

**Northwestern University
Transportation Center**

**Pipeline Economics and Management
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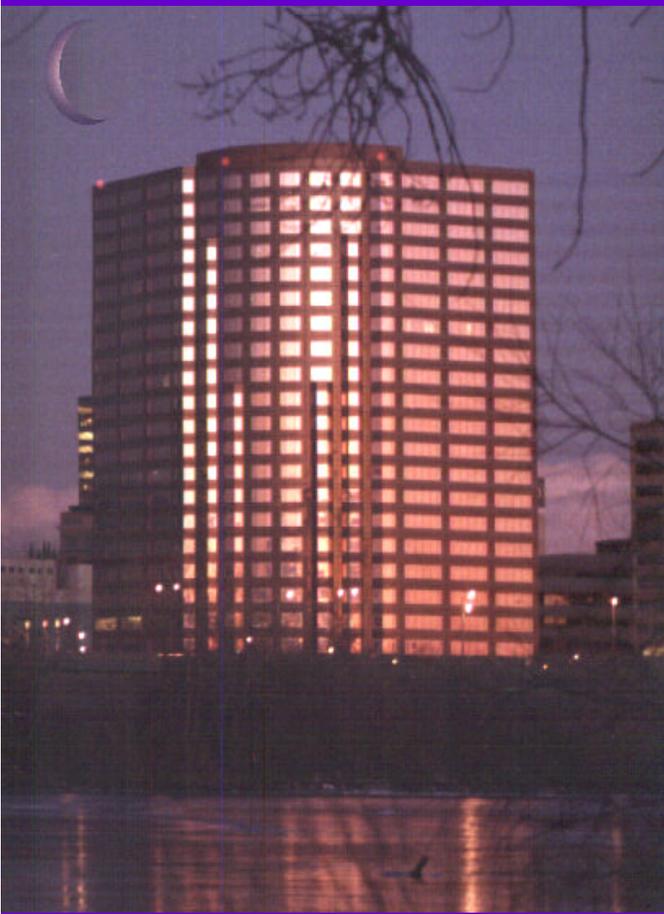
“Fostering Pipeline Integrity”

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Hartford Steam Boiler Inspection and Insurance Co.**

Agenda

- I Why Is HSB Here?**
- II Silver Bullets**
- III Frameworks**
- IV The Journey**

Hartford Steam Boiler Inspection and Insurance Co.



- Assets - \$2.2 Billion
- Revenues - \$650 Million
- Engineering and Insurance
- World's Largest Insurer of Equipment and Machinery
- World's Largest Accredited Inspection Agency 700+ Inspectors

Hartford Steam Boiler Inspection and Insurance Co.

Formed in October 1866

Outgrowth of Polytechnic Club - Group of Engineers
Consulting to Understand and Prevent Boiler
Explosions

Watershed Event - Sultana Explosion in 1865

Good Materials of Construction, Fine Workmanship,
Careful Operation, and Periodic Inspection Can
Prevent Boiler Explosions

Developed "*Hartford Standards*" and "*Hartford
Settings*"

Hartford Steam Boiler Inspection and Insurance Co.

Company Started By Providing Boiler Inspection
Coupled With Insurance

Business Model - Engineering Knowledge and an
Understanding of Risk We Stand Behind With a
Guarantee

Historically - Prevent Losses, Indemnify in the Event
of a Loss, Help Ensure Rapid Recovery

Present and Future - Apply the Business Model to
Help Customers Improve Their Business and Realize
Opportunity

Hartford Steam Boiler *Last Five Years*

We Do Not Own Pipelines

We Do Not Operate Pipelines

Constructed 35 Miles of Line Pipe

Repaired/Rebuilt 12 Compressor Stations

Repaired 4 Pumping Stations

Replaced 4 Terminal Loading Racks

Not A Casual or Passing Interest

What We Will Not Talk About

The Absolute Solution...

The Silver Bullet!

The Absolute Answer.

Following Each Major Incident.....
.....There Is An Outcry for “The Silver Bullet”

Edison

Reedy River

San Jacinto

Bellingham

- Remotely Controlled Valves
- Operator Training
- Pigging
- Leak Detection

Fostering Pipeline Integrity Joint Industry-Government Efforts

Liquid Risk Assessment Quality Team
(RAQT) (1995-96)

Natural Gas RAQT (1996)

Joint Liquid and Natural Gas RAQT (1997)

DOT-OPS Risk Management Demonstration
Programs (1998 - Present)

Unusually Sensitive Areas (1997 - Present)

Damage Prevention - Dig Safely (1996 -
Present)

Fostering Pipeline Integrity Joint Industry-Government Efforts

One Size Does Not Fit All

Comprehensive

Systematic

Integrated

Risk Management

- Process (Risk-Based Decision Making)
- Program Elements (Management Systems)

Dilemma: Prescriptive vs. Performance Based

Product Terminals

NFPA Requirements

- Active Fire Protection
- Dry Chemical System

Why Don't We Require Active Fire
Protection?

False Dumps

Maintenance & Operator (Driver) Training

How Does HSB Evaluate and Manage Risk?

Frameworks

Not Just Technology - People, Process & Technology

Management Commitment

Comprehensive, Systematic & Integrated

Risk-Based Methods

Communication

– Stakeholders

Framework

A Structure, Holding Parts Together

Serves as a Model for Desired State

Guides Development of a Comprehensive,
Systematic and Integrated Approach

Provides a Basis for Evaluating Current
Practices

Provides a Basis for Developing Improvement
Plans

Facilitates Communication

P&D Framework: Core Elements and Key Enablers

Core Elements			Key Enablers	
Risk Management	Asset Integrity	Pipeline Operations	People	Technology

Business Requirements

Strategy

Policies

Compliance Requirements

Standards

Work Processes

Procedures

Communication, Communication

P&D Framework: Asset Integrity Work Process and Sub-Processes

Core Elements

Asset Integrity

Design		Build						Maintain	
n	Conduct Design Review	Obtain Permits	Qualify Contracts	Award Contracts	Inspect	Conduct Acceptance Testing	Start-Up	Inspect	Def Maintenance Require

HSB Frameworks

Spill Prevention and Detection (P&D)

Operational Excellence

Business Excellence

Fostering Pipeline Integrity - Some Basics

Risk-Based Decision Making

Comprehensive, Systematic and Integrated
Observable - A Plan May Exist, But Can It Be
Audited?

Document - If It Is Not Documented, It Does
Not Exist (Period)

Fostering Pipeline Integrity is a Journey - Not
a One Year Project

Fostering Pipeline Integrity Is A Journey

Risk-Based Decision Making

- Operational - 3 to 5 years
- Growth - Next 1-3 years

Define a Framework (6 -12 months)

Evaluate Current State (3 to 6 months)

Define Needs/Gaps (2 to 4 months)

Develop Improvement Plans (2 to 4 months)

Implement Plans (2 to 6 years)

Develop Evergreen/Renewal Process to Ensure
Continuous Improvement

Specific Recommendations

Focus on a Few Critical Elements

Commit Resources

Remember One Size Does Not Fit All

Increase Commitment to Risk-Based Approaches

Recognize This is a Journey

Thank You

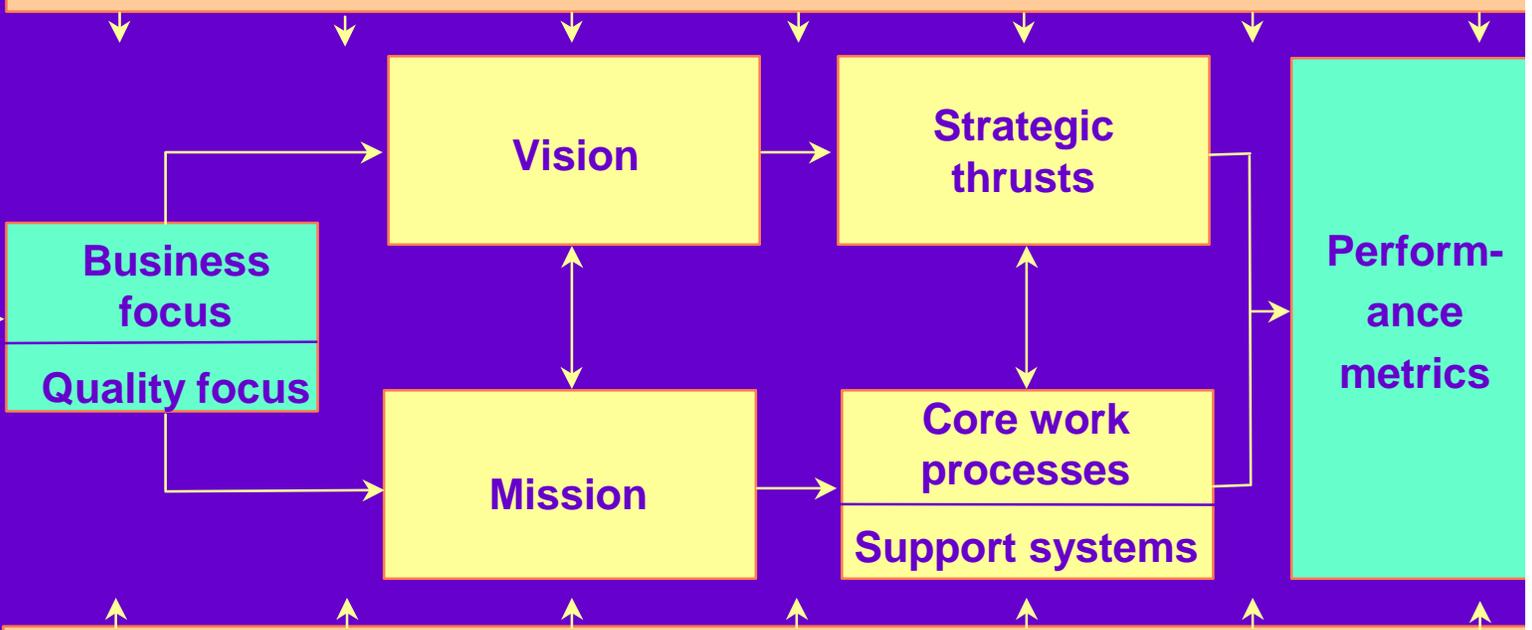
*Luck Comes to Those Who Work Hard
Good Luck On Your Journey*

Framework *Baldrige National Quality Award*



Framework for Comprehensive and Systematic Corporate Transformation

Strategic Planning



Awareness

Other Frameworks - Integrity, Safety and Environmental

Process Safety Management - OSHA
1910.119

Risk Management - EPA

International Safety Rating System

British Standards Institute

Fostering Pipeline Integrity - Not a New Concept

Provisions of 49 CFR 194

- Design, Construction, Corrosion Control, Hydrotesting, Operator Qualifications, Drug and Alcohol Testing

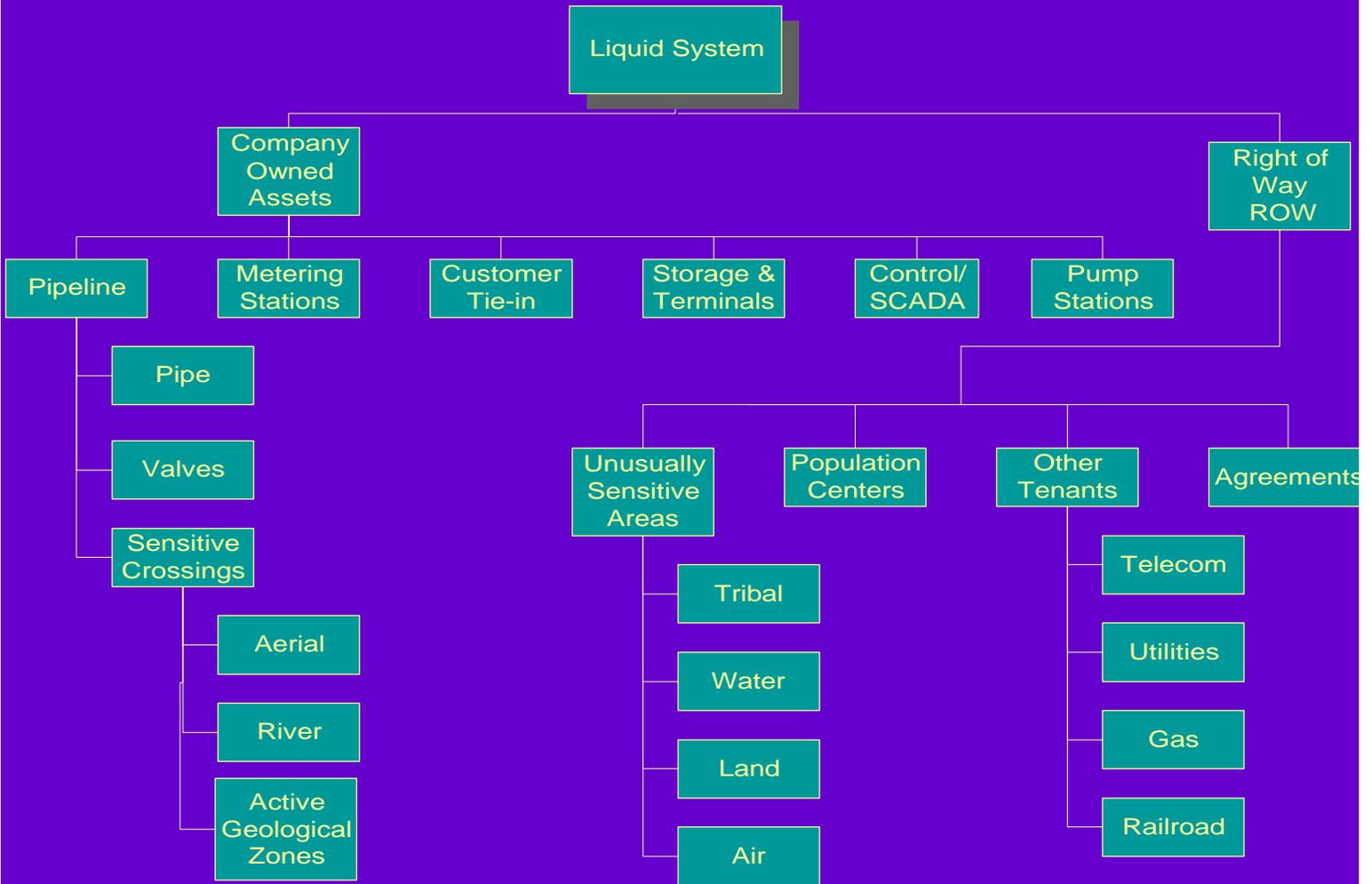
Standards Within ASME B31.8

- Design and Construction

Recommended Practices

- API RP 1129, **Assurance of Hazardous Liquid Pipeline System Integrity**
- API Publ 1156, **Effects of Smooth and Rock Dents on Liquid Petroleum Pipelines**
- NACE RP 0169, **Corrosion Control for Natural Gas and Liquid Pipelines**

Liquid Pipeline System Map



Generalized Risk Management Process

