

Valero

CPF 4-2009-5003M

Exhibit 4



IMP 302: In-Line Inspection Data Evaluation

Introduction

DOT regulations require all pipeline operators to have a process for reviewing integrity assessment results and conducting information analysis by qualified personnel. This procedure demonstrates that Valero Energy Corporation (the Company) provides qualified personnel to review the in-line inspection (ILI) data.

Regulation

§49 CFR 195.452(f) An operator must include, at minimum, each of the following elements in its written integrity management program:

(8) A process for review of integrity assessment results and information analysis by a person qualified to evaluate the results and information (see paragraph (h)(2) of this section).

§49 CFR 195.452(g) What is an information analysis? In periodically evaluating the integrity of each pipeline segment (paragraph (j) of this section), an operator must analyze all available information about the integrity of the entire pipeline and the consequences of a failure. This information includes: (1) Information critical to determining the potential for, and preventing, damage due to excavation, including current and planned damage prevention activities, and development or planned development along the pipeline segment; (2) Data gathered through the integrity assessment required under this section; (3) Data gathered in conjunction with other inspections, tests, surveillance and patrols required by this Part, including, corrosion control monitoring and cathodic protection surveys; and (4) Information about how a failure would affect the high consequence area, such as location of the water intake.

Scope

This procedure applies to all liquid pipeline systems inspected using in-line inspection technology and operated by the Company.

NOTE: The Corporate IMP Team completes all of the steps in this procedure unless stated otherwise.

Resources

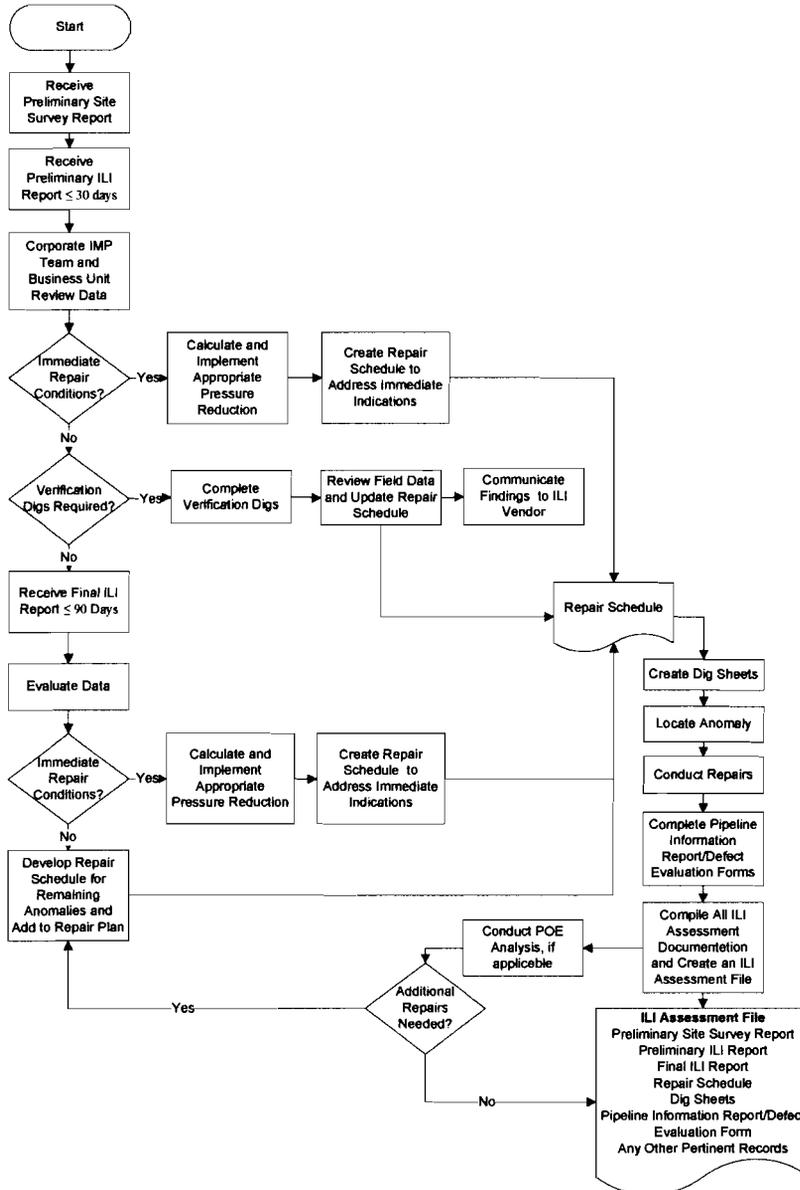
To begin this procedure, use the following:

- ◆ ILI Service Provider's Preliminary Report
- ◆ ILI Repair Schedule (see Appendix B: Forms and Reports)



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Process Overview





1. Preliminary Site Survey Report

- 1) Receive the Preliminary Site Survey Report from the ILI Service Provider.
- 2) Place it into the ILI Assessment File.

2. Preliminary ILI Report

- 1) Receive the Preliminary ILI Report.
- 2) Analyze with Business Unit personnel preliminary assessment and determine course of action.
 - a) If applicable, evaluate data and determine discovery of immediate repair conditions.
 - b) If applicable, request a temporary pressure reduction per Appendix A: IMP 401: Implementation of Temporary Pressure Reduction.
 - c) Create Repair Schedule to address immediate repair conditions.
 - d) If applicable, determine verification dig locations.
 - e) If applicable, issue Dig Sheet for verification and preliminary features to the Business Unit Asset Manager.

3. Create the Repair Schedule

- 1) To prepare for an Assessment Dig, do the following:
 - a) Prepare the Repair Schedule based on the evaluation of the ILI Inspection Reports.
 - b) Create Dig Sheets from ILI Service Provider software.
 - c) Assemble Repair Schedule, which includes the Repair Schedule and Dig Sheets.
- 2) Consider the following additional preparations prior to the Assessment Dig:
 - a) Update the Repair Schedule with the new digs.
 - b) Create Dig Requisition for Repair Schedule.
 - c) Send the Dig Sheets to the appropriate Business Unit Asset Manager.
- 3) After completing the digs/repairs, the Business Unit personnel send the Pipeline Information Report/Defect Evaluation Forms back to the Corporate IMP Team.

Include within the Pipeline Information Report/Defect Evaluation Forms any miscellaneous notes, pictures, and/or other pertinent documentation.
- 4) Enter the repair data into the electronic Repair Schedule.
- 5) Evaluate data to compare actual findings to reported anomalies and to verify completion of all required repairs.
- 6) Create or update documentation as follows:
 - ◆ Repair Schedule
 - ◆ Dig sheet
 - ◆ PIR/Defect Evaluation
 - ◆ Etchings
 - ◆ Photos



- ◆ Other supplemental documentation

4. Management of Verification/Preliminary Digs

- 1) Create a Repair Schedule and send it to the Business Unit Asset Manager.
- 2) Business Unit personnel/third-party qualified contractor locates each feature listed in the Repair Schedule and captures all required information for verification and ILI Service Provider data performance evaluations.

5. Locating an Anomaly for Evaluation

5.1. Identify Anomaly to Be Repaired

- 1) Review the repair list to see if there are anomalies called out for repair that have already been addressed (either by prior repair, prior evaluation, removed since the tool run, etc).
- 2) Contact Corporate IMP Team to determine if any identified anomalies have already been repaired. If the Corporate IMP Team concurs, these anomalies will be removed from the list.

NOTE: In most cases, a previously repaired anomaly will not need re-evaluation.

5.2. Locate Anomaly on Maps

Locate anomalies on the alignment map using wheel count or station numbers when provided on the repair list or vendor dig sheets.

5.3. Locate Control Points on Maps

- 1) Locate either an upstream or downstream control point called out on the dig sheet on the alignment map and note the milepost or stationing.
- 2) If the anomaly is located within 1000' of an easily recognized known control point, perform field measurement and stake location. Skip to Step 5.7.

4.1-5.4. Identifying Other Known Reference Points

If anomaly is >1000' from a known control point, complete the following steps:

- 1) Review Pipeline Information Reports (PIR) or other project documents related to past historical pipeline work between your known control points to determine if there are pipe replacements that are not reflected on the maps. A pipe replacement can be used once identified on the maps as another reference point to measure from in locating the anomaly. Notify the Corporate IMP Team of the change so the maps can be updated and adjusted to indicate the historical reference location.
- 2) Review of the PIRs can also be used to determine if there are other historical reference points that are not identified on the maps, but can be correlated to the anomaly and used to reduce field-measuring distance. Examples may include casings, roads, railroads or creek crossings that used thicker wall pipe, valves, TORs or Weld + End fittings from prior tie-ins, etc.

NOTE 1: Since older PIRs may not always accurately describe the work location, use reported distances for reference only and attempt to field locate before using the reference for field measurement.

NOTE 2: When evaluating which known reference points to use for field measurement, make sure that the points being used can be located in the field and are properly mapped. If they are not properly mapped, use absolute distance between the reference point and the anomaly.

Comment [KEWW1]: Need to define TORs. Please provide.



- 3) If a reference point is found that can be used to shorten the field measurement distance, correlate this reference point with the anomaly's absolute tool run distance.
- 4) Finally, account for measurement differences when the surface distance is significantly different than the pipe distance (e.g., for instance across rivers, over railroads, levees, etc.).

5.5. Perform Field Measurement

- 1) If measurement distance is >1000' from the nearest known reference point, measure from both directions whenever practical. Apply good judgment and measure from only one direction if the other contains obstacles – such as hills, water, backyards, freeways, etc. that make measurement either impractical or inaccurate.
- 2) If multiple anomalies exist between two reference points, consider using the following process:
 - a) Measure through from reference point to reference point.
 - b) Begin measurement at initial reference point and stake each anomaly along way to second reference point. Compare field measurement between two reference points and related report measurement. Adjust each stake's position by the following formula: [(measured distance between reference points/report distance between reference points) x (report distance from initial reference point to anomaly)] – (report distance from initial reference point and anomaly).

5.6. Stake Location

- 1) Stake the anomaly location for excavation.
- 2) If upstream and downstream measurements result in a gap or overlap rather than pointing to a specific location, note both of the locations, and determine which measurement is more likely to be accurate.
- 3) Begin excavating closer to the more accurate measurement.
- 4) If the gap or overlap is significant, measure again.
- 5) If measurements are still not within 20' of each other consult with the Corporate IMP Team as necessary before excavating.

NOTE: API 1163 can be used as a reference for resolving gap and overlap in measurements. API 1163 describes the "percentage rule" for interpolating gaps and overlaps. Examples using this rule are as follows:

- ◆ Gap example:
 - ◆ Distance from upstream marker to Stake #1 = 2135'
 - ◆ Distance from downstream marker to Stake #2 = 3347'
 - ◆ Total distance = 2135' + 3347' = 5482'
 - ◆ Field determined gap in measurement = 17'
 - ◆ Percentage from upstream marker = 2135'/5482' = 39%
 - ◆ Percentage from downstream marker = 3347'/5482' = 61%
 - ◆ Measurement from Stake #1 = 39% x 17' = 6.63'
 - ◆ Measurement from Stake #2 = 61% x 17' = 10.37'
- ◆ Overlap example:
 - ◆ Distance from upstream marker to Stake #1 = 2605'
 - ◆ Distance from downstream marker to Stake #2 = 1369'



- ◆ Field determined overlap in measurement = 12'
- ◆ Total distance = 2605' + 1369' = 3974'
- ◆ Percentage from upstream marker = 2605'/3974' = 66%
- ◆ Percentage from downstream marker = 1369'/3974' = 34%
- ◆ Measurement from Stake #1 = 66% x 12' = 7.92'
- ◆ Measurement from Stake #2 = 34% x 12' = 4.08'

5.7. Plan Excavation

Plan for excavation including the following notifications:

- ◆ landowner notification
- ◆ One-Call
- ◆ environmental notification (if working in environmentally sensitive areas)

5.8. Excavate and Locate Anomaly

- 1) Excavate the staked location, and verify you have found the anomaly by matching the Repair Schedule and dig report characteristics to those on the pipe – such as joint length, clock position, anomaly type, anomaly dimensions, distance from nearest weld, etc.
- 2) Ensure that all dig report characteristics are documented on the PIR.
- 3) Also ensure that a Defect Evaluation Form is filled out for the anomaly being reviewed or repaired. If you are not certain the anomaly has been identified, expose at least two joints to verify that you are on the right joint.
- 4) If anomaly has not been positively identified, expose another known reference point (such as another weld, short pup in the vicinity, bend, etc.) to re-orient your location. Make sure you are properly orientated (i.e., upstream vs. downstream), look at joint log, and reassess dig location.
- 4) If these efforts fail to locate the anomaly, start the field measurement process over and include consultation with the Corporate IMP Team.

NOTE: If you believe that you are in the right place, but cannot locate the anomaly, the Corporate IMP Team must concur with your finding before you can consider the ILI report may be in error and no further anomaly evaluation is needed. Corporate IMP Team will work with the ILI Vendor to determine actual data error and best suitable path forward given the available information. At no point will a conclusion of "Nothing Found" be final before consulting with the ILI Vendor.

5.9. Evaluate and Repair Anomaly

Once the anomaly has been located, evaluate and repair per the Company's *Operations, Maintenance, and Emergency Procedures*. Repair any defect considered hazardous or having the potential of becoming a hazardous condition in the near future.

5.6. Completion of Verification/Preliminary Digs and Repairs

- 1) Update Repair Schedule with data from the PIR/Defect Evaluation Forms on the verification/preliminary digs that were performed.
- 2) Business Unit personnel/third-party qualified contractor locates each feature listed in the Repair Schedule and captures all required information for verification and ILI Service Provider data performance evaluations.



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6)3) Business Unit personnel/third-party qualified contractor will record all findings on the Pipeline Information Report/Defect Evaluation Forms (see *Operations, Maintenance, and Emergency Procedures*).

7)4) Submit defect data.

- a) Business Unit personnel/third-party qualified contractor submits all recorded defect data to the Corporate IMP Team after the repair of feature for ILI data confirmation, if applicable.
- b) At a minimum, submit defect data for data validation, consisting of the following measured dimensions:
 - ◆ Defect depth (inches)
 - ◆ Defect length (inches)
 - ◆ Defect width (inches)
 - ◆ Defect orientation (o'clock position)
 - ◆ Defect distance from girth weld (feet)
 - ◆ Longitudinal seam orientation (o'clock position)
 - ◆ Wall thickness (inches)
 - ◆ Defect log distance (feet/stationing)

6.7. Inspection Verification

- 1) Compare the actual measured defect data to ILI data supplied from the verification features.
- 2) Confirm that the ILI data dimensions are within the specified tolerances of the actual measured dimensions per Appendix E of API 1163: Inline Inspection Systems Qualification Standard.
- 3) If ILI data are within specified tolerances, skip Step 4d and continue to Step 5 below.
- 4) Verify information to determine if additional digs are required.
 - a) If any data points are not within tolerances, determine if additional digs are required.
 - b) If additional digs are not required, ILI Service Provider must reanalyze data to determine why data was out of specification.
 - c) If reanalysis cannot validate ILI Service Provider data, determine if additional digs are required.
 - d) If additional digs or re-analysis of data cannot validate the ILI results, reject log and employ steps for re-inspection.

NOTE: The data verification process is outlined in Figure 3-2: In-Line Inspection and Data Evaluation in Section 3: Integrity Assessment.

- 5) Proceed with data analysis once data is validated.

7.8. Final ILI Report

- 1) Receive the Final ILI Report.
- 2) Evaluate the hard copy of the Final ILI Report to identify areas of concern.

Note any inconsistencies reported in the anomaly data on a Pipeline Assessment Issue Report (see Appendix B: Forms and Reports).
- 3) Download provided inspection data into the Repair Schedule.



- 4) Evaluate the Final ILI Report and review for required repairs within an HCA.
- 5) If applicable, request temporary pressure reduction per Appendix A: IMP 401: Implementation of Temporary Pressure Reduction.
- 6) Generate the Repair Schedule for the inspected pipe segment.

8.9. Dig Management

- 1) Corporate IMP Team along with the Business Unit Asset Manager sets the repair schedule for anomaly conditions identified in the Repair Schedule per Section 4: Remedial Action of the Liquid Pipeline Integrity Management Program Manual.
- 2) Business Unit personnel perform identified repairs.
- 3) The Corporate IMP Team or Business Unit Asset Manager documents repair compliance dates and methods of repair.
- 4) The Corporate IMP Team or Business Unit Asset Manager acts as the direct contact for the Business Unit personnel and the ILI Service Provider regarding any inspection data issues.
- 5) The Corporate IMP Team or Business Unit Asset Manager assists with any issue related to the reported inspection data provided by the ILI Service Provider.
- 6) After completing the repairs, the Business Unit personnel/third-party qualified contractor will record all findings on the Pipeline Information Report/Defect Evaluation Forms (see *Operations, Maintenance, and Emergency Procedures Manual*).

9.10. Data Evaluation

Check Repair Schedule for discrepancies in reported data.

10.11. Compile Data into ILI Assessment File

Compile all data for the ILI assessment and place into the ILI Assessment File. Store all files per the Records and Information Management Services (RIMS).

- 1) Preliminary Site Survey Report
- 2) Preliminary ILI Report
- 3) Final ILI Report (hard copy and CD Data)
- 4) Third-Party Out-Source Reports or Studies
- 5) ILI Assessment File

NOTE: An ILI Assessment File may include, but is not limited to, a Preliminary Site Survey Report, Preliminary ILI Report, a Final ILI Report, the Repair Schedule, Dig Sheets, Pipeline Information Report/Defect Evaluation Forms, and other pertinent documents.

11.12. Probability of Exceedance (POE) Analysis, if Required

11.1.12.1. Criteria for Requiring POE Analysis

Conditions requiring a POE would include

- ◆ Metal loss \geq 35%
- ◆ Pipe manufactured prior to 1979



- ◆ Leak history within the assessment interval
- ◆ Excessive corrosion growth rate

The IMP Team may elect to conduct a POE Analysis when conditions do not meet these criteria.

11.2.12.2. Conducting POE

Follow the steps below to complete required POE analysis.

- 1) Prepare and submit inspection data and repair results to a qualified pipeline engineering services provider for third-party analysis to determine the probability that the depth of the remaining corrosion defects exceed 80% of the wall thickness (potential leak), or the predicted anomaly burst pressure exceeds 110% of the maximum operating pressure (MOP) (potential pressure release).
- 2) Upon completion of the POE analysis, the Pipeline Engineering Services Provider will submit a draft report of the findings to Corporate IMP Team.
- 3) Review and approve draft report for submittal of final issue. If necessary, communicate with the Pipeline Engineering Services Provider to facilitate any changes required prior to issuance of final report.
- 4) After the Corporate IMP Team approves the draft, the Pipeline Engineering Services Provider will issue the final POE report to the Corporate IMP Team.
- 5) Receive the POE Report.
- 6) Evaluate POE report to determine the probability of failure and the recommended maximum inspection interval period and to determine the need for additional repairs.

12.13. ILI Service Provider Tool Specifications

Appendix D provides the ILI Service Provider Tool Specifications.

IMP 302: In-Line Inspection Data Evaluation

Introduction

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Regulation

§49 CFR 195.452(f) An operator must include, at minimum, each of the following elements in its written integrity management program:

(8) A process for review of integrity assessment results and information analysis by a person qualified to evaluate the results and information (see paragraph (h)(2) of this section).

§49 CFR 195.452(g) What is an information analysis? In periodically evaluating the integrity of each pipeline segment (paragraph (j) of this section), an operator must analyze all available information about the integrity of the entire pipeline and the consequences of a failure. This information includes: (1) Information critical to determining the potential for, and preventing, damage due to excavation, including current and planned damage prevention activities, and development or planned development along the pipeline segment; (2) Data gathered through the integrity assessment required under this section; (3) Data gathered in conjunction with other inspections, tests, surveillance and patrols required by this Part, including, corrosion control monitoring and cathodic protection surveys; and (4) Information about how a failure would affect the high consequence area, such as location of the water intake.

Scope

This procedure applies to all liquid pipeline systems inspected using in-line inspection technology and operated by the Company.

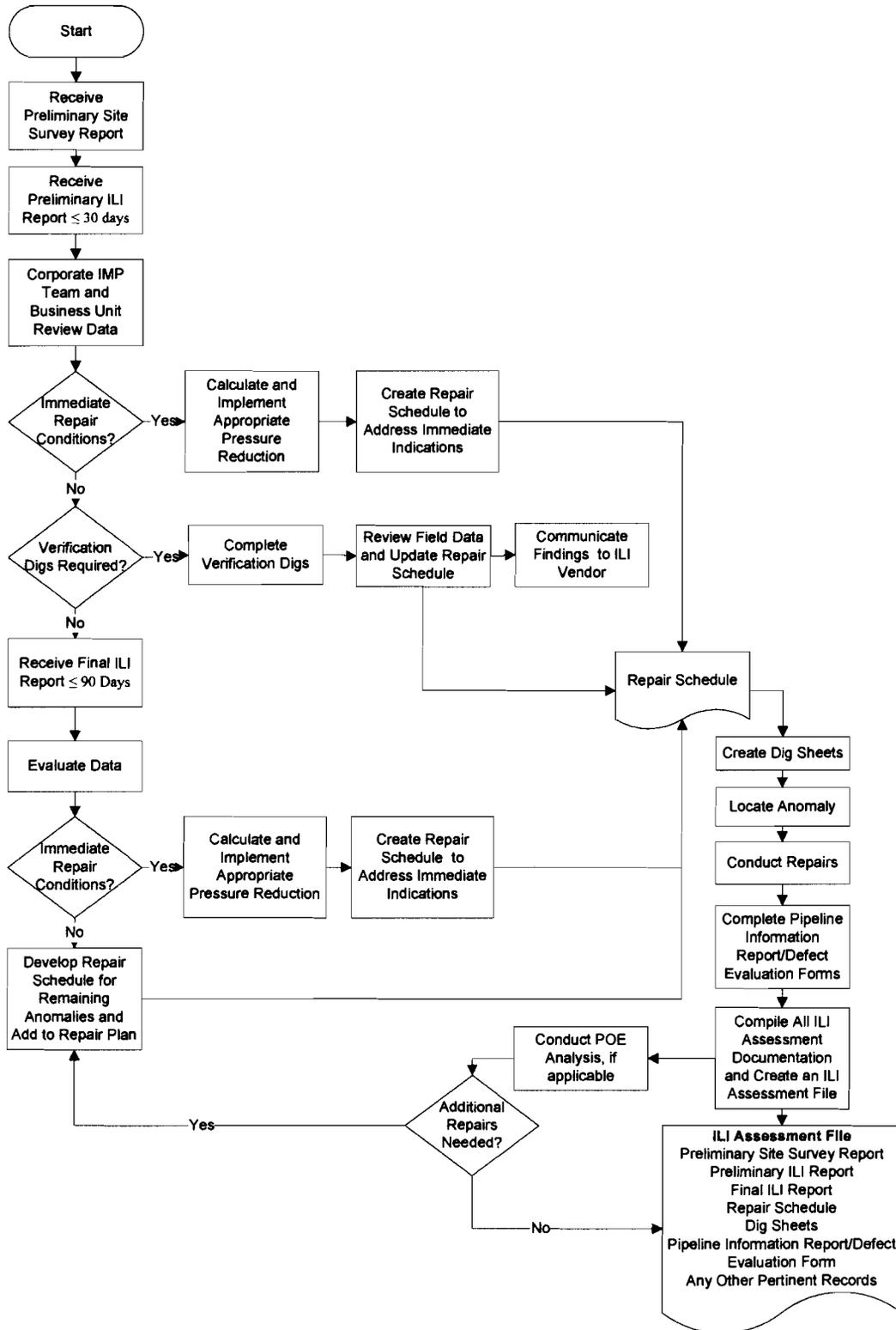
NOTE: The Corporate IMP Team completes all of the steps in this procedure unless stated otherwise.

Resources

To begin this procedure, use the following:

- ◆ ILI Service Provider's Preliminary Report
- ◆ ILI Repair Schedule (see Appendix B: Forms and Reports)

Process Overview



1. Preliminary Site Survey Report

- 1) Receive the Preliminary Site Survey Report from the ILI Service Provider.
- 2) Place it into the ILI Assessment File.

2. Preliminary ILI Report

- 1) Receive the Preliminary ILI Report.
- 2) Analyze with Business Unit personnel preliminary assessment and determine course of action.
 - a) If applicable, evaluate data and determine discovery of immediate repair conditions.
 - b) If applicable, request a temporary pressure reduction per Appendix A: IMP 401: Implementation of Temporary Pressure Reduction.
 - c) Create Repair Schedule to address immediate repair conditions.
 - d) If applicable, determine verification dig locations.
 - e) If applicable, issue Dig Sheet for verification and preliminary features to the Business Unit Asset Manager.

3. Create the Repair Schedule

- 1) To prepare for an Assessment Dig, do the following:
 - a) Prepare the Repair Schedule based on the evaluation of the ILI Inspection Reports.
 - b) Create Dig Sheets from ILI Service Provider software.
 - c) Assemble Repair Schedule, which includes the Repair Schedule and Dig Sheets.
- 2) Consider the following additional preparations prior to the Assessment Dig:
 - a) Update the Repair Schedule with the new digs.
 - b) Create Dig Requisition for Repair Schedule.
 - c) Send the Dig Sheets to the appropriate Business Unit Asset Manager.
- 3) After completing the digs/repairs, the Business Unit personnel send the Pipeline Information Report/Defect Evaluation Forms back to the Corporate IMP Team.

Include within the Pipeline Information Report/Defect Evaluation Forms any miscellaneous notes, pictures, and/or other pertinent documentation.
- 4) Enter the repair data into the electronic Repair Schedule.
- 5) Evaluate data to compare actual findings to reported anomalies and to verify completion of all required repairs.
- 6) Create or update documentation as follows:
 - ◆ Repair Schedule
 - ◆ Dig sheet
 - ◆ PIR/Defect Evaluation
 - ◆ Etchings
 - ◆ Photos

- ◆ Other supplemental documentation

4. Management of Verification/Preliminary Digs

- 1) Create a Repair Schedule and send it to the Business Unit Asset Manager.
- 2) Business Unit personnel/third-party qualified contractor locates each feature listed in the Repair Schedule and captures all required information for verification and ILI Service Provider data performance evaluations.

5. Locating an Anomaly for Evaluation

5.1. Identify Anomaly to Be Repaired

- 1) Review the repair list to see if there are anomalies called out for repair that have already been addressed (either by prior repair, prior evaluation, removed since the tool run, etc).
- 2) Contact Corporate IMP Team to determine if any identified anomalies have already been repaired. If the Corporate IMP Team concurs, these anomalies will be removed from the list.

NOTE: In most cases, a previously repaired anomaly will not need re-evaluation.

5.2. Locate Anomaly on Maps

Locate anomalies on the alignment map using wheel count or station numbers when provided on the repair list or vendor dig sheets.

5.3. Locate Control Points on Maps

- 1) Locate either an upstream or downstream control point called out on the dig sheet on the alignment map and note the milepost or stationing.
- 2) If the anomaly is located within 1000' of an easily recognized known control point, perform field measurement and stake location. Skip to Step 5.7.

5.4. Identifying Other Known Reference Points

If anomaly is >1000' from a known control point, complete the following steps:

- 1) Review Pipeline Information Reports (PIR) or other project documents related to past historical pipeline work between your known control points to determine if there are pipe replacements that are not reflected on the maps. A pipe replacement can be used once identified on the maps as another reference point to measure from in locating the anomaly. Notify the Corporate IMP Team of the change so the maps can be updated and adjusted to indicate the historical reference location.
- 2) Review of the PIRs can also be use to determine if there are other historical reference point that are not identified on the maps, but can be correlated to the anomaly and used to reduce field-measuring distance. Examples may include casings, roads, railroads or creek crossings that used thicker wall pipe, valves, Thread-O-Rings (TORs) or Weld + End fittings from prior tie-ins, etc.

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NOTE 2: When evaluating which known reference points to use for field measurement, make sure that the points being used can be located in the field and are properly mapped. If they are not properly mapped, use absolute distance between the reference point and the anomaly.

- 3) If a reference point is found that can be used to shorten the field measurement distance, correlate this reference point with the anomaly's absolute tool run distance.
- 4) Finally, account for measurement differences when the surface distance is significantly different than the pipe distance (e.g., for instance across rivers, over railroads, levees, etc.).

5.5. Perform Field Measurement

- 1) If measurement distance is >1000' from the nearest known reference point, measure from both directions whenever practical. Apply good judgment and measure from only one direction if the other contains obstacles – such as hills, water, backyards, freeways, etc. that make measurement either impractical or inaccurate.
- 2) If multiple anomalies exist between two reference points, consider using the following process:
 - a) Measure through from reference point to reference point.
 - b) Begin measurement at initial reference point and stake each anomaly along way to second reference point. Compare field measurement between two reference points and related report measurement. Adjust each stake's position by the following formula: $[(\text{measured distance between reference points}/\text{report distance between reference points}) \times (\text{report distance from initial reference point to anomaly})] - (\text{report distance from initial reference point and anomaly})$.

5.6. Stake Location

- 1) Stake the anomaly location for excavation.
- 2) If upstream and downstream measurements result in a gap or overlap rather than pointing to a specific location, note both of the locations, and determine which measurement is more likely to be accurate.
- 3) Begin excavating on the selected point.
- 4) If the gap or overlap is significant, measure again.
- 5) If measurements are still not within 20' of each other consult with the Corporate IMP Team as necessary before excavating.

NOTE: API 1163 can be used as a reference for resolving gap and overlap in measurements. API 1163 describes the "percentage rule" for interpolating gaps and overlaps. Examples using this rule are as follows:

- ◆ Gap example:
 - ◆ Distance from upstream marker to Stake #1 = 2135'
 - ◆ Distance from downstream marker to Stake #2 = 3347'
 - ◆ Total distance = $2135' + 3347' = 5482'$
 - ◆ Field determined gap in measurement = 17'
 - ◆ Percentage from upstream marker = $2135'/5482' = 39\%$
 - ◆ Percentage from downstream marker = $3347'/5482' = 61\%$
 - ◆ Measurement from Stake #1 = $39\% \times 17' = 6.63'$
 - ◆ Measurement from Stake #2 = $61\% \times 17' = 10.37'$
- ◆ Overlap example:
 - ◆ Distance from upstream marker to Stake #1 = 2605'
 - ◆ Distance from downstream marker to Stake #2 = 1369'

- ◆ Field determined overlap in measurement = 12'
- ◆ Total distance = 2605' + 1369' = 3974'
- ◆ Percentage from upstream marker = $2605'/3974' = 66\%$
- ◆ Percentage from downstream marker = $1369'/3974' = 34\%$
- ◆ Measurement from Stake #1 = $66\% \times 12' = 7.92'$
- ◆ Measurement from Stake #2 = $34\% \times 12' = 4.08'$

5.7. Plan Excavation

Plan for excavation including the following notifications:

- ◆ landowner notification
- ◆ One-Call
- ◆ environmental notification (if working in environmentally sensitive areas)

5.8. Excavate and Locate Anomaly

- 1) Excavate the staked location, and verify you have found the anomaly by matching the Repair Schedule and dig report characteristics to those on the pipe – such as joint length, clock position, anomaly type, anomaly dimensions, distance from nearest weld, etc.
- 2) Ensure that all dig report characteristics are documented on the PIR.
- 3) Also ensure that a Defect Evaluation Form is filled out for the anomaly being reviewed or repaired. If you are not certain the anomaly has been identified, expose at least two joints to verify that you are on the right joint.
- 4) If anomaly has not been positively identified, expose another known reference point (such as another weld, short pup in the vicinity, bend, etc.) to re-orient your location. Make sure you are properly orientated (i.e., upstream vs. downstream), look at joint log, and reassess dig location.
- 5) If these efforts fail to locate the anomaly, start the field measurement process over and include consultation with the Corporate IMP Team.

NOTE: If you believe that you are in the right place, but cannot locate the anomaly, the Corporate IMP Team must concur with your finding before you can consider the ILI report may be in error and no further anomaly evaluation is needed. Corporate IMP Team will work with the ILI Vendor to determine actual data error and best suitable path forward given the available information. At no point will a conclusion of "Nothing Found" be final before consulting with the ILI Vendor.

5.9. Evaluate and Repair Anomaly

Once the anomaly has been located, evaluate and repair per the Company's *Operations, Maintenance, and Emergency Procedures*. Repair any defect considered hazardous or having the potential of becoming a hazardous condition in the near future.

6. Completion of Verification/Preliminary Digs and Repairs

- 1) Update Repair Schedule with data from the PIR/Defect Evaluation Forms on the verification/preliminary digs that were performed.
- 2) Business Unit personnel/third-party qualified contractor locates each feature listed in the Repair Schedule and captures all required information for verification and ILI Service Provider data performance evaluations.

- 3) Business Unit personnel/third-party qualified contractor will record all findings on the Pipeline Information Report/Defect Evaluation Forms (see *Operations, Maintenance, and Emergency Procedures*).
- 4) Submit defect data.
 - a) Business Unit personnel/third-party qualified contractor submits all recorded defect data to the Corporate IMP Team after the repair of feature for ILI data confirmation, if applicable.
 - b) At a minimum, submit defect data for data validation, consisting of the following measured dimensions:
 - ◆ Defect depth (inches)
 - ◆ Defect length (inches)
 - ◆ Defect width (inches)
 - ◆ Defect orientation (o'clock position)
 - ◆ Defect distance from girth weld (feet)
 - ◆ Longitudinal seam orientation (o'clock position)
 - ◆ Wall thickness (inches)
 - ◆ Defect log distance (feet/stationing)

7. Inspection Verification

- 1) Compare the actual measured defect data to ILI data supplied from the verification features.
- 2) Confirm that the ILI data dimensions are within the specified tolerances of the actual measured dimensions per Appendix E of API 1163: Inline Inspection Systems Qualification Standard.
- 3) If ILI data are within specified tolerances, skip Step 4d and continue to Step 5 below.
- 4) Verify information to determine if additional digs are required.
 - a) If any data points are not within tolerances, determine if additional digs are required.
 - b) If additional digs are not required, ILI Service Provider must reanalyze data to determine why data was out of specification.
 - c) If reanalysis cannot validate ILI Service Provider data, determine if additional digs are required.
 - d) If additional digs or re-analysis of data cannot validate the ILI results, reject log and employ steps for re-inspection.

NOTE: The data verification process is outlined in Figure 3-2: In-Line Inspection and Data Evaluation in Section 3: Integrity Assessment.

- 5) Proceed with data analysis once data is validated.

8. Final ILI Report

- 1) Receive the Final ILI Report.
- 2) Evaluate the hard copy of the Final ILI Report to identify areas of concern.

Note any inconsistencies reported in the anomaly data on a Pipeline Assessment Issue Report (see Appendix B: Forms and Reports).
- 3) Download provided inspection data into the Repair Schedule.

- 4) Evaluate the Final ILI Report and review for required repairs within an HCA.
- 5) If applicable, request temporary pressure reduction per Appendix A: IMP 401: Implementation of Temporary Pressure Reduction.
- 6) Generate the Repair Schedule for the inspected pipe segment.

9. Dig Management

- 1) Corporate IMP Team along with the Business Unit Asset Manager sets the repair schedule for anomaly conditions identified in the Repair Schedule per Section 4: Remedial Action of the Liquid Pipeline Integrity Management Program Manual.
- 2) Business Unit personnel perform identified repairs.
- 3) The Corporate IMP Team or Business Unit Asset Manager documents repair compliance dates and methods of repair.
- 4) The Corporate IMP Team or Business Unit Asset Manager acts as the direct contact for the Business Unit personnel and the ILI Service Provider regarding any inspection data issues.
- 5) The Corporate IMP Team or Business Unit Asset Manager assists with any issue related to the reported inspection data provided by the ILI Service Provider.
- 6) After completing the repairs, the Business Unit personnel/third-party qualified contractor will record all findings on the Pipeline Information Report/Defect Evaluation Forms (see *Operations, Maintenance, and Emergency Procedures Manual*).

10. Data Evaluation

Check Repair Schedule for discrepancies in reported data.

11. Compile Data into ILI Assessment File

Compile all data for the ILI assessment and place into the ILI Assessment File. Store all files per the Records and Information Management Services (RIMS).

- 1) Preliminary Site Survey Report
- 2) Preliminary ILI Report
- 3) Final ILI Report (hard copy and CD Data)
- 4) Third-Party Out-Source Reports or Studies
- 5) ILI Assessment File

NOTE: An ILI Assessment File may include, but is not limited to, a Preliminary Site Survey Report, Preliminary ILI Report, a Final ILI Report, the Repair Schedule, Dig Sheets, Pipeline Information Report/Defect Evaluation Forms, and other pertinent documents.

12. Probability of Exceedance (POE) Analysis, if Required

12.1. Criteria for Requiring POE Analysis

Conditions requiring a POE would include

- ◆ Metal loss \geq 35%
- ◆ Pipe manufactured prior to 1979

- ◆ Leak history within the assessment interval
- ◆ Excessive corrosion growth rate

The IMP Team may elect to conduct a POE Analysis when conditions do not meet these criteria.

12.2. Conducting POE

Follow the steps below to complete required POE analysis.

- 1) Prepare and submit inspection data and repair results to a qualified pipeline engineering services provider for third-party analysis to determine the probability that the depth of the remaining corrosion defects exceed 80% of the wall thickness (potential leak), or the predicted anomaly burst pressure exceeds 110% of the maximum operating pressure (MOP) (potential pressure release).
- 2) Upon completion of the POE analysis, the Pipeline Engineering Services Provider will submit a draft report of the findings to Corporate IMP Team.
- 3) Review and approve draft report for submittal of final issue. If necessary, communicate with the Pipeline Engineering Services Provider to facilitate any changes required prior to issuance of final report.
- 4) After the Corporate IMP Team approves the draft, the Pipeline Engineering Services Provider will issue the final POE report to the Corporate IMP Team.
- 5) Receive the POE Report.
- 6) Evaluate POE report to determine the probability of failure and the recommended maximum inspection interval period and to determine the need for additional repairs.

13. ILI Service Provider Tool Specifications

Appendix D provides the ILI Service Provider Tool Specifications.