National Transportation Safety Board

Safety Issues: Integrity Assessment, Data Integration, and Federal/State Oversight

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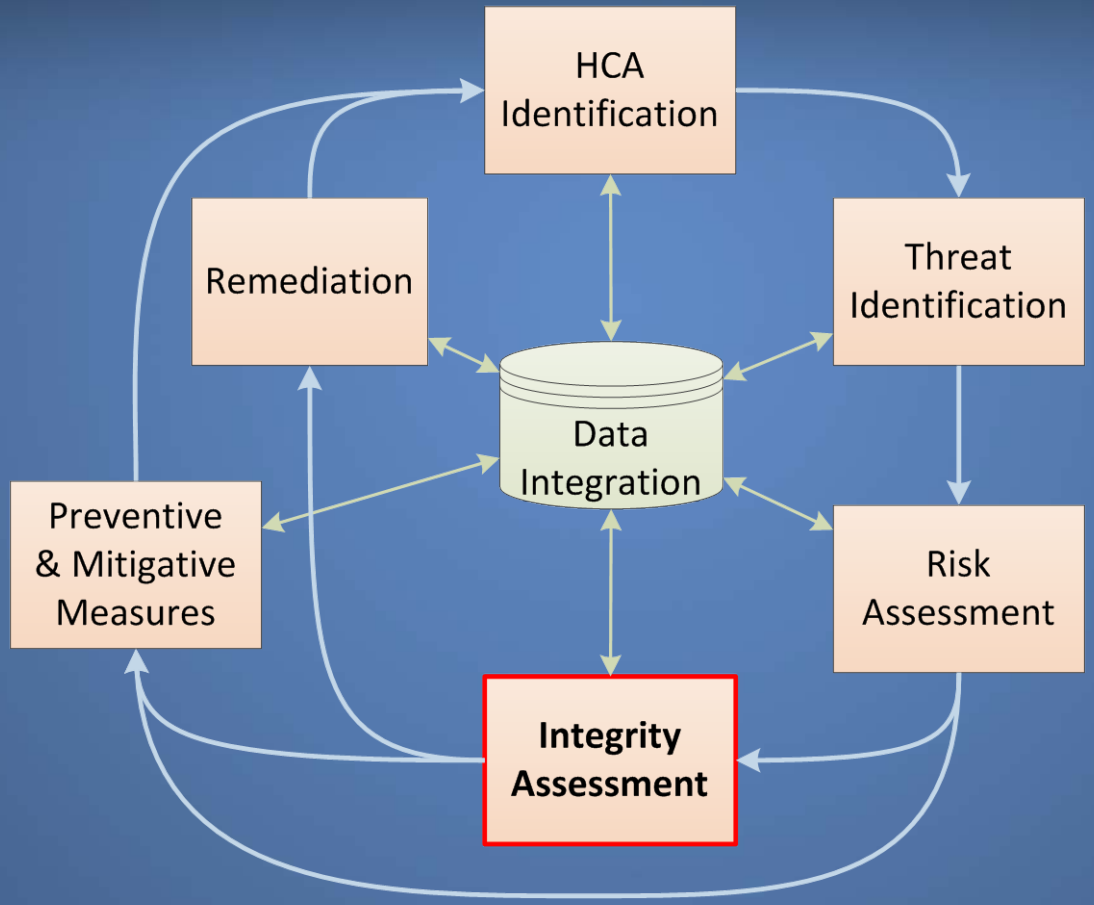
Integrity Assessment



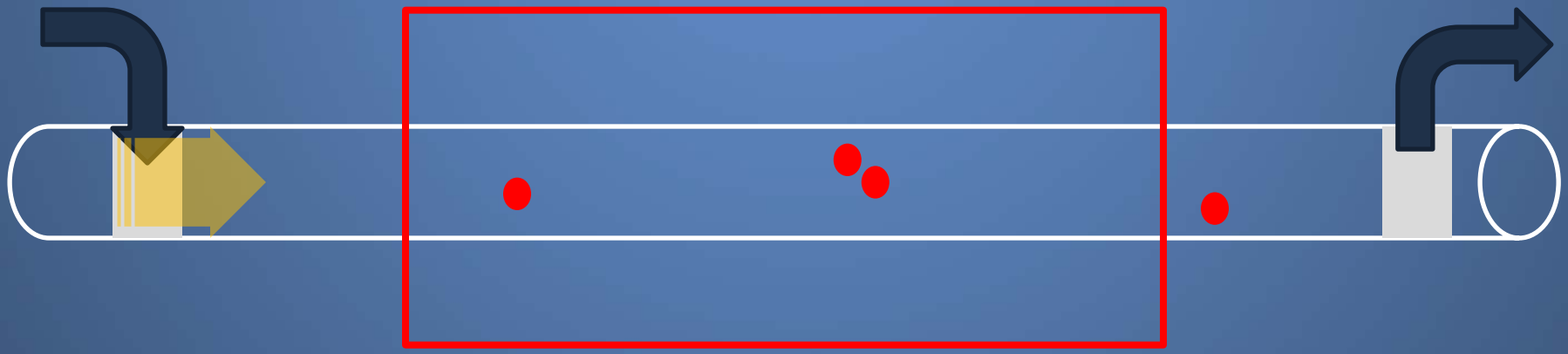
Selection of Method(s)

- Integrity assessment methods
  - In-line inspection (ILI)
  - Pressure testing
  - Direct assessment
  - Other methodologies

In-line Inspection (ILI) / Smart Pigs: High Resolution Magnetic Flux Leakage (MFL) Tools

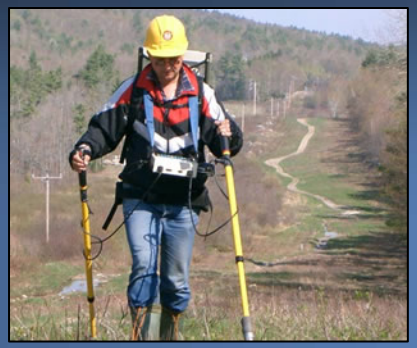
Source: PHMSA

In-line Inspection (ILI) / Smart Pigs: High Resolution Magnetic Flux Leakage (MFL) Tools



Source: PHMSA

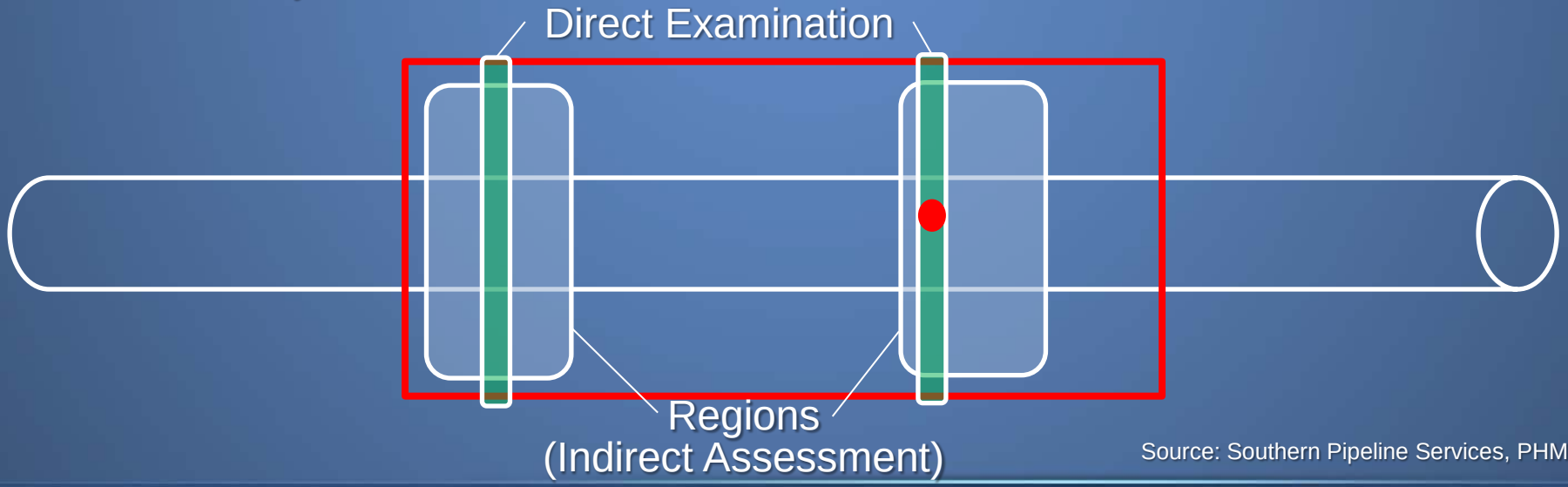
Direct Assessment



Close Interval Survey

Excavation

Direct Examination of External Corrosion



Source: Southern Pipeline Services, PHMSA

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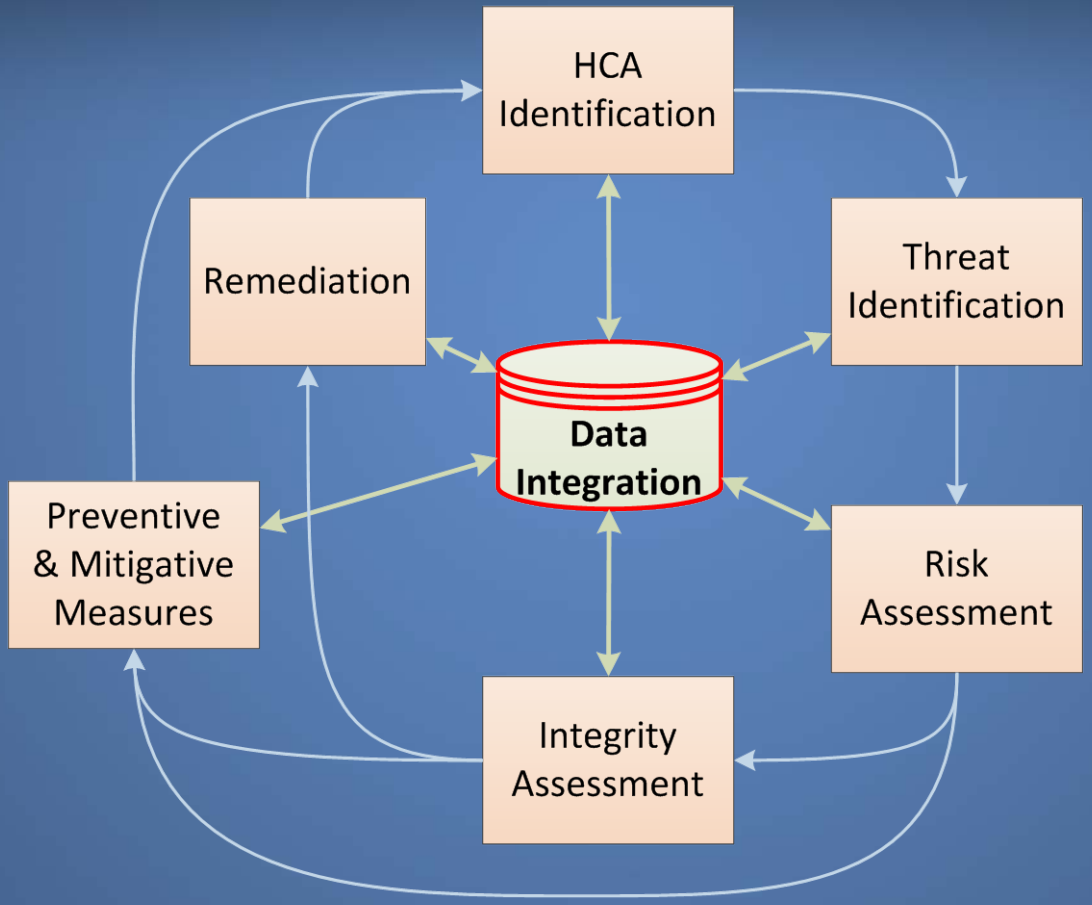
Comparison of ILI and Direct Assessment

	In-line Inspection	Direct Assessment
Pros	• High per-mile discovery of anomalies • Covers long distance of continuous pipeline segments • Multiple threats • Most predictive and preferred tools	• Less disruptive • Effective for confirmed internal, external, and stress corrosion cracking threat
Cons	• Pipeline configuration • Operational complication	• Corrosion threat only • Limited coverage • Relies on selecting regions for indirect inspection • Relies on selecting location for direct examination (dig)

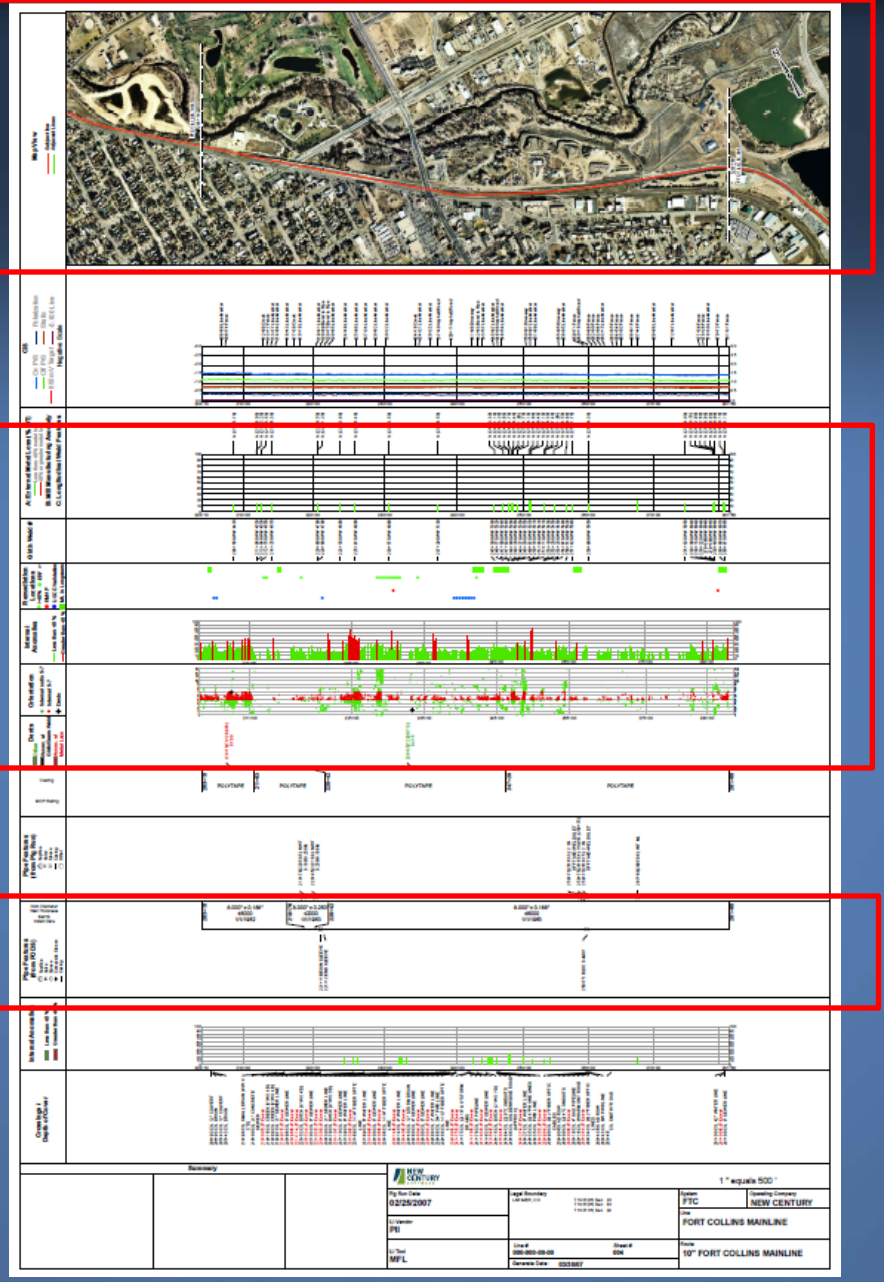
Safety Issues

- Use of direct assessment as the sole integrity assessment method
- Advancement in ILI technologies
- Use of ILI for intrastate pipelines lags behind interstate pipelines

Data Integration



GIS data of pipeline

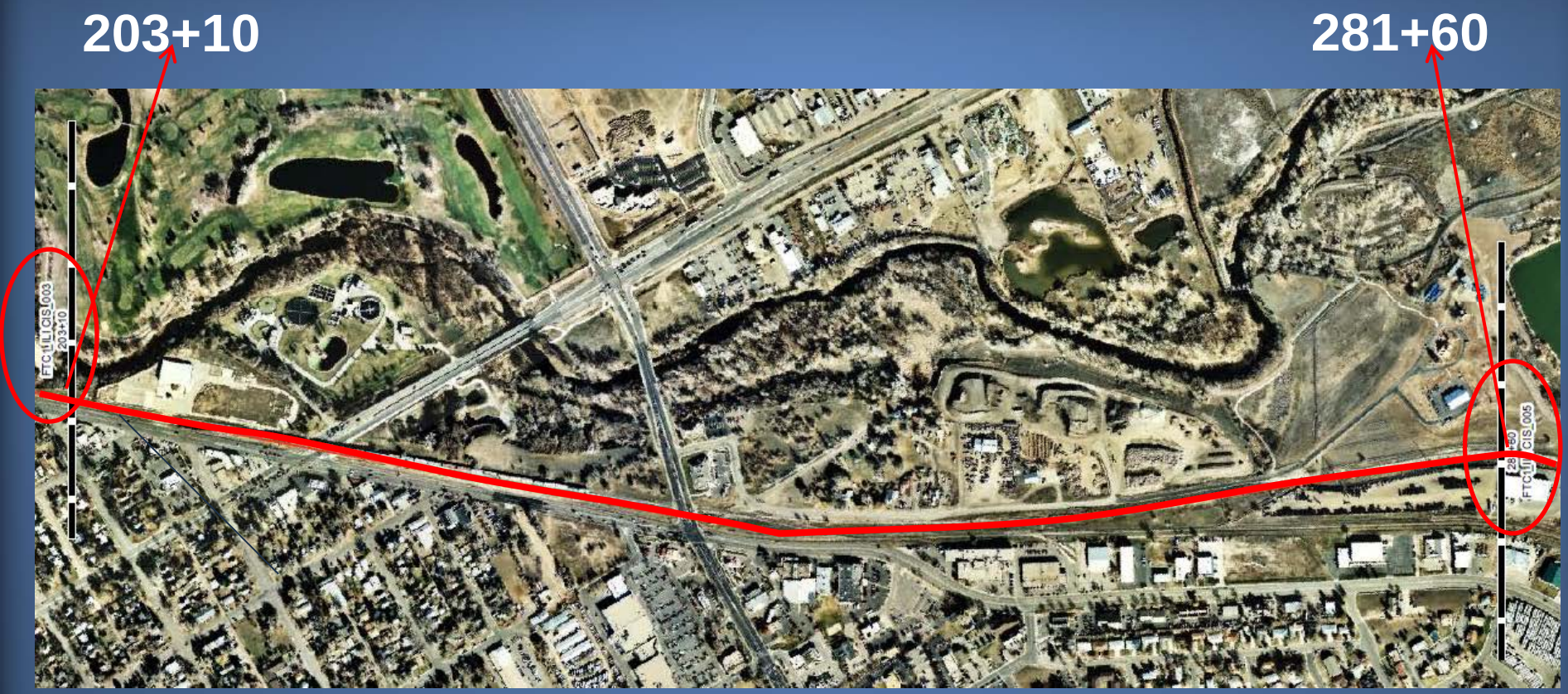


ILI run data

Pipe features (from PODS)

Source: New Century Software

GIS Data of Pipeline and Environment



Source: New Century Software

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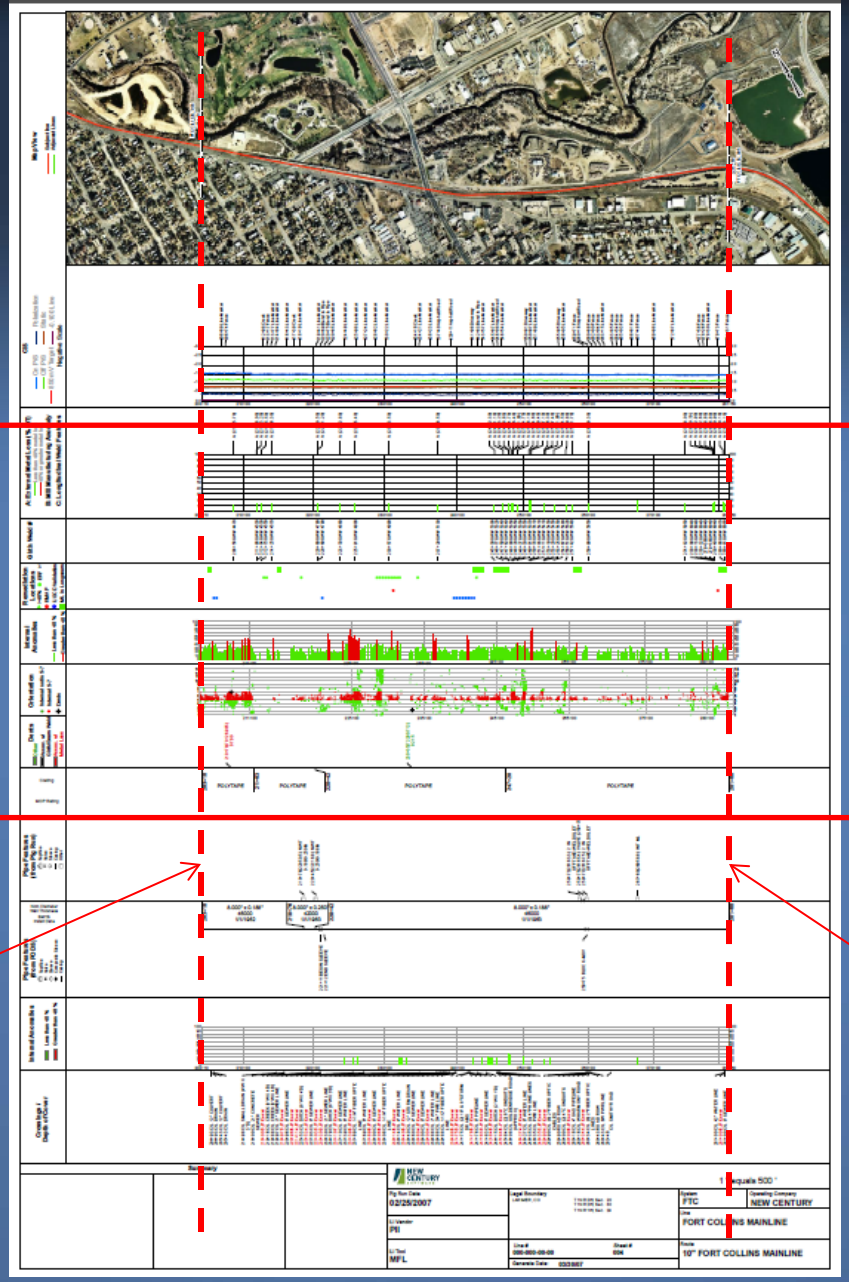

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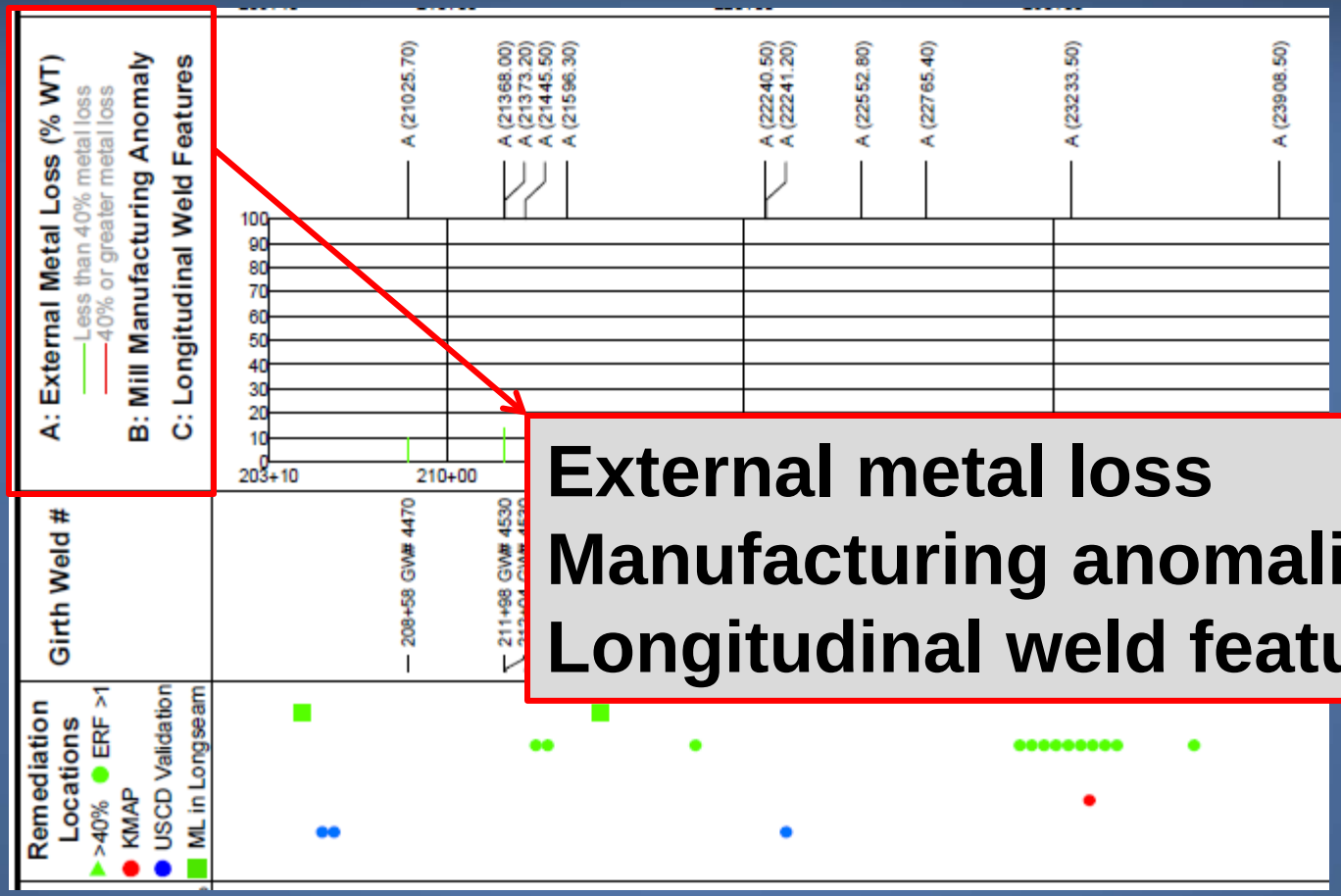
Examples of Integrity Assessment Results



External metal loss
Manufacturing anomalies
Longitudinal weld features

Source: New Century Software

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Safety Issues in Data Integration

- Assembling data to improve threat identification, risk assessment, and overall risk model's confidence
- Incorporating new data in a timely manner
- Inaccurate data

Use of GIS in Data Integration

- Unified referencing system
- Industry-wide effort to merge pipeline data model with GIS model
- Operators are familiar with GIS's capability

Federal and State Oversight

- Pipeline operators design and implement IM programs
- Federal and state inspectors ensure compliance
- PHMSA oversees state safety programs and provides resources

Issues in Federal and State Oversight

- IM program inspections differ among states
- State IM program inspections differ from federal IM program inspections
- PHMSA's role in mentoring rated poorly
- State-to-state and federal-to-state coordination needs improvement

Limitations of NPMS

- Standards drafted in 1998
- Positional accuracy +/- 500 feet
- Limited pipeline attributes
- No attribute identifying HCA segments

Summary

- Gradual increasing trend of significant incident rate leveled off since 2004
- Corrosion and material failure rates in high consequence areas are low (2010–2013)
- Integrity assessment covered beyond HCA
- PHMSA's continual efforts and improvements

Summary

- Increase use of ILI, especially for intrastate pipelines
- Improve guidance in threat identification, risk assessment, and data integration
- Increase state/state and federal/state coordination
- Develop standards for use of geospatial data and a repository of authoritative data sources for HCA identification
- Strengthen data collection

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