



PERCUSSION
PETROLEUM
LLC

**NM OIL CONSERVATION
ARTESIA DISTRICT**

JUN 20 2018

RECEIVED

Percussion Petroleum, LLC

**Eddy County, NM
Morris Boyd State Com
7H**

30-015-44879

OH

Survey: Survey #1

Standard Survey Report

02 May, 2018

**Provide Signature Page for
Directional Survey**





Company: Percussion Petroleum, LLC
Project: Eddy County, NM
Site: Morris Boyd State Com
Well: 7H
Wellbore: OH
Rig: Silver Oak 1
Design: Plan #1 / 8:24, May 02 2018

PROJECT DETAILS Eddy County, NM
Geocentric System: US State Plane 1983
Datum: North American Datum 1983
Elevation: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level



TOTAL CORRECTION
Magnetic North is 7.37° East of Grid North (Magnetic Convergence)

WELL DETAILS: 7H

RKB=17' @ 3449.00usft (Silver Oak 1)
3432.05
+N-S +E-W Northing Easting Latitude Longitude
0.00 0.00 696791.96 603718.60 32.640870 -104.466647

SECTION DETAILS

Sec	MD	Inc	Adj	TVD	+N-S	+E-W	Diag	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	645.00	0.00	360.00	645.00	0.00	0.00	0.00	0.00
3	1044.77	8.00	109.73	1043.47	-8.40	26.21	2.00	9.38
4	2437.48	9.00	109.73	2432.63	-74.81	208.55	0.00	74.60
5	3312.60	80.20	180.06	2964.00	-448.20	278.80	10.00	648.81
6	6167.32	90.20	180.06	2964.04	-3503.90	278.81	0.00	3503.81
7	6170.36	90.14	180.06	2964.03	-3508.84	278.81	2.00	3506.66
8	6229.33	90.14	180.06	2949.00	-4375.80	274.84	0.00	6875.61
9	6649.23	80.14	180.06	2949.25	-4285.80	274.32	0.00	6885.51

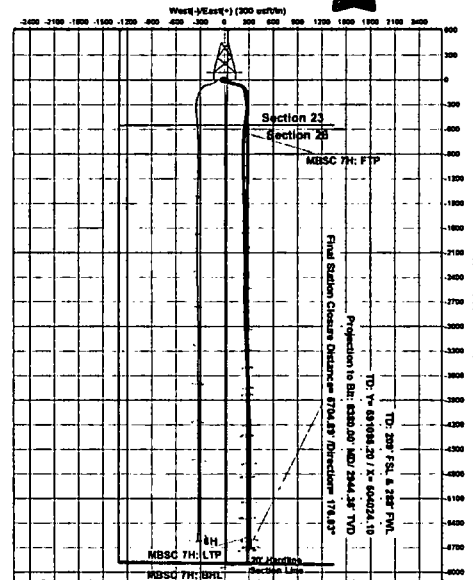
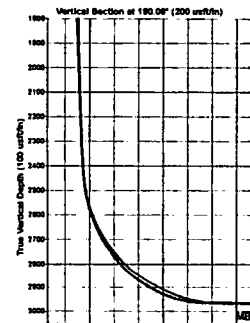
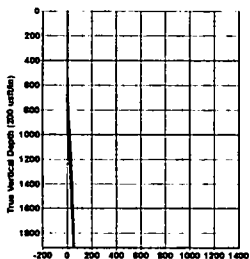
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting	Shape
MBSC 7H: BHL	2949.25	-6285.80	274.80	690906.10	603982.20	Point
MBSC 7H: LTP	2949.00	-6275.90	274.84	691216.00	603993.24	Point
MBSC 7H: IP1	2964.00	-3503.90	278.81	693288.00	603995.41	Point
MBSC 7H: FTP	2964.00	-448.20	279.80	696142.70	603998.40	Point

Azimuths to Grid North
True North: 0.07°
Magnetic North: 7.37°

Magnetic Field
Strength: 48002.6nT
Dip Angle: 60.29°
Date: 4/20/2018
Model: IGRF2015

Disclaimer:
THIS IS AN ESTIMATE. NO WARRANTY IS MADE. THE USER ASSUMES ALL LIABILITY FOR ANY AND ALL DAMAGES, INCLUDING BUT NOT LIMITED TO, DAMAGES TO PERSONS OR PROPERTY, ARISING OUT OF OR FROM THE USE OF THIS INFORMATION.



Final Station Closure Distance= 6704.69' / Direction= 178.93°
Projection to BH: 6380.00' MD/ 2944.38' TVD
TD: Y= 691098.20 / X= 604024.10
TD: 209' FSL & 288' FNL

Plan: Plan #1 (FHON) Silver Oak 1

Created By: Daniel Benn Date: 8:24, May 02 2018



Wellbenders Survey Report



Company: Percussion Petroleum, LLC
Project: Eddy County, NM
Site: Morris Boyd State Com
Well: 7H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well 7H
TVD Reference: RKB=17' @ 3449.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3449.00usft (Silver Oak 1)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WBDS_SQL_2

Project	Eddy County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Morris Boyd State Com				
Site Position:		Northing:	596,686.20 usft	Latitude:	32.640272
From:	Map	Easting:	501,469.20 usft	Longitude:	-104.462854
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	-0.07 °

Well	7H					
Well Position	+N/-S	0.00 usft	Northing:	596,791.90 usft	Latitude:	32.640570
	+E/-W	0.00 usft	Easting:	503,718.60 usft	Longitude:	-104.455547
Position Uncertainty	0.00 usft		Wellhead Elevation:	usft	Ground Level:	3,432.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	4/20/2018	7.30	60.29	48,002.63758748

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	180.06	

Survey Program		Date	5/2/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
128.00	8,380.00	Survey #1 (OH)	MWD+IGRF	OWSG MWD + IGRF or WMM	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
128.00	0.40	113.50	128.00	-0.18	0.41	0.18	0.31	0.31	0.00
220.00	0.20	130.20	220.00	-0.41	0.83	0.41	0.24	-0.22	18.15
312.00	0.40	168.70	312.00	-0.83	1.01	0.83	0.30	0.22	41.85
404.00	0.20	191.80	404.00	-1.30	1.04	1.30	0.25	-0.22	25.11
495.00	0.50	189.60	494.99	-1.85	0.94	1.85	0.33	0.33	-2.42
587.00	1.50	130.20	586.98	-3.02	1.80	3.02	1.43	1.09	-64.57
678.00	3.90	124.00	677.87	-5.52	5.27	5.51	2.65	2.64	-6.81
770.00	6.20	116.40	769.51	-9.48	12.32	9.47	2.60	2.50	-8.26
861.00	6.70	115.10	859.93	-13.92	21.53	13.89	0.57	0.55	-1.43



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MD Reference: RKB=17' @ 3449.00usft (Silver Oak 1)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WBDS_SQL_2

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
953.00	6.50	116.20	951.32	-18.49	31.06	18.46	0.26	-0.22	1.20
1,044.00	7.60	113.50	1,041.64	-23.17	41.20	23.12	1.26	1.21	-2.97
1,135.00	7.90	113.00	1,131.80	-28.01	52.47	27.95	0.34	0.33	-0.55
1,177.00	7.90	113.20	1,173.41	-30.27	57.78	30.21	0.07	0.00	0.48
1,263.00	7.50	113.70	1,258.63	-34.86	68.36	34.79	0.47	-0.47	0.58
1,357.00	6.90	103.60	1,351.89	-38.65	79.46	38.57	1.49	-0.64	-10.74
1,451.00	6.90	102.50	1,445.21	-41.20	90.46	41.11	0.14	0.00	-1.17
1,545.00	7.00	104.10	1,538.52	-43.82	101.53	43.71	0.23	0.11	1.70
1,638.00	7.10	102.90	1,630.82	-46.48	112.63	46.36	0.19	0.11	-1.29
1,733.00	7.10	103.90	1,725.09	-49.20	124.05	49.07	0.13	0.00	1.05
1,827.00	7.00	102.70	1,818.38	-51.86	135.28	51.72	0.19	-0.11	-1.28
1,920.00	7.30	101.20	1,910.65	-54.25	146.60	54.10	0.38	0.32	-1.61
2,013.00	7.50	102.30	2,002.88	-56.69	158.33	56.53	0.26	0.22	1.18
2,107.00	7.60	105.60	2,096.07	-59.67	170.31	59.49	0.47	0.11	3.51
2,202.00	7.60	107.70	2,190.23	-63.27	182.34	63.08	0.29	0.00	2.21
2,295.00	7.70	108.80	2,282.40	-67.15	194.10	66.94	0.19	0.11	1.18
2,388.00	7.80	109.20	2,374.55	-71.23	205.96	71.02	0.12	0.11	0.43
2,481.00	12.10	124.00	2,466.15	-78.76	220.01	78.53	5.34	4.62	15.91
2,575.00	18.50	136.70	2,556.79	-95.15	238.43	94.90	7.65	6.81	13.51
2,668.00	26.60	151.10	2,642.68	-124.18	258.66	123.91	10.48	8.71	15.48
2,762.00	33.70	167.20	2,724.04	-168.16	274.65	167.88	11.39	7.55	17.13
2,856.00	41.60	178.90	2,798.50	-224.96	281.05	224.66	11.30	8.40	12.45
2,949.00	51.40	180.90	2,862.45	-292.33	281.07	292.03	10.65	10.54	2.15
3,042.00	63.30	185.30	2,912.55	-370.33	276.64	370.04	13.40	12.80	4.73
3,135.00	75.10	188.20	2,945.52	-456.50	266.36	456.22	13.02	12.69	3.12
3,229.00	86.60	188.00	2,960.44	-548.22	253.31	547.95	12.24	12.23	-0.21
3,260.00	88.70	186.30	2,961.71	-578.95	249.45	578.69	8.71	6.77	-5.48
3,322.00	88.80	185.30	2,963.07	-640.62	243.19	640.36	1.62	0.16	-1.61
3,414.00	89.00	182.20	2,964.83	-732.39	237.17	732.14	3.38	0.22	-3.37
3,508.00	90.80	181.00	2,965.00	-826.35	234.55	826.10	2.30	1.91	-1.28
3,602.00	92.40	180.50	2,962.37	-920.30	233.32	920.06	1.78	1.70	-0.53
3,695.00	90.20	179.40	2,960.26	-1,013.27	233.40	1,013.03	2.64	-2.37	-1.18
3,789.00	90.40	178.80	2,959.77	-1,107.26	234.88	1,107.01	0.67	0.21	-0.64
3,883.00	90.80	179.00	2,958.79	-1,201.23	236.68	1,200.99	0.48	0.43	0.21
3,976.00	89.50	178.20	2,958.54	-1,294.20	238.95	1,293.95	1.64	-1.40	-0.86
4,070.00	89.90	178.30	2,959.03	-1,388.16	241.82	1,387.90	0.44	0.43	0.11
4,163.00	90.80	178.60	2,958.47	-1,481.12	244.34	1,480.87	1.02	0.97	0.32
4,257.00	91.30	179.30	2,956.74	-1,575.09	246.06	1,574.83	0.92	0.53	0.74
4,352.00	90.40	178.90	2,955.33	-1,670.07	247.55	1,669.81	1.04	-0.95	-0.42
4,448.00	90.80	179.40	2,954.33	-1,766.05	248.98	1,765.79	0.67	0.42	0.52
4,541.00	90.10	179.10	2,953.60	-1,859.04	250.20	1,858.78	0.82	-0.75	-0.32
4,662.00	90.10	179.60	2,953.39	-1,980.03	251.57	1,979.77	0.41	0.00	0.41
4,756.00	88.80	179.20	2,954.29	-2,074.02	252.55	2,073.75	1.45	-1.38	-0.43
4,850.00	89.20	179.50	2,955.93	-2,168.00	253.62	2,167.73	0.53	0.43	0.32



Wellbenders Survey Report



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TVD Reference: RKB=17' @ 3449.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3449.00usft (Silver Oak 1)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WBDS_SQL_2

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,945.00	89.30	179.90	2,957.17	-2,262.99	254.12	2,262.72	0.43	0.11	0.42
5,038.00	89.80	180.30	2,957.90	-2,355.98	253.95	2,355.72	0.69	0.54	0.43
5,132.00	89.90	180.70	2,958.15	-2,449.98	253.13	2,449.71	0.44	0.11	0.43
5,226.00	89.70	179.90	2,958.48	-2,543.98	252.64	2,543.71	0.88	-0.21	-0.85
5,320.00	91.30	180.20	2,957.66	-2,637.97	252.56	2,637.71	1.73	1.70	0.32
5,414.00	90.60	179.40	2,956.10	-2,731.96	252.89	2,731.69	1.13	-0.74	-0.85
5,509.00	89.10	178.30	2,956.35	-2,826.93	254.79	2,826.66	1.96	-1.58	-1.16
5,604.00	89.80	178.30	2,957.26	-2,921.89	257.61	2,921.61	0.74	0.74	0.00
5,697.00	90.60	178.20	2,956.94	-3,014.84	260.45	3,014.57	0.87	0.86	-0.11
5,791.00	91.30	178.00	2,955.38	-3,108.78	263.57	3,108.50	0.77	0.74	-0.21
5,885.00	90.10	177.90	2,954.23	-3,202.71	266.93	3,202.43	1.28	-1.28	-0.11
5,978.00	89.00	177.40	2,954.96	-3,295.62	270.74	3,295.34	1.30	-1.18	-0.54
6,072.00	90.00	177.40	2,955.78	-3,389.52	275.01	3,389.23	1.06	1.06	0.00
6,163.00	91.00	177.40	2,954.99	-3,480.42	279.14	3,480.13	1.10	1.10	0.00
6,255.00	89.30	178.00	2,954.74	-3,572.35	282.83	3,572.05	1.96	-1.85	0.65
6,346.00	90.10	177.90	2,955.22	-3,663.29	286.08	3,662.98	0.89	0.88	-0.11
6,438.00	91.20	177.80	2,954.18	-3,755.21	289.53	3,754.91	1.20	1.20	-0.11
6,529.00	89.00	178.70	2,954.02	-3,846.16	292.31	3,845.86	2.61	-2.42	0.99
6,621.00	88.80	178.70	2,955.78	-3,938.12	294.40	3,937.81	0.22	-0.22	0.00
6,712.00	89.90	178.50	2,956.82	-4,029.09	296.62	4,028.78	1.23	1.21	-0.22
6,804.00	89.70	178.30	2,957.14	-4,121.05	299.19	4,120.74	0.31	-0.22	-0.22
6,895.00	89.00	178.50	2,958.17	-4,212.01	301.73	4,211.69	0.80	-0.77	0.22
6,987.00	89.10	179.80	2,959.70	-4,303.99	303.10	4,303.67	1.42	0.11	1.41
7,079.00	90.30	180.60	2,960.18	-4,395.98	302.78	4,395.66	1.57	1.30	0.87
7,171.00	91.20	180.50	2,958.97	-4,487.97	301.89	4,487.65	0.98	0.98	-0.11
7,265.00	92.00	180.60	2,956.35	-4,581.93	300.99	4,581.61	0.86	0.85	0.11
7,360.00	90.10	180.30	2,954.61	-4,676.90	300.24	4,676.59	2.02	-2.00	-0.32
7,453.00	90.80	180.40	2,953.88	-4,769.90	299.68	4,769.58	0.76	0.75	0.11
7,547.00	88.90	180.00	2,954.12	-4,863.89	299.35	4,863.58	2.07	-2.02	-0.43
7,641.00	89.20	180.00	2,955.68	-4,957.88	299.35	4,957.56	0.32	0.32	0.00
7,734.00	90.10	180.00	2,956.25	-5,050.88	299.35	5,050.56	0.97	0.97	0.00
7,828.00	91.10	179.90	2,955.27	-5,144.87	299.43	5,144.55	1.07	1.06	-0.11
7,924.00	91.40	179.50	2,953.17	-5,240.85	299.93	5,240.53	0.52	0.31	-0.42
8,019.00	92.20	179.70	2,950.19	-5,335.80	300.60	5,335.48	0.87	0.84	0.21
8,114.00	90.40	179.20	2,948.03	-5,430.76	301.51	5,430.44	1.97	-1.89	-0.53
8,209.00	90.30	179.30	2,947.45	-5,525.75	302.75	5,525.43	0.15	-0.11	0.11
8,299.00	91.30	179.00	2,946.20	-5,615.73	304.09	5,615.41	1.16	1.11	-0.33
8,380.00	91.30	179.00	2,944.36	-5,696.70	305.50	5,696.38	0.00	0.00	0.00

TD: 209' FSL & 288' FWL - TD: Y= 591095.20 / X= 504024.10 - Projection to Bit: 8380.00' MD/ 2944.36' TVD - Final Station

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Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,380.00	2,944.36	-5,696.70	305.50	TD: 209' FSL & 288' FWL
8,380.00	2,944.36	-5,696.70	305.50	TD: Y= 591095.20 / X= 504024.10
8,380.00	2,944.36	-5,696.70	305.50	Projection to Bit: 8380.00' MD/ 2944.36' TVD
8,380.00	2,944.36	-5,696.70	305.50	Final Station Closure Distance= 5704.89' /Direction= 176.93°

Checked By: _____ Approved By: _____ Date: _____