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30-015-45045

NORTHERN DELAWARE BASIN

EDDY COUNTY, NM

ATLAS

PUDGE FEDERAL #21H

ST01

Design: ACTUAL WELLPATH (ST01)

Survey Report - Geographic

10 December, 2018



Survey Report - Geographic

Company: NORTHERN DELAWARE BASIN
Project: EDDY COUNTY, NM
Site: ATLAS
Well: PUDGE FEDERAL #21H
Wellbore: ST01
Design: ACTUAL WELLPATH (ST01)

Local Co-ordinate Reference: Well PUDGE FEDERAL #21H
TVD Reference: RKB=2938.6+25 @ 2963.6usft (LATSHAW 44)
MD Reference: RKB=2938.6+25 @ 2963.6usft (LATSHAW 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

Project	EDDY COUNTY, NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	ATLAS		
Site Position:		Northing:	371,480.80 usft
From:	Map	Easting:	573,599.60 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 1' 15.933 N
		Longitude:	104° 5' 45.086 W
		Grid Convergence:	0.13 °

Well	PUDGE FEDERAL #21H		
Well Position	+N-S	0.0 usft	Northing:
	+E-W	0.0 usft	Easting:
Position Uncertainty	3.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 4' 49.839 N
		Longitude:	104° 1' 1.192 W
		Ground Level:	2,938.6 usft

Wellbore	ST01		
Magnetics	Model Name	Sample Date	Declination
			(°)
	WMM2015	7/9/2018	7.06
			Dip Angle
			(°)
			59.83
			Field Strength
			(nT)
			47,685.29271333

Design	ACTUAL WELLPATH (ST01)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	7,075.0
Vertical Section:	Depth From (TVD)	+N-S	+E-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			175.35

Survey Program	Date 7/16/2018		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	7,075.0	GYRO (OWB)	Standard Keeper 104
7,083.0	13,920.0	MWD-CURVE/LATERAL (ST01)	MWD+IFR1+MS
			Description
			Standard Wireline Keeper ver 1.0.4
			OWSG MWD + IFR1 + Multi-Station Correction

Survey									
Measured			Vertical			Map	Map		
Depth	Inclination	Azimuth	Depth	+N-S	+E-W	Northing	Easting	Latitude	Longitude
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
0.0	0.00	0.00	0.0	0.0	0.0	393,157.50	597,976.80	32° 4' 49.839 N	104° 1' 1.192 W
100.0	2.19	172.26	100.0	-1.9	0.3	393,155.61	597,977.06	32° 4' 49.820 N	104° 1' 1.189 W
125.0	2.36	174.00	125.0	-2.9	0.4	393,154.62	597,977.18	32° 4' 49.810 N	104° 1' 1.187 W
150.0	2.39	176.10	149.9	-3.9	0.5	393,153.59	597,977.27	32° 4' 49.800 N	104° 1' 1.186 W
175.0	2.47	178.78	174.9	-5.0	0.5	393,152.53	597,977.32	32° 4' 49.790 N	104° 1' 1.186 W
200.0	2.40	178.06	199.9	-6.0	0.5	393,151.47	597,977.34	32° 4' 49.779 N	104° 1' 1.186 W
225.0	2.44	182.87	224.9	-7.1	0.5	393,150.41	597,977.34	32° 4' 49.769 N	104° 1' 1.186 W
250.0	2.35	186.00	249.8	-8.1	0.5	393,149.37	597,977.26	32° 4' 49.758 N	104° 1' 1.187 W
275.0	2.34	184.98	274.8	-9.1	0.4	393,148.35	597,977.16	32° 4' 49.748 N	104° 1' 1.188 W
300.0	2.38	183.25	299.8	-10.2	0.3	393,147.33	597,977.08	32° 4' 49.738 N	104° 1' 1.189 W
325.0	2.38	187.19	324.8	-11.2	0.2	393,146.29	597,976.99	32° 4' 49.728 N	104° 1' 1.190 W



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Survey Calculation Method: Minimum Curvature
Database: EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
350.0	2.35	178.16	349.8	-12.2	0.1	393,145.27	597,976.94	32° 4' 49.718 N	104° 1' 1.191 W
375.0	2.42	190.33	374.7	-13.3	0.1	393,144.23	597,976.86	32° 4' 49.707 N	104° 1' 1.191 W
400.0	2.38	192.75	399.7	-14.3	-0.2	393,143.21	597,976.65	32° 4' 49.697 N	104° 1' 1.194 W
425.0	2.33	192.83	424.7	-15.3	-0.4	393,142.21	597,976.43	32° 4' 49.687 N	104° 1' 1.197 W
450.0	2.14	194.78	449.7	-16.2	-0.6	393,141.26	597,976.19	32° 4' 49.678 N	104° 1' 1.199 W
475.0	1.71	213.05	474.7	-17.0	-0.9	393,140.50	597,975.87	32° 4' 49.670 N	104° 1' 1.203 W
500.0	1.39	238.20	499.7	-17.5	-1.4	393,140.02	597,975.41	32° 4' 49.666 N	104° 1' 1.209 W
525.0	1.25	258.35	524.6	-17.7	-1.9	393,139.81	597,974.89	32° 4' 49.664 N	104° 1' 1.215 W
550.0	1.29	270.76	549.6	-17.7	-2.5	393,139.76	597,974.34	32° 4' 49.663 N	104° 1' 1.221 W
575.0	1.12	276.20	574.6	-17.7	-3.0	393,139.79	597,973.81	32° 4' 49.664 N	104° 1' 1.227 W
600.0	1.16	275.20	599.6	-17.7	-3.5	393,139.84	597,973.32	32° 4' 49.664 N	104° 1' 1.233 W
625.0	1.20	275.03	624.6	-17.6	-4.0	393,139.88	597,972.80	32° 4' 49.665 N	104° 1' 1.239 W
650.0	1.14	277.60	649.6	-17.6	-4.5	393,139.94	597,972.30	32° 4' 49.665 N	104° 1' 1.245 W
675.0	1.21	276.57	674.6	-17.5	-5.0	393,140.00	597,971.79	32° 4' 49.666 N	104° 1' 1.251 W
700.0	1.03	281.68	699.6	-17.4	-5.5	393,140.08	597,971.31	32° 4' 49.666 N	104° 1' 1.256 W
725.0	0.93	283.01	724.6	-17.3	-5.9	393,140.17	597,970.89	32° 4' 49.667 N	104° 1' 1.261 W
750.0	0.78	292.84	749.6	-17.2	-6.3	393,140.28	597,970.53	32° 4' 49.669 N	104° 1' 1.265 W
775.0	0.80	291.78	774.6	-17.1	-6.6	393,140.41	597,970.22	32° 4' 49.670 N	104° 1' 1.269 W
800.0	0.82	284.36	799.6	-17.0	-6.9	393,140.52	597,969.88	32° 4' 49.671 N	104° 1' 1.273 W
825.0	0.81	292.96	824.6	-16.9	-7.3	393,140.63	597,969.54	32° 4' 49.672 N	104° 1' 1.277 W
850.0	0.75	297.39	849.6	-16.7	-7.6	393,140.78	597,969.24	32° 4' 49.673 N	104° 1' 1.280 W
875.0	0.65	299.21	874.6	-16.6	-7.8	393,140.92	597,968.97	32° 4' 49.675 N	104° 1' 1.283 W
900.0	0.58	293.71	899.6	-16.5	-8.1	393,141.04	597,968.73	32° 4' 49.676 N	104° 1' 1.286 W
925.0	0.36	295.82	924.6	-16.4	-8.3	393,141.13	597,968.54	32° 4' 49.677 N	104° 1' 1.288 W
950.0	0.37	292.25	949.6	-16.3	-8.4	393,141.19	597,968.40	32° 4' 49.678 N	104° 1' 1.290 W
975.0	0.32	297.40	974.6	-16.2	-8.5	393,141.26	597,968.26	32° 4' 49.678 N	104° 1' 1.292 W
1,000.0	0.34	298.65	999.6	-16.2	-8.7	393,141.32	597,968.13	32° 4' 49.679 N	104° 1' 1.293 W
1,025.0	0.34	298.67	1,024.6	-16.1	-8.8	393,141.39	597,968.00	32° 4' 49.680 N	104° 1' 1.295 W
1,050.0	0.31	300.59	1,049.6	-16.0	-8.9	393,141.46	597,967.88	32° 4' 49.680 N	104° 1' 1.296 W
1,075.0	0.31	316.95	1,074.6	-16.0	-9.0	393,141.55	597,967.77	32° 4' 49.681 N	104° 1' 1.297 W
1,100.0	0.44	315.46	1,099.6	-15.8	-9.1	393,141.67	597,967.66	32° 4' 49.682 N	104° 1' 1.299 W
1,125.0	0.50	325.85	1,124.6	-15.7	-9.3	393,141.82	597,967.53	32° 4' 49.684 N	104° 1' 1.300 W
1,150.0	0.54	334.12	1,149.6	-15.5	-9.4	393,142.02	597,967.42	32° 4' 49.686 N	104° 1' 1.301 W
1,175.0	0.62	328.89	1,174.6	-15.3	-9.5	393,142.24	597,967.30	32° 4' 49.688 N	104° 1' 1.303 W
1,200.0	0.67	331.96	1,199.6	-15.0	-9.6	393,142.49	597,967.16	32° 4' 49.690 N	104° 1' 1.304 W
1,225.0	0.74	341.52	1,224.6	-14.7	-9.8	393,142.77	597,967.04	32° 4' 49.693 N	104° 1' 1.306 W
1,250.0	0.73	332.28	1,249.6	-14.4	-9.9	393,143.06	597,966.91	32° 4' 49.696 N	104° 1' 1.307 W
1,275.0	0.68	337.27	1,274.6	-14.2	-10.0	393,143.34	597,966.78	32° 4' 49.699 N	104° 1' 1.309 W
1,300.0	0.75	323.46	1,299.6	-13.9	-10.2	393,143.61	597,966.63	32° 4' 49.702 N	104° 1' 1.310 W
1,325.0	0.63	338.11	1,324.6	-13.6	-10.3	393,143.87	597,966.48	32° 4' 49.704 N	104° 1' 1.312 W
1,350.0	0.65	333.31	1,349.6	-13.4	-10.4	393,144.12	597,966.36	32° 4' 49.707 N	104° 1' 1.314 W
1,375.0	0.60	350.35	1,374.6	-13.1	-10.5	393,144.38	597,966.28	32° 4' 49.709 N	104° 1' 1.315 W
1,400.0	0.67	346.86	1,399.6	-12.8	-10.6	393,144.65	597,966.22	32° 4' 49.712 N	104° 1' 1.315 W
1,425.0	0.62	331.10	1,424.6	-12.6	-10.7	393,144.91	597,966.13	32° 4' 49.714 N	104° 1' 1.316 W
1,450.0	0.61	341.32	1,449.6	-12.3	-10.8	393,145.16	597,966.02	32° 4' 49.717 N	104° 1' 1.318 W
1,475.0	0.60	333.73	1,474.6	-12.1	-10.9	393,145.40	597,965.92	32° 4' 49.719 N	104° 1' 1.319 W
1,500.0	0.59	333.78	1,499.6	-11.9	-11.0	393,145.63	597,965.80	32° 4' 49.722 N	104° 1' 1.320 W
1,525.0	0.66	324.74	1,524.6	-11.6	-11.1	393,145.86	597,965.66	32° 4' 49.724 N	104° 1' 1.322 W
1,550.0	0.61	336.94	1,549.6	-11.4	-11.3	393,146.10	597,965.53	32° 4' 49.726 N	104° 1' 1.323 W
1,575.0	0.60	332.45	1,574.6	-11.2	-11.4	393,146.34	597,965.41	32° 4' 49.729 N	104° 1' 1.324 W
1,600.0	0.64	336.15	1,599.6	-10.9	-11.5	393,146.59	597,965.30	32° 4' 49.731 N	104° 1' 1.326 W
1,625.0	0.65	337.81	1,624.6	-10.7	-11.6	393,146.85	597,965.19	32° 4' 49.734 N	104° 1' 1.327 W
1,650.0	0.66	334.44	1,649.6	-10.4	-11.7	393,147.11	597,965.07	32° 4' 49.736 N	104° 1' 1.328 W
1,675.0	0.66	334.31	1,674.6	-10.1	-11.9	393,147.37	597,964.95	32° 4' 49.739 N	104° 1' 1.330 W
1,700.0	0.68	331.13	1,699.5	-9.9	-12.0	393,147.63	597,964.81	32° 4' 49.741 N	104° 1' 1.331 W



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Local Co-ordinate Reference: Well PUDGE FEDERAL #21H
TVD Reference: RKB=2938.6+25 @ 2963.6usft (LATSHAW 44)
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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,725.0	0.70	333.81	1,724.5	-9.6	-12.1	393,147.89	597,964.67	32° 4' 49.744 N	104° 1' 1.333 W
1,750.0	0.63	336.97	1,749.5	-9.3	-12.3	393,148.16	597,964.55	32° 4' 49.747 N	104° 1' 1.334 W
1,775.0	0.72	333.27	1,774.5	-9.1	-12.4	393,148.42	597,964.43	32° 4' 49.749 N	104° 1' 1.336 W
1,800.0	0.75	331.01	1,799.5	-8.8	-12.5	393,148.71	597,964.28	32° 4' 49.752 N	104° 1' 1.338 W
1,825.0	0.76	338.33	1,824.5	-8.5	-12.7	393,149.00	597,964.14	32° 4' 49.755 N	104° 1' 1.339 W
1,850.0	0.90	331.61	1,849.5	-8.2	-12.8	393,149.33	597,963.98	32° 4' 49.758 N	104° 1' 1.341 W
1,875.0	0.94	332.24	1,874.5	-7.8	-13.0	393,149.69	597,963.79	32° 4' 49.762 N	104° 1' 1.343 W
1,900.0	0.98	333.33	1,899.5	-7.4	-13.2	393,150.06	597,963.60	32° 4' 49.765 N	104° 1' 1.345 W
1,925.0	1.05	331.76	1,924.5	-7.0	-13.4	393,150.45	597,963.40	32° 4' 49.769 N	104° 1' 1.348 W
1,950.0	1.10	328.69	1,949.5	-6.6	-13.6	393,150.86	597,963.17	32° 4' 49.773 N	104° 1' 1.350 W
1,975.0	1.16	328.21	1,974.5	-6.2	-13.9	393,151.28	597,962.91	32° 4' 49.778 N	104° 1' 1.353 W
2,000.0	1.47	323.03	1,999.5	-5.7	-14.2	393,151.75	597,962.58	32° 4' 49.782 N	104° 1' 1.357 W
2,025.0	1.57	323.90	2,024.5	-5.2	-14.6	393,152.28	597,962.19	32° 4' 49.788 N	104° 1' 1.362 W
2,050.0	1.67	321.92	2,049.5	-4.7	-15.0	393,152.85	597,961.76	32° 4' 49.793 N	104° 1' 1.367 W
2,075.0	1.70	323.44	2,074.5	-4.1	-15.5	393,153.43	597,961.31	32° 4' 49.799 N	104° 1' 1.372 W
2,100.0	1.73	321.98	2,099.5	-3.5	-15.9	393,154.03	597,960.86	32° 4' 49.805 N	104° 1' 1.377 W
2,125.0	1.69	326.89	2,124.5	-2.9	-16.4	393,154.63	597,960.43	32° 4' 49.811 N	104° 1' 1.382 W
2,150.0	1.57	334.92	2,149.4	-2.2	-16.7	393,155.25	597,960.08	32° 4' 49.817 N	104° 1' 1.386 W
2,175.0	1.48	358.29	2,174.4	-1.6	-16.9	393,155.88	597,959.93	32° 4' 49.823 N	104° 1' 1.388 W
2,200.0	1.40	11.69	2,199.4	-1.0	-16.8	393,156.50	597,959.98	32° 4' 49.829 N	104° 1' 1.387 W
2,225.0	1.58	32.33	2,224.4	-0.4	-16.6	393,157.10	597,960.22	32° 4' 49.835 N	104° 1' 1.384 W
2,250.0	1.58	37.11	2,249.4	0.2	-16.2	393,157.66	597,960.62	32° 4' 49.841 N	104° 1' 1.380 W
2,275.0	1.69	37.94	2,274.4	0.7	-15.8	393,158.23	597,961.05	32° 4' 49.846 N	104° 1' 1.375 W
2,300.0	1.69	41.79	2,299.4	1.3	-15.3	393,158.79	597,961.52	32° 4' 49.852 N	104° 1' 1.369 W
2,325.0	1.73	40.63	2,324.4	1.9	-14.8	393,159.35	597,962.01	32° 4' 49.858 N	104° 1' 1.364 W
2,350.0	1.72	35.89	2,349.4	2.4	-14.3	393,159.94	597,962.48	32° 4' 49.863 N	104° 1' 1.358 W
2,375.0	1.70	37.11	2,374.4	3.0	-13.9	393,160.54	597,962.92	32° 4' 49.869 N	104° 1' 1.353 W
2,400.0	1.80	39.82	2,399.3	3.6	-13.4	393,161.14	597,963.40	32° 4' 49.875 N	104° 1' 1.347 W
2,425.0	1.80	37.09	2,424.3	4.3	-12.9	393,161.76	597,963.89	32° 4' 49.881 N	104° 1' 1.342 W
2,450.0	1.74	41.72	2,449.3	4.9	-12.4	393,162.35	597,964.38	32° 4' 49.887 N	104° 1' 1.336 W
2,475.0	1.77	47.47	2,474.3	5.4	-11.9	393,162.90	597,964.91	32° 4' 49.892 N	104° 1' 1.330 W
2,500.0	1.90	52.32	2,499.3	5.9	-11.3	393,163.41	597,965.53	32° 4' 49.898 N	104° 1' 1.323 W
2,525.0	1.91	57.41	2,524.3	6.4	-10.6	393,163.89	597,966.21	32° 4' 49.902 N	104° 1' 1.315 W
2,550.0	2.02	62.03	2,549.3	6.8	-9.9	393,164.32	597,966.95	32° 4' 49.907 N	104° 1' 1.306 W
2,575.0	2.08	63.53	2,574.3	7.2	-9.1	393,164.73	597,967.74	32° 4' 49.911 N	104° 1' 1.297 W
2,600.0	2.13	64.36	2,599.2	7.6	-8.2	393,165.13	597,968.57	32° 4' 49.914 N	104° 1' 1.287 W
2,625.0	1.86	72.49	2,624.2	8.0	-7.4	393,165.46	597,969.37	32° 4' 49.918 N	104° 1' 1.278 W
2,650.0	1.33	93.23	2,649.2	8.1	-6.8	393,165.56	597,970.05	32° 4' 49.919 N	104° 1' 1.270 W
2,675.0	0.97	148.74	2,674.2	7.9	-6.4	393,165.36	597,970.45	32° 4' 49.917 N	104° 1' 1.265 W
2,700.0	1.12	165.39	2,699.2	7.4	-6.2	393,164.95	597,970.62	32° 4' 49.913 N	104° 1' 1.263 W
2,725.0	1.16	169.69	2,724.2	7.0	-6.1	393,164.46	597,970.73	32° 4' 49.908 N	104° 1' 1.262 W
2,750.0	1.10	165.40	2,749.2	6.5	-6.0	393,163.98	597,970.83	32° 4' 49.903 N	104° 1' 1.261 W
2,775.0	0.93	168.51	2,774.2	6.0	-5.9	393,163.55	597,970.93	32° 4' 49.899 N	104° 1' 1.260 W
2,800.0	0.86	168.09	2,799.2	5.7	-5.8	393,163.17	597,971.01	32° 4' 49.895 N	104° 1' 1.259 W
2,825.0	0.71	161.37	2,824.2	5.3	-5.7	393,162.84	597,971.10	32° 4' 49.892 N	104° 1' 1.258 W
2,850.0	0.69	162.70	2,849.2	5.0	-5.6	393,162.55	597,971.19	32° 4' 49.889 N	104° 1' 1.257 W
2,875.0	0.70	168.33	2,874.2	4.8	-5.5	393,162.25	597,971.27	32° 4' 49.886 N	104° 1' 1.256 W
2,900.0	0.74	168.78	2,899.2	4.4	-5.5	393,161.94	597,971.33	32° 4' 49.883 N	104° 1' 1.255 W
2,925.0	0.76	171.16	2,924.2	4.1	-5.4	393,161.62	597,971.39	32° 4' 49.880 N	104° 1' 1.255 W
2,950.0	0.86	163.66	2,949.2	3.8	-5.3	393,161.28	597,971.47	32° 4' 49.876 N	104° 1' 1.254 W
2,975.0	0.80	164.33	2,974.2	3.4	-5.2	393,160.93	597,971.57	32° 4' 49.873 N	104° 1' 1.252 W
3,000.0	0.78	167.26	2,999.2	3.1	-5.2	393,160.60	597,971.65	32° 4' 49.870 N	104° 1' 1.251 W
3,025.0	0.82	161.11	3,024.2	2.8	-5.1	393,160.26	597,971.75	32° 4' 49.866 N	104° 1' 1.250 W
3,050.0	0.80	165.94	3,049.2	2.4	-5.0	393,159.92	597,971.85	32° 4' 49.863 N	104° 1' 1.249 W
3,075.0	0.81	153.24	3,074.2	2.1	-4.8	393,159.60	597,971.97	32° 4' 49.860 N	104° 1' 1.248 W



Survey Report - Geographic

Company: NORTHERN DELAWARE BASIN

Project: EDDY COUNTY, NM

Site: ATLAS

Well: PUDGE FEDERAL #21H

Wellbore: ST01

Design: ACTUAL WELLPATH (ST01)

Local Co-ordinate Reference:

Well PUDGE FEDERAL #21H

TVD Reference:

RKB=2938.6+25 @ 2963.6usft (LATSHAW 44)

MD Reference:

RKB=2938.6+25 @ 2963.6usft (LATSHAW 44)

North Reference:

Grid

Survey Calculation Method:

Minimum Curvature

Database:

EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,100.0	0.82	152.38	3,099.2	1.8	-4.7	393,159.28	597,972.13	32° 4' 49.856 N	104° 1' 1.246 W
3,125.0	0.83	156.04	3,124.2	1.5	-4.5	393,158.95	597,972.29	32° 4' 49.853 N	104° 1' 1.244 W
3,150.0	0.77	149.22	3,149.2	1.1	-4.4	393,158.65	597,972.45	32° 4' 49.850 N	104° 1' 1.242 W
3,175.0	0.73	158.25	3,174.2	0.9	-4.2	393,158.35	597,972.59	32° 4' 49.847 N	104° 1' 1.241 W
3,200.0	0.72	163.03	3,199.2	0.6	-4.1	393,158.05	597,972.70	32° 4' 49.844 N	104° 1' 1.239 W
3,225.0	0.77	161.82	3,224.1	0.2	-4.0	393,157.74	597,972.80	32° 4' 49.841 N	104° 1' 1.238 W
3,250.0	0.84	170.01	3,249.1	-0.1	-3.9	393,157.40	597,972.88	32° 4' 49.838 N	104° 1' 1.237 W
3,275.0	0.88	157.97	3,274.1	-0.5	-3.8	393,157.05	597,972.98	32° 4' 49.834 N	104° 1' 1.236 W
3,300.0	0.73	161.37	3,299.1	-0.8	-3.7	393,156.72	597,973.11	32° 4' 49.831 N	104° 1' 1.235 W
3,325.0	0.71	158.86	3,324.1	-1.1	-3.6	393,156.42	597,973.21	32° 4' 49.828 N	104° 1' 1.233 W
3,350.0	0.72	167.86	3,349.1	-1.4	-3.5	393,156.12	597,973.30	32° 4' 49.825 N	104° 1' 1.232 W
3,375.0	0.78	168.14	3,374.1	-1.7	-3.4	393,155.80	597,973.37	32° 4' 49.822 N	104° 1' 1.232 W
3,400.0	0.81	170.72	3,399.1	-2.0	-3.4	393,155.46	597,973.43	32° 4' 49.819 N	104° 1' 1.231 W
3,425.0	0.71	164.25	3,424.1	-2.4	-3.3	393,155.14	597,973.50	32° 4' 49.815 N	104° 1' 1.230 W
3,450.0	0.65	173.39	3,449.1	-2.6	-3.2	393,154.85	597,973.56	32° 4' 49.813 N	104° 1' 1.229 W
3,475.0	0.64	171.86	3,474.1	-2.9	-3.2	393,154.57	597,973.60	32° 4' 49.810 N	104° 1' 1.229 W
3,500.0	0.65	173.66	3,499.1	-3.2	-3.2	393,154.29	597,973.63	32° 4' 49.807 N	104° 1' 1.229 W
3,525.0	0.70	174.74	3,524.1	-3.5	-3.1	393,154.00	597,973.66	32° 4' 49.804 N	104° 1' 1.228 W
3,550.0	0.75	171.34	3,549.1	-3.8	-3.1	393,153.68	597,973.70	32° 4' 49.801 N	104° 1' 1.228 W
3,575.0	0.67	173.87	3,574.1	-4.1	-3.1	393,153.38	597,973.74	32° 4' 49.798 N	104° 1' 1.227 W
3,600.0	0.61	172.01	3,599.1	-4.4	-3.0	393,153.10	597,973.78	32° 4' 49.795 N	104° 1' 1.227 W
3,625.0	0.70	186.70	3,624.1	-4.7	-3.0	393,152.82	597,973.78	32° 4' 49.792 N	104° 1' 1.227 W
3,650.0	0.74	176.84	3,649.1	-5.0	-3.0	393,152.50	597,973.77	32° 4' 49.789 N	104° 1' 1.227 W
3,675.0	0.73	180.65	3,674.1	-5.3	-3.0	393,152.18	597,973.78	32° 4' 49.786 N	104° 1' 1.227 W
3,700.0	0.70	171.00	3,699.1	-5.6	-3.0	393,151.87	597,973.80	32° 4' 49.783 N	104° 1' 1.227 W
3,725.0	0.63	171.18	3,724.1	-5.9	-3.0	393,151.59	597,973.84	32° 4' 49.780 N	104° 1' 1.226 W
3,750.0	0.73	186.44	3,749.1	-6.2	-3.0	393,151.29	597,973.85	32° 4' 49.777 N	104° 1' 1.226 W
3,775.0	0.76	178.31	3,774.1	-6.5	-3.0	393,150.97	597,973.83	32° 4' 49.774 N	104° 1' 1.226 W
3,800.0	0.69	168.70	3,799.1	-6.8	-2.9	393,150.66	597,973.87	32° 4' 49.771 N	104° 1' 1.226 W
3,825.0	0.70	169.18	3,824.1	-7.1	-2.9	393,150.36	597,973.93	32° 4' 49.768 N	104° 1' 1.225 W
3,850.0	0.66	165.92	3,849.1	-7.4	-2.8	393,150.07	597,973.99	32° 4' 49.765 N	104° 1' 1.225 W
3,875.0	0.61	170.48	3,874.1	-7.7	-2.8	393,149.80	597,974.05	32° 4' 49.763 N	104° 1' 1.224 W
3,900.0	0.61	177.56	3,899.1	-8.0	-2.7	393,149.53	597,974.07	32° 4' 49.760 N	104° 1' 1.224 W
3,925.0	0.69	184.24	3,924.1	-8.2	-2.7	393,149.25	597,974.07	32° 4' 49.757 N	104° 1' 1.224 W
3,950.0	0.72	175.78	3,949.1	-8.6	-2.7	393,148.94	597,974.07	32° 4' 49.754 N	104° 1' 1.224 W
3,975.0	0.63	174.10	3,974.1	-8.8	-2.7	393,148.65	597,974.10	32° 4' 49.751 N	104° 1' 1.224 W
4,000.0	0.59	171.80	3,999.1	-9.1	-2.7	393,148.39	597,974.13	32° 4' 49.749 N	104° 1' 1.223 W
4,025.0	0.64	173.18	4,024.1	-9.4	-2.6	393,148.12	597,974.16	32° 4' 49.746 N	104° 1' 1.223 W
4,050.0	0.66	172.45	4,049.1	-9.7	-2.6	393,147.84	597,974.20	32° 4' 49.743 N	104° 1' 1.222 W
4,075.0	0.51	170.17	4,074.1	-9.9	-2.6	393,147.59	597,974.24	32° 4' 49.741 N	104° 1' 1.222 W
4,100.0	0.62	172.25	4,099.1	-10.2	-2.5	393,147.34	597,974.27	32° 4' 49.738 N	104° 1' 1.221 W
4,125.0	0.71	179.65	4,124.1	-10.4	-2.5	393,147.05	597,974.29	32° 4' 49.735 N	104° 1' 1.221 W
4,150.0	0.70	180.70	4,149.1	-10.8	-2.5	393,146.75	597,974.29	32° 4' 49.732 N	104° 1' 1.221 W
4,175.0	0.70	176.59	4,174.1	-11.1	-2.5	393,146.44	597,974.30	32° 4' 49.729 N	104° 1' 1.221 W
4,200.0	0.74	174.11	4,199.1	-11.4	-2.5	393,146.13	597,974.32	32° 4' 49.726 N	104° 1' 1.221 W
4,225.0	0.72	178.29	4,224.1	-11.7	-2.5	393,145.81	597,974.35	32° 4' 49.723 N	104° 1' 1.221 W
4,250.0	0.64	177.97	4,249.1	-12.0	-2.4	393,145.51	597,974.36	32° 4' 49.720 N	104° 1' 1.221 W
4,275.0	0.71	176.64	4,274.1	-12.3	-2.4	393,145.22	597,974.37	32° 4' 49.717 N	104° 1' 1.220 W
4,300.0	0.60	186.46	4,299.1	-12.6	-2.4	393,144.93	597,974.36	32° 4' 49.714 N	104° 1' 1.221 W
4,325.0	0.73	182.65	4,324.1	-12.9	-2.5	393,144.65	597,974.34	32° 4' 49.712 N	104° 1' 1.221 W
4,350.0	0.68	178.93	4,349.1	-13.2	-2.5	393,144.34	597,974.34	32° 4' 49.709 N	104° 1' 1.221 W
4,375.0	0.65	189.03	4,374.1	-13.4	-2.5	393,144.05	597,974.32	32° 4' 49.706 N	104° 1' 1.221 W
4,400.0	0.70	191.23	4,399.1	-13.7	-2.5	393,143.76	597,974.27	32° 4' 49.703 N	104° 1' 1.222 W
4,425.0	0.67	185.15	4,424.1	-14.0	-2.6	393,143.46	597,974.22	32° 4' 49.700 N	104° 1' 1.222 W
4,450.0	0.62	197.60	4,449.1	-14.3	-2.6	393,143.19	597,974.17	32° 4' 49.697 N	104° 1' 1.223 W



Survey Report - Geographic

Company: NORTHERN DELAWARE BASIN
Project: EDDY COUNTY, NM
Site: ATLAS
Well: PUDGE FEDERAL #21H
Wellbore: ST01
Design: ACTUAL WELLPATH (ST01)

Local Co-ordinate Reference: Well PUDGE FEDERAL #21H
TVD Reference: RKB=2938.6+25 @ 2963.6usft (LATSHAW 44)
MD Reference: RKB=2938.6+25 @ 2963.6usft (LATSHAW 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,475.0	0.69	198.88	4,474.1	-14.6	-2.7	393,142.92	597,974.08	32° 4' 49.695 N	104° 1' 1.224 W
4,500.0	0.82	196.36	4,499.1	-14.9	-2.8	393,142.60	597,973.98	32° 4' 49.691 N	104° 1' 1.225 W
4,525.0	0.71	191.99	4,524.1	-15.2	-2.9	393,142.28	597,973.90	32° 4' 49.688 N	104° 1' 1.226 W
4,550.0	0.70	194.93	4,549.1	-15.5	-3.0	393,141.98	597,973.83	32° 4' 49.685 N	104° 1' 1.227 W
4,575.0	0.68	194.85	4,574.1	-15.8	-3.1	393,141.69	597,973.75	32° 4' 49.682 N	104° 1' 1.228 W
4,600.0	0.60	199.08	4,599.0	-16.1	-3.1	393,141.42	597,973.67	32° 4' 49.680 N	104° 1' 1.229 W
4,625.0	0.68	198.74	4,624.0	-16.3	-3.2	393,141.16	597,973.58	32° 4' 49.677 N	104° 1' 1.230 W
4,650.0	0.82	198.48	4,649.0	-16.6	-3.3	393,140.85	597,973.47	32° 4' 49.674 N	104° 1' 1.231 W
4,675.0	0.69	187.22	4,674.0	-17.0	-3.4	393,140.53	597,973.40	32° 4' 49.671 N	104° 1' 1.232 W
4,700.0	0.73	192.45	4,699.0	-17.3	-3.5	393,140.23	597,973.34	32° 4' 49.668 N	104° 1' 1.233 W
4,725.0	0.75	192.53	4,724.0	-17.6	-3.5	393,139.91	597,973.27	32° 4' 49.665 N	104° 1' 1.233 W
4,750.0	0.90	194.21	4,749.0	-17.9	-3.6	393,139.56	597,973.19	32° 4' 49.661 N	104° 1' 1.234 W
4,775.0	0.83	193.57	4,774.0	-18.3	-3.7	393,139.19	597,973.10	32° 4' 49.658 N	104° 1' 1.235 W
4,800.0	0.91	196.86	4,799.0	-18.7	-3.8	393,138.83	597,973.00	32° 4' 49.654 N	104° 1' 1.237 W
4,825.0	0.97	191.61	4,824.0	-19.1	-3.9	393,138.43	597,972.90	32° 4' 49.650 N	104° 1' 1.238 W
4,850.0	1.00	185.59	4,849.0	-19.5	-4.0	393,138.01	597,972.84	32° 4' 49.646 N	104° 1' 1.239 W
4,875.0	1.12	184.84	4,874.0	-20.0	-4.0	393,137.55	597,972.79	32° 4' 49.641 N	104° 1' 1.239 W
4,900.0	1.08	187.96	4,899.0	-20.4	-4.1	393,137.07	597,972.74	32° 4' 49.637 N	104° 1' 1.240 W
4,925.0	1.09	190.99	4,924.0	-20.9	-4.1	393,136.60	597,972.66	32° 4' 49.632 N	104° 1' 1.241 W
4,950.0	1.64	193.93	4,949.0	-21.5	-4.3	393,136.02	597,972.53	32° 4' 49.626 N	104° 1' 1.242 W
4,975.0	1.21	172.50	4,974.0	-22.1	-4.3	393,135.41	597,972.48	32° 4' 49.620 N	104° 1' 1.243 W
5,000.0	1.07	167.74	4,999.0	-22.6	-4.2	393,134.92	597,972.56	32° 4' 49.615 N	104° 1' 1.242 W
5,025.0	1.07	168.54	5,024.0	-23.0	-4.1	393,134.47	597,972.66	32° 4' 49.611 N	104° 1' 1.241 W
5,050.0	0.71	188.98	5,049.0	-23.4	-4.1	393,134.08	597,972.68	32° 4' 49.607 N	104° 1' 1.240 W
5,075.0	0.51	214.28	5,074.0	-23.7	-4.2	393,133.84	597,972.59	32° 4' 49.605 N	104° 1' 1.241 W
5,100.0	0.47	227.43	5,099.0	-23.8	-4.3	393,133.68	597,972.46	32° 4' 49.603 N	104° 1' 1.243 W
5,125.0	0.55	234.58	5,124.0	-24.0	-4.5	393,133.54	597,972.28	32° 4' 49.602 N	104° 1' 1.245 W
5,150.0	0.66	227.90	5,149.0	-24.1	-4.7	393,133.37	597,972.08	32° 4' 49.600 N	104° 1' 1.247 W
5,175.0	0.68	224.84	5,174.0	-24.3	-4.9	393,133.17	597,971.87	32° 4' 49.598 N	104° 1' 1.250 W
5,200.0	0.78	218.45	5,199.0	-24.6	-5.1	393,132.93	597,971.66	32° 4' 49.596 N	104° 1' 1.252 W
5,225.0	0.81	227.19	5,224.0	-24.8	-5.4	393,132.68	597,971.42	32° 4' 49.593 N	104° 1' 1.255 W
5,250.0	0.90	231.23	5,249.0	-25.1	-5.7	393,132.44	597,971.14	32° 4' 49.591 N	104° 1' 1.258 W
5,275.0	0.90	223.01	5,274.0	-25.3	-6.0	393,132.17	597,970.85	32° 4' 49.588 N	104° 1' 1.262 W
5,300.0	1.01	222.64	5,299.0	-25.6	-6.2	393,131.86	597,970.57	32° 4' 49.585 N	104° 1' 1.265 W
5,325.0	0.87	226.33	5,324.0	-25.9	-6.5	393,131.57	597,970.28	32° 4' 49.582 N	104° 1' 1.268 W
5,350.0	0.87	224.34	5,349.0	-26.2	-6.8	393,131.30	597,970.01	32° 4' 49.580 N	104° 1' 1.272 W
5,375.0	1.06	226.23	5,374.0	-26.5	-7.1	393,131.01	597,969.71	32° 4' 49.577 N	104° 1' 1.275 W
5,400.0	1.16	229.42	5,398.9	-26.8	-7.5	393,130.68	597,969.35	32° 4' 49.574 N	104° 1' 1.279 W
5,425.0	1.29	221.51	5,423.9	-27.2	-7.8	393,130.31	597,968.97	32° 4' 49.570 N	104° 1' 1.284 W
5,450.0	0.99	224.89	5,448.9	-27.6	-8.2	393,129.95	597,968.64	32° 4' 49.566 N	104° 1' 1.288 W
5,475.0	0.94	232.18	5,473.9	-27.9	-8.5	393,129.64	597,968.34	32° 4' 49.563 N	104° 1' 1.291 W
5,500.0	0.90	229.26	5,498.9	-28.1	-8.7	393,129.37	597,968.05	32° 4' 49.561 N	104° 1' 1.294 W
5,525.0	1.05	228.57	5,523.9	-28.4	-9.1	393,129.09	597,967.73	32° 4' 49.558 N	104° 1' 1.298 W
5,550.0	1.15	228.02	5,548.9	-28.7	-9.4	393,128.77	597,967.38	32° 4' 49.555 N	104° 1' 1.302 W
5,575.0	1.16	229.32	5,573.9	-29.1	-9.8	393,128.43	597,967.00	32° 4' 49.551 N	104° 1' 1.307 W
5,600.0	1.26	222.68	5,598.9	-29.4	-10.2	393,128.07	597,966.62	32° 4' 49.548 N	104° 1' 1.311 W
5,625.0	1.07	224.42	5,623.9	-29.8	-10.5	393,127.70	597,966.27	32° 4' 49.544 N	104° 1' 1.315 W
5,650.0	0.99	232.13	5,648.9	-30.1	-10.9	393,127.40	597,965.93	32° 4' 49.541 N	104° 1' 1.319 W
5,675.0	1.24	233.95	5,673.9	-30.4	-11.3	393,127.11	597,965.55	32° 4' 49.538 N	104° 1' 1.324 W
5,700.0	1.37	233.13	5,698.9	-30.7	-11.7	393,126.77	597,965.09	32° 4' 49.535 N	104° 1' 1.329 W
5,725.0	1.37	229.87	5,723.9	-31.1	-12.2	393,126.40	597,964.62	32° 4' 49.531 N	104° 1' 1.334 W
5,750.0	1.45	227.92	5,748.9	-31.5	-12.6	393,125.99	597,964.16	32° 4' 49.527 N	104° 1' 1.340 W
5,775.0	1.40	232.04	5,773.9	-31.9	-13.1	393,125.59	597,963.68	32° 4' 49.523 N	104° 1' 1.345 W
5,800.0	1.36	231.23	5,798.9	-32.3	-13.6	393,125.22	597,963.21	32° 4' 49.520 N	104° 1' 1.351 W
5,825.0	1.42	227.15	5,823.9	-32.7	-14.1	393,124.82	597,962.75	32° 4' 49.516 N	104° 1' 1.356 W

Company: NORTHERN DELAWARE BASIN
Project: EDDY COUNTY, NM
Site: ATLAS
Well: PUDGE FEDERAL #21H
Wellbore: ST01
Design: ACTUAL WELLPATH (ST01)

Local Co-ordinate Reference: Well PUDGE FEDERAL #21H
TVD Reference: RKB=2938.6+25 @ 2963.6usft (LATSHAW 44)
MD Reference: RKB=2938.6+25 @ 2963.6usft (LATSHAW 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,850.0	1.55	226.65	5,848.8	-33.1	-14.5	393,124.38	597,962.28	32° 4' 49.511 N	104° 1' 1.362 W
5,875.0	1.41	224.44	5,873.8	-33.6	-15.0	393,123.93	597,961.82	32° 4' 49.507 N	104° 1' 1.367 W
5,900.0	1.49	224.20	5,898.8	-34.0	-15.4	393,123.47	597,961.37	32° 4' 49.502 N	104° 1' 1.372 W
5,925.0	1.52	224.35	5,923.8	-34.5	-15.9	393,123.00	597,960.92	32° 4' 49.498 N	104° 1' 1.378 W
5,950.0	1.62	221.72	5,948.8	-35.0	-16.4	393,122.50	597,960.45	32° 4' 49.493 N	104° 1' 1.383 W
5,975.0	1.48	222.94	5,973.8	-35.5	-16.8	393,122.00	597,959.99	32° 4' 49.488 N	104° 1' 1.388 W
6,000.0	1.55	216.81	5,998.8	-36.0	-17.2	393,121.50	597,959.57	32° 4' 49.483 N	104° 1' 1.393 W
6,025.0	1.35	219.66	6,023.8	-36.5	-17.6	393,121.00	597,959.18	32° 4' 49.478 N	104° 1' 1.398 W
6,050.0	1.52	215.32	6,048.8	-37.0	-18.0	393,120.50	597,958.80	32° 4' 49.473 N	104° 1' 1.402 W
6,075.0	1.49	215.49	6,073.8	-37.5	-18.4	393,119.97	597,958.42	32° 4' 49.468 N	104° 1' 1.407 W
6,100.0	1.55	213.04	6,098.8	-38.1	-18.8	393,119.42	597,958.05	32° 4' 49.462 N	104° 1' 1.411 W
6,125.0	1.45	212.63	6,123.8	-38.6	-19.1	393,118.87	597,957.69	32° 4' 49.457 N	104° 1' 1.415 W
6,150.0	1.38	206.99	6,148.7	-39.2	-19.4	393,118.33	597,957.39	32° 4' 49.452 N	104° 1' 1.419 W
6,175.0	1.43	207.70	6,173.7	-39.7	-19.7	393,117.79	597,957.10	32° 4' 49.446 N	104° 1' 1.422 W
6,200.0	1.44	204.36	6,198.7	-40.3	-20.0	393,117.23	597,956.83	32° 4' 49.441 N	104° 1' 1.425 W
6,225.0	1.49	204.44	6,223.7	-40.9	-20.2	393,116.64	597,956.57	32° 4' 49.435 N	104° 1' 1.428 W
6,250.0	1.49	201.19	6,248.7	-41.5	-20.5	393,116.05	597,956.31	32° 4' 49.429 N	104° 1' 1.431 W
6,275.0	1.53	194.70	6,273.7	-42.1	-20.7	393,115.42	597,956.11	32° 4' 49.423 N	104° 1' 1.434 W
6,300.0	1.35	198.69	6,298.7	-42.7	-20.9	393,114.82	597,955.93	32° 4' 49.417 N	104° 1' 1.436 W
6,325.0	1.38	197.84	6,323.7	-43.2	-21.1	393,114.25	597,955.75	32° 4' 49.411 N	104° 1' 1.438 W
6,350.0	1.41	191.32	6,348.7	-43.8	-21.2	393,113.66	597,955.59	32° 4' 49.406 N	104° 1' 1.440 W
6,375.0	1.37	192.06	6,373.7	-44.4	-21.3	393,113.07	597,955.47	32° 4' 49.400 N	104° 1' 1.441 W
6,400.0	1.44	192.52	6,398.7	-45.0	-21.5	393,112.47	597,955.34	32° 4' 49.394 N	104° 1' 1.443 W
6,425.0	1.47	191.80	6,423.7	-45.6	-21.6	393,111.85	597,955.21	32° 4' 49.388 N	104° 1' 1.444 W
6,450.0	1.29	190.48	6,448.7	-46.2	-21.7	393,111.26	597,955.09	32° 4' 49.382 N	104° 1' 1.446 W
6,475.0	1.57	191.87	6,473.6	-46.9	-21.8	393,110.65	597,954.97	32° 4' 49.376 N	104° 1' 1.447 W
6,500.0	1.44	189.54	6,498.6	-47.5	-22.0	393,110.00	597,954.85	32° 4' 49.369 N	104° 1' 1.449 W
6,525.0	1.46	193.37	6,523.6	-48.1	-22.1	393,109.38	597,954.72	32° 4' 49.363 N	104° 1' 1.450 W
6,550.0	1.51	194.72	6,548.6	-48.7	-22.2	393,108.76	597,954.56	32° 4' 49.357 N	104° 1' 1.452 W
6,575.0	1.49	205.69	6,573.6	-49.4	-22.5	393,108.14	597,954.34	32° 4' 49.351 N	104° 1' 1.455 W
6,600.0	1.47	205.28	6,598.6	-49.9	-22.7	393,107.56	597,954.06	32° 4' 49.345 N	104° 1' 1.458 W
6,625.0	1.53	209.54	6,623.6	-50.5	-23.0	393,106.98	597,953.76	32° 4' 49.339 N	104° 1' 1.461 W
6,650.0	1.65	199.09	6,648.6	-51.1	-23.3	393,106.35	597,953.48	32° 4' 49.333 N	104° 1' 1.465 W
6,675.0	1.79	175.05	6,673.6	-51.9	-23.4	393,105.62	597,953.39	32° 4' 49.326 N	104° 1' 1.466 W
6,700.0	2.07	163.79	6,698.6	-52.7	-23.3	393,104.80	597,953.55	32° 4' 49.318 N	104° 1' 1.464 W
6,725.0	2.08	164.58	6,723.5	-53.6	-23.0	393,103.93	597,953.80	32° 4' 49.309 N	104° 1' 1.461 W
6,750.0	2.04	161.89	6,748.5	-54.4	-22.7	393,103.07	597,954.06	32° 4' 49.301 N	104° 1' 1.458 W
6,775.0	1.77	165.46	6,773.5	-55.2	-22.5	393,102.27	597,954.29	32° 4' 49.293 N	104° 1' 1.455 W
6,800.0	1.27	158.15	6,798.5	-55.9	-22.3	393,101.64	597,954.49	32° 4' 49.287 N	104° 1' 1.453 W
6,825.0	0.84	154.28	6,823.5	-56.3	-22.1	393,101.22	597,954.68	32° 4' 49.282 N	104° 1' 1.451 W
6,850.0	0.97	99.60	6,848.5	-56.5	-21.8	393,101.02	597,954.96	32° 4' 49.280 N	104° 1' 1.447 W
6,875.0	1.52	84.54	6,873.5	-56.5	-21.3	393,101.01	597,955.50	32° 4' 49.280 N	104° 1' 1.441 W
6,900.0	1.43	79.83	6,898.5	-56.4	-20.7	393,101.10	597,956.14	32° 4' 49.281 N	104° 1' 1.434 W
6,925.0	1.46	61.98	6,923.5	-56.2	-20.1	393,101.31	597,956.73	32° 4' 49.283 N	104° 1' 1.427 W
6,950.0	1.36	49.24	6,948.5	-55.9	-19.6	393,101.65	597,957.23	32° 4' 49.287 N	104° 1' 1.421 W
6,975.0	1.25	39.85	6,973.5	-55.4	-19.2	393,102.05	597,957.63	32° 4' 49.291 N	104° 1' 1.416 W
7,000.0	1.33	29.76	6,998.5	-55.0	-18.9	393,102.51	597,957.95	32° 4' 49.295 N	104° 1' 1.413 W
7,025.0	1.24	33.71	7,023.4	-54.5	-18.6	393,102.99	597,958.25	32° 4' 49.300 N	104° 1' 1.409 W
7,050.0	1.25	59.17	7,048.4	-54.1	-18.2	393,103.35	597,958.63	32° 4' 49.303 N	104° 1' 1.405 W
7,075.0	1.60	76.32	7,073.4	-53.9	-17.6	393,103.58	597,959.20	32° 4' 49.306 N	104° 1' 1.398 W
7,083.0	2.90	67.71	7,081.4	-53.8	-17.3	393,103.68	597,959.50	32° 4' 49.307 N	104° 1' 1.395 W
7,124.0	5.87	64.22	7,122.3	-52.5	-14.5	393,104.99	597,962.35	32° 4' 49.319 N	104° 1' 1.362 W
7,156.0	6.30	61.34	7,154.1	-51.0	-11.4	393,106.54	597,965.36	32° 4' 49.335 N	104° 1' 1.326 W
7,251.0	4.02	41.83	7,248.7	-46.0	-4.6	393,111.52	597,972.16	32° 4' 49.384 N	104° 1' 1.247 W
7,346.0	4.73	38.34	7,343.5	-40.4	0.0	393,117.07	597,976.81	32° 4' 49.439 N	104° 1' 1.193 W

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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
7,441.0	4.24	32.62	7,438.2	-34.4	4.3	393,123.10	597,981.13	32° 4' 49.498 N	104° 1' 1.143 W
7,536.0	3.57	30.86	7,533.0	-28.9	7.7	393,128.60	597,984.54	32° 4' 49.553 N	104° 1' 1.103 W
7,631.0	2.93	26.28	7,627.8	-24.2	10.3	393,133.32	597,987.13	32° 4' 49.599 N	104° 1' 1.072 W
7,727.0	1.99	13.15	7,723.7	-20.4	11.8	393,137.14	597,988.60	32° 4' 49.637 N	104° 1' 1.055 W
7,768.0	2.10	8.69	7,764.7	-18.9	12.1	393,138.58	597,988.87	32° 4' 49.651 N	104° 1' 1.052 W
7,812.0	1.68	5.18	7,808.7	-17.5	12.3	393,140.02	597,989.05	32° 4' 49.665 N	104° 1' 1.050 W
7,843.0	1.22	138.22	7,839.7	-17.3	12.5	393,140.22	597,989.32	32° 4' 49.667 N	104° 1' 1.047 W
7,875.0	5.71	148.28	7,871.6	-18.9	13.6	393,138.61	597,990.38	32° 4' 49.651 N	104° 1' 1.035 W
7,907.0	9.99	150.20	7,903.3	-22.6	15.8	393,134.85	597,992.60	32° 4' 49.614 N	104° 1' 1.009 W
7,939.0	13.63	155.27	7,934.6	-28.5	18.8	393,129.01	597,995.56	32° 4' 49.556 N	104° 1' 0.975 W
7,970.0	16.07	154.60	7,964.6	-35.7	22.1	393,121.82	597,998.92	32° 4' 49.485 N	104° 1' 0.936 W
8,002.0	18.17	155.47	7,995.1	-44.2	26.1	393,113.28	598,002.90	32° 4' 49.400 N	104° 1' 0.890 W
8,034.0	21.29	155.66	8,025.3	-54.1	30.6	393,103.44	598,007.36	32° 4' 49.303 N	104° 1' 0.838 W
8,065.0	24.92	154.99	8,053.8	-65.1	35.6	393,092.39	598,012.45	32° 4' 49.193 N	104° 1' 0.780 W
8,097.0	28.20	153.64	8,082.4	-78.0	41.9	393,079.51	598,018.65	32° 4' 49.066 N	104° 1' 0.708 W
8,129.0	31.04	152.76	8,110.2	-92.1	49.0	393,065.39	598,025.79	32° 4' 48.926 N	104° 1' 0.626 W
8,161.0	33.48	151.63	8,137.3	-107.2	57.0	393,050.29	598,033.76	32° 4' 48.776 N	104° 1' 0.533 W
8,193.0	35.58	150.76	8,163.6	-123.1	65.7	393,034.40	598,042.50	32° 4' 48.619 N	104° 1' 0.432 W
8,241.0	39.52	150.29	8,201.7	-148.6	80.1	393,008.94	598,056.90	32° 4' 48.366 N	104° 1' 0.266 W
8,288.0	43.37	150.97	8,236.9	-175.7	95.3	392,981.83	598,072.15	32° 4' 48.097 N	104° 1' 0.090 W
8,336.0	45.83	149.27	8,271.1	-204.9	112.1	392,952.62	598,088.94	32° 4' 47.808 N	104° 0' 59.895 W
8,384.0	49.51	151.39	8,303.4	-235.7	129.7	392,921.78	598,106.49	32° 4' 47.502 N	104° 0' 59.692 W
8,432.0	54.35	153.54	8,333.0	-269.2	147.1	392,888.28	598,123.93	32° 4' 47.170 N	104° 0' 59.491 W
8,479.0	59.53	154.01	8,358.6	-304.5	164.5	392,852.95	598,141.33	32° 4' 46.820 N	104° 0' 59.290 W
8,527.0	64.75	153.63	8,381.0	-342.6	183.2	392,814.88	598,160.05	32° 4' 46.443 N	104° 0' 59.074 W
8,575.0	64.39	151.32	8,401.6	-381.1	203.3	392,776.44	598,180.08	32° 4' 46.062 N	104° 0' 58.842 W
8,623.0	69.61	151.55	8,420.4	-419.8	224.4	392,737.65	598,201.19	32° 4' 45.677 N	104° 0' 58.598 W
8,670.0	75.12	152.86	8,434.6	-459.5	245.3	392,698.04	598,222.06	32° 4' 45.285 N	104° 0' 58.357 W
8,718.0	79.32	154.88	8,445.2	-501.5	265.9	392,656.02	598,242.67	32° 4' 44.868 N	104° 0' 58.119 W
8,766.0	84.00	156.42	8,452.2	-544.7	285.4	392,612.77	598,262.24	32° 4' 44.439 N	104° 0' 57.893 W
8,813.0	86.95	158.62	8,455.9	-588.0	303.3	392,569.48	598,280.15	32° 4' 44.011 N	104° 0' 57.686 W
8,862.0	87.49	159.62	8,458.3	-633.7	320.8	392,523.75	598,297.59	32° 4' 43.558 N	104° 0' 57.485 W
8,957.0	89.41	165.27	8,460.9	-724.2	349.4	392,433.25	598,326.22	32° 4' 42.661 N	104° 0' 57.155 W
9,052.0	92.44	171.53	8,459.3	-817.2	368.5	392,340.26	598,345.31	32° 4' 41.740 N	104° 0' 56.936 W
9,082.0	92.44	171.39	8,458.1	-846.9	373.0	392,310.62	598,349.76	32° 4' 41.447 N	104° 0' 56.886 W
9,177.0	92.12	172.65	8,454.3	-940.9	386.1	392,216.62	598,362.94	32° 4' 40.516 N	104° 0' 56.736 W
9,272.0	90.90	174.84	8,451.8	-1,035.3	396.5	392,122.22	598,373.29	32° 4' 39.582 N	104° 0' 56.619 W
9,367.0	89.07	177.37	8,451.8	-1,130.0	402.9	392,027.45	598,379.74	32° 4' 38.644 N	104° 0' 56.547 W
9,462.0	89.45	176.79	8,453.0	-1,224.9	407.8	391,932.58	598,384.58	32° 4' 37.705 N	104° 0' 56.494 W
9,557.0	91.22	177.36	8,452.5	-1,319.8	412.6	391,837.71	598,389.43	32° 4' 36.766 N	104° 0' 56.441 W
9,653.0	87.68	178.24	8,453.4	-1,415.7	416.3	391,741.81	598,393.11	32° 4' 35.816 N	104° 0' 56.401 W
9,748.0	88.62	177.95	8,456.5	-1,510.6	419.5	391,646.91	598,396.27	32° 4' 34.877 N	104° 0' 56.368 W
9,843.0	90.32	178.27	8,457.3	-1,605.5	422.6	391,551.97	598,399.40	32° 4' 33.937 N	104° 0' 56.335 W
9,939.0	88.39	179.17	8,458.4	-1,701.5	424.7	391,456.00	598,401.54	32° 4' 32.988 N	104° 0' 56.313 W
10,033.0	88.88	179.07	8,460.7	-1,795.5	426.2	391,362.04	598,402.99	32° 4' 32.058 N	104° 0' 56.300 W
10,129.0	87.14	183.50	8,464.0	-1,891.3	424.0	391,266.15	598,400.84	32° 4' 31.109 N	104° 0' 56.328 W
10,224.0	87.71	183.79	8,468.3	-1,986.1	418.0	391,171.44	598,394.81	32° 4' 30.172 N	104° 0' 56.401 W
10,320.0	86.82	181.50	8,472.8	-2,081.8	413.6	391,075.66	598,390.38	32° 4' 29.224 N	104° 0' 56.456 W
10,415.0	87.45	180.96	8,477.6	-2,176.7	411.5	390,980.80	598,388.34	32° 4' 28.285 N	104° 0' 56.483 W
10,511.0	88.67	180.63	8,480.8	-2,272.6	410.2	390,884.87	598,387.01	32° 4' 27.336 N	104° 0' 56.502 W
10,605.0	90.04	180.00	8,481.9	-2,366.6	409.7	390,790.88	598,386.50	32° 4' 26.406 N	104° 0' 56.511 W
10,700.0	91.16	179.50	8,480.9	-2,461.6	410.1	390,695.88	598,386.91	32° 4' 25.466 N	104° 0' 56.509 W
10,796.0	89.62	179.69	8,480.2	-2,557.6	410.8	390,599.89	598,387.59	32° 4' 24.516 N	104° 0' 56.505 W
10,890.0	90.87	179.90	8,479.8	-2,651.6	411.1	390,505.89	598,387.92	32° 4' 23.585 N	104° 0' 56.504 W
10,986.0	92.13	179.56	8,477.3	-2,747.6	411.6	390,409.93	598,388.38	32° 4' 22.636 N	104° 0' 56.502 W

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Survey

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11,081.0	89.21	179.23	8,476.2	-2,842.5	412.6	390,314.95	598,389.38	32° 4' 21.696 N	104° 0' 56.494 W
11,175.0	89.87	180.00	8,477.0	-2,936.5	413.2	390,220.96	598,390.01	32° 4' 20.765 N	104° 0' 56.489 W
11,270.0	91.19	179.09	8,476.1	-3,031.5	414.0	390,125.97	598,390.77	32° 4' 19.825 N	104° 0' 56.484 W
11,366.0	87.02	177.96	8,477.6	-3,127.5	416.4	390,030.04	598,393.24	32° 4' 18.876 N	104° 0' 56.459 W
11,461.0	87.60	178.15	8,482.1	-3,222.3	419.7	389,935.20	598,396.46	32° 4' 17.937 N	104° 0' 56.424 W
11,556.0	89.73	178.58	8,484.3	-3,317.2	422.4	389,840.27	598,399.17	32° 4' 16.998 N	104° 0' 56.396 W
11,652.0	91.96	179.14	8,482.9	-3,413.2	424.3	389,744.30	598,401.08	32° 4' 16.048 N	104° 0' 56.377 W
11,748.0	89.51	179.69	8,481.6	-3,509.2	425.3	389,648.32	598,402.06	32° 4' 15.098 N	104° 0' 56.369 W
11,843.0	91.18	180.56	8,481.0	-3,604.2	425.0	389,553.33	598,401.85	32° 4' 14.158 N	104° 0' 56.375 W
11,939.0	88.27	179.73	8,481.5	-3,700.2	424.8	389,457.34	598,401.61	32° 4' 13.208 N	104° 0' 56.381 W
12,034.0	88.47	179.40	8,484.2	-3,795.1	425.5	389,362.38	598,402.33	32° 4' 12.268 N	104° 0' 56.376 W
12,129.0	90.10	179.18	8,485.4	-3,890.1	426.7	389,267.40	598,403.50	32° 4' 11.328 N	104° 0' 56.365 W
12,224.0	87.37	179.16	8,487.5	-3,985.1	428.1	389,172.44	598,404.88	32° 4' 10.388 N	104° 0' 56.353 W
12,320.0	88.05	179.00	8,491.3	-4,081.0	429.6	389,076.53	598,406.42	32° 4' 9.439 N	104° 0' 56.338 W
12,415.0	89.73	179.25	8,493.2	-4,175.9	431.1	388,981.56	598,407.87	32° 4' 8.499 N	104° 0' 56.324 W
12,510.0	91.87	179.64	8,491.8	-4,270.9	432.0	388,886.58	598,408.79	32° 4' 7.559 N	104° 0' 56.317 W
12,605.0	94.00	179.57	8,487.0	-4,365.8	432.6	388,791.72	598,409.44	32° 4' 6.620 N	104° 0' 56.313 W
12,699.0	91.21	180.09	8,482.7	-4,459.7	432.9	388,697.82	598,409.72	32° 4' 5.691 N	104° 0' 56.312 W
12,794.0	91.41	180.13	8,480.5	-4,554.7	432.7	388,602.85	598,409.54	32° 4' 4.751 N	104° 0' 56.318 W
12,890.0	89.64	180.97	8,479.7	-4,650.6	431.8	388,506.86	598,408.62	32° 4' 3.801 N	104° 0' 56.332 W
12,985.0	88.59	181.35	8,481.1	-4,745.6	429.9	388,411.89	598,406.69	32° 4' 2.861 N	104° 0' 56.357 W
13,080.0	90.16	181.43	8,482.2	-4,840.6	427.6	388,316.93	598,404.39	32° 4' 1.922 N	104° 0' 56.387 W
13,175.0	89.95	180.13	8,482.1	-4,935.6	426.3	388,221.94	598,403.10	32° 4' 0.982 N	104° 0' 56.406 W
13,271.0	90.39	178.91	8,481.8	-5,031.6	427.1	388,125.95	598,403.90	32° 4' 0.032 N	104° 0' 56.400 W
13,366.0	91.24	178.66	8,480.4	-5,126.5	429.1	388,030.98	598,405.92	32° 3' 59.092 N	104° 0' 56.380 W
13,461.0	92.63	178.18	8,477.2	-5,221.4	431.7	387,936.07	598,408.53	32° 3' 58.152 N	104° 0' 56.352 W
13,556.0	94.28	177.87	8,471.5	-5,316.2	435.0	387,841.30	598,411.80	32° 3' 57.215 N	104° 0' 56.318 W
13,651.0	93.04	175.72	8,465.4	-5,410.8	440.3	387,746.65	598,417.10	32° 3' 56.278 N	104° 0' 56.259 W
13,747.0	93.51	174.75	8,459.9	-5,506.4	448.3	387,651.14	598,425.06	32° 3' 55.332 N	104° 0' 56.170 W
13,842.0	94.99	174.65	8,452.9	-5,600.7	457.0	387,556.81	598,433.81	32° 3' 54.398 N	104° 0' 56.072 W
13,868.0	95.41	174.65	8,450.6	-5,626.5	459.4	387,531.03	598,436.23	32° 3' 54.143 N	104° 0' 56.044 W
13,920.0	95.41	174.65	8,445.7	-5,678.0	464.3	387,479.49	598,441.06	32° 3' 53.633 N	104° 0' 55.990 W

Checked By: _____ Approved By: _____ Date: _____