

30-025-44038

December 11, 2017



HOBBS OCD
MAR 28 2018
RECEIVED

**END OF WELL
REPORT
FOR**

**Steward Energy
Pollos Hermanos State 2H
Lea County, NM
DM-2017-183-SED-T-NM**



SURVEYS

BOTTOM HOLE ASSEMBLIES

SLIDE REPORTS

DAILY REPORTS

Steward Energy II, LLC

DrilTech, LLC

Lea County, NM (NAD 83) NM East Zone
Section 10 T14S R38E
Section 10 T14S R38E
Well #1
Lateral
Plan #4



SURFACE LOCATION

US State Plane 1983
New Mexico Eastern Zone
Elevation: GL 3753 + 13' RKB @ 3766.00ft
Northing 770687.00 Easting 924927.00 Latitude 33.112°N Longitude 103.081°W

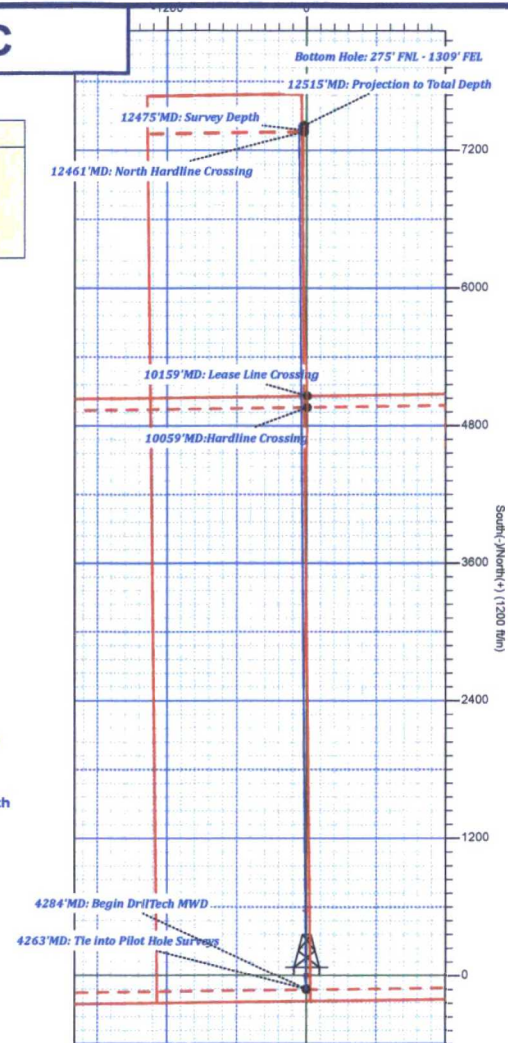
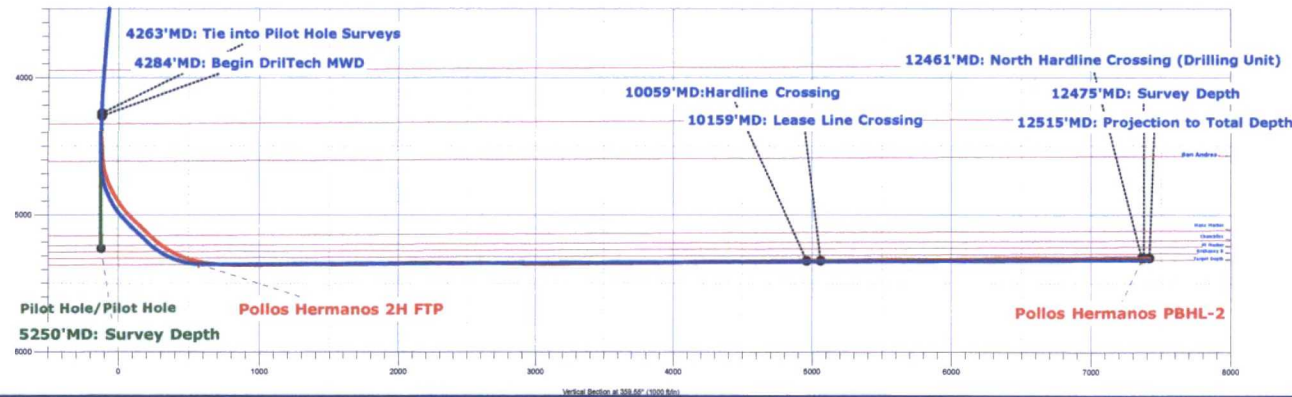
SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect	Annotation
4545.00	0.44	286.51	4540.57	-123.92	-2.57	0.00	-123.89	4545'MD - Tie into existing survey
4610.00	0.44	287.51	4605.56	-123.77	-3.04	0.01	-123.74	4610'MD: STK Begin Build 9°/100'MD
5108.51	45.00	359.51	5054.22	62.67	-6.56	9.00	62.72	5109'MD: 45° Incl. Begin Tangent 200'MD
5308.51	45.00	359.51	5195.64	204.09	-7.77	0.00	204.14	5309'MD: Resume Build 10.10° Incl.
5308.55	45.00	359.51	5195.68	204.12	-7.77	0.00	204.18	5309'MD: Resume Build 10.10° Incl.
5756.77	90.27	359.55	5361.82	607.91	-11.05	10.10	607.98	5757'MD: End Build hold 90.27° on Azm. 359.55°
12510.16	90.27	359.55	5330.00	7361.01	-64.00	0.00	7361.29	12510'MD: LTP
12565.16	90.27	359.55	5329.74	7416.01	-64.43	0.00	7416.29	12565'MD: PBHL



WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
Pollos Hermanos PBHL-2	5330.00	7361.01	-64.00	778048.00	924863.00
Pollos Hermanos 2H FTP	5362.32	569.00	-6.00	771256.00	924921.00





Steward Energy II, LLC

Lea County, NM (NAD 83) NM East Zone

Pollos Hermanos 2H

Well #1

Lateral

Survey: DrilTech MWD - Lateral

Standard Survey Report

10 December, 2017



Survey Report

Company:	Steward Energy II, LLC	Local Co-ordinate Reference:	Well Well #1
Project:	Lea County, NM (NAD 83) NM East Zone	TVD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 5000.14 Single User Db

Project	Lea County, NM (NAD 83) NM East Zone		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Pollos Hermanos 2H			
Site Position:		Northing:	770,687.00 usft	Latitude: 33.112°N
From: Map		Easting:	924,927.00 usft	Longitude: 103.081°W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: 0.68 °

Well	Well #1			
Well Position	+N/-S	0.00 ft	Northing:	770,687.00 usft
	+E/-W	0.00 ft	Easting:	924,927.00 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft
			Ground Level:	3,753.00 ft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/22/2017	6.74	60.94	48,467.23252200

Design	Lateral				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	4,263.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	359.50	

Survey Program	Date	12/10/2017			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
84.25	2,391.21	VES Gyro (Pilot Hole)	CB_Film_GMS	Camera Based Film Gyro Multi-Shot	
2,474.00	4,263.00	MWD (Pilot Hole)	MWD	MWD - Standard	
4,284.00	12,515.00	DrilTech MWD - Lateral (Lateral)	MWD	MWD - Standard	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,263.00	1.76	184.73	4,258.60	-120.92	-1.82	-120.90	0.00	0.00	0.00	
4263'MD: Tie into Pilot Hole Surveys										
4,284.00	1.76	185.08	4,279.59	-121.57	-1.88	-121.55	0.05	0.00	1.67	
4284'MD: Begin DrilTech MWD										
4,379.00	1.76	346.36	4,374.58	-121.60	-2.35	-121.58	3.66	0.00	169.77	
4,474.00	3.34	358.76	4,469.48	-117.42	-2.75	-117.39	1.75	1.66	13.05	
4,536.00	3.25	0.42	4,531.38	-113.85	-2.78	-113.83	0.21	-0.15	2.68	
4,568.00	3.25	0.25	4,563.33	-112.04	-2.77	-112.01	0.03	0.00	-0.53	



Survey Report

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Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 5000.14 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,599.00	4.66	1.39	4,594.25	-109.90	-2.73	-109.87	4.56	4.55	3.68
4,630.00	7.30	358.05	4,625.08	-106.67	-2.77	-106.65	8.59	8.52	-10.77
4,662.00	10.46	357.00	4,656.70	-101.74	-2.99	-101.71	9.89	9.88	-3.28
4,693.00	13.98	356.73	4,686.99	-95.19	-3.35	-95.16	11.36	11.35	-0.87
4,725.00	17.41	356.12	4,717.79	-86.55	-3.90	-86.51	10.73	10.72	-1.91
4,756.00	19.96	357.61	4,747.15	-76.64	-4.43	-76.60	8.37	8.23	4.81
4,787.00	22.07	359.02	4,776.09	-65.53	-4.75	-65.48	7.00	6.81	4.55
4,819.00	24.45	0.25	4,805.49	-52.89	-4.83	-52.85	7.59	7.44	3.84
4,850.00	26.91	1.57	4,833.42	-39.46	-4.61	-39.42	8.15	7.94	4.26
4,882.00	29.37	1.48	4,861.64	-24.37	-4.20	-24.34	7.69	7.69	-0.28
4,913.00	31.48	1.04	4,888.37	-8.68	-3.86	-8.65	6.84	6.81	-1.42
4,945.00	33.41	0.69	4,915.37	8.48	-3.60	8.52	6.06	6.03	-1.09
4,977.00	35.70	0.42	4,941.73	26.63	-3.43	26.66	7.17	7.16	-0.84
5,008.00	37.99	359.99	4,966.53	45.22	-3.36	45.25	7.43	7.39	-1.39
5,039.00	40.54	359.37	4,990.53	64.84	-3.48	64.87	8.32	8.23	-2.00
5,071.00	43.97	359.19	5,014.21	86.35	-3.75	86.38	10.73	10.72	-0.56
5,102.00	45.64	359.02	5,036.21	108.19	-4.09	108.22	5.40	5.39	-0.55
5,134.00	45.90	358.67	5,058.53	131.12	-4.55	131.15	1.13	0.81	-1.09
5,166.00	45.99	358.84	5,080.78	154.11	-5.05	154.15	0.47	0.28	0.53
5,197.00	46.08	358.84	5,102.30	176.42	-5.50	176.46	0.29	0.29	0.00
5,228.00	46.17	358.84	5,123.79	198.76	-5.96	198.80	0.29	0.29	0.00
5,260.00	46.08	358.49	5,145.96	221.82	-6.49	221.87	0.84	-0.28	-1.09
5,292.00	46.08	358.93	5,168.16	244.86	-7.01	244.92	0.99	0.00	1.38
5,323.00	47.84	358.32	5,189.32	267.51	-7.56	267.57	5.86	5.68	-1.97
5,355.00	51.00	359.02	5,210.13	291.81	-8.12	291.87	10.01	9.88	2.19
5,387.00	54.26	359.72	5,229.55	317.23	-8.39	317.30	10.33	10.19	2.19
5,418.00	57.16	0.07	5,247.02	342.84	-8.44	342.90	9.40	9.35	1.13
5,449.00	59.62	0.34	5,263.26	369.24	-8.34	369.30	7.97	7.94	0.87
5,481.00	62.17	0.86	5,278.83	397.20	-8.05	397.25	8.09	7.97	1.63
5,512.00	64.63	0.95	5,292.71	424.91	-7.61	424.96	7.94	7.94	0.29
5,543.00	67.62	0.60	5,305.25	453.25	-7.23	453.30	9.70	9.65	-1.13
5,575.00	70.52	0.69	5,316.68	483.14	-6.89	483.18	9.07	9.06	0.28
5,607.00	73.25	1.13	5,326.63	513.54	-6.41	513.58	8.63	8.53	1.38
5,638.00	75.89	1.39	5,334.88	543.42	-5.75	543.45	8.55	8.52	0.84
5,669.00	77.82	1.57	5,341.93	573.59	-4.97	573.61	6.25	6.23	0.58
5,701.00	79.49	1.57	5,348.22	604.95	-4.11	604.97	5.22	5.22	0.00
5,732.00	81.25	1.57	5,353.41	635.50	-3.28	635.51	5.68	5.68	0.00
5,764.00	83.19	0.60	5,357.74	667.20	-2.68	667.20	6.77	6.06	-3.03
5,795.00	85.47	359.81	5,360.80	698.05	-2.57	698.04	7.78	7.35	-2.55
5,826.00	87.58	358.93	5,362.68	728.99	-2.91	728.98	7.37	6.81	-2.84
5,858.00	88.20	359.02	5,363.86	760.96	-3.48	760.96	1.96	1.94	0.28
5,889.00	88.46	359.28	5,364.76	791.94	-3.94	791.95	1.19	0.84	0.84
5,983.00	89.96	359.90	5,366.06	885.93	-4.61	885.94	1.73	1.60	0.66
6,078.00	91.45	0.07	5,364.89	980.92	-4.64	980.92	1.58	1.57	0.18



Survey Report

Company:	Steward Energy II, LLC	Local Co-ordinate Reference:	Well Well #1
Project:	Lea County, NM (NAD 83) NM East Zone	TVD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 5000.14 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,172.00	90.31	359.81	5,363.45	1,074.91	-4.73	1,074.91	1.24	-1.21	-0.28
6,266.00	90.57	359.46	5,362.72	1,168.90	-5.33	1,168.90	0.46	0.28	-0.37
6,360.00	91.01	359.11	5,361.43	1,262.88	-6.51	1,262.89	0.60	0.47	-0.37
6,455.00	91.01	358.49	5,359.75	1,357.85	-8.49	1,357.87	0.65	0.00	-0.65
6,551.00	89.43	358.93	5,359.38	1,453.82	-10.66	1,453.86	1.71	-1.65	0.46
6,645.00	89.60	358.14	5,360.18	1,547.79	-13.06	1,547.84	0.86	0.18	-0.84
6,740.00	90.66	357.79	5,359.96	1,642.72	-16.43	1,642.80	1.18	1.12	-0.37
6,835.00	91.36	357.88	5,358.29	1,737.64	-20.02	1,737.75	0.74	0.74	0.09
6,930.00	91.36	358.40	5,356.04	1,832.56	-23.10	1,832.70	0.55	0.00	0.55
7,024.00	90.75	359.81	5,354.30	1,926.53	-24.57	1,926.67	1.63	-0.65	1.50
7,118.00	91.28	359.37	5,352.64	2,020.52	-25.24	2,020.66	0.73	0.56	-0.47
7,212.00	90.66	0.60	5,351.05	2,114.50	-25.27	2,114.64	1.47	-0.66	1.31
7,307.00	89.43	359.90	5,350.97	2,209.50	-24.85	2,209.63	1.49	-1.29	-0.74
7,402.00	90.57	359.63	5,350.97	2,304.49	-25.24	2,304.63	1.23	1.20	-0.28
7,497.00	89.43	0.07	5,350.97	2,399.49	-25.49	2,399.62	1.29	-1.20	0.46
7,515.00	89.43	0.51	5,351.15	2,417.49	-25.40	2,417.62	2.44	0.00	2.44
7,609.00	89.43	0.95	5,352.09	2,511.48	-24.20	2,511.59	0.47	0.00	0.47
7,703.00	89.87	1.22	5,352.66	2,605.46	-22.42	2,605.56	0.55	0.47	0.29
7,797.00	90.04	1.83	5,352.74	2,699.43	-19.92	2,699.50	0.67	0.18	0.65
7,889.00	88.90	1.92	5,353.59	2,791.37	-16.91	2,791.41	1.24	-1.24	0.10
7,980.00	88.46	1.30	5,355.68	2,882.31	-14.36	2,882.33	0.84	-0.48	-0.68
8,072.00	90.22	1.66	5,356.74	2,974.27	-11.98	2,974.26	1.95	1.91	0.39
8,164.00	90.48	1.30	5,356.18	3,066.24	-9.60	3,066.20	0.48	0.28	-0.39
8,256.00	90.13	0.69	5,355.69	3,158.22	-8.01	3,158.17	0.76	-0.38	-0.66
8,348.00	89.96	359.90	5,355.62	3,250.22	-7.53	3,250.16	0.88	-0.18	-0.86
8,440.00	91.01	0.16	5,354.84	3,342.21	-7.48	3,342.15	1.18	1.14	0.28
8,532.00	91.54	0.25	5,352.79	3,434.19	-7.15	3,434.12	0.58	0.58	0.10
8,624.00	89.96	0.42	5,351.59	3,526.18	-6.62	3,526.10	1.73	-1.72	0.18
8,715.00	90.40	359.55	5,351.30	3,617.18	-6.64	3,617.10	1.07	0.48	-0.96
8,810.00	90.75	0.51	5,350.35	3,712.17	-6.59	3,712.09	1.08	0.37	1.01
8,904.00	89.87	359.81	5,349.84	3,806.17	-6.33	3,806.08	1.20	-0.94	-0.74
8,999.00	90.84	359.99	5,349.25	3,901.16	-6.49	3,901.07	1.04	1.02	0.19
9,093.00	91.89	0.25	5,347.01	3,995.14	-6.30	3,995.04	1.15	1.12	0.28
9,186.00	91.89	0.42	5,343.95	4,088.08	-5.75	4,087.98	0.18	0.00	0.18
9,280.00	91.19	359.99	5,341.42	4,182.05	-5.42	4,181.94	0.87	-0.74	-0.46
9,374.00	89.78	1.13	5,340.62	4,276.04	-4.50	4,275.91	1.93	-1.50	1.21
9,468.00	89.16	1.13	5,341.49	4,370.01	-2.65	4,369.87	0.66	-0.66	0.00
9,562.00	91.01	0.34	5,341.35	4,464.00	-1.44	4,463.84	2.14	1.97	-0.84
9,657.00	91.01	0.95	5,339.68	4,558.98	-0.37	4,558.81	0.64	0.00	0.64
9,751.00	90.48	1.48	5,338.46	4,652.95	1.62	4,652.76	0.80	-0.56	0.56
9,845.00	90.57	1.30	5,337.60	4,746.92	3.90	4,746.70	0.21	0.10	-0.19
9,939.00	90.40	359.72	5,336.80	4,840.91	4.74	4,840.68	1.69	-0.18	-1.68
10,031.00	91.01	0.51	5,335.67	4,932.90	4.92	4,932.67	1.08	0.66	0.86



Survey Report

Company:	Steward Energy II, LLC	Local Co-ordinate Reference:	Well Well #1
Project:	Lea County, NM (NAD 83) NM East Zone	TVD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,059.00	90.64	0.14	5,335.26	4,960.90	5.08	4,960.66	1.85	-1.31	-1.31
10059'MD: Hardline Crossing									
10,125.00	89.78	359.28	5,335.02	5,026.89	4.75	5,026.66	1.85	-1.31	-1.31
10,159.00	89.75	358.80	5,335.16	5,060.89	4.18	5,060.66	1.41	-0.10	-1.40
10159'MD: Lease Line Crossing									
10,219.00	89.69	357.96	5,335.46	5,120.86	2.49	5,120.65	1.41	-0.10	-1.40
10,314.00	91.19	358.76	5,334.73	5,215.82	-0.23	5,215.62	1.79	1.58	0.84
10,408.00	91.71	358.93	5,332.35	5,309.77	-2.13	5,309.59	0.58	0.55	0.18
10,502.00	90.75	358.32	5,330.33	5,403.72	-4.38	5,403.55	1.21	-1.02	-0.65
10,596.00	90.40	358.76	5,329.39	5,497.68	-6.78	5,497.53	0.60	-0.37	0.47
10,690.00	90.84	358.14	5,328.37	5,591.64	-9.32	5,591.51	0.81	0.47	-0.66
10,784.00	91.10	359.02	5,326.78	5,685.60	-11.65	5,685.48	0.98	0.28	0.94
10,878.00	89.08	357.88	5,326.63	5,779.56	-14.19	5,779.46	2.47	-2.15	-1.21
10,973.00	89.52	358.32	5,327.79	5,874.50	-17.34	5,874.43	0.65	0.46	0.46
11,067.00	90.66	358.14	5,327.64	5,968.45	-20.24	5,968.40	1.23	1.21	-0.19
11,161.00	90.92	358.76	5,326.35	6,062.41	-22.78	6,062.38	0.72	0.28	0.66
11,254.00	90.48	359.19	5,325.21	6,155.39	-24.45	6,155.36	0.66	-0.47	0.46
11,347.00	91.19	359.28	5,323.86	6,248.37	-25.69	6,248.35	0.77	0.76	0.10
11,440.00	91.71	358.58	5,321.50	6,341.32	-27.43	6,341.32	0.94	0.56	-0.75
11,534.00	90.75	359.02	5,319.48	6,435.28	-29.39	6,435.29	1.12	-1.02	0.47
11,628.00	90.04	359.81	5,318.84	6,529.27	-30.35	6,529.28	1.13	-0.76	0.84
11,723.00	90.04	359.46	5,318.77	6,624.27	-30.96	6,624.28	0.37	0.00	-0.37
11,817.00	89.52	359.81	5,319.13	6,718.26	-31.56	6,718.28	0.67	-0.55	0.37
11,911.00	89.34	0.07	5,320.07	6,812.26	-31.66	6,812.28	0.34	-0.19	0.28
12,005.00	90.84	0.16	5,319.92	6,906.26	-31.47	6,906.27	1.60	1.60	0.10
12,099.00	90.92	0.86	5,318.47	7,000.24	-30.63	7,000.24	0.75	0.09	0.74
12,193.00	90.66	0.42	5,317.18	7,094.22	-29.58	7,094.21	0.54	-0.28	-0.47
12,287.00	90.48	0.60	5,316.24	7,188.22	-28.74	7,188.19	0.27	-0.19	0.19
12,381.00	90.48	1.22	5,315.46	7,282.20	-27.25	7,282.16	0.66	0.00	0.66
12,461.00	90.18	1.52	5,314.99	7,362.18	-25.34	7,362.12	0.53	-0.37	0.37
12461'MD: North Hardline Crossing (Drilling Unit)									
12,475.00	90.13	1.57	5,314.96	7,376.17	-24.96	7,376.11	0.53	-0.37	0.37
12475'MD: Survey Depth									
12,515.00	90.13	1.57	5,314.86	7,416.16	-23.87	7,416.08	0.00	0.00	0.00
12515'MD: Projection to Total Depth - Bottom Hole: 275' FNL - 1309' FEL									



Survey Report

Company:	Steward Energy II, LLC	Local Co-ordinate Reference:	Well Well #1
Project:	Lea County, NM (NAD 83) NM East Zone	TVD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 5000.14 Single User Db

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,263.00	4,258.60	-120.92	-1.82	4263'MD: Tie into Pilot Hole Surveys
4,284.00	4,279.59	-121.57	-1.88	4284'MD: Begin DrilTech MWD
10,059.00	5,335.26	4,960.90	5.08	10059'MD: Hardline Crossing
10,159.00	5,335.16	5,060.89	4.18	10159'MD: Lease Line Crossing
12,461.00	5,314.99	7,362.18	-25.34	12461'MD: North Hardline Crossing (Drilling Unit)
12,475.00	5,314.96	7,376.17	-24.96	12475'MD: Survey Depth
12,515.00	5,314.86	7,416.16	-23.87	12515'MD: Projection to Total Depth
12,515.00	5,314.86	7,416.16	-23.87	Bottom Hole: 275' FNL - 1309' FEL

Checked By: _____ Approved By: _____ Date: _____



Steward Energy II, LLC

Lea County, NM (NAD 83) NM East Zone

Pollos Hermanos 2H

Well #1

Lateral

Survey: DrilTech MWD - Lateral

Survey Report - Geographic

10 December, 2017



Survey Report - Geographic

Company:	Steward Energy II, LLC	Local Co-ordinate Reference:	Well Well #1
Project:	Lea County, NM (NAD 83) NM East Zone	TVD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 5000.14 Single User Db

Project	Lea County, NM (NAD 83) NM East Zone		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Pollos Hermanos 2H		
Site Position:		Northing:	770,687.00 usft
From:	Map	Easting:	924,927.00 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Latitude:	33.112°N
		Longitude:	103.081°W
		Grid Convergence:	0.68 °

Well	Well #1		
Well Position	+N/-S	0.00 ft	Northing: 770,687.00 usft
	+E/-W	0.00 ft	Easting: 924,927.00 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft
		Latitude:	33.112°N
		Longitude:	103.081°W
		Ground Level:	3,753.00 ft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/22/2017	6.74	60.94	48,467.23252200

Design	Lateral				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	4,263.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	359.50	

Survey Program	Date	12/10/2017			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
84.25	2,391.21	VES Gyro (Pilot Hole)	CB_Film_GMS	Camera Based Film Gyro Multi-Shot	
2,474.00	4,263.00	MWD (Pilot Hole)	MWD	MWD - Standard	
4,284.00	12,515.00	DrilTech MWD - Lateral (Lateral)	MWD	MWD - Standard	

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,263.00	1.76	184.73	4,258.60	-120.92	-1.82	770,566.07	924,925.18	33.112°N	103.081°W
4263'MD: Tie into Pilot Hole Surveys									
4,284.00	1.76	185.08	4,279.59	-121.57	-1.88	770,565.43	924,925.13	33.112°N	103.081°W
4284'MD: Begin DrilTech MWD									
4,379.00	1.76	346.36	4,374.58	-121.60	-2.35	770,565.40	924,924.65	33.112°N	103.081°W
4,474.00	3.34	358.76	4,469.48	-117.42	-2.75	770,569.58	924,924.25	33.112°N	103.081°W
4,536.00	3.25	0.42	4,531.38	-113.85	-2.78	770,573.14	924,924.22	33.112°N	103.081°W
4,568.00	3.25	0.25	4,563.33	-112.04	-2.77	770,574.96	924,924.23	33.112°N	103.081°W
4,599.00	4.66	1.39	4,594.25	-109.90	-2.73	770,577.10	924,924.27	33.112°N	103.081°W
4,630.00	7.30	358.05	4,625.08	-106.67	-2.77	770,580.32	924,924.23	33.112°N	103.081°W



Survey Report - Geographic

Company:	Steward Energy II, LLC	Local Co-ordinate Reference:	Well Well #1
Project:	Lea County, NM (NAD 83) NM East Zone	TVD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 5000.14 Single User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,662.00	10.46	357.00	4,656.70	-101.74	-2.99	770,585.26	924,924.01	33.112°N	103.081°W
4,693.00	13.98	356.73	4,686.99	-95.19	-3.35	770,591.81	924,923.65	33.112°N	103.081°W
4,725.00	17.41	356.12	4,717.79	-86.55	-3.90	770,600.45	924,923.10	33.112°N	103.081°W
4,756.00	19.96	357.61	4,747.15	-76.64	-4.43	770,610.36	924,922.57	33.112°N	103.081°W
4,787.00	22.07	359.02	4,776.09	-65.53	-4.75	770,621.47	924,922.25	33.112°N	103.081°W
4,819.00	24.45	0.25	4,805.49	-52.89	-4.83	770,634.11	924,922.17	33.112°N	103.081°W
4,850.00	26.91	1.57	4,833.42	-39.46	-4.61	770,647.54	924,922.40	33.112°N	103.081°W
4,882.00	29.37	1.48	4,861.64	-24.37	-4.20	770,662.62	924,922.80	33.112°N	103.081°W
4,913.00	31.48	1.04	4,888.37	-8.68	-3.86	770,678.32	924,923.14	33.112°N	103.081°W
4,945.00	33.41	0.69	4,915.37	8.48	-3.60	770,695.48	924,923.40	33.112°N	103.081°W
4,977.00	35.70	0.42	4,941.73	26.63	-3.43	770,713.63	924,923.57	33.112°N	103.081°W
5,008.00	37.99	359.99	4,966.53	45.22	-3.36	770,732.22	924,923.64	33.113°N	103.081°W
5,039.00	40.54	359.37	4,990.53	64.84	-3.48	770,751.84	924,923.52	33.112°N	103.081°W
5,071.00	43.97	359.19	5,014.21	86.35	-3.75	770,773.35	924,923.25	33.113°N	103.081°W
5,102.00	45.64	359.02	5,036.21	108.19	-4.09	770,795.19	924,922.91	33.113°N	103.081°W
5,134.00	45.90	358.67	5,058.53	131.12	-4.55	770,818.11	924,922.45	33.113°N	103.081°W
5,166.00	45.99	358.84	5,080.78	154.11	-5.05	770,841.11	924,921.95	33.113°N	103.081°W
5,197.00	46.08	358.84	5,102.30	176.42	-5.50	770,863.41	924,921.50	33.113°N	103.081°W
5,228.00	46.17	358.84	5,123.79	198.76	-5.96	770,885.76	924,921.04	33.113°N	103.081°W
5,260.00	46.08	358.49	5,145.96	221.82	-6.49	770,908.82	924,920.51	33.113°N	103.081°W
5,292.00	46.08	358.93	5,168.16	244.86	-7.01	770,931.86	924,919.99	33.113°N	103.081°W
5,323.00	47.84	358.32	5,189.32	267.51	-7.56	770,954.51	924,919.44	33.113°N	103.081°W
5,355.00	51.00	359.02	5,210.13	291.81	-8.12	770,978.80	924,918.88	33.113°N	103.081°W
5,387.00	54.26	359.72	5,229.55	317.23	-8.39	771,004.23	924,918.61	33.113°N	103.081°W
5,418.00	57.16	0.07	5,247.02	342.84	-8.44	771,029.84	924,918.56	33.113°N	103.081°W
5,449.00	59.62	0.34	5,263.26	369.24	-8.34	771,056.24	924,918.66	33.113°N	103.081°W
5,481.00	62.17	0.86	5,278.83	397.20	-8.05	771,084.19	924,918.95	33.113°N	103.081°W
5,512.00	64.63	0.95	5,292.71	424.91	-7.61	771,111.91	924,919.39	33.113°N	103.081°W
5,543.00	67.62	0.60	5,305.25	453.25	-7.23	771,140.25	924,919.77	33.114°N	103.081°W
5,575.00	70.52	0.69	5,316.68	483.14	-6.89	771,170.13	924,920.11	33.114°N	103.081°W
5,607.00	73.25	1.13	5,326.63	513.54	-6.41	771,200.54	924,920.59	33.114°N	103.081°W
5,638.00	75.89	1.39	5,334.88	543.42	-5.75	771,230.41	924,921.25	33.114°N	103.081°W
5,669.00	77.82	1.57	5,341.93	573.59	-4.97	771,260.59	924,922.03	33.114°N	103.081°W
5,701.00	79.49	1.57	5,348.22	604.95	-4.11	771,291.95	924,922.89	33.114°N	103.081°W
5,732.00	81.25	1.57	5,353.41	635.50	-3.28	771,322.50	924,923.73	33.114°N	103.081°W
5,764.00	83.19	0.60	5,357.74	667.20	-2.68	771,354.20	924,924.33	33.114°N	103.081°W
5,795.00	85.47	359.81	5,360.80	698.05	-2.57	771,385.04	924,924.44	33.114°N	103.081°W
5,826.00	87.58	358.93	5,362.68	728.99	-2.91	771,415.98	924,924.09	33.114°N	103.081°W
5,858.00	88.20	359.02	5,363.86	760.96	-3.48	771,447.96	924,923.52	33.114°N	103.081°W
5,889.00	88.46	359.28	5,364.76	791.94	-3.94	771,478.94	924,923.06	33.114°N	103.081°W
5,983.00	89.96	359.90	5,366.06	885.93	-4.61	771,572.92	924,922.39	33.115°N	103.081°W
6,078.00	91.45	0.07	5,364.89	980.92	-4.64	771,667.91	924,922.37	33.115°N	103.081°W
6,172.00	90.31	359.81	5,363.45	1,074.91	-4.73	771,761.90	924,922.27	33.115°N	103.081°W
6,266.00	90.57	359.46	5,362.72	1,168.90	-5.33	771,855.90	924,921.67	33.116°N	103.081°W
6,360.00	91.01	359.11	5,361.43	1,262.88	-6.51	771,949.88	924,920.50	33.116°N	103.081°W
6,455.00	91.01	358.49	5,359.75	1,357.85	-8.49	772,044.84	924,918.51	33.116°N	103.081°W
6,551.00	89.43	358.93	5,359.38	1,453.82	-10.66	772,140.81	924,916.35	33.116°N	103.081°W
6,645.00	89.60	358.14	5,360.18	1,547.79	-13.06	772,234.78	924,913.94	33.117°N	103.081°W
6,740.00	90.66	357.79	5,359.96	1,642.72	-16.43	772,329.72	924,910.57	33.117°N	103.081°W
6,835.00	91.36	357.88	5,358.29	1,737.64	-20.02	772,424.63	924,906.98	33.117°N	103.081°W
6,930.00	91.36	358.40	5,356.04	1,832.56	-23.10	772,519.56	924,903.90	33.117°N	103.081°W
7,024.00	90.75	359.81	5,354.30	1,926.53	-24.57	772,613.53	924,902.43	33.118°N	103.081°W
7,118.00	91.28	359.37	5,352.64	2,020.52	-25.24	772,707.51	924,901.76	33.118°N	103.081°W
7,212.00	90.66	0.60	5,351.05	2,114.50	-25.27	772,801.49	924,901.73	33.118°N	103.081°W
7,307.00	89.43	359.90	5,350.97	2,209.50	-24.85	772,896.49	924,902.15	33.118°N	103.081°W



Survey Report - Geographic

Company:	Steward Energy II, LLC	Local Co-ordinate Reference:	Well Well #1
Project:	Lea County, NM (NAD 83) NM East Zone	TVD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 5000.14 Single User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
7,402.00	90.57	359.63	5,350.97	2,304.49	-25.24	772,991.49	924,901.76	33.119°N	103.081°W
7,497.00	89.43	0.07	5,350.97	2,399.49	-25.49	773,086.48	924,901.51	33.119°N	103.081°W
7,515.00	89.43	0.51	5,351.15	2,417.49	-25.40	773,104.48	924,901.60	33.119°N	103.081°W
7,609.00	89.43	0.95	5,352.09	2,511.48	-24.20	773,198.47	924,902.80	33.119°N	103.081°W
7,703.00	89.87	1.22	5,352.66	2,605.46	-22.42	773,292.45	924,904.58	33.119°N	103.081°W
7,797.00	90.04	1.83	5,352.74	2,699.43	-19.92	773,386.42	924,907.08	33.120°N	103.081°W
7,889.00	88.90	1.92	5,353.59	2,791.37	-16.91	773,478.36	924,910.09	33.120°N	103.081°W
7,980.00	88.46	1.30	5,355.68	2,882.31	-14.36	773,569.30	924,912.65	33.120°N	103.081°W
8,072.00	90.22	1.66	5,356.74	2,974.27	-11.98	773,661.26	924,915.02	33.120°N	103.080°W
8,164.00	90.48	1.30	5,356.18	3,066.24	-9.60	773,753.23	924,917.40	33.121°N	103.080°W
8,256.00	90.13	0.69	5,355.69	3,158.22	-8.01	773,845.21	924,918.99	33.121°N	103.080°W
8,348.00	89.96	359.90	5,355.62	3,250.22	-7.53	773,937.21	924,919.47	33.121°N	103.080°W
8,440.00	91.01	0.16	5,354.84	3,342.21	-7.48	774,029.20	924,919.52	33.121°N	103.080°W
8,532.00	91.54	0.25	5,352.79	3,434.19	-7.15	774,121.18	924,919.85	33.122°N	103.080°W
8,624.00	89.96	0.42	5,351.59	3,526.18	-6.62	774,213.17	924,920.38	33.122°N	103.080°W
8,715.00	90.40	359.55	5,351.30	3,617.18	-6.64	774,304.17	924,920.36	33.122°N	103.080°W
8,810.00	90.75	0.51	5,350.35	3,712.17	-6.59	774,399.16	924,920.41	33.123°N	103.080°W
8,904.00	89.87	359.81	5,349.84	3,806.17	-6.33	774,493.16	924,920.67	33.123°N	103.080°W
8,999.00	90.84	359.99	5,349.25	3,901.16	-6.49	774,588.15	924,920.51	33.123°N	103.080°W
9,093.00	91.89	0.25	5,347.01	3,995.14	-6.30	774,682.13	924,920.70	33.123°N	103.080°W
9,186.00	91.89	0.42	5,343.95	4,088.08	-5.75	774,775.07	924,921.25	33.124°N	103.080°W
9,280.00	91.19	359.99	5,341.42	4,182.05	-5.42	774,869.04	924,921.58	33.124°N	103.080°W
9,374.00	89.78	1.13	5,340.62	4,276.04	-4.50	774,963.03	924,922.50	33.124°N	103.080°W
9,468.00	89.16	1.13	5,341.49	4,370.01	-2.65	775,057.00	924,924.36	33.124°N	103.080°W
9,562.00	91.01	0.34	5,341.35	4,464.00	-1.44	775,150.99	924,925.56	33.125°N	103.080°W
9,657.00	91.01	0.95	5,339.68	4,558.98	-0.37	775,245.97	924,926.63	33.125°N	103.080°W
9,751.00	90.48	1.48	5,338.46	4,652.95	1.62	775,339.94	924,928.62	33.125°N	103.080°W
9,845.00	90.57	1.30	5,337.60	4,746.92	3.90	775,433.91	924,930.90	33.125°N	103.080°W
9,939.00	90.40	359.72	5,336.80	4,840.91	4.74	775,527.90	924,931.74	33.126°N	103.080°W
10,031.00	91.01	0.51	5,335.67	4,932.90	4.92	775,619.89	924,931.92	33.126°N	103.080°W
10,059.00	90.64	0.14	5,335.26	4,960.90	5.08	775,647.88	924,932.08	33.126°N	103.080°W
10059°MD: Hardline Crossing									
10,125.00	89.78	359.28	5,335.02	5,026.89	4.75	775,713.88	924,931.75	33.126°N	103.080°W
10,159.00	89.75	358.80	5,335.16	5,060.89	4.18	775,747.88	924,931.18	33.126°N	103.080°W
10159°MD: Lease Line Crossing									
10,219.00	89.69	357.96	5,335.46	5,120.86	2.49	775,807.85	924,929.49	33.126°N	103.080°W
10,314.00	91.19	358.76	5,334.73	5,215.82	-0.23	775,902.81	924,926.77	33.127°N	103.080°W
10,408.00	91.71	358.93	5,332.35	5,309.77	-2.13	775,996.76	924,924.88	33.127°N	103.080°W
10,502.00	90.75	358.32	5,330.33	5,403.72	-4.38	776,090.71	924,922.62	33.127°N	103.080°W
10,596.00	90.40	358.76	5,329.39	5,497.68	-6.78	776,184.67	924,920.23	33.127°N	103.080°W
10,690.00	90.84	358.14	5,328.37	5,591.64	-9.32	776,278.63	924,917.68	33.128°N	103.080°W
10,784.00	91.10	359.02	5,326.78	5,685.60	-11.65	776,372.59	924,915.35	33.128°N	103.080°W
10,878.00	89.08	357.88	5,326.63	5,779.56	-14.19	776,466.54	924,912.81	33.128°N	103.080°W
10,973.00	89.52	358.32	5,327.79	5,874.50	-17.34	776,561.48	924,909.66	33.128°N	103.080°W
11,067.00	90.66	358.14	5,327.64	5,968.45	-20.24	776,655.44	924,906.76	33.129°N	103.080°W
11,161.00	90.92	358.76	5,326.35	6,062.41	-22.78	776,749.39	924,904.22	33.129°N	103.080°W
11,254.00	90.48	359.19	5,325.21	6,155.39	-24.45	776,842.37	924,902.55	33.129°N	103.080°W
11,347.00	91.19	359.28	5,323.86	6,248.37	-25.69	776,935.35	924,901.31	33.129°N	103.080°W
11,440.00	91.71	358.58	5,321.50	6,341.32	-27.43	777,028.30	924,899.58	33.130°N	103.080°W
11,534.00	90.75	359.02	5,319.48	6,435.28	-29.39	777,122.26	924,897.61	33.130°N	103.080°W
11,628.00	90.04	359.81	5,318.84	6,529.27	-30.35	777,216.25	924,896.65	33.130°N	103.080°W
11,723.00	90.04	359.46	5,318.77	6,624.27	-30.96	777,311.25	924,896.04	33.131°N	103.080°W
11,817.00	89.52	359.81	5,319.13	6,718.26	-31.56	777,405.25	924,895.44	33.131°N	103.080°W
11,911.00	89.34	0.07	5,320.07	6,812.26	-31.66	777,499.24	924,895.35	33.131°N	103.080°W
12,005.00	90.84	0.16	5,319.92	6,906.26	-31.47	777,593.24	924,895.53	33.131°N	103.080°W



Survey Report - Geographic

Company:	Steward Energy II, LLC	Local Co-ordinate Reference:	Well Well #1
Project:	Lea County, NM (NAD 83) NM East Zone	TVD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 5000.14 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
12,099.00	90.92	0.86	5,318.47	7,000.24	-30.63	777,687.22	924,896.37	33.132°N	103.080°W
12,193.00	90.66	0.42	5,317.18	7,094.22	-29.58	777,781.21	924,897.42	33.132°N	103.080°W
12,287.00	90.48	0.60	5,316.24	7,188.22	-28.74	777,875.20	924,898.26	33.132°N	103.080°W
12,381.00	90.48	1.22	5,315.46	7,282.20	-27.25	777,969.18	924,899.75	33.132°N	103.080°W
12,461.00	90.18	1.52	5,314.99	7,362.18	-25.34	778,049.16	924,901.66	33.133°N	103.080°W
12461'MD: North Hardline Crossing (Drilling Unit)									
12,475.00	90.13	1.57	5,314.96	7,376.17	-24.96	778,063.15	924,902.04	33.133°N	103.080°W
12475'MD: Survey Depth									
12,515.00	90.13	1.57	5,314.86	7,416.16	-23.87	778,103.14	924,903.13	33.133°N	103.080°W
12515'MD: Projection to Total Depth - Bottom Hole: 275' FNL - 1309' FEL									

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,263.00	4,258.60	-120.92	-1.82	4263'MD: Tie into Pilot Hole Surveys
4,284.00	4,279.59	-121.57	-1.88	4284'MD: Begin DrilTech MWD
10,059.00	5,335.26	4,960.90	5.08	10059'MD: Hardline Crossing
10,159.00	5,335.16	5,060.89	4.18	10159'MD: Lease Line Crossing
12,461.00	5,314.99	7,362.18	-25.34	12461'MD: North Hardline Crossing (Drilling Unit)
12,475.00	5,314.96	7,376.17	-24.96	12475'MD: Survey Depth
12,515.00	5,314.86	7,416.16	-23.87	12515'MD: Projection to Total Depth
12,515.00	5,314.86	7,416.16	-23.87	Bottom Hole: 275' FNL - 1309' FEL

Checked By: _____	Approved By: _____	Date: _____
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Steward Energy II, LLC

Lea County, NM (NAD 83) NM East Zone

Pollos Hermanos 2H

Well #1

Pilot Hole

Design: Pilot Hole

Standard Survey Report

10 December, 2017



Survey Report

Company:	Steward Energy II, LLC	Local Co-ordinate Reference:	Well Well #1
Project:	Lea County, NM (NAD 83) NM East Zone	TVD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Pilot Hole	Survey Calculation Method:	Minimum Curvature
Design:	Pilot Hole	Database:	EDM 5000.14 Single User Db

Project	Lea County, NM (NAD 83) NM East Zone		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site		Pollos Hermanos 2H			
Site Position:		Northing:	770,687.00 usft	Latitude:	33.112°N
From:	Map	Easting:	924,927.00 usft	Longitude:	103.081°W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.68 °

Well	Well #1					
Well Position	+N/-S	0.00 ft	Northing:	770,687.00 usf	Latitude:	33.112°N
	+E/-W	0.00 ft	Easting:	924,927.00 usf	Longitude:	103.081°W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,753.00 ft

Wellbore	Pilot Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/8/2017	6.74	60.94	48,471.43238704

Design	Pilot Hole				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	243.33	

Survey Program	Date	12/10/2017			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
84.25	2,391.21	VES Gyro (Pilot Hole)	CB_Film_GMS	Camera Based Film Gyro Multi-Shot	
2,474.00	5,250.00	MWD (Pilot Hole)	MWD	MWD - Standard	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	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	
84.25	0.18	228.79	84.25	-0.09	-0.10	0.13	0.21	0.21	0.00	
84.25' MD: Begin VES Gyro										
178.29	0.36	324.45	178.29	0.06	-0.38	0.32	0.44	0.19	101.72	
272.33	0.36	300.95	272.33	0.45	-0.81	0.52	0.16	0.00	-24.99	
366.37	0.31	233.21	366.37	0.45	-1.26	0.93	0.40	-0.05	-72.03	
460.41	0.19	231.58	460.41	0.20	-1.59	1.33	0.13	-0.13	-1.73	
554.45	0.21	221.47	554.44	-0.03	-1.83	1.64	0.04	0.02	-10.75	
648.49	0.22	208.62	648.48	-0.32	-2.03	1.95	0.05	0.01	-13.66	
742.53	0.24	209.25	742.52	-0.65	-2.21	2.26	0.02	0.02	0.67	



Survey Report

Company:	Steward Energy II, LLC	Local Co-ordinate Reference:	Well Well #1
Project:	Lea County, NM (NAD 83) NM East Zone	TVD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Pilot Hole	Survey Calculation Method:	Minimum Curvature
Design:	Pilot Hole	Database:	EDM 5000.14 Single User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
836.57	0.25	215.14	836.56	-0.99	-2.42	2.61	0.03	0.01	6.26
930.61	0.34	223.79	930.60	-1.35	-2.74	3.05	0.11	0.10	9.20
1,024.65	0.39	232.35	1,024.64	-1.75	-3.18	3.63	0.08	0.05	9.10
1,118.69	0.22	156.79	1,118.68	-2.11	-3.36	3.95	0.42	-0.18	-80.35
1,212.73	0.24	167.09	1,212.72	-2.47	-3.25	4.01	0.05	0.02	10.95
1,306.77	0.50	162.10	1,306.76	-3.05	-3.08	4.12	0.28	0.28	-5.31
1,400.81	0.72	173.27	1,400.79	-4.03	-2.88	4.39	0.26	0.23	11.88
1,494.85	0.48	195.10	1,494.82	-5.00	-2.92	4.85	0.35	-0.26	23.21
1,588.89	0.28	218.59	1,588.86	-5.56	-3.16	5.32	0.27	-0.21	24.98
1,682.93	0.38	241.49	1,682.90	-5.89	-3.58	5.84	0.17	0.11	24.35
1,776.97	0.41	248.41	1,776.94	-6.16	-4.17	6.49	0.06	0.03	7.36
1,871.01	0.61	258.62	1,870.98	-6.38	-4.97	7.31	0.23	0.21	10.86
1,965.05	1.00	273.92	1,965.01	-6.42	-6.28	8.50	0.47	0.41	16.27
2,059.09	0.91	271.64	2,059.03	-6.35	-7.85	9.86	0.10	-0.10	-2.42
2,153.13	0.89	266.06	2,153.06	-6.37	-9.32	11.19	0.10	-0.02	-5.93
2,247.17	0.90	277.44	2,247.09	-6.33	-10.78	12.48	0.19	0.01	12.10
2,341.21	0.48	272.32	2,341.12	-6.22	-11.91	13.43	0.45	-0.45	-5.44
2,391.21	0.32	295.43	2,391.12	-6.15	-12.24	13.70	0.45	-0.32	46.22
2391'MD: Final Gyro Survey - 2391'MD tie into VES Gyro									
2,474.00	0.70	296.09	2,473.91	-5.83	-12.91	14.15	0.46	0.46	0.80
2474'MD: Begin Driltech MWD									
2,569.00	0.70	193.78	2,568.90	-6.14	-13.57	14.88	1.15	0.00	-107.69
2,663.00	1.23	181.92	2,662.89	-7.70	-13.74	15.73	0.60	0.56	-12.62
2,757.00	2.55	178.84	2,756.84	-10.80	-13.73	17.12	1.41	1.40	-3.28
2,852.00	3.78	179.46	2,851.69	-16.05	-13.66	19.40	1.30	1.29	0.65
2,946.00	4.40	172.25	2,945.45	-22.72	-13.14	21.94	0.86	0.66	-7.67
3,039.00	3.96	168.56	3,038.20	-29.40	-12.02	23.94	0.55	-0.47	-3.97
3,134.00	4.92	166.10	3,132.92	-36.57	-10.39	25.70	1.03	1.01	-2.59
3,228.00	5.19	167.33	3,226.55	-44.63	-8.49	27.62	0.31	0.29	1.31
3,322.00	5.10	172.25	3,320.17	-52.92	-7.00	30.00	0.48	-0.10	5.23
3,415.00	4.92	171.02	3,412.82	-60.95	-5.82	32.56	0.23	-0.19	-1.32
3,509.00	4.48	171.28	3,506.50	-68.56	-4.63	34.91	0.47	-0.47	0.28
3,604.00	4.40	174.01	3,601.22	-75.86	-3.69	37.34	0.24	-0.08	2.87
3,699.00	4.48	174.98	3,695.93	-83.18	-2.98	40.00	0.12	0.08	1.02
3,793.00	4.48	176.38	3,789.64	-90.50	-2.43	42.79	0.12	0.00	1.49
3,885.00	4.40	178.32	3,881.37	-97.61	-2.10	45.69	0.18	-0.09	2.11
3,981.00	4.48	180.86	3,977.08	-105.04	-2.05	48.98	0.22	0.08	2.65
4,075.00	3.78	181.13	4,070.84	-111.81	-2.16	52.12	0.74	-0.74	0.29
4,169.00	2.81	173.48	4,164.68	-117.20	-1.96	54.36	1.13	-1.03	-8.14
4,263.00	1.76	184.73	4,258.60	-120.92	-1.82	55.90	1.21	-1.12	11.97
4,357.00	1.14	177.26	4,352.57	-123.30	-1.89	57.03	0.69	-0.66	-7.95
4,451.00	0.26	299.69	4,446.57	-124.13	-2.03	57.53	1.38	-0.94	130.24
4,545.00	0.44	286.51	4,540.57	-123.92	-2.57	57.91	0.21	0.19	-14.02



Survey Report

Company:	Steward Energy II, LLC	Local Co-ordinate Reference:	Well Well #1
Project:	Lea County, NM (NAD 83) NM East Zone	TVD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Pilot Hole	Survey Calculation Method:	Minimum Curvature
Design:	Pilot Hole	Database:	EDM 5000.14 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,640.00	0.26	187.19	4,635.57	-124.03	-2.94	58.30	0.57	-0.19	-104.55
4,733.00	0.26	204.24	4,728.56	-124.43	-3.06	58.58	0.08	0.00	18.33
4,827.00	0.44	313.14	4,822.56	-124.38	-3.41	58.87	0.62	0.19	115.85
4,922.00	0.44	264.27	4,917.56	-124.16	-4.04	59.34	0.38	0.00	-51.44
5,017.00	0.44	270.07	5,012.56	-124.20	-4.76	60.00	0.05	0.00	6.11
5,111.00	0.26	250.91	5,106.56	-124.27	-5.33	60.54	0.23	-0.19	-20.38
5,187.00	0.53	345.40	5,182.55	-123.98	-5.58	60.63	0.80	0.36	124.33
5,250.00	0.53	345.40	5,245.55	-123.42	-5.72	60.51	0.00	0.00	0.00
5250'MD: Survey Depth									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
84.25	84.25	-0.09	-0.10	84.25'MD: Begin VES Gyro
2,391.21	2,391.12	-6.15	-12.24	2391'MD: Final Gyro Survey
2,391.21	2,391.12	-6.15	-12.24	2391'MD tie into VES Gyro
2,474.00	2,473.91	-5.83	-12.91	2474'MD: Begin Driltech MWD
5,250.00	5,245.55	-123.42	-5.72	5250'MD: Survey Depth

Checked By: _____ Approved By: _____ Date: _____



Steward Energy II, LLC

Lea County, NM (NAD 83) NM East Zone

Pollos Hermanos 2H

Well #1

Pilot Hole

Design: Pilot Hole

Survey Report - Geographic

10 December, 2017



Survey Report - Geographic

Company:	Steward Energy II, LLC	Local Co-ordinate Reference:	Well Well #1
Project:	Lea County, NM (NAD 83) NM East Zone	TVD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Pilot Hole	Survey Calculation Method:	Minimum Curvature
Design:	Pilot Hole	Database:	EDM 5000.14 Single User Db

Project	Lea County, NM (NAD 83) NM East Zone		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Pollos Hermanos 2H				
Site Position:		Northing:	770,687.00 usft	Latitude:	33.112°N
From:	Map	Easting:	924,927.00 usft	Longitude:	103.081°W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.68 °

Well	Well #1					
Well Position	+N/-S	0.00 ft	Northing:	770,687.00 usft	Latitude:	33.112°N
	+E/-W	0.00 ft	Easting:	924,927.00 usft	Longitude:	103.081°W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,753.00 ft

Wellbore	Pilot Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/8/2017	6.74	60.94	48,471.43238704

Design	Pilot Hole				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	243.33	

Survey Program	Date	12/10/2017			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
84.25	2,391.21	VES Gyro (Pilot Hole)	CB_Film_GMS	Camera Based Film Gyro Multi-Shot	
2,474.00	5,250.00	MWD (Pilot Hole)	MWD	MWD - Standard	

Survey											
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude		
0.00	0.00	0.00	0.00	0.00	0.00	770,687.00	924,927.00	33.112°N	103.081°W		
84.25	0.18	228.79	84.25	-0.09	-0.10	770,686.91	924,926.90	33.112°N	103.081°W		
84.25'MD: Begin VES Gyro											
178.29	0.36	324.45	178.29	0.06	-0.38	770,687.05	924,926.62	33.112°N	103.081°W		
272.33	0.36	300.95	272.33	0.45	-0.81	770,687.45	924,926.19	33.112°N	103.081°W		
366.37	0.31	233.21	366.37	0.45	-1.26	770,687.44	924,925.74	33.112°N	103.081°W		
460.41	0.19	231.58	460.41	0.20	-1.59	770,687.20	924,925.41	33.112°N	103.081°W		
554.45	0.21	221.47	554.44	-0.03	-1.83	770,686.97	924,925.17	33.112°N	103.081°W		
648.49	0.22	208.62	648.48	-0.32	-2.03	770,686.68	924,924.97	33.112°N	103.081°W		
742.53	0.24	209.25	742.52	-0.65	-2.21	770,686.35	924,924.79	33.112°N	103.081°W		
836.57	0.25	215.14	836.56	-0.99	-2.42	770,686.01	924,924.58	33.112°N	103.081°W		



Survey Report - Geographic

Company:	Steward Energy II, LLC	Local Co-ordinate Reference:	Well Well #1
Project:	Lea County, NM (NAD 83) NM East Zone	TVD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Pilot Hole	Survey Calculation Method:	Minimum Curvature
Design:	Pilot Hole	Database:	EDM 5000.14 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
930.61	0.34	223.79	930.60	-1.35	-2.74	770,685.64	924,924.26	33.112°N	103.081°W
1,024.65	0.39	232.35	1,024.64	-1.75	-3.18	770,685.25	924,923.82	33.112°N	103.081°W
1,118.69	0.22	156.79	1,118.68	-2.11	-3.36	770,684.88	924,923.64	33.112°N	103.081°W
1,212.73	0.24	167.09	1,212.72	-2.47	-3.25	770,684.53	924,923.75	33.112°N	103.081°W
1,306.77	0.50	162.10	1,306.76	-3.05	-3.08	770,683.94	924,923.92	33.112°N	103.081°W
1,400.81	0.72	173.27	1,400.79	-4.03	-2.88	770,682.97	924,924.12	33.112°N	103.081°W
1,494.85	0.48	195.10	1,494.82	-5.00	-2.92	770,682.00	924,924.08	33.112°N	103.081°W
1,588.89	0.28	218.59	1,588.86	-5.56	-3.16	770,681.44	924,923.84	33.112°N	103.081°W
1,682.93	0.38	241.49	1,682.90	-5.89	-3.58	770,681.11	924,923.42	33.112°N	103.081°W
1,776.97	0.41	248.41	1,776.94	-6.16	-4.17	770,680.84	924,922.83	33.112°N	103.081°W
1,871.01	0.61	258.62	1,870.98	-6.38	-4.97	770,680.62	924,922.03	33.112°N	103.081°W
1,965.05	1.00	273.92	1,965.01	-6.42	-6.28	770,680.57	924,920.72	33.112°N	103.081°W
2,059.09	0.91	271.64	2,059.03	-6.35	-7.85	770,680.65	924,919.16	33.112°N	103.081°W
2,153.13	0.89	266.06	2,153.06	-6.37	-9.32	770,680.62	924,917.68	33.112°N	103.081°W
2,247.17	0.90	277.44	2,247.09	-6.33	-10.78	770,680.67	924,916.22	33.112°N	103.081°W
2,341.21	0.48	272.32	2,341.12	-6.22	-11.91	770,680.78	924,915.09	33.112°N	103.081°W
2,391.21	0.32	295.43	2,391.12	-6.15	-12.24	770,680.85	924,914.76	33.112°N	103.081°W
2391'MD: Final Gyro Survey - 2391'MD tie into VES Gyro									
2,474.00	0.70	296.09	2,473.91	-5.83	-12.91	770,681.17	924,914.09	33.112°N	103.081°W
2474'MD: Begin Driltech MWD									
2,569.00	0.70	193.78	2,568.90	-6.14	-13.57	770,680.86	924,913.44	33.112°N	103.081°W
2,663.00	1.23	181.92	2,662.89	-7.70	-13.74	770,679.30	924,913.26	33.112°N	103.081°W
2,757.00	2.55	178.84	2,756.84	-10.80	-13.73	770,676.20	924,913.27	33.112°N	103.081°W
2,852.00	3.78	179.46	2,851.69	-16.05	-13.66	770,670.95	924,913.35	33.112°N	103.081°W
2,946.00	4.40	172.25	2,945.45	-22.72	-13.14	770,664.28	924,913.86	33.112°N	103.081°W
3,039.00	3.96	168.56	3,038.20	-29.40	-12.02	770,657.60	924,914.98	33.112°N	103.081°W
3,134.00	4.92	166.10	3,132.92	-36.57	-10.39	770,650.43	924,916.61	33.112°N	103.081°W
3,228.00	5.19	167.33	3,226.55	-44.63	-8.49	770,642.37	924,918.51	33.112°N	103.081°W
3,322.00	5.10	172.25	3,320.17	-52.92	-7.00	770,634.08	924,920.01	33.112°N	103.081°W
3,415.00	4.92	171.02	3,412.82	-60.95	-5.82	770,626.04	924,921.19	33.112°N	103.081°W
3,509.00	4.48	171.28	3,506.50	-68.56	-4.63	770,618.43	924,922.37	33.112°N	103.081°W
3,604.00	4.40	174.01	3,601.22	-75.86	-3.69	770,611.14	924,923.31	33.112°N	103.081°W
3,699.00	4.48	174.98	3,695.93	-83.18	-2.98	770,603.82	924,924.02	33.112°N	103.081°W
3,793.00	4.48	176.38	3,789.64	-90.50	-2.43	770,596.50	924,924.57	33.112°N	103.081°W
3,885.00	4.40	178.32	3,881.37	-97.61	-2.10	770,589.39	924,924.90	33.112°N	103.081°W
3,981.00	4.48	180.86	3,977.08	-105.04	-2.05	770,581.96	924,924.95	33.112°N	103.081°W
4,075.00	3.78	181.13	4,070.84	-111.81	-2.16	770,575.19	924,924.84	33.112°N	103.081°W
4,169.00	2.81	173.48	4,164.68	-117.20	-1.96	770,569.80	924,925.04	33.112°N	103.081°W
4,263.00	1.76	184.73	4,258.60	-120.92	-1.82	770,566.07	924,925.18	33.112°N	103.081°W
4,357.00	1.14	177.26	4,352.57	-123.30	-1.89	770,563.70	924,925.11	33.112°N	103.081°W
4,451.00	0.26	299.69	4,446.57	-124.13	-2.03	770,562.87	924,924.97	33.112°N	103.081°W
4,545.00	0.44	286.51	4,540.57	-123.92	-2.57	770,563.08	924,924.43	33.112°N	103.081°W
4,640.00	0.26	187.19	4,635.57	-124.03	-2.94	770,562.97	924,924.06	33.112°N	103.081°W
4,733.00	0.26	204.24	4,728.56	-124.43	-3.06	770,562.57	924,923.94	33.112°N	103.081°W
4,827.00	0.44	313.14	4,822.56	-124.38	-3.41	770,562.62	924,923.59	33.112°N	103.081°W
4,922.00	0.44	264.27	4,917.56	-124.16	-4.04	770,562.83	924,922.96	33.112°N	103.081°W
5,017.00	0.44	270.07	5,012.56	-124.20	-4.76	770,562.80	924,922.24	33.112°N	103.081°W
5,111.00	0.26	250.91	5,106.56	-124.27	-5.33	770,562.73	924,921.67	33.112°N	103.081°W
5,187.00	0.53	345.40	5,182.55	-123.98	-5.58	770,563.01	924,921.42	33.112°N	103.081°W
5,250.00	0.53	345.40	5,245.55	-123.42	-5.72	770,563.58	924,921.28	33.112°N	103.081°W
5250'MD: Survey Depth									



Survey Report - Geographic

Company:	Steward Energy II, LLC	Local Co-ordinate Reference:	Well Well #1
Project:	Lea County, NM (NAD 83) NM East Zone	TVD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Site:	Pollos Hermanos 2H	MD Reference:	GL 3753 + 13' RKB @ 3766.00ft
Well:	Well #1	North Reference:	Grid
Wellbore:	Pilot Hole	Survey Calculation Method:	Minimum Curvature
Design:	Pilot Hole	Database:	EDM 5000.14 Single User Db

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
84.25	84.25	-0.09	-0.10	84.25'MD: Begin VES Gyro
2,391.21	2,391.12	-6.15	-12.24	2391'MD: Final Gyro Survey
2,391.21	2,391.12	-6.15	-12.24	2391'MD tie into VES Gyro
2,474.00	2,473.91	-5.83	-12.91	2474'MD: Begin Driltech MWD
5,250.00	5,245.55	-123.42	-5.72	5250'MD: Survey Depth

Checked By: _____ Approved By: _____ Date: _____