Transportation Research Board Pipeline Study

Washington, DC

December 7, 2017

OVERVIEW

- Discuss Potential Failure Modes/ Specific Hazards
- Review Leading Indicators/Precursors
- Accident/Incident Data

Potential Failure Modes/Specific Hazards

- Includes potential hazards associated with jurisdictional portion of gas systems only
  - Excavation leaks
  - Corrosion leaks
  - Vehicular damage leaks
  - Component/equipment failure leaks or overpressure
  - Natural forces causing system damage and leaks

LEAKS – EXCAVATION

- Potential is always there on any system for 3rd party damage
  - Even with State laws in place to call 1st

LEAKS – CORROSION

- Unprotected steel tanks and piping may corrode
  - Based on soil conditions

LEAKS – VEHICULAR DAMAGE

LEAKS/OVERPRESSURE – COMPONENT/EQUIPMENT FAILURE

- Potential leak from either regulator vent
- Potential for over-pressure

LEAKS/DAMAGE – NATURAL FORCES

- Flooding and other natural forces have the potential to cause leaks

EASTERN PROPANE & OIL

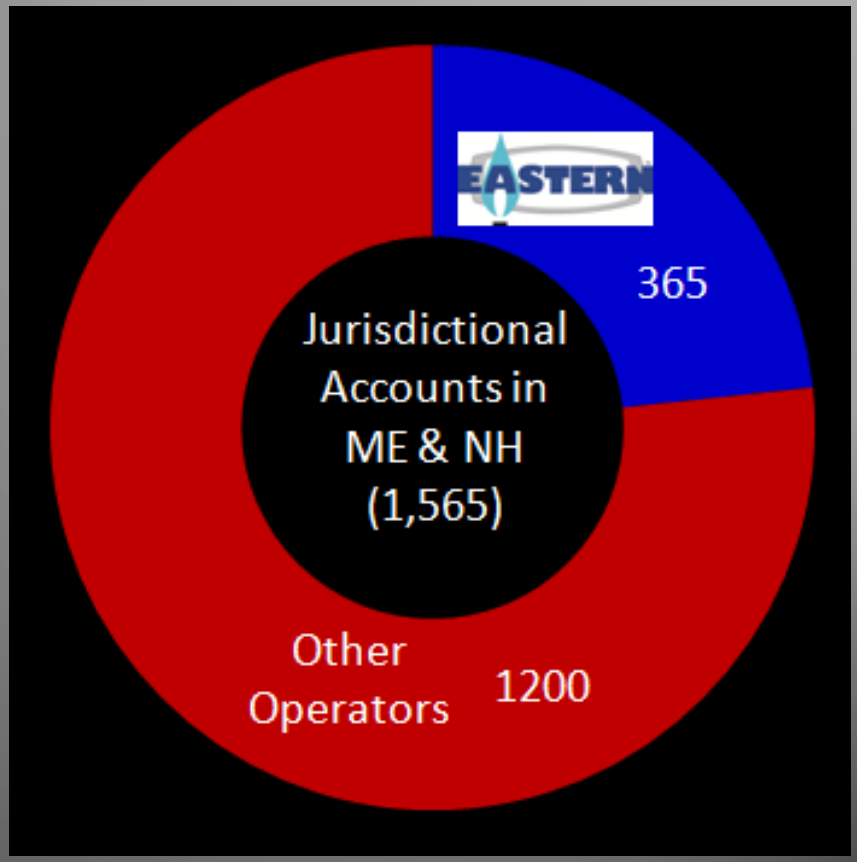
Top 50 Propane Retailers

RANK	RETAILER	HEADQUARTERS	2015 GALLONS
1	AmeriGas Propane	King of Prussia, Pa.	1,184,300,000
2	Ferrellgas	Overland Park, Kan.	720,398,000
3	Suburban Propane Partners LP	Whippany, N.J.	480,400,000
4	Growmark Inc.	Bloomington, Ill.	298,691,088
5	CHS Inc.	Eagan, Minn.	223,318,782
6	NGL Energy Partners LP	Tulsa, Okla.	158,000,000
7	MFA Oil Co.	Columbia, Mo.	100,033,466
8	Blossman Gas Inc.	Ocean Springs, Miss.	94,000,000
9	Southern States Cooperative Inc.	Richmond, Va.	74,100,000
10	Empire Gas Co. Inc.	San Juan, Puerto Rico	74,000,000
11	Pinnacle Propane	Irving, Texas	68,000,000
12	Dead River Co.	South Portland, Maine	65,000,000
13	Lakes Gas Co.	Forest Lake, Minn.	54,000,000
14	Paraco Gas	Rye Brook, N.Y.	52,350,000
15	Superior Plus Energy Services Inc.	Rochester, N.Y.	52,000,000
16	ThompsonGas	Frederick, Md.	47,200,000
17	Eastern Propane & Oil	Rochester, N.H.	41,000,000
18	Hawaii Gas	Honolulu	28,000,000
19	Matheson	Basking Ridge, N.J.	26,884,000
20	Sharp Energy	Dover, Del.	25,800,000

- We are listed as #17 based on retail gallons sold
- 434 jurisdictional systems

One Retailer: Representative of the Industry

- NH & ME JLP sites = 1,565
- CT & VT JLP sites = 692



Reliable leading Indicators Data–Precursor Examples

- UG steel piping and containers – <u>potential corrosion leaks</u>
  - 314 jurisdictional systems out of 434 systems were analyzed for the last 3 years:
    - 130 systems have UG steel tanks
    - 12 systems have UG steel pipe

Reliable leading Indicators Data–Precursor Examples

- 10 of the 130 UG tanks had low cathodic protection readings
- 2 of the 12 UG Steel Piping Systems had low cathodic protection readings
- None of the systems resulted in a leak for the past 3 years analyzed

Reliable leading Indicators Data- Precursor Examples

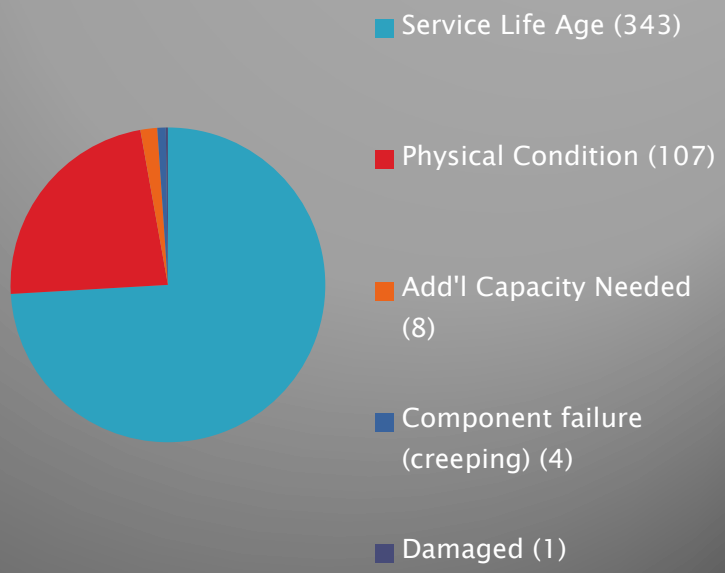
- Leak Survey Results:
  - 864 leak surveys
    - 30 small leaks found on AG piping- 3.4%
      - repaired right away

Reliable leading Indicators Data–Precursor Examples

Year	Regulator Swap-outs	
	1st Stage Regulators	2nd Stage Regulators
2015	28	183
2016	8	148
2017	7	89
	43	420

Reliable leading Indicators Data–Precursor Examples

- Reasons for replacement of regulators
  - Manufacturer service life recommendation
  - Physical condition
  - Sizing issue from additional load added
  - High lockup pressure/creep
  - Damaged



PHMSA Definition 191.3

- "Incident" means any of the following events:
  - 1) Release of LP gas that results in one or more of the following consequences:
    - (i) A death or personal injury with in-patient hospitalization;
    - (ii) Property damage of $50k or more but excluding cost of gas lost;
    - (iii) Unintentional gas loss of 3 million cubic ft or more
      - Equates to 82,463 gallons of liquid propane (36.38 cubic ft/gallon of propane) (3M ÷ 36.38 = 82,463)
  - 2) An event that's significant in the judgment of the operator without meeting above requirements

States Knowledge of Reportable Incidents

- NH PUC
  - 14 years of enforcement with LPG
  - No reportable incidents based on 49 CFR191.5 (Immediate notice of certain incidents) or 191.9 (Distribution system – Incident report)
  - Finding some code issues from time to time
    - Not seeing incidents
    - Only a handful of reportable incidents received based on more stringent State requirements

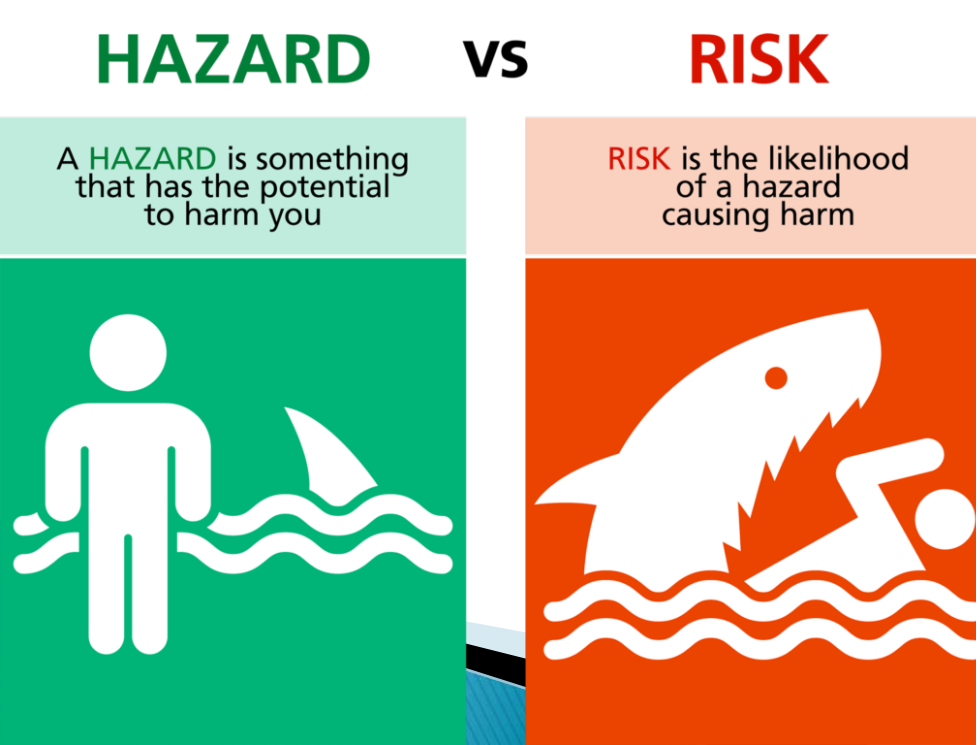
States Knowledge of Reportable Incidents

- Maine PUC – no PHMSA reportable LPG Incidents of record
- Only a couple of State reported incidents

Frequency of Particular Accident Causes

Understanding Risk

- Does the industry understand its risk?



Closing Comments

- We've discussed potential failure modes
- We've reviewed the associated hazards
- We've discussed test results that are the same each year
- We don't have incidents to discuss frequency
- Reportable Incident Data = rare at best

QUESTIONS?

- Thank you for your time!