COLLECTION GUIDE

ADV INTEGRITY | FAILURE ANALYSIS

SAMPLING PROCEDURE

1. **Document the sample removal location:**

    a. Record location of feature (e.g., station number, mile post, etc.) and/or GPS coordinates
    b. Take photos of at least the following:
    - ☐ Overview of failure site including local topography taken from several areas of interest
    - ☐ Detail of fracture surface(s), magnified appropriately to show all relevant features at the fracture surfaces and the fracture origin
    - ☐ Detail of coating in area of failure
    - ☐ Detail of areas of internal and external corrosion near the fracture surface, if present
    - ☐ Details of residues or corrosion products near the fracture surface, if present
    - ☐ Details of areas indicating outside force damage, if present

2. **Consider sample configuration:**

    a. Consider removing at least 2 feet upstream and downstream of area of interest to provide sufficient material for mechanical testing
    b. Avoid cutting across area of interest or flame cutting within 4 inches of the area of interest

3. **Perform additional testing, if required:**

    a. Consult with ADV Integrity for additional testing recommendations, if needed (see Contact Us below)
    b. May include:
        i. Pipe to soil potential measurements
        ii. Soil pH
        iii. Pipeline fluid or soil sampling for chemistry

4. **Mark the sample, including the following:**

    a. Top of Pipe (12:00 o'clock orientation)
    b. Flow Direction
    c. Any applicable station numbers, etc.

5. **Protect the area of interest and ship sample:**

    a. Avoid mechanically cleaning (such as sandblasting or wire-brushing) the fracture surface
    b. Avoid touching or rubbing fracture surfaces together or against another hard object, such as a rock or pocket knife
    c. Apply a preservative (WD40 or grease) to fracture surfaces if extended period of time will exist between shipping and receiving is expected
    d. Cover the failed section with plastic or a tarp during shipping
    e. Ship the sample as soon as possible to avoid any environmental degradation
    f. Complete a **Chain of Custody** for the shipment

CONTACT US

Our full-scale testing facility and team of engineers are available to assist you with your failure analysis. Contact our metallurgical expert for more information about our services:

David Futch, PE
Director of Materials Engineering
David.Futch@advintegrity.com
863.268.3473 (cell)

COLLECTION GUIDE

ADV INTEGRITY l FAILURE ANALYSIS

BACKGROUND QUESTIONNAIRE

#	QUESTION	RESPONSE
1	Operating Company	
2	Product Transported	
3	Line Name and Number and/or System Name	
4	Survey Station and Mile Post	
5	Date of Failure / Incident / Anomaly	
6	How Failure / Incident / Anomaly was found	
7	Closest City or town, County, and State	
8	Pipe Nominal Outside Diameter	
9	Pipe Nominal Wall Thickness	
10	Pipe Grade	
11	Pipe Seam Type and approx. Joint Length	
12	Pipe Manufacturer	
13	Year of Installation	
14	Depth of Cover in area of failure	
15	Coating Type	
16	Cathodic Protection Type and Year installed (if applicable)	
17	Distance to nearest rectifier or anode bed (if applicable) (Note any Pipe-to-Soil Readings or Surveys done before incident)	
18	Terrain and Soil Conditions, including Soil pH (if applicable)	
19	Distance to Upstream and Downstream Compressor or Pumping Station	
20	Distance to Upstream and Downstream Girth Welds	
21	Position of Failure / Incident / Anomaly on Pipe (from top or bottom and/or O'clock position)	
22	Pressure at time and location of Failure / Incident / Anomaly	
23	Normal Operating Pressure at Location of Failure / Incident / Anomaly	
24	MOP, MAOP, Design Factor, and/or Location Class	
25	Date, Test Pressure, and Duration of most recent Hydrostatic Test (if applicable). (Note any test failures and probable cause)	
26	Hydrostatic Test Pressure at Location of Failure / Incident / Anomaly (if applicable)	
27	Date of the last in-line inspection (ILI) and any anomalies or repairs near failure site	
28	Note any previous NDT performed in or around the failure site	

CHAIN OF CUSTODY

ADV INTEGRITY | FAILURE ANALYSIS

Owner:		Project/Pipeline Name:	

Contact:	(Name)	(Phone)	(Email)

Sample Origin:		Sample Destination:	David Futch, ADV Integrity, Inc. 4027 Pinehurst Meadow, Magnolia, Texas 77355 863.268.3473 (cell)

Sample Identification

Item #	Quantity	Description of Item (Model, Serial #, Condition, Marks, Scratches)	Date (mm/dd/yyyy)	Time (hh:mm)	Notes

Chain of Custody

Action (checked out, returned, shipped, loaded)	Relinquished by:	Date (mm/dd/yyyy)	Time (hh:mm)	Received by:	Comments