

Well Name: **Murdock 13-34D**

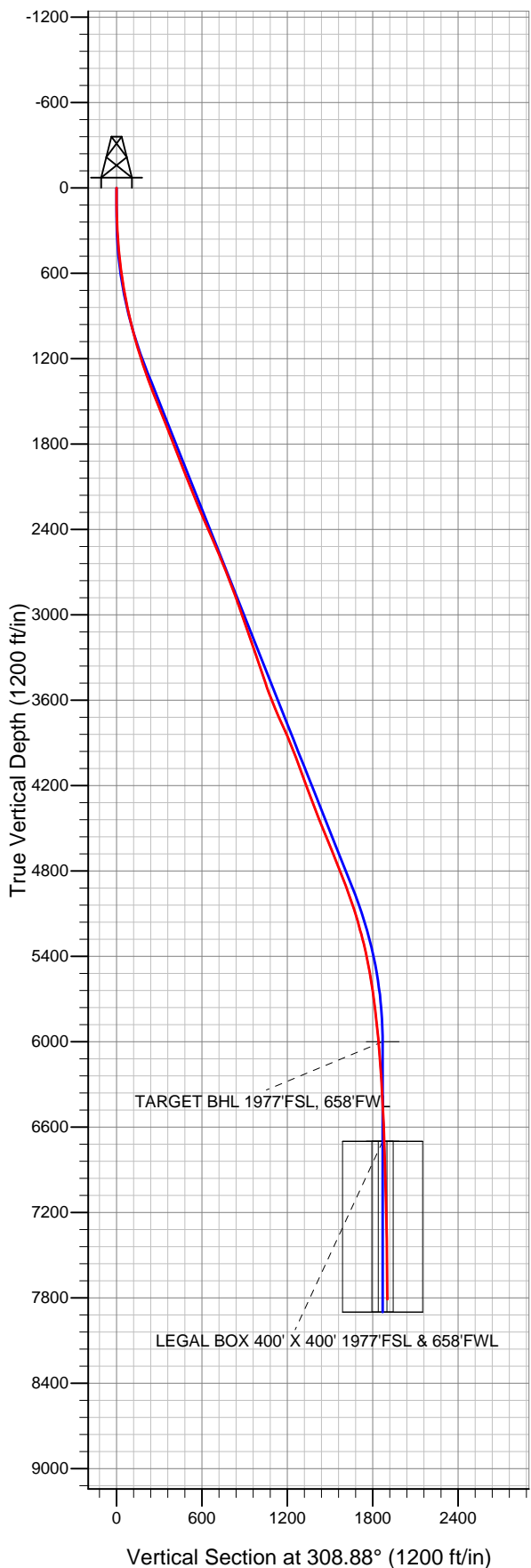
Surface Location: Murdock 34SW-BL Pad Sec.34-T5N-R68W
North American Datum 1983 US State Plane 1983 Colorado Northern Zone

Ground Elevation: 5057.0

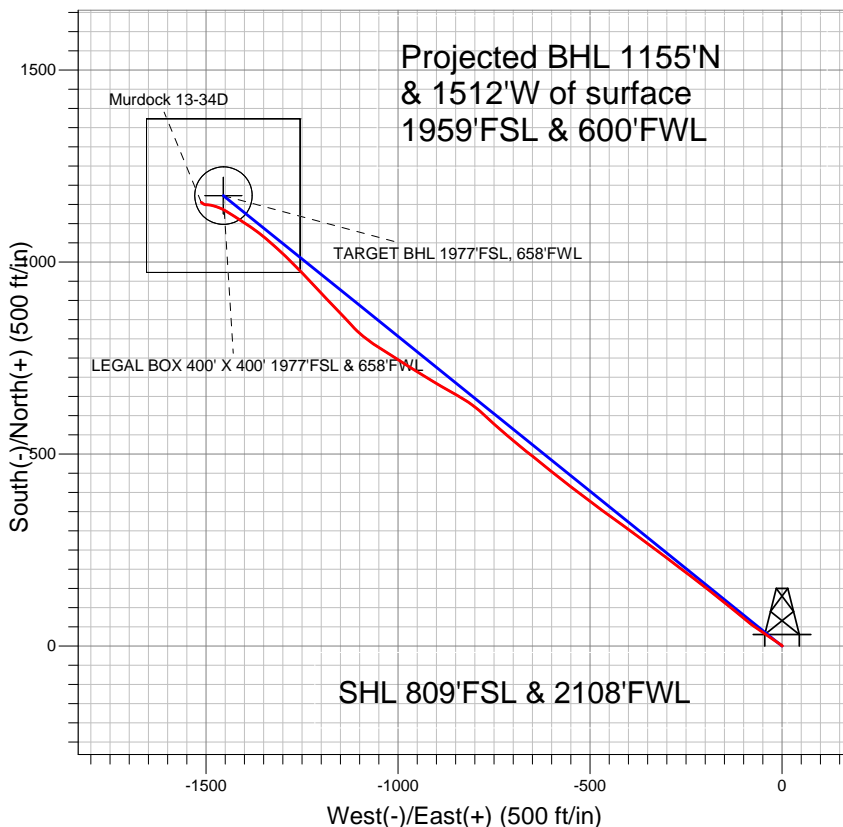
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1371271.20	3140783.95	40.351440	-104.994870

Original Well Elev WELL @ 5070.0ft (Original Well Elev)

Slot



Apollo Operating, LLC.



LEGEND

- ▲ Murdock 13-34D, Wellbore #1, Plan #1 (10-31-12) R V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
8130'MD & 7810'TVD @ 1903'VS
0.5 deg Inc 317.7 deg AZ

Project: SEC.34-T5N-68W
Site: Murdock 34SW-BL Pad Sec.34-T5N-R68W
Well: Murdock 13-34D
Plan: Wellbore #1



Directional

Apollo Operating, LLC.

SEC.34-T5N-68W

Murdock 34SW-BL Pad Sec.34-T5N-R68W

Murdock 13-34D

Wellbore #1

Survey: Survey #1

Standard Survey Report

15 November, 2012

Company:	Apollo Operating, LLC.	Local Co-ordinate Reference:	Well Murdock 13-34D
Project:	SEC.34-T5N-68W	TVD Reference:	WELL @ 5070.0ft (Original Well Elev)
Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	MD Reference:	WELL @ 5070.0ft (Original Well Elev)
Well:	Murdock 13-34D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.34-T5N-68W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Murdock 34SW-BL Pad Sec.34-T5N-R68W		
Site Position:		Northing:	1,371,227.26ft
From:	Lat/Long	Easting:	3,140,742.39ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.351320
		Longitude:	-104.995020
		Grid Convergence:	0.33 °

Well	Murdock 13-34D		
Well Position	+N/-S	0.0 ft	Northing: 1,371,271.20 ft
	+E/-W	0.0 ft	Easting: 3,140,783.95 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	40.351440
		Longitude:	-104.994870
		Ground Level:	5,057.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/31/2012	8.80	66.93	52,934

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	308.88	

Survey Program	Date	11/15/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
109.0	8,130.0	Survey #1 (Wellbore #1)	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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
109.0	0.50	27.10	109.0	0.4	0.2	0.1	0.46	0.46	0.00	
227.0	1.70	309.30	227.0	2.0	-0.9	2.0	1.41	1.02	-65.93	
319.0	3.50	301.70	318.9	4.3	-4.3	6.1	1.99	1.96	-8.26	
446.0	5.60	303.80	445.5	9.8	-12.8	16.1	1.66	1.65	1.65	
566.0	8.10	305.70	564.6	18.0	-24.5	30.4	2.09	2.08	1.58	
648.0	8.10	304.50	645.8	24.7	-34.0	41.9	0.21	0.00	-1.46	
776.0	10.00	304.20	772.2	36.0	-50.6	62.0	1.48	1.48	-0.23	
904.0	13.30	305.00	897.5	50.7	-71.9	87.8	2.58	2.58	0.63	
1,032.0	15.50	309.60	1,021.5	70.1	-97.1	119.6	1.94	1.72	3.59	
1,161.0	16.60	309.10	1,145.5	92.7	-124.7	155.2	0.86	0.85	-0.39	
1,289.0	18.80	309.10	1,267.4	117.2	-154.9	194.1	1.72	1.72	0.00	
1,417.0	20.80	307.90	1,387.8	144.2	-188.8	237.5	1.59	1.56	-0.94	

Company:	Apollo Operating, LLC.	Local Co-ordinate Reference:	Well Murdock 13-34D
Project:	SEC.34-T5N-68W	TVD Reference:	WELL @ 5070.0ft (Original Well Elev)
Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	MD Reference:	WELL @ 5070.0ft (Original Well Elev)
Well:	Murdock 13-34D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
1,545.0	21.90	307.70	1,507.1	172.7	-225.7	284.1	0.86	0.86	-0.16
1,674.0	21.50	306.80	1,626.9	201.6	-263.6	331.8	0.40	-0.31	-0.70
1,802.0	21.40	307.30	1,746.0	229.8	-301.0	378.5	0.16	-0.08	0.39
1,930.0	21.70	306.40	1,865.1	258.0	-338.6	425.5	0.35	0.23	-0.70
2,058.0	21.30	307.30	1,984.2	286.1	-376.1	472.4	0.41	-0.31	0.70
2,187.0	21.60	305.20	2,104.3	314.0	-414.2	519.5	0.64	0.23	-1.63
2,315.0	22.60	306.40	2,222.9	342.2	-453.2	567.6	0.86	0.78	0.94
2,443.0	23.70	306.80	2,340.5	372.2	-493.6	617.9	0.87	0.86	0.31
2,571.0	23.60	307.70	2,457.8	403.3	-534.5	669.2	0.29	-0.08	0.70
2,700.0	22.60	306.60	2,576.5	433.8	-574.8	719.8	0.84	-0.78	-0.85
2,828.0	21.70	310.70	2,695.0	463.9	-612.5	768.0	1.40	-0.70	3.20
2,956.0	20.80	308.00	2,814.3	493.4	-648.4	814.4	1.04	-0.70	-2.11
3,084.0	19.80	309.10	2,934.4	521.0	-683.1	858.8	0.84	-0.78	0.86
3,213.0	19.20	310.30	3,056.0	548.5	-716.2	901.9	0.56	-0.47	0.93
3,341.0	18.60	312.40	3,177.1	575.9	-747.4	943.3	0.71	-0.47	1.64
3,469.0	18.90	312.60	3,298.3	603.7	-777.7	984.4	0.24	0.23	0.16
3,597.0	18.30	305.60	3,419.6	629.4	-809.3	1,025.1	1.81	-0.47	-5.47
3,726.0	20.90	299.40	3,541.1	652.5	-845.8	1,068.0	2.58	2.02	-4.81
3,854.0	22.80	300.30	3,659.9	676.3	-887.1	1,115.1	1.51	1.48	0.70
3,982.0	24.40	301.50	3,777.2	702.6	-931.1	1,165.8	1.31	1.25	0.94
4,110.0	22.70	302.10	3,894.6	729.5	-974.6	1,216.6	1.34	-1.33	0.47
4,239.0	21.70	302.40	4,014.0	755.5	-1,015.8	1,265.0	0.78	-0.78	0.23
4,367.0	18.80	302.90	4,134.1	779.4	-1,053.1	1,309.0	2.27	-2.27	0.39
4,495.0	21.20	307.90	4,254.3	804.8	-1,088.7	1,352.7	2.30	1.88	3.91
4,623.0	21.20	318.50	4,373.7	836.4	-1,122.3	1,398.7	2.99	0.00	8.28
4,752.0	22.20	315.40	4,493.6	871.2	-1,154.9	1,445.9	1.18	0.78	-2.40
4,880.0	22.50	318.20	4,612.0	906.7	-1,188.2	1,494.1	0.86	0.23	2.19
5,009.0	22.60	315.90	4,731.1	942.9	-1,221.9	1,543.0	0.69	0.08	-1.78
5,137.0	21.20	314.90	4,849.9	976.9	-1,255.4	1,590.5	1.13	-1.09	-0.78
5,265.0	19.50	315.40	4,969.9	1,008.5	-1,286.8	1,634.7	1.34	-1.33	0.39
5,394.0	17.20	311.70	5,092.3	1,036.5	-1,316.1	1,675.2	2.00	-1.78	-2.87
5,522.0	15.80	310.70	5,215.0	1,060.4	-1,343.5	1,711.5	1.12	-1.09	-0.78
5,651.0	12.90	305.60	5,340.0	1,080.3	-1,368.5	1,743.4	2.45	-2.25	-3.95
5,779.0	10.90	304.70	5,465.3	1,095.5	-1,390.1	1,769.8	1.57	-1.56	-0.70
5,907.0	9.10	300.80	5,591.3	1,107.6	-1,408.7	1,791.8	1.50	-1.41	-3.05
6,036.0	7.30	304.70	5,719.0	1,117.5	-1,424.2	1,810.1	1.46	-1.40	3.02
6,164.0	6.20	301.20	5,846.1	1,125.7	-1,436.8	1,825.1	0.92	-0.86	-2.73
6,293.0	5.30	300.60	5,974.4	1,132.3	-1,447.9	1,837.9	0.70	-0.70	-0.47
6,320.7	5.10	300.15	6,002.0	1,133.6	-1,450.1	1,840.4	0.72	-0.71	-1.62
TARGET BHL 1977'FSL, 658'FWL									
6,421.0	4.40	298.20	6,102.0	1,137.6	-1,457.3	1,848.6	0.72	-0.70	-1.95
6,549.0	4.00	291.30	6,229.6	1,141.6	-1,465.8	1,857.6	0.50	-0.31	-5.39
6,678.0	3.50	290.10	6,358.4	1,144.6	-1,473.7	1,865.7	0.39	-0.39	-0.93
6,806.0	3.10	283.20	6,486.2	1,146.7	-1,480.7	1,872.5	0.44	-0.31	-5.39
6,935.0	2.70	281.00	6,615.0	1,148.1	-1,487.1	1,878.3	0.32	-0.31	-1.71
7,018.8	2.31	281.48	6,698.7	1,148.8	-1,490.7	1,881.5	0.47	-0.47	0.57
TARGET CIRCLE 1977'FSL & 658'FWL									
7,018.9	2.31	281.48	6,698.8	1,148.8	-1,490.7	1,881.5	0.00	0.00	0.00
LEGAL BOX 400' X 400' 1977'FSL & 658'FWL									
7,063.0	2.10	281.80	6,742.9	1,149.1	-1,492.4	1,883.1	0.47	-0.47	0.73
7,191.0	2.00	263.60	6,870.8	1,149.4	-1,496.9	1,886.7	0.51	-0.08	-14.22
7,320.0	1.60	280.60	6,999.7	1,149.4	-1,500.9	1,889.9	0.51	-0.31	13.18
7,448.0	1.20	288.90	7,127.7	1,150.2	-1,503.9	1,892.7	0.35	-0.31	6.48
7,577.0	1.20	293.10	7,256.7	1,151.2	-1,506.4	1,895.3	0.07	0.00	3.26

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Design:	Wellbore #1	Database:	Landmark

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7,705.0	1.00	304.90	7,384.6	1,152.3	-1,508.6	1,897.7	0.24	-0.16	9.22	
7,833.0	0.70	307.30	7,512.6	1,153.4	-1,510.1	1,899.6	0.24	-0.23	1.88	
7,962.0	0.60	309.80	7,641.6	1,154.4	-1,511.3	1,901.1	0.08	-0.08	1.94	
8,085.0	0.50	317.70	7,764.6	1,155.2	-1,512.1	1,902.2	0.10	-0.08	6.42	
8,130.0	0.50	317.70	7,809.6	1,155.5	-1,512.4	1,902.6	0.00	0.00	0.00	

Checked By: _____	Approved By: _____	Date: _____
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