty has proposed the Granite Bridge project, one of the largest ever to be undertaken in New Hampshire

2018/2019 **NH** Major Other Activity

Granite Bridge would run through 9 NH Communities Stratham to Manchester

Proposed in an “Energy Corridor” Route 101

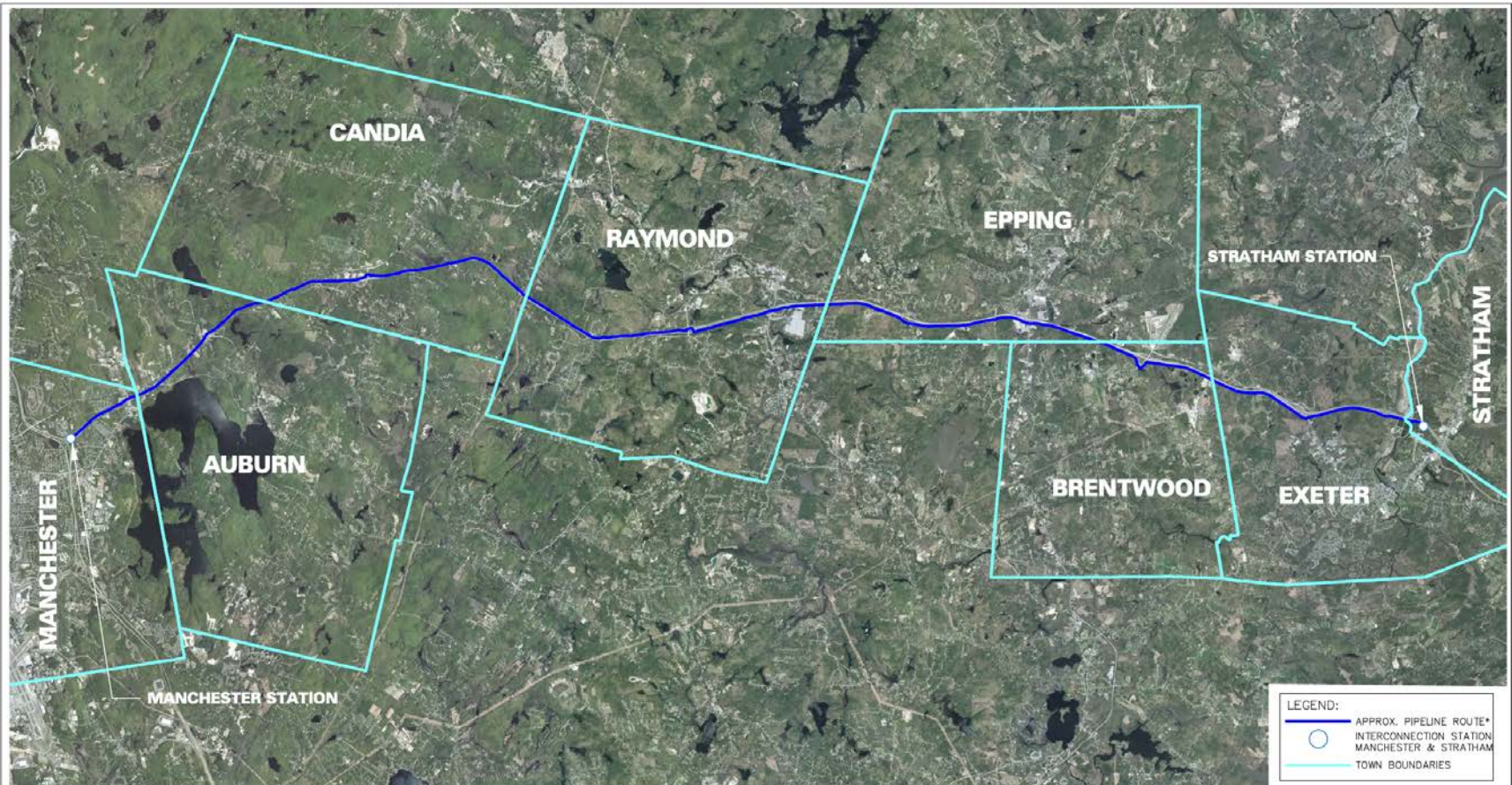
Will require Site Evaluation Committee Review after PUC Review

Will be a 27 mile intrastate transmission 16 inch diameter pipeline operate at 900 psig

Will propose a 2 BCF LNG Storage Facility

Will propose a Liquefaction Facility and Vaporization Facility

2018/2019 **NH** Major Other Activity



NORTH

AERIAL IMAGERY PROVIDED BY: AIR GRANT
MAP MAPPING SERVICES (PWS)
WORM HOLE, UNIVERSITY OF NEW HAMPSHIRE, DURIAM, NH 03824

PREPARED BY:

BEALS + THOMAS
Civil Engineers + Landscape Architects +
Land Surveyors + Planners +
Environmental Specialists

GRANITEBRIDGE

*16" DIAMETER GRANITE BRIDGE PIPELINE NOT SHOWN TO SCALE. PRELIMINARY ROUTE SHOWN, ENGINEERING DESIGN NOT FINAL.

PREPARED FOR:

Liberty Utilities
15 Buttrick Rd.
Londonderry, New Hampshire

AERIAL EXHIBIT PLAN
Rockingham & Hillsborough County
New Hampshire

Scale: 1"=9,000' Date: 11/17/2017

B+T Project No. 2935.01 SHEET NO. 1 OF 47

2018/2019 **NH** Major Construction Activity

- ▣ Construction Activity – Unitil has been awarded Kingston and Atkinson expansion. Approx 5 mile extension.
- ▣ Unitil has proposed an expansion into town of Epping, currently being reviewed by Commission Staff. If approve, 2019 construction will begin.

Program Metrics

- ▣ Track and Trend Leaks, Leak Repairs
- ▣ Track and Trend Emergency Responses
- ▣ Track and Trend Underground Damage Prevention Stats
- ▣ Track and Trend Accelerated Replacement Program
- ▣ Track Odorization Levels
- ▣ Track and Trend O&M Work Hours
- ▣ Track Evacuations

What's New?

- ▣ LP Operators were asked to update Jurisdictional Lists during summer/fall – nearly complete
- ▣ LP Operators will need to begin odorization tests at each system. Bulk Tanks no longer will be acceptable starting January 2019
- ▣ LP Operators should expect a letter from the Safety Division stating this by the end of November.
- ▣ Rulemaking for 500 rules will need to internally be initiated to update rules.

What's New?

- ▣ The Commission ordered on September 28, 2018 Unitil and Liberty to complete within 60 days a review regarding Documentation and Safety Procedures in another effort to avoid wide spread Over-Pressurizations
 1. Consider using tertiary overpressure protection devices
 2. Identify all areas where multiple pressure mains coexist and update details including services and identification of facilities
 3. Documented Sign offs now required for work plans where these are located
 4. Priority must be given for record updates in these area

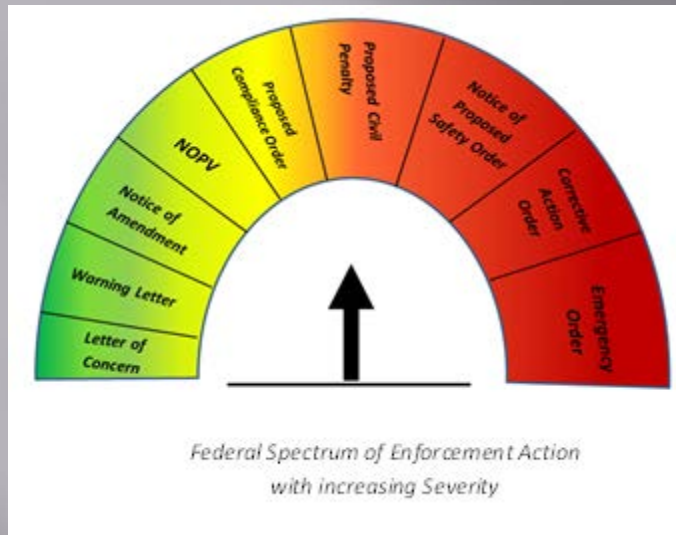
What's New?

- ▣ The Commission ordered on September 28, 2018 Unitil and Liberty to complete within 60 days a review regarding Documentation and Safety Procedures in another effort to avoid wide spread Over-Pressurizations
- 5. Review existing safeguards
- 6. Review historical incidents in other states
- 7. Highlight existing safeguards explicitly contained in procedures
- 8. Annotate any new safeguards that may improve those in place
- 9. Develop Specific emergency actions/plans for each retirement/abandonment project in case something goes wrong

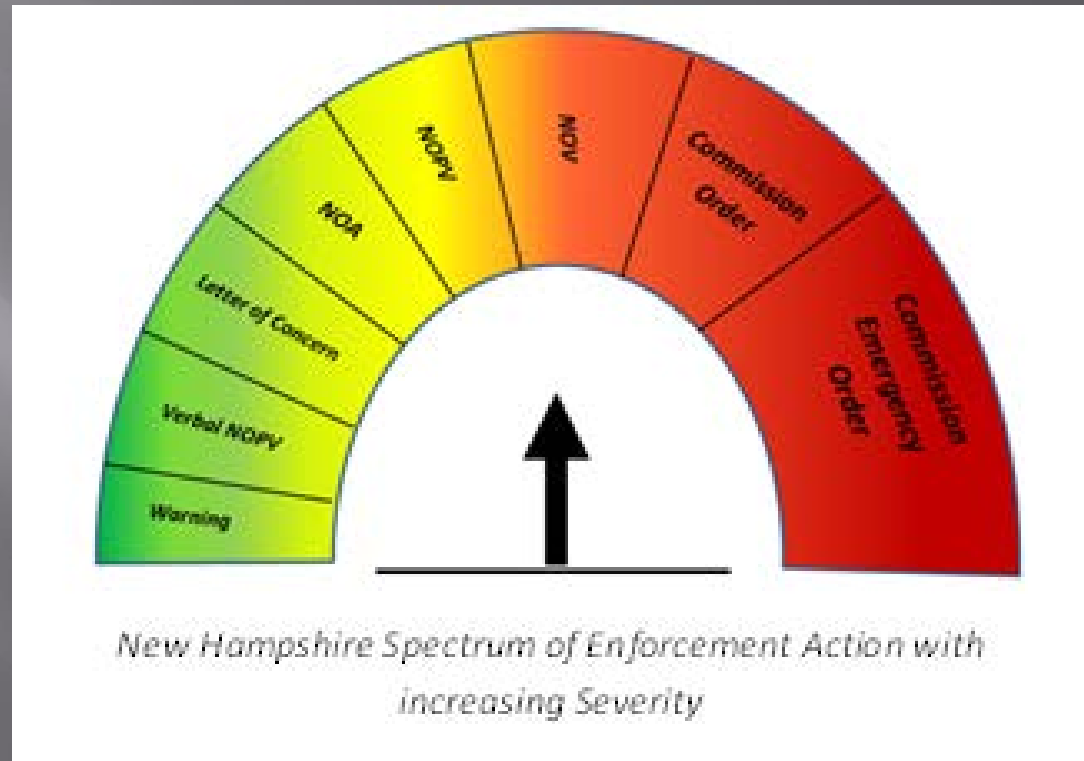
What's New?

- ▣ The Commission ordered on September 28, 2018 Unifil and Liberty to complete within 60 days a review regarding Documentation and Safety Procedures in another effort to avoid wide spread Over-Pressurizations
- 10. Include as much detail as possible for district regulating stations, both internally and externally to vaults and above ground stations
- 11. Include other utilities infrastructure and surrounding geographic features on plans involving district regs
- 12. Qualified personnel who work on those stations must be present when work is conducted in vicinity of those stations for 1st, 2nd, 3rd party excavations

NH versus Federal Compliance Actions Pipeline Safety Only (Not DIGSAFE)



9 Actions the
Federal
Government
can use



8 Actions the NH PUC
can use

New Hampshire Damage Prevention Update

NH Damage Prevention Update

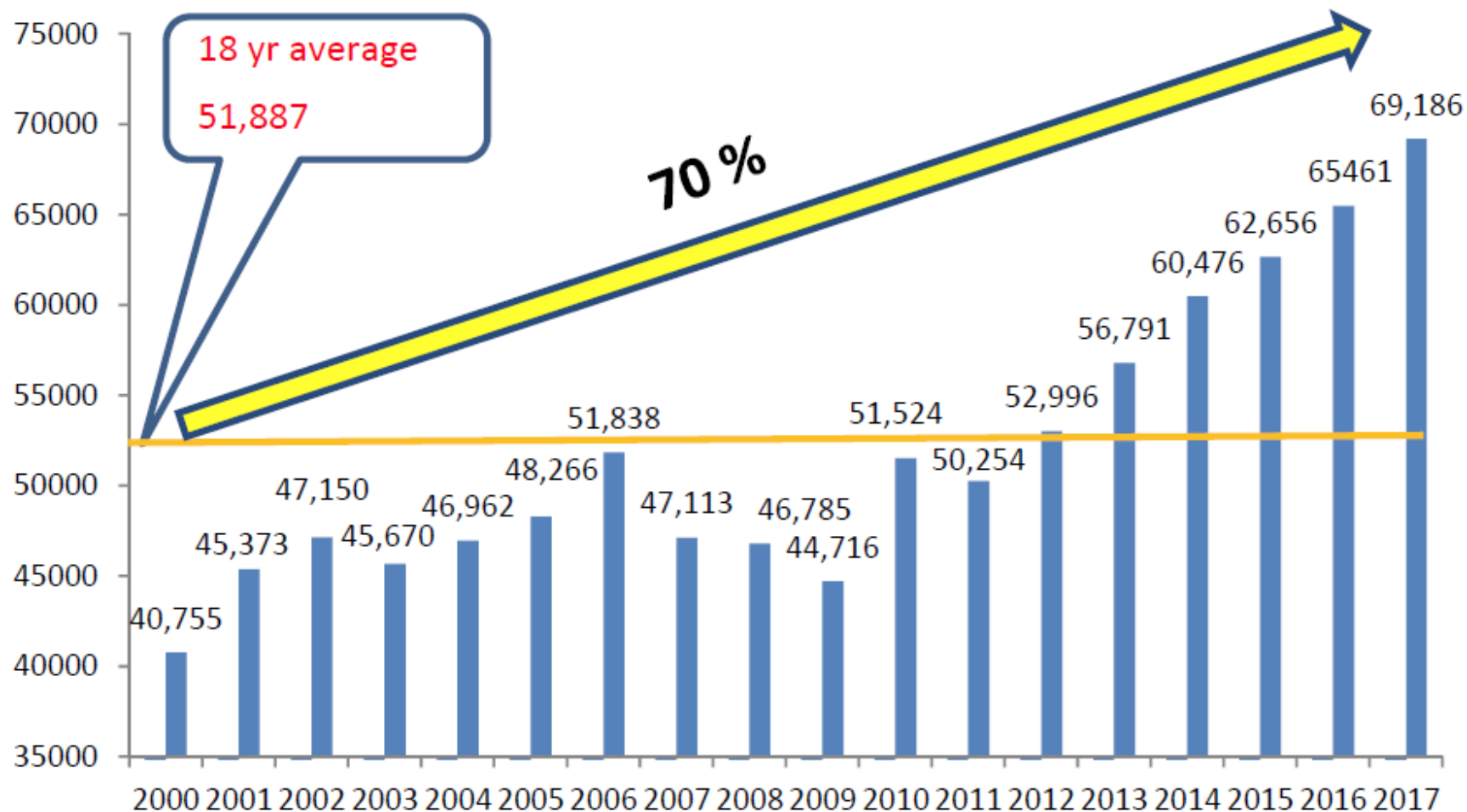
- ▣ Statistics are now posted on our website

NH Damage Prevention Statistical Update			
Year	Excavator	Operator	Total
	Gas Damages Per 1000	Gas Damages Per 1000	Gas Damages Per 1000
2010	1.19	0.52	1.71
2011	1.17	0.41	1.59
2012	1.29	0.34	1.64
2013	0.79	0.40	1.19
2014	0.99	0.43	1.41
2015	1.02	0.39	1.41
2016	0.89	0.38	1.27
2017	0.89	0.48	1.37

CALLS TO DIG SAFE SYSTEMS, INC. FOR NH LOCATES

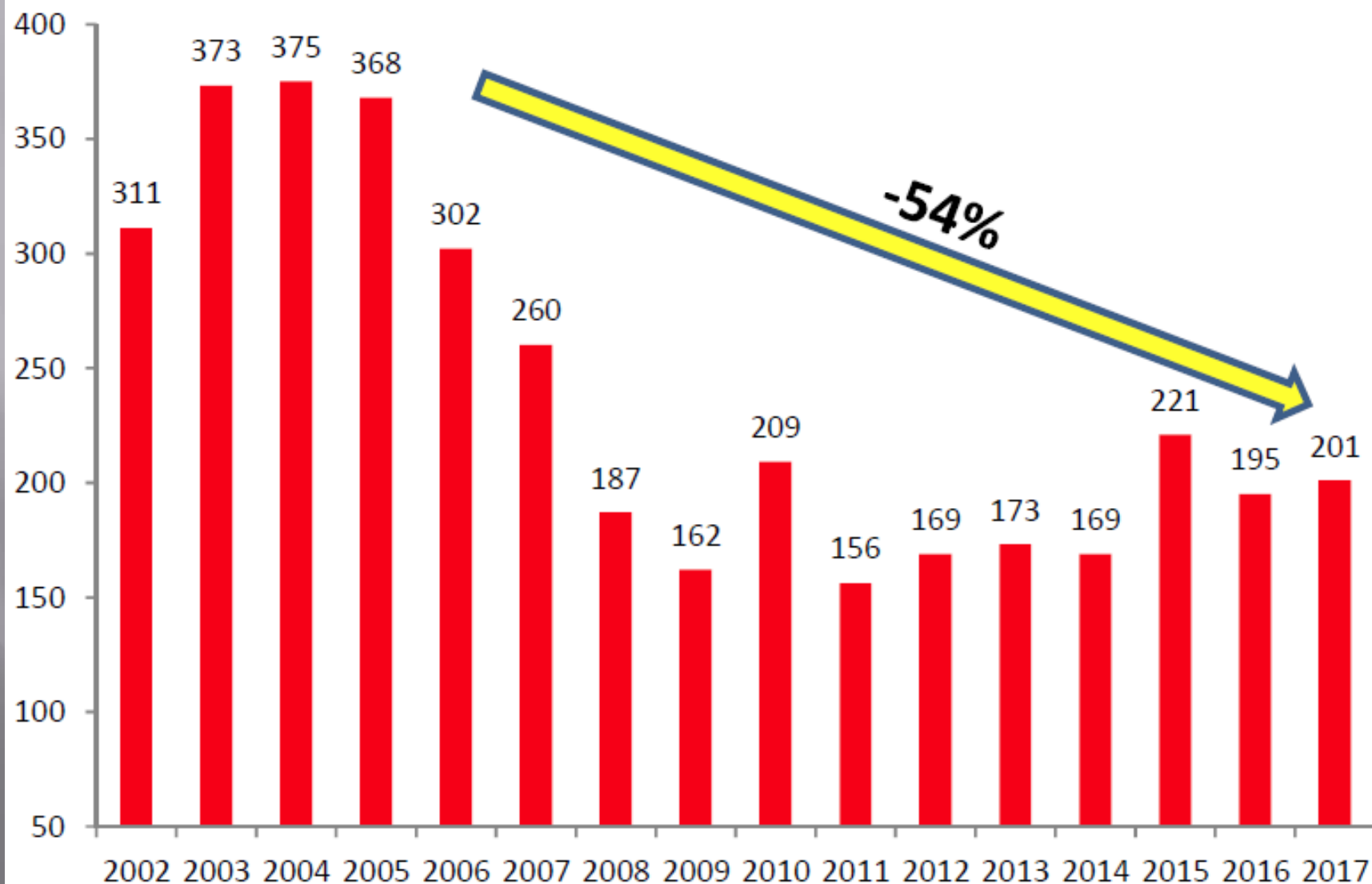
2000 - 2017

DIG SAFE ANNUAL REPORT 2017



REPORTED DIG SAFE DAMAGES or PROCEDURAL VIOLATIONS 2002-2017

to THE NEW HAMPSHIRE PUC SAFETY DIVISION



Type	Company	Party	Damages Per 1000							
			2017	2016	2015	2014	2013	2012	2011	2010
Private Utilities	Liberty	Excavator	0.82	1.20	1.55	1.28	0.90	1.56	1.57	1.73
		Operator	1.05	0.77	0.65	1.01	0.90	0.60	0.85	1.00
		Sub Total	1.87	1.97	2.20	2.29	1.80	2.17	2.42	2.73
	Unitil	Excavator	2.37	2.01	2.00	2.30	1.99	3.27	2.71	1.97
		Operator	0.23	0.42	0.69	0.26	0.35	0.59	0.31	0.49
		Sub Total	2.60	2.43	2.69	2.56	2.33	3.86	3.02	2.46
	NH Gas	Excavator	0.00	0.00	0.00	0.00	0.00	1.38	0.00	2.47
		Operator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Sub Total	0.00	0.00	0.00	0.00	0.00	1.38	0.00	2.47
Gas Operators	Gorham	Excavator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Operator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Sub Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Androscoggin	Excavator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Operator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Sub Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Master Meter & Transmission	UNH	Excavator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Operator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Sub Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Propane	LPG	Excavator	0.05	0.05	0.05	0.00	0.00	0.00	0.06	0.13
		Operator	0.05	0.00	0.00	0.00	0.00	0.00	0.12	0.13
		Sub Total	0.10	0.05	0.05	0.00	0.00	0.00	0.18	0.26
ALL GAS	NH ALL	Excavator	0.89	0.89	1.02	0.99	0.79	1.29	1.17	1.19
		Operator	0.48	0.38	0.39	0.43	0.40	0.34	0.41	0.52
		Sub Total	1.37	1.27	1.41	1.41	1.19	1.64	1.59	1.71

Under Ground Damage Prevention Stats	Gas Pipeline Damages per 1000 Dig Safe Requests							
State	2010	2011	2012	2013	2014	2015	2016	2017
New Hampshire	1.71	1.59	1.64	1.19	1.41	1.41	1.27	1.37
New York	2.29	2.14	2.01	1.92	1.77	1.97	1.75	1.70
Virginia	1.67	1.49	1.49	1.31	1.36	1.35	1.26	1.08
Massachusetts	3.89	3.89	4.14	2.29	2.47	2.65	2.64	1.41
Maryland	2.46	2.86	1.93	1.72	1.17	1.25	1.15	1.13
Maine	1.54	2.04	1.77	1.67	1.54	1.86	2.67	2.22
Connecticut	1.60	1.30	1.60	1.60	1.50	1.40	1.40	1.50
Pennsylvania	5.60	4.60	4.40	3.80	3.39	3.10	3.30	3.20
New Jersey	3.90	3.27	2.93	3.08	3.27	3.11	2.88	2.49
District Columbia	2.70	2.72	2.76	2.47	1.94	2.11	1.92	1.67
Ohio	4.35	4.15	3.75	3.50	3.70	3.34	2.88	2.70
Delaware	4.13	3.40	4.01	2.87	2.76	3.03	2.24	2.42
Rhode Island	Not reported			1.69	2.63	3.20	2.58	2.38
West Virginia	Not reported					3.30	4.05	2.46
Vermont	Not reported					2.54	3.04	Not Reported

Source: NAPSR Eastern Region Meeting May 21-25, 2018

2017 One Call Progress Report - Gas Final

Underground Damage Enforcement Proceedings involving gas facilities in New Hampshire that were closed by
Underground Damage Prevention Specialist (William Ruoff) in CY 2017 *

Year of Violation/ Incident	# of Gas Enforcement Actions	Type of Enforcement	at Fault	Gas	Collected Fines and Equivalent Training Value	
2017	50	Fine (Civil Penalty)	Excavator	24	\$12,000	
		Fine (Civil Penalty)	Operator	26	\$13,000	
2016	13	Fine (Civil Penalty)	Excavator	9	\$4,500	
		Fine (Civil Penalty)	Operator	4	\$2,000	
2015	1	Fine (Civil Penalty)	Excavator	1	\$100	
		Fine (Civil Penalty)	Operator	0	\$0	
SubTotal	64	Fine (Civil Penalty)	Excavator	34	\$16,600	
		Fine (Civil Penalty)	Operator	30	\$15,000	
2017	19	Equivalent Training (Civil Penalty)	Excavator	19	\$9,500	
2016	16	Equivalent Training (Civil Penalty)	Excavator	16	\$8,000	
2015	2	Equivalent Training (Civil Penalty)	Excavator	2	\$1,000	
SubTotal	37	Equivalent Training (Civil Penalty)	Excavator	37	\$18,500	
2017	16	Dismissal	Dismissed	Either	2	NA
			Homeowner	Excavator	5	NA
			Reasonable Care	Excavator	5	NA
			No Violation	Either	4	NA
			Non-Jurisdictional	Either	0	NA
			Unknown	Excavator	0	NA
2016	6	Dismissal	Dismissed	Either	1	NA
			Homeowner	Excavator	0	NA
			Reasonable Care	Excavator	5	NA
			No Violation	Either	0	NA
			Non-Jurisdictional	Either	0	NA
			Unknown	Excavator	0	NA
2015	0	Dismissal	Dismissed	Either	0	NA
			Homeowner	Excavator	0	NA
			Reasonable Care	Excavator	0	NA
			No Violation	Either	0	NA
			Non-Jurisdictional	Either	0	NA
			Unknown	Excavator	0	NA
2017	85	Total Gas Enforcement Actions		85	\$34,500	
2016	35	Total Gas Enforcement Actions		35	\$14,500	
2015	3	Total Gas Enforcement Actions		3	\$1,100	
Total	123	Grand Total		123	\$50,100	
			Actual Fines Collected		\$31,600	

• 123 Gas Investigations

• \$31,600 in Civil Penalties

*

These statistics include Underground Damage Prevention proceedings that were successfully closed from 1st Quarter 2017 through June 30, 2018

2017 One Call Progress Report - Non-Gas Final

Underground Damage Enforcement Proceedings involving non-gas facilities in New Hampshire that were closed by Underground Damage Prevention Specialist (William Ruoff) in CY 2017 *

Year of Violation/ Incident	Non-Gas Enforce- ment Actions	Type of Enforcement		at Fault	Electric	Phone	Cable	Water	Other	Total	Collected Fines and Equivalent Training Value
2017	45	Fine (Civil Penalty)		Excavator	16	4	1	0	0	21	\$9,700
		Fine (Civil Penalty)		Operator	12	5	7	0	0	24	\$11,200
2016	13	Fine (Civil Penalty)		Excavator	1	4	0	0	0	5	\$1,700
		Fine (Civil Penalty)		Operator	6	1	1	0	0	8	\$3,200
2015	7	Fine (Civil Penalty)		Excavator	0	0	0	0	0	0	\$0
		Fine (Civil Penalty)		Operator	6	0	1	0	0	7	\$2,700
SubTotal	65	Fine (Civil Penalty)		Excavator	17	8	1	0	0	26	\$11,400
		Fine (Civil Penalty)		Operator	24	6	9	0	0	39	\$17,100
2017	41	Equiv. Training (Civ. Penalty)		Excavator	27	9	5	0	0	41	\$20,500
2016	18	Equiv. Training (Civ. Penalty)		Excavator	8	6	4	0	0	18	\$9,000
2015	9	Equiv. Training (Civ. Penalty)		Excavator	6	1	2	0	0	9	\$4,500
SubTotal	68	Equiv. Training (Civ. Penalty)		Excavator	41	16	11	0	0	68	\$34,000
2017	28	Dismissal	Dismissed	Either	3	8	1	0	0	12	NA
			Homeowner	Excavator	3	1	0	0	0	4	NA
			Reasonable Care	Excavator	0	2	0	0	0	2	NA
			No Violation	Either	5	3	1	0	0	9	NA
			Non-Jurisdictional	Either	0	0	0	0	0	0	NA
			Unknown	Excavator	1	0	0	0	0	1	NA
2016	14	Dismissal	Dismissed	Either	3	2	2	0	0	7	NA
			Homeowner	Excavator	0	0	0	0	0	0	NA
			Reasonable Care	Excavator	0	0	1	0	0	1	NA
			No Violation	Either	3	2	1	0	0	6	NA
			Non-Jurisdictional	Either	0	0	0	0	0	0	NA
			Unknown	Excavator	0	0	0	0	0	0	NA
2015	9	Dismissal	Dismissed	Either	1	2	2	0	0	5	NA
			Homeowner	Excavator	0	0	0	0	0	0	NA
			Reasonable Care	Excavator	3	0	0	0	0	3	NA
			No Violation	Either	0	1	0	0	0	1	NA
			Non-Jurisdictional	Either	0	0	0	0	0	0	NA
			Unknown	Excavator	0	0	0	0	0	0	NA
2017	114	Total Non-Gas Enforcement Actions			67	32	15	0	0	114	\$33,400
2016	45	Total Non-Gas Enforcement Actions			21	15	9	0	0	45	\$13,900
2015	25	Total Non-Gas Enforcement Actions			16	4	5	0	0	25	\$7,200
Total	184	Grand Total			104	51	29	0	0	184	\$54,500
Actual Fines Collected								\$20,500			

184 Non Gas Investigations

\$20,500 Civil Penalties

* These statistics include Underground Damage Prevention proceedings that were successfully closed from 1st Quarter 2017 through June 30, 2018

New Hampshire Excavator Manual

- Last published February 2018
- Amendments on Puc website through September 2018
- <http://www.puc.nh.gov/Safety/educationandtraining.htm>
- Reorganized Sections
- Updated Franchise Territory Maps
- Updated LPG and Water Systems for Town listings
- Updated UtilityNames resulting from Mergers/Acquisitions

NEW HAMPSHIRE

EXCAVATOR MANUAL



Remember to Contact



**before you
Blast, Demo, Drill or
Excavate**

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Monday thru Friday, 6:00 am to 6:00 pm

AFTER 6:00 PM:

EMERGENCY CALLS ONLY

New Hampshire Excavator Manual

UTILITIES BY CITY / TOWN

CITY/TOWN	TELEPHONE	CABLE	ELECTRIC	WATER	SEWER	GAS	LPG
BOSCAWEN	CONSOLIDATED COMMUNICATIONS TDS	COMCAST	EVERSOURCE UNITIL	PENCOOK BOSCAWEN WATER PRECINCT	MUNICIPAL	LIBERTY	
BOW	DUNBARTON CONSOLIDATED COMMUNICATIONS	COMCAST	UNITIL EVERSOURCE	ABENAKI BOW PENNICHUCK EAST	BOW	LIBERTY	ENERGYNORTH IRVING OIL RYMES
BRADFORD	TDS	TDS	EVERSOURCE				
BRENTWOOD	CONSOLIDATED COMMUNICATIONS	COMCAST	NHEC EVERSOURCE UNITIL			UNITIL	DF RICHARD ENERGY FERRELLGAS SUBURBAN PROPANE
BRIDGEWATER	CONSOLIDATED COMMUNICATIONS	ATLANTIC BROADBAND	NHEC EVERSOURCE				
BRISTOL	CONSOLIDATED COMMUNICATIONS	ATLANTIC BROADBAND	NHEC EVRSOURCE	MUNICIPAL	MUNICIPAL		RYMES SUBURBAN PROPANE
BROOKFIELD	CONSOLIDATED COMMUNICATIONS	TIME WARNER	NHEC EVERSOURCE WOLFEBORO ELECTRIC				
BROOKLINE	CONSOLIDATED COMMUNICATIONS	CHARTER COMMUNICATIONS	EVERSOURCE				
CAMBRIDGE	CONSOLIDATED COMMUNICATIONS		EVERSOURCE				
CAMPTON	CONSOLIDATED COMMUNICATIONS	TIME WARNER	NHEC EVERSOURCE	COMMUNITY LAKES REGION WATER CO.	COMMUNITY		AMERIGAS PROPANE DEAD RIVER CO FRANCONIA GAS SUBURBAN PROPANE

NH Puc 800 Administrative Rules

- Completed rulemaking February 8 2017, initiated in May 2016
- Areas of Review:
 - Locator Training Requirements updated 4th edition NULCA
 - 1. PUC 802.16 Definition for Tolerance zone
 - 2. PUC 803.01 (b) (6) (c) Procedures and Operation of Notification Center. The specific location language was enhanced to provide a more accurate location of the proposed excavation.
 - 3. PUC 804.01 (e) & (f) Reporting Requirements for Operators of Underground Facilities. Provides new record keeping requirements for Operators regarding existing facilities and retired facilities found during excavation and not previously recorded.

NH Puc 800 Administrative Rules

- Will complete rulemaking by November 2016, initiated in May 2016
- Areas of Review:
 - 4. PUC 805.01 (d) (4) Duties of an Excavator. Ditto 3. PUC 803.01(b) (6) (c). Also PUC 805.01 (i) For Excavations over 100 lineal feet requires the excavator to provide more complete information to the locator so the locator can more accurately locate for the excavation.
 - 5. PUC 805.02 (e) Excavation That Affects the Tolerance Zone. New language was included for excavation types that are perpendicular to the existing facilities.
 - 6. Update “operator” for telecommunications (RSA 362:7 modified in 2013)

NH Damage Prevention Items

- Began performing random field checks based on quantity tickets per town per county.
- estimating 2 days per month
- Evaluating whether number of violations found are increasing, staying steady or decreasing
- Implemented mobile tablets and RSS Feeder Application of Dig Safe System Inc

National Damage Prevention Items



- NH PUC in July 2017 completed a PHMSA Part 198 Evaluation based on federal 7 elements
- Received an “Adequate” Rating on May of 2018.
- Nearly 40 states are now “Adequate”
- NH will not adopt Part 196 into State Rules

NH Pipeline Safety INSPECTIONS PLANS – PLANS - PLANS

- ▣ Physical Security Plans
- ▣ Public Awareness Plans
- ▣ Operation and Maintenance Plans
- ▣ Emergency Plans
- ▣ Distribution Integrity Management Plans

NH Pipeline Safety INSPECTIONS PLANS – PLANS - PLANS

- ▣ Operator Qualification Plans
- ▣ Control Room Plans
- ▣ Integrity Management Plans
- ▣ Quality Assurance Plans
- ▣ Damage Prevention Plans
- ▣ Construction Plans
- ▣ Drug and Alcohol Plans

And there are more coming.....

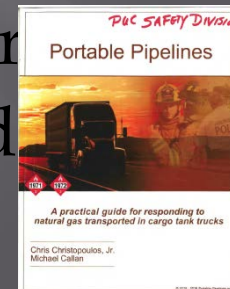
CNG Assessment Lessons Learned

- ▣ Storage Trailer (s) and Decompression Skid
- ▣ Multiple Trailers coupled to a Decompression Skid



CNG Storage Trailers

- ▣ Hexagon Lincoln of Lincoln, Nebraska.
- ▣ The Type IV cylinders are constructed of a high density polyethylene liner wrapped in filament wound epoxy-carbon (composite) outer shell.
- ▣ The cylinders in the TITAN® module are forty-two and one-half inches in diameter by thirty-eight and one-half feet long.
- ▣ The cylinders contain a small amount of metal located at the ends of each cylinder
- ▣ <http://portable-pipelines.com> and <http://energyemergencies.com>

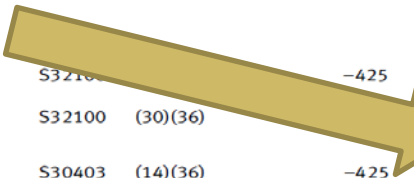


CNG Assessment Lessons Learned

- ▣ Thin wall tubing 2", 1", $\frac{3}{4}$ ", $\frac{1}{2}$ ", $\frac{3}{8}$ "
- ▣ Not strong enough, end up at 20% to 100% SMYS
- ▣ Pressure Test to 1.25 per B31.3, do not pressure test to 1.5 per Part 192



CNG Assessment Lessons Learned

Material	Spec. No.	P-No. or S-No. (5)	Grade	UNS No.	Notes	Min. Temp., °F (6)	Specified Min. Strength, ksi		Min. Temp. to 100	200
							Tensile	Yield		
<div>Stainless Steel (3)(4a) Pipes and Tubes (2)</div> <div></div>										
18Cr–10Ni–Ti pipe smls > 3⁄8 in. thick	A 312	8	TP321	S32100		–425	70	25	16.7	16.7
18Cr–10Ni–Ti pipe > 3⁄8 in. thick	A 376	8	TP321	S32100	(30)(36)		70	25	16.7	16.7
18Cr–8Ni tube	A 269	8	TP304L	S30403	(14)(36)	–425	70	25	16.7	16.7
18Cr–8Ni pipe	A 312	8	TP304L	S30403	...	–425	70	25	16.7	16.7
Type 304L A 240	A 358	8	304L	S30403	(36)	–425	70	25	16.7	16.7
16Cr–12Ni–2Mo tube	A 269	8	TP316L	S31603	(14)(36)	–425	70	25	16.7	16.7
16Cr–12Ni–2Mo pipe	A 312	8	TP316L	S31603	...	–425	70	25	16.7	16.7
Type 316L A 240	A 358	8	316L	S31603	(36)	–425	70	25	16.7	16.7
18Cr–10Ni–Ti pipe smls > 3⁄8 in. thick	A 312	8	TP321	S32100	(28)(30)(36)	–425	70	25	16.7	16.7
18Cr–10Ni–Ti pipe > 3⁄8 in. thick	A 376	8	TP321	S32100	(28)(30)(36)	–425	70	25	16.7	16.7
18Cr–10Ni–Ti pipe smls > 3⁄8 in. thick	A 312	8	TP321H	S32109	(30)(36)	–325	70	25	16.7	16.7
18Cr–10Ni–Ti pipe > 3⁄8 in. thick	A 376	8	TP321H	S32109	...	–325	70	25	16.7	16.7
23Cr–13Ni	A 451	8	CPH8	J93400	(26)(28)(35)	–325	65	28	18.7	18.7
25Cr–20Ni	A 451	8	CPK20	J94202	(12)(28)(35)(39)	–325	65	28	18.7	18.7
11Cr–Ti tube	A 268	7	TP409	S40900	(35)	–20	60	30	20.0	...
18Cr–Ti tube	A 268	7	TP430Ti	S43036	(35)(49)	–20	60	40	20.0	...
15Cr–13Ni–2Mo–Cb	A 451	S-8	CPF10MC	...	(28)	–325	70	30	20.0	...
16Cr–8Ni–2Mo pipe	A 376	8	16-8-2H	S16800	(26)(31)(35)	–325	75	30	20.0	...
12Cr–Al tube	A 268	7	TP405	S40500	(35)	–20	60	30	20.0	20.0
13Cr tube	A 268	6	TP410	S41000	(35)	–20	60	30	20.0	20.0
16Cr tube	A 268	7	TP430	S43000	(35)(49)	–20	60	35	20.0	20.0
18Cr–13Ni–3Mo pipe	A 312	8	TP317L	S31703	...	–325	75	30	20.0	20.0
25Cr–20Ni pipe	A 312	8	TP310	...	(28)(35)(39)	–325	75	30	20.0	20.0
Type 310S A 240	A 358	8	310S	S31008	(28)(31)(35)(36)	–325	75	30	20.0	20.0
25Cr–20Ni pipe	A 409	8	TP310	S31000	(28)(31)(35)(36)(39)	–325	75	30	20.0	20.0
18Cr–10Ni–Ti pipe smls ≤ 3⁄8 in. thk & wld	A 312	8	TP321	S32100	(30)	–425	75	30	20.0	20.0
18Cr–10Ni–Ti pipe	A 358	8	321	S32100	(30)(36)	–425	75	30	20.0	20.0
18Cr–10Ni–Ti pipe ≤ 3⁄8 in. thick	A 376	8	TP321	S32100	(30)(36)	–425	75	30	20.0	20.0
18Cr–10Ni–Ti pipe	A 409	8	TP321	S32100	(30)(36)	–425	75	30	20.0	20.0
23Cr–12Ni pipe	A 312	8	TP309	...	(28)(35)(39)	–325	75	30	20.0	20.0

ASME B31.3-2010
(Revision of ASME B31.3-2008)

Process Piping

ASME Code for Pressure Piping, B31

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CNG Assessment Lessons Learned



CNG Assessment Lessons Learned

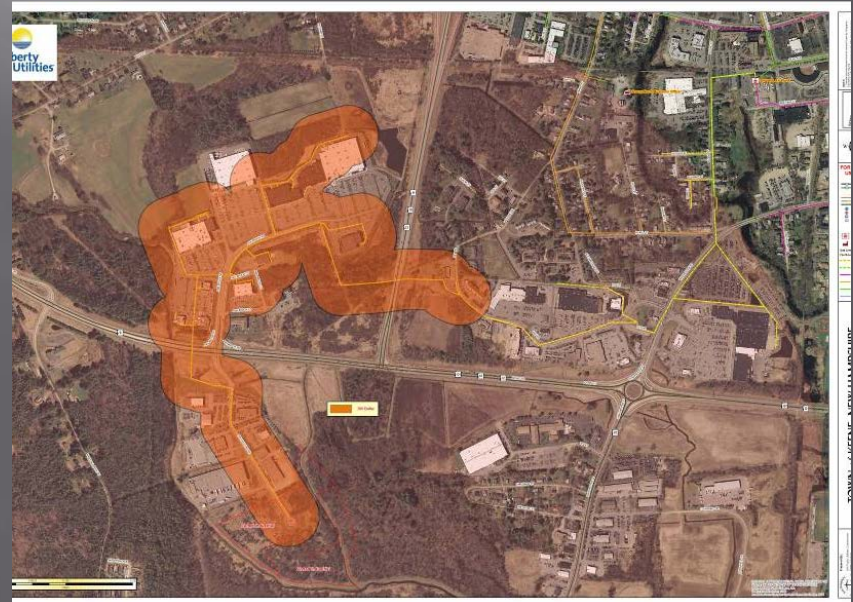
- ▣ CNG Materials are mostly Stainless Steel
- ▣ There are many kinds of Stainless Steel most used by the food industry, medical industry and chemical industry, have to go to Appendix B to see if SST is okay
- ▣ ASTM A 269 Grade 316 seamless tubing
- ▣ Tubing is considered pipe
- ▣ 3 Reductions Pressures 4000 psig, reduced to 1500 psig, reduced to 105 psig, reduced to 60 psig.

CNG Assessment Lessons Learned

- ▣ Units Leased by Vendor, boiler plate terms initially used by Supplier and Utility
- ▣ Control system initially by Vendor
- ▣ Emergency Response initially by Vendor
- ▣ Maintenance of interior initially by Vendor
- ▣ No Covered Task for Transfer Operations
- ▣ No qualifications of Vendor Employees

CNG Assessment Lessons Learned

- ▣ Engineers tried to convince Class Location as a Class 1
- ▣ This was done to try allow the standard materials used to not have to be retrofitted



CNG Assessment Lessons Learned

- ▣ 5 foot vents required above decompression skid
- ▣ based NFPA 70 Class 1 Division 1



CNG Assessment

- ▣ Comprehensive CNG Review was issued on October 3, 2018 nearly 100 pages
- ▣ This applies to Keene only
- ▣ Safety Division expects this to be a template which Utility will use in other locations
- ▣ If Safety Division recommendations are implemented by Utility then conversion of customers will began in late fall 2018.

THANK YOU FOR YOUR EFFORTS TOWARDS PIPELINE SAFETY

- Zero Incidents is Achievable