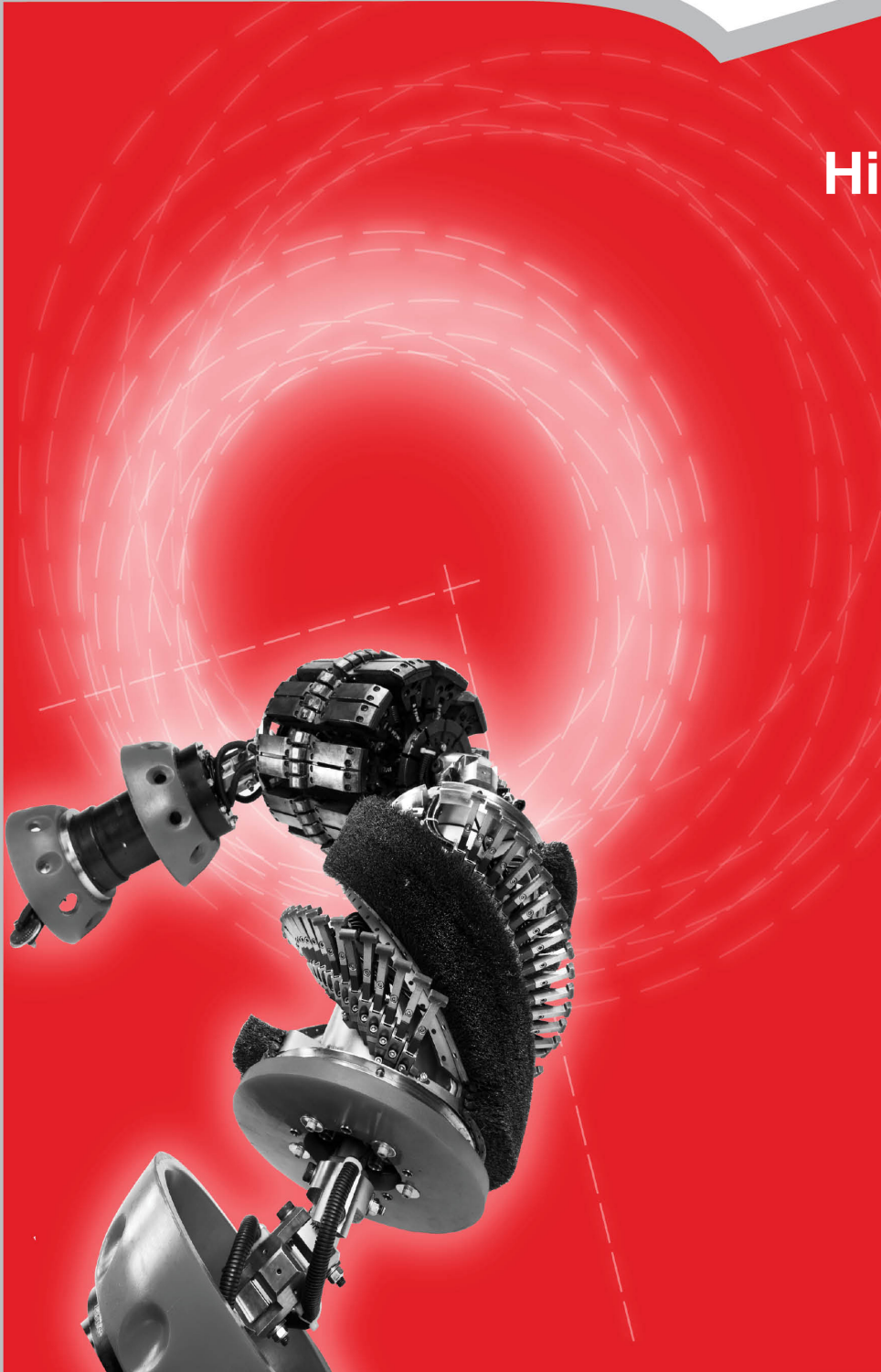


Pipeline Inspection Report



T.D. Williamson
Pipeline Performance™



Company Name

Hiland Crude, LLC

Project Name

Bethel to Bainville

Pipe Size

8"

Inspection Date(s)

Sep 27, 2013

Report Date(s)

Dec 2, 2013

TDW Regional Office

TDW Services, Inc.



Executive Summary - GMFL Inspection

Executive Summary - GMFL Inspection

RUN INFORMATION

Hiland Crude, LLC
Heber Briceno

Bethel to Bainville
8" Crude

	Launcher	Receiver
Location:	Bethel	Bainville
Date/Time:	9/26/2013 3:17:32 PM	9/27/2013 12:59:30 AM
Stationing:	0+00	950+39
GPS - LAT:	48.28431539	48.06737463
GPS - LONG:	-103.8162	-103.8852091
Duration of run - Hours: 9.7	Average Velocity: 2.72 ft/sec	Tool Tracking By: Cherokee Pipeline Services
Pipeline Length: 94,904.00 ft	Maximum Velocity: 5.65 ft/sec	
On-site Representative: Jesse Child	Data Analyst: Ben Stehling	
Contact: Heber Briceno		

INSPECTION FINDINGS

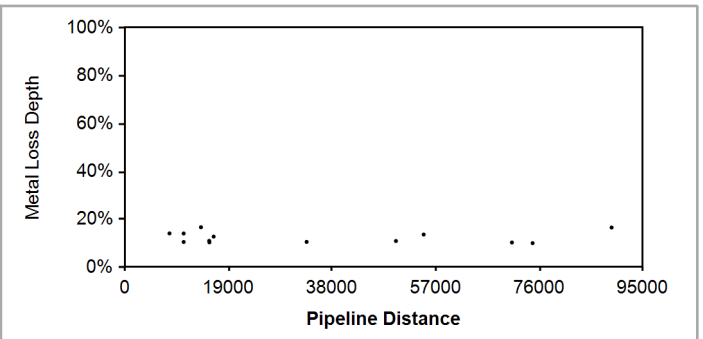
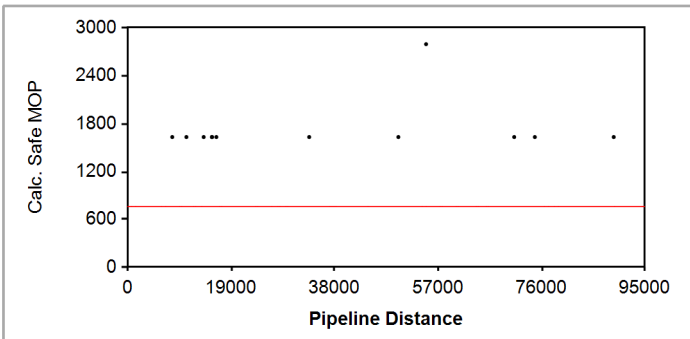
Current Established Maximum

Criteria Used: ASME B31G: Modified

Operating Pressure of Pipeline: 750 psi

Defect Interaction Rule: 1 inch between pits

Welds Detected: 2,233	Valves Detected: 2	Fittings Detected: 0	Markers Detected: 16	Gains Detected: 3
Casings Detected: 0	Tees Detected: 3	Flanges Detected: 6	Repairs Detected: 0	Deformations Detected: 4
P' < P*: 0	M/L pits: 13	M/L grouping: 13		
Internal groups: 2	External groups: 11			



* The number of anomalies where P' (calculated safe max. pressure for an anomaly) is less than P (current established maximum pressure of pipeline) - see ASME B31G

INSPECTION DETAILS

A total of 13 metal loss groups (2 Internal/11 External) were detected on the inspection survey, of which the deepest is reported at 17%. Using an established maximum operating pressure of 750 psi, 0 of the metal loss features appear to be pressure reducing.

Inspection data was obtained for the full length (94,904 feet / 17.97 miles) of the survey. The quality of the inspection data is satisfactory for a comprehensive assessment of this pipeline segment.

The inspection tool for this project included TDW XYZ Mapping module consisting of a high resolution Inertial Measurement Unit (IMU). The precision navigation data recorded by the IMU along with survey data supplied for specified control points and AGM locations provides a calculation of X, Y and Z coordinates for all objects and features listed in this report. The reported Latitude and Longitude are in NAD83 datum format. Z coordinates are Orthometric heights reported in feet. The final accuracy of reported coordinates is dependent upon the accuracy of the survey points and distance between these points, as well as uniform tool speed; however, the Survey Data Provided for AGM/Control Points is not at the required Sub-Centimeter accuracy level as specified in the document: XYZ Survey Data Requirements (D1902 Rev D).



Executive Summary - Deformation

RUN INFORMATION

Hiland Crude, LLC
 Heber Briceno

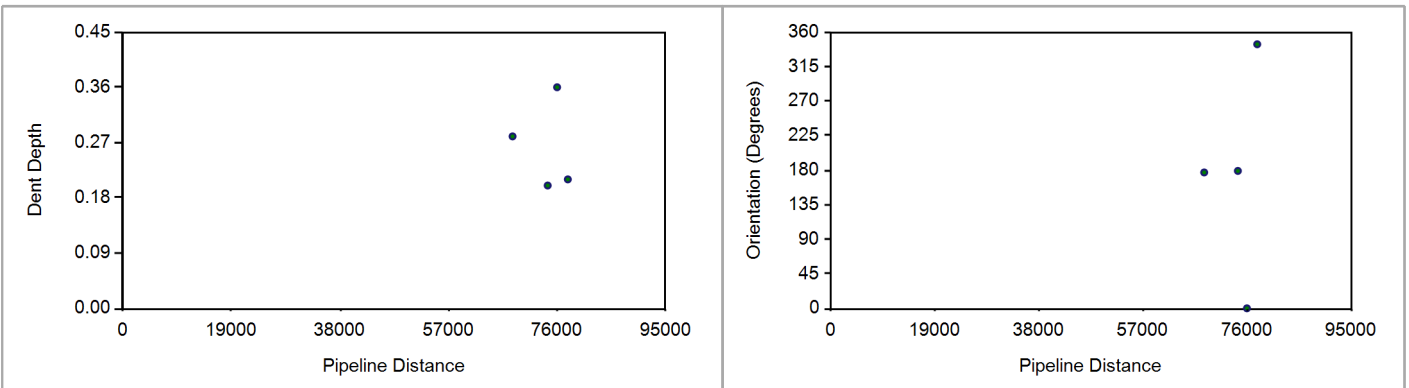
Bethel to Bainville
 8" Crude

	Launcher	Receiver
Location:	Bethel	Bainville
Date/Time:	9/24/2013 6:07:08 PM	9/25/2013 3:17:11 PM
Stationing:	0+00	950+39
GPS - LAT:	48.28431539	48.06737463
GPS - LONG:	-103.8162	-103.8852091

Duration of run - Hours: 9.17	Average Velocity: 2.87 ft/sec	Tool Tracking By: Cherokee Pipeline Services
Pipeline Length: 94,660.00 ft	Maximum Velocity: 5.4 ft/sec	
On-site Representative: Jesse Child	Data Analyst: Ben Stehling	

INSPECTION FINDINGS

Deformations Detected: 4 Ovalities Detected: 0 Expansions Detected: 0 Heavy Weld Detected: 0 Valves Detected: 2



INSPECTION DETAILS

Inspection data was obtained for the full length (94,660 feet / 17.93 miles) of the survey. The quality of the inspection data is satisfactory for a comprehensive assessment of this pipeline segment.

A total of 4 deformations (4 dents) were detected on the inspection survey, of which the deepest is reported at 0.36 inch.

DEF sensor coverage, 96% with one failed sensor throughout the run; however, the data was acceptable for analysis.



Metal Loss - Immediate Prioritized Repairs

ID#	Distance (ft)	Depth	Length	Width	Orientation	PSI (P')	% of Est. psi (P'/P)	Latitude	Longitude	Altitude
-----	---------------	-------	--------	-------	-------------	----------	----------------------	----------	-----------	----------

Nothing found in this pipeline inspection meets the criteria for Immediate Repair conditions relating to METAL LOSS.

Metal Loss - Immediate Prioritized Repairs



Metal Loss - 180 Day Prioritized Repairs

ID#	Distance (ft)	Depth	Length	Width	Orientation	PSI (P')	% of Est. psi (P'/P)	Latitude	Longitude	Altitude
-----	---------------	-------	--------	-------	-------------	----------	-------------------------	----------	-----------	----------

Nothing in the inspection meets the criteria for 180 Day Repair conditions relating to METAL LOSS.



Dent - Immediate Prioritized Repairs

ID#	Distance (ft)	Depth (in)	Depth (%)	Orientation	Metal Loss	On a Weld	Ovality	Description
-----	---------------	------------	-----------	-------------	------------	-----------	---------	-------------

Nothing found in the pipeline inspection meets the criteria for Immediate Repair conditions relating to DENTS.



Dent - 60 Day Prioritized Repairs

ID#	Distance (ft)	Depth (in)	Depth (%)	Orientation	Metal Loss	On a Weld	Ovality	Description
Condition 2A								
14000002	76,186.9	0.36	4.17%	0	No	No	No	TDW Correlated Deformation

Condition	Number
2A	1

60 Day Repair Conditions (if anomaly falls in an HCA area)

Condition: 2A A dent located on top of the pipeline (above the 4 and 8 o'clock positions) with a depth greater than 3% of the pipeline diameter (greater than 0.250 inches in depth for a pipeline diameter less than Actual Pipe Size (APS) 12.75).

Disclaimer: It is not possible for TDW inline inspection tools to determine whether there is cracking evidence associated with a dent or whether the dent is on a stress riser.

Dent - 60 Day Prioritized Repairs



Dent - 180 Day Prioritized Repairs

ID#	Distance (ft)	Depth (in)	Depth (%)	Orientation	Metal Loss	On a Weld	Ovality	Description
-----	---------------	------------	-----------	-------------	------------	-----------	---------	-------------

Nothing in the inspection meets of the criteria for 180 Day Repair conditions relating to DENTS.



Metal Loss Summary

DEFINITIONS

This Metal Loss Summary Report provides information regarding indicated anomalies found in this inspection. Anomalies detected during the inspection are sized and assigned a length, width, and depth. The specified formula for determining remaining-strength of the anomaly is then applied to the predicted sizes. The predicted size accuracy is described in the contract specifications.

The Metal Loss Summary Report is a listing of metal loss indications in the pipeline, sorted first by the calculated safe maximum operating pressure (P') ascending, then by depth descending. As an aid in locating these anomalies, the upstream and downstream references are included, as well as distances from the defect to the reference.

ID#	Each location is automatically assigned a number in the software. This number is provided to assist the user of PIGTRAP software to more easily find any given defect.
Dist.	Given in either feet or meters, based on contractual agreements, this is the absolute distance from launch.
Depth	Predicted depth of the defect as a percentage of nominal wall.
Length	Predicted length of the defect, reported in either inches or millimeters.
Width	Predicted width of the defect, reported in either inches or millimeters.
ID/OD	Determination whether the defect exists on the inside (INT) or outside (EXT) surface of the pipe.
Orientation: Deg / O'Clock	Orientation is reported in degrees and o'clock (0 degrees/12:00 at top of pipe) as viewed looking downstream.
P'	Based on the specified formula for determining remaining-strength, it is the predicted safe maximum allowable pressure for the defect (P').
% Est. Press. (P'/P)	Percent of maximum established pressure, this is calculated by dividing the calculated safe pressure of the defect (P') by the current established maximum operating pressure of the pipeline (P). For TDW reporting, P is either established MOP provided by the customer or the calculated pressure rating for the pipe (P). Percentages less than 100% are considered pressure reducing.
Aboveground References	The name of the closest upstream and downstream references, usually either an AGM or a Valve.
Distance from Defect	The distance to the upstream and downstream reference listed in the previous column. Used for locating defects in the field.

See Appendix C for Dig Sheet Preparation



Metal Loss Summary

Metal Loss Summary

ID#	Dist (ft)	Depth	Length	Width	ID/OD	Orientation Deg O'clock	P'	% Est. Press. (P'/P)	Above-Ground References	Distance from Defect
40000003	13,943.1	16.7%	0.55	0.45	INT	291 9:30	1632.2	100.0	U/S: AGM 020, Sta. 136+62, ROW -- Han #8802	492.73
									D/S: AGM 030, Sta. 210+54, Two track -- Han #9128	6983.26
40000012	89,255.3	16.6%	0.70	0.50	EXT	348 11:30	1632.2	100.0	U/S: AGM 150, Sta. 884+39, ROW -- Han #8043	674.47
									D/S: Pipe Exiting Ground, Bainville Injection -- Han #8539	5631.29
40000000	8,175.7	14.2%	1.54	0.63	EXT	92 3:00	1632.2	100.0	U/S: AGM 010, Sta. 80+12, Two track -- Han #9128	422.49
									D/S: AGM 020, Sta. 136+62, ROW -- Han #8802	5274.74
40000002	10,773.6	14.1%	0.81	0.52	EXT	125 4:00	1632.2	100.0	U/S: AGM 010, Sta. 80+12, Two track -- Han #9128	3020.44
									D/S: AGM 020, Sta. 136+62, ROW -- Han #8802	2676.78
40000006	16,273.5	12.8%	0.54	0.33	EXT	1 12:00	1632.2	100.0	U/S: AGM 020, Sta. 136+62, ROW -- Han #8802	2823.06
									D/S: AGM 030, Sta. 210+54, Two track -- Han #9128	4652.92
40000004	15,449.5	11.1%	0.69	0.70	EXT	179 5:45	1632.2	100.0	U/S: AGM 020, Sta. 136+62, ROW -- Han #8802	1999.10
									D/S: AGM 030, Sta. 210+54, Two track -- Han #9128	5476.89
40000008	49,703.6	11.0%	1.39	1.45	EXT	38 1:15	1632.2	100.0	U/S: AGM 080, Sta. 493+79, Two track -- Survey Point	264.80
									D/S: AGM 090, Sta. 548+52, 52nd St. NW -- Han #9128	5255.17
40000007	33,325.7	10.6%	0.42	0.54	EXT	244 8:00	1632.2	100.0	U/S: AGM 050, Sta. 305+18, Two track -- Han #9128	2866.23
									D/S: AGM 070, Sta. 441+33, 54th St. NW -- Han #9128	10835.31
40000001	10,773.6	10.6%	0.78	0.49	EXT	185 6:00	1632.2	100.0	U/S: AGM 010, Sta. 80+12, Two track -- Han #9128	3020.44
									D/S: AGM 020, Sta. 136+62, ROW -- Han #8802	2676.78
40000005	15,487.3	10.4%	1.07	0.91	EXT	120 4:00	1632.2	100.0	U/S: AGM 020, Sta. 136+62, ROW -- Han #8802	2036.91
									D/S: AGM 030, Sta. 210+54, Two track -- Han #9128	5439.08



Metal Loss Summary

ID#	Dist (ft)	Depth	Length	Width	ID/OD	Orientation Deg O'clock	P'	% Est. Press. (P'/P)	Above-Ground References	Distance from Defect	
40000010	70,976.2	10.4%	0.99	0.55	INT	352	11:30	1632.2	100.0	U/S: AGM 110, Sta. 671+61, Gravel Rd -- Han #8043	3761.22
										D/S: AGM 120, Sta. 715+12, ROW -- Han #8802	627.57
40000011	74,768.5	10.1%	0.43	0.70	EXT	20	12:30	1632.2	100.0	U/S: AGM 120, Sta. 715+12, ROW -- Han #8802	3164.76
										D/S: AGM 130, Sta. 773+20, ROW -- Han #8043	2622.77
40000009	54,791.2	13.7%	1.11	0.82	EXT	259	8:30	2795.5	100.0	U/S: AGM 080, Sta. 493+79, Two track -- Survey Point	5352.41
										D/S: AGM 090, Sta. 548+52, 52nd St. NW -- Han #9128	167.55

This report shows a maximum of 100 metal loss groups.

Type	Number
Metal Loss	13

Metal Loss Summary



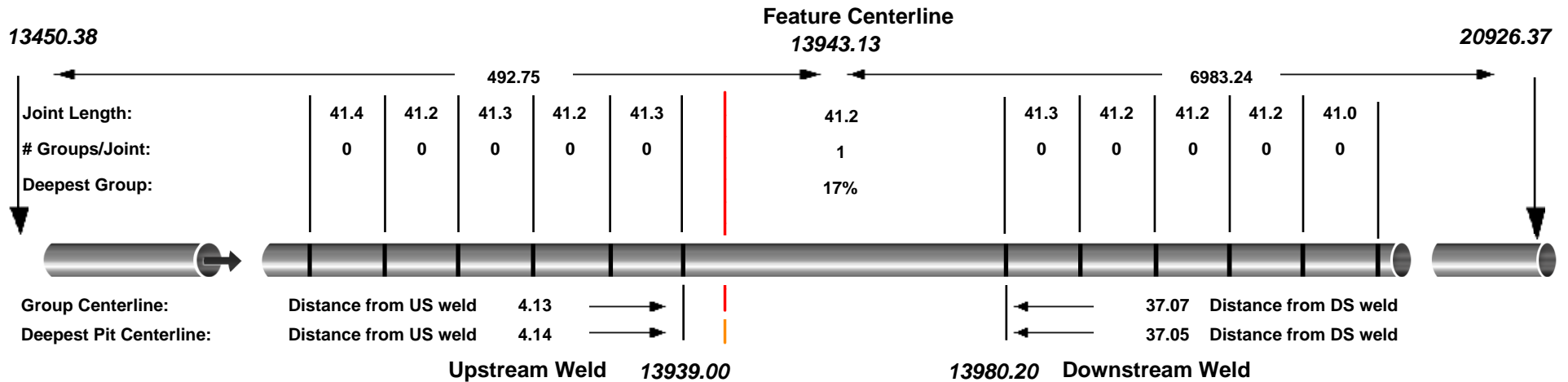
GROUP - Dig Site Information Report

UPSTREAM REFERENCE

AGM 020, Sta. 136+62, ROW -- Han #8802

DOWNSTREAM REFERENCE

AGM 030, Sta. 210+54, Two track -- Han #9128

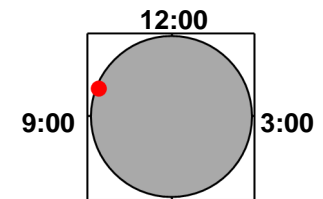


Feature Information

ID:	40000003	Distance from Launcher:	13943.13	<u>Feature Description</u>
Time:	8687.85	Orientation on Pipe Wall:	9:30	Metal Loss - INTERNAL
Latitude:	48.25950387	Longitude:	-103.84446175	Wall Thickness: 0.188
				Altitude: 2273.865

Feature Orientation

as looking downstream



6:00
12:00 is top of pipe

GROUP

Depth: 17%
Length: 0.552
Width: 0.452
ERF: 0.460

Safe Operating Pressure: 1632 psi

Upstream Locations		Downstream Locations	
456.02	Bend right - 90 deg., 6D	2645.94	Bend left - 24 deg., 1.5D
6007.89	Bend left - 28 deg., 1.5D	2653.71	Bend left - 32 deg., 3D
6410.34	Bend left - 36 deg., 3D	3308.83	Bend right - 45 deg., 3D
6871.46	Bend right-up - 40 deg., 3D	5594.54	Bend left - 25 deg., 3D
13285.55	Bend right - 38 deg., 1.5D	5954.66	Bend left-up - 30 deg., 3D

(relative distance from Feature Centerline)

1. Measurements on this sheet are in ft / in

2. All numbers in italics are Distance from Launch



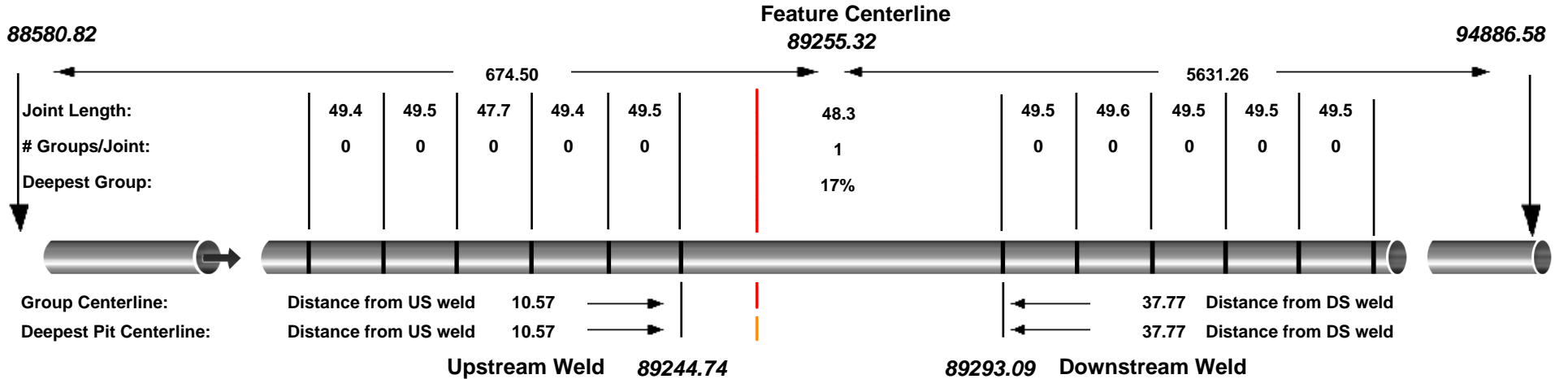
GROUP - Dig Site Information Report

UPSTREAM REFERENCE

AGM 150, Sta. 884+39, ROW -- Han #8043

DOWNSTREAM REFERENCE

Pipe Exiting Ground, Bainville Injection -- Han #8539

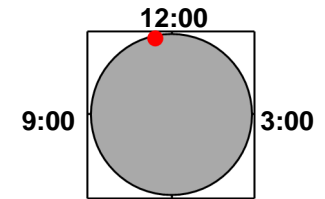


Feature Information

ID:	40000012	Distance from Launcher:	89255.32	<u>Feature Description</u>
Time:	36042.54	Orientation on Pipe Wall:	11:30	Metal Loss - EXTERNAL
Latitude:	48.08014184	Longitude:	-103.88941192	Wall Thickness: 0.188
				Altitude: 2014.806

Feature Orientation

as looking downstream



6:00
 12:00 is top of pipe

GROUP

Depth: **17%**
 Length: **0.699**
 Width: **0.503**
 ERF: **0.460**

Safe Operating Pressure: **1632 psi**

Upstream Locations		Downstream Locations	
1555.54	Bend right - 36 deg., 3D	581.95	Bend left - 32 deg., 1.5D
2462.57	Bend left - 21 deg., 29D	2287.26	Bend left - 32 deg., 3D
3225.27	Bend left - 45 deg., 3D	2683.28	Bend left - 21 deg., 3D
11263.64	Bend right - 25 deg., 18D	3934.78	Bend right - 90 deg., 6D
14386.05	Bend right - 26 deg., 1.5D	4626.67	Bend left - 24 deg., 3D

(relative distance from Feature Centerline)

1. Measurements on this sheet are in ft / in 2. All numbers in italics are Distance from Launch



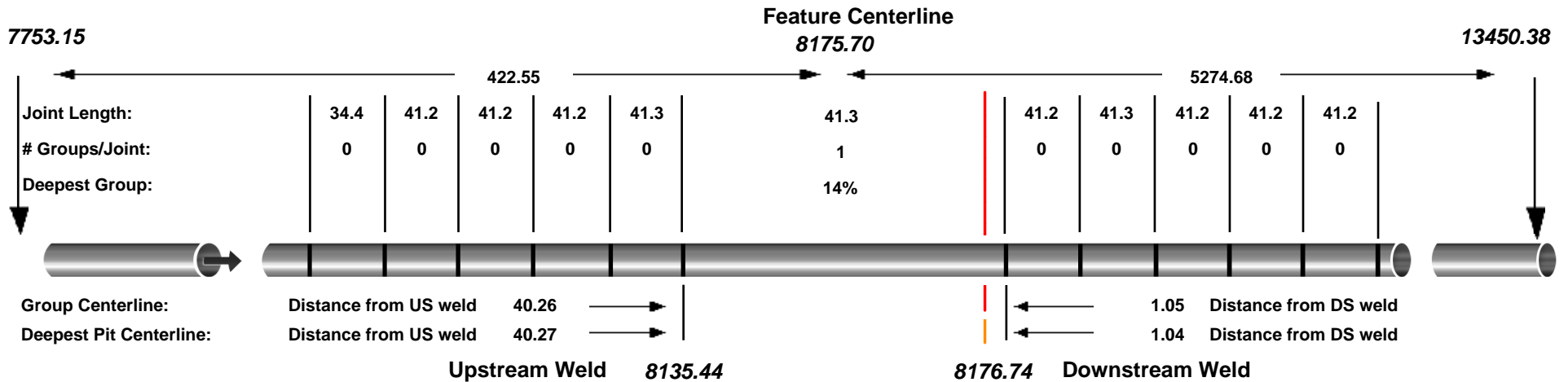
GROUP - Dig Site Information Report

UPSTREAM REFERENCE

AGM 010, Sta. 80+12, Two track -- Han #9128

DOWNSTREAM REFERENCE

AGM 020, Sta. 136+62, ROW -- Han #8802

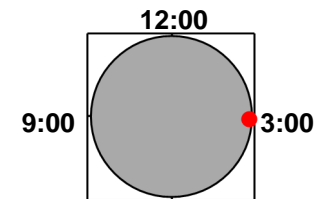


Feature Information

ID:	40000000	Distance from Launcher:	8175.70	<u>Feature Description</u>
Time:	6621.96	Orientation on Pipe Wall:	3:00	Metal Loss - EXTERNAL
Latitude:	48.27400191	Longitude:	-103.84252300	Wall Thickness: 0.188
				Altitude: 2306.182

Feature Orientation

as looking downstream



6:00
12:00 is top of pipe

GROUP

Depth: 14%
 Length: 1.538
 Width: 0.629
 ERF: 0.460

Safe Operating Pressure: 1632 psi

Upstream Locations		Downstream Locations	
240.46	Bend left - 28 deg., 1.5D	5311.41	Bend right - 90 deg., 6D
642.91	Bend left - 36 deg., 3D	8413.37	Bend left - 24 deg., 1.5D
1104.03	Bend right-up - 40 deg., 3D	8421.14	Bend left - 32 deg., 3D
7518.12	Bend right - 38 deg., 1.5D	9076.26	Bend right - 45 deg., 3D
8119.24	Bend left - 45 deg., 3D	11361.97	Bend left - 25 deg., 3D

(relative distance from Feature Centerline)

1. Measurements on this sheet are in ft / in

2. All numbers in italics are Distance from Launch



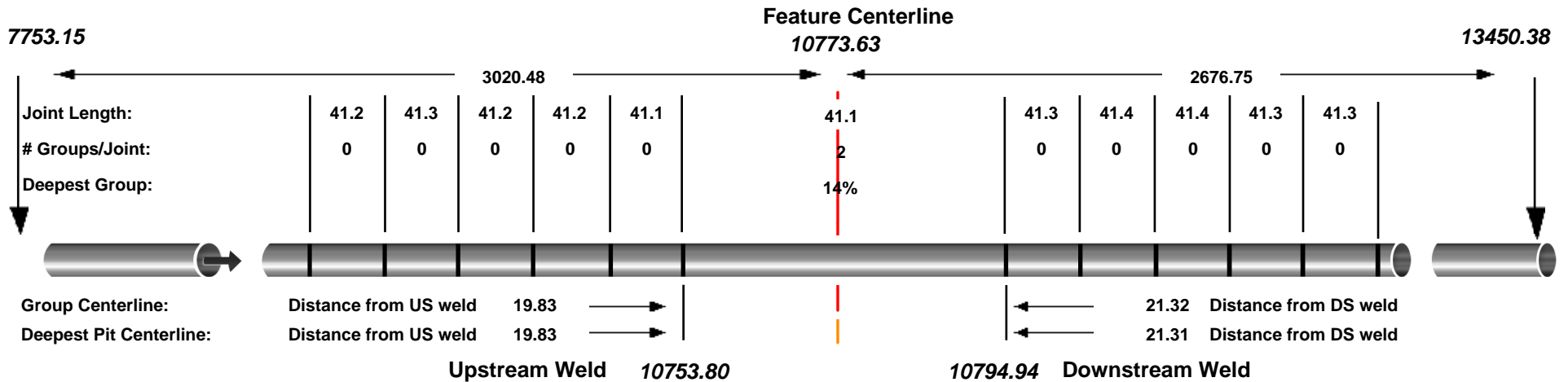
GROUP - Dig Site Information Report

UPSTREAM REFERENCE

AGM 010, Sta. 80+12, Two track -- Han #9128

DOWNSTREAM REFERENCE

AGM 020, Sta. 136+62, ROW -- Han #8802

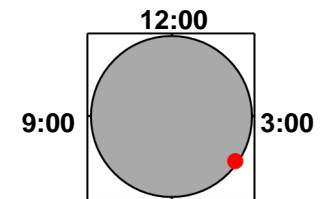


Feature Information

ID:	40000002	Distance from Launcher:	10773.63	<u>Feature Description</u>
Time:	7563.82	Orientation on Pipe Wall:	4:00	Metal Loss - EXTERNAL
Latitude:	48.26692762	Longitude:	-103.84267730	Wall Thickness: 0.188
				Altitude: 2296.127

Feature Orientation

as looking downstream



6:00
12:00 is top of pipe

GROUP

Depth: 14%
 Length: 0.810
 Width: 0.517
 ERF: 0.460

Safe Operating Pressure: 1632 psi

Upstream Locations		Downstream Locations	
2838.39	Bend left - 28 deg., 1.5D	2713.48	Bend right - 90 deg., 6D
3240.84	Bend left - 36 deg., 3D	5815.44	Bend left - 24 deg., 1.5D
3701.96	Bend right-up - 40 deg., 3D	5823.21	Bend left - 32 deg., 3D
10116.05	Bend right - 38 deg., 1.5D	6478.33	Bend right - 45 deg., 3D
10717.17	Bend left - 45 deg., 3D	8764.04	Bend left - 25 deg., 3D

(relative distance from Feature Centerline)

1. Measurements on this sheet are in ft / in

2. All numbers in italics are Distance from Launch



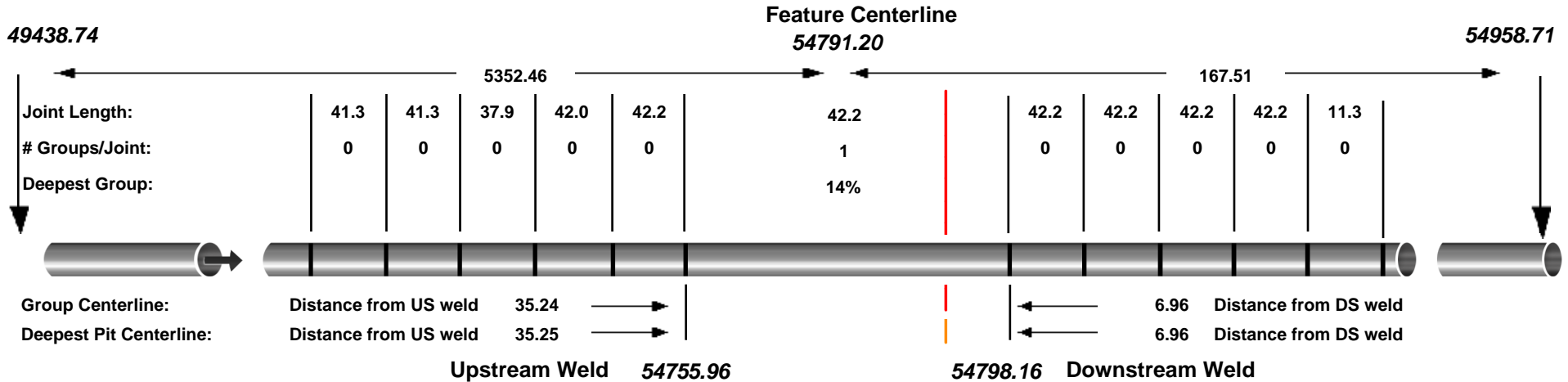
GROUP - Dig Site Information Report

UPSTREAM REFERENCE

AGM 080, Sta. 493+79, Two track -- Survey Point

DOWNSTREAM REFERENCE

AGM 090, Sta. 548+52, 52nd St. NW -- Han #9128

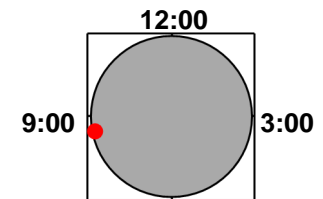


Feature Information

ID:	40000009	Distance from Launcher: 54791.20	<u>Feature Description</u>
Time:	24775.88	Orientation on Pipe Wall: 8:30	Metal Loss - EXTERNAL
Latitude:	48.16913338	Longitude: -103.89021095	Wall Thickness: 0.322
			Altitude: 2191.788

Feature Orientation

as looking downstream



6:00
 12:00 is top of pipe

GROUP

Depth: **14%**
 Length: **1.107**
 Width: **0.822**
 ERF: **0.268**

Safe Operating Pressure: **2796 psi**

Upstream Locations		Downstream Locations	
14168.31	Bend left - 27 deg., 1.5D	2696.85	Bend left - 40 deg., 1.5D
16982.42	Bend left - 18 deg., 1.5D	3154.65	Bend right - 45 deg., 3D
20848.03	Bend left - 21 deg., 1.5D	3163.22	Bend right - 21 deg., 1.5D
22415.87	Bend right - 90 deg., 8D	5618.07	Bend right - 45 deg., 11D
27059.80	Bend left - 40 deg., 3D	6008.12	Bend left - 45 deg., 3D

(relative distance from Feature Centerline)

1. Measurements on this sheet are in ft / in

2. All numbers in italics are Distance from Launch



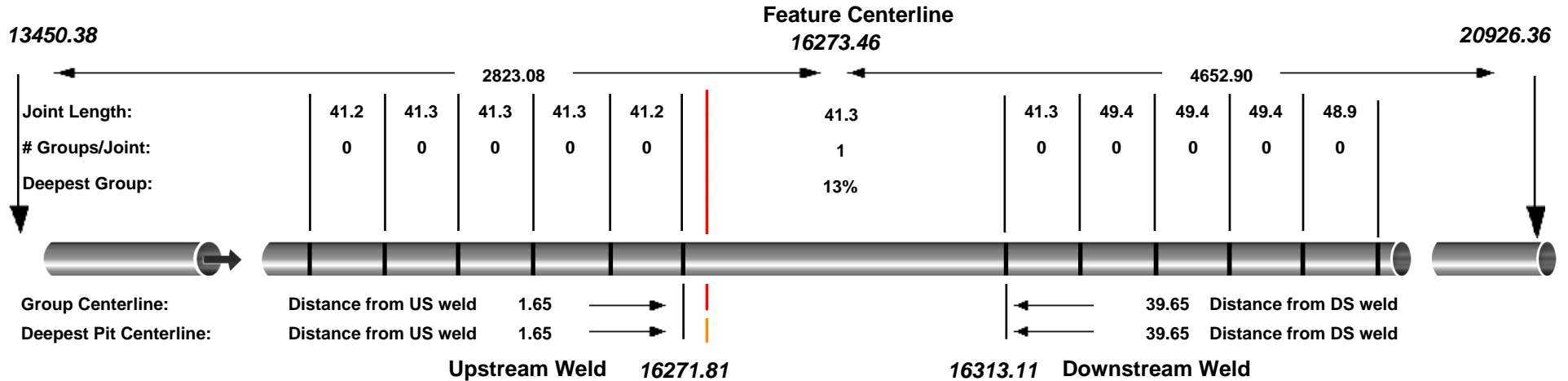
GROUP - Dig Site Information Report

UPSTREAM REFERENCE

AGM 020, Sta. 136+62, ROW -- Han #8802

DOWNSTREAM REFERENCE

AGM 030, Sta. 210+54, Two track -- Han #9128

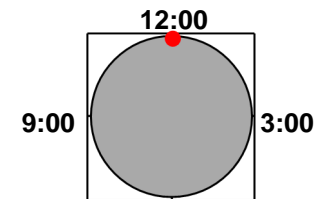


Feature Information

ID:	40000006	Distance from Launcher:	16273.46	<u>Feature Description</u>
Time:	9475.85	Orientation on Pipe Wall:	12:00	Metal Loss - EXTERNAL
Latitude:	48.25785361	Longitude:	-103.85320335	Wall Thickness: 0.188
				Altitude: 2302.313

Feature Orientation

as looking downstream



6:00
12:00 is top of pipe

GROUP

Depth: 13%
 Length: 0.543
 Width: 0.333
 ERF: 0.460

Safe Operating Pressure: 1632 psi

Upstream Locations		Downstream Locations	
2786.35	Bend right - 90 deg., 6D	315.61	Bend left - 24 deg., 1.5D
8338.22	Bend left - 28 deg., 1.5D	323.38	Bend left - 32 deg., 3D
8740.67	Bend left - 36 deg., 3D	978.50	Bend right - 45 deg., 3D
9201.79	Bend right-up - 40 deg., 3D	3264.21	Bend left - 25 deg., 3D
15615.88	Bend right - 38 deg., 1.5D	3624.33	Bend left-up - 30 deg., 3D

(relative distance from Feature Centerline)

1. Measurements on this sheet are in ft / in
 2. All numbers in italics are Distance from Launch



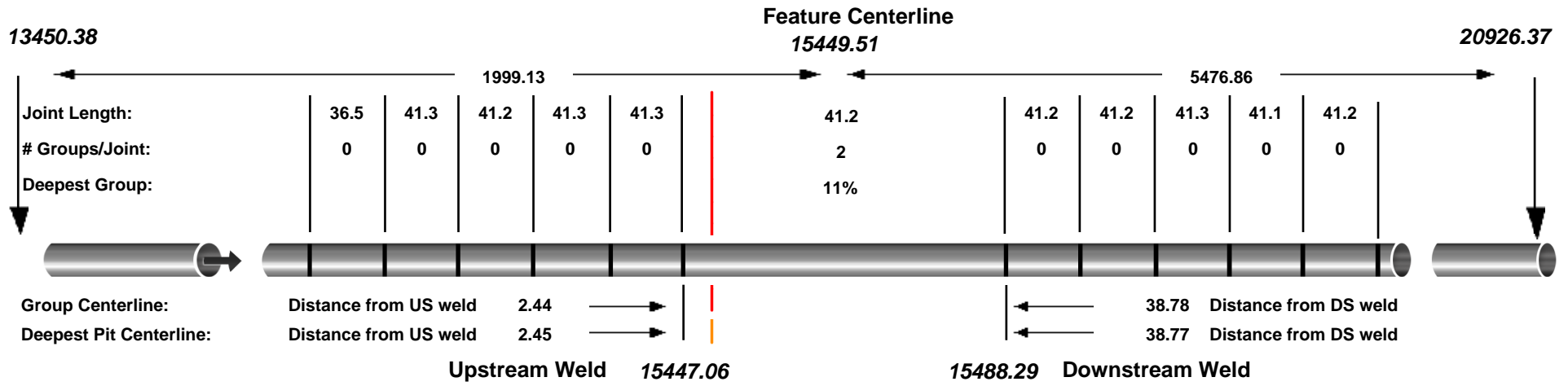
GROUP - Dig Site Information Report

UPSTREAM REFERENCE

AGM 020, Sta. 136+62, ROW -- Han #8802

DOWNSTREAM REFERENCE

AGM 030, Sta. 210+54, Two track -- Han #9128

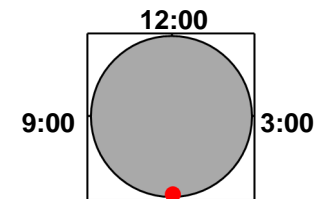


Feature Information

ID:	40000004	Distance from Launcher:	15449.51	<u>Feature Description</u>
Time:	9209.35	Orientation on Pipe Wall:	5:45	Metal Loss - EXTERNAL
Latitude:	48.25915746	Longitude:	-103.85046378	Wall Thickness: 0.188
				Altitude: 2295.315

Feature Orientation

as looking downstream



6:00
 12:00 is top of pipe

GROUP

Depth: 11%
 Length: 0.689
 Width: 0.705
 ERF: 0.460

Safe Operating Pressure: 1632 psi

Upstream Locations		Downstream Locations	
1962.40	Bend right - 90 deg., 6D	1139.56	Bend left - 24 deg., 1.5D
7514.27	Bend left - 28 deg., 1.5D	1147.33	Bend left - 32 deg., 3D
7916.72	Bend left - 36 deg., 3D	1802.45	Bend right - 45 deg., 3D
8377.84	Bend right-up - 40 deg., 3D	4088.16	Bend left - 25 deg., 3D
14791.93	Bend right - 38 deg., 1.5D	4448.28	Bend left-up - 30 deg., 3D

(relative distance from Feature Centerline)

1. Measurements on this sheet are in ft / in
 2. All numbers in italics are Distance from Launch



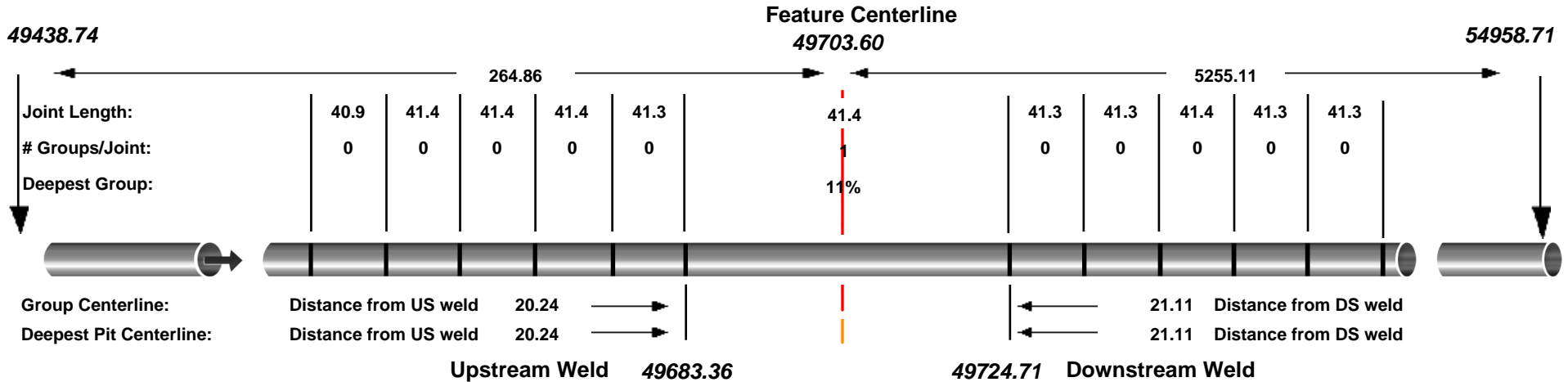
GROUP - Dig Site Information Report

UPSTREAM REFERENCE

AGM 080, Sta. 493+79, Two track -- Survey Point

DOWNSTREAM REFERENCE

AGM 090, Sta. 548+52, 52nd St. NW -- Han #9128

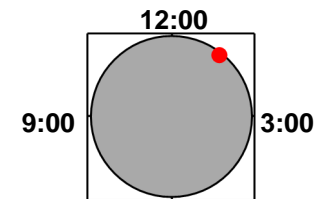


Feature Information

ID:	40000008	Distance from Launcher:	49703.60	<u>Feature Description</u>
Time:	22497.43	Orientation on Pipe Wall:	1:15	Metal Loss - EXTERNAL
Latitude:	48.18282275	Longitude:	-103.89200802	Wall Thickness: 0.188
				Altitude: 2216.107

Feature Orientation

as looking downstream



GROUP

Depth: 11%

Length: 1.387

Width: 1.454

ERF: 0.460

Safe Operating Pressure: 1632 psi

Upstream Locations		Downstream Locations	
9080.71	Bend left - 27 deg., 1.5D	7784.45	Bend left - 40 deg., 1.5D
11894.82	Bend left - 18 deg., 1.5D	8242.25	Bend right - 45 deg., 3D
15760.43	Bend left - 21 deg., 1.5D	8250.82	Bend right - 21 deg., 1.5D
17328.27	Bend right - 90 deg., 8D	10705.67	Bend right - 45 deg., 11D
21972.20	Bend left - 40 deg., 3D	11095.72	Bend left - 45 deg., 3D

(relative distance from Feature Centerline)

1. Measurements on this sheet are in ft / in

2. All numbers in italics are Distance from Launch



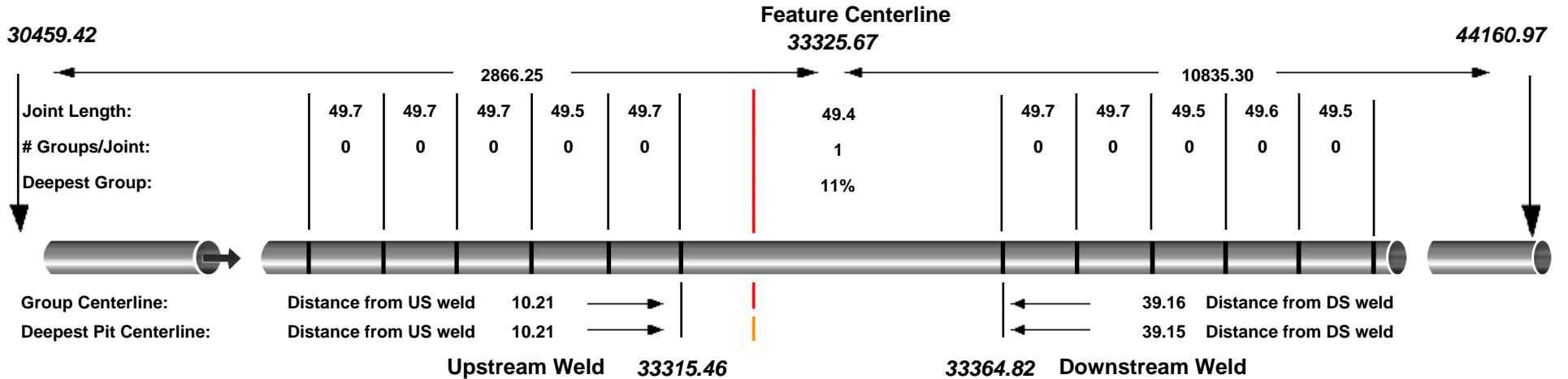
GROUP - Dig Site Information Report

UPSTREAM REFERENCE

AGM 050, Sta. 305+18, Two track -- Han #9128

DOWNSTREAM REFERENCE

AGM 070, Sta. 441+33, 54th St. NW -- Han #9128

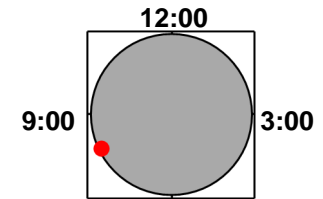


Feature Information

ID:	40000007	Distance from Launcher:	33325.67	<u>Feature Description</u>
Time:	16077.95	Orientation on Pipe Wall:	8:00	Metal Loss - EXTERNAL
Latitude:	48.21767075	Longitude:	-103.86769742	Wall Thickness: 0.188
				Altitude: 2242.949

Feature Orientation

as looking downstream



6:00
 12:00 is top of pipe

GROUP

Depth: 11%
 Length: 0.417
 Width: 0.545
 ERF: 0.460

Safe Operating Pressure: 1632 psi

Upstream Locations		Downstream Locations	
950.34	Bend right - 90 deg., 8D	617.50	Bend left - 21 deg., 1.5D
5594.27	Bend left - 40 deg., 3D	4483.11	Bend left - 18 deg., 1.5D
5743.69	Bend right - 30 deg., 1.5D	7297.22	Bend left - 27 deg., 1.5D
6758.65	Bend left - 90 deg., 7D	24162.38	Bend left - 40 deg., 1.5D
6963.53	Bend right - 90 deg., 7D	24620.18	Bend right - 45 deg., 3D

(relative distance from Feature Centerline)

1. Measurements on this sheet are in ft / in

2. All numbers in italics are Distance from Launch



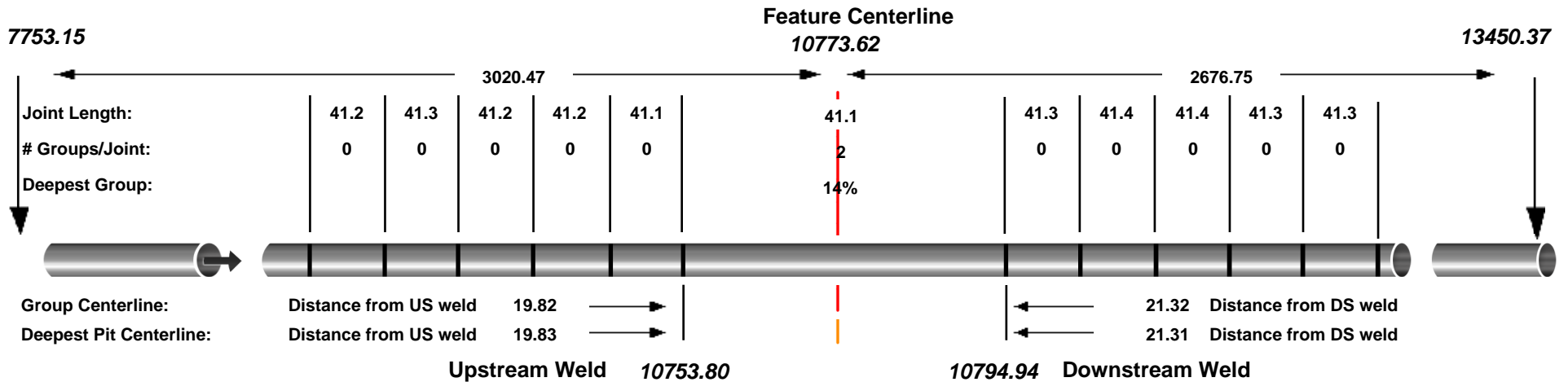
GROUP - Dig Site Information Report

UPSTREAM REFERENCE

AGM 010, Sta. 80+12, Two track -- Han #9128

DOWNSTREAM REFERENCE

AGM 020, Sta. 136+62, ROW -- Han #8802

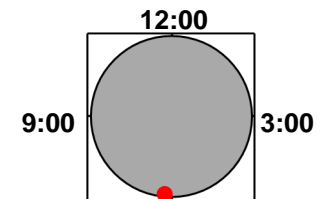


Feature Information

ID:	40000001	Distance from Launcher:	10773.62	<u>Feature Description</u>
Time:	7563.82	Orientation on Pipe Wall:	6:00	Metal Loss - EXTERNAL
Latitude:	48.26692763	Longitude:	-103.84267730	Wall Thickness: 0.188
				Altitude: 2296.127

Feature Orientation

as looking downstream



6:00
12:00 is top of pipe

GROUP

Depth: 11%
 Length: 0.776
 Width: 0.485
 ERF: 0.460

Safe Operating Pressure: 1632 psi

Upstream Locations		Downstream Locations	
2838.38	Bend left - 28 deg., 1.5D	2713.49	Bend right - 90 deg., 6D
3240.83	Bend left - 36 deg., 3D	5815.45	Bend left - 24 deg., 1.5D
3701.95	Bend right-up - 40 deg., 3D	5823.22	Bend left - 32 deg., 3D
10116.04	Bend right - 38 deg., 1.5D	6478.34	Bend right - 45 deg., 3D
10717.16	Bend left - 45 deg., 3D	8764.05	Bend left - 25 deg., 3D

(relative distance from Feature Centerline)

1. Measurements on this sheet are in ft / in

2. All numbers in italics are Distance from Launch



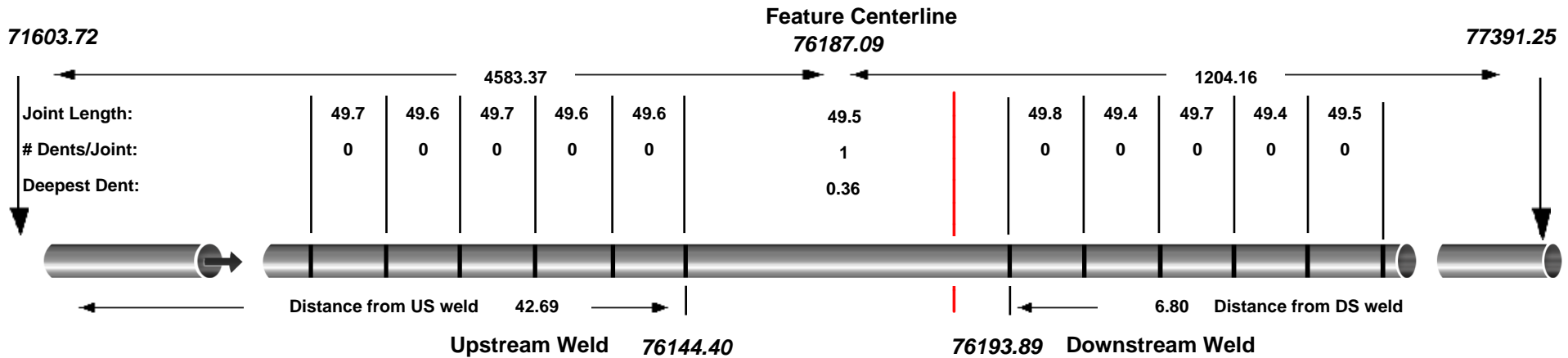
DENT - Dig Site Information Report

UPSTREAM REFERENCE

AGM 120, Sta. 715+12, ROW -- Han #8802

DOWNSTREAM REFERENCE

AGM 130, Sta. 773+20, ROW -- Han #8043

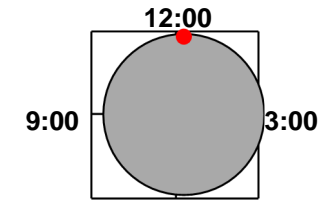


Feature Information

ID:	14000002	Distance from Launcher:	76187.09	<u>Feature Description</u>
Time:	32853.04	Orientation on Pipe Wall:	12:00	DENT
Latitude:	48.11326113	Longitude:	-103.88954855	Wall Thickness: 0.188
Altitude:				Altitude: 2106.474
Additional Information:	TDW Correlated Deformation			

Feature Orientation

as looking downstream



12:00
 6:00
 12:00 is top of pipe

DENT
 Depth: 0.36

Upstream Locations		Downstream Locations	
1317.82	Bend right - 26 deg., 1.5D	1804.59	Bend right - 25 deg., 18D
2052.10	Bend left - 16 deg., 1.5D	9842.96	Bend left - 45 deg., 3D
7768.03	Tee on top of pipe	10605.66	Bend left - 21 deg., 29D
9821.88	Bend left - 30 deg., 1.5D	11512.69	Bend right - 36 deg., 3D
15387.77	Bend left - 45 deg., 3D	13650.18	Bend left - 32 deg., 1.5D

(relative distance from Feature Centerline)

1. Measurements on this sheet are in ft / in 2. All numbers in italics are Distance from Launch



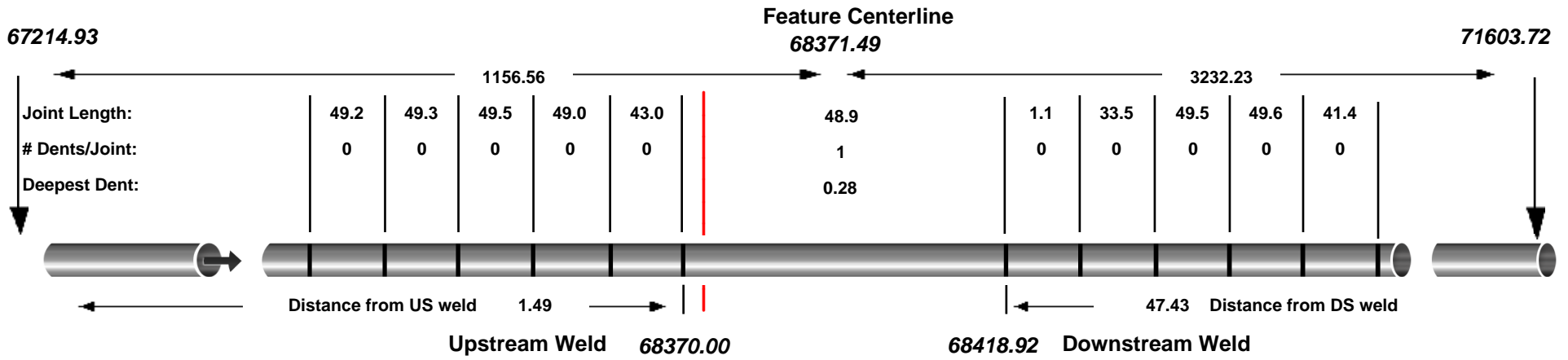
DENT - Dig Site Information Report

UPSTREAM REFERENCE

AGM 110, Sta. 671+61, Gravel Rd -- Han #8043

DOWNSTREAM REFERENCE

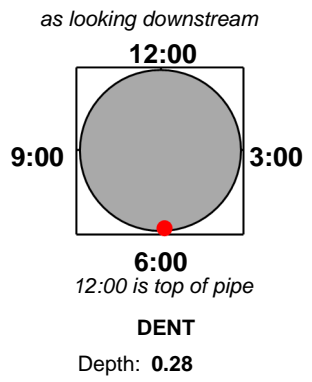
AGM 120, Sta. 715+12, ROW -- Han #8802



Feature Information

ID:	14000000	Distance from Launcher:	68371.49	Feature Description
Time:	29751.75	Orientation on Pipe Wall:	5:45	DENT
Latitude:	48.13445473	Longitude:	-103.89059370	Wall Thickness: 0.188
Altitude:				Altitude: 2221.085
Additional Information:	TDW Correlated Deformation			

Feature Orientation



Upstream Locations		Downstream Locations	
2006.28	Bend left - 30 deg., 1.5D	47.57	Tee on top of pipe
7572.17	Bend left - 45 deg., 3D	5763.50	Bend left - 16 deg., 1.5D
7962.22	Bend right - 45 deg., 11D	6497.78	Bend right - 26 deg., 1.5D
10417.07	Bend right - 21 deg., 1.5D	9620.19	Bend right - 25 deg., 18D
10425.64	Bend right - 45 deg., 3D	17658.56	Bend left - 45 deg., 3D

(relative distance from Feature Centerline)

1. Measurements on this sheet are in ft / in
 2. All numbers in italics are Distance from Launch



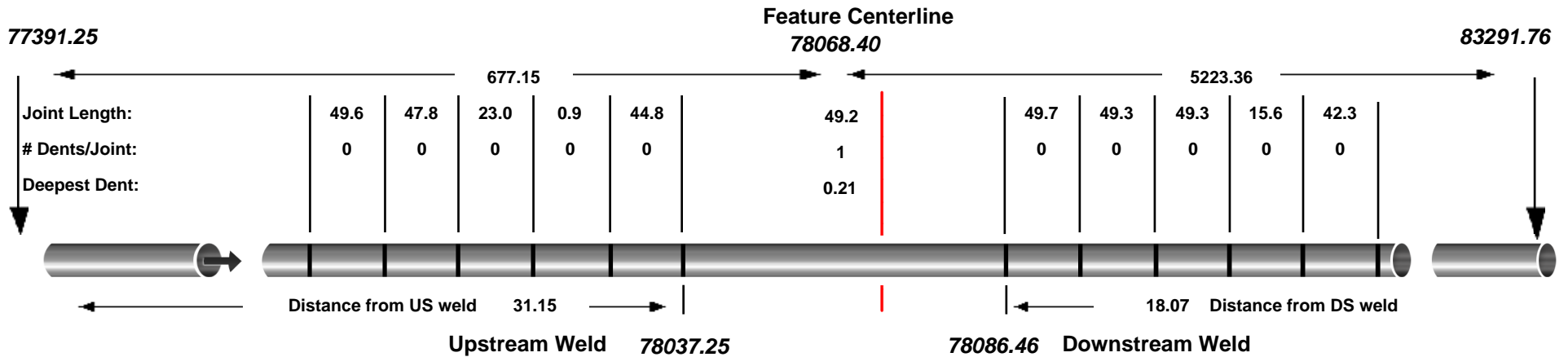
DENT - Dig Site Information Report

UPSTREAM REFERENCE

AGM 130, Sta. 773+20, ROW -- Han #8043

DOWNSTREAM REFERENCE

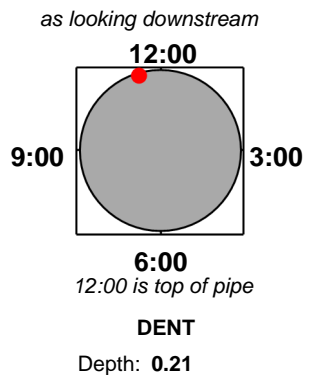
AGM 140, Sta. 832+34, ROW -- Han #8802



Feature Information

ID:	14000003	Distance from Launcher:	78068.40	<u>Feature Description</u>
Time:	33456.12	Orientation on Pipe Wall:	11:15	DENT
Latitude:	48.10834115	Longitude:	-103.88756750	Wall Thickness: 0.188
Altitude:				Altitude: 2121.073
Additional Information:	TDW Correlated Deformation			

Feature Orientation



Upstream Locations		Downstream Locations	
76.72	Bend right - 25 deg., 18D	7961.65	Bend left - 45 deg., 3D
3199.13	Bend right - 26 deg., 1.5D	8724.35	Bend left - 21 deg., 29D
3933.41	Bend left - 16 deg., 1.5D	9631.38	Bend right - 36 deg., 3D
9649.34	Tee on top of pipe	11768.87	Bend left - 32 deg., 1.5D
11703.19	Bend left - 30 deg., 1.5D	13474.18	Bend left - 32 deg., 3D

(relative distance from Feature Centerline)

1. Measurements on this sheet are in ft / in

2. All numbers in italics are Distance from Launch



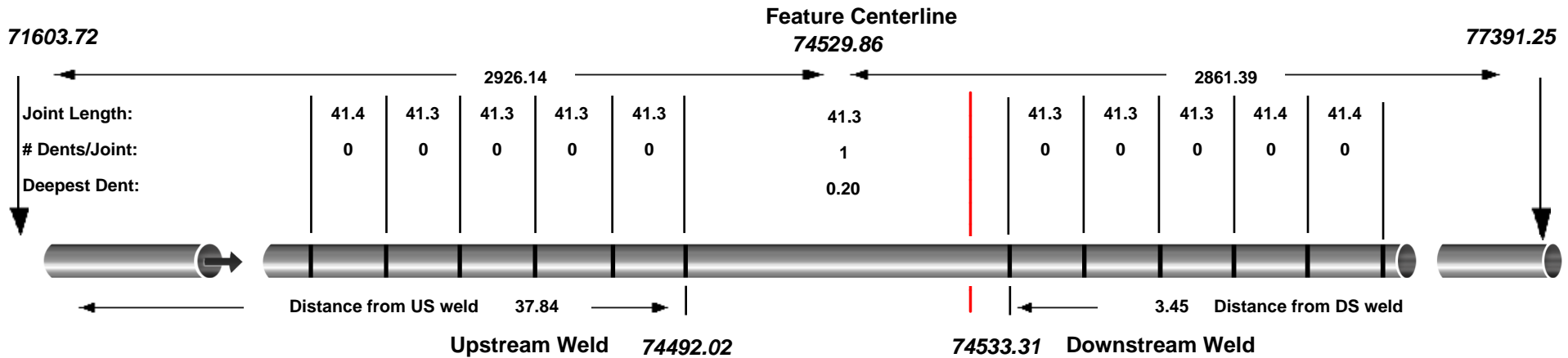
DENT - Dig Site Information Report

UPSTREAM REFERENCE

AGM 120, Sta. 715+12, ROW -- Han #8802

DOWNSTREAM REFERENCE

AGM 130, Sta. 773+20, ROW -- Han #8043

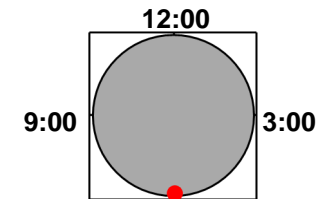


Feature Information

ID:	14000001	Distance from Launcher:	74529.86	<u>Feature Description</u>
Time:	32210.28	Orientation on Pipe Wall:	5:45	DENT
Latitude:	48.11770714	Longitude:	-103.89030642	Wall Thickness: 0.188
Altitude:				Altitude: 2120.346
Additional Information:	TDW Correlated Deformation			

Feature Orientation

as looking downstream



6:00
 12:00 is top of pipe

DENT
 Depth: 0.20

Upstream Locations		Downstream Locations	
394.87	Bend left - 16 deg., 1.5D	339.41	Bend right - 26 deg., 1.5D
6110.80	Tee on top of pipe	3461.82	Bend right - 25 deg., 18D
8164.65	Bend left - 30 deg., 1.5D	11500.19	Bend left - 45 deg., 3D
13730.54	Bend left - 45 deg., 3D	12262.89	Bend left - 21 deg., 29D
14120.59	Bend right - 45 deg., 11D	13169.92	Bend right - 36 deg., 3D

(relative distance from Feature Centerline)

1. Measurements on this sheet are in ft / in

2. All numbers in italics are Distance from Launch



The Pipeline Summary report provides an overview of the pipeline condition.

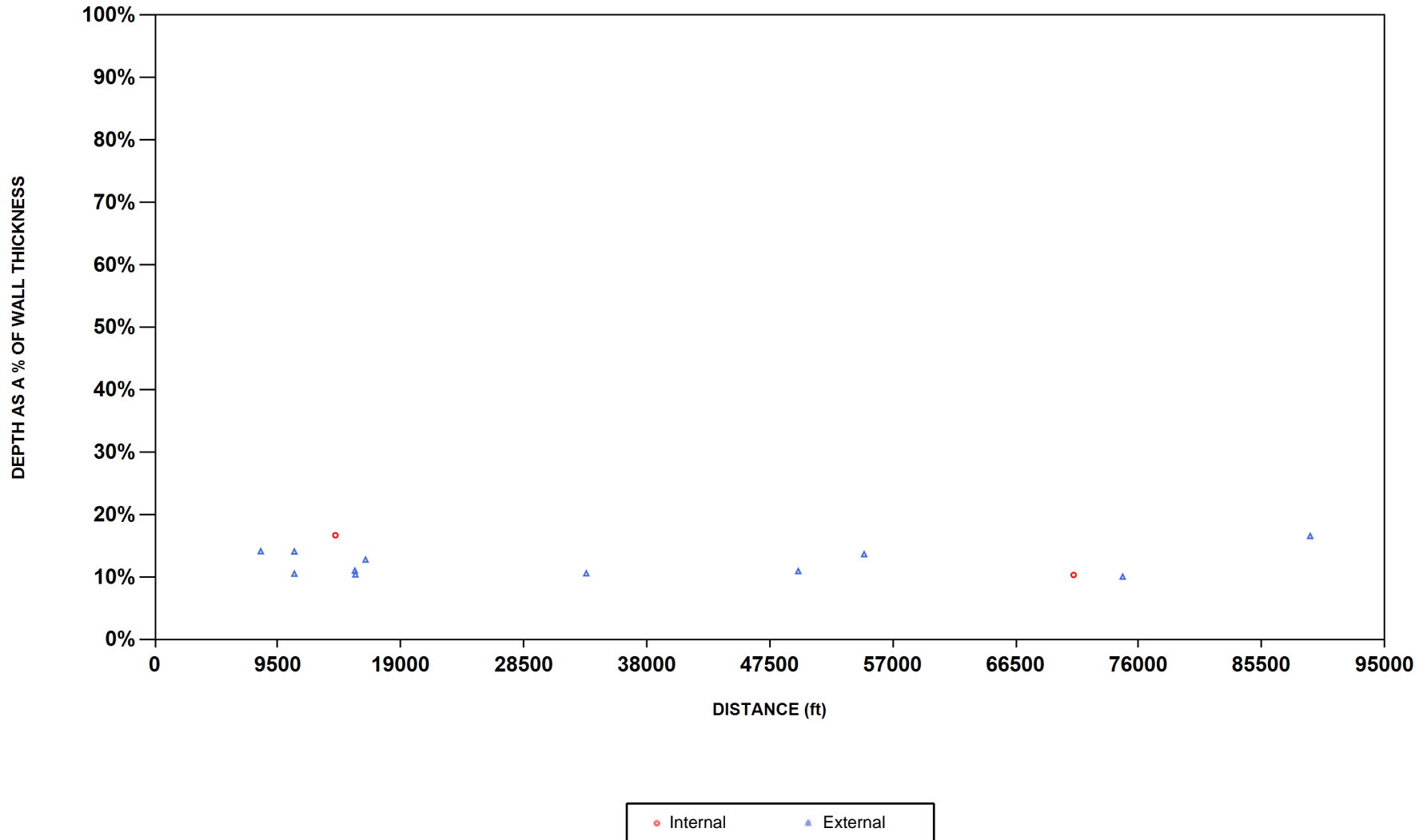
The following charts are utilized in this report:

Metal Loss Depth	This chart highlights the predicted depths of defects as a percentage of wall thickness compared to distance. Areas of concentrated metal loss are easily detected as defects group.
Metal Loss Orientation	The distance from launch is plotted against the orientation of the defect. Orientation is based on 360° in a circle, with 0° or 360° marking the top of the pipe (180° the bottom). Displaying the orientation of defects around the circumference of the pipeline may aid in determining the type of corrosion mechanism present. For example, the majority of defects along the bottom of the pipe might indicate internal channel corrosion.
Metal Loss - Calculated Safe Max. Operating Pressure	The calculated safe maximum operating pressure of each defect is plotted compared to distance.
Velocity - MFL	Displays the speed of the tool relative to distance during the inspection. The specified contractual velocity of the inspection tool is 10 feet per second. If the tool exceeds this speed, the data collected by the tool may be degraded.
Defect Depth Histogram	Displays the total number of defects (pressure reducing groups/defects and non-pressure reducing groups /defects (where $P' < P$)) by predicted depth of the defect as a percentage of nominal wall.
Dent Depth	This chart highlights the predicted depths of deformations in inches or mm compared to distance.
Dent Orientation	The distance from launch is plotted against the orientation of the deformation indications. Orientation is based on 360° in a circle, with 0° or 360° marking the top of the pipe (180° the bottom).
Velocity - DEF	Displays the speed of the tool relative to distance during the inspection. The specified contractual velocity of the inspection tool is 10 feet per second. If the tool exceeds this speed, the data collected by the tool may be degraded.



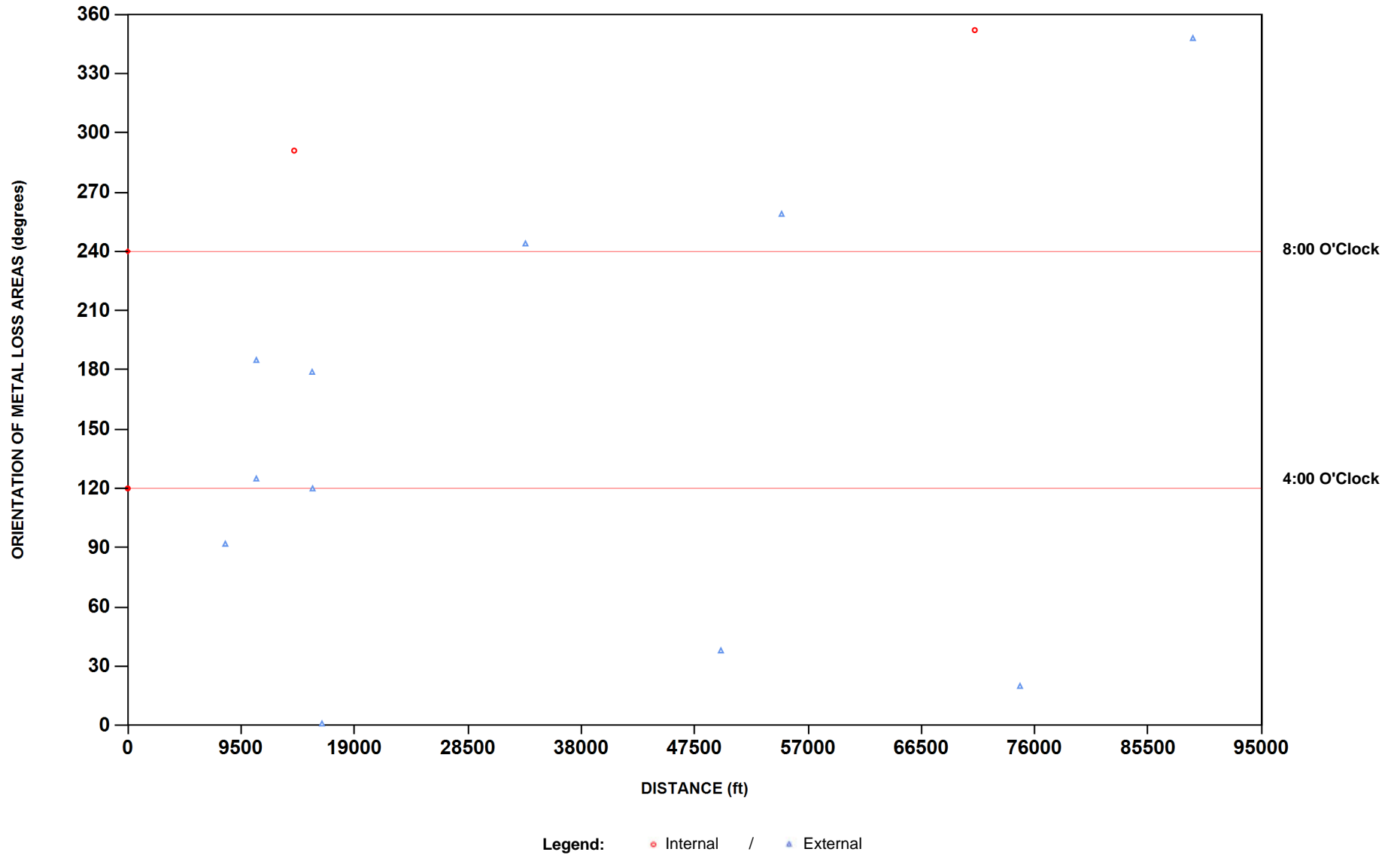
Metal Loss Depth Graph

Metal Loss Depth Graph





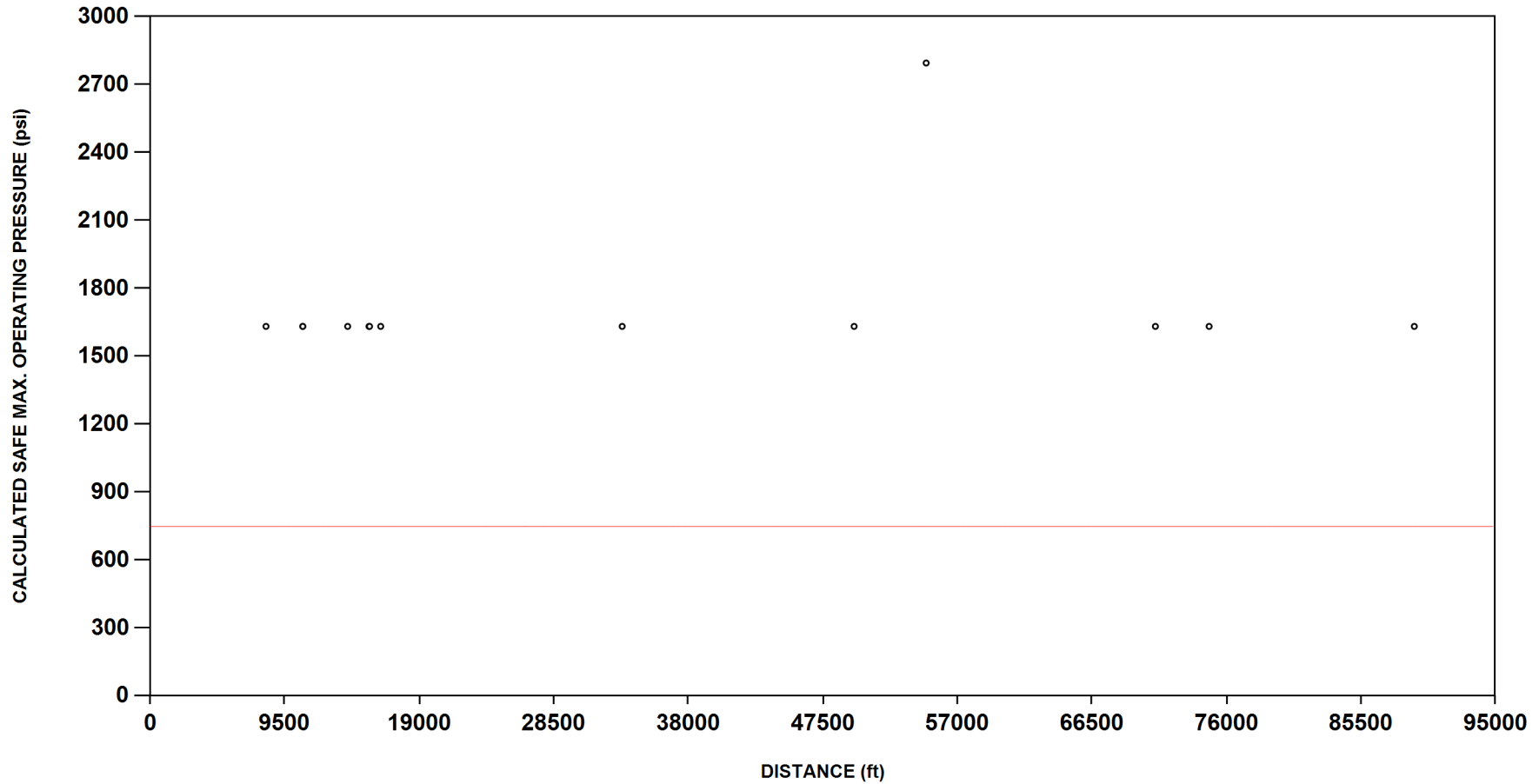
Metal Loss Orientation Graph



Metal Loss Orientation Graph



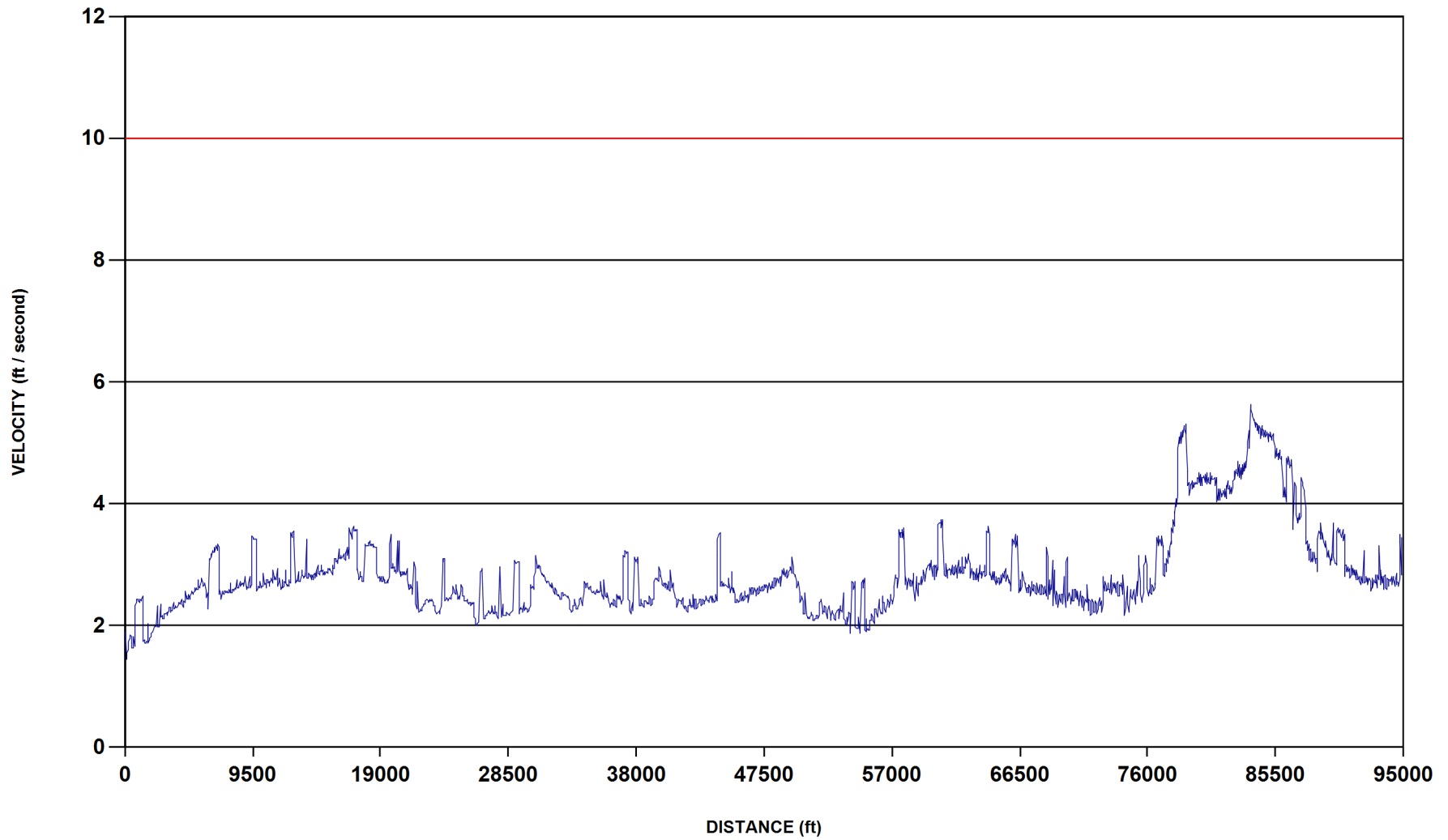
Metal Loss - Calculated Safe Max. Operating Pressure Graph



Metal Loss - Calculated Safe Max. Operating Pressure Graph



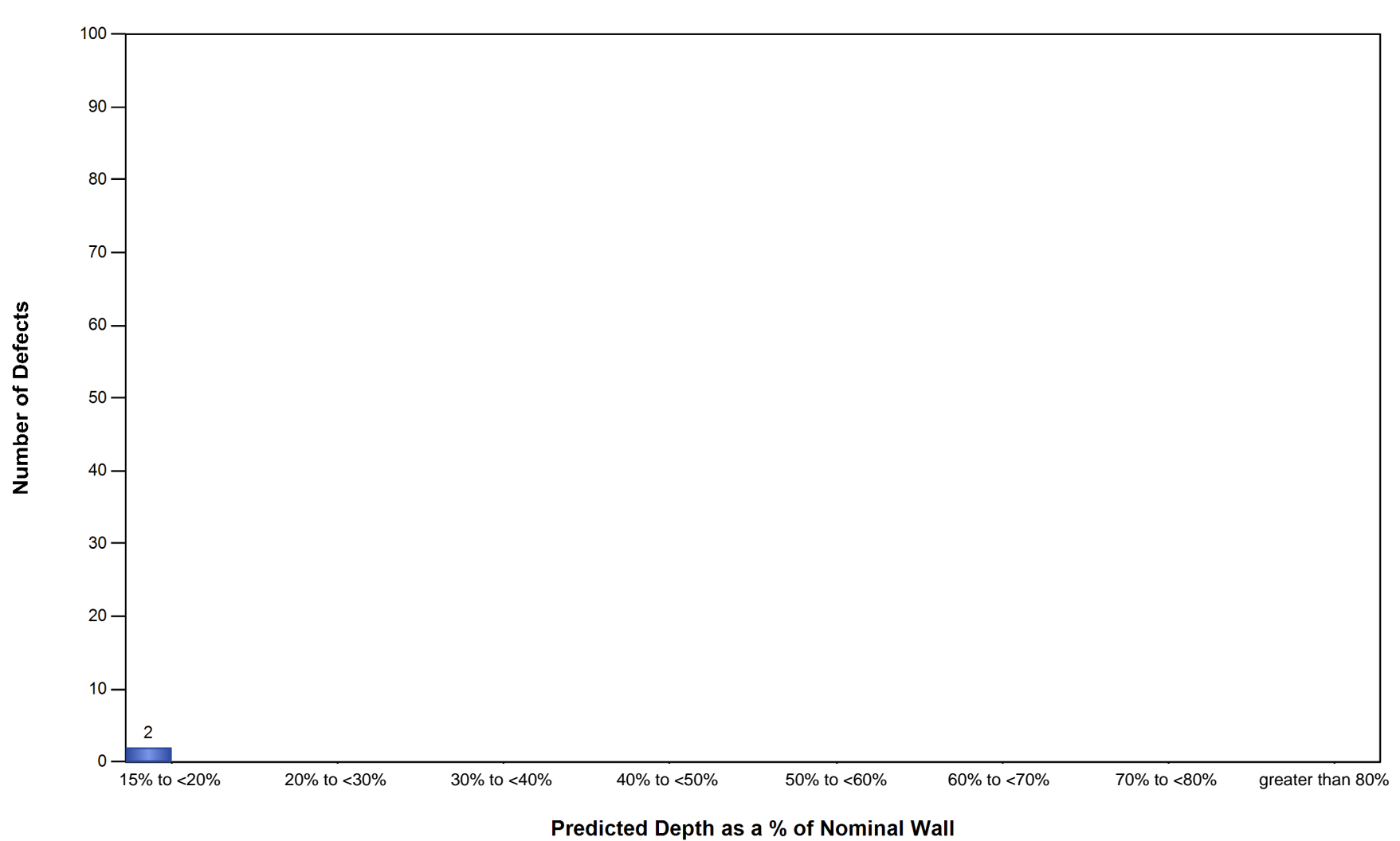
Velocity Graph - MFL



Velocity Graph - MFL



Defect Depth Histogram



Defect Depth Histogram

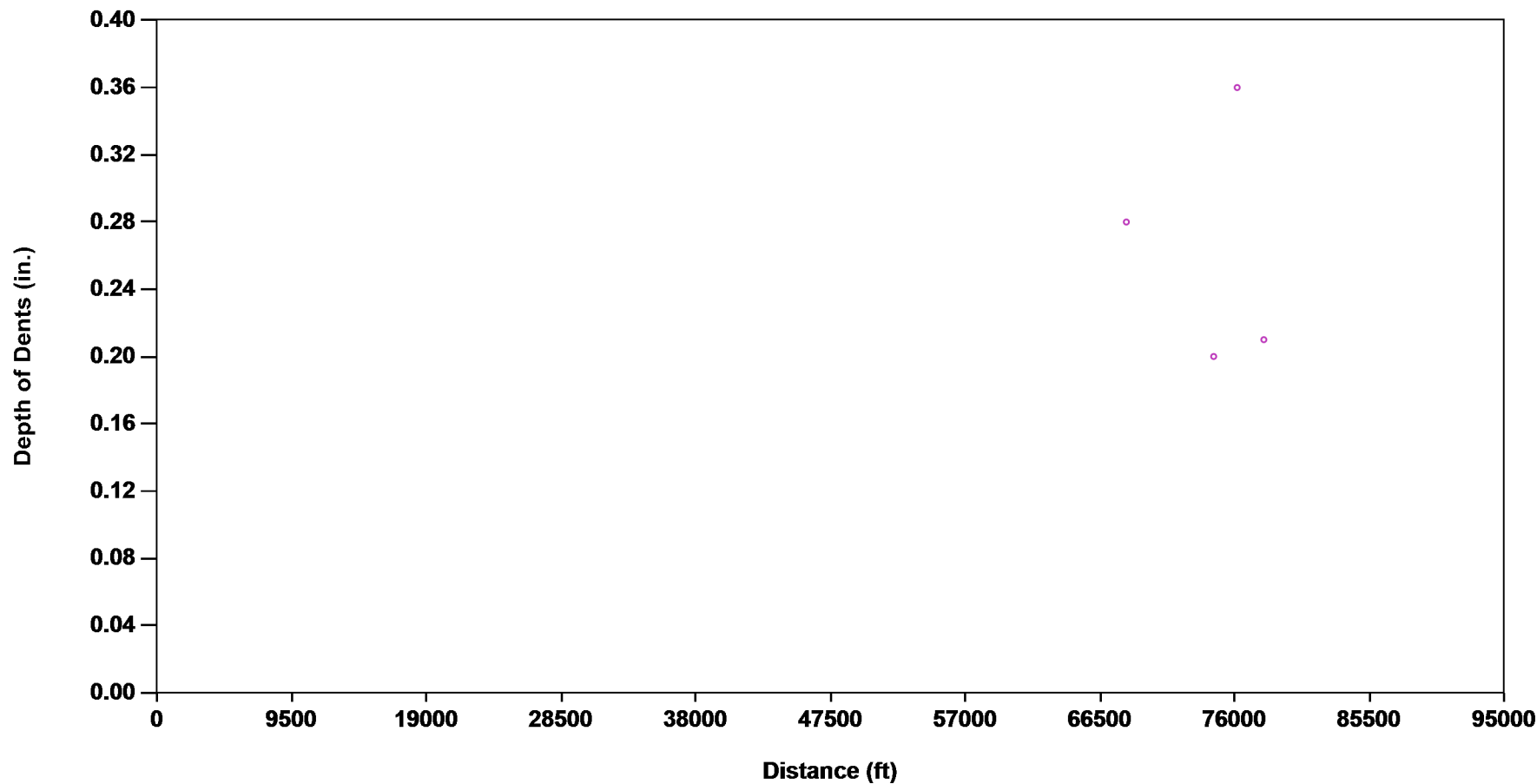
Total Defects: 13

■ Non-Pressure-Reducing Groups

■ Pressure-Reducing Groups (where $P' < P$)



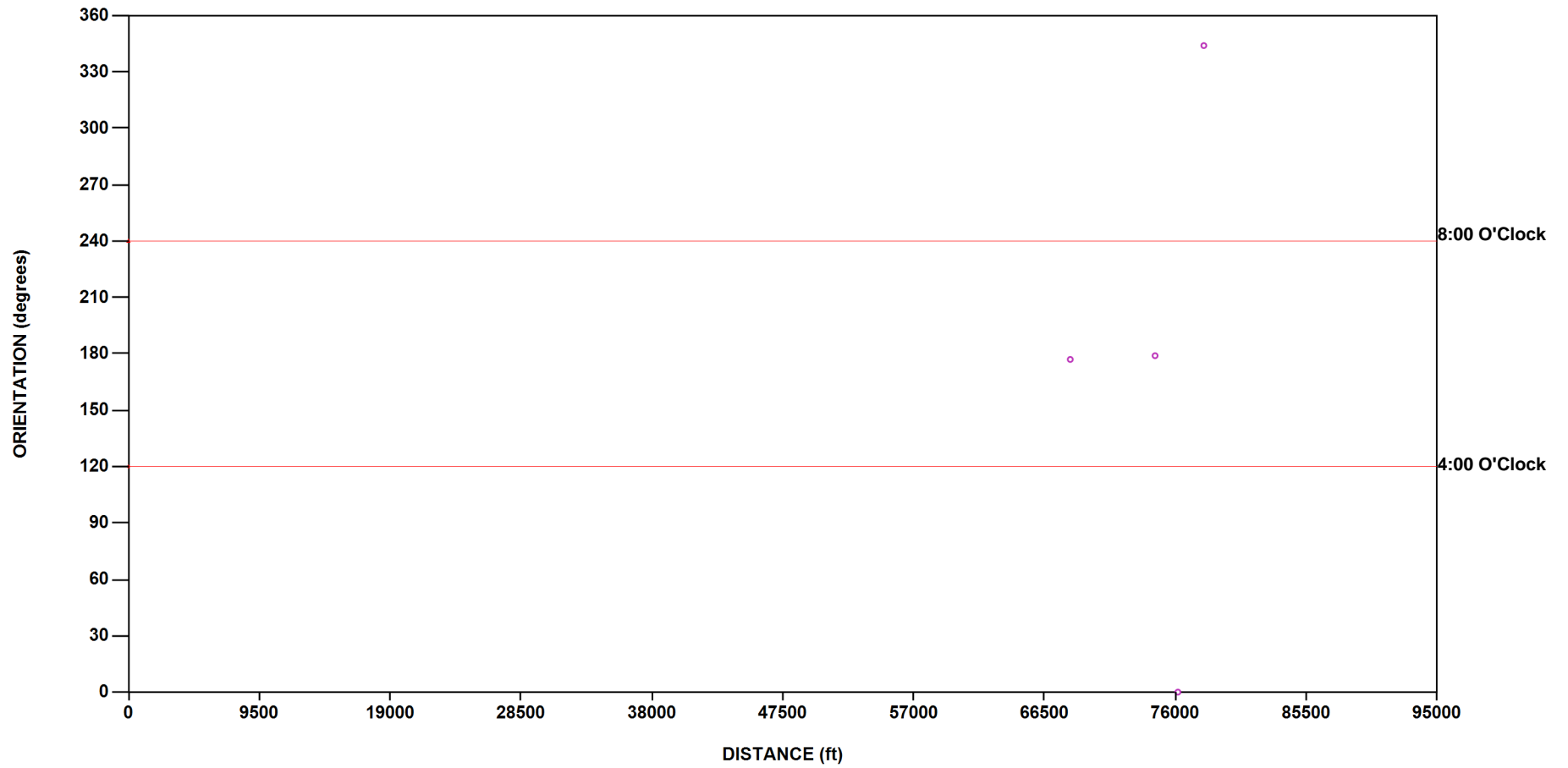
Dent Depth Graph



Dent Depth Graph



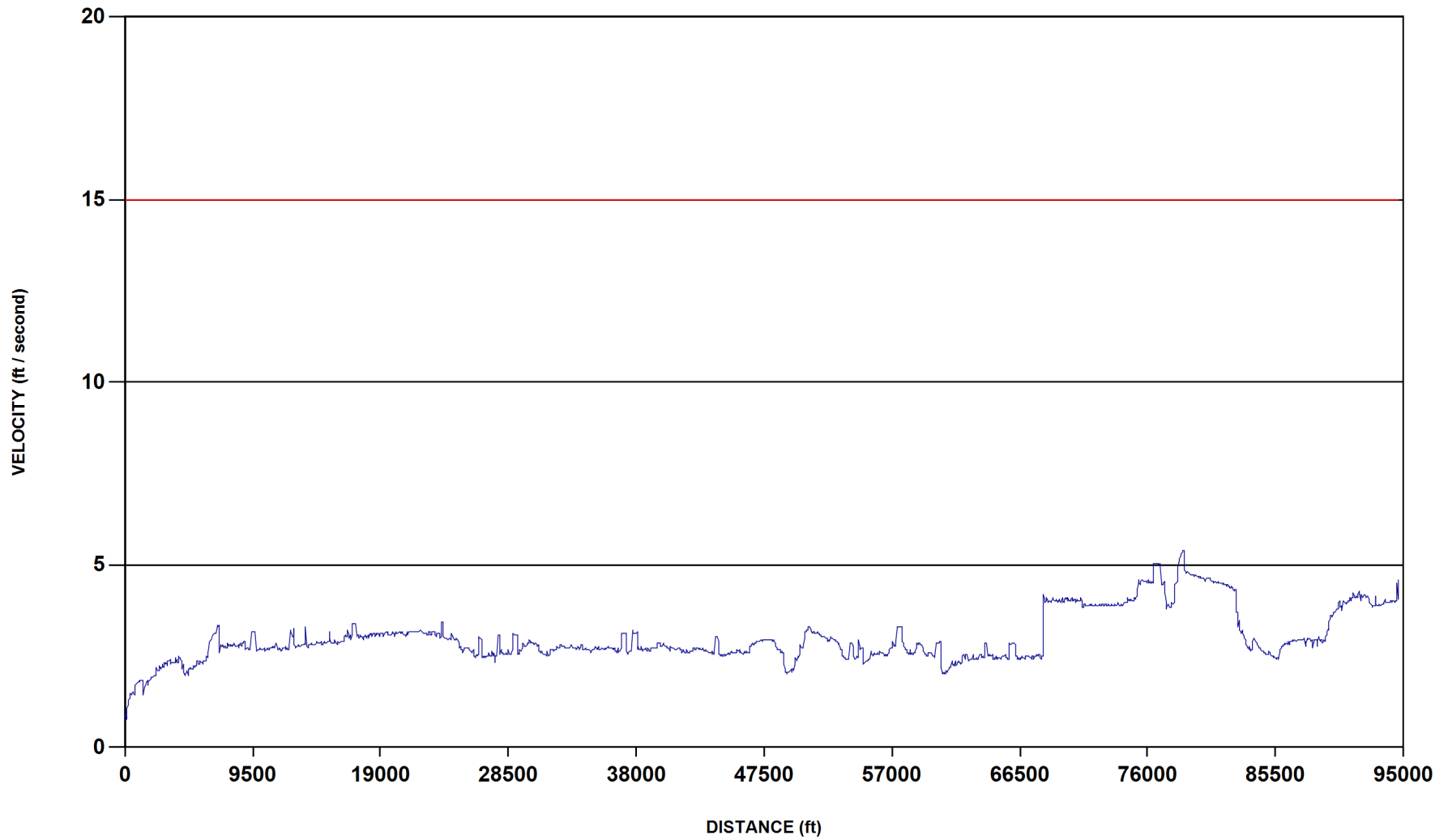
Dent Orientation Graph



Dent Orientation Graph



Velocity Graph - DEF



Velocity Graph - DEF



Locations Summary

DEFINITIONS

A location is a feature in the pipeline that can be used to correlate the inspection tool data to above ground references. Common location features include valves, fittings, flanges, tees, casings, repairs and aboveground markers (AGMs).

For example, a metal loss area could be referenced as being 200 feet down stream from a valve. Not all locations can be easily found from above ground. Some locations might not be useful if they are not above ground.

ID#	Each location is automatically assigned a number in the software. This number is provided to assist the user of PIGTRAP software to more easily find any given defect.
Time	A reference time from the inspection tool. May also be used to locate features in the PIGTRAP software.
Distance	Given in either feet or meters, based on contractual agreements, this is the absolute distance measured by the tool from launch.
Joint #	This unique number identifies the girth weld number.
U/S Weld Dist.	The distance to the upstream (U/S) weld (in feet or meters).
D/S Weld Dist.	The distance to the downstream (D/S) weld (in feet or meters).
Description	Describes the location in greater detail. Possible entries include valves, flanges, fittings, tees, markers, etc.
Latitude	This shows the north/south position of the Location as supplied by the customer or recorded by an AGM box. For XYZ mapping runs, these values are the supplied survey points or were calculated by the tool.
Longitude	This shows the east/west position of the Location as supplied by the customer or recorded by an AGM box. For XYZ mapping runs, these values are the supplied survey points or were calculated by the tool.
Altitude	For XYZ mapping runs, this shows the elevation above sea level of the location as supplied by the customer or calculated by the tool.

Zeros in Latitude and Longitude mean that no data was supplied by the customer. Calculated or estimated values can be viewed in the Pipe Listing report.



Locations Summary

ID#	Time	Dist (ft)	Joint #	U/S Weld	D/S Weld	Description	Latitude	Longitude	Altitude
				Dist.	Dist.				
10000001	3,065.66	0.0	110	1.4	1.5	Valve (Launcher), Sta. 0+00, Bethel Injection	48.28431539	-103.81620000	2309.843
10000002	3,066.24	1.1	110	2.5	0.5	Flange	48.28431535	-103.81620347	2309.860
10000003	3,067.44	3.4	120	1.7	2.2	Pipe Support	48.28431536	-103.81621288	2309.900
10000004	3,068.85	6.1	130	0.3	0.9	Tee at 270 deg.	48.28431535	-103.81622419	2309.947
10000005	3,070.05	8.4	140	1.5	1.0	Pipe Support	48.28431535	-103.81623345	2309.979
10000006	3,070.74	9.6	150	0.5	0.5	Flange	48.28431533	-103.81623869	2309.991
10000007	3,072.45	12.9	170	0.2	1.4	Bend down - 45 deg., 3D	48.28431522	-103.81625198	2309.882
10000070	3,075.87	19.7	180	6.0	4.2	Pipe Entering Ground, Bethel Injection -- Survey Point	48.28431526	-103.81627210	2305.324
10000008	3,078.44	24.7	190	0.2	1.4	Bend up - 45 deg., 3D	48.28431532	-103.81628691	2301.938
10000009	3,095.33	57.1	220	0.1	1.4	Bend left - 45 deg., 3D	48.28431299	-103.81641927	2301.625
10000010	3,455.56	658.1	380	0.1	1.1	Bend right - 38 deg., 1.5D	48.28316384	-103.81815666	2288.741
10000011	6,193.19	7,072.3	1,960	0.1	1.4	Bend right-up - 40 deg., 3D	48.27542605	-103.83941388	2282.467
10000012	6,373.69	7,533.3	2,090	0.1	1.1	Bend left - 36 deg., 3D	48.27537949	-103.84129619	2279.917
10000013	6,459.33	7,753.1	2,160	24.1	17.3	AGM 010, Sta. 80+12, Two track -- Han #9128	48.27504857	-103.84204610	2285.528
10000014	6,529.73	7,935.6	2,210	0.1	0.8	Bend left - 28 deg., 1.5D	48.27465663	-103.84249521	2297.889
10000015	8,515.84	13,450.4	3,570	10.1	27.3	AGM 020, Sta. 136+62, ROW -- Han #8802	48.25962296	-103.84260690	2263.771
10000016	8,529.63	13,490.6	3,590	1.0	8.2	Bend right - 90 deg., 6D	48.25951395	-103.84261316	2263.866
10000017	9,575.70	16,589.4	4,360	0.1	0.7	Bend left - 24 deg., 1.5D	48.25735122	-103.85425313	2303.048
10000018	9,578.04	16,597.3	4,380	0.1	1.1	Bend left - 32 deg., 3D	48.25733245	-103.85426960	2303.193
10000019	9,767.22	17,252.6	4,550	0.1	1.4	Bend right - 45 deg., 3D	48.25554207	-103.85430054	2314.587
10000020	10,534.28	19,538.0	5,030	0.1	0.8	Bend left - 25 deg., 3D	48.25216201	-103.86209234	2332.966
10000021	10,654.37	19,898.2	5,120	0.1	1.0	Bend left-up - 30 deg., 3D	48.25134278	-103.86290590	2322.896
10000022	11,004.69	20,926.4	5,330	43.9	5.7	AGM 030, Sta. 210+54, Two track -- Han #9128	48.24854210	-103.86291810	2289.905
10000023	13,189.41	26,235.9	6,440	9.7	31.7	AGM 040, Sta. 263+34, Two track -- Han #8802	48.23405682	-103.86294220	2265.690
10000024	13,250.80	26,365.8	6,480	1.0	8.9	Bend right - 90 deg., 7D	48.23370310	-103.86294061	2258.815
10000025	13,321.15	26,570.7	6,540	1.3	8.8	Bend left - 90 deg., 7D	48.23367229	-103.86377405	2260.502
10000026	13,780.36	27,582.4	6,800	0.1	0.9	Bend right - 30 deg., 1.5D	48.23091394	-103.86380804	2250.546
10000027	13,848.86	27,732.0	6,850	0.1	1.3	Bend left - 40 deg., 3D	48.23057304	-103.86414373	2253.218
10000028	14,982.25	30,459.4	7,540	32.4	9.0	AGM 050, Sta. 305+18, Two track -- Han #9128	48.22314126	-103.86382520	2238.427
10000029	15,687.77	32,378.7	8,020	1.2	8.3	Bend right - 90 deg., 8D	48.21791335	-103.86384963	2257.186
10000030	16,340.03	33,943.4	8,350	0.1	0.6	Bend left - 21 deg., 1.5D	48.21751634	-103.87020826	2256.841
10000031	17,869.15	37,809.0	9,280	0.0	0.4	Bend left - 18 deg., 1.5D	48.21296584	-103.88443967	2190.219
10000033	18,948.46	40,623.2	9,940	0.1	0.8	Bend left - 27 deg., 1.5D	48.20758470	-103.89262171	2223.304

Locations Summary



Locations Summary

ID#	Time	Dist (ft)	Joint #	U/S Weld	D/S Weld	Description	Latitude	Longitude	Altitude
				Dist.	Dist.				
10000034	20,404.67	44,161.0	10,770	14.6	27.7	AGM 070, Sta. 441+33, 54th St. NW -- Han #9128	48.19793885	-103.89295370	2194.836
10000035	22,407.23	49,438.7	11,970	5.1	31.9	AGM 080, Sta. 493+79, Two track -- Survey Point	48.18354472	-103.89204120	2213.038
10000036	24,837.72	54,958.7	13,230	33.9	8.4	AGM 090, Sta. 548+52, 52nd St. NW -- Han #9128	48.16872701	-103.88990230	2199.108
10000037	25,943.18	57,488.6	13,860	0.1	1.2	Bend left - 40 deg., 1.5D	48.16245242	-103.88559721	2193.513
10000038	26,074.36	57,946.5	13,990	0.1	1.4	Bend right - 45 deg., 3D	48.16183441	-103.88398027	2198.487
10000039	26,077.21	57,954.6	14,010	0.0	0.4	Bend right - 21 deg., 1.5D	48.16181273	-103.88397031	2198.555
10000040	26,966.87	60,409.9	14,570	0.1	1.4	Bend right - 45 deg., 11D	48.15511008	-103.88396655	2212.045
10000041	27,070.45	60,791.1	14,670	14.1	8.1	AGM 100, Sta. 608+00, CR 1A -- Han #100	48.15438171	-103.88507310	2219.852
10000042	27,072.92	60,800.0	14,680	0.1	1.5	Bend left - 45 deg., 3D	48.15436463	-103.88509824	2220.742
10000043	28,987.34	66,365.6	15,950	0.1	0.9	Bend left - 30 deg., 1.5D	48.13992438	-103.89065179	2273.205
10000044	29,309.50	67,214.9	16,130	18.5	30.9	AGM 110, Sta. 671+61, Gravel Rd -- Han #8043	48.13760747	-103.89061520	2246.424
10000045	29,769.92	68,419.4	16,380	0.1	0.9	Tee on top of pipe	48.13432387	-103.89059230	2223.586
10000046	31,034.96	71,603.7	17,150	35.9	5.4	AGM 120, Sta. 715+12, ROW -- Han #8802	48.12564495	-103.89067570	2187.417
10000047	32,046.73	74,135.2	17,780	0.1	0.4	Bend left - 16 deg., 1.5D	48.11873906	-103.89076717	2139.262
10000048	32,350.41	74,869.5	17,980	0.1	0.5	Bend right - 26 deg., 1.5D	48.11683053	-103.88989600	2107.373
10000049	33,256.70	77,391.3	18,570	14.2	33.5	AGM 130, Sta. 773+20, ROW -- Han #8043	48.11011012	-103.88825360	2095.424
10000050	33,436.46	77,992.0	18,700	0.1	0.8	Bend right - 25 deg., 18D	48.10854795	-103.88751935	2121.715
10000051	34,631.21	83,291.8	19,830	17.7	32.0	AGM 140, Sta. 832+34, ROW -- Han #8802	48.09428754	-103.89082070	2113.256
10000052	35,169.55	86,030.7	20,390	0.1	1.5	Bend left - 45 deg., 3D	48.08695444	-103.89290315	2030.711
10000053	35,340.90	86,793.0	20,560	0.1	0.6	Bend left - 21 deg., 29D	48.08522866	-103.89116536	2016.703
10000054	35,566.63	87,700.3	20,760	0.1	1.1	Bend right - 36 deg., 3D	48.08394068	-103.88803443	2021.019
10000055	35,842.19	88,580.8	20,950	10.2	31.1	AGM 150, Sta. 884+39, ROW -- Han #8043	48.08164430	-103.88783100	2026.008
10000056	36,223.24	89,837.7	21,210	0.1	0.9	Bend left - 32 deg., 1.5D	48.07885771	-103.89081166	2001.033
10000057	36,776.03	91,543.0	21,580	0.1	1.0	Bend left - 32 deg., 3D	48.07423253	-103.89139668	1980.675
10000058	36,918.96	91,938.9	21,680	0.1	0.7	Bend left - 21 deg., 3D	48.07329762	-103.89059289	1997.832
10000059	37,373.68	93,193.4	21,960	1.4	8.4	Bend right - 90 deg., 6D	48.07178577	-103.88605327	2109.320
10000060	37,623.05	93,882.3	22,110	0.1	0.8	Bend left - 24 deg., 3D	48.06995545	-103.88669655	2089.176
10000061	37,975.45	94,878.8	22,340	0.1	1.4	Bend up - 45 deg., 3D	48.06742669	-103.88525037	2092.487
10000071	37,977.68	94,886.6	22,350	7.0	4.0	Pipe Exiting Ground, Bainville Injection -- Han #8539	48.06741327	-103.88523910	2098.000
10000062	37,979.05	94,891.4	22,360	0.1	1.5	Bend down - 45 deg., 3D	48.06740499	-103.88523252	2100.919
10000063	37,979.99	94,894.6	22,380	0.5	0.5	Flange	48.06739735	-103.88522659	2100.942
10000064	37,980.37	94,896.0	22,390	0.8	1.9	Pipe Support	48.06739407	-103.88522405	2100.919
10000065	37,981.01	94,898.4	22,400	0.3	0.9	Tee at 90 deg.	48.06738858	-103.88521988	2100.881

Locations Summary



Locations Summary

ID#	Time	Dist (ft)	Joint #	U/S Weld Dist.	D/S Weld Dist.	Description	Latitude	Longitude	Altitude
10000066	37,981.80	94,901.1	22,410	2.0	1.9	Pipe Support	48.06738218	-103.88521493	2100.829
10000067	37,982.43	94,903.3	22,420	0.5	2.7	Flange	48.06737701	-103.88521091	2100.799
10000068	37,982.74	94,904.4	22,420	1.5	1.6	Valve (Receiver), Sta. 950+39, Bainville Injection	48.06737463	-103.88520910	2100.771

Locations	Number
Bend	40
Casing	0
Flange	6
Fitting	0
Marker	16
Repair	0
Tee	3
Valve	2
Pipe Support	4

Locations Summary



Casings Summary

DEFINITIONS

A casing is a section of larger diameter pipe through which the pipeline passes. Usually installed to protect a pipeline from excessive external loading, casings can also shield pipelines from protective cathodic protection currents. Therefore, the condition of a pipeline inside a casing can provide valuable information.

TDW MFL tools detect when a casing is not centered around the pipeline. These casings are referred to as being eccentric. The closer the casing is to the pipeline, the stronger the signal seen by the inspection tool. The tool will not detect if the casing is shorted to the pipe wall. The tool might see evidence of a short, such as metal loss.

This information may be useful in updating pipeline databases and alignment sheets.

Sometimes spacers are identified inside casings. These are mechanical devices used to center the pipeline inside the casing and are not considered harmful.

ID#	Each location is automatically assigned a number in the software. This number is provided to assist the user of PIGTRAP software to more easily find any given defect.
Time	A reference time from the inspection tool. May also be used to locate features in the PIGTRAP software.
Distance Start, End	Given in either feet or meters, this is the absolute distance measured by the tool from launch to the beginning and ending of the casing.
Casing Length	The total predicted casing length (in feet or meters).
Eccentric (side)	Identifies one of four conditions associated with the casing: 1- no eccentricity (blank); 2- eccentric on upstream side (upstream); 3- eccentric on downstream side (downstream); 4- eccentric on both ends (both)
# of Metal Loss in Casing	Provides the number of metal loss groups identified inside the casing.
Max. Depth of Metal Loss	If metal loss is identified inside the casing, this column provides the maximum predicted depth of all metal loss features.
Above Ground References	The name of the closest upstream and downstream references, usually an Aboveground Marker or a Valve.
Distance from Start/Upstream Side of Casing	The distance from the Aboveground Reference (AGM or Valve) to the start (upstream) side of the casing.



Casings Summary

ID#	Time	Distance (ft) Start	Distance (ft) End	Casing Length (ft)	Eccentric (side)	# of Metal Loss in Casing	Max. Depth of Metal Loss	Above Ground References	Distance from Start/Upstream Side of Casing
No Casings appear in this pipeline inspection									

Casings Summary



Deformation Summary

DEFINITIONS

The Deformation Summary Report lists all the deformations and dents detected during the inspection, sorted by depth of deformation (descending)

Dents may affect the integrity of the pipeline and are considered harmful. A dent with associated metal loss is potentially more significant than a dent alone.

ID#	Each Deformation is automatically assigned a number in the software. This number is provided to assist the user of PIGTRAP software to more easily find any given defect.
Distance	Given in either feet or meters, based on contractual agreements, this is the absolute distance measured by the tool from launch.
Depth	Depth of the indication in inches or mm.
Orientation	The orientation of the deformation indication in degrees (top of pipe = 0) and clock position, as viewed facing downstream.
Sub Type	The sub type of deformation if other than dent (i.e. Heavy Weld, Ovality, Buckle, Expansion).
Min X Sec Dia	The minimum measured Cross-Section (ID) measured within the scope of the deformation.
Description	Text describing a deformation in greater detail. Any special conditions are noted.
On Weld	Determination whether the indication crosses a girth (or seam) weld.
Metal Loss	"Yes" is listed if there is any metal loss associated with a dent.
Above-Ground References	The name of the closest upstream and downstream references, usually either an AGM or a valve.
Distance from Defect	The distance to the upstream and downstream reference listed in the previous column. Used for locating defects in the field.



Deformation Summary

ID#	Distance (ft)	Depth (in)	Depth %	Orientation (Deg / O'Clock)	Sub Type	Min X Sec Dia	Description	On Metal Weld Loss	Above-Ground References	Distance from Defect
14000002	76,187.1	0.36	4.5%	0 12:00		7.79	TDW Correlated Deformation		U/S: AGM 120, Sta. 715+12, ROW -- Han #8802 D/S: AGM 130, Sta. 773+20, ROW -- Han #8043	4583.22 1204.31
14000000	68,371.5	0.28	3.5%	177 5:45		8.10	TDW Correlated Deformation		U/S: AGM 110, Sta. 671+61, Gravel Rd -- Han #8043 D/S: AGM 120, Sta. 715+12, ROW -- Han #8802	1156.38 3232.41
14000003	78,068.4	0.21	2.6%	344 11:15		7.97	TDW Correlated Deformation		U/S: AGM 130, Sta. 773+20, ROW -- Han #8043 D/S: AGM 140, Sta. 832+34, ROW -- Han #8802	677.05 5223.46
14000001	74,529.9	0.20	2.5%	179 5:45		8.12	TDW Correlated Deformation		U/S: AGM 120, Sta. 715+12, ROW -- Han #8802 D/S: AGM 130, Sta. 773+20, ROW -- Han #8043	2925.89 2861.64

Type	Number
DENT	4

Deformation Summary



Gains (Metal in Close Proximity)

DEFINITIONS

The inspection tool may detect ferrous metal objects located close to or touching the pipeline. They appear as additional metal added to the pipe, and are referred to as gains. This table identifies gains detected during the inspection.

Clamps or anchors around the pipeline are considered gains. Some metal objects can be potentially harmful to the pipeline. They can damage the pipeline's protective coating, or over time may dent or cause damage to the pipeline.

ID#	Each location is automatically assigned a number in the software. This number is provided to assist the user of PIGTRAP software to more easily find any given defect.
Distance	Given in either feet or meters, based on contractual agreements, this is the absolute distance measured by the tool from launch.
Length	The measured length of the gain measured in feet or meters.
Width	The measured width of the gain measured in inches or millimeters. When full circumference, this is usually typical of a clamp or banding around the circumference of the pipeline.
Depth in Gauss	The difference in gauss reading (magnetic strength) at the gain. The greater the number, the greater the mass of the object, or the closer the proximity to the pipeline, or both. This table is sorted with highest depth in gauss listed in a descending order.
Orientation: Degrees / O'Clock	The distance from launch is plotted against the orientation of the defect. Orientation is based on 360 degrees in a circle, with 0 / 360 degrees marking the top of the pipe (180 degrees the bottom).
Joint #	This unique number identifies the girth weld number.
U/S Weld Dist.	The distance to the upstream (U/S) weld (in feet or meters).
D/S Weld Dist.	The distance to the downstream (D/S) weld (in feet or meters).



Gains (Metal in Close Proximity)

ID#	Distance (ft)	Length (in)	Width (in)	Depth in Gauss	Orientation		Joint #	U/S Weld Dist.	D/S Weld Dist.
					Degrees	/ O'Clock			
13000002	53972.23	2.71	9.77	97	300 to 80	9:45 to 2:30	12980	34.4	6.8
13000000	42392.49	3.30	4.89	67	90 to 160	3:00 to 5:15	10340	18.0	23.4
13000001	53971.76	0.71	2.09	38	330 to 360	11:00 to 11:45	12980	34.0	7.1

Total Number of Gains

3



Nominal Wall Thickness

DEFINITIONS

The following list provides locations along the pipeline where changes in wall thickness or pipe type occur. While the TDW inspection tool can easily detect changes in wall thickness, it cannot take direct thickness measurements. Therefore, where wall thicknesses are known, the tool can identify the locations where the thickness changes. Where wall thicknesses are not known, best efforts will be made to estimate thicknesses based on best available data.

ID#	Each wall thickness change ID is automatically assigned a number in the software. This number is provided to assist the user of PIGTRAP software to more easily find any given defect.
Distance	Given in either feet or meters, based on contractual agreements, this is the absolute distance measured by the tool from launch.
Wall Thickness	The predicted wall thickness in inches or millimeters.
Pipetype	Type of pipe construction. Electric Resistance Weld (ERW), Seamless (SMLS), Lap Weld (LW), etc.
Yield Strength (SMYS)	Specified Minimum Yield Strength – A required strength level that measured yield stress of a pipe material must exceed, which is a function of pipe grade. The measured yield stress is the tensile stress required to produce a total elongation of 0.5 percent of a gage length as determined by an extensometer during a tensile test.
Safety Factor	(or design factor) Typically 0.72 per ASME B31.4 In setting the safety factor, due consideration has been given to and allowances made for the manufacturing tolerance and maximum allowable depth of imperfections provided for in the specifications.
Length of Segment	The length of the pipe for the specified wall thickness, measured in feet or meters.



Nominal Wall Thickness

ID#	Distance (ft)	Wall Thickness (in)	Pipetype	Yield Strength (SMYS)	Safety Factor	Length of Segment (ft)
11000000	-1.48	0.322	ERW	52000	0.72	69.18
11000001	67.70	0.188	ERW	52000	0.72	662.4
11000002	730.11	0.322	ERW	52000	0.72	633.01
11000003	1363.12	0.188	ERW	52000	0.72	4870.99
11000004	6234.11	0.322	ERW	52000	0.72	759.49
11000005	6993.60	0.188	ERW	52000	0.72	2417.51
11000006	9411.11	0.322	ERW	52000	0.72	353.71
11000007	9764.83	0.188	ERW	52000	0.72	2540.21
11000008	12305.04	0.322	ERW	52000	0.72	295.41
11000009	12600.45	0.188	ERW	52000	0.72	885.55
11000010	13485.99	0.322	ERW	52000	0.72	9.24
11000011	13495.23	0.188	ERW	52000	0.72	3443.59
11000012	16938.82	0.322	ERW	52000	0.72	302.64
11000013	17241.46	0.188	ERW	52000	0.72	6344.07
11000014	23585.54	0.322	ERW	52000	0.72	168.81
11000015	23754.35	0.188	ERW	52000	0.72	2606.71
11000016	26361.05	0.322	ERW	52000	0.72	214.63
11000017	26575.68	0.188	ERW	52000	0.72	1178.14
11000018	27753.82	0.322	ERW	52000	0.72	165.52
11000019	27919.34	0.188	ERW	52000	0.72	976
11000020	28895.35	0.322	ERW	52000	0.72	379.89
11000021	29275.24	0.188	ERW	52000	0.72	7736.31
11000022	37011.54	0.322	ERW	52000	0.72	365.27
11000023	37376.81	0.188	ERW	52000	0.72	431.86
11000024	37808.67	0.322	ERW	52000	0.72	371.27
11000025	38179.94	0.188	ERW	52000	0.72	5798.61
11000026	43978.56	0.322	ERW	52000	0.72	252.12
11000027	44230.68	0.188	ERW	52000	0.72	9768.06
11000028	53998.74	0.322	ERW	52000	0.72	253.16
11000029	54251.90	0.188	ERW	52000	0.72	419.73
11000030	54671.63	0.322	ERW	52000	0.72	306.61
11000031	54978.23	0.188	ERW	52000	0.72	2509.65
11000032	57487.89	0.322	ERW	52000	0.72	445.69
11000033	57933.58	0.188	ERW	52000	0.72	2475.53
11000034	60409.11	0.322	ERW	52000	0.72	391.62
11000035	60800.73	0.188	ERW	52000	0.72	3227.01
11000036	64027.74	0.322	ERW	52000	0.72	208.94
11000037	64236.68	0.188	ERW	52000	0.72	1656.01
11000038	65892.69	0.322	ERW	52000	0.72	473.3
11000039	66365.99	0.188	ERW	52000	0.72	10267.95

Nominal Wall Thickness



Nominal Wall Thickness

ID#	Distance (ft)	Wall Thickness (in)	Pipetype	Yield Strength (SMYS)	Safety Factor	Length of Segment (ft)
11000040	76633.94	0.322	ERW	52000	0.72	555.97
11000041	77189.91	0.188	ERW	52000	0.72	1044.7
11000042	78234.61	0.322	ERW	52000	0.72	691.2
11000043	78925.81	0.188	ERW	52000	0.72	15780.77
11000044	94706.58	0.322	ERW	52000	0.72	111.71
11000045	94818.29	0.188	ERW	52000	0.72	45.28
11000046	94863.57	0.322	ERW	52000	0.72	40.81

Nominal Wall Thickness

Wall Thickness	Pipetype	Total Length (ft)	Total Length (miles)	Percent of Total Distance
0.188	ERW	87,087	16.494	91.8%
0.322	ERW	7,819	1.481	8.2%



Repair Report

DEFINITIONS

This table lists all the repairs to the pipeline detected during the inspection.

Pipeline repairs that are typically detected include:

- Sleeves
- Half sole
- Patches
- Stopples
- Clamps
- Weld + End
- Clock Spring

ID# Each repair is automatically assigned a number in the software. This number is provided to assist the user of PIGTRAP software to more easily find any given defect.

Distance Given in either feet or meters, based on contractual agreements, this is the absolute distance measured by the tool from launch.

Length Gives the linear length of the repair.

Type of Repair Describes the type of repair detected during the inspection.



Repair Report

ID#	Distance (ft)	Length (ft)	Type of Repair
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No Repairs have been detected on this pipeline inspection

Repair Report



AGM Information Summary

DEFINITIONS

This table includes all values and above ground marker sites in the inspection run.

ID#	Each location is automatically assigned a number in the software. This number is provided to assist the user of PIGTRAP software to more easily find any given defect.
Time	A reference time from the inspection tool. May also be used to locate features in the PIGTRAP software.
Distance	Given in either feet or meters, based on contractual agreements, this is the absolute distance measured by the tool from launch.
Description	Describes the AGM in greater detail. Generally includes only valves and markers.
Latitude	This shows the north/south position of the Location as supplied by the customer or recorded by an AGM box. For XYZ mapping runs, these values are the supplied survey points or were calculated by the tool.
Longitude	This shows the east/west position of the Location as supplied by the customer or recorded by an AGM box. For XYZ mapping runs, these values are the supplied survey points or were calculated by the tool.
Altitude	For XYZ mapping runs, this shows the elevation above sea level of the location as supplied by the customer or calculated by the tool.

Zeroes in Latitude and Longitude mean that no data was supplied by the customer. Calculated or estimated values can be viewed in the Pipe Listing report.



AGM Information Summary

AGM Information Summary

ID#	Time	Distance(ft)	Description	Latitude	Longitude	Altitude
10000001	3065.66	0.00	Valve (Launcher), Sta. 0+00, Bethel Injection	48.28431539	-103.81620000	2309.843
10000070	3075.87	19.68	Pipe Entering Ground, Bethel Injection -- Survey Point	48.28431526	-103.81627210	2305.324
10000013	6459.33	7753.15	AGM 010, Sta. 80+12, Two track -- Han #9128	48.27504857	-103.84204610	2285.528
10000015	8515.84	13450.38	AGM 020, Sta. 136+62, ROW -- Han #8802	48.25962296	-103.84260690	2263.771
10000022	11004.69	20926.36	AGM 030, Sta. 210+54, Two track -- Han #9128	48.24854210	-103.86291810	2289.905
10000023	13189.41	26235.93	AGM 040, Sta. 263+34, Two track -- Han #8802	48.23405682	-103.86294220	2265.690
10000028	14982.25	30459.42	AGM 050, Sta. 305+18, Two track -- Han #9128	48.22314126	-103.86382520	2238.427
10000034	20404.67	44160.97	AGM 070, Sta. 441+33, 54th St. NW -- Han #9128	48.19793885	-103.89295370	2194.836
10000035	22407.23	49438.74	AGM 080, Sta. 493+79, Two track -- Survey Point	48.18354472	-103.89204120	2213.038
10000036	24837.72	54958.71	AGM 090, Sta. 548+52, 52nd St. NW -- Han #9128	48.16872701	-103.88990230	2199.108
10000041	27070.45	60791.07	AGM 100, Sta. 608+00, CR 1A -- Han #100	48.15438171	-103.88507310	2219.852
10000044	29309.50	67214.92	AGM 110, Sta. 671+61, Gravel Rd -- Han #8043	48.13760747	-103.89061520	2246.424
10000046	31034.96	71603.72	AGM 120, Sta. 715+12, ROW -- Han #8802	48.12564495	-103.89067570	2187.417
10000049	33256.70	77391.25	AGM 130, Sta. 773+20, ROW -- Han #8043	48.11011012	-103.88825360	2095.424
10000051	34631.21	83291.76	AGM 140, Sta. 832+34, ROW -- Han #8802	48.09428754	-103.89082070	2113.256
10000055	35842.19	88580.82	AGM 150, Sta. 884+39, ROW -- Han #8043	48.08164430	-103.88783100	2026.008
10000071	37977.68	94886.57	Pipe Exiting Ground, Bainville Injection -- Han #8539	48.06741327	-103.88523910	2098.000
10000068	37982.74	94904.38	Valve (Receiver), Sta. 950+39, Bainville Injection	48.06737463	-103.88520910	2100.771

TYPE	NUMBER
Valves	2
Markers	16



Miscellaneous

DEFINITIONS

There are occasions when special notations or circumstances require the addition of a note. These notes are included in this table for your reference.

ID#	Each miscellaneous note is automatically assigned a number in the software. This number is provided to assist the user of PIGTRAP software to more easily find any given defect.
Time	A reference time from the inspection tool. May also be used to locate features in the PIGTRAP software.
Distance	Given in either feet or meters, based on contractual agreements, this is the absolute distance measured by the tool from launch.
Memo	A description of the entry.

MEMO EXAMPLES

Gap or dent in casing	When the casing is not welded, or when a gap occurs in the weld, this signature is detected by the tool, and identified with a Misc. remark.
Inclusion	An anomaly in the cross section of the pipeline. Inclusions may be detrimental if they protrude through the pipe wall.
Mill anomaly	The process of manufacturing pipe can often leave indications in the pipe wall. Typically these anomalies are not detrimental, and are identified for the benefit of the client.
Sensor problems	Noting locations where anomalous sensor readings occurred.
Tool stops/starts	All tools are setup on a time-based system. When the tool stops, it continues to record, although not moving. When the tool moves very slowly, it is possible that its movement is not detected, and therefore, reported distances may appear shorter than actual. Many stops and starts may affect the overall distance accuracy of the tool.



Miscellaneous

Miscellaneous

ID#	Time	Distance (ft)	Memo
12000000	273.29	-27.37	Begin Run Tickle
12000001	9,608.17	16,692.18	Debris @ 12:00
12000002	39,272.99	94,952.43	End Run Tickle

Total	Number
Misc listings	3



Other Anomalies

DEFINITIONS

This Report lists anomalies that appear in the data which do not fall into typical metal loss categories. Examples range from manufacturing/mill anomalies in the pipe body and seam weld to construction-related and girth weld anomalies. Predicted wall loss depth estimations as well as pressure calculations are not generally applicable to these features and therefore these values do not appear in this table.

ID#	Each item is automatically assigned a number in the software. This number is provided to assist the user of PIGTRAP software to more easily find any given defect.
Feature Description / Comments	Classification of the feature along with any additional comments if applicable.
Dist (ft)	Given in either feet or meters, based on contractual agreements, this is the absolute distance from launch.
Length (in)	Predicted length of the defect, reported in either inches or millimeters.
Width (in)	Predicted width of the defect, reported in either inches or millimeters.
Gauss Delta	The difference between high and low gauss readings (magnetic strength) at the feature. This table is sorted with the highest gauss listed in a descending order. Gauss delta indicates relative disturbance of the magnetic field at that location and does not necessarily represent relative severity when comparing one feature to another.
ID/OD	Determination whether the defect exists on the inside (INT) or outside (EXT) surface of the pipe.
Anomaly / Seam Orientation	Orientation of both the feature and the seam weld in the joint of pipe is reported in o'clock (12:00 at top of pipe) as viewed looking downstream. If the pipe is determined to be seamless construction and therefore has no seam, "SMLS" will appear. "N/D" will be populated for joints where the seam is not detected.
Aboveground References	The name of the closest upstream and downstream references, usually either an AGM or a Valve.
Distance from Defect	The distance to the upstream and downstream reference listed in the previous column. Used for locating defects in the field.



Other Anomalies

Other Anomalies

ID#	Feature Description/Comments	Dist (ft)	Length	Width	Gauss Delta	ID/OD	Anomaly/Seam Orientation O'clock	Distance from Defect	
								Above-Ground References	
20000011	Seam Variation	39,419.1	0.82	0.54	38	INT	12:15 / N/D	U/S: AGM 050, Sta. 305+18, Two track -- Han #9128	8959.62
								D/S: AGM 070, Sta. 441+33, 54th St. NW - Han #9128	4741.93
20000015	Seam Variation	50,910.1	0.82	0.68	39	EXT	7:15 / N/D	U/S: AGM 080, Sta. 493+79, Two track -- Survey Point	1471.28
								D/S: AGM 090, Sta. 548+52, 52nd St. NW -- Han #9128	4048.69
20000036	Seam Variation	83,652.7	0.35	0.33	32	INT	6:00 / N/D	U/S: AGM 140, Sta. 832+34, ROW -- Han #8802	360.97
								D/S: AGM 150, Sta. 884+39, ROW -- Han #8043	4928.09
20000013	Seam Variation	41,009.9	0.47	0.45	27	EXT	7:30 / N/D	U/S: AGM 050, Sta. 305+18, Two track -- Han #9128	10550.46
								D/S: AGM 070, Sta. 441+33, 54th St. NW - Han #9128	3151.09
20000018	Seam Variation	51,552.2	0.71	0.58	29	INT	9:30 / N/D	U/S: AGM 080, Sta. 493+79, Two track -- Survey Point	2113.44
								D/S: AGM 090, Sta. 548+52, 52nd St. NW -- Han #9128	3406.53
20000012	Seam Variation	39,454.7	0.47	0.41	26	INT	12:30 / N/D	U/S: AGM 050, Sta. 305+18, Two track -- Han #9128	8995.29
								D/S: AGM 070, Sta. 441+33, 54th St. NW - Han #9128	4706.25
20000001	Seam Variation	6,108.4	0.47	0.41	34	EXT	11:00 / N/D	U/S: Pipe Entering Ground, Bethel Injection -- Survey Point	6088.69
								D/S: AGM 010, Sta. 80+12, Two track -- Han #9128	1644.77
20000034	Seam Variation	83,395.4	0.71	0.52	26	INT	10:15 / N/D	U/S: AGM 140, Sta. 832+34, ROW -- Han #8802	103.58
								D/S: AGM 150, Sta. 884+39, ROW -- Han #8043	5185.47
20000030	Seam Variation	79,520.4	0.47	0.37	24	EXT	6:30 / N/D	U/S: AGM 130, Sta. 773+20, ROW -- Han #8043	2129.13
								D/S: AGM 140, Sta. 832+34, ROW -- Han #8802	3771.38
20000031	Seam Variation	79,740.1	0.71	0.61	33	INT	6:15 / N/D	U/S: AGM 130, Sta. 773+20, ROW -- Han #8043	2348.81
								D/S: AGM 140, Sta. 832+34, ROW -- Han #8802	3551.70



Other Anomalies

Other Anomalies

ID#	Feature Description/Comments	Dist (ft)	Length	Width	Gauss Delta	ID/OD	Anomaly/Seam Orientation O'clock	Above-Ground References		Distance from Defect
								U/S:	D/S:	
20000027	Seam Variation	76,601.2	1.18	0.53	23	INT	8:15 / N/D	AGM 120, Sta. 715+12, ROW -- Han #8802	4997.39	
								AGM 130, Sta. 773+20, ROW -- Han #8043	790.14	
20000029	Seam Variation	79,519.8	0.82	0.42	17	EXT	6:30 / N/D	AGM 130, Sta. 773+20, ROW -- Han #8043	2128.51	
								AGM 140, Sta. 832+34, ROW -- Han #8802	3772.00	
20000021	Seam Variation	65,725.5	0.59	0.54	25	INT	4:30 / N/D	AGM 100, Sta. 608+00, CR 1A -- Han #100	4934.45	
								AGM 110, Sta. 671+61, Gravel Rd -- Han #8043	1489.40	
20000022	Seam Variation	65,727.6	0.59	0.56	25	INT	4:30 / N/D	AGM 100, Sta. 608+00, CR 1A -- Han #100	4936.45	
								AGM 110, Sta. 671+61, Gravel Rd -- Han #8043	1487.40	
20000033	Seam Variation	83,388.3	0.47	0.50	23	INT	10:30 / N/D	AGM 140, Sta. 832+34, ROW -- Han #8802	96.53	
								AGM 150, Sta. 884+39, ROW -- Han #8043	5192.53	
20000043	Seam Variation	89,808.2	0.47	0.57	27	INT	1:15 / N/D	AGM 150, Sta. 884+39, ROW -- Han #8043	1227.34	
								Pipe Exiting Ground, Bainville Injection -- Han #8539	5078.41	
20000035	Seam Variation	83,652.6	1.18	0.80	25	INT	6:00 / N/D	AGM 140, Sta. 832+34, ROW -- Han #8802	360.74	
								AGM 150, Sta. 884+39, ROW -- Han #8043	4928.31	
20000042	Seam Variation	89,806.9	0.35	0.37	19	EXT	1:15 / N/D	AGM 150, Sta. 884+39, ROW -- Han #8043	1226.08	
								Pipe Exiting Ground, Bainville Injection -- Han #8539	5079.68	
20000038	Seam Variation	85,973.3	0.47	0.56	22	EXT	11:45 / N/D	AGM 140, Sta. 832+34, ROW -- Han #8802	2681.56	
								AGM 150, Sta. 884+39, ROW -- Han #8043	2607.50	
20000032	Seam Variation	82,141.0	0.47	0.45	19	EXT	10:00 / N/D	AGM 130, Sta. 773+20, ROW -- Han #8043	4749.75	
								AGM 140, Sta. 832+34, ROW -- Han #8802	1150.76	



Other Anomalies

ID#	Feature Description/Comments	Dist (ft)	Length	Width	Gauss Delta	ID/OD	Anomaly/Seam Orientation		Above-Ground References	Distance from Defect
								O'clock		
20000028	Seam Variation	78,209.4	0.47	0.44	21	INT	1:00 / N/D	U/S:	AGM 130, Sta. 773+20, ROW -- Han #8043	818.18
								D/S:	AGM 140, Sta. 832+34, ROW -- Han #8802	5082.33
20000025	Seam Variation	74,515.3	0.82	0.92	20	EXT	8:00 / N/D	U/S:	AGM 120, Sta. 715+12, ROW -- Han #8802	2911.54
								D/S:	AGM 130, Sta. 773+20, ROW -- Han #8043	2875.99
20000016	Seam Variation	50,910.3	0.59	0.60	23	EXT	7:15 / N/D	U/S:	AGM 080, Sta. 493+79, Two track -- Survey Point	1471.58
								D/S:	AGM 090, Sta. 548+52, 52nd St. NW -- Han #9128	4048.38
20000000	Seam Variation	507.7	0.47	0.68	29	INT	5:00 / N/D	U/S:	Pipe Entering Ground, Bethel Injection -- Survey Point	488.03
								D/S:	AGM 010, Sta. 80+12, Two track -- Han #9128	7245.44
20000037	Seam Variation	83,653.1	0.47	0.50	23	INT	6:00 / N/D	U/S:	AGM 140, Sta. 832+34, ROW -- Han #8802	361.34
								D/S:	AGM 150, Sta. 884+39, ROW -- Han #8043	4927.72
20000039	Seam Variation	86,478.5	0.35	0.50	23	INT	2:15 / N/D	U/S:	AGM 140, Sta. 832+34, ROW -- Han #8802	3186.72
								D/S:	AGM 150, Sta. 884+39, ROW -- Han #8043	2102.33
20000017	Seam Variation	50,911.9	0.82	0.88	16	EXT	7:15 / N/D	U/S:	AGM 080, Sta. 493+79, Two track -- Survey Point	1473.08
								D/S:	AGM 090, Sta. 548+52, 52nd St. NW -- Han #9128	4046.88
20000023	Seam Variation	65,728.0	0.47	0.61	21	INT	4:30 / N/D	U/S:	AGM 100, Sta. 608+00, CR 1A -- Han #100	4936.95
								D/S:	AGM 110, Sta. 671+61, Gravel Rd -- Han #8043	1486.90
20000020	Seam Variation	61,230.2	1.53	1.64	23	INT	4:15 / N/D	U/S:	AGM 100, Sta. 608+00, CR 1A -- Han #100	439.06
								D/S:	AGM 110, Sta. 671+61, Gravel Rd -- Han #8043	5984.79
20000040	Seam Variation	87,469.6	0.47	0.58	18	INT	10:30 / N/D	U/S:	AGM 140, Sta. 832+34, ROW -- Han #8802	4177.78
								D/S:	AGM 150, Sta. 884+39, ROW -- Han #8043	1111.28

Other Anomalies



Other Anomalies

ID#	Feature Description/Comments	Dist (ft)	Length	Width	Gauss Delta	ID/OD	Anomaly/Seam Orientation O'clock	Above-Ground References	Distance from Defect
20000009	Seam Variation	22,190.4	0.71	0.95	24	INT	5:00 / N/D	U/S: AGM 030, Sta. 210+54, Two track -- Han #9128 D/S: AGM 040, Sta. 263+34, Two track -- Han #8802	1264.00 4045.57

Other Anomalies Type	Number
Girth Weld Anomaly	0
Mill Anomaly	
Seam Variation	31

Other Anomalies

DEFINITIONS

The Pipeline Listing Report presents all detected pipeline data in sequential order, beginning at launcher and ending at the receiver. The table includes welds, locations, metal loss defects, AGMs, wall thickness changes, etc.

ID#	Each item is automatically assigned a number in the software. This number is provided to assist the user of PIGTRAP software to more easily find any given defect.
Description	Describes the event at the particular location. Identifies the type of the descriptive, being a weld, location, pipe thickness change, etc.
Distance	Given in either feet or meters, based on contractual agreements, this is the absolute distance from launch.
Joint #	This unique number identifies the girth weld number.
U/S Weld	The distance to the upstream (U/S) weld (in feet or meters).
D/S Weld	The distance to the downstream (D/S) weld (in feet or meters).
Latitude	If GPS coordinates were provided for launch, receive and AGMs, this provides the predicted Latitude reading of the location from the first GPS reading based on INS readings obtained by the tool during the inspection.
Longitude	If GPS coordinates were provided for launch, receive and AGMs, this provides the predicted Longitude reading of the location from the first GPS reading based on INS readings obtained by the tool during the inspection.
Altitude	If GPS coordinates were provided for launch, receive and AGMs, this provides the predicted Altitude reading of the location from the first GPS reading based on INS readings obtained by the tool during the inspection.
Orientation: Deg. / O'Clock	Orientation is reported in degrees or o'clock (0 degrees/12:00 at top of pipe) as viewed looking downstream.
% Depth	Predicted depth of the defect as a percentage of nominal wall.
Length or WT (Pipe Thickness)	Predicted length of the defect, reported in either inches or millimeters – or if a wall thickness change, the new wall thickness begins at this point.
Width or YS (Yield Strength)	Predicted width of the defect, reported in either inches or millimeters – or if a wall thickness change, the new SMYS begins at this point.
P' (Calc. Safe Max. Operating Pressure) or SF (Safety Factor)	Calculated safe maximum operating pressure for the pipeline segment as calculated based on information provided by the Customer. TDW software uses either ASME B31G, MODIFIED ASME B31G or Z662-99 to calculate the calculated safe maximum allowable operating pressure (P') of the pipeline at a metal loss area.
(P'/P)	Percent of maximum established pressure, this is calculated by dividing the calculated safe pressure of the defect (P') by the current established maximum operating pressure of the pipeline (P). For TDW reporting, P is either established MOP provided by the customer or the calculated pressure rating for the pipe (P). Percentages less than 100% are considered pressure reducing.



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
12000000	Begin Run Tickle	-27.4	0	-	26.0	48.28431536	-103.81620009	2309.842						
11000000	WT CHANGE	-1.5	0	0.0	0.1	48.28431536	-103.81620009	2309.842			0.322	52000	0.72	
	110 WELD	-1.4	110	0.0	2.9	48.28431536	-103.81620009	2309.842						
10000000	Flange	-1.2	110	0.2	2.7	48.28431536	-103.81620009	2309.842	0	12:00				
10000001	Valve (Launcher), Sta. 0+00, Bethel Injection	0.0	110	1.4	1.5	48.28431539	-103.81620000	2309.843						
10000002	Flange	1.1	110	2.5	0.5	48.28431535	-103.81620347	2309.860	0	12:00				
	120 WELD	1.5	120	0.0	4.0	48.28431535	-103.81620506	2309.869						
10000003	Pipe Support	3.4	120	1.7	2.2	48.28431536	-103.81621288	2309.900						
	130 WELD	5.5	130	0.0	1.2	48.28431536	-103.81622190	2309.936						
10000004	Tee at 270 deg.	6.1	130	0.3	0.9	48.28431535	-103.81622419	2309.947	263	8:45				
	140 WELD	6.7	140	0.0	2.5	48.28431535	-103.81622663	2309.959						
10000005	Pipe Support	8.4	140	1.5	1.0	48.28431535	-103.81623345	2309.979						
	150 WELD	9.2	150	0.0	0.9	48.28431533	-103.81623685	2309.987						
10000006	Flange	9.6	150	0.5	0.5	48.28431533	-103.81623869	2309.991	0	12:00				
	160 WELD	10.1	160	0.0	2.0	48.28431531	-103.81624056	2309.993						
	170 WELD	12.1	170	0.0	1.6	48.28431524	-103.81624871	2310.028						
10000007	Bend down - 45 deg., 3D	12.9	170	0.2	1.4	48.28431522	-103.81625198	2309.882	0	12:00				
	180 WELD	13.7	180	0.0	10.2	48.28431522	-103.81625473	2309.487						
10000070	Pipe Entering Ground, Bethel Injection -- Survey Point	19.7	180	6.0	4.2	48.28431526	-103.81627210	2305.324						
	190 WELD	23.9	190	0.0	1.6	48.28431532	-103.81628423	2302.329						
10000008	Bend up - 45 deg., 3D	24.7	190	0.2	1.4	48.28431532	-103.81628691	2301.938	0	12:00				
	200 WELD	25.5	200	0.0	20.1	48.28431530	-103.81628971	2301.758						
	210 WELD	45.6	210	0.0	10.8	48.28431404	-103.81637222	2301.601						
	220 WELD	56.3	220	0.0	1.6	48.28431346	-103.81641635	2301.630						
10000009	Bend left - 45 deg., 3D	57.1	220	0.1	1.4	48.28431299	-103.81641927	2301.625	0	12:00				
	230 WELD	57.9	230	0.0	9.9	48.28431192	-103.81642206	2301.608						
11000001	WT CHANGE	67.7	230	0.0	0.1	48.28429266	-103.81645050	2301.276			0.188	52000	0.72	
	240 WELD	67.8	240	0.0	41.0	48.28429250	-103.81645073	2301.273						
	250 WELD	108.8	250	0.0	41.2	48.28421074	-103.81656634	2300.382						
	260 WELD	150.0	260	0.0	41.3	48.28412811	-103.81668118	2298.977						
	270 WELD	191.3	270	0.0	41.3	48.28404571	-103.81679595	2298.013						
	280 WELD	232.6	280	0.0	41.3	48.28396298	-103.81691035	2296.978						
	290 WELD	273.9	290	0.0	49.4	48.28387959	-103.81702357	2295.289						
	300 WELD	323.3	300	0.0	8.0	48.28377801	-103.81715563	2295.293						
	310 WELD	331.3	310	0.0	49.0	48.28376135	-103.81717670	2295.397						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
	320 WELD	380.3	320	0.0	49.4	48.28365845	-103.81730420	2295.830						
	330 WELD	429.7	330	0.0	49.4	48.28355658	-103.81743546	2295.654						
	340 WELD	479.1	340	0.0	49.6	48.28346238	-103.81757924	2294.933						
20000000	Seam Variation	507.7	340	28.6	21.0	48.28341059	-103.81766635	2294.661	155 5:00	-	0.47	0.68		
	350 WELD	528.7	350	0.0	48.6	48.28337430	-103.81773213	2293.891						
	360 WELD	577.3	360	0.0	49.6	48.28329419	-103.81789027	2291.935						
	370 WELD	626.9	370	0.0	30.6	48.28321471	-103.81805480	2289.877						
	380 WELD	657.5	380	0.0	1.2	48.28316442	-103.81815453	2288.755						
10000010	Bend right - 38 deg., 1.5D	658.1	380	0.1	1.1	48.28316384	-103.81815666	2288.741	0 12:00					
	390 WELD	658.7	390	0.0	49.3	48.28316353	-103.81815912	2288.728						
	400 WELD	708.0	400	0.0	22.2	48.28316315	-103.81836143	2288.033						
11000002	WT CHANGE	730.1	400	0.0	0.1	48.28316319	-103.81845213	2287.609			0.322	52000	0.72	
	410 WELD	730.2	410	0.0	42.1	48.28316319	-103.81845242	2287.609						
	420 WELD	772.3	420	0.0	42.1	48.28316314	-103.81862502	2287.302						
	430 WELD	814.4	430	0.0	42.2	48.28316188	-103.81879780	2286.251						
	440 WELD	856.6	440	0.0	42.1	48.28315893	-103.81897045	2286.235						
	450 WELD	898.8	450	0.0	42.2	48.28315643	-103.81914299	2286.368						
	460 WELD	940.9	460	0.0	42.2	48.28315694	-103.81931574	2286.002						
	470 WELD	983.1	470	0.0	42.2	48.28315853	-103.81948839	2285.668						
	480 WELD	1,025.3	480	0.0	42.2	48.28316003	-103.81966097	2285.551						
	490 WELD	1,067.5	490	0.0	42.2	48.28316112	-103.81983356	2285.509						
	500 WELD	1,109.7	500	0.0	42.3	48.28316126	-103.82000631	2285.459						
	510 WELD	1,152.0	510	0.0	42.2	48.28316390	-103.82017945	2285.579						
	520 WELD	1,194.2	520	0.0	42.3	48.28316499	-103.82035194	2286.388						
	530 WELD	1,236.5	530	0.0	42.2	48.28316261	-103.82052482	2287.060						
	540 WELD	1,278.7	540	0.0	42.2	48.28316184	-103.82069754	2288.045						
	550 WELD	1,320.9	550	0.0	42.3	48.28316288	-103.82086993	2289.455						
11000003	WT CHANGE	1,363.1	550	0.0	0.1	48.28316139	-103.82104229	2290.225			0.188	52000	0.72	
	560 WELD	1,363.2	560	0.0	41.2	48.28316138	-103.82104261	2290.224						
	570 WELD	1,404.4	570	0.0	40.8	48.28315961	-103.82121112	2290.948						
	580 WELD	1,445.2	580	0.0	6.3	48.28315885	-103.82137849	2291.801						
	590 WELD	1,451.6	590	0.0	41.2	48.28315886	-103.82140457	2291.903						
	600 WELD	1,492.7	600	0.0	41.3	48.28316027	-103.82157323	2292.594						
	610 WELD	1,534.1	610	0.0	41.3	48.28316118	-103.82174242	2293.575						
	620 WELD	1,575.4	620	0.0	41.4	48.28316063	-103.82191154	2294.394						
	630 WELD	1,616.7	630	0.0	41.3	48.28315907	-103.82208053	2296.147						
	640 WELD	1,658.1	640	0.0	41.3	48.28315839	-103.82224966	2296.846						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
650	WELD	1,699.4	650	0.0	41.3	48.28315870	-103.82241893	2296.606						
660	WELD	1,740.7	660	0.0	41.4	48.28315813	-103.82258783	2294.794						
670	WELD	1,782.1	670	0.0	41.4	48.28315721	-103.82275691	2293.214						
680	WELD	1,823.5	680	0.0	41.3	48.28315620	-103.82292622	2293.238						
690	WELD	1,864.8	690	0.0	41.4	48.28315571	-103.82309554	2293.340						
700	WELD	1,906.2	700	0.0	41.2	48.28315510	-103.82326494	2293.688						
710	WELD	1,947.4	710	0.0	41.3	48.28315564	-103.82343430	2294.020						
720	WELD	1,988.7	720	0.0	41.3	48.28315607	-103.82360356	2295.052						
730	WELD	2,030.0	730	0.0	41.3	48.28315565	-103.82377294	2295.840						
740	WELD	2,071.3	740	0.0	41.4	48.28315571	-103.82394221	2295.891						
750	WELD	2,112.7	750	0.0	41.4	48.28315505	-103.82411151	2296.818						
760	WELD	2,154.1	760	0.0	41.4	48.28315485	-103.82428089	2297.102						
770	WELD	2,195.5	770	0.0	41.3	48.28315435	-103.82445030	2297.355						
780	WELD	2,236.8	780	0.0	41.3	48.28315397	-103.82461939	2299.008						
790	WELD	2,278.1	790	0.0	41.3	48.28315348	-103.82478866	2300.671						
800	WELD	2,319.4	800	0.0	41.4	48.28315325	-103.82495772	2302.200						
810	WELD	2,360.8	810	0.0	41.3	48.28315291	-103.82512692	2303.951						
820	WELD	2,402.1	820	0.0	41.3	48.28315285	-103.82529635	2305.403						
830	WELD	2,443.4	830	0.0	41.4	48.28315386	-103.82546575	2306.574						
840	WELD	2,484.7	840	0.0	41.4	48.28315589	-103.82563461	2306.469						
850	WELD	2,526.1	850	0.0	41.4	48.28315752	-103.82580335	2304.940						
860	WELD	2,567.5	860	0.0	41.4	48.28315882	-103.82597214	2302.595						
870	WELD	2,608.8	870	0.0	41.3	48.28315898	-103.82614106	2301.381						
880	WELD	2,650.1	880	0.0	41.3	48.28315927	-103.82631031	2300.520						
890	WELD	2,691.4	890	0.0	41.3	48.28315897	-103.82647914	2300.885						
900	WELD	2,732.7	900	0.0	41.3	48.28315873	-103.82664846	2300.905						
910	WELD	2,774.0	910	0.0	41.3	48.28315810	-103.82681747	2300.952						
920	WELD	2,815.3	920	0.0	41.3	48.28315748	-103.82698671	2301.734						
930	WELD	2,856.6	930	0.0	41.3	48.28315707	-103.82715557	2303.264						
940	WELD	2,897.9	940	0.0	41.3	48.28315587	-103.82732464	2304.426						
950	WELD	2,939.2	950	0.0	41.3	48.28315615	-103.82749363	2304.232						
960	WELD	2,980.5	960	0.0	41.3	48.28315871	-103.82766238	2303.776						
970	WELD	3,021.8	970	0.0	41.4	48.28315524	-103.82783113	2302.936						
980	WELD	3,063.2	980	0.0	41.3	48.28313288	-103.82799695	2303.051						
990	WELD	3,104.5	990	0.0	41.3	48.28310699	-103.82816156	2302.789						
1000	WELD	3,145.8	1000	0.0	41.3	48.28308065	-103.82832613	2302.558						
1010	WELD	3,187.1	1010	0.0	41.3	48.28305308	-103.82848999	2302.902						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
1020	WELD	3,228.4	1020	0.0	41.3	48.28301643	-103.82864982	2302.746						
1030	WELD	3,269.7	1030	0.0	41.3	48.28297497	-103.82880708	2302.837						
1040	WELD	3,311.0	1040	0.0	41.4	48.28293191	-103.82896346	2303.104						
1050	WELD	3,352.3	1050	0.0	41.4	48.28288365	-103.82911571	2302.926						
1060	WELD	3,393.7	1060	0.0	41.3	48.28282391	-103.82925931	2303.081						
1070	WELD	3,435.0	1070	0.0	41.3	48.28276181	-103.82940067	2303.414						
1080	WELD	3,476.3	1080	0.0	41.3	48.28269957	-103.82954197	2303.741						
1090	WELD	3,517.6	1090	0.0	41.3	48.28262694	-103.82967015	2304.206						
1100	WELD	3,558.9	1100	0.0	41.4	48.28254513	-103.82978645	2304.859						
1110	WELD	3,600.3	1110	0.0	41.2	48.28246094	-103.82989896	2305.659						
1120	WELD	3,641.5	1120	0.0	41.3	48.28237584	-103.83000984	2306.591						
1130	WELD	3,682.8	1130	0.0	41.4	48.28229032	-103.83012058	2307.518						
1140	WELD	3,724.3	1140	0.0	41.4	48.28220493	-103.83023165	2308.035						
1150	WELD	3,765.6	1150	0.0	41.3	48.28212030	-103.83034381	2307.709						
1160	WELD	3,806.9	1160	0.0	41.3	48.28203592	-103.83045630	2307.700						
1170	WELD	3,848.2	1170	0.0	41.3	48.28195172	-103.83056923	2307.968						
1180	WELD	3,889.5	1180	0.0	41.3	48.28186726	-103.83068206	2307.889						
1190	WELD	3,930.8	1190	0.0	41.3	48.28178280	-103.83079478	2308.303						
1200	WELD	3,972.1	1200	0.0	41.3	48.28169891	-103.83090826	2309.289						
1210	WELD	4,013.5	1210	0.0	41.3	48.28161556	-103.83102260	2310.112						
1220	WELD	4,054.8	1220	0.0	41.3	48.28153218	-103.83113662	2311.442						
1230	WELD	4,096.1	1230	0.0	41.4	48.28144838	-103.83125017	2312.305						
1240	WELD	4,137.5	1240	0.0	41.3	48.28136473	-103.83136434	2312.805						
1250	WELD	4,178.8	1250	0.0	41.3	48.28128129	-103.83147805	2314.682						
1260	WELD	4,220.1	1260	0.0	41.3	48.28119708	-103.83159018	2317.228						
1270	WELD	4,261.4	1270	0.0	41.0	48.28111203	-103.83170129	2319.656						
1280	WELD	4,302.5	1280	0.0	41.2	48.28102832	-103.83181251	2323.150						
1290	WELD	4,343.6	1290	0.0	41.2	48.28094472	-103.83192467	2326.959						
1300	WELD	4,384.9	1300	0.0	41.3	48.28086036	-103.83203546	2330.943						
1310	WELD	4,426.1	1310	0.0	22.6	48.28077601	-103.83214619	2335.301						
1320	WELD	4,448.7	1320	0.0	11.4	48.28073033	-103.83220738	2338.297						
1330	WELD	4,460.1	1330	0.0	41.3	48.28070753	-103.83223861	2339.633						
1340	WELD	4,501.5	1340	0.0	41.3	48.28062420	-103.83235191	2342.659						
1350	WELD	4,542.8	1350	0.0	41.3	48.28054076	-103.83246493	2341.052						
1360	WELD	4,584.1	1360	0.0	41.3	48.28045778	-103.83257872	2337.026						
1370	WELD	4,625.4	1370	0.0	41.3	48.28037419	-103.83269238	2334.455						
1380	WELD	4,666.7	1380	0.0	41.4	48.28029016	-103.83280525	2333.432						



Pipeline Listing

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Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
1390	WELD	4,708.1	1390	0.0	41.2	48.28020636	-103.83291859	2333.164						
1400	WELD	4,749.3	1400	0.0	41.4	48.28012259	-103.83303094	2332.262						
1410	WELD	4,790.7	1410	0.0	41.2	48.28003800	-103.83314315	2333.049						
1420	WELD	4,831.9	1420	0.0	41.3	48.27995356	-103.83325467	2335.051						
1430	WELD	4,873.2	1430	0.0	41.3	48.27986913	-103.83336720	2334.977						
1440	WELD	4,914.4	1440	0.0	41.3	48.27978588	-103.83348081	2332.052						
1450	WELD	4,955.8	1450	0.0	41.3	48.27970266	-103.83359463	2329.245						
1460	WELD	4,997.1	1460	0.0	41.3	48.27961930	-103.83370831	2326.587						
1470	WELD	5,038.4	1470	0.0	41.4	48.27953608	-103.83382187	2323.512						
1480	WELD	5,079.8	1480	0.0	41.3	48.27945240	-103.83393444	2320.122						
1490	WELD	5,121.1	1490	0.0	41.3	48.27936840	-103.83404621	2315.920						
1500	WELD	5,162.4	1500	0.0	41.4	48.27928456	-103.83415866	2311.826						
1510	WELD	5,203.8	1510	0.0	41.3	48.27920046	-103.83427121	2309.532						
1520	WELD	5,245.1	1520	0.0	41.3	48.27911592	-103.83438335	2307.982						
1530	WELD	5,286.4	1530	0.0	41.4	48.27903139	-103.83449547	2307.248						
1540	WELD	5,327.7	1540	0.0	41.4	48.27894706	-103.83460796	2306.458						
1550	WELD	5,369.1	1550	0.0	41.3	48.27886257	-103.83472013	2306.358						
1560	WELD	5,410.4	1560	0.0	41.4	48.27877841	-103.83483339	2307.412						
1570	WELD	5,451.8	1570	0.0	41.4	48.27869476	-103.83494694	2309.865						
1580	WELD	5,493.2	1580	0.0	41.3	48.27861137	-103.83506105	2310.545						
1590	WELD	5,534.5	1590	0.0	41.4	48.27852819	-103.83517542	2308.959						
1600	WELD	5,575.9	1600	0.0	41.3	48.27844477	-103.83528952	2307.867						
1610	WELD	5,617.3	1610	0.0	41.4	48.27836111	-103.83540334	2307.594						
1620	WELD	5,658.6	1620	0.0	41.2	48.27827710	-103.83551630	2308.238						
1630	WELD	5,699.9	1630	0.0	41.3	48.27819302	-103.83562905	2308.667						
1640	WELD	5,741.2	1640	0.0	41.3	48.27810888	-103.83574216	2308.874						
1650	WELD	5,782.5	1650	0.0	41.3	48.27802422	-103.83585422	2308.348						
1660	WELD	5,823.9	1660	0.0	41.4	48.27793957	-103.83596625	2307.807						
1670	WELD	5,865.2	1670	0.0	41.3	48.27785550	-103.83607911	2306.228						
1680	WELD	5,906.5	1680	0.0	41.2	48.27777181	-103.83619248	2303.292						
1690	WELD	5,947.8	1690	0.0	41.3	48.27768795	-103.83630496	2300.125						
1700	WELD	5,989.1	1700	0.0	41.3	48.27760373	-103.83641710	2297.149						
1710	WELD	6,030.4	1710	0.0	41.4	48.27751951	-103.83652971	2294.915						
1720	WELD	6,071.8	1720	0.0	41.1	48.27743559	-103.83664271	2291.972						
20000001	Seam Variation	6,108.4	1720	36.6	4.5	48.27736145	-103.83674297	2289.654	330	11:00	-	0.47	0.41	
1730	WELD	6,112.9	1730	0.0	38.9	48.27735238	-103.83675523	2289.370						
1740	WELD	6,151.8	1740	0.0	41.3	48.27727368	-103.83686179	2286.510						



Pipeline Listing

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1750 WELD		6,193.1	1750	0.0	41.1	48.27719010	-103.83697476	2285.173						
11000004	WT CHANGE	6,234.1	1750	0.0	0.1	48.27710676	-103.83708678	2283.880			0.322	52000	0.72	
1760 WELD		6,234.2	1760	0.0	42.1	48.27710658	-103.83708702	2283.877						
1770 WELD		6,276.3	1770	0.0	42.2	48.27702111	-103.83720210	2281.076						
1780 WELD		6,318.6	1780	0.0	42.2	48.27693624	-103.83731843	2278.242						
1790 WELD		6,360.8	1790	0.0	42.2	48.27685158	-103.83743593	2277.539						
1800 WELD		6,403.0	1800	0.0	42.2	48.27676598	-103.83755160	2277.356						
1810 WELD		6,445.2	1810	0.0	42.2	48.27667994	-103.83766664	2276.834						
1820 WELD		6,487.4	1820	0.0	42.3	48.27659442	-103.83778251	2276.801						
1830 WELD		6,529.6	1830	0.0	42.2	48.27650871	-103.83789821	2276.739						
1840 WELD		6,571.8	1840	0.0	42.1	48.27642304	-103.83801407	2276.099						
1850 WELD		6,614.0	1850	0.0	42.2	48.27633907	-103.83813208	2275.620						
1860 WELD		6,656.2	1860	0.0	42.2	48.27625490	-103.83825037	2275.506						
1870 WELD		6,698.4	1870	0.0	42.2	48.27617011	-103.83836749	2275.194						
1880 WELD		6,740.6	1880	0.0	42.2	48.27608451	-103.83848343	2275.523						
1890 WELD		6,782.8	1890	0.0	42.2	48.27599836	-103.83859817	2276.446						
1900 WELD		6,825.0	1900	0.0	42.2	48.27591275	-103.83871352	2277.418						
1910 WELD		6,867.2	1910	0.0	42.2	48.27582715	-103.83882926	2277.918						
1920 WELD		6,909.4	1920	0.0	42.2	48.27574057	-103.83894351	2278.515						
1930 WELD		6,951.5	1930	0.0	42.1	48.27565573	-103.83906059	2279.786						
11000005	WT CHANGE	6,993.6	1930	0.0	0.1	48.27557243	-103.83917872	2280.824			0.188	52000	0.72	
1940 WELD		6,993.7	1940	0.0	41.2	48.27557228	-103.83917894	2280.825						
1950 WELD		7,034.8	1950	0.0	36.7	48.27549398	-103.83929995	2281.167						
1960 WELD		7,071.5	1960	0.0	1.5	48.27542690	-103.83941123	2282.448						
10000011	Bend right-up - 40 deg., 3D	7,072.3	1960	0.1	1.4	48.27542605	-103.83941388	2282.467	0 12:00					
1970 WELD		7,073.0	1970	0.0	41.4	48.27542568	-103.83941669	2282.475						
1980 WELD		7,114.4	1980	0.0	41.1	48.27542008	-103.83958454	2282.168						
1990 WELD		7,155.5	1990	0.0	41.2	48.27541521	-103.83975234	2281.597						
2000 WELD		7,196.7	2000	0.0	41.4	48.27541166	-103.83992065	2280.904						
2010 WELD		7,238.1	2010	0.0	41.4	48.27540723	-103.84008969	2280.873						
2020 WELD		7,279.6	2020	0.0	41.4	48.27540333	-103.84025880	2280.447						
2030 WELD		7,320.9	2030	0.0	41.3	48.27539963	-103.84042786	2279.868						
2040 WELD		7,362.2	2040	0.0	41.3	48.27539473	-103.84059648	2279.857						
2050 WELD		7,403.5	2050	0.0	41.3	48.27538948	-103.84076556	2280.374						
2060 WELD		7,444.8	2060	0.0	41.3	48.27538380	-103.84093446	2280.142						
2070 WELD		7,486.2	2070	0.0	40.3	48.27537987	-103.84110337	2279.957						



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	2080 WELD	7,526.5	2080	0.0	6.2	48.27537942	-103.84126830	2279.916						
	2090 WELD	7,532.7	2090	0.0	1.2	48.27537978	-103.84129385	2279.918						
10000012	Bend left - 36 deg., 3D	7,533.3	2090	0.1	1.1	48.27537949	-103.84129619	2279.917	0	12:00				
	2100 WELD	7,533.9	2100	0.0	7.2	48.27537886	-103.84129832	2279.912						
	2110 WELD	7,541.0	2110	0.0	30.1	48.27536867	-103.84132348	2279.888						
	2120 WELD	7,571.2	2120	0.0	41.3	48.27532564	-103.84142893	2280.076						
	2130 WELD	7,612.5	2130	0.0	39.7	48.27526709	-103.84157347	2280.642						
	2140 WELD	7,652.2	2140	0.0	35.5	48.27520903	-103.84171077	2282.309						
	2150 WELD	7,687.7	2150	0.0	41.4	48.27515437	-103.84183054	2283.298						
	2160 WELD	7,729.1	2160	0.0	41.4	48.27508803	-103.84196730	2284.260						
10000013	AGM 010, Sta. 80+12, Two track -- Han #9128	7,753.1	2160	24.1	17.3	48.27504857	-103.84204610	2285.528						
	2170 WELD	7,770.4	2170	0.0	41.4	48.27501786	-103.84209934	2286.463						
	2180 WELD	7,811.8	2180	0.0	41.4	48.27493448	-103.84221218	2289.724						
	2190 WELD	7,853.2	2190	0.0	41.4	48.27484786	-103.84231955	2293.247						
	2200 WELD	7,894.5	2200	0.0	40.6	48.27475340	-103.84241096	2295.393						
	2210 WELD	7,935.2	2210	0.0	0.9	48.27465773	-103.84249470	2297.858						
10000014	Bend left - 28 deg., 1.5D	7,935.6	2210	0.1	0.8	48.27465663	-103.84249521	2297.889	0	12:00				
	2220 WELD	7,936.0	2220	0.0	34.4	48.27465548	-103.84249566	2297.920						
	2230 WELD	7,970.5	2230	0.0	41.2	48.27456206	-103.84250788	2301.189						
	2240 WELD	8,011.7	2240	0.0	41.2	48.27444974	-103.84251645	2304.118						
	2250 WELD	8,052.9	2250	0.0	41.2	48.27433728	-103.84251990	2306.178						
	2260 WELD	8,094.2	2260	0.0	41.3	48.27422465	-103.84252170	2306.298						
	2270 WELD	8,135.4	2270	0.0	41.3	48.27411193	-103.84252240	2306.056						
40000000	Metal Loss - EXTERNAL	8,175.7	2270	40.2	1.1	48.27400191	-103.84252300	2306.182	92	3:00	14%	1.54	0.63	1760 100%
	2280 WELD	8,176.7	2280	0.0	41.2	48.27399905	-103.84252300	2306.211						
	2290 WELD	8,218.0	2290	0.0	41.3	48.27388640	-103.84252160	2306.752						
	2300 WELD	8,259.3	2300	0.0	41.2	48.27377376	-103.84251880	2306.849						
	2310 WELD	8,300.5	2310	0.0	41.2	48.27366131	-103.84251780	2306.522						
	2320 WELD	8,341.7	2320	0.0	41.2	48.27354870	-103.84251820	2305.742						
	2330 WELD	8,382.9	2330	0.0	41.3	48.27343611	-103.84251860	2304.594						
	2340 WELD	8,424.2	2340	0.0	41.3	48.27332326	-103.84251892	2304.175						
	2350 WELD	8,465.5	2350	0.0	41.2	48.27321029	-103.84251930	2304.045						
	2360 WELD	8,506.7	2360	0.0	41.3	48.27309773	-103.84251930	2304.545						
	2370 WELD	8,548.0	2370	0.0	41.4	48.27298483	-103.84251810	2305.341						
	2380 WELD	8,589.4	2380	0.0	41.4	48.27287207	-103.84251730	2305.440						
	2390 WELD	8,630.8	2390	0.0	41.3	48.27275916	-103.84251635	2304.912						



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TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
2400	WELD	8,672.1	2400	0.0	41.3	48.27264639	-103.84251550	2304.747						
2410	WELD	8,713.4	2410	0.0	41.3	48.27253354	-103.84251400	2304.880						
2420	WELD	8,754.7	2420	0.0	41.3	48.27242075	-103.84251210	2305.059						
2430	WELD	8,796.0	2430	0.0	41.4	48.27230787	-103.84251100	2305.114						
2440	WELD	8,837.3	2440	0.0	41.2	48.27219499	-103.84251050	2305.216						
2450	WELD	8,878.6	2450	0.0	45.0	48.27208235	-103.84250970	2305.083						
2460	WELD	8,923.6	2460	0.0	40.7	48.27195946	-103.84250950	2305.131						
2470	WELD	8,964.3	2470	0.0	41.1	48.27184823	-103.84250900	2305.205						
2480	WELD	9,005.5	2480	0.0	41.3	48.27173582	-103.84250791	2305.865						
2490	WELD	9,046.7	2490	0.0	41.3	48.27162310	-103.84250610	2305.922						
2500	WELD	9,088.0	2500	0.0	41.2	48.27151041	-103.84250560	2305.978						
2510	WELD	9,129.2	2510	0.0	41.3	48.27139787	-103.84250631	2306.041						
2520	WELD	9,170.5	2520	0.0	41.3	48.27128519	-103.84250730	2305.952						
2530	WELD	9,211.8	2530	0.0	41.2	48.27117257	-103.84250860	2306.446						
2540	WELD	9,253.0	2540	0.0	41.4	48.27106051	-103.84251908	2306.882						
2550	WELD	9,294.4	2550	0.0	41.0	48.27095208	-103.84256574	2306.817						
2560	WELD	9,335.4	2560	0.0	34.9	48.27084451	-103.84261219	2305.728						
2570	WELD	9,370.3	2570	0.0	40.9	48.27075236	-103.84264543	2303.727						
11000006	WT CHANGE	9,411.1	2570	0.0	0.1	48.27064372	-103.84267237	2298.674			0.322	52000	0.72	
2580	WELD	9,411.2	2580	0.0	42.1	48.27064348	-103.84267241	2298.663						
2590	WELD	9,453.3	2590	0.0	42.2	48.27053077	-103.84269138	2292.299						
2600	WELD	9,495.5	2600	0.0	42.2	48.27041575	-103.84269570	2290.732						
2610	WELD	9,537.7	2610	0.0	42.2	48.27030068	-103.84269550	2292.688						
2620	WELD	9,579.9	2620	0.0	42.2	48.27018562	-103.84269613	2294.854						
2630	WELD	9,622.1	2630	0.0	42.3	48.27007052	-103.84269540	2297.045						
2640	WELD	9,664.4	2640	0.0	42.2	48.26995519	-103.84269290	2299.218						
2650	WELD	9,706.6	2650	0.0	42.2	48.26983994	-103.84269652	2301.255						
2660	WELD	9,748.8	2660	0.0	16.1	48.26972459	-103.84270180	2301.831						
11000007	WT CHANGE	9,764.8	2660	0.0	0.1	48.26968114	-103.84270322	2302.206			0.188	52000	0.72	
2670	WELD	9,764.9	2670	0.0	40.9	48.26968090	-103.84270323	2302.207						
2680	WELD	9,805.8	2680	0.0	41.2	48.26956927	-103.84270370	2303.234						
2690	WELD	9,847.0	2690	0.0	41.1	48.26945696	-103.84270180	2304.190						
2700	WELD	9,888.1	2700	0.0	41.2	48.26934506	-103.84270010	2305.489						
2710	WELD	9,929.2	2710	0.0	41.2	48.26923227	-103.84269900	2305.584						
2720	WELD	9,970.5	2720	0.0	41.3	48.26912001	-103.84269810	2305.384						
2730	WELD	10,011.8	2730	0.0	41.3	48.26900701	-103.84269680	2304.809						
2740	WELD	10,053.1	2740	0.0	41.3	48.26889410	-103.84269505	2303.471						



Pipeline Listing

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ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
2750	WELD	10,094.4	2750	0.0	41.1	48.26878124	-103.84269420	2301.305						
2760	WELD	10,135.5	2760	0.0	40.9	48.26866916	-103.84269460	2298.707						
2770	WELD	10,176.4	2770	0.0	41.3	48.26855780	-103.84269530	2297.139						
2780	WELD	10,217.6	2780	0.0	41.4	48.26844536	-103.84269320	2296.836						
2790	WELD	10,259.0	2790	0.0	41.4	48.26833269	-103.84269210	2297.486						
2800	WELD	10,300.4	2800	0.0	41.4	48.26821985	-103.84268973	2299.329						
2810	WELD	10,341.8	2810	0.0	41.3	48.26810686	-103.84268840	2300.262						
2820	WELD	10,383.1	2820	0.0	41.2	48.26799414	-103.84268690	2301.401						
2830	WELD	10,424.2	2830	0.0	41.2	48.26788158	-103.84268520	2302.019						
2840	WELD	10,465.5	2840	0.0	41.2	48.26776898	-103.84268310	2301.993						
2850	WELD	10,506.7	2850	0.0	41.2	48.26765649	-103.84268088	2301.527						
2860	WELD	10,547.9	2860	0.0	41.2	48.26754394	-103.84267890	2301.052						
2870	WELD	10,589.1	2870	0.0	41.3	48.26743145	-103.84267780	2300.335						
2880	WELD	10,630.3	2880	0.0	41.2	48.26731875	-103.84267810	2299.068						
2890	WELD	10,671.5	2890	0.0	41.2	48.26720632	-103.84267810	2297.739						
2900	WELD	10,712.7	2900	0.0	41.1	48.26709380	-103.84267740	2297.037						
2910	WELD	10,753.8	2910	0.0	41.1	48.26698179	-103.84267740	2296.484						
40000002	Metal Loss - EXTERNAL	10,773.6	2910	19.8	21.4	48.26692762	-103.84267730	2296.127	125	4:00	14%	0.81	0.52	1760 100%
40000001	Metal Loss - EXTERNAL	10,773.6	2910	19.8	21.4	48.26692763	-103.84267730	2296.127	185	6:00	11%	0.78	0.49	1760 100%
2920	WELD	10,794.9	2920	0.0	41.3	48.26686937	-103.84267730	2296.130						
2930	WELD	10,836.3	2930	0.0	41.4	48.26675660	-103.84267720	2296.401						
2940	WELD	10,877.7	2940	0.0	41.4	48.26664364	-103.84267620	2296.478						
2950	WELD	10,919.0	2950	0.0	41.3	48.26653060	-103.84267520	2295.951						
2960	WELD	10,960.3	2960	0.0	41.3	48.26641772	-103.84267460	2295.059						
2970	WELD	11,001.6	2970	0.0	41.4	48.26630478	-103.84267380	2294.122						
2980	WELD	11,043.0	2980	0.0	41.3	48.26619176	-103.84267228	2293.931						
2990	WELD	11,084.3	2990	0.0	41.3	48.26607886	-103.84267070	2293.175						
3000	WELD	11,125.6	3000	0.0	41.3	48.26596596	-103.84266865	2292.125						
3010	WELD	11,167.0	3010	0.0	41.4	48.26585295	-103.84266670	2290.754						
3020	WELD	11,208.3	3020	0.0	41.3	48.26573990	-103.84266570	2289.499						
3030	WELD	11,249.6	3030	0.0	41.3	48.26562700	-103.84266420	2288.330						
3040	WELD	11,290.9	3040	0.0	41.4	48.26551416	-103.84266240	2286.720						
3050	WELD	11,332.3	3050	0.0	41.2	48.26540109	-103.84266160	2285.145						
3060	WELD	11,373.6	3060	0.0	41.3	48.26528835	-103.84266040	2284.625						
3070	WELD	11,414.8	3070	0.0	41.1	48.26517590	-103.84265860	2285.979						
3080	WELD	11,456.0	3080	0.0	41.2	48.26506364	-103.84265650	2286.796						
3090	WELD	11,497.2	3090	0.0	41.2	48.26495141	-103.84265530	2286.285						



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3100	WELD	11,538.5	3100	0.0	41.3	48.26483908	-103.84265450	2284.764						
3110	WELD	11,579.7	3110	0.0	41.3	48.26472677	-103.84265400	2282.639						
3120	WELD	11,621.0	3120	0.0	41.3	48.26461423	-103.84265320	2281.653						
3130	WELD	11,662.3	3130	0.0	41.3	48.26450178	-103.84265230	2280.800						
3140	WELD	11,703.6	3140	0.0	40.9	48.26438942	-103.84265082	2280.837						
3150	WELD	11,744.5	3150	0.0	41.3	48.26427797	-103.84264880	2281.015						
3160	WELD	11,785.8	3160	0.0	41.4	48.26416522	-103.84264700	2281.499						
3170	WELD	11,827.2	3170	0.0	41.4	48.26405228	-103.84264530	2280.715						
3180	WELD	11,868.5	3180	0.0	41.3	48.26393971	-103.84264460	2278.347						
3190	WELD	11,909.8	3190	0.0	41.3	48.26382725	-103.84264450	2275.796						
3200	WELD	11,951.1	3200	0.0	41.2	48.26371480	-103.84264520	2273.305						
3210	WELD	11,992.3	3210	0.0	41.3	48.26360281	-103.84264640	2270.714						
3220	WELD	12,033.7	3220	0.0	41.3	48.26349063	-103.84264720	2268.468						
3230	WELD	12,074.9	3230	0.0	41.0	48.26337845	-103.84264720	2266.821						
3240	WELD	12,116.0	3240	0.0	39.4	48.26326663	-103.84264620	2265.374						
3250	WELD	12,155.3	3250	0.0	41.3	48.26315940	-103.84264269	2262.495						
3260	WELD	12,196.6	3260	0.0	41.3	48.26304682	-103.84263807	2261.438						
3270	WELD	12,237.9	3270	0.0	40.9	48.26293425	-103.84263500	2260.684						
3280	WELD	12,278.8	3280	0.0	26.3	48.26282243	-103.84263390	2259.457						
11000008	WT CHANGE	12,305.0	3280	0.0	0.1	48.26275091	-103.84263520	2258.716			0.322	52000	0.72	
3290	WELD	12,305.1	3290	0.0	42.1	48.26275070	-103.84263520	2258.714						
3300	WELD	12,347.3	3300	0.0	42.2	48.26263562	-103.84263840	2256.645						
3310	WELD	12,389.5	3310	0.0	42.1	48.26252061	-103.84264061	2254.369						
3320	WELD	12,431.6	3320	0.0	42.2	48.26240556	-103.84263604	2255.455						
3330	WELD	12,473.9	3330	0.0	42.2	48.26229051	-103.84262888	2256.722						
3340	WELD	12,516.1	3340	0.0	42.2	48.26217522	-103.84262695	2256.091						
3350	WELD	12,558.3	3350	0.0	42.3	48.26206016	-103.84262910	2256.538						
11000009	WT CHANGE	12,600.4	3350	0.0	0.1	48.26194525	-103.84262550	2258.429			0.188	52000	0.72	
3360	WELD	12,600.5	3360	0.0	41.2	48.26194501	-103.84262550	2258.432						
3370	WELD	12,641.8	3370	0.0	41.3	48.26183275	-103.84262140	2260.823						
3380	WELD	12,683.0	3380	0.0	13.8	48.26171976	-103.84262060	2262.759						
3390	WELD	12,696.9	3390	0.0	41.0	48.26168205	-103.84262090	2263.321						
3400	WELD	12,737.8	3400	0.0	41.3	48.26157023	-103.84262395	2265.446						
3410	WELD	12,779.1	3410	0.0	41.3	48.26145748	-103.84262690	2267.456						
3420	WELD	12,820.4	3420	0.0	41.3	48.26134470	-103.84262560	2268.858						
3430	WELD	12,861.8	3430	0.0	41.4	48.26123184	-103.84262290	2269.141						
3440	WELD	12,903.2	3440	0.0	41.3	48.26111882	-103.84262218	2268.374						



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3450	WELD	12,944.5	3450	0.0	41.3	48.26100590	-103.84262290	2267.851						
3460	WELD	12,985.8	3460	0.0	41.3	48.26089288	-103.84262200	2267.849						
3470	WELD	13,027.1	3470	0.0	41.3	48.26077999	-103.84262060	2267.542						
3480	WELD	13,068.4	3480	0.0	41.4	48.26066718	-103.84261810	2267.807						
3490	WELD	13,109.8	3490	0.0	41.4	48.26055400	-103.84261700	2267.512						
3500	WELD	13,151.2	3500	0.0	41.3	48.26044102	-103.84261610	2266.436						
3510	WELD	13,192.5	3510	0.0	41.3	48.26032803	-103.84261480	2265.219						
3520	WELD	13,233.8	3520	0.0	41.3	48.26021504	-103.84261310	2263.935						
3530	WELD	13,275.1	3530	0.0	41.2	48.26010214	-103.84261160	2263.712						
3540	WELD	13,316.3	3540	0.0	41.3	48.25998927	-103.84261010	2263.159						
3550	WELD	13,357.6	3550	0.0	41.3	48.25987652	-103.84260850	2262.899						
3560	WELD	13,398.9	3560	0.0	41.4	48.25976367	-103.84260610	2263.547						
3570	WELD	13,440.2	3570	0.0	37.4	48.25965068	-103.84260640	2263.740						
10000015	AGM 020, Sta. 136+62, ROW -- Han #8802	13,450.4	3570	10.1	27.3	48.25962296	-103.84260690	2263.771						
3580	WELD	13,477.7	3580	0.0	8.4	48.25954856	-103.84260770	2263.670						
11000010	WT CHANGE	13,486.0	3580	0.0	0.1	48.25952590	-103.84260790	2263.765			0.322	52000	0.72	
3590	WELD	13,486.1	3590	0.0	9.2	48.25952566	-103.84260790	2263.767						
10000016	Bend right - 90 deg., 6D	13,490.6	3590	1.0	8.2	48.25951395	-103.84261316	2263.866	0	12:00				
11000011	WT CHANGE	13,495.2	3590	0.0	0.1	48.25951041	-103.84263096	2264.088			0.188	52000	0.72	
3600	WELD	13,495.3	3600	0.0	32.8	48.25951041	-103.84263133	2264.092						
3610	WELD	13,528.2	3610	0.0	41.2	48.25951055	-103.84276652	2265.688						
3620	WELD	13,569.4	3620	0.0	41.3	48.25951111	-103.84293528	2265.865						
3630	WELD	13,610.6	3630	0.0	41.3	48.25951155	-103.84310382	2265.353						
3640	WELD	13,651.9	3640	0.0	39.4	48.25951135	-103.84327225	2264.749						
3650	WELD	13,691.3	3650	0.0	41.4	48.25951089	-103.84343309	2265.272						
3660	WELD	13,732.7	3660	0.0	41.4	48.25950922	-103.84360182	2268.140						
3670	WELD	13,774.0	3670	0.0	41.2	48.25950833	-103.84377009	2270.186						
3680	WELD	13,815.2	3680	0.0	41.3	48.25950699	-103.84393857	2271.888						
3690	WELD	13,856.5	3690	0.0	41.2	48.25950581	-103.84410722	2272.434						
3700	WELD	13,897.7	3700	0.0	41.3	48.25950494	-103.84427601	2272.962						
3710	WELD	13,939.0	3710	0.0	41.2	48.25950398	-103.84444486	2273.733						
40000003	Metal Loss - INTERNAL	13,943.1	3710	4.1	37.1	48.25950387	-103.84446175	2273.865	291	9:30	17%	0.55	0.45	1760 100%
3720	WELD	13,980.2	3720	0.0	41.3	48.25950255	-103.84461343	2274.632						
3730	WELD	14,021.5	3730	0.0	41.2	48.25950054	-103.84478196	2275.897						
3740	WELD	14,062.7	3740	0.0	41.2	48.25949844	-103.84494999	2276.641						
3750	WELD	14,103.9	3750	0.0	41.2	48.25949767	-103.84511803	2276.671						



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3760	WELD	14,145.2	3760	0.0	41.0	48.25949702	-103.84528690	2276.635						
3770	WELD	14,186.2	3770	0.0	41.3	48.25949530	-103.84545421	2276.908						
3780	WELD	14,227.5	3780	0.0	41.2	48.25949454	-103.84562288	2277.963						
3790	WELD	14,268.7	3790	0.0	41.2	48.25949367	-103.84579183	2278.892						
3800	WELD	14,309.9	3800	0.0	41.2	48.25949321	-103.84596063	2278.546						
3810	WELD	14,351.2	3810	0.0	41.4	48.25949198	-103.84612951	2278.449						
3820	WELD	14,392.5	3820	0.0	41.4	48.25949097	-103.84629818	2279.143						
3830	WELD	14,433.9	3830	0.0	41.4	48.25948983	-103.84646727	2279.518						
3840	WELD	14,475.3	3840	0.0	41.3	48.25948881	-103.84663638	2279.918						
3850	WELD	14,516.6	3850	0.0	41.3	48.25948803	-103.84680546	2280.478						
3860	WELD	14,557.9	3860	0.0	41.3	48.25948801	-103.84697452	2280.709						
3870	WELD	14,599.2	3870	0.0	41.4	48.25948787	-103.84714369	2281.305						
3880	WELD	14,640.6	3880	0.0	41.3	48.25948720	-103.84731281	2282.205						
3890	WELD	14,681.9	3890	0.0	41.3	48.25948693	-103.84748185	2283.366						
3900	WELD	14,723.2	3900	0.0	41.4	48.25948663	-103.84765062	2284.537						
3910	WELD	14,764.5	3910	0.0	41.4	48.25948551	-103.84781921	2286.568						
3920	WELD	14,805.9	3920	0.0	41.3	48.25948420	-103.84798819	2289.024						
3930	WELD	14,847.2	3930	0.0	41.3	48.25948235	-103.84815681	2291.557						
3940	WELD	14,888.5	3940	0.0	41.4	48.25948066	-103.84832585	2292.262						
3950	WELD	14,929.9	3950	0.0	41.3	48.25947840	-103.84849477	2292.666						
3960	WELD	14,971.2	3960	0.0	41.3	48.25947706	-103.84866372	2293.180						
3970	WELD	15,012.5	3970	0.0	41.4	48.25947697	-103.84883266	2293.299						
3980	WELD	15,053.9	3980	0.0	41.4	48.25947629	-103.84900167	2293.407						
3990	WELD	15,095.3	3990	0.0	41.4	48.25947521	-103.84917076	2293.339						
4000	WELD	15,136.7	4000	0.0	41.3	48.25947396	-103.84933975	2293.519						
4010	WELD	15,178.0	4010	0.0	38.7	48.25947682	-103.84950886	2293.871						
4020	WELD	15,216.8	4020	0.0	27.4	48.25948023	-103.84966750	2294.286						
4030	WELD	15,244.2	4030	0.0	1.2	48.25948193	-103.84977973	2294.442						
4040	WELD	15,245.4	4040	0.0	36.5	48.25948098	-103.84978438	2294.436						
4050	WELD	15,281.9	4050	0.0	41.3	48.25942282	-103.84990615	2294.821						
4060	WELD	15,323.2	4060	0.0	41.2	48.25935716	-103.85004364	2295.491						
4070	WELD	15,364.4	4070	0.0	41.3	48.25929271	-103.85018165	2295.360						
4080	WELD	15,405.8	4080	0.0	41.3	48.25922713	-103.85031887	2295.214						
4090	WELD	15,447.1	4090	0.0	41.2	48.25916136	-103.85045572	2295.325						
40000004	Metal Loss - EXTERNAL	15,449.5	4090	2.4	38.8	48.25915746	-103.85046378	2295.315	179	5:45	11%	0.69	0.70	1760 100%
40000005	Metal Loss - EXTERNAL	15,487.3	4090	40.2	1.0	48.25909720	-103.85058959	2295.742	120	4:00	10%	1.07	0.91	1760 100%
4100	WELD	15,488.3	4100	0.0	41.2	48.25909567	-103.85059277	2295.761						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
4110	WELD	15,529.4	4110	0.0	41.2	48.25903048	-103.85072993	2296.829						
4120	WELD	15,570.7	4120	0.0	41.3	48.25896524	-103.85086703	2298.138						
4130	WELD	15,612.0	4130	0.0	41.1	48.25889936	-103.85100389	2299.779						
4140	WELD	15,653.1	4140	0.0	41.2	48.25883339	-103.85114004	2301.136						
4150	WELD	15,694.3	4150	0.0	41.3	48.25876774	-103.85127619	2302.574						
4160	WELD	15,735.6	4160	0.0	41.2	48.25870261	-103.85141270	2303.317						
4170	WELD	15,776.8	4170	0.0	41.2	48.25863745	-103.85155058	2303.322						
4180	WELD	15,818.0	4180	0.0	41.2	48.25857273	-103.85168805	2303.367						
4190	WELD	15,859.2	4190	0.0	41.2	48.25850781	-103.85182548	2303.350						
4200	WELD	15,900.4	4200	0.0	41.2	48.25844292	-103.85196285	2303.568						
4210	WELD	15,941.7	4210	0.0	41.3	48.25837837	-103.85210046	2303.194						
4220	WELD	15,983.0	4220	0.0	41.3	48.25831295	-103.85223719	2302.927						
4230	WELD	16,024.2	4230	0.0	41.3	48.25824755	-103.85237406	2302.609						
4240	WELD	16,065.5	4240	0.0	41.2	48.25818182	-103.85251047	2301.573						
4250	WELD	16,106.7	4250	0.0	41.3	48.25811677	-103.85264749	2300.286						
4260	WELD	16,148.0	4260	0.0	41.3	48.25805172	-103.85278528	2300.472						
4270	WELD	16,189.3	4270	0.0	41.3	48.25798700	-103.85292321	2301.449						
4280	WELD	16,230.6	4280	0.0	41.2	48.25792173	-103.85306058	2302.086						
4290	WELD	16,271.8	4290	0.0	41.3	48.25785622	-103.85319790	2302.311						
4000006	Metal Loss - EXTERNAL	16,273.5	4290	1.6	39.7	48.25785361	-103.85320335	2302.313	1	12:00	13%	0.54	0.33	1760 100%
4300	WELD	16,313.1	4300	0.0	41.3	48.25779052	-103.85333490	2302.298						
4310	WELD	16,354.4	4310	0.0	49.4	48.25772513	-103.85347219	2302.460						
4320	WELD	16,403.9	4320	0.0	49.4	48.25764689	-103.85363696	2302.637						
4330	WELD	16,453.3	4330	0.0	49.4	48.25756862	-103.85380192	2302.761						
4340	WELD	16,502.7	4340	0.0	48.9	48.25749078	-103.85396707	2303.025						
4350	WELD	16,551.6	4350	0.0	37.4	48.25741327	-103.85412978	2303.086						
4360	WELD	16,589.0	4360	0.0	0.8	48.25735195	-103.85425203	2303.044						
10000017	Bend left - 24 deg., 1.5D	16,589.4	4360	0.1	0.7	48.25735122	-103.85425313	2303.048	0	12:00				
4370	WELD	16,589.8	4370	0.0	7.0	48.25735038	-103.85425407	2303.052						
4380	WELD	16,596.7	4380	0.0	1.2	48.25733399	-103.85426878	2303.182						
10000018	Bend left - 32 deg., 3D	16,597.3	4380	0.1	1.1	48.25733245	-103.85426960	2303.193	0	12:00				
4390	WELD	16,597.9	4390	0.0	44.4	48.25733084	-103.85426999	2303.195						
4400	WELD	16,642.4	4400	0.0	49.6	48.25720910	-103.85427380	2303.048						
4410	WELD	16,692.0	4410	0.0	49.3	48.25707338	-103.85427335	2303.235						
12000001	Debris @ 12:00	16,692.2	4410	0.2	49.1	48.25707279	-103.85427332	2303.237						
4420	WELD	16,741.3	4420	0.0	49.4	48.25693854	-103.85427000	2303.545						
4430	WELD	16,790.7	4430	0.0	49.4	48.25680338	-103.85426910	2303.667						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC
Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
	4440 WELD	16,840.1	4440	0.0	49.5	48.25666826	-103.85426950	2303.687						
	4450 WELD	16,889.6	4450	0.0	49.3	48.25653276	-103.85426920	2304.055						
11000012	WT CHANGE	16,938.8	4450	0.0	0.1	48.25639823	-103.85426919	2304.175			0.322	52000	0.72	
	4460 WELD	16,938.9	4460	0.0	7.6	48.25639799	-103.85426920	2304.177						
	4470 WELD	16,946.5	4470	0.0	42.2	48.25637707	-103.85426950	2304.350						
	4480 WELD	16,988.7	4480	0.0	42.2	48.25626192	-103.85427288	2306.352						
	4490 WELD	17,030.8	4490	0.0	42.2	48.25614704	-103.85428169	2304.443						
	4500 WELD	17,073.0	4500	0.0	42.1	48.25603194	-103.85428852	2304.756						
	4510 WELD	17,115.1	4510	0.0	42.2	48.25591689	-103.85429263	2306.494						
	4520 WELD	17,157.3	4520	0.0	42.2	48.25580183	-103.85429582	2308.327						
	4530 WELD	17,199.5	4530	0.0	42.1	48.25568670	-103.85429660	2310.998						
11000013	WT CHANGE	17,241.5	4530	0.0	0.1	48.25557234	-103.85429840	2314.047			0.188	52000	0.72	
	4540 WELD	17,241.6	4540	0.0	10.3	48.25557207	-103.85429841	2314.051						
	4550 WELD	17,251.8	4550	0.0	1.6	48.25554406	-103.85429963	2314.539						
10000019	Bend right - 45 deg., 3D	17,252.6	4550	0.1	1.4	48.25554207	-103.85430054	2314.587	0	12:00				
	4560 WELD	17,253.4	4560	0.0	48.6	48.25554041	-103.85430229	2314.627						
	4570 WELD	17,302.0	4570	0.0	49.1	48.25545038	-103.85444816	2316.171						
	4580 WELD	17,351.0	4580	0.0	46.6	48.25536244	-103.85459972	2317.389						
	4590 WELD	17,397.7	4590	0.0	49.5	48.25527898	-103.85474401	2317.456						
	4600 WELD	17,447.2	4600	0.0	49.5	48.25519055	-103.85489662	2319.274						
	4610 WELD	17,496.6	4610	0.0	49.5	48.25510198	-103.85504923	2321.096						
	4620 WELD	17,546.1	4620	0.0	49.5	48.25501416	-103.85520323	2321.313						
	4630 WELD	17,595.6	4630	0.0	49.4	48.25492623	-103.85535690	2320.639						
	4640 WELD	17,645.0	4640	0.0	49.5	48.25483861	-103.85551096	2320.705						
	4650 WELD	17,694.5	4650	0.0	49.5	48.25475033	-103.85566414	2321.299						
	4660 WELD	17,744.0	4660	0.0	49.5	48.25466213	-103.85581721	2322.426						
	4670 WELD	17,793.5	4670	0.0	49.4	48.25457459	-103.85597136	2323.583						
	4680 WELD	17,842.9	4680	0.0	49.5	48.25448676	-103.85612457	2324.081						
	4690 WELD	17,892.4	4690	0.0	49.3	48.25439804	-103.85627768	2324.648						
	4700 WELD	17,941.7	4700	0.0	49.3	48.25430918	-103.85642840	2325.413						
	4710 WELD	17,990.9	4710	0.0	49.5	48.25422114	-103.85658091	2325.932						
	4720 WELD	18,040.4	4720	0.0	49.5	48.25413448	-103.85673636	2325.600						
	4730 WELD	18,089.9	4730	0.0	49.4	48.25405600	-103.85689976	2326.173						
	4740 WELD	18,139.3	4740	0.0	49.6	48.25399120	-103.85707714	2327.288						
	4750 WELD	18,188.9	4750	0.0	49.3	48.25392689	-103.85725555	2328.120						
	4760 WELD	18,238.2	4760	0.0	49.4	48.25386227	-103.85743254	2328.347						
	4770 WELD	18,287.7	4770	0.0	49.5	48.25379710	-103.85760963	2328.485						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
4780	WELD	18,337.2	4780	0.0	49.3	48.25373227	-103.857778764	2328.327						
4790	WELD	18,386.5	4790	0.0	49.5	48.25366854	-103.85796511	2328.745						
4800	WELD	18,436.0	4800	0.0	49.3	48.25360395	-103.85814340	2328.371						
4810	WELD	18,485.3	4810	0.0	49.4	48.25353943	-103.85832038	2328.154						
4820	WELD	18,534.7	4820	0.0	49.6	48.25347371	-103.85849666	2328.137						
4830	WELD	18,584.3	4830	0.0	49.4	48.25340795	-103.85867396	2328.975						
4840	WELD	18,633.6	4840	0.0	49.4	48.25334369	-103.85885145	2329.152						
4850	WELD	18,683.1	4850	0.0	49.2	48.25327952	-103.85902923	2327.598						
4860	WELD	18,732.2	4860	0.0	49.5	48.25321477	-103.85920527	2325.225						
4870	WELD	18,781.8	4870	0.0	49.1	48.25315028	-103.85938340	2324.145						
4880	WELD	18,830.9	4880	0.0	49.3	48.25308773	-103.85956082	2323.835						
4890	WELD	18,880.2	4890	0.0	49.2	48.25302360	-103.85973798	2323.802						
4900	WELD	18,929.4	4900	0.0	49.5	48.25295755	-103.85991315	2324.072						
4910	WELD	18,978.9	4910	0.0	49.3	48.25289200	-103.86008981	2323.035						
4920	WELD	19,028.2	4920	0.0	49.5	48.25282957	-103.86026860	2322.646						
4930	WELD	19,077.7	4930	0.0	49.5	48.25276574	-103.86044673	2323.268						
4940	WELD	19,127.2	4940	0.0	49.6	48.25270043	-103.86062395	2324.253						
4950	WELD	19,176.8	4950	0.0	49.5	48.25263587	-103.86080196	2327.303						
4960	WELD	19,226.3	4960	0.0	45.7	48.25257119	-103.86097979	2328.082						
4970	WELD	19,272.0	4970	0.0	49.3	48.25251139	-103.86114289	2324.859						
4980	WELD	19,321.3	4980	0.0	46.0	48.25244668	-103.86131890	2321.011						
4990	WELD	19,367.3	4990	0.0	49.6	48.25238579	-103.86148374	2319.951						
5000	WELD	19,416.9	5000	0.0	49.8	48.25232077	-103.86166128	2322.131						
5010	WELD	19,466.7	5010	0.0	49.0	48.25225592	-103.86183819	2327.500						
5020	WELD	19,515.7	5020	0.0	21.9	48.25219184	-103.86201303	2332.087						
5030	WELD	19,537.6	5030	0.0	0.8	48.25216277	-103.86209114	2332.965						
10000020	Bend left - 25 deg., 3D	19,538.0	5030	0.1	0.8	48.25216201	-103.86209234	2332.966	0	12:00				
5040	WELD	19,538.5	5040	0.0	45.3	48.25216118	-103.86209359	2332.964						
5050	WELD	19,583.7	5050	0.0	49.2	48.25205852	-103.86219699	2331.059						
5060	WELD	19,632.9	5060	0.0	45.5	48.25194680	-103.86230857	2329.151						
5070	WELD	19,678.4	5070	0.0	49.5	48.25184338	-103.86241109	2327.794						
5080	WELD	19,727.9	5080	0.0	49.5	48.25173071	-103.86252255	2328.192						
5090	WELD	19,777.4	5090	0.0	49.5	48.25161837	-103.86263483	2326.371						
5100	WELD	19,826.9	5100	0.0	43.0	48.25150604	-103.86274682	2324.561						
5110	WELD	19,869.9	5110	0.0	27.8	48.25140797	-103.86284380	2323.428						
5120	WELD	19,897.7	5120	0.0	1.1	48.25134416	-103.86290511	2322.900						
10000021	Bend left-up - 30 deg., 3D	19,898.2	5120	0.1	1.0	48.25134278	-103.86290590	2322.896	0	12:00				



Pipeline Listing

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Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
5130	WELD	19,898.8	5130	0.0	46.7	48.25134129	-103.86290633	2322.891						
5140	WELD	19,945.5	5140	0.0	49.4	48.25121356	-103.86291166	2323.122						
5150	WELD	19,995.0	5150	0.0	49.4	48.25107862	-103.86291350	2324.260						
5160	WELD	20,044.4	5160	0.0	49.3	48.25094394	-103.86291454	2327.196						
5170	WELD	20,093.7	5170	0.0	49.6	48.25080941	-103.86291480	2330.350						
5180	WELD	20,143.3	5180	0.0	47.6	48.25067409	-103.86291480	2332.945						
5190	WELD	20,190.9	5190	0.0	49.4	48.25054400	-103.86291560	2334.802						
5200	WELD	20,240.3	5200	0.0	49.4	48.25040919	-103.86291640	2336.177						
5210	WELD	20,289.7	5210	0.0	49.5	48.25027426	-103.86291573	2335.268						
5220	WELD	20,339.2	5220	0.0	49.0	48.25013923	-103.86291440	2331.921						
5230	WELD	20,388.2	5230	0.0	49.6	48.25000558	-103.86291330	2328.186						
5240	WELD	20,437.8	5240	0.0	49.5	48.24987129	-103.86291271	2321.811						
5250	WELD	20,487.3	5250	0.0	48.8	48.24973754	-103.86291330	2314.737						
5260	WELD	20,536.1	5260	0.0	49.2	48.24960526	-103.86291498	2309.604						
5270	WELD	20,585.4	5270	0.0	49.5	48.24947148	-103.86291650	2306.081						
5280	WELD	20,634.9	5280	0.0	49.4	48.24933663	-103.86291830	2304.694						
5290	WELD	20,684.4	5290	0.0	49.6	48.24920193	-103.86291980	2303.339						
5300	WELD	20,733.9	5300	0.0	49.6	48.24906707	-103.86291920	2300.022						
5310	WELD	20,783.5	5310	0.0	49.4	48.24893214	-103.86291880	2296.023						
5320	WELD	20,832.9	5320	0.0	49.6	48.24879739	-103.86291950	2293.858						
5330	WELD	20,882.5	5330	0.0	49.6	48.24866181	-103.86291930	2292.221						
1000022	AGM 030, Sta. 210+54, Two track -- Han #9128	20,926.4	5330	43.9	5.7	48.24854210	-103.86291810	2289.905						
5340	WELD	20,932.1	5340	0.0	49.5	48.24852651	-103.86291800	2289.706						
5350	WELD	20,981.6	5350	0.0	49.2	48.24839112	-103.86291680	2289.466						
5360	WELD	21,030.8	5360	0.0	49.5	48.24825642	-103.86291640	2290.201						
5370	WELD	21,080.4	5370	0.0	49.3	48.24812098	-103.86291650	2290.643						
5380	WELD	21,129.7	5380	0.0	49.3	48.24798644	-103.86291670	2294.468						
5390	WELD	21,179.0	5390	0.0	49.5	48.24785252	-103.86291683	2299.538						
5400	WELD	21,228.6	5400	0.0	49.7	48.24771739	-103.86291787	2303.417						
5410	WELD	21,278.2	5410	0.0	49.6	48.24758188	-103.86292020	2304.971						
5420	WELD	21,327.8	5420	0.0	49.5	48.24744656	-103.86292100	2306.922						
5430	WELD	21,377.3	5430	0.0	49.5	48.24731163	-103.86292020	2310.145						
5440	WELD	21,426.9	5440	0.0	49.3	48.24717641	-103.86292060	2308.161						
5450	WELD	21,476.2	5450	0.0	49.6	48.24704190	-103.86292159	2306.501						
5460	WELD	21,525.8	5460	0.0	49.5	48.24690648	-103.86291980	2308.870						
5470	WELD	21,575.3	5470	0.0	49.5	48.24677126	-103.86291940	2306.904						



Pipeline Listing

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Bethel to Bainville

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5480	WELD	21,624.8	5480	0.0	49.5	48.24663621	-103.86292080	2304.093						
5490	WELD	21,674.2	5490	0.0	49.6	48.24650126	-103.86292380	2306.351						
5500	WELD	21,723.8	5500	0.0	49.5	48.24636684	-103.86292600	2312.217						
5510	WELD	21,773.3	5510	0.0	49.6	48.24623165	-103.86292620	2314.849						
5520	WELD	21,822.9	5520	0.0	49.7	48.24609622	-103.86292660	2316.646						
5530	WELD	21,872.5	5530	0.0	49.8	48.24596091	-103.86292494	2320.035						
5540	WELD	21,922.3	5540	0.0	49.5	48.24582558	-103.86292150	2324.703						
5550	WELD	21,971.8	5550	0.0	49.4	48.24569048	-103.86292230	2326.312						
5560	WELD	22,021.2	5560	0.0	49.4	48.24555560	-103.86292470	2324.816						
5570	WELD	22,070.6	5570	0.0	49.5	48.24542050	-103.86292450	2322.764						
5580	WELD	22,120.1	5580	0.0	49.5	48.24528528	-103.86292320	2321.652						
5590	WELD	22,169.7	5590	0.0	49.4	48.24515008	-103.86292180	2321.311						
20000009	Seam Variation	22,190.4	5590	20.7	28.7	48.24509345	-103.86292120	2320.496	150	5:00	-	0.71	0.95	
5600	WELD	22,219.1	5600	0.0	49.2	48.24501529	-103.86292020	2318.299						
5610	WELD	22,268.3	5610	0.0	49.6	48.24488221	-103.86292000	2311.168						
5620	WELD	22,317.9	5620	0.0	49.5	48.24474830	-103.86292210	2303.175						
5630	WELD	22,367.4	5630	0.0	49.7	48.24461452	-103.86292523	2296.538						
5640	WELD	22,417.1	5640	0.0	49.4	48.24447983	-103.86292777	2290.641						
5650	WELD	22,466.6	5650	0.0	49.4	48.24434552	-103.86292918	2285.698						
5660	WELD	22,516.0	5660	0.0	49.5	48.24421067	-103.86293070	2283.161						
5670	WELD	22,565.4	5670	0.0	49.6	48.24407557	-103.86293120	2282.222						
5680	WELD	22,615.1	5680	0.0	49.6	48.24393997	-103.86293030	2282.750						
5690	WELD	22,664.7	5690	0.0	49.4	48.24380454	-103.86292892	2285.081						
5700	WELD	22,714.1	5700	0.0	49.4	48.24367061	-103.86292690	2290.336						
5710	WELD	22,763.5	5710	0.0	48.9	48.24353639	-103.86292450	2295.009						
5720	WELD	22,812.4	5720	0.0	49.4	48.24340288	-103.86292490	2295.241						
5730	WELD	22,861.9	5730	0.0	49.2	48.24326783	-103.86292664	2293.898						
5740	WELD	22,911.1	5740	0.0	49.4	48.24313357	-103.86292860	2294.322						
5750	WELD	22,960.5	5750	0.0	49.4	48.24299858	-103.86292780	2297.475						
5760	WELD	23,009.9	5760	0.0	49.5	48.24286424	-103.86292780	2301.267						
5770	WELD	23,059.3	5770	0.0	49.5	48.24272981	-103.86292840	2305.841						
5780	WELD	23,108.9	5780	0.0	49.6	48.24259474	-103.86292900	2308.307						
5790	WELD	23,158.5	5790	0.0	49.5	48.24245929	-103.86292860	2308.392						
5800	WELD	23,208.0	5800	0.0	49.5	48.24232420	-103.86292880	2306.275						
5810	WELD	23,257.6	5810	0.0	49.6	48.24218929	-103.86292760	2305.192						
5820	WELD	23,307.2	5820	0.0	49.6	48.24205412	-103.86292900	2305.045						
5830	WELD	23,356.7	5830	0.0	49.5	48.24191886	-103.86292950	2305.588						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC
Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
5840	WELD	23,406.3	5840	0.0	49.4	48.24178361	-103.86293040	2305.455						
5850	WELD	23,455.7	5850	0.0	49.4	48.24164859	-103.86293060	2304.879						
5860	WELD	23,505.1	5860	0.0	49.3	48.24151355	-103.86292779	2304.770						
5870	WELD	23,554.4	5870	0.0	31.2	48.24137860	-103.86292698	2305.306						
11000014	WT CHANGE	23,585.5	5870	0.0	0.1	48.24129375	-103.86293168	2304.030			0.322	52000	0.72	
5880	WELD	23,585.6	5880	0.0	42.1	48.24129348	-103.86293169	2304.025						
5890	WELD	23,627.8	5890	0.0	42.3	48.24117914	-103.86293850	2300.352						
5900	WELD	23,670.0	5900	0.0	42.3	48.24106428	-103.86294040	2296.430						
5910	WELD	23,712.3	5910	0.0	42.1	48.24094914	-103.86293603	2297.889						
11000015	WT CHANGE	23,754.3	5910	0.0	0.1	48.24083509	-103.86293140	2301.935			0.188	52000	0.72	
5920	WELD	23,754.4	5920	0.0	48.9	48.24083483	-103.86293140	2301.939						
5930	WELD	23,803.4	5930	0.0	15.7	48.24070131	-103.86292890	2302.327						
5940	WELD	23,819.1	5940	0.0	45.1	48.24065833	-103.86292890	2301.896						
5950	WELD	23,864.2	5950	0.0	49.5	48.24053545	-103.86293149	2299.700						
5960	WELD	23,913.7	5960	0.0	49.5	48.24040043	-103.86293200	2297.983						
5970	WELD	23,963.2	5970	0.0	49.5	48.24026539	-103.86293130	2296.583						
5980	WELD	24,012.6	5980	0.0	49.5	48.24013028	-103.86292989	2295.684						
5990	WELD	24,062.1	5990	0.0	49.5	48.23999505	-103.86292940	2294.433						
6000	WELD	24,111.6	6000	0.0	49.5	48.23985997	-103.86293040	2291.652						
6010	WELD	24,161.2	6010	0.0	49.5	48.23972459	-103.86293090	2289.811						
6020	WELD	24,210.7	6020	0.0	49.1	48.23958940	-103.86293090	2286.778						
6030	WELD	24,259.8	6030	0.0	49.5	48.23945530	-103.86293120	2284.665						
6040	WELD	24,309.4	6040	0.0	49.6	48.23931984	-103.86293210	2283.014						
6050	WELD	24,359.0	6050	0.0	49.3	48.23918420	-103.86293290	2281.061						
6060	WELD	24,408.3	6060	0.0	46.8	48.23904944	-103.86293350	2279.730						
6070	WELD	24,455.1	6070	0.0	49.5	48.23892177	-103.86293480	2278.350						
6080	WELD	24,504.6	6080	0.0	49.6	48.23878660	-103.86293560	2276.720						
6090	WELD	24,554.2	6090	0.0	46.4	48.23865126	-103.86293559	2275.732						
6100	WELD	24,600.6	6100	0.0	49.5	48.23852464	-103.86293430	2274.603						
6110	WELD	24,650.1	6110	0.0	49.6	48.23838942	-103.86293290	2273.865						
6120	WELD	24,699.6	6120	0.0	49.3	48.23825403	-103.86293281	2272.686						
6130	WELD	24,748.9	6130	0.0	41.7	48.23811918	-103.86293353	2271.504						
6140	WELD	24,790.7	6140	0.0	43.9	48.23800525	-103.86293270	2269.877						
6150	WELD	24,834.6	6150	0.0	49.6	48.23788526	-103.86293200	2267.894						
6160	WELD	24,884.2	6160	0.0	49.7	48.23774967	-103.86293250	2265.911						
6170	WELD	24,933.9	6170	0.0	49.6	48.23761414	-103.86293340	2264.903						
6180	WELD	24,983.5	6180	0.0	49.4	48.23747854	-103.86293260	2264.354						



Pipeline Listing

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Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
6190	WELD	25,032.9	6190	0.0	49.5	48.23734350	-103.86293275	2264.012						
6200	WELD	25,082.5	6200	0.0	49.6	48.23720814	-103.86293330	2265.547						
6210	WELD	25,132.1	6210	0.0	49.6	48.23707282	-103.86293470	2263.758						
6220	WELD	25,181.7	6220	0.0	49.6	48.23693763	-103.86293580	2261.619						
6230	WELD	25,231.3	6230	0.0	49.7	48.23680221	-103.86293520	2262.629						
6240	WELD	25,280.9	6240	0.0	49.5	48.23666661	-103.86293550	2263.765						
6250	WELD	25,330.5	6250	0.0	49.4	48.23653110	-103.86293530	2265.111						
6260	WELD	25,379.9	6260	0.0	49.6	48.23639602	-103.86293490	2266.720						
6270	WELD	25,429.5	6270	0.0	49.4	48.23626041	-103.86293360	2268.739						
6280	WELD	25,479.0	6280	0.0	49.6	48.23612520	-103.86293350	2269.168						
6290	WELD	25,528.6	6290	0.0	49.4	48.23598990	-103.86293390	2267.177						
6300	WELD	25,578.0	6300	0.0	49.5	48.23585508	-103.86293590	2265.880						
6310	WELD	25,627.4	6310	0.0	49.6	48.23571965	-103.86293770	2265.898						
6320	WELD	25,677.0	6320	0.0	49.2	48.23558431	-103.86293916	2264.542						
6330	WELD	25,726.2	6330	0.0	49.2	48.23544975	-103.86293900	2263.920						
6340	WELD	25,775.4	6340	0.0	48.0	48.23531519	-103.86293778	2264.387						
6350	WELD	25,823.4	6350	0.0	49.6	48.23518417	-103.86293690	2263.703						
6360	WELD	25,873.0	6360	0.0	49.4	48.23504866	-103.86293725	2265.322						
6370	WELD	25,922.5	6370	0.0	47.6	48.23491339	-103.86293830	2265.453						
6380	WELD	25,970.1	6380	0.0	49.6	48.23478343	-103.86293580	2265.247						
6390	WELD	26,019.7	6390	0.0	41.4	48.23464787	-103.86293555	2266.353						
6400	WELD	26,061.0	6400	0.0	41.3	48.23453496	-103.86293719	2266.872						
6410	WELD	26,102.3	6410	0.0	41.3	48.23442221	-103.86293970	2267.037						
6420	WELD	26,143.6	6420	0.0	41.3	48.23430931	-103.86294170	2266.318						
6430	WELD	26,185.0	6430	0.0	41.3	48.23419625	-103.86294280	2265.926						
6440	WELD	26,226.3	6440	0.0	41.3	48.23408325	-103.86294240	2265.765						
10000023	AGM 040, Sta. 263+34, Two track -- Han #8802	26,235.9	6440	9.7	31.7	48.23405682	-103.86294220	2265.690						
6450	WELD	26,267.6	6450	0.0	41.3	48.23397022	-103.86294176	2264.914						
6460	WELD	26,308.8	6460	0.0	11.4	48.23385736	-103.86294020	2263.863						
6470	WELD	26,320.3	6470	0.0	40.9	48.23382611	-103.86293980	2263.290						
11000016	WT CHANGE	26,361.1	6470	0.0	0.1	48.23371545	-103.86293653	2259.305			0.322	52000	0.72	
6480	WELD	26,361.2	6480	0.0	9.9	48.23371519	-103.86293652	2259.295						
10000024	Bend right - 90 deg., 7D	26,365.8	6480	1.0	8.9	48.23370310	-103.86294061	2258.815	0	12:00				
6490	WELD	26,371.1	6490	0.0	30.9	48.23369868	-103.86296027	2258.794						
6500	WELD	26,402.0	6500	0.0	42.3	48.23369492	-103.86308677	2258.636						
6510	WELD	26,444.2	6510	0.0	42.2	48.23369151	-103.86325952	2258.634						



Pipeline Listing

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Bethel to Bainville

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6520	WELD	26,486.4	6520	0.0	42.3	48.23368713	-103.86343198	2258.645						
6530	WELD	26,528.7	6530	0.0	37.1	48.23368033	-103.86360428	2258.787						
6540	WELD	26,565.7	6540	0.0	10.0	48.23367619	-103.86375560	2260.262						
10000025	Bend left - 90 deg., 7D	26,570.7	6540	1.3	8.8	48.23367229	-103.86377405	2260.502	0	12:00				
11000017	WT CHANGE	26,575.7	6540	0.0	0.1	48.23365975	-103.86377867	2260.826			0.188	52000	0.72	
6550	WELD	26,575.8	6550	0.0	41.2	48.23365946	-103.86377866	2260.832						
6560	WELD	26,617.0	6560	0.0	23.5	48.23354687	-103.86377630	2262.511						
6570	WELD	26,640.5	6570	0.0	38.7	48.23348257	-103.86377640	2261.955						
6580	WELD	26,679.2	6580	0.0	41.3	48.23337721	-103.86377660	2259.744						
6590	WELD	26,720.6	6590	0.0	41.4	48.23326460	-103.86377590	2257.316						
6600	WELD	26,761.9	6600	0.0	41.3	48.23315165	-103.86377560	2255.849						
6610	WELD	26,803.3	6610	0.0	41.4	48.23303882	-103.86377756	2255.488						
6620	WELD	26,844.7	6620	0.0	41.4	48.23292604	-103.86378010	2255.639						
6630	WELD	26,886.0	6630	0.0	41.4	48.23281286	-103.86378263	2255.428						
6640	WELD	26,927.4	6640	0.0	41.4	48.23270010	-103.86378430	2255.628						
6650	WELD	26,968.8	6650	0.0	41.4	48.23258705	-103.86378552	2255.553						
6660	WELD	27,010.2	6660	0.0	41.4	48.23247404	-103.86378530	2255.885						
6670	WELD	27,051.6	6670	0.0	41.4	48.23236128	-103.86378510	2256.315						
6680	WELD	27,093.0	6680	0.0	41.4	48.23224795	-103.86378510	2256.464						
6690	WELD	27,134.4	6690	0.0	41.4	48.23213517	-103.86378602	2257.035						
6700	WELD	27,175.8	6700	0.0	41.4	48.23202213	-103.86378740	2257.733						
6710	WELD	27,217.2	6710	0.0	41.4	48.23190910	-103.86378850	2257.381						
6720	WELD	27,258.7	6720	0.0	41.4	48.23179640	-103.86379000	2256.001						
6730	WELD	27,300.1	6730	0.0	41.4	48.23168338	-103.86379080	2255.031						
6740	WELD	27,341.5	6740	0.0	41.4	48.23157052	-103.86379040	2253.669						
6750	WELD	27,382.8	6750	0.0	41.4	48.23145758	-103.86379120	2253.037						
6760	WELD	27,424.3	6760	0.0	41.4	48.23134455	-103.86379427	2252.703						
6770	WELD	27,465.7	6770	0.0	41.4	48.23123180	-103.86379730	2251.862						
6780	WELD	27,507.1	6780	0.0	41.4	48.23111906	-103.86379970	2251.387						
6790	WELD	27,548.5	6790	0.0	33.4	48.23100630	-103.86380187	2251.117						
6800	WELD	27,581.8	6800	0.0	1.0	48.23091526	-103.86380757	2250.557						
10000026	Bend right - 30 deg., 1.5D	27,582.4	6800	0.1	0.9	48.23091394	-103.86380804	2250.546	0	12:00				
6810	WELD	27,582.9	6810	0.0	41.1	48.23091274	-103.86380888	2250.539						
6820	WELD	27,624.0	6820	0.0	41.4	48.23081872	-103.86390071	2250.189						
6830	WELD	27,665.4	6830	0.0	41.2	48.23072479	-103.86399440	2250.859						
6840	WELD	27,706.5	6840	0.0	24.7	48.23063147	-103.86408739	2252.622						
6850	WELD	27,731.3	6850	0.0	1.4	48.23057475	-103.86414286	2253.230						



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1000027	Bend left - 40 deg., 3D	27,732.0	6850	0.1	1.3	48.23057304	-103.86414373	2253.218	0 12:00					
	6860 WELD	27,732.7	6860	0.0	21.2	48.23057128	-103.86414397	2253.184						
1100018	WT CHANGE	27,753.8	6860	0.0	0.1	48.23051385	-103.86413605	2251.678			0.322	52000	0.72	
	6870 WELD	27,753.9	6870	0.0	38.8	48.23051356	-103.86413602	2251.672						
	6880 WELD	27,792.8	6880	0.0	42.3	48.23040803	-103.86412572	2247.925						
	6890 WELD	27,835.0	6890	0.0	42.2	48.23029313	-103.86411679	2245.275						
	6900 WELD	27,877.2	6900	0.0	42.2	48.23017831	-103.86410628	2247.326						
1100019	WT CHANGE	27,919.3	6900	0.0	0.1	48.23006448	-103.86409811	2252.550			0.188	52000	0.72	
	6910 WELD	27,919.5	6910	0.0	40.8	48.23006419	-103.86409810	2252.557						
	6920 WELD	27,960.3	6920	0.0	8.6	48.22995308	-103.86409194	2254.046						
	6930 WELD	27,968.9	6930	0.0	40.8	48.22992956	-103.86409050	2254.144						
	6940 WELD	28,009.6	6940	0.0	41.4	48.22981835	-103.86408209	2253.661						
	6950 WELD	28,051.0	6950	0.0	41.3	48.22970539	-103.86407182	2253.827						
	6960 WELD	28,092.4	6960	0.0	41.3	48.22959253	-103.86406121	2252.766						
	6970 WELD	28,133.7	6970	0.0	41.4	48.22947992	-103.86405027	2252.232						
	6980 WELD	28,175.1	6980	0.0	41.3	48.22936722	-103.86404049	2251.611						
	6990 WELD	28,216.4	6990	0.0	41.4	48.22925455	-103.86403274	2251.275						
	7000 WELD	28,257.8	7000	0.0	41.3	48.22914182	-103.86402545	2250.935						
	7010 WELD	28,299.1	7010	0.0	41.4	48.22902927	-103.86401745	2251.416						
	7020 WELD	28,340.6	7020	0.0	41.4	48.22891652	-103.86400802	2252.095						
	7030 WELD	28,381.9	7030	0.0	41.4	48.22880405	-103.86399980	2253.284						
	7040 WELD	28,423.3	7040	0.0	41.4	48.22869114	-103.86399262	2254.212						
	7050 WELD	28,464.7	7050	0.0	41.4	48.22857837	-103.86398472	2254.499						
	7060 WELD	28,506.1	7060	0.0	41.4	48.22846573	-103.86397528	2254.559						
	7070 WELD	28,547.5	7070	0.0	41.4	48.22835286	-103.86396491	2254.317						
	7080 WELD	28,588.9	7080	0.0	41.4	48.22824024	-103.86395352	2254.667						
	7090 WELD	28,630.3	7090	0.0	41.4	48.22812752	-103.86394357	2255.083						
	7100 WELD	28,671.7	7100	0.0	41.4	48.22801494	-103.86393504	2254.498						
	7110 WELD	28,713.1	7110	0.0	41.4	48.22790255	-103.86392633	2253.198						
	7120 WELD	28,754.4	7120	0.0	41.4	48.22778997	-103.86391683	2252.629						
	7130 WELD	28,795.9	7130	0.0	41.4	48.22767734	-103.86390679	2252.188						
	7140 WELD	28,837.3	7140	0.0	41.2	48.22756501	-103.86389349	2250.954						
	7150 WELD	28,878.5	7150	0.0	17.0	48.22745274	-103.86388350	2249.386						
1100020	WT CHANGE	28,895.3	7150	0.0	0.1	48.22740684	-103.86388170	2248.727			0.322	52000	0.72	
	7160 WELD	28,895.5	7160	0.0	42.1	48.22740654	-103.86388170	2248.724						
	7170 WELD	28,937.6	7170	0.0	42.2	48.22729168	-103.86387427	2246.583						
	7180 WELD	28,979.8	7180	0.0	42.3	48.22717697	-103.86386573	2242.998						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
7190	WELD	29,022.1	7190	0.0	42.2	48.22706200	-103.86385918	2240.198						
7200	WELD	29,064.3	7200	0.0	42.2	48.22694689	-103.86385680	2238.626						
7210	WELD	29,106.6	7210	0.0	42.2	48.22683171	-103.86385890	2237.195						
7220	WELD	29,148.7	7220	0.0	42.2	48.22671666	-103.86385950	2236.232						
7230	WELD	29,191.0	7230	0.0	42.3	48.22660153	-103.86385890	2236.083						
7240	WELD	29,233.2	7240	0.0	42.1	48.22648634	-103.86385939	2237.081						
11000021	WT CHANGE	29,275.2	7240	0.0	0.1	48.22637214	-103.86386743	2239.028			0.188	52000	0.72	
7250	WELD	29,275.3	7250	0.0	33.1	48.22637185	-103.86386744	2239.030						
7260	WELD	29,308.5	7260	0.0	11.8	48.22628155	-103.86386876	2239.183						
7270	WELD	29,320.3	7270	0.0	41.2	48.22624941	-103.86386692	2239.209						
7280	WELD	29,361.5	7280	0.0	41.5	48.22613724	-103.86385974	2239.195						
7290	WELD	29,403.0	7290	0.0	41.4	48.22602403	-103.86385830	2239.480						
7300	WELD	29,444.4	7300	0.0	41.4	48.22591129	-103.86385760	2239.560						
7310	WELD	29,485.7	7310	0.0	41.4	48.22579842	-103.86385740	2239.425						
7320	WELD	29,527.1	7320	0.0	41.4	48.22568568	-103.86385680	2240.261						
7330	WELD	29,568.5	7330	0.0	41.4	48.22557293	-103.86385590	2242.268						
7340	WELD	29,609.9	7340	0.0	41.4	48.22545991	-103.86385560	2242.586						
7350	WELD	29,651.3	7350	0.0	41.4	48.22534717	-103.86385340	2241.896						
7360	WELD	29,692.7	7360	0.0	41.4	48.22523440	-103.86385190	2240.549						
7370	WELD	29,734.1	7370	0.0	41.3	48.22512155	-103.86385090	2239.683						
7380	WELD	29,775.4	7380	0.0	41.4	48.22500877	-103.86385100	2239.138						
7390	WELD	29,816.9	7390	0.0	41.4	48.22489603	-103.86385080	2238.136						
7400	WELD	29,858.2	7400	0.0	41.4	48.22478347	-103.86385060	2236.808						
7410	WELD	29,899.6	7410	0.0	41.4	48.22467053	-103.86384870	2237.111						
7420	WELD	29,941.0	7420	0.0	41.4	48.22455740	-103.86384690	2237.336						
7430	WELD	29,982.4	7430	0.0	41.4	48.22444465	-103.86384480	2238.069						
7440	WELD	30,023.7	7440	0.0	41.4	48.22433188	-103.86384295	2239.217						
7450	WELD	30,065.1	7450	0.0	41.4	48.22421868	-103.86384150	2240.377						
7460	WELD	30,106.5	7460	0.0	41.3	48.22410558	-103.86383950	2240.997						
7470	WELD	30,147.8	7470	0.0	41.4	48.22399270	-103.86383800	2240.509						
7480	WELD	30,189.2	7480	0.0	41.4	48.22387970	-103.86383640	2240.105						
7490	WELD	30,230.6	7490	0.0	41.4	48.22376660	-103.86383400	2240.125						
7500	WELD	30,272.0	7500	0.0	41.4	48.22365350	-103.86383290	2239.756						
7510	WELD	30,313.4	7510	0.0	41.4	48.22354036	-103.86383220	2239.244						
7520	WELD	30,354.8	7520	0.0	41.3	48.22342726	-103.86382980	2238.862						
7530	WELD	30,396.0	7530	0.0	31.0	48.22331442	-103.86382652	2238.557						
7540	WELD	30,427.0	7540	0.0	41.4	48.22322970	-103.86382570	2238.962						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
10000028	AGM 050, Sta. 305+18, Two track -- Han #9128	30,459.4	7540	32.4	9.0	48.22314126	-103.86382520	2238.427						
7550	WELD	30,468.4	7550	0.0	41.4	48.22311674	-103.86382459	2238.056						
7560	WELD	30,509.8	7560	0.0	41.4	48.22300382	-103.86382110	2237.000						
7570	WELD	30,551.2	7570	0.0	41.4	48.22289100	-103.86382130	2236.321						
7580	WELD	30,592.6	7580	0.0	41.3	48.22277831	-103.86382310	2236.385						
7590	WELD	30,634.0	7590	0.0	41.4	48.22266573	-103.86382290	2236.165						
7600	WELD	30,675.3	7600	0.0	41.4	48.22255293	-103.86382240	2236.247						
7610	WELD	30,716.7	7610	0.0	41.3	48.22244007	-103.86382360	2236.572						
7620	WELD	30,758.0	7620	0.0	41.4	48.22232743	-103.86382430	2236.987						
7630	WELD	30,799.4	7630	0.0	41.4	48.22221481	-103.86382470	2237.594						
7640	WELD	30,840.8	7640	0.0	41.4	48.22210230	-103.86382540	2238.777						
7650	WELD	30,882.1	7650	0.0	41.3	48.22198941	-103.86382584	2239.388						
7660	WELD	30,923.5	7660	0.0	41.4	48.22187662	-103.86382530	2239.157						
7670	WELD	30,964.8	7670	0.0	41.4	48.22176393	-103.86382480	2238.955						
7680	WELD	31,006.2	7680	0.0	41.3	48.22165092	-103.86382370	2238.062						
7690	WELD	31,047.6	7690	0.0	41.3	48.22153801	-103.86382280	2237.710						
7700	WELD	31,088.9	7700	0.0	41.4	48.22142510	-103.86382270	2237.221						
7710	WELD	31,130.2	7710	0.0	41.3	48.22131212	-103.86382400	2236.305						
7720	WELD	31,171.6	7720	0.0	41.4	48.22119938	-103.86382690	2235.020						
7730	WELD	31,213.0	7730	0.0	41.4	48.22108652	-103.86382960	2234.581						
7740	WELD	31,254.3	7740	0.0	41.4	48.22097380	-103.86383218	2234.089						
7750	WELD	31,295.7	7750	0.0	41.4	48.22086110	-103.86383400	2234.659						
7760	WELD	31,337.1	7760	0.0	41.4	48.22074850	-103.86383490	2235.707						
7770	WELD	31,378.4	7770	0.0	41.4	48.22063598	-103.86383470	2237.404						
7780	WELD	31,419.8	7780	0.0	41.4	48.22052368	-103.86383353	2241.141						
7790	WELD	31,461.1	7790	0.0	41.4	48.22041176	-103.86383240	2246.187						
7800	WELD	31,502.5	7800	0.0	41.4	48.22030004	-103.86383170	2250.832						
7810	WELD	31,543.9	7810	0.0	41.4	48.22018769	-103.86383090	2254.504						
7820	WELD	31,585.3	7820	0.0	41.4	48.22007502	-103.86383182	2255.544						
7830	WELD	31,626.6	7830	0.0	41.4	48.21996274	-103.86383505	2252.520						
7840	WELD	31,668.0	7840	0.0	41.4	48.21985055	-103.86383870	2248.798						
7850	WELD	31,709.5	7850	0.0	41.4	48.21973793	-103.86384207	2247.467						
7860	WELD	31,750.8	7860	0.0	41.4	48.21962513	-103.86384453	2247.252						
7870	WELD	31,792.2	7870	0.0	41.3	48.21951224	-103.86384660	2246.303						
7880	WELD	31,833.5	7880	0.0	41.3	48.21939948	-103.86384770	2247.122						
7890	WELD	31,874.8	7890	0.0	41.4	48.21928676	-103.86384830	2249.271						



Pipeline Listing

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Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
7900	WELD	31,916.2	7900	0.0	41.4	48.21917388	-103.86384970	2251.675						
7910	WELD	31,957.6	7910	0.0	41.4	48.21906104	-103.86385060	2253.922						
7920	WELD	31,999.0	7920	0.0	41.3	48.21894822	-103.86385100	2255.219						
7930	WELD	32,040.3	7930	0.0	41.4	48.21883549	-103.86385210	2255.731						
7940	WELD	32,081.7	7940	0.0	41.4	48.21872259	-103.86385370	2256.140						
7950	WELD	32,123.1	7950	0.0	41.4	48.21860990	-103.86385558	2256.357						
7960	WELD	32,164.4	7960	0.0	41.3	48.21849722	-103.86385867	2256.834						
7970	WELD	32,205.8	7970	0.0	41.4	48.21838424	-103.86386124	2257.532						
7980	WELD	32,247.1	7980	0.0	41.3	48.21827131	-103.86386300	2257.920						
7990	WELD	32,288.5	7990	0.0	41.4	48.21815839	-103.86386236	2258.170						
8000	WELD	32,329.9	8000	0.0	34.5	48.21804551	-103.86385703	2257.582						
8010	WELD	32,364.4	8010	0.0	9.7	48.21795152	-103.86384856	2257.459						
8020	WELD	32,374.2	8020	0.0	9.5	48.21792495	-103.86384554	2257.307						
10000029	Bend right - 90 deg., 8D	32,378.7	8020	1.2	8.3	48.21791335	-103.86384963	2257.186	0	12:00				
8030	WELD	32,383.6	8030	0.0	38.5	48.21790893	-103.86386790	2257.078						
8040	WELD	32,422.1	8040	0.0	50.2	48.21789931	-103.86402549	2255.678						
8050	WELD	32,472.4	8050	0.0	49.5	48.21788749	-103.86422942	2251.857						
8060	WELD	32,521.9	8060	0.0	49.3	48.21787767	-103.86443029	2246.493						
8070	WELD	32,571.2	8070	0.0	49.3	48.21786791	-103.86463074	2242.293						
8080	WELD	32,620.5	8080	0.0	49.7	48.21785680	-103.86483104	2239.771						
8090	WELD	32,670.2	8090	0.0	49.6	48.21784488	-103.86503352	2239.531						
8100	WELD	32,719.8	8100	0.0	49.6	48.21783414	-103.86523544	2236.722						
8110	WELD	32,769.4	8110	0.0	49.6	48.21782344	-103.86543707	2233.699						
8120	WELD	32,819.0	8120	0.0	49.4	48.21781209	-103.86563923	2232.812						
8130	WELD	32,868.4	8130	0.0	49.7	48.21779959	-103.86584005	2233.829						
8140	WELD	32,918.1	8140	0.0	49.7	48.21778631	-103.86604237	2233.908						
8150	WELD	32,967.8	8150	0.0	49.6	48.21777405	-103.86624459	2231.285						
8160	WELD	33,017.4	8160	0.0	49.7	48.21776166	-103.86644643	2228.714						
8170	WELD	33,067.1	8170	0.0	49.7	48.21774841	-103.86664857	2228.636						
8180	WELD	33,116.8	8180	0.0	49.7	48.21773450	-103.86685047	2231.632						
8190	WELD	33,166.5	8190	0.0	49.7	48.21772012	-103.86705224	2234.126						
8200	WELD	33,216.2	8200	0.0	49.5	48.21770544	-103.86725402	2235.788						
8210	WELD	33,265.8	8210	0.0	49.7	48.21769025	-103.86745479	2239.073						
8220	WELD	33,315.5	8220	0.0	49.4	48.21767414	-103.86765608	2242.537						
40000007	Metal Loss - EXTERNAL	33,325.7	8220	10.2	39.2	48.21767075	-103.86769742	2242.949	244	8:00	11%	0.42	0.54	1760 100%
8230	WELD	33,364.8	8230	0.0	49.7	48.21765758	-103.86785624	2243.942						
8240	WELD	33,414.5	8240	0.0	49.7	48.21764234	-103.86805794	2242.854						

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
8250	WELD	33,464.2	8250	0.0	49.5	48.21762962	-103.86826008	2241.596						
8260	WELD	33,513.7	8260	0.0	49.6	48.21761715	-103.86846114	2239.911						
8270	WELD	33,563.3	8270	0.0	49.5	48.21760343	-103.86866298	2238.324						
8280	WELD	33,612.9	8280	0.0	49.6	48.21759033	-103.86886448	2238.388						
8290	WELD	33,662.5	8290	0.0	49.3	48.21757801	-103.86906621	2239.515						
8300	WELD	33,711.8	8300	0.0	49.7	48.21756603	-103.86926623	2242.247						
8310	WELD	33,761.4	8310	0.0	49.7	48.21755599	-103.86946827	2246.219						
8320	WELD	33,811.1	8320	0.0	49.7	48.21754777	-103.86967019	2250.479						
8330	WELD	33,860.8	8330	0.0	49.4	48.21753784	-103.86987205	2254.038						
8340	WELD	33,910.2	8340	0.0	32.9	48.21752561	-103.87007311	2255.424						
8350	WELD	33,943.1	8350	0.0	0.6	48.21751659	-103.87020709	2256.835						
10000030	Bend left - 21 deg., 1.5D	33,943.4	8350	0.1	0.6	48.21751634	-103.87020826	2256.841	0	12:00				
8360	WELD	33,943.7	8360	0.0	30.4	48.21751604	-103.87020950	2256.847						
8370	WELD	33,974.1	8370	0.0	49.2	48.21748158	-103.87032223	2258.195						
8380	WELD	34,023.4	8380	0.0	49.5	48.21742629	-103.87050576	2260.318						
8390	WELD	34,072.8	8390	0.0	49.2	48.21737089	-103.87069058	2259.874						
8400	WELD	34,122.0	8400	0.0	49.3	48.21731444	-103.87087289	2257.626						
8410	WELD	34,171.3	8410	0.0	49.7	48.21725690	-103.87105476	2255.255						
8420	WELD	34,221.0	8420	0.0	49.2	48.21719934	-103.87123824	2252.708						
8430	WELD	34,270.2	8430	0.0	49.5	48.21714225	-103.87142026	2249.988						
8440	WELD	34,319.7	8440	0.0	49.6	48.21708453	-103.87160290	2246.934						
8450	WELD	34,369.3	8450	0.0	49.7	48.21702661	-103.87178596	2244.116						
8460	WELD	34,419.0	8460	0.0	48.0	48.21696929	-103.87196963	2241.125						
8470	WELD	34,467.0	8470	0.0	49.6	48.21691318	-103.87214652	2238.918						
8480	WELD	34,516.6	8480	0.0	49.5	48.21685419	-103.87232914	2236.739						
8490	WELD	34,566.1	8490	0.0	41.4	48.21679555	-103.87251179	2235.245						
8500	WELD	34,607.5	8500	0.0	41.4	48.21674700	-103.87266438	2234.079						
8510	WELD	34,648.9	8510	0.0	41.4	48.21669868	-103.87281701	2232.417						
8520	WELD	34,690.2	8520	0.0	41.3	48.21665056	-103.87296975	2231.268						
8530	WELD	34,731.5	8530	0.0	41.4	48.21660265	-103.87312277	2229.722						
8540	WELD	34,772.9	8540	0.0	41.4	48.21655429	-103.87327546	2228.857						
8550	WELD	34,814.3	8550	0.0	41.4	48.21650520	-103.87342782	2228.113						
8560	WELD	34,855.7	8560	0.0	41.4	48.21645589	-103.87357970	2226.976						
8570	WELD	34,897.0	8570	0.0	41.3	48.21640648	-103.87373174	2225.982						
8580	WELD	34,938.4	8580	0.0	41.4	48.21635656	-103.87388331	2225.214						
8590	WELD	34,979.7	8590	0.0	41.4	48.21630716	-103.87403539	2224.510						
8600	WELD	35,021.1	8600	0.0	41.4	48.21625700	-103.87418679	2223.716						



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8610	WELD	35,062.5	8610	0.0	41.3	48.21620726	-103.87433866	2222.833						
8620	WELD	35,103.8	8620	0.0	41.4	48.21615867	-103.87449110	2221.356						
8630	WELD	35,145.1	8630	0.0	41.3	48.21611007	-103.87464350	2219.087						
8640	WELD	35,186.5	8640	0.0	41.4	48.21606087	-103.87479538	2217.663						
8650	WELD	35,227.8	8650	0.0	41.4	48.21601107	-103.87494695	2216.048						
8660	WELD	35,269.2	8660	0.0	41.4	48.21596190	-103.87509908	2214.493						
8670	WELD	35,310.6	8670	0.0	41.4	48.21591245	-103.87525107	2213.415						
8680	WELD	35,352.0	8680	0.0	41.3	48.21586194	-103.87540224	2213.063						
8690	WELD	35,393.3	8690	0.0	41.4	48.21581109	-103.87555296	2212.806						
8700	WELD	35,434.7	8700	0.0	41.3	48.21576058	-103.87570371	2211.724						
8710	WELD	35,476.0	8710	0.0	41.4	48.21571102	-103.87585543	2211.041						
8720	WELD	35,517.4	8720	0.0	41.4	48.21566263	-103.87600810	2209.007						
8730	WELD	35,558.8	8730	0.0	41.3	48.21561468	-103.87616128	2206.746						
8740	WELD	35,600.1	8740	0.0	41.3	48.21556700	-103.87631440	2205.238						
8750	WELD	35,641.4	8750	0.0	41.3	48.21551837	-103.87646683	2204.709						
8760	WELD	35,682.8	8760	0.0	41.4	48.21546954	-103.87661923	2204.060						
8770	WELD	35,724.1	8770	0.0	41.4	48.21542112	-103.87677185	2203.672						
8780	WELD	35,765.5	8780	0.0	41.4	48.21537252	-103.87692425	2202.615						
8790	WELD	35,806.9	8790	0.0	41.4	48.21532366	-103.87707661	2202.784						
8800	WELD	35,848.2	8800	0.0	41.3	48.21527481	-103.87722899	2202.497						
8810	WELD	35,889.6	8810	0.0	41.3	48.21522612	-103.87738161	2201.731						
8820	WELD	35,930.9	8820	0.0	41.3	48.21517890	-103.87753517	2200.241						
8830	WELD	35,972.2	8830	0.0	41.3	48.21513162	-103.87768829	2198.637						
8840	WELD	36,013.5	8840	0.0	41.4	48.21508333	-103.87784115	2197.641						
8850	WELD	36,054.9	8850	0.0	41.4	48.21503528	-103.87799424	2196.678						
8860	WELD	36,096.3	8860	0.0	41.3	48.21498672	-103.87814717	2196.064						
8870	WELD	36,137.6	8870	0.0	41.4	48.21493748	-103.87829935	2196.234						
8880	WELD	36,179.0	8880	0.0	41.3	48.21488859	-103.87845209	2195.696						
8890	WELD	36,220.3	8890	0.0	41.4	48.21484053	-103.87860500	2194.459						
8900	WELD	36,261.7	8900	0.0	41.3	48.21479216	-103.87875783	2193.560						
8910	WELD	36,303.0	8910	0.0	41.4	48.21474311	-103.87891026	2192.590						
8920	WELD	36,344.4	8920	0.0	41.3	48.21469372	-103.87906263	2191.730						
8930	WELD	36,385.7	8930	0.0	41.3	48.21464540	-103.87921542	2190.649						
8940	WELD	36,427.0	8940	0.0	41.4	48.21459706	-103.87936816	2189.564						
8950	WELD	36,468.4	8950	0.0	41.4	48.21454827	-103.87952071	2189.004						
8960	WELD	36,509.8	8960	0.0	41.3	48.21449980	-103.87967349	2188.681						
8970	WELD	36,551.1	8970	0.0	41.4	48.21445131	-103.87982611	2188.642						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC
Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
8980	WELD	36,592.5	8980	0.0	41.3	48.21440248	-103.87997868	2188.193						
8990	WELD	36,633.8	8990	0.0	41.3	48.21435347	-103.88013084	2187.478						
9000	WELD	36,675.1	9000	0.0	41.3	48.21430445	-103.88028313	2186.904						
9010	WELD	36,716.5	9010	0.0	41.3	48.21425622	-103.88043590	2185.856						
9020	WELD	36,757.8	9020	0.0	41.4	48.21420838	-103.88058897	2184.532						
9030	WELD	36,799.1	9030	0.0	41.3	48.21416015	-103.88074180	2183.595						
9040	WELD	36,840.5	9040	0.0	41.4	48.21411164	-103.88089426	2183.613						
9050	WELD	36,881.8	9050	0.0	41.4	48.21406349	-103.88104715	2183.212						
9060	WELD	36,923.2	9060	0.0	41.4	48.21401531	-103.88120004	2183.303						
9070	WELD	36,964.5	9070	0.0	47.1	48.21396597	-103.88135215	2184.348						
11000022	WT CHANGE	37,011.5	9070	0.0	0.1	48.21390849	-103.88152414	2185.216			0.322	52000	0.72	
9080	WELD	37,011.7	9080	0.0	27.6	48.21390836	-103.88152452	2185.213						
9090	WELD	37,039.3	9090	0.0	42.2	48.21387422	-103.88162497	2183.898						
9100	WELD	37,081.5	9100	0.0	42.2	48.21382243	-103.88177807	2179.955						
9110	WELD	37,123.7	9110	0.0	42.2	48.21377236	-103.88193077	2172.780						
9120	WELD	37,165.9	9120	0.0	42.2	48.21372165	-103.88208317	2166.379						
9130	WELD	37,208.1	9130	0.0	42.2	48.21366883	-103.88223507	2161.539						
9140	WELD	37,250.3	9140	0.0	42.2	48.21361563	-103.88238781	2159.932						
9150	WELD	37,292.6	9150	0.0	42.2	48.21356286	-103.88254104	2162.030						
9160	WELD	37,334.8	9160	0.0	42.2	48.21351088	-103.88269390	2166.105						
11000023	WT CHANGE	37,376.8	9160	0.0	0.1	48.21345918	-103.88284641	2168.773			0.188	52000	0.72	
9170	WELD	37,376.9	9170	0.0	36.9	48.21345903	-103.88284688	2168.775						
9180	WELD	37,413.8	9180	0.0	40.9	48.21341614	-103.88298365	2169.936						
9190	WELD	37,454.7	9190	0.0	41.3	48.21337109	-103.88313418	2175.747						
9200	WELD	37,496.0	9200	0.0	41.4	48.21332648	-103.88328323	2185.638						
9210	WELD	37,537.4	9210	0.0	41.3	48.21327818	-103.88343365	2190.725						
9220	WELD	37,578.7	9220	0.0	41.4	48.21322884	-103.88358564	2191.107						
9230	WELD	37,620.1	9230	0.0	41.3	48.21318048	-103.88373777	2190.221						
9240	WELD	37,661.4	9240	0.0	41.4	48.21313204	-103.88389030	2190.499						
9250	WELD	37,702.8	9250	0.0	41.3	48.21308407	-103.88404313	2190.574						
9260	WELD	37,744.1	9260	0.0	41.2	48.21303800	-103.88419748	2190.873						
9270	WELD	37,785.3	9270	0.0	23.5	48.21299321	-103.88435192	2190.121						
11000024	WT CHANGE	37,808.7	9270	0.0	0.1	48.21296629	-103.88443876	2190.208			0.322	52000	0.72	
9280	WELD	37,808.7	9280	0.0	0.5	48.21296619	-103.88443895	2190.210						
10000031	Bend left - 18 deg., 1.5D	37,809.0	9280	0.0	0.4	48.21296584	-103.88443967	2190.219	0	12:00				
9290	WELD	37,809.2	9290	0.0	38.0	48.21296549	-103.88444040	2190.229						
9300	WELD	37,847.2	9300	0.0	42.2	48.21289901	-103.88456008	2191.193						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
9310	WELD	37,889.4	9310	0.0	42.2	48.21282604	-103.88469385	2191.208						
9320	WELD	37,931.6	9320	0.0	42.2	48.21275507	-103.88482984	2190.843						
9330	WELD	37,973.8	9330	0.0	42.2	48.21268402	-103.88496544	2190.528						
9340	WELD	38,016.0	9340	0.0	42.2	48.21261270	-103.88510066	2191.648						
9350	WELD	38,058.3	9350	0.0	42.2	48.21254417	-103.88523913	2194.041						
9360	WELD	38,100.5	9360	0.0	42.2	48.21247495	-103.88537692	2195.330						
9370	WELD	38,142.7	9370	0.0	37.4	48.21240332	-103.88551204	2196.141						
11000025	WT CHANGE	38,179.9	9370	0.0	0.1	48.21233329	-103.88562179	2196.491			0.188	52000	0.72	
9380	WELD	38,180.1	9380	0.0	7.0	48.21233308	-103.88562210	2196.490						
9390	WELD	38,187.0	9390	0.0	41.2	48.21231928	-103.88564209	2196.552						
9400	WELD	38,228.2	9400	0.0	41.3	48.21223777	-103.88575791	2197.200						
9410	WELD	38,269.5	9410	0.0	41.4	48.21215659	-103.88587544	2197.414						
9420	WELD	38,310.8	9420	0.0	41.3	48.21207668	-103.88599489	2197.014						
9430	WELD	38,352.2	9430	0.0	41.4	48.21199626	-103.88611361	2196.253						
9440	WELD	38,393.5	9440	0.0	41.4	48.21191562	-103.88623209	2195.890						
9450	WELD	38,434.9	9450	0.0	41.3	48.21183498	-103.88635053	2194.694						
9460	WELD	38,476.2	9460	0.0	41.4	48.21175479	-103.88646961	2193.653						
9470	WELD	38,517.6	9470	0.0	41.3	48.21167448	-103.88658850	2193.554						
9480	WELD	38,558.9	9480	0.0	41.4	48.21159366	-103.88670645	2194.439						
9490	WELD	38,600.3	9490	0.0	41.3	48.21151279	-103.88682382	2195.416						
9500	WELD	38,641.6	9500	0.0	41.4	48.21143139	-103.88694102	2197.178						
9510	WELD	38,683.0	9510	0.0	41.3	48.21135066	-103.88705906	2197.651						
9520	WELD	38,724.3	9520	0.0	41.4	48.21127078	-103.88717862	2197.889						
9530	WELD	38,765.7	9530	0.0	41.4	48.21119081	-103.88729788	2199.106						
9540	WELD	38,807.0	9540	0.0	41.4	48.21111110	-103.88741766	2199.928						
9550	WELD	38,848.4	9550	0.0	41.3	48.21103098	-103.88753695	2200.715						
9560	WELD	38,889.7	9560	0.0	41.4	48.21095052	-103.88765535	2202.040						
9570	WELD	38,931.1	9570	0.0	41.4	48.21087000	-103.88777351	2203.602						
9580	WELD	38,972.5	9580	0.0	41.4	48.21078944	-103.88789162	2204.851						
9590	WELD	39,013.9	9590	0.0	41.4	48.21070874	-103.88800905	2206.350						
9600	WELD	39,055.2	9600	0.0	41.3	48.21062872	-103.88812741	2207.480						
9610	WELD	39,096.6	9610	0.0	41.3	48.21054911	-103.88824638	2208.011						
9620	WELD	39,137.9	9620	0.0	41.3	48.21046907	-103.88836491	2208.249						
9630	WELD	39,179.2	9630	0.0	41.4	48.21038853	-103.88848295	2208.855						
9640	WELD	39,220.6	9640	0.0	41.3	48.21030811	-103.88860132	2208.643						
9650	WELD	39,261.9	9650	0.0	49.5	48.21022770	-103.88871960	2208.203						
9660	WELD	39,311.4	9660	0.0	49.6	48.21013197	-103.88886195	2207.398						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
9670	WELD	39,361.0	9670	0.0	49.3	48.21003608	-103.88900420	2206.171						
9680	WELD	39,410.3	9680	0.0	49.6	48.20994052	-103.88914562	2204.998						
20000011	Seam Variation	39,419.1	9680	8.7	40.9	48.20992355	-103.88917062	2204.831	11 12:15	-	0.82	0.54		
20000012	Seam Variation	39,454.7	9680	44.4	5.2	48.20985431	-103.88927297	2204.065	17 12:30	-	0.47	0.41		
9690	WELD	39,459.9	9690	0.0	49.7	48.20984419	-103.88928792	2203.906						
9700	WELD	39,509.6	9700	0.0	49.3	48.20974854	-103.88943053	2202.548						
9710	WELD	39,558.9	9710	0.0	49.5	48.20965258	-103.88957109	2201.663						
9720	WELD	39,608.4	9720	0.0	49.7	48.20955614	-103.88971229	2201.122						
9730	WELD	39,658.1	9730	0.0	44.1	48.20945953	-103.88985397	2200.769						
9740	WELD	39,702.2	9740	0.0	49.7	48.20937360	-103.88997996	2200.685						
9750	WELD	39,751.9	9750	0.0	49.7	48.20927730	-103.89012282	2201.614						
9760	WELD	39,801.5	9760	0.0	49.7	48.20918133	-103.89026590	2201.596						
9770	WELD	39,851.2	9770	0.0	49.2	48.20908521	-103.89040895	2202.368						
9780	WELD	39,900.5	9780	0.0	49.4	48.20899003	-103.89055068	2203.167						
9790	WELD	39,949.9	9790	0.0	49.5	48.20889348	-103.89069145	2204.078						
9800	WELD	39,999.4	9800	0.0	49.3	48.20879652	-103.89083315	2205.469						
9810	WELD	40,048.7	9810	0.0	9.0	48.20870048	-103.89097443	2206.221						
9820	WELD	40,057.7	9820	0.0	49.2	48.20868293	-103.89100016	2206.664						
9830	WELD	40,106.9	9830	0.0	49.8	48.20858723	-103.89114041	2209.993						
9840	WELD	40,156.7	9840	0.0	49.5	48.20849118	-103.89128371	2213.700						
9850	WELD	40,206.1	9850	0.0	49.2	48.20839666	-103.89142669	2218.170						
9860	WELD	40,255.4	9860	0.0	49.7	48.20830164	-103.89156845	2221.716						
9870	WELD	40,305.0	9870	0.0	49.7	48.20820544	-103.89171136	2224.321						
9880	WELD	40,354.7	9880	0.0	49.6	48.20810909	-103.89185442	2225.610						
9890	WELD	40,404.3	9890	0.0	49.5	48.20801245	-103.89199672	2225.898						
9900	WELD	40,453.9	9900	0.0	49.7	48.20791631	-103.89213904	2225.385						
9910	WELD	40,503.6	9910	0.0	49.0	48.20782011	-103.89228212	2225.361						
9920	WELD	40,552.6	9920	0.0	44.6	48.20772485	-103.89242294	2225.225						
9930	WELD	40,597.2	9930	0.0	25.6	48.20763668	-103.89254951	2224.236						
9940	WELD	40,622.8	9940	0.0	0.9	48.20758580	-103.89262065	2223.322						
10000033	Bend left - 27 deg., 1.5D	40,623.2	9940	0.1	0.8	48.20758470	-103.89262171	2223.304	0 12:00					
9950	WELD	40,623.7	9950	0.0	48.1	48.20758350	-103.89262248	2223.287						
9960	WELD	40,671.8	9960	0.0	49.4	48.20745684	-103.89267508	2221.251						
9970	WELD	40,721.2	9970	0.0	49.6	48.20732582	-103.89272249	2219.279						
9980	WELD	40,770.8	9980	0.0	49.4	48.20719180	-103.89274650	2218.405						
9990	WELD	40,820.2	9990	0.0	49.6	48.20705696	-103.89274890	2217.879						
10000	WELD	40,869.8	10000	0.0	49.6	48.20692141	-103.89275288	2216.923						



Pipeline Listing

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10010	WELD	40,919.4	10010	0.0	49.7	48.20678603	-103.89275962	2214.566						
10020	WELD	40,969.1	10020	0.0	49.6	48.20665108	-103.89276540	2209.734						
20000013	Seam Variation	41,009.9	10020	40.8	8.8	48.20654034	-103.89276900	2204.756	232 7:30	-	0.47	0.45		
10030	WELD	41,018.7	10030	0.0	49.5	48.20651655	-103.89276970	2203.792						
10040	WELD	41,068.2	10040	0.0	49.5	48.20638159	-103.89277375	2199.520						
10050	WELD	41,117.7	10050	0.0	49.6	48.20624655	-103.89277690	2199.391						
10060	WELD	41,167.3	10060	0.0	49.5	48.20611079	-103.89277944	2200.367						
10070	WELD	41,216.8	10070	0.0	49.6	48.20597541	-103.89278217	2199.717						
10080	WELD	41,266.4	10080	0.0	49.5	48.20584010	-103.89278600	2198.101						
10090	WELD	41,315.9	10090	0.0	49.6	48.20570480	-103.89279011	2196.731						
10100	WELD	41,365.5	10100	0.0	49.3	48.20556940	-103.89279464	2196.401						
10110	WELD	41,414.8	10110	0.0	49.6	48.20543467	-103.89279875	2196.542						
10120	WELD	41,464.3	10120	0.0	41.4	48.20529899	-103.89280222	2196.240						
10130	WELD	41,505.7	10130	0.0	41.4	48.20518614	-103.89280581	2195.767						
10140	WELD	41,547.1	10140	0.0	41.3	48.20507322	-103.89280966	2195.547						
10150	WELD	41,588.5	10150	0.0	41.4	48.20496016	-103.89281344	2195.497						
10160	WELD	41,629.8	10160	0.0	41.4	48.20484718	-103.89281868	2194.556						
10170	WELD	41,671.2	10170	0.0	41.4	48.20473438	-103.89282200	2196.120						
10180	WELD	41,712.6	10180	0.0	41.4	48.20462193	-103.89282599	2198.911						
10190	WELD	41,753.9	10190	0.0	41.4	48.20450932	-103.89282870	2202.136						
10200	WELD	41,795.3	10200	0.0	41.4	48.20439654	-103.89283109	2204.547						
10210	WELD	41,836.7	10210	0.0	41.4	48.20428390	-103.89283240	2207.778						
10220	WELD	41,878.1	10220	0.0	41.4	48.20417171	-103.89283260	2212.583						
10230	WELD	41,919.5	10230	0.0	41.4	48.20405920	-103.89283280	2216.368						
10240	WELD	41,960.8	10240	0.0	41.4	48.20394635	-103.89283300	2218.494						
10250	WELD	42,002.2	10250	0.0	41.3	48.20383327	-103.89283360	2219.820						
10260	WELD	42,043.5	10260	0.0	41.4	48.20372083	-103.89283480	2221.974						
10270	WELD	42,084.9	10270	0.0	41.4	48.20360790	-103.89283540	2224.562						
10280	WELD	42,126.3	10280	0.0	41.4	48.20349485	-103.89283510	2226.056						
10290	WELD	42,167.6	10290	0.0	41.3	48.20338186	-103.89283490	2226.711						
10300	WELD	42,209.0	10300	0.0	41.4	48.20326885	-103.89283580	2226.159						
10310	WELD	42,250.4	10310	0.0	41.4	48.20315595	-103.89283730	2225.335						
10320	WELD	42,291.7	10320	0.0	41.3	48.20304281	-103.89283880	2224.954						
10330	WELD	42,333.0	10330	0.0	41.3	48.20292992	-103.89284010	2224.528						
10340	WELD	42,374.4	10340	0.0	41.4	48.20281706	-103.89284173	2223.966						
13000000	GAIN	42,392.5	10340	18.0	23.4	48.20276754	-103.89284300	2223.644	126 4:00					
10350	WELD	42,415.8	10350	0.0	41.3	48.20270400	-103.89284484	2223.297						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
10360	WELD	42,457.1	10360	0.0	41.4	48.20259106	-103.89284804	2222.819						
10370	WELD	42,498.4	10370	0.0	41.4	48.20247815	-103.89285077	2222.431						
10380	WELD	42,539.8	10380	0.0	41.4	48.20236518	-103.89285290	2222.188						
10390	WELD	42,581.2	10390	0.0	41.4	48.20225220	-103.89285530	2221.332						
10400	WELD	42,622.5	10400	0.0	41.4	48.20213919	-103.89285840	2221.098						
10410	WELD	42,663.9	10410	0.0	41.3	48.20202639	-103.89286267	2220.392						
10420	WELD	42,705.2	10420	0.0	41.4	48.20191372	-103.89286711	2219.967						
10430	WELD	42,746.6	10430	0.0	41.3	48.20180076	-103.89287073	2219.792						
10440	WELD	42,787.9	10440	0.0	41.4	48.20168790	-103.89287370	2219.862						
10450	WELD	42,829.3	10450	0.0	41.4	48.20157494	-103.89287699	2220.010						
10460	WELD	42,870.7	10460	0.0	41.4	48.20146198	-103.89288056	2219.782						
10470	WELD	42,912.0	10470	0.0	41.4	48.20134904	-103.89288430	2219.534						
10480	WELD	42,953.4	10480	0.0	41.4	48.20123608	-103.89288758	2219.647						
10490	WELD	42,994.7	10490	0.0	41.4	48.20112319	-103.89289010	2219.656						
10500	WELD	43,036.1	10500	0.0	41.4	48.20101045	-103.89289270	2219.356						
10510	WELD	43,077.5	10510	0.0	41.4	48.20089750	-103.89289629	2218.744						
10520	WELD	43,118.8	10520	0.0	41.4	48.20078458	-103.89290048	2218.419						
10530	WELD	43,160.2	10530	0.0	41.4	48.20067158	-103.89290420	2217.780						
10540	WELD	43,201.6	10540	0.0	41.4	48.20055880	-103.89290792	2216.982						
10550	WELD	43,242.9	10550	0.0	41.3	48.20044602	-103.89291200	2216.030						
10560	WELD	43,284.3	10560	0.0	41.4	48.20033321	-103.89291550	2215.117						
10570	WELD	43,325.6	10570	0.0	41.2	48.20022036	-103.89291840	2214.760						
10580	WELD	43,366.8	10580	0.0	41.0	48.20010787	-103.89292190	2214.341						
10590	WELD	43,407.8	10590	0.0	41.4	48.19999602	-103.89292558	2212.925						
10600	WELD	43,449.2	10600	0.0	33.8	48.19988308	-103.89292734	2211.667						
10610	WELD	43,482.9	10610	0.0	41.0	48.19979081	-103.89292902	2211.083						
10620	WELD	43,524.0	10620	0.0	41.3	48.19967871	-103.89293310	2210.372						
10630	WELD	43,565.3	10630	0.0	41.3	48.19956596	-103.89293689	2208.037						
10640	WELD	43,606.6	10640	0.0	41.3	48.19945308	-103.89293984	2206.427						
10650	WELD	43,648.0	10650	0.0	41.4	48.19933996	-103.89294260	2205.416						
10660	WELD	43,689.3	10660	0.0	41.3	48.19922705	-103.89294521	2203.798						
10670	WELD	43,730.7	10670	0.0	41.4	48.19911403	-103.89294800	2202.714						
10680	WELD	43,772.0	10680	0.0	41.3	48.19900098	-103.89294950	2202.171						
10690	WELD	43,813.3	10690	0.0	41.4	48.19888811	-103.89295180	2201.413						
10700	WELD	43,854.7	10700	0.0	41.3	48.19877500	-103.89295480	2200.687						
10710	WELD	43,896.0	10710	0.0	41.4	48.19866205	-103.89295730	2200.722						
10720	WELD	43,937.4	10720	0.0	41.2	48.19854905	-103.89295950	2200.748						



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11000026	WT CHANGE	43,978.6	10720	0.0	0.1	48.19843660	-103.89295963	2200.028			0.322	52000	0.72	
	10730 WELD	43,978.7	10730	0.0	41.0	48.19843633	-103.89295962	2200.023						
	10740 WELD	44,019.7	10740	0.0	42.2	48.19832439	-103.89295730	2197.714						
	10750 WELD	44,061.9	10750	0.0	42.3	48.19820925	-103.89295580	2195.790						
	10760 WELD	44,104.1	10760	0.0	42.3	48.19809404	-103.89295780	2194.595						
	10770 WELD	44,146.4	10770	0.0	42.2	48.19797867	-103.89295539	2194.620						
10000034	AGM 070, Sta. 441+33, 54th St. NW -- Han #9128	44,161.0	10770	14.6	27.7	48.19793885	-103.89295370	2194.836						
	10780 WELD	44,188.6	10780	0.0	42.2	48.19786348	-103.89295030	2196.011						
11000027	WT CHANGE	44,230.7	10780	0.0	0.1	48.19774896	-103.89294488	2197.351			0.188	52000	0.72	
	10790 WELD	44,230.8	10790	0.0	33.4	48.19774867	-103.89294484	2197.350						
	10800 WELD	44,264.1	10800	0.0	10.6	48.19765789	-103.89293537	2197.284						
	10810 WELD	44,274.7	10810	0.0	39.2	48.19762905	-103.89293183	2197.581						
	10820 WELD	44,313.9	10820	0.0	41.4	48.19752252	-103.89292260	2199.140						
	10830 WELD	44,355.3	10830	0.0	41.3	48.19740948	-103.89291675	2198.733						
	10840 WELD	44,396.6	10840	0.0	41.4	48.19729670	-103.89291028	2198.027						
	10850 WELD	44,437.9	10850	0.0	41.3	48.19718368	-103.89290344	2197.626						
	10860 WELD	44,479.3	10860	0.0	41.3	48.19707090	-103.89289659	2197.924						
	10870 WELD	44,520.6	10870	0.0	41.4	48.19695811	-103.89288991	2198.795						
	10880 WELD	44,561.9	10880	0.0	41.4	48.19684528	-103.89288320	2199.068						
	10890 WELD	44,603.3	10890	0.0	41.3	48.19673244	-103.89287519	2199.777						
	10900 WELD	44,644.6	10900	0.0	41.3	48.19661962	-103.89286739	2199.972						
	10910 WELD	44,685.9	10910	0.0	41.3	48.19650681	-103.89286133	2199.542						
	10920 WELD	44,727.2	10920	0.0	41.4	48.19639392	-103.89285506	2200.187						
	10930 WELD	44,768.6	10930	0.0	41.3	48.19628107	-103.89284817	2200.920						
	10940 WELD	44,809.9	10940	0.0	41.3	48.19616840	-103.89284072	2201.347						
	10950 WELD	44,851.2	10950	0.0	41.3	48.19605575	-103.89283339	2201.938						
	10960 WELD	44,892.5	10960	0.0	41.4	48.19594301	-103.89282625	2203.024						
	10970 WELD	44,933.9	10970	0.0	41.4	48.19583020	-103.89281849	2204.916						
	10980 WELD	44,975.2	10980	0.0	41.4	48.19571781	-103.89280998	2208.217						
	10990 WELD	45,016.6	10990	0.0	41.4	48.19560538	-103.89280097	2211.526						
	11000 WELD	45,058.0	11000	0.0	41.3	48.19549267	-103.89279161	2212.949						
	11010 WELD	45,099.3	11010	0.0	41.3	48.19537995	-103.89278369	2212.670						
	11020 WELD	45,140.6	11020	0.0	41.3	48.19526716	-103.89277665	2212.155						
	11030 WELD	45,182.0	11030	0.0	41.3	48.19515441	-103.89276957	2211.922						
	11040 WELD	45,223.3	11040	0.0	41.3	48.19504152	-103.89276290	2211.457						
	11050 WELD	45,264.6	11050	0.0	41.3	48.19492874	-103.89275765	2210.964						



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11060	WELD	45,305.9	11060	0.0	41.3	48.19481578	-103.89275166	2210.501						
11070	WELD	45,347.2	11070	0.0	41.3	48.19470301	-103.89274394	2210.047						
11080	WELD	45,388.6	11080	0.0	41.4	48.19459026	-103.89273495	2209.713						
11090	WELD	45,429.9	11090	0.0	41.3	48.19447752	-103.89272523	2209.260						
11100	WELD	45,471.2	11100	0.0	41.4	48.19436482	-103.89271609	2208.679						
11110	WELD	45,512.6	11110	0.0	41.3	48.19425233	-103.89270847	2205.919						
11120	WELD	45,553.9	11120	0.0	41.3	48.19413985	-103.89270088	2203.095						
11130	WELD	45,595.2	11130	0.0	41.4	48.19402738	-103.89269287	2200.135						
11140	WELD	45,636.6	11140	0.0	41.4	48.19391475	-103.89268555	2197.603						
11150	WELD	45,678.0	11150	0.0	41.3	48.19380217	-103.89267831	2194.472						
11160	WELD	45,719.3	11160	0.0	41.4	48.19368980	-103.89267200	2190.213						
11170	WELD	45,760.7	11170	0.0	41.3	48.19357770	-103.89266627	2185.290						
11180	WELD	45,802.0	11180	0.0	41.4	48.19346562	-103.89266099	2180.166						
11190	WELD	45,843.4	11190	0.0	41.3	48.19335313	-103.89265611	2177.805						
11200	WELD	45,884.7	11200	0.0	41.3	48.19324131	-103.89264912	2183.069						
11210	WELD	45,926.0	11210	0.0	41.3	48.19312979	-103.89264095	2188.874						
11220	WELD	45,967.3	11220	0.0	41.3	48.19301741	-103.89263286	2192.149						
11230	WELD	46,008.7	11230	0.0	41.4	48.19290496	-103.89262491	2195.008						
11240	WELD	46,050.0	11240	0.0	41.3	48.19279248	-103.89261609	2197.870						
11250	WELD	46,091.3	11250	0.0	41.4	48.19267983	-103.89260717	2200.046						
11260	WELD	46,132.7	11260	0.0	41.3	48.19256733	-103.89259784	2202.186						
11270	WELD	46,174.0	11270	0.0	41.4	48.19245460	-103.89258996	2203.392						
11280	WELD	46,215.4	11280	0.0	41.3	48.19234171	-103.89258290	2203.668						
11290	WELD	46,256.7	11290	0.0	41.3	48.19222907	-103.89257640	2204.069						
11300	WELD	46,297.9	11300	0.0	41.3	48.19211635	-103.89257024	2205.715						
11310	WELD	46,339.2	11310	0.0	41.3	48.19200354	-103.89256412	2206.572						
11320	WELD	46,380.5	11320	0.0	41.3	48.19189090	-103.89255552	2207.682						
11330	WELD	46,421.8	11330	0.0	41.3	48.19177840	-103.89254577	2208.761						
11340	WELD	46,463.2	11340	0.0	41.3	48.19166567	-103.89253623	2208.940						
11350	WELD	46,504.5	11350	0.0	41.4	48.19155290	-103.89252803	2208.845						
11360	WELD	46,545.8	11360	0.0	41.3	48.19144018	-103.89252189	2208.072						
11370	WELD	46,587.1	11370	0.0	41.4	48.19132738	-103.89251600	2206.660						
11380	WELD	46,628.5	11380	0.0	49.5	48.19121455	-103.89251043	2205.347						
11390	WELD	46,678.0	11390	0.0	49.6	48.19107967	-103.89250318	2207.698						
11400	WELD	46,727.6	11400	0.0	49.6	48.19094423	-103.89249480	2209.953						
11410	WELD	46,777.2	11410	0.0	49.5	48.19080879	-103.89248631	2210.082						
11420	WELD	46,826.7	11420	0.0	49.6	48.19067393	-103.89247775	2210.786						



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11430	WELD	46,876.2	11430	0.0	49.5	48.19053855	-103.89246874	2212.857						
11440	WELD	46,925.7	11440	0.0	49.3	48.19040323	-103.89246036	2214.959						
11450	WELD	46,975.1	11450	0.0	49.6	48.19026862	-103.89245169	2216.652						
11460	WELD	47,024.7	11460	0.0	49.6	48.19013326	-103.89244286	2218.323						
11470	WELD	47,074.3	11470	0.0	49.6	48.18999794	-103.89243457	2219.845						
11480	WELD	47,124.0	11480	0.0	49.7	48.18986255	-103.89242753	2221.105						
11490	WELD	47,173.7	11490	0.0	49.6	48.18972697	-103.89241980	2221.903						
11500	WELD	47,223.3	11500	0.0	49.6	48.18959143	-103.89241058	2222.634						
11510	WELD	47,272.9	11510	0.0	49.6	48.18945611	-103.89240236	2223.643						
11520	WELD	47,322.6	11520	0.0	49.6	48.18932045	-103.89239417	2223.990						
11530	WELD	47,372.2	11530	0.0	49.6	48.18918503	-103.89238724	2223.502						
11540	WELD	47,421.8	11540	0.0	49.4	48.18904927	-103.89238100	2222.747						
11550	WELD	47,471.2	11550	0.0	49.7	48.18891464	-103.89237352	2222.487						
11560	WELD	47,520.8	11560	0.0	48.7	48.18877886	-103.89236533	2223.201						
11570	WELD	47,569.5	11570	0.0	49.7	48.18864626	-103.89235704	2224.880						
11580	WELD	47,619.2	11580	0.0	49.5	48.18851093	-103.89234786	2226.687						
11590	WELD	47,668.7	11590	0.0	49.6	48.18837593	-103.89233861	2227.990						
11600	WELD	47,718.3	11600	0.0	49.5	48.18824048	-103.89232964	2228.451						
11610	WELD	47,767.8	11610	0.0	49.6	48.18810532	-103.89232175	2228.650						
11620	WELD	47,817.5	11620	0.0	49.1	48.18796974	-103.89231475	2228.189						
11630	WELD	47,866.6	11630	0.0	49.4	48.18783557	-103.89230763	2228.490						
11640	WELD	47,916.0	11640	0.0	49.2	48.18770082	-103.89229809	2229.656						
11650	WELD	47,965.2	11650	0.0	49.5	48.18756657	-103.89228938	2229.592						
11660	WELD	48,014.7	11660	0.0	49.4	48.18743129	-103.89228241	2229.347						
11670	WELD	48,064.1	11670	0.0	49.6	48.18729618	-103.89227522	2229.604						
11680	WELD	48,113.7	11680	0.0	49.5	48.18716087	-103.89226671	2229.515						
11690	WELD	48,163.2	11690	0.0	49.6	48.18702578	-103.89225800	2229.341						
11700	WELD	48,212.8	11700	0.0	49.2	48.18689022	-103.89224867	2228.655						
11710	WELD	48,262.0	11710	0.0	49.5	48.18675596	-103.89224038	2227.511						
11720	WELD	48,311.5	11720	0.0	49.1	48.18662078	-103.89223123	2227.225						
11730	WELD	48,360.6	11730	0.0	48.8	48.18648677	-103.89222245	2226.975						
11740	WELD	48,409.4	11740	0.0	49.6	48.18635363	-103.89221471	2225.389						
11750	WELD	48,459.0	11750	0.0	49.5	48.18621853	-103.89220716	2223.524						
11760	WELD	48,508.5	11760	0.0	49.5	48.18608333	-103.89219869	2221.602						
11770	WELD	48,558.0	11770	0.0	49.7	48.18594809	-103.89219044	2220.000						
11780	WELD	48,607.7	11780	0.0	49.6	48.18581238	-103.89218289	2218.937						
11790	WELD	48,657.3	11790	0.0	49.5	48.18567684	-103.89217571	2217.432						



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11800	WELD	48,706.8	11800	0.0	49.6	48.18554149	-103.89216777	2217.361						
11810	WELD	48,756.5	11810	0.0	49.6	48.18540588	-103.89215885	2217.572						
11820	WELD	48,806.1	11820	0.0	49.5	48.18527036	-103.89215042	2216.975						
11830	WELD	48,855.6	11830	0.0	41.3	48.18513536	-103.89214209	2216.128						
11840	WELD	48,896.9	11840	0.0	41.4	48.18502252	-103.89213535	2215.574						
11850	WELD	48,938.3	11850	0.0	41.3	48.18490966	-103.89212883	2215.226						
11860	WELD	48,979.6	11860	0.0	41.3	48.18479689	-103.89212176	2214.753						
11870	WELD	49,021.0	11870	0.0	41.3	48.18468417	-103.89211436	2214.089						
11880	WELD	49,062.3	11880	0.0	41.3	48.18457133	-103.89210568	2213.172						
11890	WELD	49,103.6	11890	0.0	41.4	48.18445863	-103.89209861	2212.333						
11900	WELD	49,145.0	11900	0.0	41.3	48.18434589	-103.89209249	2210.411						
11910	WELD	49,186.3	11910	0.0	41.3	48.18423301	-103.89208748	2209.779						
11920	WELD	49,227.6	11920	0.0	41.3	48.18412019	-103.89208195	2209.574						
11930	WELD	49,268.9	11930	0.0	41.3	48.18400756	-103.89207477	2210.494						
11940	WELD	49,310.3	11940	0.0	41.4	48.18389500	-103.89206750	2212.614						
11950	WELD	49,351.7	11950	0.0	41.2	48.18378222	-103.89205994	2213.394						
11960	WELD	49,392.8	11960	0.0	40.8	48.18366984	-103.89205127	2213.017						
11970	WELD	49,433.6	11970	0.0	37.1	48.18355882	-103.89204221	2212.954						
10000035	AGM 080, Sta. 493+79, Two track -- Survey Point	49,438.7	11970	5.1	31.9	48.18354472	-103.89204120	2213.038						
11980	WELD	49,470.7	11980	0.0	6.3	48.18345760	-103.89203539	2213.774						
11990	WELD	49,477.0	11990	0.0	40.9	48.18344039	-103.89203437	2214.007						
12000	WELD	49,517.9	12000	0.0	41.4	48.18332914	-103.89203020	2215.084						
12010	WELD	49,559.2	12010	0.0	41.4	48.18321663	-103.89202647	2215.896						
12020	WELD	49,600.6	12020	0.0	41.4	48.18310374	-103.89202167	2216.139						
12030	WELD	49,642.0	12030	0.0	41.3	48.18299086	-103.89201588	2216.051						
12040	WELD	49,683.4	12040	0.0	41.4	48.18287795	-103.89201068	2216.182						
40000008	Metal Loss - EXTERNAL	49,703.6	12040	20.2	21.2	48.18282275	-103.89200802	2216.107	38	1:15	11%	1.39	1.45	1760 100%
12050	WELD	49,724.7	12050	0.0	41.3	48.18276521	-103.89200504	2216.088						
12060	WELD	49,766.0	12060	0.0	41.3	48.18265247	-103.89199799	2216.148						
12070	WELD	49,807.3	12070	0.0	41.4	48.18253983	-103.89199167	2216.150						
12080	WELD	49,848.7	12080	0.0	41.3	48.18242717	-103.89198723	2216.441						
12090	WELD	49,890.0	12090	0.0	41.3	48.18231446	-103.89198272	2216.491						
12100	WELD	49,931.3	12100	0.0	41.3	48.18220174	-103.89197764	2216.300						
12110	WELD	49,972.6	12110	0.0	41.4	48.18208911	-103.89197200	2215.201						
12120	WELD	50,014.0	12120	0.0	41.3	48.18197642	-103.89196647	2213.933						
12130	WELD	50,055.3	12130	0.0	41.4	48.18186378	-103.89196072	2212.089						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
12140	WELD	50,096.7	12140	0.0	41.3	48.18175115	-103.89195477	2212.711						
12150	WELD	50,138.1	12150	0.0	41.3	48.18163851	-103.89195031	2214.339						
12160	WELD	50,179.4	12160	0.0	41.3	48.18152589	-103.89194547	2215.641						
12170	WELD	50,220.6	12170	0.0	41.3	48.18141331	-103.89193988	2217.296						
12180	WELD	50,262.0	12180	0.0	41.3	48.18130087	-103.89193385	2219.086						
12190	WELD	50,303.3	12190	0.0	41.3	48.18118828	-103.89192750	2221.306						
12200	WELD	50,344.6	12200	0.0	41.3	48.18107557	-103.89192204	2222.555						
12210	WELD	50,385.9	12210	0.0	41.4	48.18096296	-103.89191687	2221.904						
12220	WELD	50,427.3	12220	0.0	41.3	48.18085008	-103.89191143	2221.892						
12230	WELD	50,468.6	12230	0.0	41.3	48.18073733	-103.89190574	2221.892						
12240	WELD	50,509.9	12240	0.0	41.3	48.18062459	-103.89189953	2221.266						
12250	WELD	50,551.3	12250	0.0	41.3	48.18051179	-103.89189400	2220.366						
12260	WELD	50,592.5	12260	0.0	41.3	48.18039898	-103.89188950	2219.720						
12270	WELD	50,633.9	12270	0.0	41.4	48.18028656	-103.89188480	2220.190						
12280	WELD	50,675.2	12280	0.0	41.3	48.18017372	-103.89187981	2220.819						
12290	WELD	50,716.6	12290	0.0	41.3	48.18006120	-103.89187419	2221.180						
12300	WELD	50,757.9	12300	0.0	41.4	48.17994865	-103.89186827	2223.089						
12310	WELD	50,799.3	12310	0.0	41.3	48.17983604	-103.89186246	2225.031						
12320	WELD	50,840.6	12320	0.0	41.3	48.17972346	-103.89185617	2226.717						
12330	WELD	50,881.9	12330	0.0	49.6	48.17961074	-103.89184922	2227.863						
20000015	Seam Variation	50,910.1	12330	28.1	21.5	48.17953388	-103.89184494	2228.181	218	7:15	-	0.82	0.68	
20000016	Seam Variation	50,910.3	12330	28.4	21.2	48.17953307	-103.89184489	2228.183	218	7:15	-	0.59	0.60	
20000017	Seam Variation	50,911.9	12330	29.9	19.7	48.17952894	-103.89184470	2228.193	222	7:15	-	0.82	0.88	
12340	WELD	50,931.5	12340	0.0	49.7	48.17947528	-103.89184205	2228.383						
12350	WELD	50,981.2	12350	0.0	49.5	48.17933965	-103.89183563	2228.719						
12360	WELD	51,030.8	12360	0.0	49.5	48.17920446	-103.89182965	2228.819						
12370	WELD	51,080.3	12370	0.0	49.4	48.17906927	-103.89182331	2229.564						
12380	WELD	51,129.8	12380	0.0	49.3	48.17893430	-103.89181679	2229.265						
12390	WELD	51,179.0	12390	0.0	49.6	48.17879974	-103.89180936	2229.194						
12400	WELD	51,228.6	12400	0.0	49.6	48.17866450	-103.89179958	2228.327						
12410	WELD	51,278.2	12410	0.0	49.6	48.17852901	-103.89179359	2227.653						
12420	WELD	51,327.8	12420	0.0	49.6	48.17839357	-103.89178971	2227.415						
12430	WELD	51,377.4	12430	0.0	49.3	48.17825824	-103.89178524	2227.290						
12440	WELD	51,426.7	12440	0.0	49.5	48.17812349	-103.89177887	2227.043						
12450	WELD	51,476.1	12450	0.0	49.6	48.17798840	-103.89176929	2226.692						
12460	WELD	51,525.8	12460	0.0	49.5	48.17785300	-103.89176127	2227.300						
20000018	Seam Variation	51,552.2	12460	26.4	23.1	48.17778082	-103.89175839	2227.250	292	9:30	-	0.71	0.58	

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
12470	WELD	51,575.3	12470	0.0	49.5	48.17771784	-103.89175666	2226.600						
12480	WELD	51,624.8	12480	0.0	49.6	48.17758279	-103.89175208	2224.948						
12490	WELD	51,674.4	12490	0.0	49.5	48.17744736	-103.89174646	2224.453						
12500	WELD	51,723.9	12500	0.0	49.5	48.17731215	-103.89174031	2224.055						
12510	WELD	51,773.5	12510	0.0	49.6	48.17717710	-103.89173354	2224.015						
12520	WELD	51,823.0	12520	0.0	49.5	48.17704203	-103.89172631	2224.163						
12530	WELD	51,872.5	12530	0.0	49.6	48.17690680	-103.89171947	2224.566						
12540	WELD	51,922.1	12540	0.0	49.5	48.17677144	-103.89171290	2224.931						
12550	WELD	51,971.7	12550	0.0	49.7	48.17663630	-103.89170600	2225.174						
12560	WELD	52,021.3	12560	0.0	49.6	48.17650083	-103.89169919	2225.284						
12570	WELD	52,070.9	12570	0.0	49.3	48.17636539	-103.89169364	2225.414						
12580	WELD	52,120.3	12580	0.0	49.6	48.17623080	-103.89168893	2225.248						
12590	WELD	52,169.9	12590	0.0	49.6	48.17609540	-103.89168308	2225.243						
12600	WELD	52,219.5	12600	0.0	49.6	48.17596004	-103.89167580	2225.997						
12610	WELD	52,269.2	12610	0.0	49.6	48.17582442	-103.89166977	2225.582						
12620	WELD	52,318.8	12620	0.0	49.6	48.17568909	-103.89166630	2224.277						
12630	WELD	52,368.4	12630	0.0	49.7	48.17555374	-103.89166314	2223.365						
12640	WELD	52,418.1	12640	0.0	49.6	48.17541814	-103.89165778	2223.047						
12650	WELD	52,467.7	12650	0.0	49.6	48.17528290	-103.89165150	2223.114						
12660	WELD	52,517.3	12660	0.0	49.2	48.17514763	-103.89164430	2224.183						
12670	WELD	52,566.5	12670	0.0	49.2	48.17501308	-103.89163828	2224.937						
12680	WELD	52,615.8	12680	0.0	49.6	48.17487854	-103.89163339	2223.503						
12690	WELD	52,665.3	12690	0.0	49.7	48.17474336	-103.89162840	2221.769						
12700	WELD	52,715.0	12700	0.0	49.6	48.17460782	-103.89162202	2220.615						
12710	WELD	52,764.6	12710	0.0	49.7	48.17447235	-103.89161647	2220.604						
12720	WELD	52,814.3	12720	0.0	49.7	48.17433696	-103.89160949	2220.132						
12730	WELD	52,864.0	12730	0.0	49.5	48.17420141	-103.89160530	2217.833						
12740	WELD	52,913.5	12740	0.0	49.6	48.17406648	-103.89160280	2215.566						
12750	WELD	52,963.1	12750	0.0	49.3	48.17393108	-103.89159862	2214.412						
12760	WELD	53,012.4	12760	0.0	49.2	48.17379675	-103.89159188	2212.764						
12770	WELD	53,061.6	12770	0.0	49.6	48.17366258	-103.89158417	2211.419						
12780	WELD	53,111.2	12780	0.0	41.3	48.17352718	-103.89157912	2211.587						
12790	WELD	53,152.5	12790	0.0	41.3	48.17341451	-103.89157540	2211.580						
12800	WELD	53,193.7	12800	0.0	41.4	48.17330194	-103.89157250	2211.151						
12810	WELD	53,235.1	12810	0.0	41.4	48.17318924	-103.89156905	2210.106						
12820	WELD	53,276.5	12820	0.0	41.3	48.17307647	-103.89156426	2208.737						
12830	WELD	53,317.8	12830	0.0	41.3	48.17296383	-103.89155923	2207.615						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
12840	WELD	53,359.1	12840	0.0	41.3	48.17285126	-103.89155400	2206.347						
12850	WELD	53,400.5	12850	0.0	41.4	48.17273847	-103.89154910	2205.248						
12860	WELD	53,441.8	12860	0.0	41.4	48.17262590	-103.89154500	2204.166						
12870	WELD	53,483.2	12870	0.0	41.3	48.17251312	-103.89154015	2203.788						
12880	WELD	53,524.5	12880	0.0	41.4	48.17240048	-103.89153525	2203.502						
12890	WELD	53,565.8	12890	0.0	41.4	48.17228768	-103.89153053	2202.676						
12900	WELD	53,607.2	12900	0.0	41.3	48.17217497	-103.89152637	2202.227						
12910	WELD	53,648.5	12910	0.0	41.3	48.17206231	-103.89152224	2202.169						
12920	WELD	53,689.8	12920	0.0	41.3	48.17194975	-103.89151851	2202.093						
12930	WELD	53,731.1	12930	0.0	41.4	48.17183712	-103.89151470	2202.583						
12940	WELD	53,772.5	12940	0.0	41.3	48.17172440	-103.89151035	2202.625						
12950	WELD	53,813.8	12950	0.0	41.3	48.17161167	-103.89150557	2202.752						
12960	WELD	53,855.1	12960	0.0	41.3	48.17149882	-103.89150135	2202.469						
12970	WELD	53,896.4	12970	0.0	41.3	48.17138614	-103.89149834	2202.293						
12980	WELD	53,937.7	12980	0.0	41.2	48.17127351	-103.89149690	2201.480						
13000001	GAIN	53,971.8	12980	34.0	7.1	48.17118054	-103.89149535	2200.148	345	11:30				
13000002	GAIN	53,972.2	12980	34.4	6.8	48.17117924	-103.89149528	2200.129	8	12:15				
12990	WELD	53,978.9	12990	0.0	20.0	48.17116112	-103.89149446	2199.860						
11000028	WT CHANGE	53,998.7	12990	0.0	0.1	48.17110700	-103.89149022	2199.241			0.322	52000	0.72	
13000	WELD	53,998.9	13000	0.0	42.1	48.17110668	-103.89149019	2199.237						
13010	WELD	54,040.9	13010	0.0	42.2	48.17099322	-103.89147038	2195.872						
13020	WELD	54,083.1	13020	0.0	42.2	48.17088357	-103.89142189	2192.169						
13030	WELD	54,125.3	13030	0.0	42.2	48.17077728	-103.89135711	2189.492						
13040	WELD	54,167.5	13040	0.0	42.3	48.17066921	-103.89129837	2190.492						
13050	WELD	54,209.8	13050	0.0	42.2	48.17056242	-103.89123549	2193.719						
11000029	WT CHANGE	54,251.9	13050	0.0	0.1	48.17045692	-103.89116871	2195.487			0.188	52000	0.72	
13060	WELD	54,252.0	13060	0.0	19.2	48.17045665	-103.89116854	2195.488						
13070	WELD	54,271.2	13070	0.0	32.2	48.17040862	-103.89113710	2195.833						
13080	WELD	54,303.4	13080	0.0	41.3	48.17032945	-103.89108052	2195.808						
13090	WELD	54,344.7	13090	0.0	41.3	48.17022821	-103.89100611	2195.513						
13100	WELD	54,386.0	13100	0.0	41.3	48.17012709	-103.89093152	2195.832						
13110	WELD	54,427.3	13110	0.0	41.4	48.17002561	-103.89085785	2196.559						
13120	WELD	54,468.6	13120	0.0	41.3	48.16992402	-103.89078464	2197.227						
13130	WELD	54,509.9	13130	0.0	41.3	48.16982282	-103.89071048	2198.062						
13140	WELD	54,551.3	13140	0.0	41.3	48.16972210	-103.89063498	2197.822						
13150	WELD	54,592.5	13150	0.0	41.3	48.16962148	-103.89055900	2197.165						
13160	WELD	54,633.8	13160	0.0	37.9	48.16952121	-103.89048330	2195.738						



Pipeline Listing

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Hiland Crude, LLC
Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
11000030	WT CHANGE	54,671.6	13160	0.0	0.1	48.16942936	-103.89041399	2196.167			0.322	52000	0.72	
	13170 WELD	54,671.7	13170	0.0	42.0	48.16942912	-103.89041382	2196.165						
	13180 WELD	54,713.8	13180	0.0	42.2	48.16932594	-103.89033944	2193.545						
	13190 WELD	54,756.0	13190	0.0	42.2	48.16922080	-103.89027033	2191.287						
40000009	Metal Loss - EXTERNAL	54,791.2	13190	35.2	7.0	48.16913338	-103.89021095	2191.788	259 8:30	14%	1.11	0.82	3014	100%
	13200 WELD	54,798.2	13200	0.0	42.2	48.16911671	-103.89019741	2191.982						
	13210 WELD	54,840.4	13210	0.0	42.2	48.16901657	-103.89011264	2193.252						
	13220 WELD	54,882.6	13220	0.0	42.2	48.16891339	-103.89003716	2194.806						
	13230 WELD	54,924.9	13230	0.0	42.2	48.16881041	-103.88996093	2196.843						
10000036	AGM 090, Sta. 548+52, 52nd St. NW -- Han #9128	54,958.7	13230	33.9	8.4	48.16872701	-103.88990230	2199.108						
	13240 WELD	54,967.1	13240	0.0	11.3	48.16870651	-103.88988764	2199.707						
11000031	WT CHANGE	54,978.2	13240	0.0	0.1	48.16867930	-103.88986819	2200.466			0.188	52000	0.72	
	13250 WELD	54,978.3	13250	0.0	40.7	48.16867906	-103.88986802	2200.472						
	13260 WELD	55,019.1	13260	0.0	41.3	48.16857813	-103.88979844	2202.491						
	13270 WELD	55,060.4	13270	0.0	41.3	48.16847433	-103.88973197	2202.362						
	13280 WELD	55,101.7	13280	0.0	41.3	48.16837156	-103.88966244	2202.988						
	13290 WELD	55,143.0	13290	0.0	41.4	48.16826903	-103.88959276	2203.200						
	13300 WELD	55,184.3	13300	0.0	41.3	48.16816679	-103.88952155	2203.647						
	13310 WELD	55,225.6	13310	0.0	41.4	48.16806459	-103.88944955	2204.393						
	13320 WELD	55,267.0	13320	0.0	41.3	48.16796229	-103.88937855	2204.965						
	13330 WELD	55,308.3	13330	0.0	41.4	48.16786007	-103.88930722	2205.450						
	13340 WELD	55,349.7	13340	0.0	41.3	48.16775786	-103.88923630	2205.832						
	13350 WELD	55,391.0	13350	0.0	41.3	48.16765555	-103.88916500	2206.084						
	13360 WELD	55,432.3	13360	0.0	41.3	48.16755331	-103.88909387	2206.198						
	13370 WELD	55,473.6	13370	0.0	41.3	48.16745097	-103.88902281	2206.314						
	13380 WELD	55,515.0	13380	0.0	41.3	48.16734880	-103.88895124	2205.938						
	13390 WELD	55,556.3	13390	0.0	41.3	48.16724633	-103.88888047	2205.847						
	13400 WELD	55,597.6	13400	0.0	41.4	48.16714381	-103.88881006	2205.482						
	13410 WELD	55,639.0	13410	0.0	41.3	48.16704110	-103.88873971	2205.086						
	13420 WELD	55,680.3	13420	0.0	41.3	48.16693835	-103.88866986	2205.278						
	13430 WELD	55,721.6	13430	0.0	41.3	48.16683591	-103.88859931	2205.720						
	13440 WELD	55,762.9	13440	0.0	41.4	48.16673357	-103.88852891	2205.686						
	13450 WELD	55,804.3	13450	0.0	41.4	48.16663090	-103.88845838	2205.663						
	13460 WELD	55,845.7	13460	0.0	41.3	48.16652836	-103.88838820	2205.620						
	13470 WELD	55,887.0	13470	0.0	41.3	48.16642600	-103.88831697	2205.639						

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
13480	WELD	55,928.3	13480	0.0	41.4	48.16632397	-103.88824519	2205.789						
13490	WELD	55,969.7	13490	0.0	41.3	48.16622182	-103.88817311	2206.180						
13500	WELD	56,011.0	13500	0.0	41.3	48.16611926	-103.88810230	2205.749						
13510	WELD	56,052.3	13510	0.0	41.3	48.16601642	-103.88803215	2205.548						
13520	WELD	56,093.6	13520	0.0	41.4	48.16591408	-103.88796152	2206.000						
13530	WELD	56,135.0	13530	0.0	41.4	48.16581160	-103.88789068	2205.635						
13540	WELD	56,176.4	13540	0.0	41.3	48.16570922	-103.88781950	2205.584						
13550	WELD	56,217.7	13550	0.0	41.4	48.16560675	-103.88774868	2205.405						
13560	WELD	56,259.1	13560	0.0	41.3	48.16550449	-103.88767788	2204.848						
13570	WELD	56,300.4	13570	0.0	41.4	48.16540189	-103.88760783	2203.629						
13580	WELD	56,341.7	13580	0.0	41.3	48.16529905	-103.88753820	2202.124						
13590	WELD	56,383.1	13590	0.0	41.4	48.16519662	-103.88746790	2199.972						
13600	WELD	56,424.4	13600	0.0	41.4	48.16509434	-103.88739715	2197.304						
13610	WELD	56,465.8	13610	0.0	41.3	48.16499202	-103.88732662	2194.704						
13620	WELD	56,507.1	13620	0.0	41.4	48.16488964	-103.88725607	2192.460						
13630	WELD	56,548.5	13630	0.0	41.4	48.16478696	-103.88718596	2191.113						
13640	WELD	56,589.9	13640	0.0	41.3	48.16468423	-103.88711615	2190.796						
13650	WELD	56,631.2	13650	0.0	41.3	48.16458148	-103.88704673	2190.546						
13660	WELD	56,672.5	13660	0.0	41.3	48.16447884	-103.88697617	2190.652						
13670	WELD	56,713.9	13670	0.0	41.3	48.16437651	-103.88690525	2190.564						
13680	WELD	56,755.2	13680	0.0	41.3	48.16427409	-103.88683470	2190.423						
13690	WELD	56,796.5	13690	0.0	41.4	48.16417167	-103.88676432	2190.114						
13700	WELD	56,837.9	13700	0.0	41.3	48.16406899	-103.88669420	2190.199						
13710	WELD	56,879.2	13710	0.0	41.4	48.16396619	-103.88662482	2190.601						
13720	WELD	56,920.6	13720	0.0	41.3	48.16386329	-103.88655586	2191.813						
13730	WELD	56,961.9	13730	0.0	41.3	48.16376060	-103.88648574	2191.965						
13740	WELD	57,003.2	13740	0.0	41.3	48.16365831	-103.88641512	2192.871						
13750	WELD	57,044.5	13750	0.0	41.3	48.16355587	-103.88634458	2194.666						
13760	WELD	57,085.8	13760	0.0	41.4	48.16345349	-103.88627394	2196.211						
13770	WELD	57,127.2	13770	0.0	41.3	48.16335063	-103.88620410	2196.581						
13780	WELD	57,168.5	13780	0.0	41.3	48.16324771	-103.88613527	2196.633						
13790	WELD	57,209.8	13790	0.0	41.4	48.16314456	-103.88606641	2196.787						
13800	WELD	57,251.2	13800	0.0	41.4	48.16304161	-103.88599649	2196.625						
13810	WELD	57,292.5	13810	0.0	41.4	48.16293903	-103.88592605	2196.676						
13820	WELD	57,333.9	13820	0.0	41.3	48.16283656	-103.88585545	2197.760						
13830	WELD	57,375.2	13830	0.0	41.4	48.16273384	-103.88578597	2198.913						
13840	WELD	57,416.6	13840	0.0	40.6	48.16263091	-103.88571633	2199.533						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
13850	WELD	57,457.2	13850	0.0	30.8	48.16252960	-103.88564920	2198.034						
11000032	WT CHANGE	57,487.9	13850	0.0	0.1	48.16245381	-103.88559915	2193.623			0.322	52000	0.72	
13860	WELD	57,488.0	13860	0.0	1.3	48.16245361	-103.88559897	2193.610						
10000037	Bend left - 40 deg., 1.5D	57,488.6	13860	0.1	1.2	48.16245242	-103.88559721	2193.513	0 12:00					
13870	WELD	57,489.2	13870	0.0	24.8	48.16245139	-103.88559506	2193.419						
13880	WELD	57,514.0	13880	0.0	42.2	48.16241960	-103.88550668	2190.752						
13890	WELD	57,556.3	13890	0.0	42.3	48.16236070	-103.88535889	2189.153						
13900	WELD	57,598.5	13900	0.0	42.2	48.16230258	-103.88521026	2188.743						
13910	WELD	57,640.8	13910	0.0	42.3	48.16224459	-103.88506141	2187.812						
13920	WELD	57,683.1	13920	0.0	42.2	48.16218791	-103.88491150	2187.274						
13930	WELD	57,725.3	13930	0.0	42.2	48.16213083	-103.88476182	2186.606						
13940	WELD	57,767.5	13940	0.0	42.2	48.16207369	-103.88461246	2186.788						
13950	WELD	57,809.8	13950	0.0	42.2	48.16201815	-103.88446190	2186.892						
13960	WELD	57,852.0	13960	0.0	42.2	48.16195893	-103.88431475	2189.461						
13970	WELD	57,894.2	13970	0.0	39.5	48.16190295	-103.88416662	2196.049						
11000033	WT CHANGE	57,933.6	13970	0.0	0.1	48.16185208	-103.88402574	2198.258			0.188	52000	0.72	
13980	WELD	57,933.7	13980	0.0	12.0	48.16185195	-103.88402538	2198.259						
13990	WELD	57,945.7	13990	0.0	1.5	48.16183592	-103.88398228	2198.477						
10000038	Bend right - 45 deg., 3D	57,946.5	13990	0.1	1.4	48.16183441	-103.88398027	2198.487	0 12:00					
14000	WELD	57,947.3	14000	0.0	7.1	48.16183263	-103.88397896	2198.490						
14010	WELD	57,954.4	14010	0.0	0.5	48.16181336	-103.88397043	2198.550						
10000039	Bend right - 21 deg., 1.5D	57,954.6	14010	0.0	0.4	48.16181273	-103.88397031	2198.555	0 12:00					
14020	WELD	57,954.9	14020	0.0	18.8	48.16181205	-103.88397020	2198.560						
14030	WELD	57,973.7	14030	0.0	41.4	48.16176042	-103.88397070	2199.139						
14040	WELD	58,015.1	14040	0.0	41.4	48.16164748	-103.88397030	2199.857						
14050	WELD	58,056.4	14050	0.0	41.4	48.16153454	-103.88397010	2200.803						
14060	WELD	58,097.8	14060	0.0	41.4	48.16142165	-103.88397040	2202.051						
14070	WELD	58,139.2	14070	0.0	41.4	48.16130888	-103.88397180	2203.386						
14080	WELD	58,180.6	14080	0.0	41.4	48.16119612	-103.88397328	2204.783						
14090	WELD	58,222.0	14090	0.0	41.4	48.16108328	-103.88397290	2206.244						
14100	WELD	58,263.3	14100	0.0	41.4	48.16097037	-103.88397005	2207.298						
14110	WELD	58,304.7	14110	0.0	41.4	48.16085741	-103.88396960	2207.667						
14120	WELD	58,346.0	14120	0.0	41.4	48.16074447	-103.88396970	2207.535						
14130	WELD	58,387.4	14130	0.0	41.4	48.16063154	-103.88397003	2207.110						
14140	WELD	58,428.8	14140	0.0	41.4	48.16051863	-103.88397060	2207.730						
14150	WELD	58,470.2	14150	0.0	41.4	48.16040589	-103.88397138	2209.741						
14160	WELD	58,511.5	14160	0.0	41.3	48.16029297	-103.88397302	2210.411						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC
Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
14170	WELD	58,552.8	14170	0.0	41.4	48.16018009	-103.88397522	2210.270						
14180	WELD	58,594.3	14180	0.0	41.3	48.16006710	-103.88397680	2209.946						
14190	WELD	58,635.6	14190	0.0	41.4	48.15995419	-103.88397800	2209.796						
14200	WELD	58,676.9	14200	0.0	41.4	48.15984136	-103.88397900	2209.985						
14210	WELD	58,718.3	14210	0.0	41.4	48.15972844	-103.88397855	2210.662						
14220	WELD	58,759.7	14220	0.0	41.4	48.15961549	-103.88397750	2211.467						
14230	WELD	58,801.1	14230	0.0	41.4	48.15950234	-103.88397680	2211.542						
14240	WELD	58,842.4	14240	0.0	41.2	48.15938941	-103.88397810	2211.377						
14250	WELD	58,883.6	14250	0.0	41.3	48.15927660	-103.88397960	2211.262						
14260	WELD	58,924.9	14260	0.0	41.4	48.15916388	-103.88397880	2212.143						
14270	WELD	58,966.3	14270	0.0	41.3	48.15905101	-103.88397640	2213.081						
14280	WELD	59,007.5	14280	0.0	49.3	48.15893820	-103.88397600	2214.298						
14290	WELD	59,056.9	14290	0.0	49.7	48.15880357	-103.88397820	2213.353						
14300	WELD	59,106.5	14300	0.0	49.6	48.15866789	-103.88398010	2211.868						
14310	WELD	59,156.2	14310	0.0	49.6	48.15853231	-103.88397870	2209.623						
14320	WELD	59,205.8	14320	0.0	49.7	48.15839670	-103.88397810	2207.532						
14330	WELD	59,255.5	14330	0.0	49.6	48.15826104	-103.88397820	2205.258						
14340	WELD	59,305.1	14340	0.0	49.5	48.15812577	-103.88397850	2203.863						
14350	WELD	59,354.6	14350	0.0	49.6	48.15799068	-103.88397750	2202.215						
14360	WELD	59,404.1	14360	0.0	49.4	48.15785527	-103.88397740	2199.757						
14370	WELD	59,453.5	14370	0.0	49.5	48.15772047	-103.88397880	2197.063						
14380	WELD	59,503.0	14380	0.0	49.5	48.15758547	-103.88398050	2194.890						
14390	WELD	59,552.5	14390	0.0	49.5	48.15745021	-103.88398103	2193.615						
14400	WELD	59,602.1	14400	0.0	49.5	48.15731516	-103.88398130	2194.432						
14410	WELD	59,651.6	14410	0.0	49.3	48.15718010	-103.88398070	2195.150						
14420	WELD	59,700.9	14420	0.0	49.6	48.15704527	-103.88397990	2195.757						
14430	WELD	59,750.5	14430	0.0	49.7	48.15690968	-103.88397950	2195.421						
14440	WELD	59,800.3	14440	0.0	49.5	48.15677392	-103.88397880	2195.255						
14450	WELD	59,849.7	14450	0.0	49.7	48.15663878	-103.88397756	2197.096						
14460	WELD	59,899.4	14460	0.0	49.6	48.15650323	-103.88397600	2199.618						
14470	WELD	59,949.1	14470	0.0	49.6	48.15636788	-103.88397470	2202.438						
14480	WELD	59,998.7	14480	0.0	49.6	48.15623247	-103.88397450	2205.680						
14490	WELD	60,048.3	14490	0.0	49.2	48.15609712	-103.88397380	2208.908						
14500	WELD	60,097.6	14500	0.0	49.2	48.15596282	-103.88397200	2211.803						
14510	WELD	60,146.8	14510	0.0	49.3	48.15582864	-103.88397050	2214.590						
14520	WELD	60,196.1	14520	0.0	49.5	48.15569372	-103.88396915	2215.769						
14530	WELD	60,245.6	14530	0.0	49.4	48.15555864	-103.88396750	2214.631						



Pipeline Listing

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Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
14540	WELD	60,295.0	14540	0.0	49.5	48.15542402	-103.88396770	2213.349						
14550	WELD	60,344.5	14550	0.0	48.7	48.15528884	-103.88396660	2212.986						
14560	WELD	60,393.3	14560	0.0	15.9	48.15515539	-103.88396580	2212.883						
11000034	WT CHANGE	60,409.1	14560	0.0	0.1	48.15511229	-103.88396565	2212.123			0.322	52000	0.72	
14570	WELD	60,409.2	14570	0.0	1.5	48.15511205	-103.88396569	2212.117						
10000040	Bend right - 45 deg., 11D	60,409.9	14570	0.1	1.4	48.15511008	-103.88396655	2212.045	0 12:00					
14580	WELD	60,410.7	14580	0.0	37.1	48.15510831	-103.88396851	2211.936						
14590	WELD	60,447.8	14590	0.0	42.2	48.15503706	-103.88407484	2206.796						
14600	WELD	60,490.0	14600	0.0	42.3	48.15495554	-103.88419645	2206.123						
14610	WELD	60,532.3	14610	0.0	42.2	48.15487381	-103.88431792	2207.470						
14620	WELD	60,574.5	14620	0.0	42.2	48.15479411	-103.88444212	2209.352						
14630	WELD	60,616.7	14630	0.0	42.3	48.15471486	-103.88456670	2211.355						
14640	WELD	60,658.9	14640	0.0	40.1	48.15463440	-103.88468948	2213.439						
14650	WELD	60,699.0	14650	0.0	42.2	48.15455743	-103.88480536	2214.868						
14660	WELD	60,741.2	14660	0.0	35.7	48.15447675	-103.88492793	2216.765						
14670	WELD	60,776.9	14670	0.0	22.3	48.15440837	-103.88503170	2218.572						
10000041	AGM 100, Sta. 608+00, CR 1A -- Han #100	60,791.1	14670	14.1	8.1	48.15438171	-103.88507310	2219.852						
14680	WELD	60,799.2	14680	0.0	1.6	48.15436639	-103.88509681	2220.685						
10000042	Bend left - 45 deg., 3D	60,800.0	14680	0.1	1.5	48.15436463	-103.88509824	2220.742	0 12:00					
11000035	WT CHANGE	60,800.7	14680	0.0	0.1	48.15436272	-103.88509887	2220.769			0.188	52000	0.72	
14690	WELD	60,800.8	14690	0.0	41.0	48.15436247	-103.88509891	2220.771						
14700	WELD	60,841.8	14700	0.0	41.3	48.15425102	-103.88510374	2221.688						
14710	WELD	60,883.1	14710	0.0	41.3	48.15413808	-103.88511127	2222.731						
14720	WELD	60,924.4	14720	0.0	41.3	48.15402560	-103.88511963	2224.067						
14730	WELD	60,965.8	14730	0.0	41.3	48.15391274	-103.88512730	2225.659						
14740	WELD	61,007.1	14740	0.0	41.3	48.15380024	-103.88513398	2228.189						
14750	WELD	61,048.4	14750	0.0	41.2	48.15368761	-103.88514021	2230.389						
14760	WELD	61,089.5	14760	0.0	40.2	48.15357538	-103.88514424	2233.069						
14770	WELD	61,129.8	14770	0.0	40.4	48.15346538	-103.88514420	2235.698						
14780	WELD	61,170.2	14780	0.0	41.3	48.15335505	-103.88515137	2237.376						
14790	WELD	61,211.5	14790	0.0	41.3	48.15324316	-103.88517274	2236.613						
20000020	Seam Variation	61,230.2	14790	18.6	22.7	48.15319279	-103.88518455	2236.493	132 4:15	-	1.53	1.64		
14800	WELD	61,252.8	14800	0.0	41.2	48.15313176	-103.88519846	2237.115						
14810	WELD	61,294.1	14810	0.0	37.5	48.15302070	-103.88522188	2239.846						
14820	WELD	61,331.5	14820	0.0	41.3	48.15291923	-103.88523532	2241.278						
14830	WELD	61,372.9	14830	0.0	41.3	48.15280684	-103.88524620	2242.575						



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14840	WELD	61,414.2	14840	0.0	41.3	48.15269449	-103.88526375	2242.779						
14850	WELD	61,455.5	14850	0.0	41.4	48.15258262	-103.88528326	2241.227						
14860	WELD	61,496.9	14860	0.0	41.3	48.15247043	-103.88530186	2240.169						
14870	WELD	61,538.2	14870	0.0	41.3	48.15235831	-103.88532054	2240.077						
14880	WELD	61,579.5	14880	0.0	41.4	48.15224602	-103.88533842	2240.377						
14890	WELD	61,620.9	14890	0.0	41.3	48.15213386	-103.88535603	2241.470						
14900	WELD	61,662.2	14900	0.0	41.3	48.15202170	-103.88537319	2243.145						
14910	WELD	61,703.5	14910	0.0	41.3	48.15190965	-103.88539094	2244.911						
14920	WELD	61,744.8	14920	0.0	41.4	48.15179748	-103.88540843	2246.453						
14930	WELD	61,786.2	14930	0.0	41.3	48.15168542	-103.88542599	2248.472						
14940	WELD	61,827.5	14940	0.0	41.3	48.15157329	-103.88544294	2250.279						
14950	WELD	61,868.8	14950	0.0	41.3	48.15146113	-103.88546009	2252.023						
14960	WELD	61,910.1	14960	0.0	41.3	48.15134902	-103.88547773	2254.303						
14970	WELD	61,951.4	14970	0.0	41.3	48.15123681	-103.88549630	2255.735						
14980	WELD	61,992.7	14980	0.0	41.2	48.15112467	-103.88551505	2255.356						
14990	WELD	62,033.9	14990	0.0	41.2	48.15101232	-103.88553313	2254.926						
15000	WELD	62,075.2	15000	0.0	41.4	48.15089997	-103.88555140	2254.908						
15010	WELD	62,116.5	15010	0.0	41.4	48.15078765	-103.88556920	2255.172						
15020	WELD	62,157.9	15020	0.0	41.3	48.15067523	-103.88558621	2255.666						
15030	WELD	62,199.2	15030	0.0	41.2	48.15056294	-103.88560395	2256.106						
15040	WELD	62,240.5	15040	0.0	41.3	48.15045073	-103.88562211	2256.682						
15050	WELD	62,281.8	15050	0.0	41.3	48.15033870	-103.88564091	2257.979						
15060	WELD	62,323.1	15060	0.0	41.3	48.15022682	-103.88566037	2259.229						
15070	WELD	62,364.4	15070	0.0	41.3	48.15011464	-103.88567793	2260.640						
15080	WELD	62,405.7	15080	0.0	49.4	48.15000244	-103.88569566	2261.353						
15090	WELD	62,455.1	15090	0.0	49.4	48.14986825	-103.88571702	2262.779						
15100	WELD	62,504.5	15100	0.0	48.9	48.14973400	-103.88573728	2264.153						
15110	WELD	62,553.4	15110	0.0	48.0	48.14960092	-103.88575630	2265.020						
15120	WELD	62,601.4	15120	0.0	49.4	48.14947069	-103.88577588	2265.276						
15130	WELD	62,650.8	15130	0.0	49.5	48.14933657	-103.88579845	2266.135						
15140	WELD	62,700.3	15140	0.0	49.5	48.14920228	-103.88582038	2266.382						
15150	WELD	62,749.7	15150	0.0	49.4	48.14906800	-103.88584246	2267.133						
15160	WELD	62,799.1	15160	0.0	41.3	48.14893412	-103.88586621	2267.158						
15170	WELD	62,840.4	15170	0.0	41.3	48.14882204	-103.88588617	2267.511						
15180	WELD	62,881.8	15180	0.0	41.3	48.14871004	-103.88590536	2268.773						
15190	WELD	62,923.1	15190	0.0	41.4	48.14859800	-103.88592429	2269.757						
15200	WELD	62,964.4	15200	0.0	41.3	48.14848582	-103.88594184	2271.100						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
15210	WELD	63,005.7	15210	0.0	41.4	48.14837362	-103.88595898	2273.310						
15220	WELD	63,047.1	15220	0.0	41.3	48.14826148	-103.88597726	2274.923						
15230	WELD	63,088.4	15230	0.0	41.3	48.14814934	-103.88599627	2276.000						
15240	WELD	63,129.7	15240	0.0	41.4	48.14803720	-103.88601474	2277.503						
15250	WELD	63,171.1	15250	0.0	41.3	48.14792495	-103.88603278	2278.963						
15260	WELD	63,212.4	15260	0.0	41.3	48.14781274	-103.88605014	2280.623						
15270	WELD	63,253.7	15270	0.0	41.3	48.14770043	-103.88606684	2281.890						
15280	WELD	63,295.1	15280	0.0	41.3	48.14758798	-103.88608347	2282.514						
15290	WELD	63,336.4	15290	0.0	41.4	48.14747578	-103.88609933	2283.969						
15300	WELD	63,377.8	15300	0.0	41.3	48.14736332	-103.88611434	2285.218						
15310	WELD	63,419.1	15310	0.0	41.3	48.14725122	-103.88613087	2286.091						
15320	WELD	63,460.4	15320	0.0	41.3	48.14713893	-103.88614851	2287.257						
15330	WELD	63,501.7	15330	0.0	41.4	48.14702683	-103.88616667	2288.177						
15340	WELD	63,543.0	15340	0.0	41.3	48.14691457	-103.88618416	2289.213						
15350	WELD	63,584.3	15350	0.0	49.4	48.14680224	-103.88620034	2289.933						
15360	WELD	63,633.7	15360	0.0	49.4	48.14666779	-103.88621945	2291.231						
15370	WELD	63,683.2	15370	0.0	49.7	48.14653349	-103.88624012	2292.883						
15380	WELD	63,732.9	15380	0.0	49.7	48.14639860	-103.88626209	2294.283						
15390	WELD	63,782.6	15390	0.0	49.6	48.14626373	-103.88628591	2294.283						
15400	WELD	63,832.2	15400	0.0	49.4	48.14612925	-103.88631141	2293.712						
15410	WELD	63,881.5	15410	0.0	49.2	48.14599551	-103.88633729	2290.903						
15420	WELD	63,930.8	15420	0.0	48.2	48.14586276	-103.88636422	2286.206						
15430	WELD	63,978.9	15430	0.0	48.9	48.14573276	-103.88639116	2282.557						
11000036	WT CHANGE	64,027.7	15430	0.0	0.1	48.14560064	-103.88641542	2281.022			0.322	52000	0.72	
15440	WELD	64,027.8	15440	0.0	40.0	48.14560037	-103.88641548	2281.025						
15450	WELD	64,067.9	15450	0.0	42.2	48.14549148	-103.88643265	2281.773						
15460	WELD	64,110.1	15460	0.0	42.2	48.14537705	-103.88645099	2282.882						
15470	WELD	64,152.3	15470	0.0	42.2	48.14526312	-103.88647582	2284.656						
15480	WELD	64,194.5	15480	0.0	42.2	48.14515257	-103.88652473	2285.121						
11000037	WT CHANGE	64,236.7	15480	0.0	0.1	48.14504984	-103.88660208	2284.219			0.188	52000	0.72	
15490	WELD	64,236.8	15490	0.0	37.6	48.14504958	-103.88660230	2284.215						
15500	WELD	64,274.4	15500	0.0	46.0	48.14496596	-103.88669050	2285.048						
15510	WELD	64,320.3	15510	0.0	49.5	48.14485636	-103.88678179	2286.826						
15520	WELD	64,369.8	15520	0.0	49.7	48.14473617	-103.88687363	2289.020						
15530	WELD	64,419.5	15530	0.0	49.3	48.14461524	-103.88696448	2292.185						
15540	WELD	64,468.8	15540	0.0	49.4	48.14449479	-103.88705429	2294.754						
15550	WELD	64,518.2	15550	0.0	49.2	48.14437284	-103.88714088	2294.925						

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
15560	WELD	64,567.4	15560	0.0	45.0	48.14425323	-103.88723119	2290.795						
15570	WELD	64,612.5	15570	0.0	48.9	48.14414378	-103.88731460	2289.137						
15580	WELD	64,661.3	15580	0.0	49.5	48.14402484	-103.88740279	2284.841						
15590	WELD	64,710.9	15590	0.0	49.4	48.14390515	-103.88749366	2278.921						
15600	WELD	64,760.3	15600	0.0	49.1	48.14378460	-103.88758401	2277.597						
15610	WELD	64,809.4	15610	0.0	49.4	48.14366484	-103.88767359	2280.881						
15620	WELD	64,858.8	15620	0.0	48.2	48.14354475	-103.88776509	2279.098						
15630	WELD	64,907.0	15630	0.0	49.6	48.14342827	-103.88785449	2273.708						
15640	WELD	64,956.6	15640	0.0	49.4	48.14330732	-103.88794503	2274.198						
15650	WELD	65,005.9	15650	0.0	49.4	48.14318715	-103.88803473	2279.161						
15660	WELD	65,055.3	15660	0.0	49.6	48.14306696	-103.88812547	2278.375						
15670	WELD	65,104.9	15670	0.0	49.7	48.14294737	-103.88821722	2272.360						
15680	WELD	65,154.5	15680	0.0	49.4	48.14282761	-103.88830930	2266.076						
15690	WELD	65,204.0	15690	0.0	49.4	48.14270800	-103.88840101	2261.428						
15700	WELD	65,253.4	15700	0.0	49.4	48.14258806	-103.88849138	2256.685						
15710	WELD	65,302.8	15710	0.0	49.4	48.14246726	-103.88857837	2251.344						
15720	WELD	65,352.2	15720	0.0	49.1	48.14234660	-103.88866836	2250.960						
15730	WELD	65,401.3	15730	0.0	49.6	48.14222730	-103.88875996	2252.660						
15740	WELD	65,451.0	15740	0.0	49.4	48.14210668	-103.88885235	2252.605						
15750	WELD	65,500.4	15750	0.0	49.4	48.14198668	-103.88894462	2254.248						
15760	WELD	65,549.8	15760	0.0	49.5	48.14186605	-103.88903454	2256.786						
15770	WELD	65,599.3	15770	0.0	49.7	48.14174478	-103.88912339	2259.983						
15780	WELD	65,649.0	15780	0.0	49.4	48.14162319	-103.88921283	2261.582						
15790	WELD	65,698.4	15790	0.0	49.4	48.14150302	-103.88930419	2259.471						
20000021	Seam Variation	65,725.5	15790	27.1	22.3	48.14143714	-103.88935534	2258.536	137	4:30	-	0.59	0.54	
20000022	Seam Variation	65,727.6	15790	29.1	20.3	48.14143230	-103.88935911	2258.474	139	4:30	-	0.59	0.56	
20000023	Seam Variation	65,728.0	15790	29.6	19.8	48.14143110	-103.88936005	2258.461	138	4:30	-	0.47	0.61	
15800	WELD	65,747.8	15800	0.0	49.5	48.14138315	-103.88939699	2258.011						
15810	WELD	65,797.3	15810	0.0	46.0	48.14126300	-103.88948991	2259.528						
15820	WELD	65,843.3	15820	0.0	49.5	48.14115248	-103.88957823	2262.808						
11000038	WT CHANGE	65,892.7	15820	0.0	0.1	48.14103102	-103.88966509	2266.730			0.322	52000	0.72	
15830	WELD	65,892.8	15830	0.0	39.5	48.14103073	-103.88966527	2266.735						
15840	WELD	65,932.3	15840	0.0	42.3	48.14093368	-103.88973566	2267.635						
15850	WELD	65,974.6	15850	0.0	42.2	48.14083365	-103.88982137	2267.479						
15860	WELD	66,016.8	15860	0.0	42.2	48.14073872	-103.88991914	2267.685						
15870	WELD	66,059.0	15870	0.0	42.2	48.14064208	-103.89001253	2266.968						
15880	WELD	66,101.2	15880	0.0	42.2	48.14054314	-103.89010043	2267.144						

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
15890	WELD	66,143.5	15890	0.0	42.2	48.14044391	-103.89018804	2268.100						
15900	WELD	66,185.7	15900	0.0	42.3	48.14034419	-103.89027395	2268.913						
15910	WELD	66,227.9	15910	0.0	42.2	48.14024357	-103.89035777	2269.487						
15920	WELD	66,270.2	15920	0.0	42.2	48.14014338	-103.89044243	2270.160						
15930	WELD	66,312.4	15930	0.0	42.2	48.14004621	-103.89053508	2271.258						
15940	WELD	66,354.7	15940	0.0	10.5	48.13994970	-103.89062875	2272.956						
15950	WELD	66,365.1	15950	0.0	1.0	48.13992554	-103.89065120	2273.208						
10000043	Bend left - 30 deg., 1.5D	66,365.6	15950	0.1	0.9	48.13992438	-103.89065179	2273.205	0	12:00				
11000039	WT CHANGE	66,366.0	15950	0.0	0.1	48.13992317	-103.89065199	2273.191			0.188	52000	0.72	
15960	WELD	66,366.1	15960	0.0	48.6	48.13992290	-103.89065203	2273.188						
15970	WELD	66,414.7	15970	0.0	42.3	48.13978980	-103.89065680	2271.464						
15980	WELD	66,457.0	15980	0.0	48.0	48.13967452	-103.89065890	2269.434						
15990	WELD	66,504.9	15990	0.0	49.5	48.13954340	-103.89066180	2267.418						
16000	WELD	66,554.5	16000	0.0	49.4	48.13940862	-103.89066685	2265.520						
16010	WELD	66,603.9	16010	0.0	49.2	48.13927375	-103.89067189	2263.395						
16020	WELD	66,653.1	16020	0.0	49.2	48.13913938	-103.89067370	2261.323						
16030	WELD	66,702.3	16030	0.0	49.3	48.13900512	-103.89067127	2258.625						
16040	WELD	66,751.6	16040	0.0	48.9	48.13887061	-103.89066750	2256.524						
16050	WELD	66,800.5	16050	0.0	49.5	48.13873709	-103.89066210	2255.287						
16060	WELD	66,850.0	16060	0.0	49.4	48.13860209	-103.89065559	2254.086						
16070	WELD	66,899.5	16070	0.0	49.7	48.13846720	-103.89064877	2252.549						
16080	WELD	66,949.1	16080	0.0	49.3	48.13833167	-103.89064325	2250.495						
16090	WELD	66,998.4	16090	0.0	49.4	48.13819720	-103.89063780	2247.212						
16100	WELD	67,047.9	16100	0.0	49.5	48.13806276	-103.89063187	2243.056						
16110	WELD	67,097.4	16110	0.0	49.5	48.13792782	-103.89062644	2240.705						
16120	WELD	67,146.8	16120	0.0	49.5	48.13779285	-103.89062128	2241.938						
16130	WELD	67,196.4	16130	0.0	49.5	48.13765799	-103.89061683	2245.309						
10000044	AGM 110, Sta. 671+61, Gravel Rd -- Han #8043	67,214.9	16130	18.5	30.9	48.13760747	-103.89061520	2246.424						
16140	WELD	67,245.8	16140	0.0	49.5	48.13752319	-103.89061210	2248.234						
16150	WELD	67,295.4	16150	0.0	49.6	48.13738798	-103.89060845	2249.601						
16160	WELD	67,344.9	16160	0.0	49.5	48.13725281	-103.89060680	2249.090						
16170	WELD	67,394.4	16170	0.0	49.4	48.13711762	-103.89060480	2247.563						
16180	WELD	67,443.9	16180	0.0	49.1	48.13698307	-103.89060090	2243.104						
16190	WELD	67,493.0	16190	0.0	43.2	48.13685011	-103.89059705	2236.183						
16200	WELD	67,536.2	16200	0.0	49.5	48.13673388	-103.89059440	2229.078						
16210	WELD	67,585.8	16210	0.0	48.8	48.13659928	-103.89059490	2225.408						



Pipeline Listing

TDW Services, Inc.

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Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
16220	WELD	67,634.6	16220	0.0	49.0	48.13646591	-103.89059750	2224.374						
16230	WELD	67,683.6	16230	0.0	49.6	48.13633237	-103.89059682	2221.641						
16240	WELD	67,733.2	16240	0.0	49.7	48.13619678	-103.89059700	2220.662						
16250	WELD	67,782.9	16250	0.0	49.7	48.13606105	-103.89059660	2222.250						
16260	WELD	67,832.6	16260	0.0	49.5	48.13592536	-103.89059590	2222.717						
16270	WELD	67,882.2	16270	0.0	49.5	48.13579007	-103.89059680	2220.772						
16280	WELD	67,931.6	16280	0.0	49.7	48.13565502	-103.89059780	2218.783						
16290	WELD	67,981.3	16290	0.0	49.6	48.13551934	-103.89059740	2218.040						
16300	WELD	68,031.0	16300	0.0	49.7	48.13538361	-103.89059660	2218.016						
16310	WELD	68,080.7	16310	0.0	49.3	48.13524794	-103.89059570	2217.075						
16320	WELD	68,130.0	16320	0.0	49.2	48.13511313	-103.89059450	2216.664						
16330	WELD	68,179.2	16330	0.0	49.3	48.13497871	-103.89059370	2217.110						
16340	WELD	68,228.5	16340	0.0	49.5	48.13484414	-103.89059446	2215.236						
16350	WELD	68,278.0	16350	0.0	49.0	48.13470917	-103.89059739	2213.790						
16360	WELD	68,327.0	16360	0.0	43.0	48.13457557	-103.89059600	2217.052						
16370	WELD	68,370.0	16370	0.0	48.9	48.13445878	-103.89059373	2220.975						
14000000	DENT	68,371.5	16370	1.3	47.6	48.13445473	-103.89059370	2221.085	177	5:45	3.5%			
	16380 WELD	68,418.9	16380	0.0	1.1	48.13432540	-103.89059230	2223.544						
10000045	Tee on top of pipe	68,419.4	16380	0.1	0.9	48.13432387	-103.89059230	2223.586	327	10:45				
	16390 WELD	68,420.0	16390	0.0	33.5	48.13432223	-103.89059224	2223.631						
	16400 WELD	68,453.4	16400	0.0	49.5	48.13423119	-103.89059075	2225.829						
	16410 WELD	68,502.9	16410	0.0	49.6	48.13409624	-103.89058850	2228.114						
	16420 WELD	68,552.5	16420	0.0	41.4	48.13396094	-103.89058584	2230.194						
	16430 WELD	68,593.9	16430	0.0	41.3	48.13384821	-103.89058428	2230.275						
	16440 WELD	68,635.2	16440	0.0	41.3	48.13373538	-103.89058290	2229.874						
	16450 WELD	68,676.4	16450	0.0	42.7	48.13362271	-103.89058240	2229.326						
	16460 WELD	68,719.2	16460	0.0	41.3	48.13350607	-103.89058343	2228.184						
	16470 WELD	68,760.5	16470	0.0	40.9	48.13339331	-103.89058500	2227.164						
	16480 WELD	68,801.4	16480	0.0	41.4	48.13328158	-103.89058630	2225.907						
	16490 WELD	68,842.8	16490	0.0	41.4	48.13316905	-103.89058912	2224.861						
	16500 WELD	68,884.1	16500	0.0	41.4	48.13305627	-103.89059300	2223.959						
	16510 WELD	68,925.5	16510	0.0	41.3	48.13294335	-103.89059670	2223.548						
	16520 WELD	68,966.8	16520	0.0	41.4	48.13283056	-103.89059970	2223.367						
	16530 WELD	69,008.2	16530	0.0	41.3	48.13271766	-103.89060175	2223.768						
	16540 WELD	69,049.5	16540	0.0	41.4	48.13260495	-103.89060380	2222.319						
	16550 WELD	69,090.9	16550	0.0	41.3	48.13249270	-103.89060564	2217.963						
	16560 WELD	69,132.2	16560	0.0	41.4	48.13238041	-103.89060710	2214.087						



Pipeline Listing

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Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
16570	WELD	69,173.5	16570	0.0	41.3	48.13226826	-103.89060800	2209.757						
16580	WELD	69,214.8	16580	0.0	41.4	48.13215629	-103.89060930	2204.947						
16590	WELD	69,256.2	16590	0.0	41.4	48.13204381	-103.89061050	2202.164						
16600	WELD	69,297.5	16600	0.0	41.3	48.13193106	-103.89061046	2203.238						
16610	WELD	69,338.9	16610	0.0	41.3	48.13181863	-103.89061000	2206.669						
16620	WELD	69,380.1	16620	0.0	41.3	48.13170599	-103.89061011	2208.187						
16630	WELD	69,421.5	16630	0.0	40.3	48.13159314	-103.89061216	2206.998						
16640	WELD	69,461.7	16640	0.0	41.4	48.13148365	-103.89061492	2204.698						
16650	WELD	69,503.1	16650	0.0	41.3	48.13137096	-103.89061842	2203.072						
16660	WELD	69,544.4	16660	0.0	41.3	48.13125831	-103.89062150	2201.164						
16670	WELD	69,585.7	16670	0.0	41.3	48.13114579	-103.89062370	2198.803						
16680	WELD	69,627.0	16680	0.0	41.3	48.13103306	-103.89062549	2197.320						
16690	WELD	69,668.3	16690	0.0	41.3	48.13092026	-103.89062670	2197.110						
16700	WELD	69,709.6	16700	0.0	41.3	48.13080755	-103.89062720	2199.662						
16710	WELD	69,750.9	16710	0.0	41.4	48.13069496	-103.89062800	2201.411						
16720	WELD	69,792.3	16720	0.0	41.3	48.13058216	-103.89062860	2202.782						
16730	WELD	69,833.6	16730	0.0	41.3	48.13046960	-103.89062790	2205.597						
16740	WELD	69,874.9	16740	0.0	41.3	48.13035711	-103.89062570	2208.568						
16750	WELD	69,916.2	16750	0.0	41.3	48.13024436	-103.89062350	2210.729						
16760	WELD	69,957.5	16760	0.0	41.3	48.13013162	-103.89062360	2212.376						
16770	WELD	69,998.8	16770	0.0	41.4	48.13001878	-103.89062530	2212.353						
16780	WELD	70,040.1	16780	0.0	41.3	48.12990628	-103.89062660	2209.090						
16790	WELD	70,081.4	16790	0.0	41.3	48.12979423	-103.89062930	2204.395						
16800	WELD	70,122.6	16800	0.0	41.3	48.12968239	-103.89063312	2199.608						
16810	WELD	70,163.9	16810	0.0	41.3	48.12957014	-103.89063500	2195.574						
16820	WELD	70,205.2	16820	0.0	41.3	48.12945776	-103.89063633	2191.799						
16830	WELD	70,246.5	16830	0.0	41.3	48.12934523	-103.89063850	2189.127						
16840	WELD	70,287.7	16840	0.0	41.3	48.12923249	-103.89064211	2188.107						
16850	WELD	70,329.1	16850	0.0	41.4	48.12911963	-103.89064650	2188.742						
16860	WELD	70,370.4	16860	0.0	41.3	48.12900694	-103.89064802	2190.470						
16870	WELD	70,411.8	16870	0.0	41.3	48.12889419	-103.89064820	2192.100						
16880	WELD	70,453.1	16880	0.0	41.3	48.12878161	-103.89064930	2190.544						
16890	WELD	70,494.4	16890	0.0	41.4	48.12866913	-103.89065110	2186.976						
16900	WELD	70,535.8	16900	0.0	40.4	48.12855677	-103.89065320	2183.285						
16910	WELD	70,576.1	16910	0.0	41.3	48.12844673	-103.89065530	2181.384						
16920	WELD	70,617.5	16920	0.0	41.3	48.12833417	-103.89065650	2179.012						
16930	WELD	70,658.8	16930	0.0	41.3	48.12822176	-103.89065800	2175.732						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
16940	WELD	70,700.1	16940	0.0	41.3	48.12810949	-103.89065900	2172.034						
16950	WELD	70,741.4	16950	0.0	41.3	48.12799716	-103.89065950	2168.834						
16960	WELD	70,782.6	16960	0.0	41.2	48.12788464	-103.89065960	2170.437						
16970	WELD	70,823.9	16970	0.0	41.3	48.12777229	-103.89065878	2173.704						
16980	WELD	70,865.2	16980	0.0	41.3	48.12765983	-103.89065810	2176.812						
16990	WELD	70,906.5	16990	0.0	41.4	48.12754722	-103.89065870	2179.389						
17000	WELD	70,947.9	17000	0.0	41.4	48.12743451	-103.89066056	2180.153						
40000010	Metal Loss - INTERNAL	70,976.2	17000	28.3	13.1	48.12735722	-103.89066276	2180.321	352	11:30	10%	0.99	0.55	1760 100%
17010	WELD	70,989.2	17010	0.0	41.3	48.12732166	-103.89066396	2180.746						
17020	WELD	71,030.5	17020	0.0	41.3	48.12720911	-103.89066790	2182.560						
17030	WELD	71,071.8	17030	0.0	41.4	48.12709649	-103.89067120	2183.448						
17040	WELD	71,113.2	17040	0.0	41.3	48.12698377	-103.89067370	2184.686						
17050	WELD	71,154.5	17050	0.0	41.3	48.12687091	-103.89067520	2186.158						
17060	WELD	71,195.7	17060	0.0	41.3	48.12675831	-103.89067550	2187.353						
17070	WELD	71,237.1	17070	0.0	41.4	48.12664545	-103.89067460	2188.131						
17080	WELD	71,278.5	17080	0.0	41.4	48.12653257	-103.89067360	2188.616						
17090	WELD	71,319.9	17090	0.0	41.4	48.12641980	-103.89067370	2189.955						
17100	WELD	71,361.2	17100	0.0	41.3	48.12630704	-103.89067487	2189.860						
17110	WELD	71,402.5	17110	0.0	41.3	48.12619436	-103.89067600	2188.667						
17120	WELD	71,443.9	17120	0.0	41.3	48.12608160	-103.89067760	2188.017						
17130	WELD	71,485.1	17130	0.0	41.3	48.12596875	-103.89067910	2188.910						
17140	WELD	71,526.4	17140	0.0	41.3	48.12585592	-103.89067980	2188.929						
17150	WELD	71,567.8	17150	0.0	41.3	48.12574300	-103.89067887	2187.756						
10000046	AGM 120, Sta. 715+12, ROW -- Han #8802	71,603.7	17150	35.9	5.4	48.12564495	-103.89067570	2187.417						
17160	WELD	71,609.1	17160	0.0	29.4	48.12563031	-103.89067520	2187.435						
17170	WELD	71,638.5	17170	0.0	41.2	48.12555008	-103.89067400	2188.064						
17180	WELD	71,679.7	17180	0.0	41.3	48.12543751	-103.89067516	2187.829						
17190	WELD	71,721.0	17190	0.0	41.3	48.12532469	-103.89067883	2186.660						
17200	WELD	71,762.3	17200	0.0	41.3	48.12521177	-103.89068151	2185.547						
17210	WELD	71,803.7	17210	0.0	41.3	48.12509879	-103.89068430	2184.689						
17220	WELD	71,845.0	17220	0.0	41.3	48.12498583	-103.89068630	2184.065						
17230	WELD	71,886.3	17230	0.0	41.3	48.12487299	-103.89068863	2183.039						
17240	WELD	71,927.5	17240	0.0	41.4	48.12476033	-103.89069192	2180.572						
17250	WELD	71,969.0	17250	0.0	41.5	48.12464784	-103.89069498	2177.129						
17260	WELD	72,010.4	17260	0.0	41.4	48.12453582	-103.89069720	2171.892						
17270	WELD	72,051.8	17270	0.0	41.3	48.12442396	-103.89069960	2166.550						

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
17280	WELD	72,093.1	17280	0.0	41.3	48.12431157	-103.89070150	2162.777						
17290	WELD	72,134.4	17290	0.0	41.3	48.12419893	-103.89070300	2160.335						
17300	WELD	72,175.7	17300	0.0	41.4	48.12408604	-103.89070416	2158.103						
17310	WELD	72,217.1	17310	0.0	41.4	48.12397328	-103.89070535	2155.721						
17320	WELD	72,258.5	17320	0.0	41.3	48.12386041	-103.89070770	2154.044						
17330	WELD	72,299.8	17330	0.0	41.4	48.12374758	-103.89071046	2154.707						
17340	WELD	72,341.2	17340	0.0	41.4	48.12363472	-103.89071297	2155.116						
17350	WELD	72,382.6	17350	0.0	41.4	48.12352191	-103.89071450	2155.449						
17360	WELD	72,424.1	17360	0.0	41.3	48.12340907	-103.89071550	2155.792						
17370	WELD	72,465.4	17370	0.0	41.4	48.12329604	-103.89071660	2156.811						
17380	WELD	72,506.7	17380	0.0	41.4	48.12318328	-103.89071750	2159.506						
17390	WELD	72,548.1	17390	0.0	41.3	48.12307074	-103.89071859	2162.706						
17400	WELD	72,589.4	17400	0.0	41.4	48.12295805	-103.89071860	2164.997						
17410	WELD	72,630.7	17410	0.0	41.4	48.12284493	-103.89071830	2166.312						
17420	WELD	72,672.2	17420	0.0	41.5	48.12273214	-103.89071949	2167.033						
17430	WELD	72,713.6	17430	0.0	41.4	48.12261914	-103.89072170	2166.948						
17440	WELD	72,755.1	17440	0.0	41.3	48.12250624	-103.89072347	2166.632						
17450	WELD	72,796.4	17450	0.0	41.3	48.12239323	-103.89072420	2166.617						
17460	WELD	72,837.7	17460	0.0	41.3	48.12228031	-103.89072603	2165.450						
17470	WELD	72,879.0	17470	0.0	41.3	48.12216760	-103.89072950	2164.483						
17480	WELD	72,920.3	17480	0.0	41.3	48.12205471	-103.89073237	2163.395						
17490	WELD	72,961.7	17490	0.0	41.4	48.12194187	-103.89073420	2162.906						
17500	WELD	73,003.1	17500	0.0	41.4	48.12182896	-103.89073530	2162.230						
17510	WELD	73,044.5	17510	0.0	41.3	48.12171608	-103.89073600	2161.367						
17520	WELD	73,085.8	17520	0.0	41.3	48.12160333	-103.89073650	2160.950						
17530	WELD	73,127.1	17530	0.0	41.3	48.12149045	-103.89073730	2159.843						
17540	WELD	73,168.4	17540	0.0	41.3	48.12137760	-103.89073910	2158.615						
17550	WELD	73,209.7	17550	0.0	41.3	48.12126460	-103.89074140	2157.428						
17560	WELD	73,251.1	17560	0.0	41.4	48.12115177	-103.89074380	2156.772						
17570	WELD	73,292.5	17570	0.0	41.3	48.12103888	-103.89074540	2156.324						
17580	WELD	73,333.8	17580	0.0	41.3	48.12092603	-103.89074690	2155.658						
17590	WELD	73,375.1	17590	0.0	41.3	48.12081318	-103.89074750	2153.697						
17600	WELD	73,416.4	17600	0.0	41.3	48.12070033	-103.89074830	2152.191						
17610	WELD	73,457.8	17610	0.0	41.4	48.12058757	-103.89074940	2151.156						
17620	WELD	73,499.2	17620	0.0	41.3	48.12047470	-103.89075020	2150.316						
17630	WELD	73,540.5	17630	0.0	41.3	48.12036182	-103.89075050	2149.160						
17640	WELD	73,581.8	17640	0.0	41.3	48.12024885	-103.89075140	2148.058						



Pipeline Listing

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Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
17650	WELD	73,623.1	17650	0.0	41.4	48.12013606	-103.89075220	2146.461						
17660	WELD	73,664.5	17660	0.0	41.4	48.12002327	-103.89075291	2144.741						
17670	WELD	73,705.9	17670	0.0	41.3	48.11991054	-103.89075338	2142.223						
17680	WELD	73,747.2	17680	0.0	41.4	48.11979795	-103.89075546	2140.778						
17690	WELD	73,788.5	17690	0.0	41.4	48.11968547	-103.89075630	2144.349						
17700	WELD	73,830.0	17700	0.0	41.3	48.11957272	-103.89075640	2145.162						
17710	WELD	73,871.2	17710	0.0	41.3	48.11945979	-103.89075654	2144.548						
17720	WELD	73,912.5	17720	0.0	41.3	48.11934702	-103.89075912	2143.145						
17730	WELD	73,953.8	17730	0.0	41.3	48.11923419	-103.89076266	2142.220						
17740	WELD	73,995.1	17740	0.0	41.4	48.11912118	-103.89076450	2141.814						
17750	WELD	74,036.5	17750	0.0	41.3	48.11900826	-103.89076590	2141.067						
17760	WELD	74,077.9	17760	0.0	39.8	48.11889574	-103.89076700	2140.469						
17770	WELD	74,117.7	17770	0.0	17.2	48.11878685	-103.89076719	2139.799						
17780	WELD	74,134.9	17780	0.0	0.5	48.11873955	-103.89076734	2139.269						
10000047	Bend left - 16 deg., 1.5D	74,135.2	17780	0.1	0.4	48.11873906	-103.89076717	2139.262	0	12:00				
17790	WELD	74,135.4	17790	0.0	25.9	48.11873856	-103.89076700	2139.255						
17800	WELD	74,161.3	17800	0.0	41.4	48.11867018	-103.89073841	2138.191						
17810	WELD	74,202.7	17810	0.0	41.3	48.11856216	-103.89069065	2135.563						
17820	WELD	74,244.1	17820	0.0	41.3	48.11845399	-103.89064308	2133.625						
17830	WELD	74,285.4	17830	0.0	41.4	48.11834568	-103.89059582	2131.618						
17840	WELD	74,326.7	17840	0.0	41.3	48.11823765	-103.89054771	2129.811						
17850	WELD	74,368.0	17850	0.0	41.3	48.11812991	-103.89049779	2128.385						
17860	WELD	74,409.4	17860	0.0	41.3	48.11802178	-103.89044864	2126.863						
17870	WELD	74,450.7	17870	0.0	41.3	48.11791392	-103.89040011	2124.348						
17880	WELD	74,492.0	17880	0.0	41.3	48.11780605	-103.89035130	2122.288						
20000025	Seam Variation	74,515.3	17880	23.2	18.1	48.11774525	-103.89032364	2120.983	247	8:00	-	0.82	0.92	
14000001	DENT	74,529.9	17880	37.6	3.7	48.11770714	-103.89030642	2120.346	179	5:45	2.5%			
17890	WELD	74,533.3	17890	0.0	41.3	48.11769812	-103.89030234	2120.141						
17900	WELD	74,574.6	17900	0.0	41.3	48.11759029	-103.89025398	2117.326						
17910	WELD	74,615.9	17910	0.0	41.3	48.11748237	-103.89020554	2114.814						
17920	WELD	74,657.2	17920	0.0	41.4	48.11737503	-103.89015574	2111.375						
17930	WELD	74,698.6	17930	0.0	41.4	48.11726752	-103.89010679	2107.718						
17940	WELD	74,740.0	17940	0.0	41.4	48.11715977	-103.89006040	2102.818						
40000011	Metal Loss - EXTERNAL	74,768.5	17940	28.4	13.0	48.11708600	-103.89003103	2097.932	20	12:30	10%	0.43	0.70	1760 100%
17950	WELD	74,781.5	17950	0.0	41.4	48.11705227	-103.89001788	2095.766						
17960	WELD	74,822.9	17960	0.0	40.1	48.11694614	-103.88996546	2098.337						
17970	WELD	74,863.0	17970	0.0	6.2	48.11684682	-103.88990523	2106.352						



Pipeline Listing

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Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
17980	WELD	74,869.2	17980	0.0	0.6	48.11683121	-103.88989616	2107.337						
10000048	Bend right - 26 deg., 1.5D	74,869.5	17980	0.1	0.5	48.11683053	-103.88989600	2107.373	0	12:00				
17990	WELD	74,869.8	17990	0.0	6.9	48.11682978	-103.88989600	2107.407						
18000	WELD	74,876.7	18000	0.0	35.8	48.11681094	-103.88989670	2108.247						
18010	WELD	74,912.5	18010	0.0	41.3	48.11671413	-103.88990250	2111.759						
18020	WELD	74,953.9	18020	0.0	41.3	48.11660168	-103.88990901	2112.579						
18030	WELD	74,995.2	18030	0.0	41.3	48.11648892	-103.88991211	2112.487						
18040	WELD	75,036.4	18040	0.0	41.5	48.11637601	-103.88991300	2112.705						
18050	WELD	75,077.9	18050	0.0	41.3	48.11626318	-103.88991350	2113.252						
18060	WELD	75,119.3	18060	0.0	41.3	48.11615032	-103.88991390	2114.001						
18070	WELD	75,160.6	18070	0.0	41.3	48.11603746	-103.88991350	2114.646						
18080	WELD	75,201.9	18080	0.0	41.4	48.11592461	-103.88991320	2115.115						
18090	WELD	75,243.3	18090	0.0	41.3	48.11581186	-103.88991384	2115.650						
18100	WELD	75,284.6	18100	0.0	41.3	48.11569902	-103.88991440	2116.219						
18110	WELD	75,325.9	18110	0.0	41.3	48.11558597	-103.88991370	2116.796						
18120	WELD	75,367.2	18120	0.0	41.3	48.11547302	-103.88991300	2116.874						
18130	WELD	75,408.5	18130	0.0	41.4	48.11536020	-103.88991221	2116.806						
18140	WELD	75,449.9	18140	0.0	41.4	48.11524745	-103.88991090	2117.483						
18150	WELD	75,491.3	18150	0.0	41.3	48.11513457	-103.88991000	2117.095						
18160	WELD	75,532.6	18160	0.0	41.3	48.11502175	-103.88990970	2116.890						
18170	WELD	75,573.9	18170	0.0	41.4	48.11490890	-103.88990990	2116.978						
18180	WELD	75,615.3	18180	0.0	41.3	48.11479609	-103.88991080	2116.932						
18190	WELD	75,656.6	18190	0.0	41.3	48.11468319	-103.88991305	2117.036						
18200	WELD	75,697.9	18200	0.0	49.5	48.11457028	-103.88991659	2116.958						
18210	WELD	75,747.4	18210	0.0	49.5	48.11443553	-103.88991652	2116.526						
18220	WELD	75,796.9	18220	0.0	49.6	48.11430271	-103.88988133	2116.195						
18230	WELD	75,846.5	18230	0.0	49.7	48.11417040	-103.88983775	2115.286						
18240	WELD	75,896.2	18240	0.0	49.7	48.11403785	-103.88979468	2114.147						
18250	WELD	75,945.9	18250	0.0	49.6	48.11390521	-103.88975374	2112.858						
18260	WELD	75,995.5	18260	0.0	49.7	48.11377235	-103.88971287	2111.159						
18270	WELD	76,045.2	18270	0.0	49.6	48.11363985	-103.88967060	2109.451						
18280	WELD	76,094.8	18280	0.0	49.6	48.11350737	-103.88962780	2107.907						
18290	WELD	76,144.4	18290	0.0	49.5	48.11337481	-103.88958509	2107.064						
14000002	DENT	76,187.1	18290	42.5	7.0	48.11326113	-103.88954855	2106.474	0	12:00	4.5%			
18300	WELD	76,193.9	18300	0.0	49.8	48.11324303	-103.88954264	2106.476						
18310	WELD	76,243.7	18310	0.0	49.4	48.11311051	-103.88949980	2106.362						
18320	WELD	76,293.1	18320	0.0	49.7	48.11297843	-103.88945936	2106.939						



Pipeline Listing

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Bethel to Bainville

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18330	WELD	76,342.8	18330	0.0	49.4	48.11284560	-103.88941870	2107.431						
18340	WELD	76,392.2	18340	0.0	49.5	48.11271310	-103.88937859	2107.766						
18350	WELD	76,441.7	18350	0.0	49.5	48.11258078	-103.88933767	2107.501						
18360	WELD	76,491.2	18360	0.0	49.1	48.11244840	-103.88929682	2107.023						
18370	WELD	76,540.2	18370	0.0	49.5	48.11231718	-103.88925539	2106.421						
18380	WELD	76,589.7	18380	0.0	44.4	48.11218528	-103.88921224	2104.670						
20000027	Seam Variation	76,601.2	18380	11.4	32.9	48.11215470	-103.88920241	2104.311	252 8:15	-	1.18	0.53		
11000040	WT CHANGE	76,633.9	18380	0.0	0.1	48.11206708	-103.88917569	2103.405			0.322	52000	0.72	
18390	WELD	76,634.0	18390	0.0	7.0	48.11206679	-103.88917560	2103.402						
18400	WELD	76,641.1	18400	0.0	42.2	48.11204768	-103.88916972	2103.211						
18410	WELD	76,683.3	18410	0.0	42.2	48.11193529	-103.88913158	2102.088						
18420	WELD	76,725.5	18420	0.0	42.3	48.11182403	-103.88908867	2098.537						
18430	WELD	76,767.8	18430	0.0	42.3	48.11171431	-103.88904194	2092.269						
18440	WELD	76,810.1	18440	0.0	42.2	48.11160544	-103.88899131	2085.920						
18450	WELD	76,852.3	18450	0.0	42.2	48.11149711	-103.88893803	2080.234						
18460	WELD	76,894.5	18460	0.0	42.2	48.11138915	-103.88888192	2075.258						
18470	WELD	76,936.7	18470	0.0	42.2	48.11128144	-103.88882370	2070.355						
18480	WELD	76,979.0	18480	0.0	42.3	48.11117393	-103.88876566	2065.589						
18490	WELD	77,021.2	18490	0.0	42.3	48.11106552	-103.88870778	2063.675						
18500	WELD	77,063.5	18500	0.0	42.2	48.11095657	-103.88865283	2066.570						
18510	WELD	77,105.7	18510	0.0	42.2	48.11084734	-103.88859915	2069.073						
18520	WELD	77,148.0	18520	0.0	42.1	48.11073741	-103.88854769	2070.067						
11000041	WT CHANGE	77,189.9	18520	0.0	0.1	48.11062819	-103.88849725	2069.730			0.188	52000	0.72	
18530	WELD	77,190.0	18530	0.0	47.3	48.11062790	-103.88849713	2069.729						
18540	WELD	77,237.3	18540	0.0	49.7	48.11050520	-103.88843928	2071.513						
18550	WELD	77,287.0	18550	0.0	45.2	48.11037788	-103.88837962	2079.815						
18560	WELD	77,332.2	18560	0.0	44.9	48.11026316	-103.88832519	2089.628						
18570	WELD	77,377.0	18570	0.0	47.8	48.11014736	-103.88827056	2095.110						
10000049	AGM 130, Sta. 773+20, ROW -- Han #8043	77,391.3	18570	14.2	33.5	48.11011012	-103.88825360	2095.424						
18580	WELD	77,424.8	18580	0.0	49.4	48.11002274	-103.88821377	2095.723						
18590	WELD	77,474.1	18590	0.0	49.6	48.10989369	-103.88815634	2095.947						
18600	WELD	77,523.8	18600	0.0	49.7	48.10976453	-103.88809516	2098.711						
18610	WELD	77,573.5	18610	0.0	49.7	48.10963551	-103.88803329	2100.003						
18620	WELD	77,623.1	18620	0.0	49.7	48.10950615	-103.88797176	2098.849						
18630	WELD	77,672.8	18630	0.0	49.7	48.10937716	-103.88791180	2102.568						
18640	WELD	77,722.6	18640	0.0	49.4	48.10924852	-103.88785148	2108.246						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
18650	WELD	77,771.9	18650	0.0	49.6	48.10912031	-103.88779089	2112.058						
18660	WELD	77,821.6	18660	0.0	49.7	48.10899156	-103.88772887	2114.581						
18670	WELD	77,871.3	18670	0.0	49.6	48.10886234	-103.88766717	2115.572						
18680	WELD	77,920.8	18680	0.0	47.8	48.10873322	-103.88760599	2117.627						
18690	WELD	77,968.6	18690	0.0	23.0	48.10860887	-103.88754717	2120.296						
18700	WELD	77,991.6	18700	0.0	0.9	48.10854916	-103.88751932	2121.704						
10000050	Bend right - 25 deg., 18D	77,992.0	18700	0.1	0.8	48.10854795	-103.88751935	2121.715	0	12:00				
18710	WELD	77,992.5	18710	0.0	44.8	48.10854670	-103.88751946	2121.722						
18720	WELD	78,037.2	18720	0.0	49.2	48.10842544	-103.88754753	2121.319						
14000003	DENT	78,068.4	18720	31.1	18.2	48.10834115	-103.88756750	2121.073	344	11:15	2.6%			
18730	WELD	78,086.5	18730	0.0	49.7	48.10829227	-103.88757913	2120.571						
18740	WELD	78,136.1	18740	0.0	49.3	48.10815855	-103.88761118	2118.634						
18750	WELD	78,185.5	18750	0.0	49.3	48.10802567	-103.88764282	2115.436						
20000028	Seam Variation	78,209.4	18750	24.0	25.3	48.10796095	-103.88765793	2113.717	37	1:00	-	0.47	0.44	
11000042	WT CHANGE	78,234.6	18750	0.0	0.1	48.10789316	-103.88767400	2111.688			0.322	52000	0.72	
18760	WELD	78,234.7	18760	0.0	15.6	48.10789284	-103.88767409	2111.679						
18770	WELD	78,250.4	18770	0.0	42.3	48.10785083	-103.88768472	2110.403						
18780	WELD	78,292.7	18780	0.0	42.2	48.10773838	-103.88771428	2104.921						
18790	WELD	78,334.9	18790	0.0	42.3	48.10762706	-103.88774413	2096.856						
18800	WELD	78,377.2	18800	0.0	42.2	48.10751536	-103.88777259	2089.100						
18810	WELD	78,419.4	18810	0.0	42.3	48.10740283	-103.88779852	2083.335						
18820	WELD	78,461.6	18820	0.0	42.2	48.10728932	-103.88782363	2079.284						
18830	WELD	78,503.9	18830	0.0	42.2	48.10717528	-103.88784686	2077.455						
18840	WELD	78,546.1	18840	0.0	42.2	48.10706150	-103.88787252	2077.241						
18850	WELD	78,588.3	18850	0.0	42.2	48.10694859	-103.88790499	2076.085						
18860	WELD	78,630.5	18860	0.0	42.2	48.10683585	-103.88793624	2072.233						
18870	WELD	78,672.7	18870	0.0	42.2	48.10672329	-103.88796104	2066.012						
18880	WELD	78,714.9	18880	0.0	42.2	48.10661055	-103.88798418	2059.498						
18890	WELD	78,757.1	18890	0.0	42.2	48.10649765	-103.88800832	2054.157						
18900	WELD	78,799.3	18900	0.0	42.2	48.10638448	-103.88803532	2050.627						
18910	WELD	78,841.5	18910	0.0	42.2	48.10627124	-103.88806329	2051.954						
18920	WELD	78,883.7	18920	0.0	42.2	48.10615918	-103.88808610	2059.623						
11000043	WT CHANGE	78,925.8	18920	0.0	0.1	48.10604716	-103.88811230	2065.245			0.188	52000	0.72	
18930	WELD	78,925.9	18930	0.0	48.9	48.10604684	-103.88811240	2065.253						
18940	WELD	78,974.8	18940	0.0	14.3	48.10591644	-103.88815064	2070.890						
18950	WELD	78,989.1	18950	0.0	47.3	48.10587857	-103.88816112	2072.946						
18960	WELD	79,036.4	18960	0.0	49.8	48.10575463	-103.88819393	2082.599						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
18970	WELD	79,086.1	18970	0.0	49.7	48.10562482	-103.88822778	2094.244						
18980	WELD	79,135.8	18980	0.0	49.7	48.10549199	-103.88826332	2098.743						
18990	WELD	79,185.5	18990	0.0	49.6	48.10535855	-103.88829881	2100.282						
19000	WELD	79,235.1	19000	0.0	49.6	48.10522515	-103.88833425	2099.839						
19010	WELD	79,284.7	19010	0.0	49.3	48.10509170	-103.88836948	2101.674						
19020	WELD	79,334.0	19020	0.0	49.5	48.10495901	-103.88840322	2104.027						
19030	WELD	79,383.5	19030	0.0	49.3	48.10482573	-103.88843566	2106.565						
19040	WELD	79,432.9	19040	0.0	49.6	48.10469257	-103.88846683	2107.986						
19050	WELD	79,482.5	19050	0.0	49.6	48.10455872	-103.88849705	2109.741						
20000029	Seam Variation	79,519.8	19050	37.3	12.4	48.10445808	-103.88852106	2111.440	202	6:30	-	0.82	0.42	
20000030	Seam Variation	79,520.4	19050	37.9	11.7	48.10445645	-103.88852141	2111.482	202	6:30	-	0.47	0.37	
19060	WELD	79,532.1	19060	0.0	49.5	48.10442492	-103.88852899	2112.317						
19070	WELD	79,581.6	19070	0.0	49.3	48.10429149	-103.88856058	2115.498						
19080	WELD	79,630.9	19080	0.0	49.5	48.10415871	-103.88859244	2118.238						
19090	WELD	79,680.4	19090	0.0	49.6	48.10402530	-103.88862541	2119.295						
19100	WELD	79,729.9	19100	0.0	49.6	48.10389224	-103.88866101	2119.472						
20000031	Seam Variation	79,740.1	19100	10.1	39.4	48.10386490	-103.88866853	2119.391	193	6:15	-	0.71	0.61	
19110	WELD	79,779.5	19110	0.0	49.4	48.10375886	-103.88869711	2119.649						
19120	WELD	79,828.9	19120	0.0	49.4	48.10362576	-103.88872996	2120.822						
19130	WELD	79,878.2	19130	0.0	49.1	48.10349229	-103.88875822	2121.300						
19140	WELD	79,927.4	19140	0.0	49.4	48.10335916	-103.88878544	2121.529						
19150	WELD	79,976.8	19150	0.0	49.5	48.10322547	-103.88881403	2121.346						
19160	WELD	80,026.2	19160	0.0	49.4	48.10309200	-103.88884624	2120.682						
19170	WELD	80,075.6	19170	0.0	49.3	48.10295942	-103.88888047	2116.867						
19180	WELD	80,124.9	19180	0.0	49.3	48.10282748	-103.88891519	2112.036						
19190	WELD	80,174.3	19190	0.0	48.9	48.10269509	-103.88894932	2108.513						
19200	WELD	80,223.2	19200	0.0	49.3	48.10256344	-103.88898282	2107.399						
19210	WELD	80,272.5	19210	0.0	49.5	48.10243156	-103.88901669	2110.997						
19220	WELD	80,322.0	19220	0.0	49.7	48.10229919	-103.88904889	2116.712						
19230	WELD	80,371.7	19230	0.0	49.8	48.10216657	-103.88908085	2123.198						
19240	WELD	80,421.4	19240	0.0	49.7	48.10203461	-103.88911512	2130.990						
19250	WELD	80,471.1	19250	0.0	49.4	48.10190231	-103.88915350	2135.242						
19260	WELD	80,520.5	19260	0.0	49.7	48.10177042	-103.88919064	2138.928						
19270	WELD	80,570.2	19270	0.0	49.4	48.10163722	-103.88922323	2142.714						
19280	WELD	80,619.5	19280	0.0	49.4	48.10150432	-103.88925475	2145.835						
19290	WELD	80,668.9	19290	0.0	49.6	48.10137094	-103.88928465	2147.185						
19300	WELD	80,718.5	19300	0.0	49.6	48.10123685	-103.88931223	2146.821						



Pipeline Listing

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Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
19310	WELD	80,768.1	19310	0.0	49.4	48.10110280	-103.88934367	2147.009						
19320	WELD	80,817.5	19320	0.0	49.6	48.10096964	-103.88937776	2147.342						
19330	WELD	80,867.1	19330	0.0	49.7	48.10083611	-103.88941186	2147.947						
19340	WELD	80,916.8	19340	0.0	49.5	48.10070208	-103.88944465	2148.788						
19350	WELD	80,966.2	19350	0.0	49.1	48.10056924	-103.88947682	2150.064						
19360	WELD	81,015.3	19360	0.0	49.5	48.10043754	-103.88951236	2151.088						
19370	WELD	81,064.9	19370	0.0	49.5	48.10030443	-103.88954549	2152.545						
19380	WELD	81,114.4	19380	0.0	49.6	48.10017076	-103.88957657	2153.546						
19390	WELD	81,164.0	19390	0.0	49.5	48.10003678	-103.88960799	2154.404						
19400	WELD	81,213.5	19400	0.0	49.5	48.09990310	-103.88963873	2155.103						
19410	WELD	81,263.1	19410	0.0	49.4	48.09976927	-103.88967161	2155.328						
19420	WELD	81,312.5	19420	0.0	49.5	48.09963616	-103.88970572	2155.168						
19430	WELD	81,362.0	19430	0.0	49.5	48.09950303	-103.88974034	2154.803						
19440	WELD	81,411.6	19440	0.0	49.2	48.09936986	-103.88977449	2153.164						
19450	WELD	81,460.7	19450	0.0	49.5	48.09923765	-103.88980819	2151.982						
19460	WELD	81,510.3	19460	0.0	49.4	48.09910421	-103.88984177	2151.094						
19470	WELD	81,559.7	19470	0.0	49.1	48.09897087	-103.88987380	2148.948						
19480	WELD	81,608.8	19480	0.0	49.4	48.09883868	-103.88990658	2147.645						
19490	WELD	81,658.2	19490	0.0	49.6	48.09870572	-103.88994032	2147.920						
19500	WELD	81,707.8	19500	0.0	49.5	48.09857227	-103.88997217	2148.392						
19510	WELD	81,757.3	19510	0.0	49.6	48.09843838	-103.89000402	2148.770						
19520	WELD	81,807.0	19520	0.0	49.5	48.09830478	-103.89003706	2148.578						
19530	WELD	81,856.5	19530	0.0	43.6	48.09817124	-103.89007056	2148.229						
19540	WELD	81,900.1	19540	0.0	49.7	48.09805376	-103.89009978	2147.655						
19550	WELD	81,949.8	19550	0.0	49.3	48.09791997	-103.89013209	2147.994						
19560	WELD	81,999.1	19560	0.0	49.5	48.09778703	-103.89016525	2147.447						
19570	WELD	82,048.7	19570	0.0	41.7	48.09765351	-103.89019931	2146.625						
19580	WELD	82,090.4	19580	0.0	49.4	48.09754110	-103.89022758	2146.113						
19590	WELD	82,139.8	19590	0.0	49.7	48.09740800	-103.89025963	2144.183						
20000032	Seam Variation	82,141.0	19590	1.2	48.5	48.09740470	-103.89026036	2144.138	300	10:00	-	0.47	0.45	
19600	WELD	82,189.5	19600	0.0	49.6	48.09727431	-103.89029253	2143.047						
19610	WELD	82,239.1	19610	0.0	49.2	48.09714080	-103.89032520	2142.881						
19620	WELD	82,288.2	19620	0.0	47.1	48.09700799	-103.89035513	2141.196						
19630	WELD	82,335.3	19630	0.0	18.2	48.09688056	-103.89038227	2139.939						
19640	WELD	82,353.5	19640	0.0	30.0	48.09683141	-103.89039256	2139.330						
19650	WELD	82,383.5	19650	0.0	49.3	48.09675049	-103.89040933	2137.517						
19660	WELD	82,432.8	19660	0.0	49.4	48.09661724	-103.89043496	2135.609						



Pipeline Listing

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19670	WELD	82,482.2	19670	0.0	49.3	48.09648324	-103.89045900	2134.178						
19680	WELD	82,531.5	19680	0.0	49.4	48.09634949	-103.89048040	2132.185						
19690	WELD	82,580.9	19690	0.0	49.6	48.09621521	-103.89050257	2130.601						
19700	WELD	82,630.5	19700	0.0	49.5	48.09608091	-103.89052646	2128.497						
19710	WELD	82,680.1	19710	0.0	49.4	48.09594663	-103.89054915	2127.077						
19720	WELD	82,729.5	19720	0.0	49.4	48.09581245	-103.89057208	2126.321						
19730	WELD	82,778.9	19730	0.0	49.4	48.09567815	-103.89059522	2125.753						
19740	WELD	82,828.4	19740	0.0	49.4	48.09554411	-103.89061727	2125.296						
19750	WELD	82,877.8	19750	0.0	49.5	48.09540949	-103.89063618	2125.012						
19760	WELD	82,927.4	19760	0.0	49.6	48.09527467	-103.89065303	2124.133						
19770	WELD	82,976.9	19770	0.0	49.5	48.09513966	-103.89066980	2123.156						
19780	WELD	83,026.4	19780	0.0	49.5	48.09500514	-103.89069087	2121.368						
19790	WELD	83,076.0	19790	0.0	49.5	48.09487067	-103.89071485	2118.907						
19800	WELD	83,125.5	19800	0.0	49.7	48.09473668	-103.89073780	2114.309						
19810	WELD	83,175.2	19810	0.0	49.4	48.09460287	-103.89075969	2109.353						
19820	WELD	83,224.6	19820	0.0	49.5	48.09446872	-103.89078071	2111.245						
19830	WELD	83,274.1	19830	0.0	49.7	48.09433484	-103.89080789	2114.277						
10000051	AGM 140, Sta. 832+34, ROW -- Han #8802	83,291.8	19830	17.7	32.0	48.09428754	-103.89082070	2113.256						
19840	WELD	83,323.8	19840	0.0	49.3	48.09420331	-103.89084901	2108.298						
19850	WELD	83,373.0	19850	0.0	49.7	48.09407488	-103.89089707	2099.870						
20000033	Seam Variation	83,388.3	19850	15.2	34.4	48.09403495	-103.89091258	2097.755	316	10:30	-	0.47	0.50	
20000034	Seam Variation	83,395.4	19850	22.3	27.4	48.09401645	-103.89091983	2096.771	314	10:15	-	0.71	0.52	
19860	WELD	83,422.7	19860	0.0	49.2	48.09394484	-103.89094785	2093.235						
19870	WELD	83,471.9	19870	0.0	49.7	48.09381561	-103.89099843	2088.652						
19880	WELD	83,521.6	19880	0.0	44.9	48.09368472	-103.89104833	2085.208						
19890	WELD	83,566.6	19890	0.0	45.4	48.09356573	-103.89109245	2082.510						
19900	WELD	83,612.0	19900	0.0	49.6	48.09344531	-103.89113594	2079.936						
20000035	Seam Variation	83,652.6	19900	40.5	9.1	48.09333791	-103.89117448	2077.342	182	6:00	-	1.18	0.80	
20000036	Seam Variation	83,652.7	19900	40.8	8.9	48.09333740	-103.89117467	2077.332	186	6:00	-	0.35	0.33	
20000037	Seam Variation	83,653.1	19900	41.1	8.5	48.09333641	-103.89117498	2077.315	186	6:00	-	0.47	0.50	
19910	WELD	83,661.6	19910	0.0	49.6	48.09331399	-103.89118309	2076.920						
19920	WELD	83,711.2	19920	0.0	49.6	48.09318276	-103.89123171	2072.893						
19930	WELD	83,760.8	19930	0.0	49.6	48.09305151	-103.89128089	2069.047						
19940	WELD	83,810.4	19940	0.0	49.4	48.09292039	-103.89133008	2065.747						
19950	WELD	83,859.8	19950	0.0	49.6	48.09278974	-103.89137794	2062.176						
19960	WELD	83,909.4	19960	0.0	49.4	48.09265812	-103.89142569	2060.005						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC
Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
19970	WELD	83,958.8	19970	0.0	49.1	48.09252709	-103.89147297	2058.259						
19980	WELD	84,007.9	19980	0.0	49.3	48.09239685	-103.89151867	2055.599						
19990	WELD	84,057.2	19990	0.0	49.6	48.09226583	-103.89156435	2055.241						
20000	WELD	84,106.8	20000	0.0	49.5	48.09213397	-103.89161011	2053.238						
20010	WELD	84,156.2	20010	0.0	49.0	48.09200254	-103.89165542	2051.934						
20020	WELD	84,205.3	20020	0.0	49.5	48.09187178	-103.89169835	2050.218						
20030	WELD	84,254.8	20030	0.0	49.4	48.09173941	-103.89173875	2049.559						
20040	WELD	84,304.1	20040	0.0	49.4	48.09160724	-103.89177549	2048.320						
20050	WELD	84,353.5	20050	0.0	49.5	48.09147419	-103.89180899	2047.454						
20060	WELD	84,403.0	20060	0.0	49.3	48.09134071	-103.89183979	2046.959						
20070	WELD	84,452.3	20070	0.0	49.4	48.09120746	-103.89186977	2046.400						
20080	WELD	84,501.7	20080	0.0	49.3	48.09107462	-103.89190277	2044.643						
20090	WELD	84,550.9	20090	0.0	49.5	48.09094205	-103.89193656	2044.411						
20100	WELD	84,600.5	20100	0.0	47.5	48.09080862	-103.89196959	2043.744						
20110	WELD	84,648.0	20110	0.0	49.7	48.09068063	-103.89200119	2043.178						
20120	WELD	84,697.7	20120	0.0	48.1	48.09054689	-103.89203362	2042.585						
20130	WELD	84,745.7	20130	0.0	49.4	48.09041725	-103.89206312	2042.246						
20140	WELD	84,795.1	20140	0.0	49.4	48.09028381	-103.89209331	2042.296						
20150	WELD	84,844.6	20150	0.0	49.5	48.09015039	-103.89212487	2041.657						
20160	WELD	84,894.1	20160	0.0	49.1	48.09001712	-103.89215790	2040.428						
20170	WELD	84,943.2	20170	0.0	49.3	48.08988501	-103.89219145	2039.395						
20180	WELD	84,992.5	20180	0.0	49.2	48.08975203	-103.89222374	2038.097						
20190	WELD	85,041.8	20190	0.0	49.4	48.08961910	-103.89225352	2038.007						
20200	WELD	85,091.2	20200	0.0	49.5	48.08948572	-103.89228369	2037.617						
20210	WELD	85,140.6	20210	0.0	49.1	48.08935244	-103.89231413	2037.110						
20220	WELD	85,189.7	20220	0.0	49.5	48.08921976	-103.89234562	2036.492						
20230	WELD	85,239.2	20230	0.0	49.2	48.08908659	-103.89237937	2035.478						
20240	WELD	85,288.4	20240	0.0	49.5	48.08895403	-103.89241226	2034.665						
20250	WELD	85,337.9	20250	0.0	49.3	48.08882101	-103.89244505	2033.811						
20260	WELD	85,387.1	20260	0.0	49.2	48.08868820	-103.89247657	2033.385						
20270	WELD	85,436.3	20270	0.0	49.6	48.08855587	-103.89250745	2033.701						
20280	WELD	85,485.9	20280	0.0	49.5	48.08842227	-103.89253885	2035.165						
20290	WELD	85,535.4	20290	0.0	49.6	48.08828873	-103.89257161	2036.759						
20300	WELD	85,585.0	20300	0.0	49.3	48.08815535	-103.89260597	2037.443						
20310	WELD	85,634.2	20310	0.0	49.6	48.08802246	-103.89263762	2036.741						
20320	WELD	85,683.8	20320	0.0	49.4	48.08788887	-103.89266946	2036.240						
20330	WELD	85,733.2	20330	0.0	49.3	48.08775541	-103.89270164	2035.465						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
20340	WELD	85,782.5	20340	0.0	49.3	48.08762238	-103.89273336	2034.853						
20350	WELD	85,831.8	20350	0.0	49.7	48.08748942	-103.89276507	2034.309						
20360	WELD	85,881.5	20360	0.0	49.5	48.08735553	-103.89279802	2033.354						
20370	WELD	85,931.0	20370	0.0	49.6	48.08722242	-103.89283253	2032.284						
20000038	Seam Variation	85,973.3	20370	42.3	7.3	48.08710853	-103.89286207	2031.703	354	11:45	-	0.47	0.56	
20380	WELD	85,980.6	20380	0.0	49.3	48.08708899	-103.89286721	2031.685						
20390	WELD	86,029.9	20390	0.0	1.6	48.08695644	-103.89290380	2030.732						
10000052	Bend left - 45 deg., 3D	86,030.7	20390	0.1	1.5	48.08695444	-103.89290315	2030.711	0	12:00				
20400	WELD	86,031.5	20400	0.0	32.9	48.08695267	-103.89290173	2030.687						
20410	WELD	86,064.4	20410	0.0	49.5	48.08687811	-103.89282726	2029.791						
20420	WELD	86,113.9	20420	0.0	49.6	48.08676532	-103.89271557	2028.281						
20430	WELD	86,163.5	20430	0.0	49.6	48.08665215	-103.89260474	2026.432						
20440	WELD	86,213.1	20440	0.0	49.5	48.08653942	-103.89249236	2025.790						
20450	WELD	86,262.6	20450	0.0	49.6	48.08642730	-103.89238045	2025.346						
20460	WELD	86,312.2	20460	0.0	49.4	48.08631427	-103.89226860	2025.340						
20470	WELD	86,361.6	20470	0.0	49.1	48.08620140	-103.89215775	2024.065						
20480	WELD	86,410.7	20480	0.0	49.4	48.08609002	-103.89204609	2022.756						
20490	WELD	86,460.0	20490	0.0	49.6	48.08597832	-103.89193406	2021.962						
20000039	Seam Variation	86,478.5	20490	18.5	31.1	48.08593648	-103.89189193	2021.849	73	2:15	-	0.35	0.50	
20500	WELD	86,509.6	20500	0.0	49.4	48.08586648	-103.89181984	2022.003						
20510	WELD	86,559.0	20510	0.0	49.3	48.08575513	-103.89170633	2021.713						
20520	WELD	86,608.3	20520	0.0	49.5	48.08564310	-103.89159387	2019.806						
20530	WELD	86,657.8	20530	0.0	48.9	48.08553087	-103.89148164	2019.023						
20540	WELD	86,706.7	20540	0.0	49.4	48.08542024	-103.89137038	2019.265						
20550	WELD	86,756.1	20550	0.0	36.6	48.08530993	-103.89125417	2018.026						
20560	WELD	86,792.7	20560	0.0	0.7	48.08522922	-103.89116642	2016.727						
10000053	Bend left - 21 deg., 29D	86,793.0	20560	0.1	0.6	48.08522866	-103.89116536	2016.703	0	12:00				
20570	WELD	86,793.4	20570	0.0	39.0	48.08522813	-103.89116424	2016.676						
20580	WELD	86,832.4	20580	0.0	49.4	48.08517364	-103.89102719	2014.560						
20590	WELD	86,881.8	20590	0.0	49.4	48.08510374	-103.89085506	2012.116						
20600	WELD	86,931.2	20600	0.0	49.5	48.08503477	-103.89068267	2009.117						
20610	WELD	86,980.7	20610	0.0	49.3	48.08496596	-103.89051076	2004.296						
20620	WELD	87,030.0	20620	0.0	49.4	48.08489584	-103.89034308	1995.055						
20630	WELD	87,079.4	20630	0.0	49.1	48.08482547	-103.89017750	1983.798						
20640	WELD	87,128.5	20640	0.0	49.4	48.08475547	-103.89000815	1982.722						
20650	WELD	87,177.9	20650	0.0	49.4	48.08469001	-103.88983378	1988.118						
20660	WELD	87,227.3	20660	0.0	49.1	48.08462573	-103.88966012	1996.355						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC
Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
20670	WELD	87,276.3	20670	0.0	48.9	48.08456033	-103.88949107	2007.111						
20680	WELD	87,325.3	20680	0.0	49.5	48.08448948	-103.88932303	2011.606						
20690	WELD	87,374.8	20690	0.0	49.5	48.08441659	-103.88915317	2012.263						
20700	WELD	87,424.3	20700	0.0	49.3	48.08434431	-103.88898302	2012.093						
20000040	Seam Variation	87,469.6	20700	45.2	4.1	48.08427812	-103.88882791	2012.804	321 10:30	-	0.47	0.58		
20710	WELD	87,473.6	20710	0.0	49.4	48.08427212	-103.88881394	2012.883						
20720	WELD	87,523.0	20720	0.0	49.4	48.08419959	-103.88864432	2013.655						
20730	WELD	87,572.4	20730	0.0	49.4	48.08412703	-103.88847453	2015.025						
20740	WELD	87,621.8	20740	0.0	49.5	48.08405496	-103.88830421	2017.172						
20750	WELD	87,671.3	20750	0.0	28.4	48.08398344	-103.88813346	2019.465						
20760	WELD	87,699.7	20760	0.0	1.2	48.08394204	-103.88803583	2021.002						
10000054	Bend right - 36 deg., 3D	87,700.3	20760	0.1	1.1	48.08394068	-103.88803443	2021.019	0 12:00					
20770	WELD	87,700.9	20770	0.0	44.6	48.08393919	-103.88803329	2021.028						
20780	WELD	87,745.5	20780	0.0	49.3	48.08382611	-103.88796619	2021.394						
20790	WELD	87,794.8	20790	0.0	49.4	48.08370089	-103.88789293	2021.953						
20800	WELD	87,844.2	20800	0.0	49.5	48.08357443	-103.88782217	2023.543						
20810	WELD	87,893.8	20810	0.0	49.5	48.08344382	-103.88777032	2024.640						
20820	WELD	87,943.3	20820	0.0	49.4	48.08331207	-103.88772468	2023.719						
20830	WELD	87,992.7	20830	0.0	41.4	48.08318317	-103.88767723	2014.751						
20840	WELD	88,034.1	20840	0.0	49.6	48.08307466	-103.88763789	2015.018						
20850	WELD	88,083.7	20850	0.0	49.1	48.08294607	-103.88759182	2025.591						
20860	WELD	88,132.8	20860	0.0	49.6	48.08281620	-103.88754443	2030.001						
20870	WELD	88,182.4	20870	0.0	49.7	48.08268341	-103.88750474	2032.483						
20880	WELD	88,232.1	20880	0.0	49.7	48.08254798	-103.88750612	2031.181						
20890	WELD	88,281.8	20890	0.0	49.4	48.08241761	-103.88753870	2020.342						
20900	WELD	88,331.2	20900	0.0	49.6	48.08229263	-103.88758227	2005.101						
20910	WELD	88,380.8	20910	0.0	49.7	48.08216533	-103.88762984	1994.756						
20920	WELD	88,430.5	20920	0.0	49.2	48.08203427	-103.88767806	1998.637						
20930	WELD	88,479.6	20930	0.0	49.6	48.08190529	-103.88772626	2005.619						
20940	WELD	88,529.3	20940	0.0	41.3	48.08177569	-103.88777255	2014.642						
20950	WELD	88,570.6	20950	0.0	41.3	48.08166978	-103.88781587	2024.187						
10000055	AGM 150, Sta. 884+39, ROW -- Han #8043	88,580.8	20950	10.2	31.1	48.08164430	-103.88783100	2026.008						
20960	WELD	88,611.9	20960	0.0	49.7	48.08156986	-103.88789140	2029.072						
20970	WELD	88,661.7	20970	0.0	49.4	48.08145493	-103.88799931	2029.430						
20980	WELD	88,711.0	20980	0.0	49.1	48.08134358	-103.88811301	2027.681						
20990	WELD	88,760.1	20990	0.0	49.4	48.08123404	-103.88822844	2025.149						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
21000	WELD	88,809.5	21000	0.0	41.4	48.08112505	-103.88834422	2018.287						
21010	WELD	88,850.9	21010	0.0	49.4	48.08103425	-103.88844208	2013.897						
21020	WELD	88,900.3	21020	0.0	49.4	48.08092601	-103.88855935	2020.301						
21030	WELD	88,949.7	21030	0.0	49.4	48.08081761	-103.88867924	2022.686						
21040	WELD	88,999.1	21040	0.0	49.4	48.08070831	-103.88879777	2022.273						
21050	WELD	89,048.6	21050	0.0	49.5	48.08059833	-103.88891525	2021.094						
21060	WELD	89,098.1	21060	0.0	47.7	48.08048836	-103.88903298	2020.381						
21070	WELD	89,145.8	21070	0.0	49.4	48.08038303	-103.88914778	2018.981						
21080	WELD	89,195.2	21080	0.0	49.5	48.08027407	-103.88926642	2016.991						
21090	WELD	89,244.7	21090	0.0	48.3	48.08016507	-103.88938635	2015.183						
40000012	Metal Loss - EXTERNAL	89,255.3	21090	10.5	37.8	48.08014184	-103.88941192	2014.806	348	11:30	17%	0.70	0.50	1760 100%
21100	WELD	89,293.1	21100	0.0	49.5	48.08005852	-103.88950248	2013.964						
21110	WELD	89,342.6	21110	0.0	49.6	48.07994927	-103.88962129	2012.958						
21120	WELD	89,392.2	21120	0.0	49.5	48.07983944	-103.88973997	2010.793						
21130	WELD	89,441.7	21130	0.0	49.5	48.07972982	-103.88985787	2008.960						
21140	WELD	89,491.2	21140	0.0	49.5	48.07962057	-103.88997576	2006.936						
21150	WELD	89,540.7	21150	0.0	49.5	48.07951085	-103.89009360	2006.032						
21160	WELD	89,590.2	21160	0.0	49.5	48.07940067	-103.89021071	2005.579						
21170	WELD	89,639.7	21170	0.0	49.5	48.07929104	-103.89032934	2004.804						
21180	WELD	89,689.2	21180	0.0	49.4	48.07918148	-103.89044747	2003.726						
21190	WELD	89,738.6	21190	0.0	49.2	48.07907242	-103.89056611	2002.392						
21200	WELD	89,787.8	21200	0.0	49.4	48.07896538	-103.89068728	2001.368						
20000042	Seam Variation	89,806.9	21200	19.1	30.3	48.07892409	-103.89073501	2001.140	38	1:15	-	0.35	0.37	
20000043	Seam Variation	89,808.2	21200	20.4	29.0	48.07892135	-103.89073823	2001.132	40	1:15	-	0.47	0.57	
21210	WELD	89,837.2	21210	0.0	1.0	48.07885896	-103.89081098	2001.048						
10000056	Bend left - 32 deg., 1.5D	89,837.7	21210	0.1	0.9	48.07885771	-103.89081166	2001.033	0	12:00				
21220	WELD	89,838.2	21220	0.0	37.6	48.07885643	-103.89081212	2001.015						
21230	WELD	89,875.8	21230	0.0	49.3	48.07875498	-103.89083297	1999.896						
21240	WELD	89,925.1	21240	0.0	49.4	48.07862127	-103.89085952	1997.669						
21250	WELD	89,974.5	21250	0.0	49.5	48.07848733	-103.89088228	1996.093						
21260	WELD	90,024.0	21260	0.0	49.2	48.07835284	-103.89090159	1995.275						
21270	WELD	90,073.2	21270	0.0	49.4	48.07821896	-103.89091904	1993.368						
21280	WELD	90,122.6	21280	0.0	49.1	48.07808420	-103.89093306	1991.024						
21290	WELD	90,171.8	21290	0.0	49.4	48.07795020	-103.89094595	1989.238						
21300	WELD	90,221.2	21300	0.0	49.2	48.07781552	-103.89096010	1987.402						
21310	WELD	90,270.4	21310	0.0	49.5	48.07768166	-103.89097651	1985.565						
21320	WELD	90,319.9	21320	0.0	49.4	48.07754757	-103.89099337	1981.355						



Pipeline Listing

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ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
21330	WELD	90,369.2	21330	0.0	49.4	48.07741339	-103.89100884	1978.627						
21340	WELD	90,418.6	21340	0.0	48.8	48.07727882	-103.89102449	1980.179						
21350	WELD	90,467.5	21350	0.0	49.5	48.07714586	-103.89104062	1982.884						
21360	WELD	90,517.0	21360	0.0	49.5	48.07701115	-103.89105608	1983.191						
21370	WELD	90,566.4	21370	0.0	48.9	48.07687689	-103.89107189	1978.682						
21380	WELD	90,615.3	21380	0.0	41.4	48.07674492	-103.89108677	1973.169						
21390	WELD	90,656.6	21390	0.0	41.4	48.07663339	-103.89109863	1967.925						
21400	WELD	90,698.0	21400	0.0	49.7	48.07652281	-103.89111175	1974.069						
21410	WELD	90,747.7	21410	0.0	49.5	48.07638856	-103.89112599	1980.077						
21420	WELD	90,797.3	21420	0.0	49.5	48.07625354	-103.89114052	1981.537						
21430	WELD	90,846.7	21430	0.0	49.5	48.07611878	-103.89115550	1982.267						
21440	WELD	90,896.3	21440	0.0	49.3	48.07598394	-103.89117115	1982.781						
21450	WELD	90,945.5	21450	0.0	49.3	48.07584969	-103.89118644	1982.740						
21460	WELD	90,994.8	21460	0.0	49.5	48.07571540	-103.89120257	1983.396						
21470	WELD	91,044.3	21470	0.0	49.6	48.07558076	-103.89121910	1984.354						
21480	WELD	91,093.9	21480	0.0	49.3	48.07544569	-103.89123310	1983.852						
21490	WELD	91,143.2	21490	0.0	49.2	48.07531127	-103.89124775	1983.942						
21500	WELD	91,192.4	21500	0.0	48.7	48.07517724	-103.89126377	1983.925						
21510	WELD	91,241.1	21510	0.0	49.5	48.07504455	-103.89128101	1983.732						
21520	WELD	91,290.6	21520	0.0	49.5	48.07491049	-103.89129820	1979.194						
21530	WELD	91,340.0	21530	0.0	49.7	48.07477676	-103.89131761	1973.668						
21540	WELD	91,389.7	21540	0.0	49.7	48.07464326	-103.89133938	1966.784						
21550	WELD	91,439.4	21550	0.0	41.4	48.07450874	-103.89135890	1962.720						
21560	WELD	91,480.7	21560	0.0	49.3	48.07439890	-103.89137435	1970.049						
21570	WELD	91,530.0	21570	0.0	12.4	48.07426748	-103.89139280	1979.145						
21580	WELD	91,542.5	21580	0.0	1.1	48.07423389	-103.89139724	1980.622						
10000057	Bend left - 32 deg., 3D	91,543.0	21580	0.1	1.0	48.07423253	-103.89139668	1980.675	0	12:00				
21590	WELD	91,543.6	21590	0.0	40.2	48.07423115	-103.89139575	1980.719						
21600	WELD	91,583.8	21600	0.0	49.1	48.07413614	-103.89131506	1983.778						
21610	WELD	91,633.0	21610	0.0	49.6	48.07401936	-103.89121596	1985.393						
21620	WELD	91,682.5	21620	0.0	48.2	48.07390223	-103.89111515	1987.118						
21630	WELD	91,730.7	21630	0.0	10.2	48.07378847	-103.89101715	1991.064						
21640	WELD	91,741.0	21640	0.0	49.4	48.07376433	-103.89099591	1991.455						
21650	WELD	91,790.4	21650	0.0	49.5	48.07364878	-103.89089368	1991.139						
21660	WELD	91,839.8	21660	0.0	49.5	48.07353219	-103.89079184	1990.786						
21670	WELD	91,889.3	21670	0.0	49.2	48.07341497	-103.89069150	1992.522						
21680	WELD	91,938.5	21680	0.0	0.7	48.07329833	-103.89059390	1997.808						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
10000058	Bend left - 21 deg., 3D	91,938.9	21680	0.1	0.7	48.07329762	-103.89059289	1997.832	0	12:00				
	21690 WELD	91,939.3	21690	0.0	49.4	48.07329693	-103.89059176	1997.848						
	21700 WELD	91,988.6	21700	0.0	47.6	48.07321211	-103.89043645	2000.466						
	21710 WELD	92,036.2	21710	0.0	41.3	48.07313085	-103.89028484	2002.844						
	21720 WELD	92,077.6	21720	0.0	49.4	48.07307460	-103.89014001	2005.521						
	21730 WELD	92,127.0	21730	0.0	49.4	48.07301550	-103.88995940	2008.730						
	21740 WELD	92,176.3	21740	0.0	49.5	48.07295782	-103.88977724	2010.323						
	21750 WELD	92,225.8	21750	0.0	49.5	48.07289995	-103.88959498	2011.689						
	21760 WELD	92,275.3	21760	0.0	49.6	48.07284277	-103.88941255	2014.627						
	21770 WELD	92,324.9	21770	0.0	49.6	48.07278516	-103.88923030	2017.840						
	21780 WELD	92,374.5	21780	0.0	49.4	48.07272762	-103.88904784	2020.434						
	21790 WELD	92,424.0	21790	0.0	49.1	48.07266998	-103.88886650	2023.957						
	21800 WELD	92,473.1	21800	0.0	49.5	48.07261341	-103.88868571	2027.147						
	21810 WELD	92,522.6	21810	0.0	49.2	48.07255635	-103.88850324	2029.366						
	21820 WELD	92,571.8	21820	0.0	49.5	48.07249942	-103.88832156	2030.856						
	21830 WELD	92,621.2	21830	0.0	49.5	48.07244258	-103.88813930	2034.666						
	21840 WELD	92,670.7	21840	0.0	49.4	48.07238575	-103.88795741	2039.831						
	21850 WELD	92,720.0	21850	0.0	49.4	48.07232849	-103.88777536	2043.220						
	21860 WELD	92,769.5	21860	0.0	49.4	48.07227084	-103.88759386	2047.082						
	21870 WELD	92,818.8	21870	0.0	49.4	48.07221298	-103.88741279	2051.355						
	21880 WELD	92,868.3	21880	0.0	49.4	48.07215492	-103.88723273	2057.095						
	21890 WELD	92,917.6	21890	0.0	48.2	48.07209800	-103.88705356	2065.672						
	21900 WELD	92,965.8	21900	0.0	49.4	48.07204227	-103.88687820	2072.129						
	21910 WELD	93,015.2	21910	0.0	49.5	48.07198439	-103.88669928	2080.302						
	21920 WELD	93,064.7	21920	0.0	49.5	48.07192648	-103.88652459	2092.728						
	21930 WELD	93,114.2	21930	0.0	49.4	48.07187044	-103.88634824	2104.442						
	21940 WELD	93,163.6	21940	0.0	14.3	48.07181736	-103.88616369	2107.704						
	21950 WELD	93,177.9	21950	0.0	10.8	48.07180213	-103.88610985	2108.606						
	21960 WELD	93,188.7	21960	0.0	9.8	48.07179269	-103.88606852	2109.181						
10000059	Bend right - 90 deg., 6D	93,193.4	21960	1.4	8.4	48.07178577	-103.88605327	2109.320	0	12:00				
	21970 WELD	93,198.5	21970	0.0	43.9	48.07177233	-103.88605410	2108.930						
	21980 WELD	93,242.4	21980	0.0	49.4	48.07165641	-103.88610094	2104.738						
	21990 WELD	93,291.8	21990	0.0	49.4	48.07152612	-103.88614998	2101.361						
	22000 WELD	93,341.2	22000	0.0	48.9	48.07139529	-103.88619744	2098.081						
	22010 WELD	93,390.1	22010	0.0	49.4	48.07126550	-103.88624461	2096.041						
	22020 WELD	93,439.4	22020	0.0	49.4	48.07113425	-103.88629084	2094.318						
	22030 WELD	93,488.9	22030	0.0	49.3	48.07100297	-103.88633648	2095.357						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC

Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
22040	WELD	93,538.2	22040	0.0	49.3	48.07087188	-103.88638237	2095.370						
22050	WELD	93,587.5	22050	0.0	49.3	48.07074088	-103.88642746	2091.839						
22060	WELD	93,636.8	22060	0.0	49.2	48.07060994	-103.88647394	2089.486						
22070	WELD	93,686.0	22070	0.0	49.4	48.07047920	-103.88652161	2087.807						
22080	WELD	93,735.4	22080	0.0	49.4	48.07034774	-103.88656784	2086.427						
22090	WELD	93,784.8	22090	0.0	49.1	48.07021606	-103.88661259	2086.661						
22100	WELD	93,833.9	22100	0.0	48.0	48.07008499	-103.88665535	2087.363						
22110	WELD	93,881.9	22110	0.0	0.9	48.06995663	-103.88669677	2089.188						
10000060	Bend left - 24 deg., 3D	93,882.3	22110	0.1	0.8	48.06995545	-103.88669655	2089.176	0 12:00					
22120	WELD	93,882.8	22120	0.0	45.2	48.06995443	-103.88669634	2089.163						
22130	WELD	93,927.9	22130	0.0	49.6	48.06983430	-103.88665278	2087.388						
22140	WELD	93,977.5	22140	0.0	48.0	48.06970291	-103.88660378	2086.407						
22150	WELD	94,025.5	22150	0.0	45.1	48.06957542	-103.88655864	2084.970						
22160	WELD	94,070.6	22160	0.0	49.5	48.06945577	-103.88651780	2080.656						
22170	WELD	94,120.1	22170	0.0	49.5	48.06932472	-103.88646949	2078.126						
22180	WELD	94,169.6	22180	0.0	49.3	48.06919460	-103.88641495	2077.448						
22190	WELD	94,218.8	22190	0.0	49.4	48.06906791	-103.88634782	2078.265						
22200	WELD	94,268.2	22200	0.0	49.4	48.06894333	-103.88627204	2079.364						
22210	WELD	94,317.7	22210	0.0	48.9	48.06881899	-103.88619467	2083.371						
22220	WELD	94,366.6	22220	0.0	49.3	48.06869635	-103.88611686	2086.518						
22230	WELD	94,415.9	22230	0.0	49.4	48.06857272	-103.88603764	2088.211						
22240	WELD	94,465.3	22240	0.0	46.3	48.06844906	-103.88595704	2089.312						
22250	WELD	94,511.6	22250	0.0	49.6	48.06833348	-103.88588110	2089.845						
22260	WELD	94,561.2	22260	0.0	49.3	48.06820914	-103.88580205	2090.582						
22270	WELD	94,610.5	22270	0.0	49.7	48.06808522	-103.88572378	2092.047						
22280	WELD	94,660.1	22280	0.0	46.6	48.06796130	-103.88564118	2092.680						
11000044	WT CHANGE	94,706.6	22280	0.0	0.1	48.06784659	-103.88556064	2092.683			0.322	52000	0.72	
22290	WELD	94,706.7	22290	0.0	42.2	48.06784627	-103.88556042	2092.680						
22300	WELD	94,748.9	22300	0.0	42.2	48.06774023	-103.88549470	2091.970						
22310	WELD	94,791.1	22310	0.0	27.3	48.06763560	-103.88542329	2091.991						
11000045	WT CHANGE	94,818.3	22310	0.0	0.1	48.06757089	-103.88536979	2092.275			0.188	52000	0.72	
22320	WELD	94,818.4	22320	0.0	45.3	48.06757061	-103.88536956	2092.274						
11000046	WT CHANGE	94,863.6	22320	0.0	0.1	48.06746285	-103.88528004	2092.238			0.322	52000	0.72	
22330	WELD	94,863.7	22330	0.0	14.3	48.06746257	-103.88527981	2092.236						
22340	WELD	94,878.0	22340	0.0	1.5	48.06742832	-103.88525170	2092.186						
10000061	Bend up - 45 deg., 3D	94,878.8	22340	0.1	1.4	48.06742669	-103.88525037	2092.487	0 12:00					
22350	WELD	94,879.5	22350	0.0	11.0	48.06742532	-103.88524922	2092.965						



Pipeline Listing

TDW Services, Inc.

Hiland Crude, LLC
Bethel to Bainville

ID#	Description	Distance (ft)	Joint #	U/S Weld	D/S Weld	Latitude	Longitude	Altitude	Orientation (Deg / O'Clock)	Depth (%)	Length or WT	Width or YS	P' or SF	(P'/P)
10000071	Pipe Exiting Ground, Bainville Injection -- Han #8539	94,886.6	22350	7.0	4.0	48.06741327	-103.88523910	2098.000						
	22360 WELD	94,890.6	22360	0.0	1.6	48.06740671	-103.88523391	2100.651						
10000062	Bend down - 45 deg., 3D	94,891.4	22360	0.1	1.5	48.06740499	-103.88523252	2100.919	0	12:00				
	22370 WELD	94,892.2	22370	0.0	2.0	48.06740310	-103.88523111	2100.983						
	22380 WELD	94,894.2	22380	0.0	0.9	48.06739842	-103.88522744	2100.950						
10000063	Flange	94,894.6	22380	0.5	0.5	48.06739735	-103.88522659	2100.942	0	12:00				
	22390 WELD	94,895.1	22390	0.0	2.7	48.06739623	-103.88522571	2100.933						
10000064	Pipe Support	94,896.0	22390	0.8	1.9	48.06739407	-103.88522405	2100.919						
	22400 WELD	94,897.8	22400	0.0	1.2	48.06739001	-103.88522100	2100.892						
10000065	Tee at 90 deg.	94,898.4	22400	0.3	0.9	48.06738858	-103.88521988	2100.881	82	2:30				
	22410 WELD	94,899.0	22410	0.0	3.9	48.06738721	-103.88521884	2100.867						
10000066	Pipe Support	94,901.1	22410	2.0	1.9	48.06738218	-103.88521493	2100.829						
	22420 WELD	94,902.9	22420	0.0	3.1	48.06737809	-103.88521177	2100.804						
10000067	Flange	94,903.3	22420	0.5	2.7	48.06737701	-103.88521091	2100.799	0	12:00				
10000068	Valve (Receiver), Sta. 950+39, Bainville Injection	94,904.4	22420	1.5	1.6	48.06737463	-103.88520910	2100.771						
10000069	Flange	94,905.5	22420	2.7	0.5	48.06737455	-103.88520906	2100.788	0	12:00				
	22430 WELD	94,906.0	22430	0.0	-	48.06737455	-103.88520906	2100.788						
12000002	End Run Tickle	94,952.4	22430	46.5	-	48.06737455	-103.88520906	2100.788						

Type	Number
DEFORMATION	4
GAINS	3
GROUPED PITS	13
LOCATIONS	71
MISC	3
SEAM VARIATION	31
WT CHANGES	47
WELDS	2233



General Inline Inspection Terms

GLOSSARY

AGM (Aboveground Marker)	A portable device placed at an above ground reference point that both detects and records the passage of an in-line inspection tool. AGMs are typically reported using a marker number followed by the aboveground reference point description of the location device (box) placement.
ABOVE-GROUND REFERENCE POINTS	The above ground reference point is a permanent reference on or above the pipeline, which can be used to locate features in the pipeline. Reference points can be valves, fences, test stations, markers posts, or other permanent features.
ACCELEROMETERS	Part of the INS package of the in-line inspection tool. Each TDW tool contains 3 axis-aligned accelerometers measuring orientation and shock.
ANCHOR, WEIGHT OR HANGAR	Non-welded full encirclement pipeline features typically evenly spaced across water crossings. These are usually not detrimental unless associated metal loss is detected.
ANOMALY	Any kind of imperfection or defect that may be present in the wall of the pipe. This includes coating or welding.
APPURTENANCE	A component that is attached to the pipeline; e.g., valve, tee, casing, instrument connection.
ASME B31G, MODIFIED ASME B31G, or DNV RP-F101	Commonly used analysis criterion for metal loss anomalies in a pipeline. TDW software may use ASME B31G, MODIFIED ASME B31G, or DNV RP-F101 to calculate the safe maximum allowable operating pressure or failure pressure at an area of metal loss. These formulas utilize only length and depth - they do not take into consideration the width of the anomaly. The MODIFIED ASME B31G more closely approximates the values obtained via the RSTRENG calculations, which is less conservative than the standard ASME B31G calculation. See also DNV RP-F101.
BEND	A physical pipe configuration that changes pipeline direction.
BEND RADIUS	The radius of the bend in the pipe as related to the pipe diameter (D). Example: A 3-D bend would have a radius of 3 times the diameter of the pipe measured to the centerline of the pipe.
BORE RESTRICTION	Any reduction of the cross-section of the pipe that may restrict the passage of an ILI pig.
BUCKLE	A condition where the pipeline has undergone sufficient plastic deformation to cause permanent wrinkling or deformation of the pipe wall or the pipe's cross section.
BURST PRESSURE	The pressure at which the nominal hoop stress in the wall of a pipe equals the specified minimum yield stress of the pipe grade. It is calculated by $2st/D$ where s = SMYS, t = nominal wall thickness, D = nominal outside diameter of pipe.
CALIBRATION DIG	An exploratory excavation to compare findings of an in-line inspection system to actual conditions with the purpose of improving data analysis.
CASING ANOMALY	When the casing is not welded, or when a gap occurs in the weld, this signature is detected by the tool, and identified with a miscellaneous remark.
CHARACTERIZATION	The process of quantifying the size, shape, orientation, and location of an anomaly, defect, or critical defect after it has been detected.
CHECK VALVE	A valve that prevents reverse flow.
CLAMP	Non-welded full encirclement pipeline feature not located at a bridge or water crossing, in some cases a type of temporary repair.
COMPONENT	Any physical part of the pipeline, other than line pipe, including but not limited to valves, welds, tees, flanges, fitting, taps, branch connections, outlets, supports and anchors.



General Inline Inspection Terms

GLOSSARY PART 2

CONTROL POINT	Control points are know locations used to provide coordinate updates to aid the final processing of the inertial data gathered from the instruments onboard the inspection vehicle.
CORROSION (External)	Metal loss due to electrochemical, galvanic, microbiological, or other attack on the pipe due to environmental conditions surrounding the pipe.
CORROSION (Internal)	Metal loss due to chemical or other attack on the steel from liquids on the inside of the pipe. Electrochemical attack can also occur in local cells, but this is less frequent.
DATA ANALYSIS	The process through which indications are evaluated to classify, characterize and size them as non-relevant conditions, pipeline components, anomalies, imperfections, or defects.
DATUM	A datum is a set of reference points on the earth's surface against which position measurements are made. Horizontal datums are used for describing a point on the earth's surface, in latitude and longitude or another coordinate system. While hundreds of reference datums exists some examples of horizontal datums include, NAD27, NAD83, and WGS84. Vertical datums are tidal, based on sea levels referencing geodetic datums such as NAVD88, or geodetic, based on the same ellipsoid models of the earth used for computing horizontal datums.
DNV RP-F101	An analysis procedure that differs from the commonly used ASME B31G criterion. Developed by the Norwegian company Det Norske Veritas, this method is employed for European and Asian pipelines. The DNV algorithm is generally considered to be more conservative than ASME B31G.
DEFECT	An anomaly for which an analysis, such as ASME B31G, would indicate that the pipe is approaching failure as the nominal hoop stress approaches the specified minimum yield stress (SMYS).
DEFORMATION PIG	A pig designed to record conditions such as dents, wrinkles, ovalities, bend radius and angle by making measurements of the inside surface of the pipeline.
DENTS	Dents are depressions in the pipeline that may be detected by the inline inspection tool. MFL tools may be able to detect dents, but may not be able to accurately size them.
DETECTION THRESHOLD	A characteristic dimension or dimensions of an anomaly that must be exceeded to achieve a stated probability of detection.
DOT192	Part 192 of the Code for Federal Regulations (CFR) Title 49 that addresses Gas Transmission Pipelines.
DOT195	Part 195 of the Code for Federal Regulations (CFR) Title 49 that addresses Transportation of Hazardous Liquids by Pipeline.
ECCENTRIC CASINGS	TDW tools detect when a casing is not centered on the pipeline. These casings are referred to as being eccentric. The closer the casing is to the pipeline, the stronger the signal seen by the inspection tool. The tool may not detect if the casing is shorted to the pipe wall. The tool might see evidence of a short, such as metal loss.
ESTIMATED REPAIR FACTOR (ERF)	The ratio of pipeline design pressure or in some cases MOP to the safe maximum operating pressure (P').
ERW (Electric Resistance Weld)	Describes a process used to form steel from a sheet into tubular form (pipe). Welds are formed by resistance heating of two edges of a metal sheet and then forcing them together to create a solid-state weld.
EXPANSION	Local increase of pipe diameter during service which indicates the yield stress of the pipe at that location has been surpassed.



General Inline Inspection Terms

GLOSSARY PART 3

General Inline Inspection Terms

FAILURE PRESSURE RATIO (FPR)	The ratio of the predicted failure pressure calculated by an analysis criterion (e.g. ASME B31G, RSTRENG, etc.) to the MAOP
FEATURE	Any physical object detected by an in-line inspection system. Features may be anomalies, components, or some other item.
FITTING	A branch connection attached to the pipeline which is smaller than the nominal pipe size that alters flow or diverts product (e.g. tap, offtake, split-tee, weld-o-let, thread-o-let).
GAIN (Metal in Close Proximity)	The inspection tool may detect ferrous metal objects located close to or touching the pipeline. They appear as additional metal added to the pipe and are referred to as gains. Clamps or anchors are considered gains as well as features such as puddle welds or CP connections. Generally, repairs such as patches or sleeves are called out as repairs even though they show appear in the data as gains.
GIRTH WELD	A circumferential weld joining two joints of pipe.
GIS	Geographic Information System is any system that captures, stores, analyzes, manages, and presents data that are linked to location. GIS is the merging of cartography and database technology.
GOUGE	Elongated grooves or cavities caused by mechanical removal of metal.
GPS (Global Positioning System)	The navigational system utilizing satellite technology to provide a user an exact position on the earth's surface. When coupled with known surface locations such as valves and AGMs, an ILI tool's INS or IMU can approximate or calculate the centerline of a pipeline.
GYROSCOPES (Gyros)	Electronic sensors used to measure change in direction of in-line inspection tool during inspection process. Displayed as pitch and yaw in PIGTRAP.
GROUP	A group is several pits that are grouped together using specific interaction rules. If a pit is a mountain peak, then a group is a mountain range. The reason for groups is so that the overall extent of the metal loss area can be evaluated. Most formulas for calculating the strength of the pipe wall around metal loss look at the overall length of metal loss after interaction rules have been applied to pits.
HALF SOLE	A device used to repair a pipeline by welding a small section over half the circumference of the pipe over the defect, literally half of a sleeve.
HALL SENSORS	A sensor that directly measures the remaining magnetic field strength not absorbed by the pipe.
HCA (High Consequence Area)	A criterion for pipelines designed by the Code of Federal Regulations which define what program and practices operators must use to manage pipeline integrity if the pipeline is located near a commercially navigable waterway, a high population area, or an unusually sensitive area.
HEAT AFFECTED ZONE (HAZ)	The region around a weld which has been metallurgically affected during the welding process.
HEAVY WELD	A girth weld in which the root pass or a portion of the root pass intrudes further than normal into the ID of the pipe. Not usually considered detrimental.
HIGH RESOLUTION	A term used to describe the function of TDW tools for use in MFL or Deformation analysis schemes. Both MFL and Deformation tools are considered high resolution.
IMPERFECTION	An anomaly with dimension and characteristics that do not exceed acceptable limits.



General Inline Inspection Terms

GLOSSARY PART 4

IMU (Inertial Measurement Unit)	Inertial measurement unit, or IMU, is the main component of inertial guidance systems. An IMU works by sensing motion including the type, rate, and direction of that motion using a combination of accelerometers and gyroscopes.
INCLUSION	An anomaly in the cross section of the pipeline caused by manufacturing processes. Inclusions may be detrimental if they protrude through the pipe wall. Refer to mill anomaly.
INDICATION	Any measured signal or response from an inspection of a pipe different than the normal baseline signal.
INS (Inertial Navigation System)	Refers to a system of accelerometers and gyroscopes to track the movement and orientation of the inspection tool through bends, turns, etc.
INTERACTION RULES	Specifications that establish spacing criteria between anomalies or defects (pits). If the indications or defects are proximate to one another within the criteria, the anomaly or defect is treated as a single larger unit or group for engineering analysis purposes.
INSPECTION	The use of a non-destructive inspection technique.
JOINT	A single section of pipe that is welded to others to make up a pipeline.
LACK OF FUSION (LOF)	In a weld, any area or zone that lacks complete melting and coalescence of a portion of the weld.
LAUNCHER	Refers to the beginning of the inspection; an oversize section of pipe equipped with sealing door through which the inspection tool is loaded into the pipeline.
LOCATION	A location is a feature in the pipeline that can be used to correlate the inspection tool data to above ground references. Common location features include valves, fitting, flanges, tees, casings, repairs and AGMs. For example, a metal loss area could be referenced as being 200 feet downstream from a valve. Not all locations can be easily found from aboveground.
LATITUDE & LONGITUDE	Latitude is the angular distance north or south from the earth's equator measured through 90 degrees. Longitude is the arc or portion of the earth's equator intersected between the meridian of a given place and the prime meridian and is expressed either in degrees or in time. Latitude and longitude are reported as GPS coordinates. Predicted GPS for features are provided in the Pipeline Listing section.
MAOP (Maximum Allowable Operating Pressure)	(or Design Pressure) The maximum internal pressure permitted in the operation of a pipeline as defined by the Code of Federal Regulations.
MAPPING PIG	An ILI tool that uses an IMU to collect data that can be analyzed to produce an elevation and plan view of the pipeline route.
MEASUREMENT THRESHOLD	A characteristic's dimension or dimensions above which anomaly measurements can be made.
MECHANICAL DAMAGE	A generic term used to describe combinations of dents gouges, and/or cold work caused by the application of external force. Damage includes coating, movement of metal and high residual stress.
METAL LOSS	Any of a number of types of anomalies in pipe in which metal has been removed from the pipe surface, usually due to corrosion or gouging.
MFL (Magnetic Flux Leakage)	An inspection technique in which a magnetic field is applied to a pipe section and measurements are taken of a magnetic flux density at the pipe surface. Changes in measured flux density indicate the presence of a possible defect.



General Inline Inspection Terms

GLOSSARY PART 5

MILL ANOMALY	The process of manufacturing pipe can often leave indications in the pipe wall. Typically these anomalies are not detrimental, and are identified for the benefit of the client.
MINIMUM BORE	The minimum measured Internal Diameter of the pipe at any particular point. Also referred to as minimum cross-section.
MISALIGNMENT	A girth weld anomaly where the two joints of pipe were not aligned properly prior to welding. Sometimes referred to as a hi-lo.
MOP (Maximum Operating Pressure)	The established maximum internal pressure expected during the operation of a pipeline, which cannot normally exceed the maximum allowable operating pressure (MAOP).
ODOMETER	Wheels on in-line inspection tool, which rotate along the pipe to measure the distance the tool has traveled.
ORIENTATION	The location of the reference around the circumference of the pipe, as viewed in the direction of flow (downstream). The value is represented in degrees 0-360° rotating clockwise around pipe. (0° = top of pipe, 90° = 3:00)
OVALITY	A condition in which a circular pipe forms into an ellipse, usually as the result of external forces.
P	Calculated pressure rating for the pipe. Per ASME B31G, it is the greater of either the established MOP for liquid lines (MAOP for gas lines), or $2stFT/D$, where S = SMYS, F = appropriate design factor from ASME B31G, T = Temperature derating factor, D = nominal outside diameter of pipe, and t = nominal wall thickness. See ASME B31G. In application, this variable is identical per DNV RP-F101, however it is calculated using different formulas and factors.
P' (Calculated safe maximum operating pressure)	Calculated safe maximum operating pressure for the pipeline segment as calculated based on information provided by the Customer. TDW software uses ASME B31G, MODIFIED ASME B31G, or DNV RP-F101 to calculate the safe maximum allowable operating pressure (P') of the pipeline at a metal loss area for liquid lines. The calculation also takes into consideration a temperature factor, for use when the line is at elevated temperature, and a safety factor. The default values used in calculations are a temperature factor of 1, and a safety factor of 72% (80% for Canada).
Pfail (Calculated failure pressure)	Calculated maximum operating pressure for the pipeline segment as calculated based on information provided by the Customer. TDW software uses ASME B31G, MODIFIED ASME B31G, or DNV RP-F101 to calculate the failure pressure (Pfail) of the pipeline at a metal loss area for gas lines. The calculation also takes into consideration a temperature factor, for use when the line is at elevated temperature, and a safety factor. The default values used in calculations are a temperature factor of 1, and a safety factor of 100%.
P'/P	Percent of maximum established pressure, this is calculated by dividing the calculated safe pressure of the defect (P') by the current established maximum operating pressure of the pipeline (P). For TDW reporting, P is either established MOP provided by the customer or the calculated pressure rating for the pipe (P). Percentages less than 100% are considered pressure-reducing.
Pfail/MAOP	Percent of MAOP, this is calculated by dividing the calculated failure pressure of the defect (Pfail) by the current MAOP of the pipeline (P). For TDW reporting, P is either established MAOP provided by the customer or the calculated pressure rating for the pipe (P).
PATCH	A device used to repair a pipeline by welding a small section of pipe on top of the defect.
PIG	A generic term signifying any independent, self-contained device, tool or vehicle that moves through the interior of the pipeline for purposes of inspecting, batching, dimensioning, or cleaning.



General Inline Inspection Terms

GLOSSARY PART 6

General Inline Inspection Terms

PIGTRAP	Pipeline Inspection Graphical Test Reporting and Analysis Program (PIGTRAP). Proprietary software developed by TDW Inc. for viewing data collected by the inspection tool.
PIPE SUPPORT	Any device used to support an aboveground pipeline.
PIT	Localized concentrated-cell corrosion on the external or internal surfaces that results from generation of a potential (voltage) difference set up by variations in oxygen concentrations within and outside the pit. The oxygen-starved pit acts as anode and the pipe surface acts as the cathode. If several pits are in close proximity to each other, they may be grouped together using interaction rules as one group.
PLANAR	An NDT term indicating a feature has two-dimensional characteristics like a fissure. Sometimes referred to as crack-like.
RSTRENG	A computer program designed to calculate the calculated safe maximum operating pressure (P') of corroded pipe. RSTRENG results are approximated when Modified B31G criteria is used.
REBOUNDING	The process of changing the dent depth and shape by internal pressure in the pipe. Generally, dents due to third-party contact will re-round, while dents due to rocks will not unless the rock causing the dent is removed.
RECEIVER	Refers to the ending of the inspection; an oversize section of pipe equipped with sealing door through which the inspection tool is retrieved from the pipeline.
REPORTING THRESHOLD	A parameter that defines whether or not an anomaly will be reported. The parameter may be a limiting value on the depth, width, or length of the anomaly or feature.
RESIDUAL DENT DEPTH	The dent depth measured under a particular set of conditions, e.g., in pressurized or un-pressurized pipeline. While maximum dent depth does not change, the residual or measured dent depth changes with pressure and loading. Also referred to as the measured dent depth.
RUPTURE PRESSURE RATIO (RPR)	The ratio of the predicted failure pressure calculated by an analysis criterion (e.g. ASME B31G, RSTRENG, etc.) to the pressure at specified minimum yield strength (SMYS)
SAFETY FACTOR	(or Design Factor) Typically 0.72 for liquid lines per ASME B31G (0.80 in Canada) . In setting the safety factor, due consideration has been given to and allowances made for the manufacturing tolerance and maximum allowable depth of imperfections provided for in the specifications. DNV RP-F101 uses a slightly different Total Usage Factor, which is entered as the Safety Factor in PIGTRAP. The typical 0.72 factor becomes 0.648 when applying the DNV modeling factor of 0.9.
SEAMLESS	Pipe that is manufactured by means of extrusion. This process typically creates significantly more variation in pipe wall thickness than ERW pipe.
SEAM VARIATION	Non-detrimental irregularity due to the manufacturing of the seam weld. An example is excess or variance in trim.
SEAM WELD (or SEAM)	The longitudinal or spirally-oriented weld in pipe connecting two edges of a formed plate which was created at the pipe mill.
SLEEVE	A device used to repair a pipeline by welding a small section of pipe over the full circumference of the pipe over the top of the defect.
SpirALL™ Magnetic Flux Leakage	A tool system that unites a conventional axial MFL and a unique spiral MFL tool section into one tool combining the benefits of each for enhanced defect characterization and sizing.



General Inline Inspection Terms

GLOSSARY PART 7

Spiral MFL (SMFL)	A unique type of MFL tool section that creates an oblique, near-45 degree magnetic field within the pipe wall. This allows detection and characterization of long and narrow metal loss or seam features on par with circumferential or transverse MFL tools.
SPACER	A device used to maintain space between a casing and a pipeline.
SMYS (Specified Minimum Yield Strength)	A required strength level that measured yield stress of a pipe material must exceed, which is reported as pipe grade. The measured yield stress is the tensile stress required to produce a total elongation of 0.5 percent of a gage length as determined by an extensometer during a tensile test.
STITCHING	Intermittent or repeating lack of fusion in a seam weld.
TEMPERATURE FACTOR	Typically 1.0 unless the metal temperature is expected to exceed a normal temperature range of -20°F (-30°C) to 250°F (120°C).
THIRD PARTY DAMAGE	Damage to a pipeline system by an outside party. See mechanical damage.
TRACKING	The process used to monitor the progress of the inspection tool through the pipeline. AGM boxes are placed at aboveground marker reference locations to record the passage of the inspection tool.
TRAP	Pipeline facility for launching and receiving tools and pigs.
VOLUMETRIC	A term indicating a feature has three-dimensional characteristic similar to a typical corrosion pit.
WELD ANOMALY	Any area or zone in a weld that lacks complete melting and fusion of a portion of the weld which could have occurred during the welding process or caused by corrosion.
WRINKLE	A smooth and localized bulge visible on the outside wall of the pipe.
WRINKLE BEND	A field bend that contains smooth and localized bulges on the inner radius of the bend, sometimes formed when pipe is cold bent.



Appendix A

Database and Reporting Details

1. The Graphs, Dig Sheets, and Tables used in this report were generated using a standalone reporting engine from data contained in a Microsoft Access™ database.
2. If the end user has Microsoft™ Access on their computer, they have complete access to the inspection database. The database file which has an extension of *.mdb (Microsoft™ database) is stored in the same directory as the tool data. Although the printed reports and report spreadsheet were generated by a standalone reporting engine, using Access the user can customize some basic graphs or tables contained in the database. Alternatively, the data can be exported to a spreadsheet if preferred.
3. The PigTrap™ software, included with this report, provides the user with an easy way to view the data collected by the TDW in-line inspection tool and can also be helpful when trying to locate certain features or specific sections of pipe. The software can be run off various media or installed onto a network or hard drive. Please refer to Appendix B for installation requirements and instructions.
4. For dig sheet creation, please refer to Appendix C.
5. TDW inspection tools are designed to detect various features and anomalies within a pipeline. These various features and anomalies are added to the database using PigTrap™ software by qualified Data Analysts.
6. Database Numbering System: All entries in the database have a unique number assigned to them. The table below lists the number range of each category of database records.

7. All records are numbered sequentially from the beginning of the pipeline section to the end of the pipeline section. By default Welds begin at 110 and are incremented by 10 from one weld to the next. This can be altered to match customer weld or joint numbering by request.

Welds	110	to	9,999,999
Locations	10,000,000	to	10,999,999
Pipe	11,000,000	to	11,999,999
Misc	12,000,000	to	12,999,999
Gains	13,000,000	to	13,999,999
Deformations	14,000,000	to	14,999,999
Bore Restrictions	15,000,000	to	15,999,999
Pits or Other Defects	20,000,000	to	39,999,999
Groups (of Pits)	40,000,000	to	49,999,999
Seam Welds	51,000,000	to	51,999,999

8. All other records are incremented by 1 from one record to the next. For example, the first Location record would be numbered 10,000,000, the second record would be 10,000,001, and the third record would be 10,000,002, etc. Depending on information sent out previous to the final report, numbering may change during analysis of the run.



Appendix B

Installation Instructions for PigTrap™ Pipeline Inspection Graphical Test/Report Analysis Program

The PigTrap™ software allows the user to view all of the data collected during the Magpie/TDW inline inspection survey. Installation requires the disk(s) or external drive that accompany the inspection report.

System Requirements

Before you install and run PigTrap™ please verify that the computer you are installing to meets the minimum requirements needed to successfully open and operate PigTrap™.

Windows OS

- Microsoft® Windows 7, Vista®; Windows® XP Professional, Home Edition
 - o Administrator rights required
- 2.0 GHz Intel® Core™ 2 Duo Processor or higher
- 2 GB RAM or more
- 1 GB available hard drive space plus additional necessary for the run size.
- Qualified hardware-accelerated OpenGL graphics card, 32-bit color, and 256MB of VRAM (latest manufacturer drivers strongly recommended also).
- Microsoft® Access 2003 or higher
- Microsoft® .NET Framework 3.5 Service pack 1
- Microsoft® Visual C++ 2008 SP1 Redistributable Package (x86)
- Microsoft® Report Viewer 2008 SP1

What electronic data accompanied the inspection report

The CD, DVD, or external drive supplied by T.D. Williamson, Inc. for this PigTrap™ inspection of your pipeline contains the following types of files. For CD or DVDs the first disk will contain these files while accompanying disks (if any) contain raw tool data only. External drives will contain this information in the Final Report folder on the external drive under the run name folder.

- Database – .MBD (Microsoft Data Base) Files of this type may be viewed through Microsoft Access. This file contains the analysis of the inspection.
- .rsf – This is a PigTrap™ reference file which holds specific settings for the run to be viewed.
- Spreadsheet – .XLS (Microsoft Excel) A Pipeline Listing is generated for your run in an Excel spreadsheet format. Each event at a particular location is identified and described. You may use Copy and Paste techniques to build your own custom formatted report.
- Setup.exe file – This file executes the installation of the data for the specific run contained on the disk(s) or external drive.

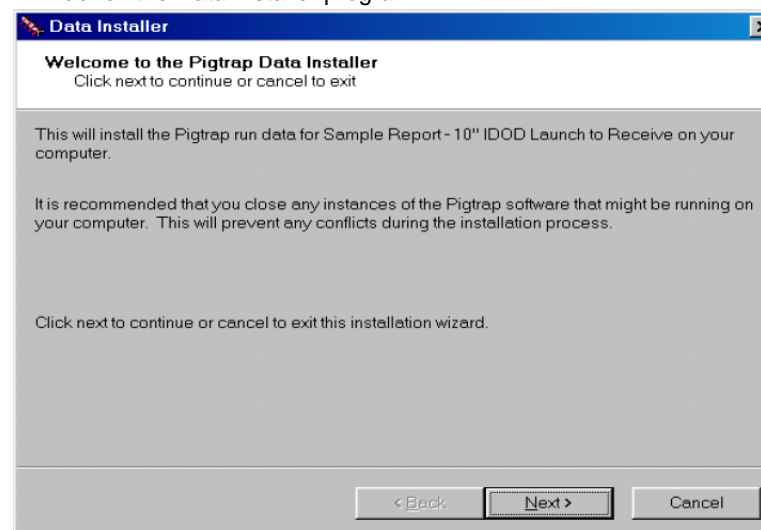
- h*.nnn, c*.nnn, i*.nnn, p*.nnn, t*.nnn, l*.nnn & o*.nnn – The raw tool data created on-board the inspection tool. These files are necessary for PigTrap™ to function properly. CD and DVDs have the option to install these files onto your computer, if chosen not to install them to your computer the disks must be used to view the run.

Run Data and PigTrap™ Installation

The inspection report will be accompanied by either CDs, DVDs, or an external drive containing all files necessary for installation. Installation for CDs and DVDs differs from external drives, if an external drive accompanied your final report please skip to PigTrap™ Installation.

CDs and DVDs

1. Insert Disk 1 from the report binder into your computer's CD/DVD drive.
2. Access the Setup.exe program located on the CD or DVD. This can be done by browsing to your computer's CD/DVD drive and double clicking Setup.exe. This will launch the Data Installer program.



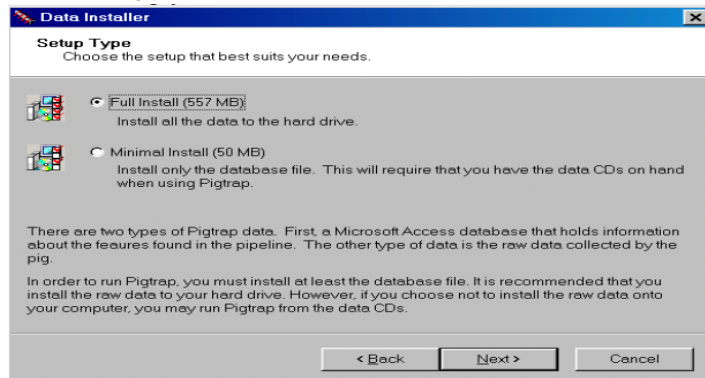
Note: If you want to install only the Pigtrap™ software and not the run data (advanced users only), choose Cancel and go to the Pigtrap™ Installation steps on page 3.

3. Click Next to continue installing the run data.

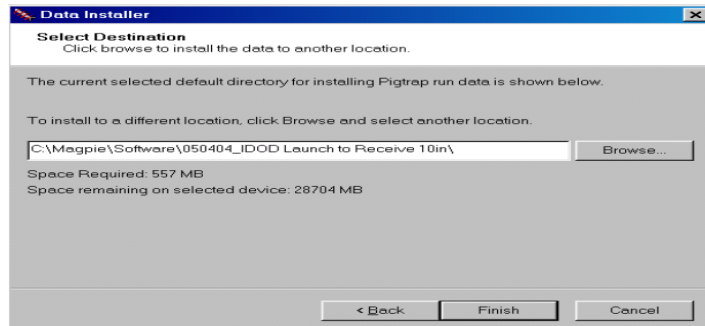


Appendix B

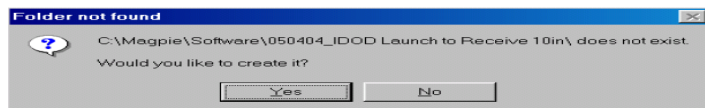
4. Choose the type of install you would like to perform: Full Install (recommended) or Minimal Install. The size of the installation is shown next to each type of installation. The database file must be installed for PigTrap™ to operate properly, but you may choose to not install the raw data. If you choose to not install all the data, you may need to change disks while viewing the data in PigTrap™. Click Next to continue after making your choice.



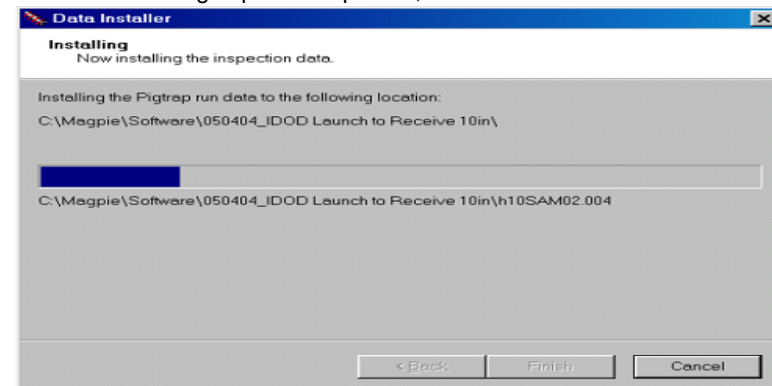
5. Choose the installation location on your computer for the data files. The default and recommended location is C:\Magpie\Software. The location inside this folder is based on the trap date, name, and size of the run. If you would like to specify another location, click the Browse... button. Click Finish to continue.



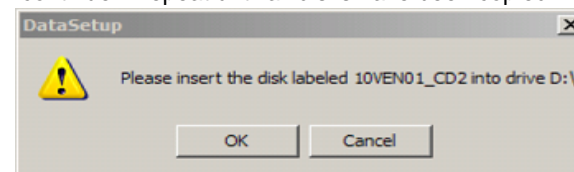
6. If the installation folder does not already exist, then you will be prompted to create it. Click Yes to create the new folder.



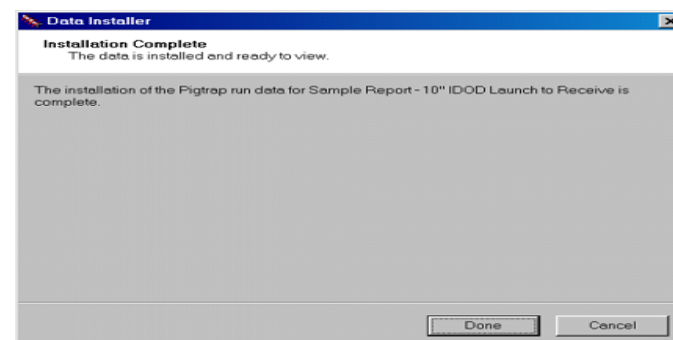
7. The following progress bar will appear. There may be a short delay while the database is being copied. Be patient, this is normal.



8. You may be prompted to insert other disks from the run distribution if data was supplied on more than one disk. Insert the required disk and click OK to continue. Repeat until all disks have been copied.



9. Click Done to complete the run data installation.



10. After clicking Done in the Data Installer PigTrap™ Installation will automatically launch.

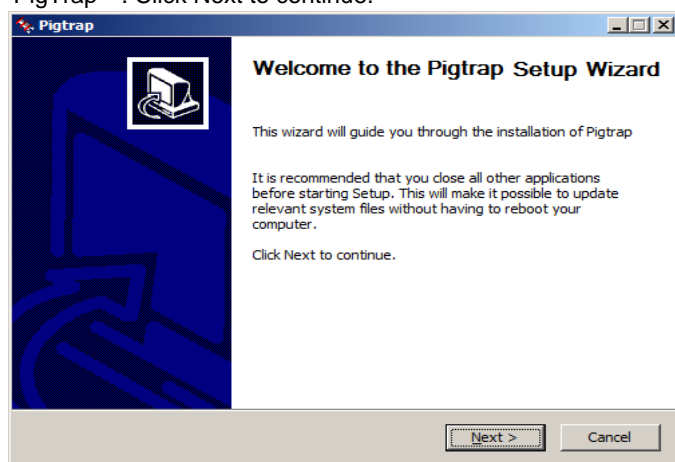


Appendix B

PigTrap™ Installation

Note: CD and DVDs follow a slightly different installation process. Steps 1 and 2 are for external drives, if you are installing from CDs or DVDs please skip to step 3.

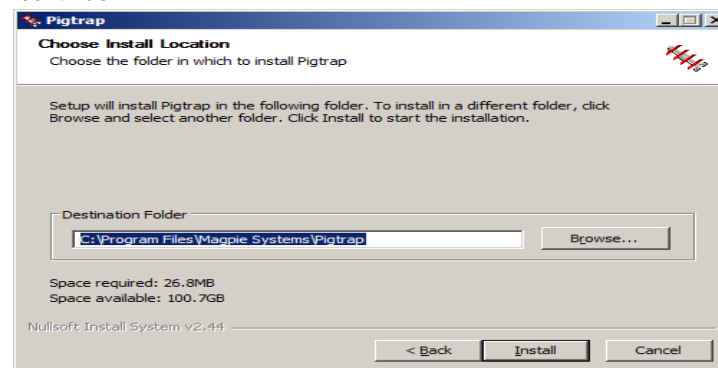
1. Plug the external drive into your computer.
2. Access the PigTrap™ setup.exe located on the external drive. This can be done by browsing to external drive and double clicking PigTrap™ setup.exe.
3. PigTrap™ Setup Wizard will launch. This will guide you through the installation of PigTrap™. Click Next to continue.



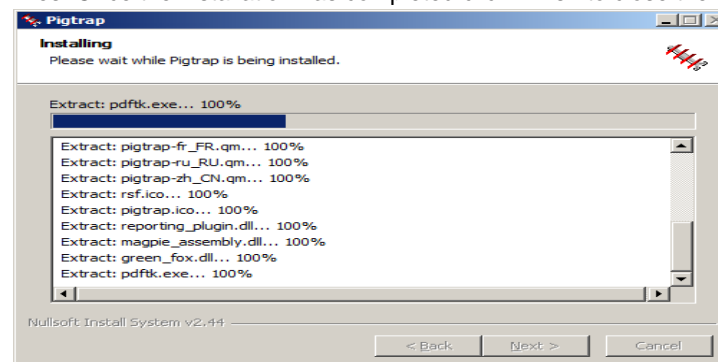
4. The Software License Agreement will appear. Read the agreement select I Agree to continue. You must accept the agreement to install PigTrap™.



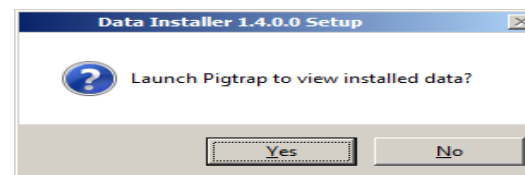
5. Choose the installation location on your computer for the PigTrap™ software. The default and recommended location is C:\Magpie\Software. Click Install to continue.



6. The following progress bar will appear while PigTrap™ installs all the necessary files. Once the installation has completed click Finish to close the wizard.



7. When prompted whether you would like to view the run data, click Yes to launch PigTrap™. Shortcuts are now on the desktop to the run and to PigTrap™. Once PigTrap™ opens with the data, choose save in the upper left of the data view.





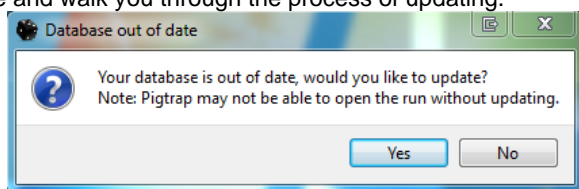
Appendix B

Opening and Viewing the Inspection Data

Viewing the inspection data in PigTrap™ can be done by using one of three different methods.

1. Double click on PigTrap™ .exe icon. Click on the Open Folder icon, then browse to the installed inspection data folder and select the desired .rsf or .mrsf file.
2. Double click on a run settings file (.rsf or .mrsf) that is associated with PigTrap™.
3. Drag and drop a run settings file (.rsf or .mrsf) on top of the PigTrap™ .exe file.

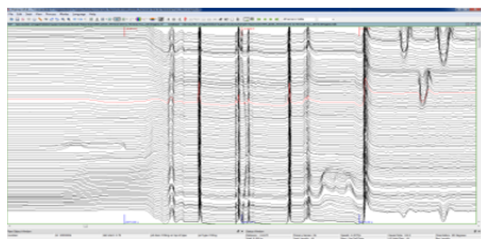
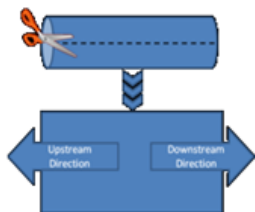
PigTrap™ was designed so you would have the ability to review previous TDW/Magpie inspection data when needed. However, you may need to acquire an updated Microsoft Access Data-base from one of our TDW representatives. When opening previous data in PigTrap™ you may encounter the message, "Your database is very old. You may need to update it." If this happens, don't panic. Chances are you will be able to view the data without any problems. If you can't, just contact your TDW representative and we can send you a newer database and walk you through the process of updating.



We packed so much into the new PigTrap™ the older reference files just couldn't hold it all so a new one may need to be created. Once the new reference file finishes, you will be able to freely navigate around in PigTrap™.

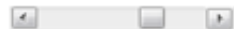
What am I looking at?

The data viewed in PigTrap™ is a 360 degree snapshot of the inside of the inspected pipe. This captured data is sliced down the middle and laid flat in the PigTrap™ main display. The horizontal lines represent sensor data collected from the pigging tool. Each line is one sensor. The left side of the screen is "upstream" while the right side of the screen is "downstream". So, as you scroll from left to right you are moving downstream from the launch valve.



Basic Navigation

The horizontal scrollbar at the bottom of the main view moves the view upstream or downstream. Clicking on the left arrow moves upstream while clicking on the right arrow moves downstream.

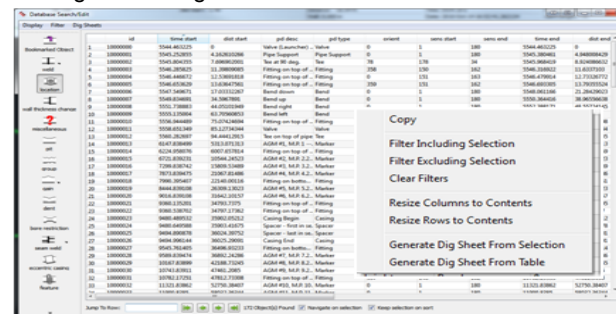


The vertical scrollbar at the right side of the main view rolls the data vertically to a desired orientation of the view.

Zooming IN/OUT on the data is easily performed by clicking on the Zoom buttons.

Select the "Jump to Distance" icon from the run toolbar to enter a desired distance point to navigate in the inspection data. The option "View Width" sets how much viewable area to display (time based).

Click on the binoculars to open the Database/Search Edit (DSE). This displays a table of the pipe objects marked by the Data Analysis personnel. The buttons in the DSE allow for a high level filtering of specific types of marked pipe objects in the table. Right click on any pipe object to display a context menu of filtering, resize columns/rows and generate dig/feature sheets.



For example: Launch and Receive Valves can be found under "location" button, you'll also find Bends, Tees, Markers, etc.

For additional information regarding dig/feature sheet creation, see Appendix C.

Training

For detailed Pigtrap training, contact your TDW representative.

Appendix B



Appendix B

Trouble Shooting

Issue	Possible Cause	Possible Solution
"Data files missing" message displayed on the Main view.	PigTrap™ is not able to load the necessary data file(s) because they are missing, not installed correctly, media/hardware damage (Dirty or scratched CD/DVD, drive failure).	Please reinstall the inspection data, check the run setting has the correct path to the files (Run Settings>Files>Data File Directory), clean the CD/DVD.
"Generate Dig Sheet" is not available from the DSE.	PigTrap™ is not installed correctly.	Please reinstall PigTrap™.
Main window title bar is not visible.	Full screen is enabled.	Press "F11" on the keyboard.
Not able to highlight pipe objects.	The color bit depth is not set correctly.	PigTrap™ requires a 32 bit color depth, please contact IT to assist in changing to the correct setting.
	One of the task specific modes is enabled.	Press the "Done" or "Cancel" buttons from the bottom left.
REF error message.	If this is the first time opening a run with PigTrap™, it may attempt to create a reference file (.ref2). This message appears because a .ref2 file does not exist or it is corrupt.	Select OK to create a new ref2 file.
Can't see the sensor data.	Zoomed in very close.	Click on the Zoom OUT button.
	Sensors are not enabled.	Turn on the sensors from the Run Toolbar.
Can't find the Status/Database Window.	The Status/Database windows are not enabled	Go to View>Status Window and toggle the option ON
Crashes while opening.	The video card drivers are out of date.	Update the graphic card drivers. Note: Before installing the latest driver, you may need to uninstall the current drivers while in Windows safe mode. Can also turn off shaders.
	The .rsf is corrupt and needs replacing.	Reinstall the inspection data.
	Microsoft Visual C++2010 redistributable is corrupt or not installed.	This is typically installed the TDW Inspection data. It is possible to have a corrupt install and additional help may be required to correct the issue. Please contact your local IT department to assist with the prerequisite install.



Appendix B

Tool Bar Layouts and Functions

Run Toolbar

The run toolbar will contain button that will toggle different views, traces and features on and off. Some of the features will be technology specific, such as IDOD as proximity sensors are only present on MFL tools. The arrows next to some buttons will provide additional options related to the specific button. Each window can be undocked by clicking and dragging the dotted left side of the toolbar.



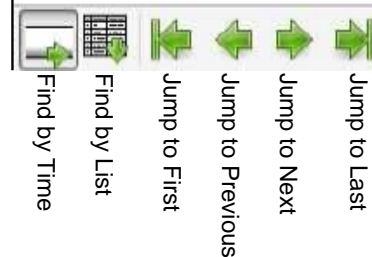
Main

The main toolbar contains navigation buttons that will aid in viewing run data and seeking to specific distances or locations.



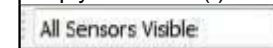
Database Navigation

These buttons navigate to features listed in the DSE.



Sensor Visibility

PigTrap™ allows user to zoom in on specific set of sensors, this dialog will display what sensors are currently being viewed. To return to viewing all sensors simply zoom out (-).



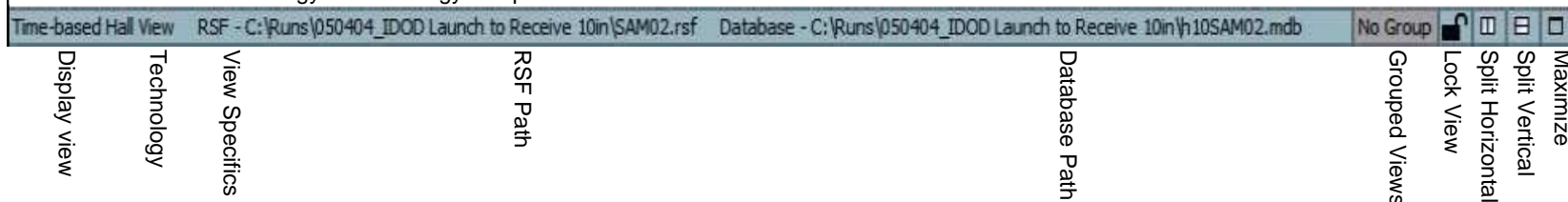
Quick Search

The quick search allows users to quickly search for features by typing in a certain criteria, such as '+valve' this will jump to the next downstream valve.



Run Details Status Bar

The run details status bar displays information regarding the view-type (time or distance), the location of the RSF and database and allows for the splitting of multiple views. Additional views can be split vertically or horizontally and even un-docked into a separate window using the button that appears after a view has been split. Locking a view will keep the current view in place. This feature will allow for multiple runs to be open in the same PigTrap™ for easier run to run or technology to technology comparison.





Appendix B

Displayed Information and Shortcuts

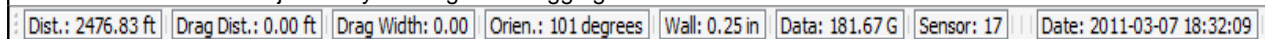
Pipe Object and Status Windows

The Pipe Object and Status Windows will be defaulted to the right side of PigTrap™. Both windows can be docked and undocked by double clicking the title bar, left clicking and dragging or clicking the undock button located in the top right corner. As PigTrap™ has the ability to display multiple datasets the Status Window will update each section depending on which tool technology is selected (refer to the Run Details Status Bar on the Tool Bar Layout and Functions page). The information contained in each section of the Status Window can also be customized by right clicking on the desired section and selecting what data to display.

	<p>The pipe object window will display information about a highlighted feature, such as a weld, providing the weld ID and Distance. Features are highlighted when the cursor is placed upstream of an object and the object becomes highlighted with a teal color.</p>	
	<p>The General section of the Status Window will display information pertaining to all datasets. The information is dependent on the cursor location, displaying the current distance, orientation, wall thickness, joint length, up stream weld and date and time. The drag distance and drag width is populated when a box is drawn and can be useful when manually measuring lengths and widths.</p>	
	<p>The MFL window will display information for the current highlighted sensor. The highlighted sensor will be a red line over the entire sensor. These sensors can be turned on and off using the Esc key.</p>	
	<p>The IDOD window will display information for the current highlighted IDOD sensor. The IDOD sensors can be turned on by pressing the tilde (~) key.</p>	
	<p>The odometer section displays information about the speed for the current cursor location.</p>	

Status Bar

The Status Bar is located at the bottom left of PigTrap™ and contains much of the same information as the General section of the Status Window. It can also be customized by right clicking and selecting what information to display. The order can also be adjusted by clicking and dragging a section above or below other rows.



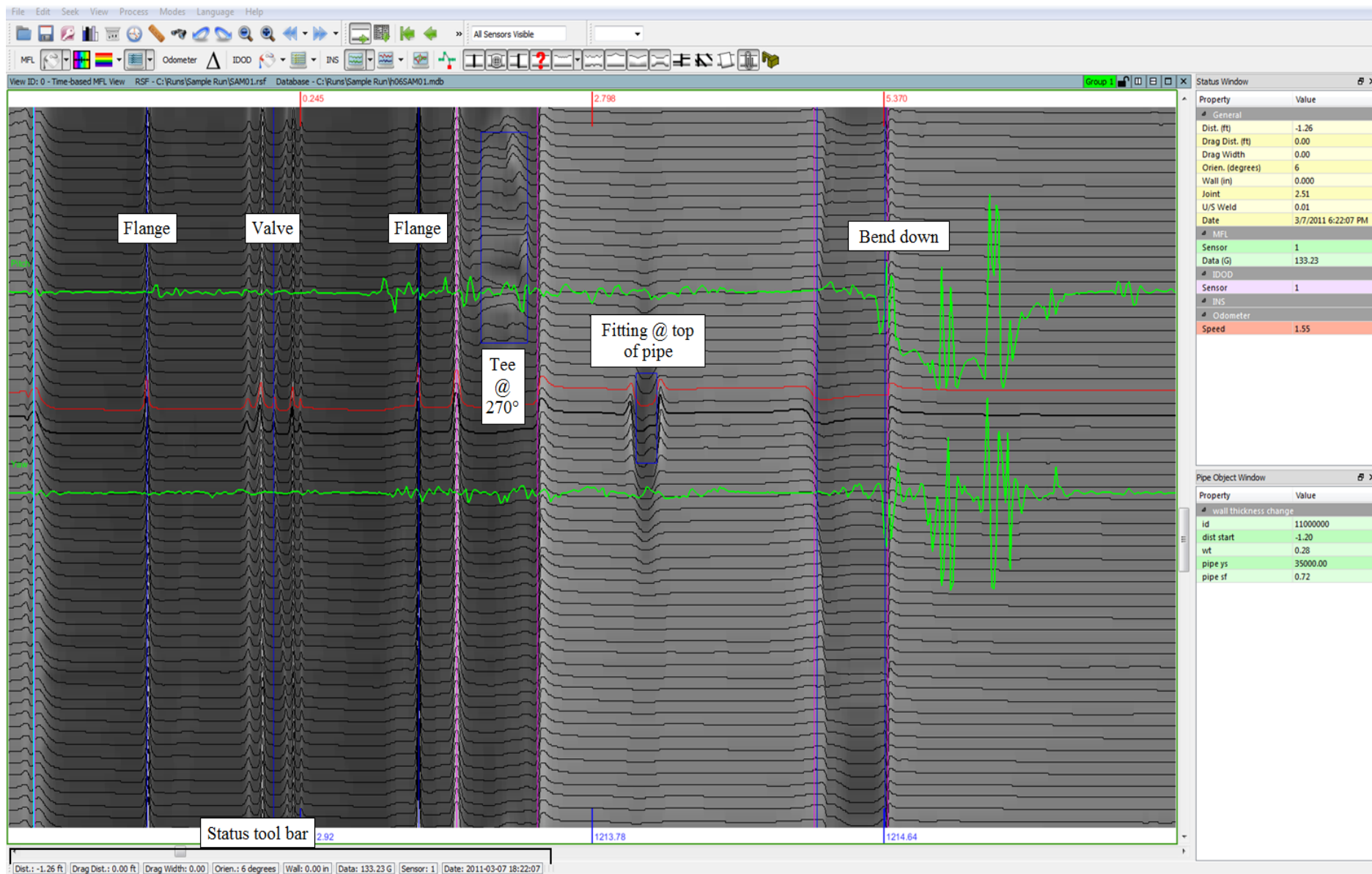
Keyboard Shortcuts

Ôd ÆÁ	Jump to Launch Valve
Ôd ÆÁ	Jump to Receive Valve
	Move Half Screen Downstream
	Move Half Screen Upstream
Page Down	Move Full Screen Downstream
Page Up	Move Full Screen Upstream
	Rotate Orientation Up
	Rotate Orientation Down
Mouse Wheel	Rotate Orientation
Ctrl + F	Open Database Search Edit (DSE)
Spacebar	Repeat Last DSE Find
Ctrl + Z	Undo Last View
Ctrl + Shift + Z	Redo Last View
Ctrl + D	Jump to Distance
Ctrl + T	Jump to Time
Ctrl + H	Open Deformation Cross Section
Ôd ÆÁ	Jump to Downstream Marker Trip
Ôd ÆÁ	Jump to Upstream Marker Trip
Alt + Double Click	Hide Status Windows
Esc	Turn Hall sensors on/off
Tilde (~)	Turn IDOD sensors on/off
M	Measure dragged box



Appendix B

PigTrap™ MFL Runs

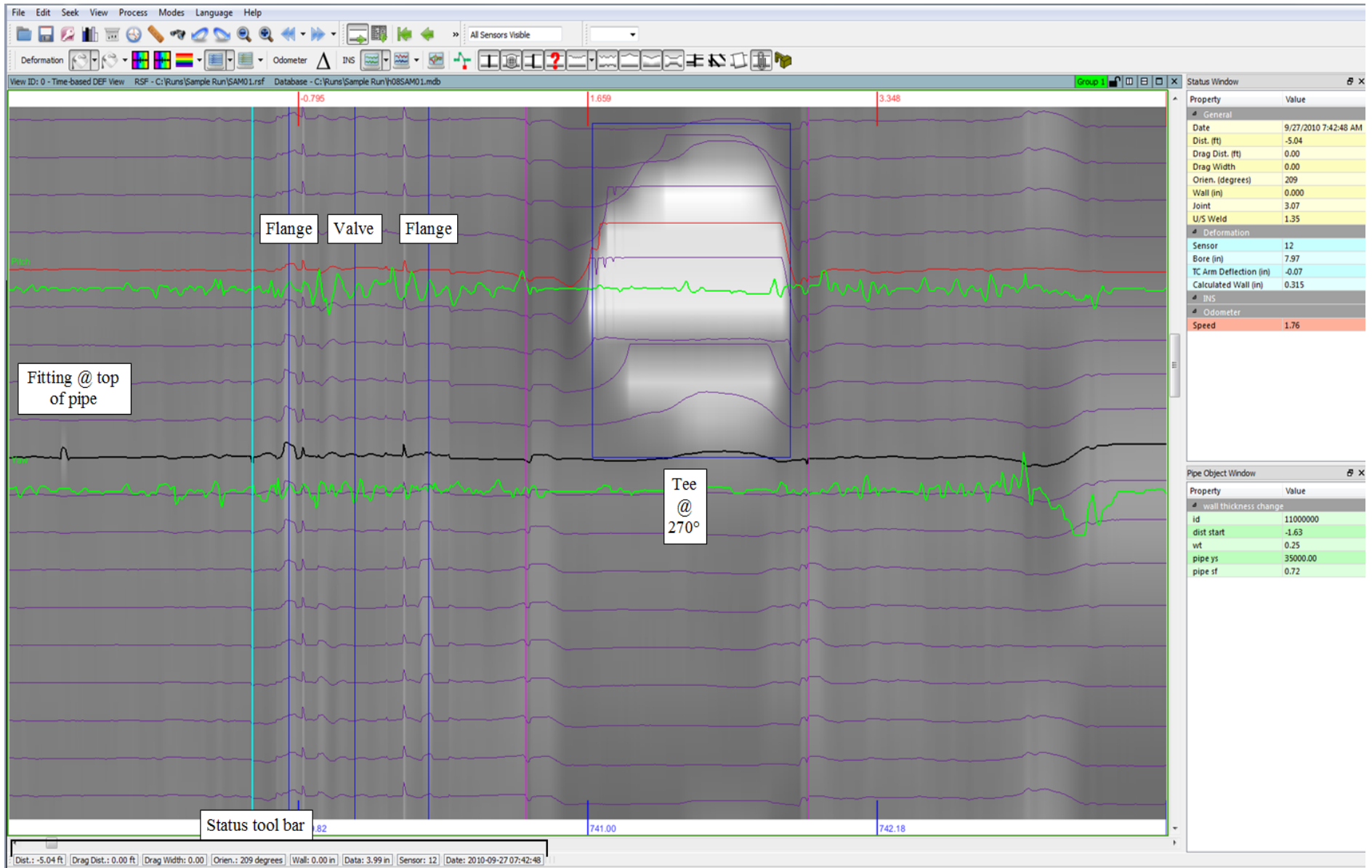


Appendix B



Appendix B

PigTrap™ DEF Runs



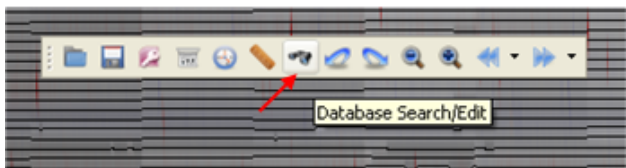
Appendix B



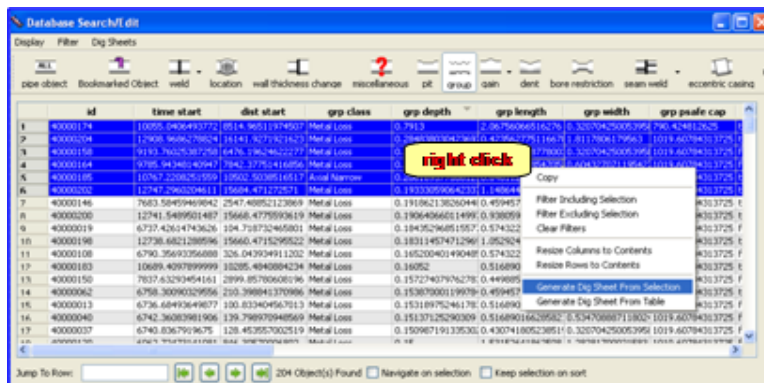
Appendix C

The user can view and print dig sheets for any anomaly or feature detected in the pipeline including Metal Loss (Groups or Pits), Dents, Locations, Gains, Wall Thickness changes, Welds, Miscellaneous notes, etc.

1. Open PigTrap™ to view the inspection data for the run. Please consult Appendix B if you need instructions on installing and viewing the raw data.
2. Click on the Database Search/Edit option either by clicking on the small binoculars icon in the toolbar or choosing the option under the Seek toolbar.
4. Once the list populates with that type of object, you can filter or sort the data to find the object(s) for which you want to create dig sheets.



a. This will bring up the Database Search/Edit (DSE) window.



3. You can choose what type of feature you want to list in the window by clicking on the icon in the margin.
5. Right clicking in the table or choosing the Dig Sheets option in the top toolbar will allow you to create dig sheets one of two ways:
 - a. Generate Dig Sheet From Selection – This will create a separate dig sheet for each of the highlighted rows in the list. Using the Ctrl key or the Shift key and clicking rows will allow for multiple row selection.
 - b. Generate Dig Sheet From Table – This will create a separate dig sheet for every item in the list whether highlighted or not. Note that if the list contains a lot of features, this could lead to numerous dig sheets being created and may impact the short term performance of your computer while they are being generated.
6. The dig sheets you requested will automatically be previewed for easier printing as well as saved to a directory as a pdf file for printing later.
 - a. To choose which directory the dig sheets are saved into, choose Report Creation Settings under the Dig Sheets option in the top toolbar.
7. Also under the Dig Sheets toolbar in the DSE window, you may change various dig sheet formatting preferences by clicking on Dig Sheet Settings option.