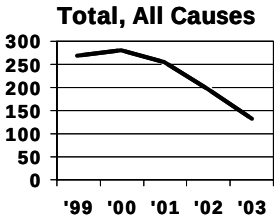
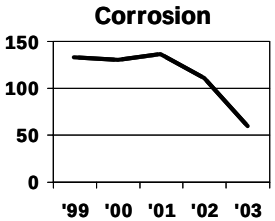
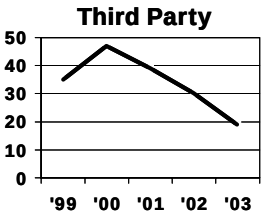
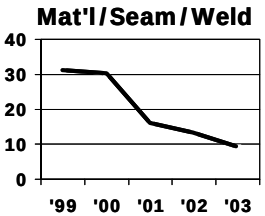
The Onshore Pipe Record









Guidance Provided by Inline Inspection Standards

API 1163, "ILI Systems Qualification"

Bryan Melan
Marathon Pipe Line LLC
Co-Chairman, API 1163 Workgroup

August 11, 2005

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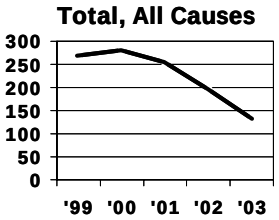

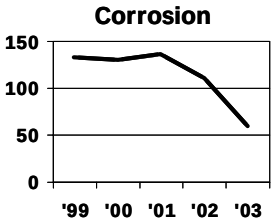

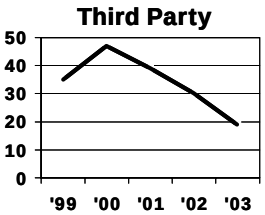

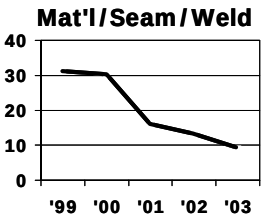

API 1163

FIRST EDITION, AUGUST 2005

- The Standard provides requirements for qualification of In-Line Inspection systems
- Not technology – specific
- Performance – based
- Provides requirements for qualification processes
- Defines the documentation of processes for system qualification
- Fosters continuous improvement in ILI quality and accuracy
- Standardizes ILI terminology

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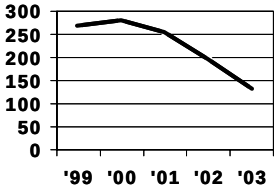
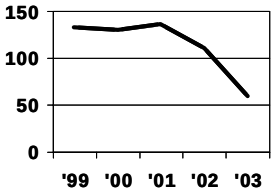
Inspection Terminology

The Onshore Pipe Record

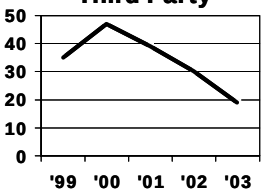
Total, All Causes



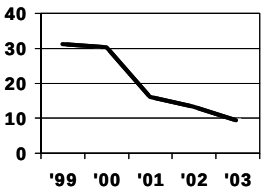
Corrosion

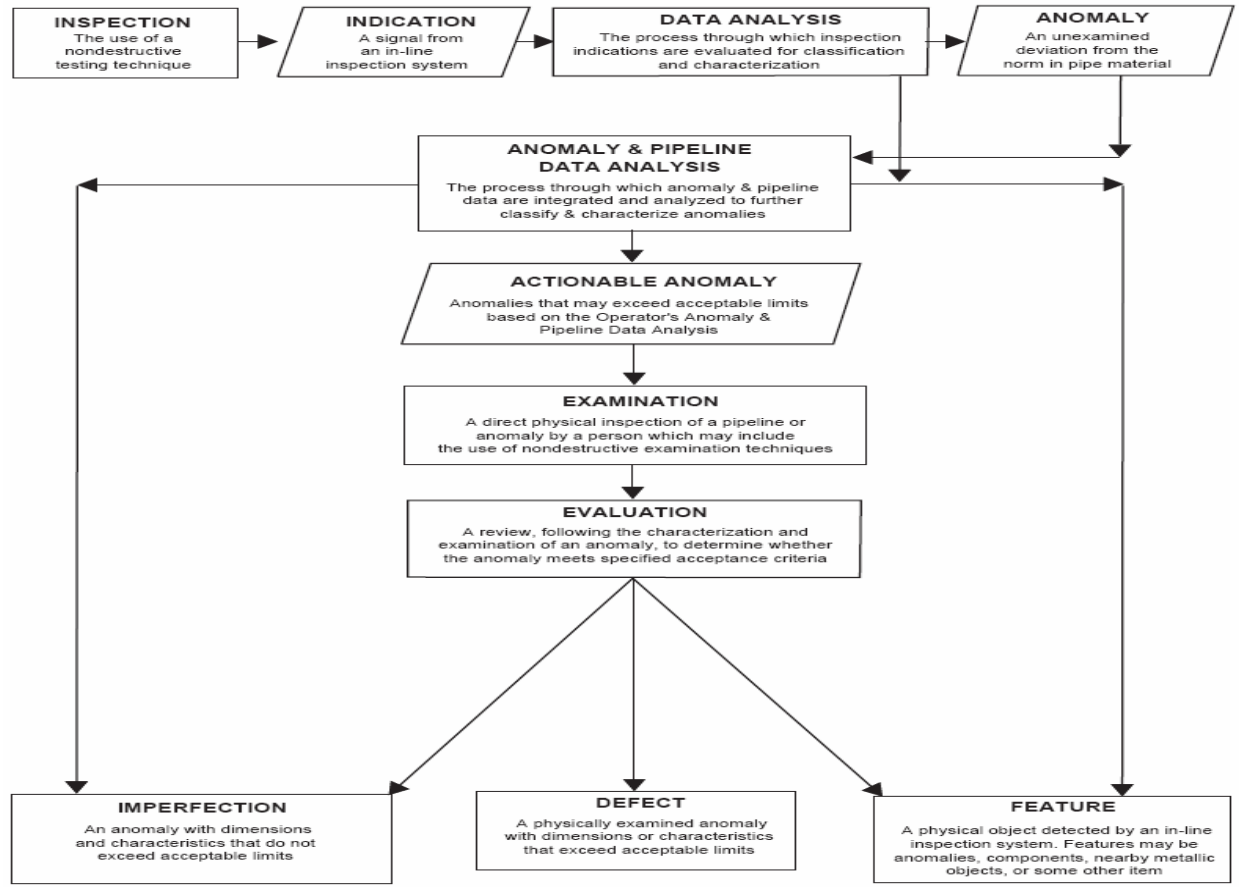


Third Party



Mat'l/Seam/Weld





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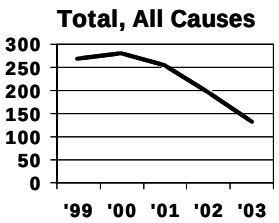

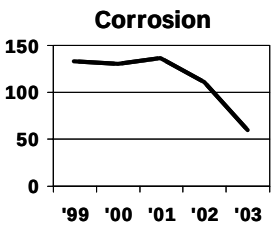

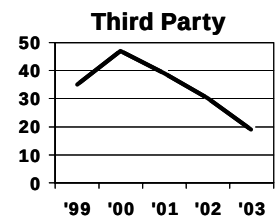

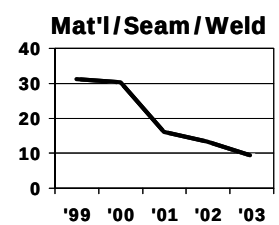

Preparation – Operator Responsibilities

While service providers have the responsibility to identify in-line inspection system capabilities, their proper use, and application, operators bear the ultimate responsibility to:

a. Identify specific risks (threats) to be investigated.

b. Choose the proper inspection technology.

c. Maintain operating conditions within the ILI system performance specification limits.

d. Confirm inspection results.

e. Provide feedback from verification results to ILI Service providers.

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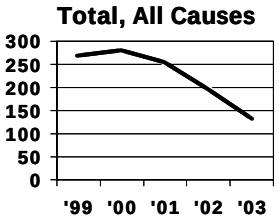
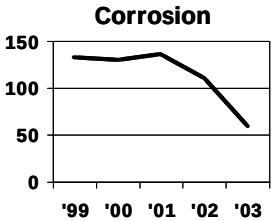
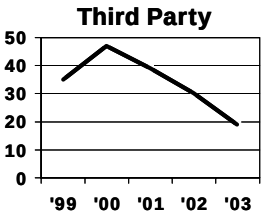
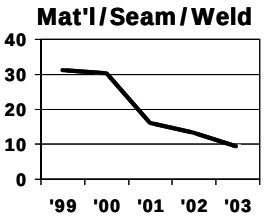




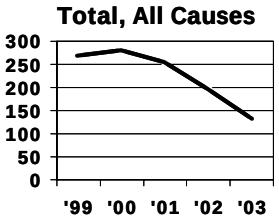


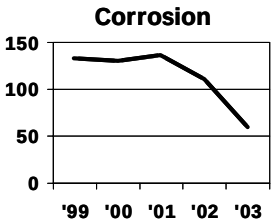


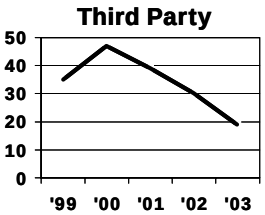
Preparation –
Goals and Objectives

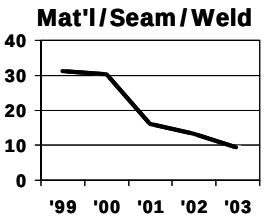
- The goals and objectives of an in-line inspection shall be defined.
- The procedures used to define the goals and objectives of an inspection are <u>not</u> covered in this Standard.
- The operator should follow the requirements included in documents such as API 1160 and ASME B31.8S.

The Onshore Pipe Record









Preparation – Performance Specification

- The performance specification shall define the capabilities of the in-line inspection system to detect, locate, identify and size anomalies.
- The service provider must statistically validate the system performance in terms of:
  - The type of anomalies or characteristics covered by the Performance Specification
  - Detection thresholds and probabilities of detection
  - Probabilities of proper identification
  - Sizing or characterization accuracies
  - Linear (distance) and orientation measurement accuracies
  - Limitations of the system

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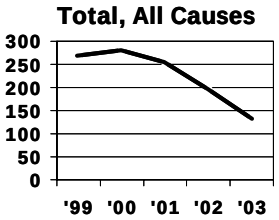
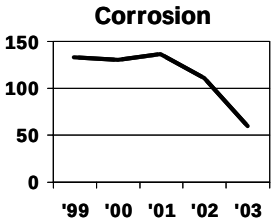
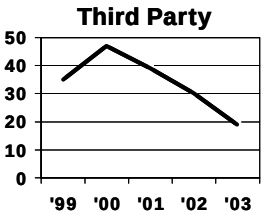
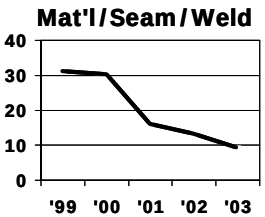






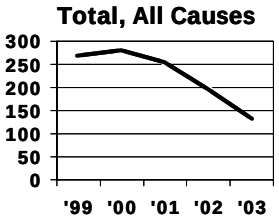


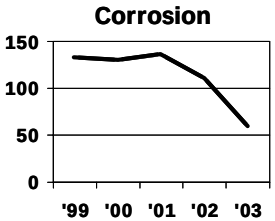
Execution

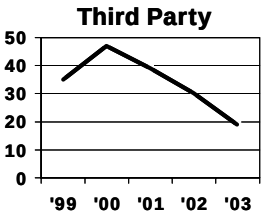
- Personnel and equipment used to perform in-line inspections and analyze the results shall be qualified according to API 1163 and its companions, ASNT Standard No. ILI-PQ, and NACE Standard Recommended Practice RP0102.

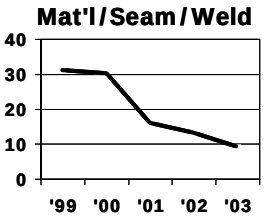
- Combined, these three standards provide requirements and processes for the qualification of in-line inspection systems, including the in-line inspection tools, their software, and the personnel to operate the systems and analyze the results.

The Onshore Pipe Record







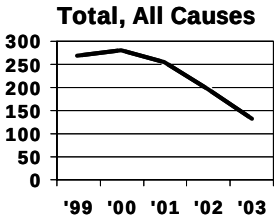


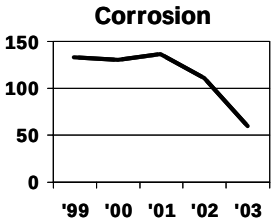
Execution - Reporting

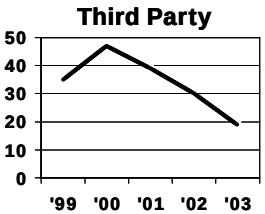
- Only feature & anomaly identifications and characterizations that are in the Performance Specification can be reported

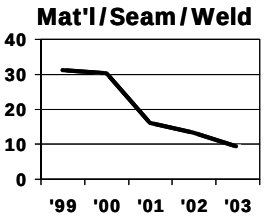
- Other features & anomalies must be reported as “unqualified”

The Onshore Pipe Record







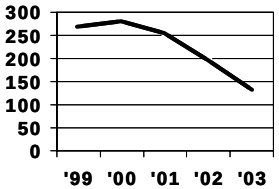


Verification

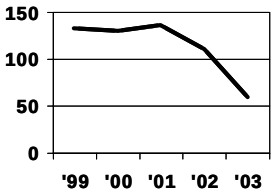
- Process Validation
- Data comparison with Historical Data for the pipeline inspected
- Data comparison with any large-scale data used to qualify the ILI system
- Verification digs may or may not be required (Figure 4).
- Regulatory or Operator required investigation digs are an additional consideration beyond the scope of this standard.

The Onshore Pipe Record

Total, All Causes



Corrosion



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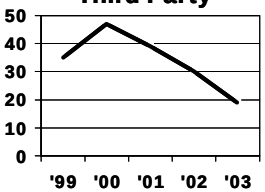

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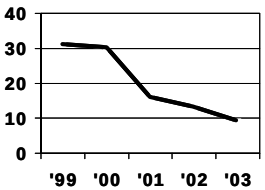
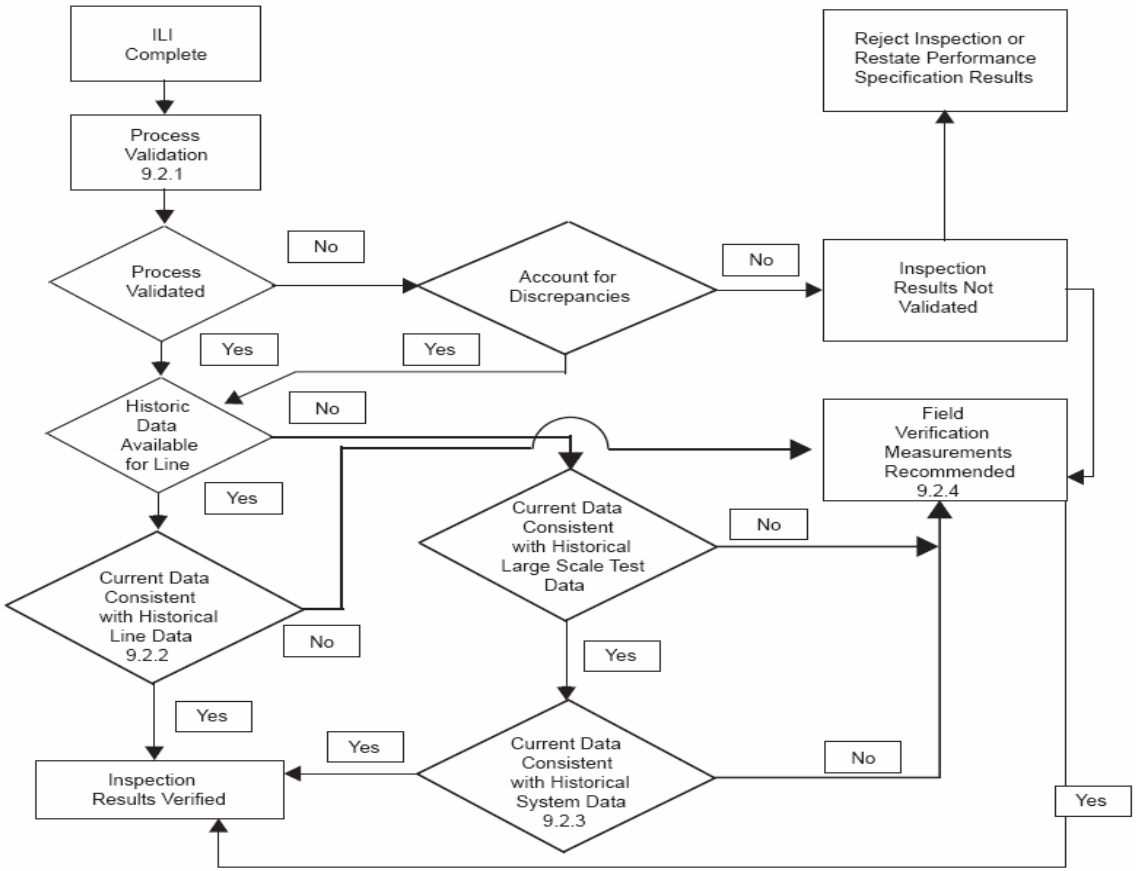
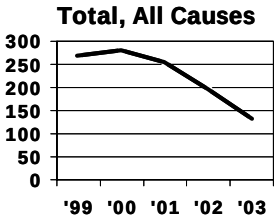


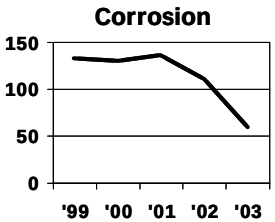
Verification

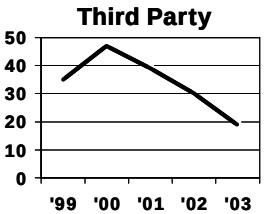
Figure 4, API 1163

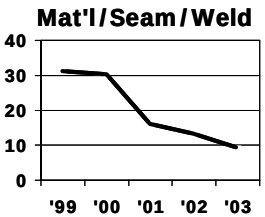


The Onshore Pipe Record









Continuous Improvement

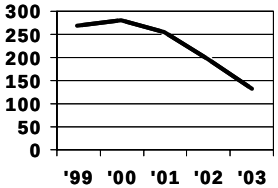
- When verification digs are performed, information from the measurements shall be given to the service provider to confirm and continuously refine the data analysis processes.

- Any discrepancies between the reported inspection results and verification measurements that are outside of performance specifications shall be documented.

Continuous Improvement

The Onshore Pipe Record

Total, All Causes



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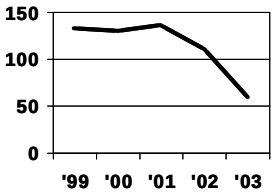

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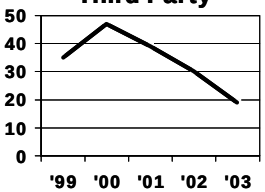

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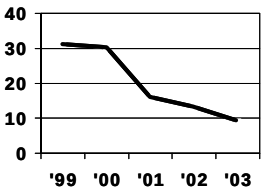

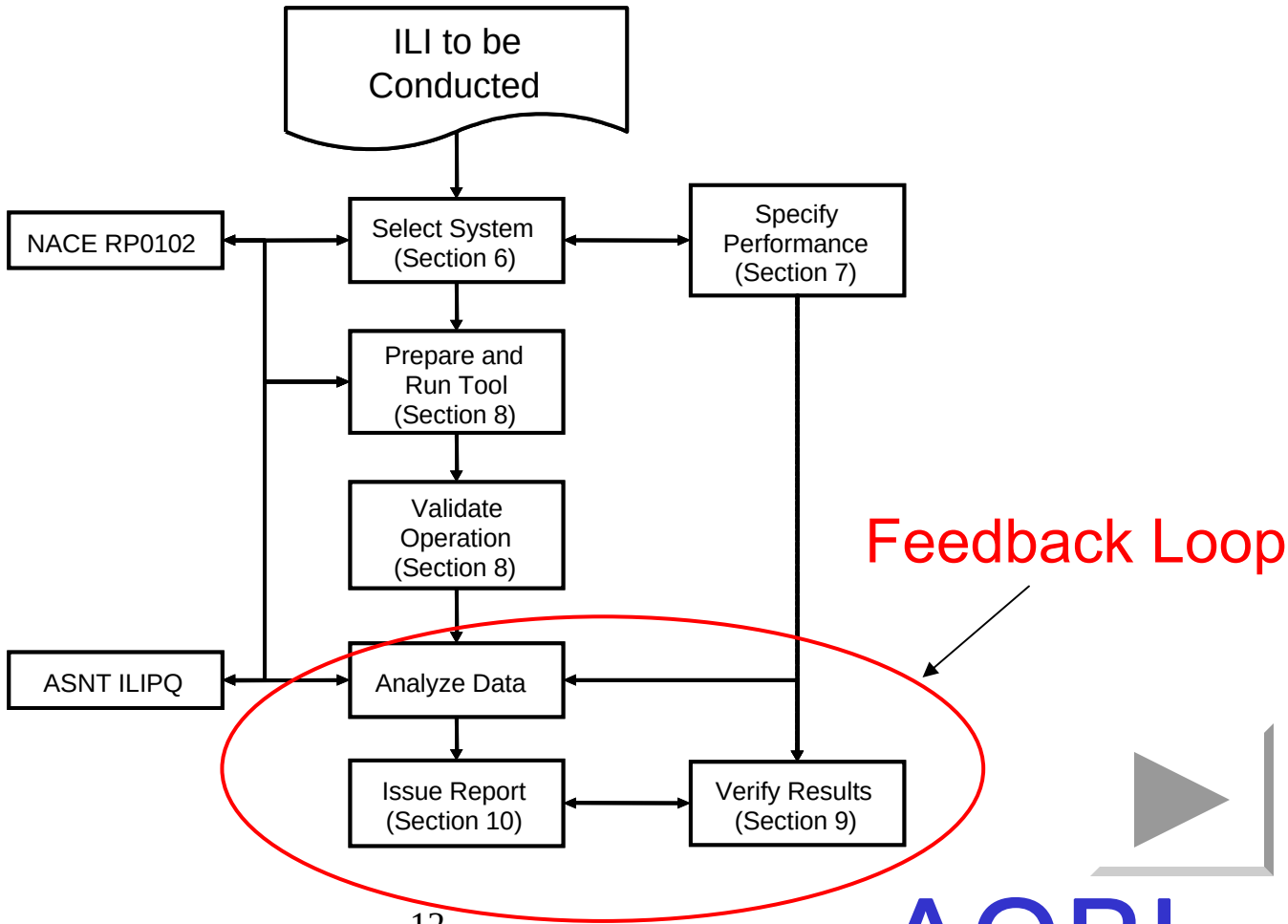

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