Once HCA's are defined

Once assessments are complete

Once baseline plan is defined

Once appropriate tool selection is made…

Implementation Begins

Andy Drake
Duke Energy Gas Transmission

Integrity Management
Workshop #2
February 2003

Implementation is…

- Confirming integrity through physical activities and data management
- Product of IM Plan which is technically-based and logical

  Do the right things
- Guided by Standards to achieve consistency and effectiveness

  Do the right things right

Standards & Technical Reports

- ASME B31.8S – Integrity Management Process & Criteria
- NACE – ECDA
- NACE – ICDA
- ASNT – ILI Personnel
- API – ILI Equipment
- ASME B31.8 – Hydrostatic Testing & Dent/Gouge Criteria
- GTI & PRCi Technical Reports cited in ASME B31.8S

Implementation Practices

- Prevention
- Detection
- Mitigation

Implementation

- Prevention
  - Design and construction requirements and practices
  - SCADA System
  - Over-pressure protection
  - Cathodic protection systems and surveys
  - Patrols, one-call, public liaison meetings

Implementation

- Detection – “periodic evaluation”
  - Inspections
    - → ILI
    - → Pressure testing
    - → Direct Assessment
  - Monitoring
    - → Operating environment
      - Cathodic protection
      - Coupons and liquids
      - Gas quality
      - Land movement
      - Encroachment patrols
    - → Development of new HCA’s

Improving Integrity

- Physical repairs / mitigation
- Establish feedback from actual findings into decision-making
  - Integrate data from other sources or previous data
  - Modify projections / assessments
  - Modify practices
  - Improve accuracy of efforts
    - → In many cases this will yield a great deal of new data
    - → May see significant changes in projections / assessments

Process of Continuous Improvement

Data Integration

David Nemeth
CMS-Panhandle Companies

Integrity Management
Workshop #2
February 2003

Overall Integrity Management Plan

Integrity Threat Classification

Identify Potential Pipeline Impact By Threat

Integration of Data

Risk Assessment

Integrity Assessment

Responses to Integrity Assessment

Mitigation

Repair & Prevention

Setting Inspection Intervals

Documentation

Data Elements

Attribute Data
Diameter
Pipe Wall Thickness
Grade
Seam Type & Joint Factor
Manufacturer
Manufacturing Date
Material Properties
Equipment Properties

Construction
Year of Installation
Bending Method
Joining Method
Depth of Cover
Crossings/Casings
Pressure Test
Coating
Soils
Inspection Reports
Cathodic Protection

Operational
Gas Quality
Flow Rate
MAOP
Leak/Failure History
Coating Condition
CP Performance
Pipe Wall Temp.
Pipe Inspection Records
Corrosion Monitoring
Pressure Fluctuations
Regulator/Relief Performance
Encroachments
Repairs
Vandalism
External Forces

Inspection
Geometry Tool Inspection
MFL Tool Inspection
Close Interval Survey
Pressure Test
Bellhole Inspection
DCVG

Common Reference Point

Data Integration will be much easier with a common reference system

Types include:

Lat/Long/Elev.

XYZ - State Plane, UTM Zones, etc.

Pipeline Stationing

Paper Maps

Whether your data is electronic or paper, a common referencing system will be needed to integrate the data. There are many software applications that do coordinate transformation “on the fly” for easier referencing. USGS provides an application called “Corpscon” for free.

Data Integration can be electronic or manual.

Database

From Websters -

Main Entry: da·ta·base
Pronunciation: 'dA-t&-"bAs, 'da- also 'dä-
Function: noun
Date: circa 1962
: a usually large collection of data organized especially for rapid search and retrieval (as by a computer)

Different Types of Databases

Electronic – Oracle, SQL, Access, etc.
Excel Spreadsheets
Paper Maps
Human Brain

Documentation

Nothing will have been done unless there is documentation that proves it has been done.

Benefits of Data Integration

Allows you to do better, more Accurate Analysis

Allows you to do Risk Analysis

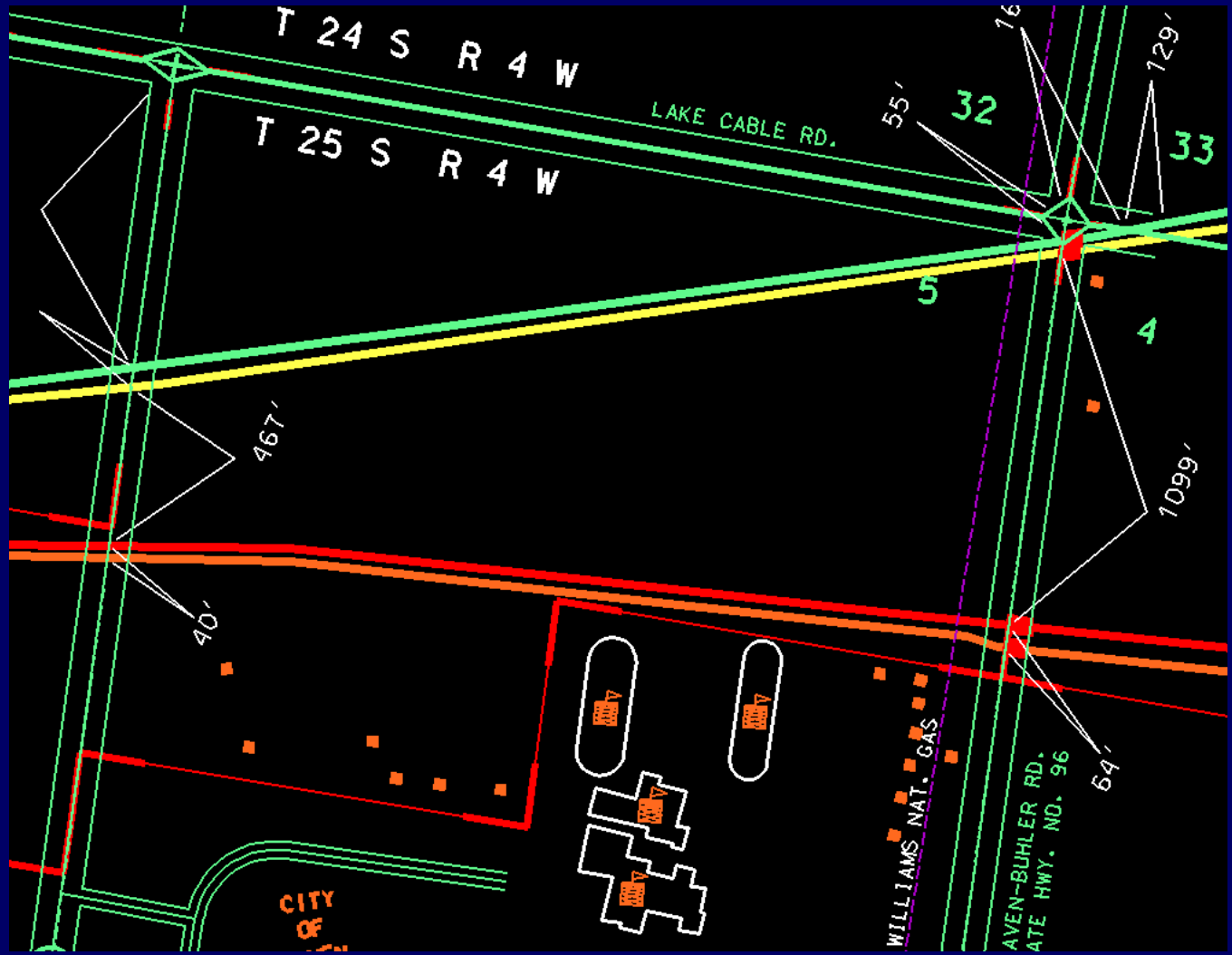
Allows you to do Threat Analysis

Allows you to do an Iterative Process

Integration

Known:

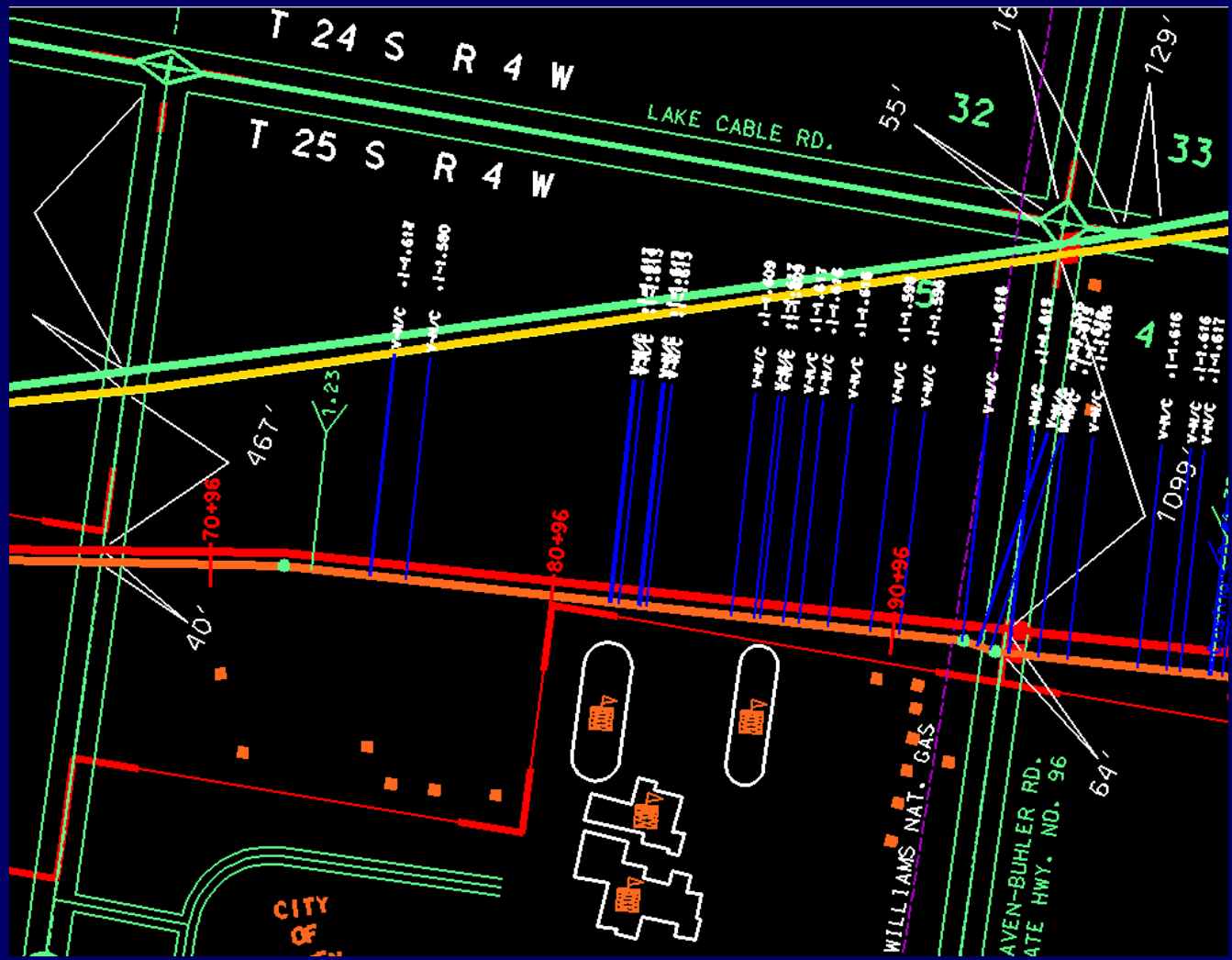
OD
WT
Grade
Location
DOT Structure Locations
Topology



Integration

Known:

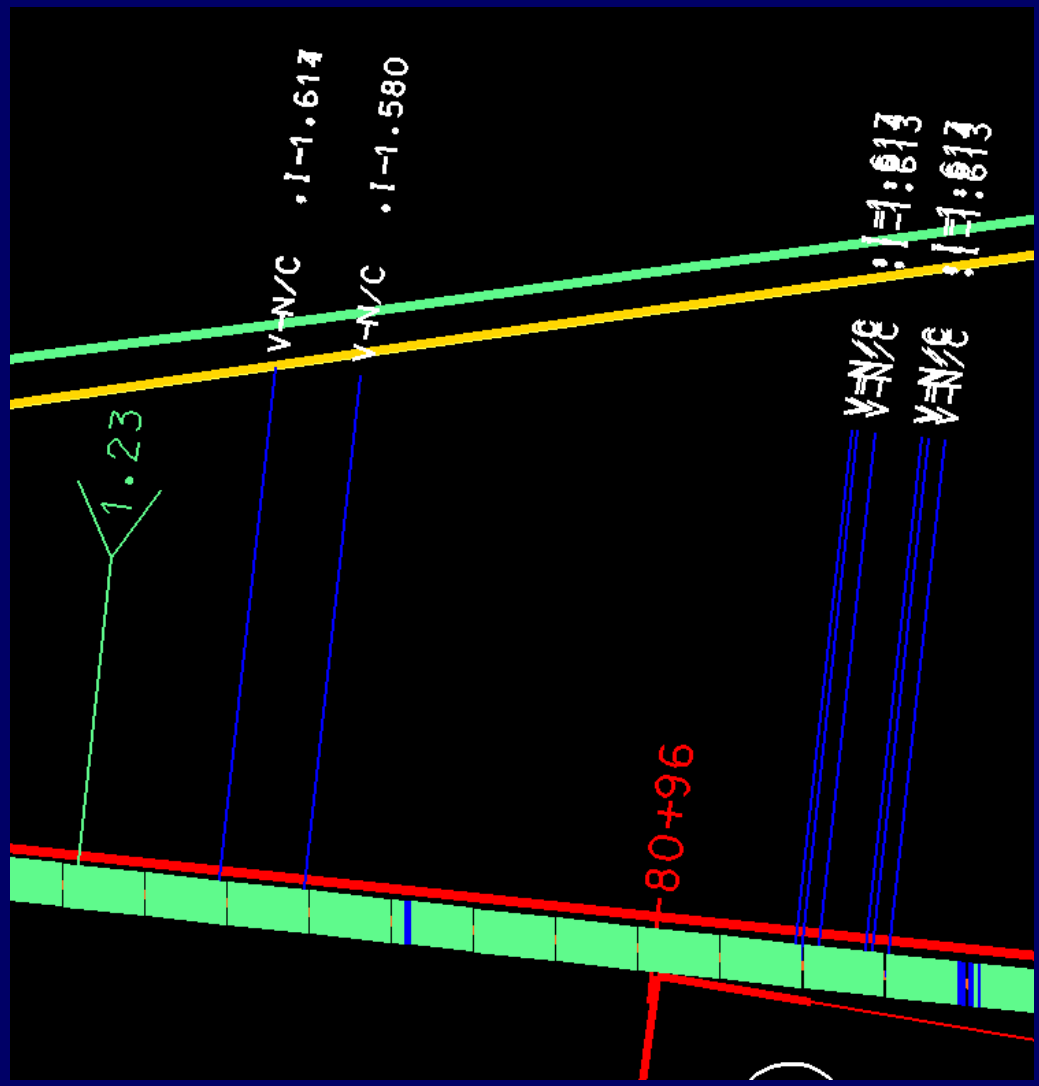
- OD
- WT
- Grade
- Location
- DOT Structure Locations
- Topology
- Anomaly Location
- RPR
- Test Point Data



Integration

Known:

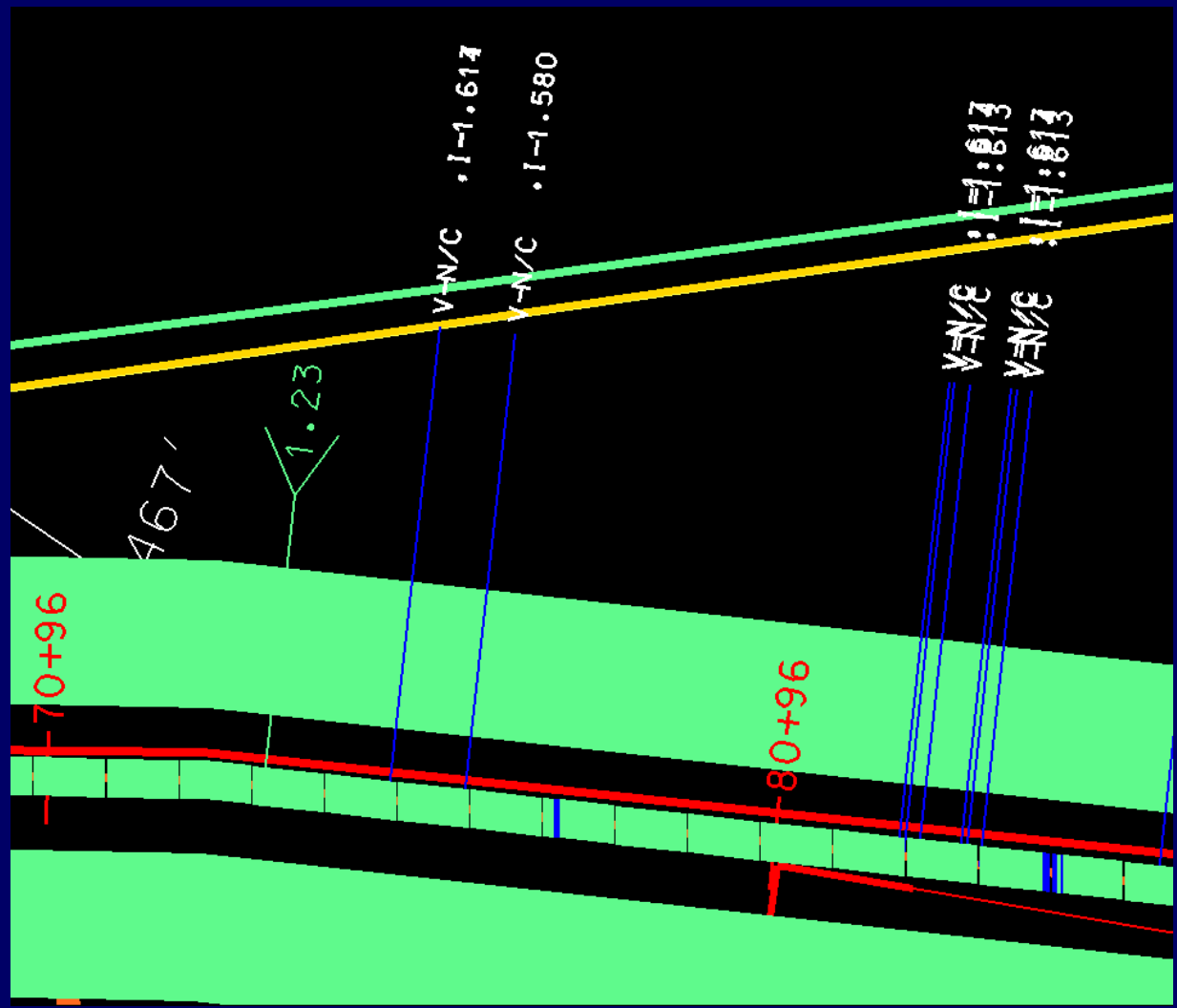
OD
WT
Grade
Location
DOT Structure Locations
Topology
Anomaly Location
RPR
Test Point Data
CIS Data



Integration

Known:

- OD
- WT
- Grade
- Location
- DOT Structure Locations
- Topology
- Anomaly Location
- RPR
- Test Point Data
- CIS Data
- Soils



Questions

What is State of the Art ??

State of the Art Risk Analysis System

State of the Art GIS System

State of the Art Integration Process

Significant Issues for Implementation

Inspection & Interval Determination

- Restrictions on use of historical inspection data for use in Baseline and Interval determination
- Overlap of Baseline and Re-inspection Interval
  - Significant impact on system outage in years 8, 9, and 10 (EEA report)
  - Doubles demands for equipment and support personnel
  - Re-inspection should not begin until all Baseline inspections are complete (2013)
- Direct Assessment
  - Tool of last choice?
  - What about 100% visual and 3rd Party Damage monitoring?
- Performance-based venue
  - Compelling technical arguments vs. “state of the art” process
  - Discount of previous inspections – illogical

Significant Issues for Implementation

Compliance

- Significant and complex rule
- Need clear compliance targets
  - System-wide application of findings very tentative
  - Data integration still very nebulous
  - ASME vs. individual process
  - Records – what and how much?
  - Enforcement Protocols (OQ challenge)