PIPELINES AND SETBACKS

Why Regulation is needed

COGCC PIPELINE REGULATIONS

1100 SERIES FLOWLINE REGULATIONS

1101. INSTALLATION AND RECLAMATION

a. Material

b. Design

c. Cover

d. Excavation/backfill/reclamation

e. Pressure testing of flowlines

1102: OPERATIONS, MAINTENANCE, REPAIR

a. Maintenance.

b. Repair.

c. Marking.

d. One Call participation.

e. Emergency response.

1103. ABANDONMENT

U.S. DEPARTMENT OF TRANSPORTATION

PIPELINE HAZARDOUS MATERIALS AND SAFETY ADMINISTRATION (PHMSA)

OFFICE OF PIPELINE SAFETY (OPS)

- Primarily responsible for issuing and enforcing the minimum pipeline safety regulations for the country.
- The federal pipeline safety laws do allow for states to accept the responsibility to regulate, inspect, and enforce safety rules over intrastate pipelines within their borders under an annual certification from PHMSA.
- If a state receives such intrastate authority they can set regulations that are more stringent than what PHMSA sets as long as the state rules do not conflict with the federal regulations.
- Basic pipeline information pertaining to Colorado can be found on the Pipeline and Hazardous Materials Safety Administration (OPS) website.
- CO PUC: responsible for jurisdictional gas distribution pipeline operators (ie. Local gas companies); regulate gas as a utility

RETAIL DELIVERY: 3 TYPES OF LINES

Low pressure lines/ 1/4 lb. psi

Intermediate lines/2 psi

High pressure lines/up to 60 psi.

THE COGCC

- IS NOT
- COULD BE
- SHOULD BE

INVOLVED IN PIPELINE SITING

WHY?

FAILURE EVENT

- Core Radius of Influence (size of the hole)
- Radiant Heat Radius (size/heat impact area)
- Potential Impact Radius

GRI-00/0189

A Model For Sizing
High Consequence Areas
Associated With
Natural Gas Pipelines

GRI-00/0189 ABSTRACT

- "This report developed a simple and defendable approach to sizing the ground area potentially affected by a worst-case ignited rupture of a high-pressure natural gas pipeline.
- Based on this model, a simple equation has been developed that relates the diameter and operating pressure of a pipeline to the size of the area likely to experience high consequences in the event of an ignited rupture failure.
- Pipeline incident reports, located in the public domain, were reviewed and provide the basis for evaluating the validity of the proposed affected area equation. The correlation suggests that the simple equation provides a credible estimate of affected area.

THE EQUATION

Relates diameter and operating pressure
of a pipeline
to the size of the affected area in the event of a
CREDIBLE WORST-CASE FAILURE EVENT

The model upon which the hazard area equation is based consists of three parts:

- a fire model that relates the rate of gas release to the heat intensity of the fire;
- an effective release rate model that provides a representative steady-state approximation to the actual transient release rate;
- a heat intensity threshold that establishes the sustained heat intensity level above which the effects on people and property are consistent with the adopted definition of a **High Consequence Area (HCA).**

THE EQUATION

$$r = 0.685\sqrt{p\,d^2}$$

- ‘r': radius of a circular area in feet surrounding the point of pipeline failure,
- ‘p': maximum allowable operating pressure in the pipeline segment in psi
- ‘d': nominal diameter of the pipeline in inches.

High Consequence Area (HCA)

The area within which both

- the extent of property damage

and

- the chance of serious or fatal injury

would be expected to be significant

"Acknowledging the uncertainty associated with interpreting reported offsets to injury and fatality, the balance of information still overwhelmingly indicates that the proposed hazard area radius equation provides a reasonable, if somewhat conservative, estimate of the zone of high consequence."

VIEWS OF REGULATION

- Create a false sense of security because stuff can still happen
- Intended to help predict future performance
- Obligation of Regulation:
- Provide a real, not false, sense of security

If pipeline incidents are seen as infrequent, they must also be seen for the potentially serious consequences that may significantly impact the general public.

COST/BENEFIT ANALYSIS (CBA) Cost of the action/Benefit of the action

CBA works most effectively when the costs and benefits of an action can each be easily identified and monetized. But it is not so tidy or easy when trying to value environmental, health and safety factors, as in the pipeline safety field. The process gets very complicated very quickly.

Is that reason not to do it?

RECKLESS DISREGARD

BY

JAMES KUNEN

- Examines the corporate practice of making the cost/benefit analysis of any action a company is considering taking to determine what would be the most cost effective approach for a company to pursue.
- In the instance that is the basis for the book, the Ford Motor Company CBA was this: should it recall fleets of school buses in order to repair a defective chassis design, or pay damages from any accidents caused by the defective chassis.
- They chose the latter, a 'credible worst case failure event'; that led to the deaths of 24 children riding one of their buses.
- So how do you choose to plan for 'a credible worst case failure event". Avert it ahead of time with potentially more upfront planning, siting and investment; or clean it up later and apologize and pay for any loss of life and damages?

AVOID RECKLESS DISREGARD

- Pipeline siting is a safety issue that is not being addressed.
- Applying this method of analysis (The Formula) to gathering lines is both warranted and valid.
- At this point there is no way to assess what the outcome of this would be as it is not known what the size of the pipelines leaving the multi well pads are.
- Pipeline siting is something that needs to be considered by this setback group and by the COGCC.
- There is no reason why something like this should not be part of the discussion and part of subsequent action.