

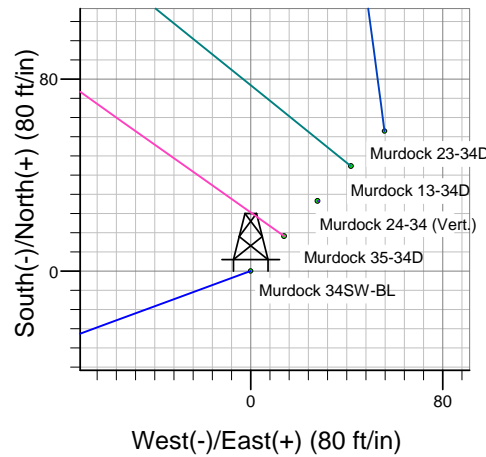
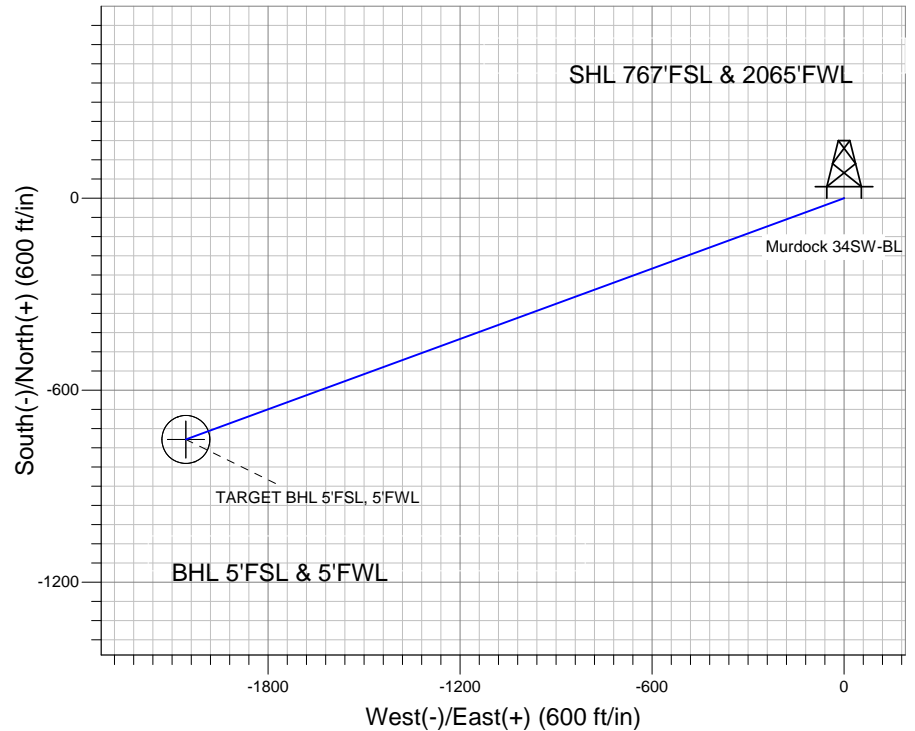
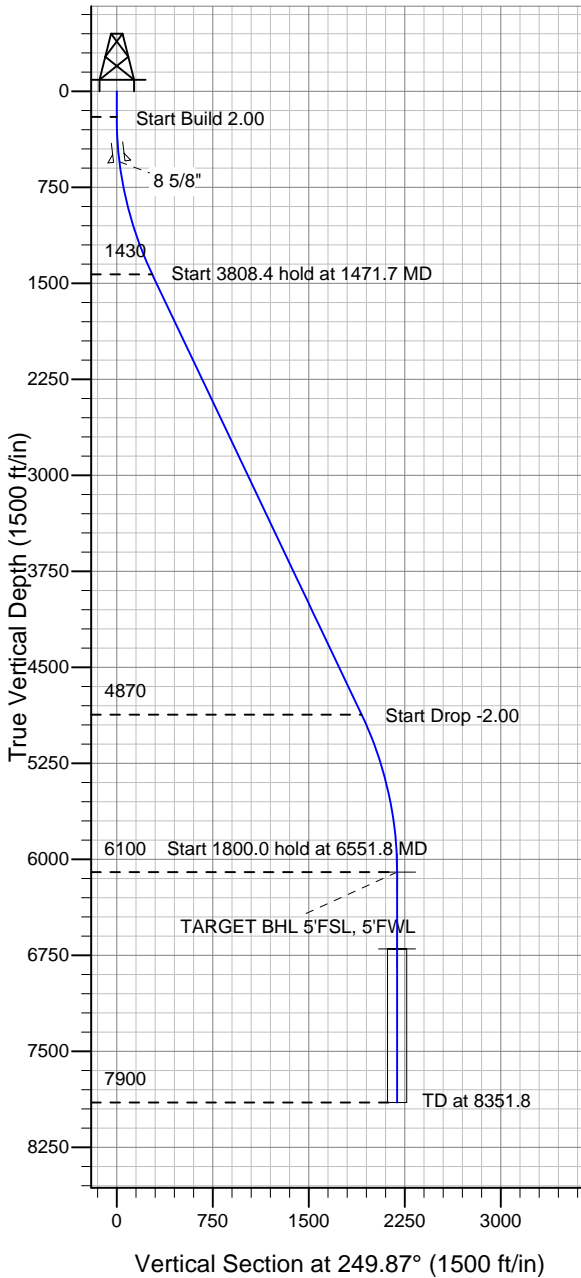
ENSIGN

Directional

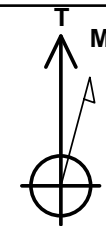
Well Name: Murdock 34SW-BL

Surface Location: Murdock 34SW-BL Pad Sec.34-T5N-R68W
 North American Datum 1983 US State Plane 1983 Colorado Northern Zone
 Ground Elevation: 5058.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1371227.25 3140742.39 40.351320 -104.995020
 Original Well Elev WELL @ 5071.0ft (Original Well Elev)

Apollo Operating, LLC.



Murdock 34SW-BL Pad Sec.34-T5N-R68W
 Murdock 34SW-BL
 Plan #1 (6-19-12)
 9:21, June 22 2012



Azimuths to True North
 Magnetic North: 8.85°

Magnetic Field
 Strength: 52971.5nT
 Dip Angle: 66.94°
 Date: 6/22/2012
 Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 5'FSL, 5'FWL	6100.0	-754.0	-2057.0	40.349250	-105.002400	Point
TARGET CIRCLE 5'FSL, 5'FWL	6700.0	-754.0	-2057.0	40.349250	-105.002400	Circle (Radius: 75.0)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	1471.7	25.43	249.87	1430.3	-95.6	-260.7	2.00	249.87	277.6	
4	5280.1	25.43	249.87	4869.7	-658.5	-1796.4	0.00	0.00	1913.2	
5	6551.8	0.00	0.00	6100.0	-754.0	-2057.0	2.00	180.00	2190.9	TARGET BHL 5'FSL, 5'FWL
6	8351.8	0.00	0.00	7900.0	-754.0	-2057.0	0.00	0.00	2190.9	



Directional

Apollo Operating, LLC.

SEC.34-T5N-68W

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

Murdock 34SW-BL

Wellbore #1

Plan: Plan #1 (6-19-12)

Standard Planning Report

22 June, 2012

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,471.7	25.43	249.87	1,430.3	-95.6	-260.7	2.00	2.00	0.00	249.87	
5,280.1	25.43	249.87	4,869.7	-658.5	-1,796.4	0.00	0.00	0.00	0.00	
6,551.8	0.00	0.00	6,100.0	-754.0	-2,057.0	2.00	-2.00	0.00	180.00	TARGET BHL 5'FS
8,351.8	0.00	0.00	7,900.0	-754.0	-2,057.0	0.00	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Murdock 34SW-BL
Company:	Apollo Operating, LLC.	TVD Reference:	WELL @ 5071.0ft (Original Well Elev)
Project:	SEC.34-T5N-68W	MD Reference:	WELL @ 5071.0ft (Original Well Elev)
Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	North Reference:	True
Well:	Murdock 34SW-BL	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-19-12)		

Planned 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
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.80	249.87	240.0	-0.1	-0.3	0.3	2.00	2.00	0.00
280.0	1.60	249.87	280.0	-0.4	-1.0	1.1	2.00	2.00	0.00
320.0	2.40	249.87	320.0	-0.9	-2.4	2.5	2.00	2.00	0.00
360.0	3.20	249.87	359.9	-1.5	-4.2	4.5	2.00	2.00	0.00
400.0	4.00	249.87	399.8	-2.4	-6.6	7.0	2.00	2.00	0.00
440.0	4.80	249.87	439.7	-3.5	-9.4	10.0	2.00	2.00	0.00
480.0	5.60	249.87	479.6	-4.7	-12.8	13.7	2.00	2.00	0.00
520.0	6.40	249.87	519.3	-6.1	-16.8	17.9	2.00	2.00	0.00
550.9	7.02	249.87	550.0	-7.4	-20.1	21.5	2.00	2.00	0.00
8 5/8"									
560.0	7.20	249.87	559.1	-7.8	-21.2	22.6	2.00	2.00	0.00
600.0	8.00	249.87	598.7	-9.6	-26.2	27.9	2.00	2.00	0.00
640.0	8.80	249.87	638.3	-11.6	-31.7	33.7	2.00	2.00	0.00
680.0	9.60	249.87	677.8	-13.8	-37.7	40.1	2.00	2.00	0.00
720.0	10.40	249.87	717.1	-16.2	-44.2	47.1	2.00	2.00	0.00
760.0	11.20	249.87	756.4	-18.8	-51.2	54.6	2.00	2.00	0.00
800.0	12.00	249.87	795.6	-21.5	-58.8	62.6	2.00	2.00	0.00
840.0	12.80	249.87	834.7	-24.5	-66.8	71.2	2.00	2.00	0.00
880.0	13.60	249.87	873.6	-27.6	-75.4	80.3	2.00	2.00	0.00
920.0	14.40	249.87	912.4	-31.0	-84.5	90.0	2.00	2.00	0.00
960.0	15.20	249.87	951.1	-34.5	-94.1	100.2	2.00	2.00	0.00
1,000.0	16.00	249.87	989.6	-38.2	-104.2	111.0	2.00	2.00	0.00
1,040.0	16.80	249.87	1,028.0	-42.1	-114.8	122.3	2.00	2.00	0.00
1,080.0	17.60	249.87	1,066.2	-46.2	-125.9	134.1	2.00	2.00	0.00
1,120.0	18.40	249.87	1,104.3	-50.4	-137.5	146.5	2.00	2.00	0.00
1,160.0	19.20	249.87	1,142.1	-54.8	-149.6	159.3	2.00	2.00	0.00
1,200.0	20.00	249.87	1,179.8	-59.5	-162.2	172.8	2.00	2.00	0.00
1,240.0	20.80	249.87	1,217.3	-64.3	-175.3	186.7	2.00	2.00	0.00
1,280.0	21.60	249.87	1,254.6	-69.2	-188.9	201.2	2.00	2.00	0.00
1,320.0	22.40	249.87	1,291.7	-74.4	-203.0	216.2	2.00	2.00	0.00
1,360.0	23.20	249.87	1,328.6	-79.7	-217.5	231.7	2.00	2.00	0.00
1,400.0	24.00	249.87	1,365.2	-85.2	-232.5	247.7	2.00	2.00	0.00
1,440.0	24.80	249.87	1,401.6	-90.9	-248.1	264.2	2.00	2.00	0.00
1,471.7	25.43	249.87	1,430.3	-95.6	-260.7	277.6	2.00	2.00	0.00
1,480.0	25.43	249.87	1,437.8	-96.8	-264.0	281.2	0.00	0.00	0.00
1,520.0	25.43	249.87	1,474.0	-102.7	-280.2	298.4	0.00	0.00	0.00
1,560.0	25.43	249.87	1,510.1	-108.6	-296.3	315.6	0.00	0.00	0.00
1,600.0	25.43	249.87	1,546.2	-114.5	-312.4	332.8	0.00	0.00	0.00
1,640.0	25.43	249.87	1,582.3	-120.4	-328.6	349.9	0.00	0.00	0.00
1,680.0	25.43	249.87	1,618.5	-126.3	-344.7	367.1	0.00	0.00	0.00
1,720.0	25.43	249.87	1,654.6	-132.3	-360.8	384.3	0.00	0.00	0.00
1,760.0	25.43	249.87	1,690.7	-138.2	-376.9	401.5	0.00	0.00	0.00
1,800.0	25.43	249.87	1,726.8	-144.1	-393.1	418.6	0.00	0.00	0.00
1,840.0	25.43	249.87	1,763.0	-150.0	-409.2	435.8	0.00	0.00	0.00
1,880.0	25.43	249.87	1,799.1	-155.9	-425.3	453.0	0.00	0.00	0.00
1,920.0	25.43	249.87	1,835.2	-161.8	-441.5	470.2	0.00	0.00	0.00
1,960.0	25.43	249.87	1,871.3	-167.7	-457.6	487.4	0.00	0.00	0.00
2,000.0	25.43	249.87	1,907.4	-173.6	-473.7	504.5	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Murdock 34SW-BL
Company:	Apollo Operating, LLC.	TVD Reference:	WELL @ 5071.0ft (Original Well Elev)
Project:	SEC.34-T5N-68W	MD Reference:	WELL @ 5071.0ft (Original Well Elev)
Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	North Reference:	True
Well:	Murdock 34SW-BL	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-19-12)		

Planned 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)
2,040.0	25.43	249.87	1,943.6	-179.6	-489.8	521.7	0.00	0.00	0.00
2,080.0	25.43	249.87	1,979.7	-185.5	-506.0	538.9	0.00	0.00	0.00
2,120.0	25.43	249.87	2,015.8	-191.4	-522.1	556.1	0.00	0.00	0.00
2,160.0	25.43	249.87	2,051.9	-197.3	-538.2	573.3	0.00	0.00	0.00
2,200.0	25.43	249.87	2,088.1	-203.2	-554.4	590.4	0.00	0.00	0.00
2,240.0	25.43	249.87	2,124.2	-209.1	-570.5	607.6	0.00	0.00	0.00
2,280.0	25.43	249.87	2,160.3	-215.0	-586.6	624.8	0.00	0.00	0.00
2,320.0	25.43	249.87	2,196.4	-220.9	-602.7	642.0	0.00	0.00	0.00
2,360.0	25.43	249.87	2,232.6	-226.9	-618.9	659.1	0.00	0.00	0.00
2,400.0	25.43	249.87	2,268.7	-232.8	-635.0	676.3	0.00	0.00	0.00
2,440.0	25.43	249.87	2,304.8	-238.7	-651.1	693.5	0.00	0.00	0.00
2,480.0	25.43	249.87	2,340.9	-244.6	-667.3	710.7	0.00	0.00	0.00
2,520.0	25.43	249.87	2,377.0	-250.5	-683.4	727.9	0.00	0.00	0.00
2,560.0	25.43	249.87	2,413.2	-256.4	-699.5	745.0	0.00	0.00	0.00
2,600.0	25.43	249.87	2,449.3	-262.3	-715.7	762.2	0.00	0.00	0.00
2,640.0	25.43	249.87	2,485.4	-268.2	-731.8	779.4	0.00	0.00	0.00
2,680.0	25.43	249.87	2,521.5	-274.2	-747.9	796.6	0.00	0.00	0.00
2,720.0	25.43	249.87	2,557.7	-280.1	-764.0	813.8	0.00	0.00	0.00
2,760.0	25.43	249.87	2,593.8	-286.0	-780.2	830.9	0.00	0.00	0.00
2,800.0	25.43	249.87	2,629.9	-291.9	-796.3	848.1	0.00	0.00	0.00
2,840.0	25.43	249.87	2,666.0	-297.8	-812.4	865.3	0.00	0.00	0.00
2,880.0	25.43	249.87	2,702.2	-303.7	-828.6	882.5	0.00	0.00	0.00
2,920.0	25.43	249.87	2,738.3	-309.6	-844.7	899.6	0.00	0.00	0.00
2,960.0	25.43	249.87	2,774.4	-315.5	-860.8	916.8	0.00	0.00	0.00
3,000.0	25.43	249.87	2,810.5	-321.5	-876.9	934.0	0.00	0.00	0.00
3,040.0	25.43	249.87	2,846.7	-327.4	-893.1	951.2	0.00	0.00	0.00
3,080.0	25.43	249.87	2,882.8	-333.3	-909.2	968.4	0.00	0.00	0.00
3,120.0	25.43	249.87	2,918.9	-339.2	-925.3	985.5	0.00	0.00	0.00
3,160.0	25.43	249.87	2,955.0	-345.1	-941.5	1,002.7	0.00	0.00	0.00
3,200.0	25.43	249.87	2,991.1	-351.0	-957.6	1,019.9	0.00	0.00	0.00
3,240.0	25.43	249.87	3,027.3	-356.9	-973.7	1,037.1	0.00	0.00	0.00
3,280.0	25.43	249.87	3,063.4	-362.8	-989.8	1,054.3	0.00	0.00	0.00
3,320.0	25.43	249.87	3,099.5	-368.8	-1,006.0	1,071.4	0.00	0.00	0.00
3,360.0	25.43	249.87	3,135.6	-374.7	-1,022.1	1,088.6	0.00	0.00	0.00
3,400.0	25.43	249.87	3,171.8	-380.6	-1,038.2	1,105.8	0.00	0.00	0.00
3,440.0	25.43	249.87	3,207.9	-386.5	-1,054.4	1,123.0	0.00	0.00	0.00
3,480.0	25.43	249.87	3,244.0	-392.4	-1,070.5	1,140.1	0.00	0.00	0.00
3,520.0	25.43	249.87	3,280.1	-398.3	-1,086.6	1,157.3	0.00	0.00	0.00
3,560.0	25.43	249.87	3,316.3	-404.2	-1,102.8	1,174.5	0.00	0.00	0.00
3,600.0	25.43	249.87	3,352.4	-410.1	-1,118.9	1,191.7	0.00	0.00	0.00
3,640.0	25.43	249.87	3,388.5	-416.1	-1,135.0	1,208.9	0.00	0.00	0.00
3,680.0	25.43	249.87	3,424.6	-422.0	-1,151.1	1,226.0	0.00	0.00	0.00
3,720.0	25.43	249.87	3,460.7	-427.9	-1,167.3	1,243.2	0.00	0.00	0.00
3,760.0	25.43	249.87	3,496.9	-433.8	-1,183.4	1,260.4	0.00	0.00	0.00
3,800.0	25.43	249.87	3,533.0	-439.7	-1,199.5	1,277.6	0.00	0.00	0.00
3,840.0	25.43	249.87	3,569.1	-445.6	-1,215.7	1,294.8	0.00	0.00	0.00
3,880.0	25.43	249.87	3,605.2	-451.5	-1,231.8	1,311.9	0.00	0.00	0.00
3,920.0	25.43	249.87	3,641.4	-457.4	-1,247.9	1,329.1	0.00	0.00	0.00
3,960.0	25.43	249.87	3,677.5	-463.3	-1,264.0	1,346.3	0.00	0.00	0.00
4,000.0	25.43	249.87	3,713.6	-469.3	-1,280.2	1,363.5	0.00	0.00	0.00
4,040.0	25.43	249.87	3,749.7	-475.2	-1,296.3	1,380.6	0.00	0.00	0.00
4,080.0	25.43	249.87	3,785.9	-481.1	-1,312.4	1,397.8	0.00	0.00	0.00
4,120.0	25.43	249.87	3,822.0	-487.0	-1,328.6	1,415.0	0.00	0.00	0.00
4,160.0	25.43	249.87	3,858.1	-492.9	-1,344.7	1,432.2	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Murdock 34SW-BL
Company:	Apollo Operating, LLC.	TVD Reference:	WELL @ 5071.0ft (Original Well Elev)
Project:	SEC.34-T5N-68W	MD Reference:	WELL @ 5071.0ft (Original Well Elev)
Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	North Reference:	True
Well:	Murdock 34SW-BL	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-19-12)		

Planned 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)	
4,200.0	25.43	249.87	3,894.2	-498.8	-1,360.8	1,449.4	0.00	0.00	0.00	
4,240.0	25.43	249.87	3,930.4	-504.7	-1,376.9	1,466.5	0.00	0.00	0.00	
4,280.0	25.43	249.87	3,966.5	-510.6	-1,393.1	1,483.7	0.00	0.00	0.00	
4,320.0	25.43	249.87	4,002.6	-516.6	-1,409.2	1,500.9	0.00	0.00	0.00	
4,360.0	25.43	249.87	4,038.7	-522.5	-1,425.3	1,518.1	0.00	0.00	0.00	
4,400.0	25.43	249.87	4,074.8	-528.4	-1,441.5	1,535.3	0.00	0.00	0.00	
4,440.0	25.43	249.87	4,111.0	-534.3	-1,457.6	1,552.4	0.00	0.00	0.00	
4,480.0	25.43	249.87	4,147.1	-540.2	-1,473.7	1,569.6	0.00	0.00	0.00	
4,520.0	25.43	249.87	4,183.2	-546.1	-1,489.8	1,586.8	0.00	0.00	0.00	
4,560.0	25.43	249.87	4,219.3	-552.0	-1,506.0	1,604.0	0.00	0.00	0.00	
4,600.0	25.43	249.87	4,255.5	-557.9	-1,522.1	1,621.1	0.00	0.00	0.00	
4,640.0	25.43	249.87	4,291.6	-563.9	-1,538.2	1,638.3	0.00	0.00	0.00	
4,680.0	25.43	249.87	4,327.7	-569.8	-1,554.4	1,655.5	0.00	0.00	0.00	
4,720.0	25.43	249.87	4,363.8	-575.7	-1,570.5	1,672.7	0.00	0.00	0.00	
4,760.0	25.43	249.87	4,400.0	-581.6	-1,586.6	1,689.9	0.00	0.00	0.00	
4,800.0	25.43	249.87	4,436.1	-587.5	-1,602.8	1,707.0	0.00	0.00	0.00	
4,840.0	25.43	249.87	4,472.2	-593.4	-1,618.9	1,724.2	0.00	0.00	0.00	
4,880.0	25.43	249.87	4,508.3	-599.3	-1,635.0	1,741.4	0.00	0.00	0.00	
4,920.0	25.43	249.87	4,544.4	-605.2	-1,651.1	1,758.6	0.00	0.00	0.00	
4,960.0	25.43	249.87	4,580.6	-611.2	-1,667.3	1,775.8	0.00	0.00	0.00	
5,000.0	25.43	249.87	4,616.7	-617.1	-1,683.4	1,792.9	0.00	0.00	0.00	
5,040.0	25.43	249.87	4,652.8	-623.0	-1,699.5	1,810.1	0.00	0.00	0.00	
5,080.0	25.43	249.87	4,688.9	-628.9	-1,715.7	1,827.3	0.00	0.00	0.00	
5,120.0	25.43	249.87	4,725.1	-634.8	-1,731.8	1,844.5	0.00	0.00	0.00	
5,160.0	25.43	249.87	4,761.2	-640.7	-1,747.9	1,861.6	0.00	0.00	0.00	
5,200.0	25.43	249.87	4,797.3	-646.6	-1,764.0	1,878.8	0.00	0.00	0.00	
5,240.0	25.43	249.87	4,833.4	-652.5	-1,780.2	1,896.0	0.00	0.00	0.00	
5,280.0	25.43	249.87	4,869.6	-658.5	-1,796.3	1,913.2	0.00	0.00	0.00	
5,280.1	25.43	249.87	4,869.7	-658.5	-1,796.4	1,913.2	0.00	0.00	0.00	
5,320.0	24.64	249.87	4,905.8	-664.3	-1,812.2	1,930.1	2.00	-2.00	0.00	
5,360.0	23.84	249.87	4,942.3	-669.9	-1,827.6	1,946.5	2.00	-2.00	0.00	
5,400.0	23.04	249.87	4,979.0	-675.4	-1,842.5	1,962.4	2.00	-2.00	0.00	
5,440.0	22.24	249.87	5,015.9	-680.7	-1,857.0	1,977.8	2.00	-2.00	0.00	
5,480.0	21.44	249.87	5,053.0	-685.8	-1,871.0	1,992.7	2.00	-2.00	0.00	
5,520.0	20.64	249.87	5,090.4	-690.8	-1,884.5	2,007.1	2.00	-2.00	0.00	
5,560.0	19.84	249.87	5,127.9	-695.5	-1,897.4	2,020.9	2.00	-2.00	0.00	
5,600.0	19.04	249.87	5,165.6	-700.1	-1,909.9	2,034.2	2.00	-2.00	0.00	
5,640.0	18.24	249.87	5,203.5	-704.5	-1,921.9	2,047.0	2.00	-2.00	0.00	
5,680.0	17.44	249.87	5,241.6	-708.7	-1,933.4	2,059.2	2.00	-2.00	0.00	
5,720.0	16.64	249.87	5,279.8	-712.8	-1,944.4	2,071.0	2.00	-2.00	0.00	
5,760.0	15.84	249.87	5,318.2	-716.6	-1,954.9	2,082.1	2.00	-2.00	0.00	
5,800.0	15.04	249.87	5,356.8	-720.3	-1,964.9	2,092.8	2.00	-2.00	0.00	
5,840.0	14.24	249.87	5,395.5	-723.8	-1,974.4	2,102.9	2.00	-2.00	0.00	
5,880.0	13.44	249.87	5,434.3	-727.0	-1,983.4	2,112.5	2.00	-2.00	0.00	
5,920.0	12.64	249.87	5,473.3	-730.1	-1,991.9	2,121.5	2.00	-2.00	0.00	
5,960.0	11.84	249.87	5,512.4	-733.1	-1,999.8	2,130.0	2.00	-2.00	0.00	
6,000.0	11.04	249.87	5,551.6	-735.8	-2,007.3	2,137.9	2.00	-2.00	0.00	
6,040.0	10.24	249.87	5,590.9	-738.3	-2,014.2	2,145.3	2.00	-2.00	0.00	
6,080.0	9.44	249.87	5,630.3	-740.7	-2,020.6	2,152.1	2.00	-2.00	0.00	
6,120.0	8.64	249.87	5,669.8	-742.9	-2,026.5	2,158.4	2.00	-2.00	0.00	
6,160.0	7.84	249.87	5,709.4	-744.8	-2,031.9	2,164.1	2.00	-2.00	0.00	
6,200.0	7.04	249.87	5,749.1	-746.6	-2,036.8	2,169.3	2.00	-2.00	0.00	
6,240.0	6.24	249.87	5,788.8	-748.2	-2,041.1	2,173.9	2.00	-2.00	0.00	
6,280.0	5.44	249.87	5,828.6	-749.6	-2,044.9	2,178.0	2.00	-2.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Murdock 34SW-BL
Company:	Apollo Operating, LLC.	TVD Reference:	WELL @ 5071.0ft (Original Well Elev)
Project:	SEC.34-T5N-68W	MD Reference:	WELL @ 5071.0ft (Original Well Elev)
Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	North Reference:	True
Well:	Murdock 34SW-BL	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-19-12)		

Planned 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)
6,320.0	4.64	249.87	5,868.4	-750.8	-2,048.2	2,181.5	2.00	-2.00	0.00
6,360.0	3.84	249.87	5,908.3	-751.8	-2,051.0	2,184.5	2.00	-2.00	0.00
6,400.0	3.04	249.87	5,948.3	-752.6	-2,053.3	2,186.9	2.00	-2.00	0.00
6,440.0	2.24	249.87	5,988.2	-753.3	-2,055.0	2,188.7	2.00	-2.00	0.00
6,480.0	1.44	249.87	6,028.2	-753.7	-2,056.2	2,190.0	2.00	-2.00	0.00
6,520.0	0.64	249.87	6,068.2	-754.0	-2,056.9	2,190.7	2.00	-2.00	0.00
6,551.8	0.00	0.00	6,100.0	-754.0	-2,057.0	2,190.9	2.00	-2.00	0.00
6,560.0	0.00	0.00	6,108.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
6,600.0	0.00	0.00	6,148.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
6,640.0	0.00	0.00	6,188.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
6,680.0	0.00	0.00	6,228.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
6,720.0	0.00	0.00	6,268.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
6,760.0	0.00	0.00	6,308.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
6,800.0	0.00	0.00	6,348.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
6,840.0	0.00	0.00	6,388.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
6,880.0	0.00	0.00	6,428.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
6,920.0	0.00	0.00	6,468.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
6,960.0	0.00	0.00	6,508.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,000.0	0.00	0.00	6,548.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,040.0	0.00	0.00	6,588.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,080.0	0.00	0.00	6,628.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,120.0	0.00	0.00	6,668.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,160.0	0.00	0.00	6,708.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,200.0	0.00	0.00	6,748.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,240.0	0.00	0.00	6,788.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,280.0	0.00	0.00	6,828.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,320.0	0.00	0.00	6,868.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,360.0	0.00	0.00	6,908.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,400.0	0.00	0.00	6,948.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,440.0	0.00	0.00	6,988.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,480.0	0.00	0.00	7,028.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,520.0	0.00	0.00	7,068.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,560.0	0.00	0.00	7,108.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,600.0	0.00	0.00	7,148.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,640.0	0.00	0.00	7,188.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,680.0	0.00	0.00	7,228.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,720.0	0.00	0.00	7,268.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,760.0	0.00	0.00	7,308.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,800.0	0.00	0.00	7,348.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,840.0	0.00	0.00	7,388.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,880.0	0.00	0.00	7,428.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,920.0	0.00	0.00	7,468.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
7,960.0	0.00	0.00	7,508.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
8,000.0	0.00	0.00	7,548.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
8,040.0	0.00	0.00	7,588.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
8,080.0	0.00	0.00	7,628.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
8,120.0	0.00	0.00	7,668.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
8,160.0	0.00	0.00	7,708.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
8,200.0	0.00	0.00	7,748.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
8,240.0	0.00	0.00	7,788.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
8,280.0	0.00	0.00	7,828.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
8,320.0	0.00	0.00	7,868.2	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00
8,351.8	0.00	0.00	7,900.0	-754.0	-2,057.0	2,190.9	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Murdock 34SW-BL
Company:	Apollo Operating, LLC.	TVD Reference:	WELL @ 5071.0ft (Original Well Elev)
Project:	SEC.34-T5N-68W	MD Reference:	WELL @ 5071.0ft (Original Well Elev)
Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	North Reference:	True
Well:	Murdock 34SW-BL	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-19-12)		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)		Name	Casing Diameter (")	Hole Diameter (")
550.9	550.0	8 5/8"		8-5/8	12-1/4



Directional

Apollo Operating, LLC.

SEC.34-T5N-68W

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

Murdock 34SW-BL

Wellbore #1

Plan #1 (6-19-12)

Anticollision Report

22 June, 2012

Company:	Apollo Operating, LLC.	Local Co-ordinate Reference:	Well Murdock 34SW-BL
Project:	SEC.34-T5N-68W	TVD Reference:	WELL @ 5071.0ft (Original Well Elev)
Reference Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	MD Reference:	WELL @ 5071.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Murdock 34SW-BL	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-19-12)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (6-19-12)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 6/22/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	8,351.8	Plan #1 (6-19-12) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Murdock 34SW-BL Pad Sec.34-T5N-R68W						
Murdock 35-34D - Wellbore #1 - Plan #1 (6-19-12)	200.0	200.0	20.2	19.5	29.894	CC, ES
Murdock 35-34D - Wellbore #1 - Plan #1 (6-19-12)	400.0	399.8	26.6	25.0	17.068	SF

Offset Design Murdock 34SW-BL Pad Sec.34-T5N-R68W - Murdock 35-34D - Wellbore #1 - Plan #1 (6-19-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance				Minimum Separation	Separation Factor	Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	43.74	14.6	13.9	20.2					
100.0	100.0	100.0	100.0	0.1	0.1	43.74	14.6	13.9	20.2	19.9	0.22	89.683		
200.0	200.0	200.0	200.0	0.3	0.3	43.74	14.6	13.9	20.2	19.5	0.67	29.894	CC, ES	
300.0	300.0	300.0	300.0	0.5	0.6	155.88	14.6	13.9	21.7	20.6	1.11	19.498		
400.0	399.8	399.8	399.8	0.8	0.8	160.46	14.6	13.9	26.6	25.0	1.56	17.068	SF	
500.0	499.5	499.5	499.5	1.0	1.0	165.20	14.6	13.9	34.9	32.9	2.01	17.370		
600.0	598.7	598.7	598.7	1.3	1.2	168.97	14.6	13.9	46.8	44.4	2.47	18.971		
700.0	697.5	697.5	697.5	1.6	1.5	171.68	14.6	13.9	62.3	59.3	2.93	21.265		
800.0	795.6	796.9	796.9	2.0	1.7	172.56	15.5	12.6	80.4	77.0	3.38	23.770		
900.0	893.1	896.3	896.1	2.5	1.9	171.57	18.4	8.4	100.5	96.6	3.84	26.140		
1,000.0	989.6	995.4	994.9	3.0	2.1	169.65	23.3	1.5	122.4	118.1	4.33	28.290		
1,100.0	1,085.3	1,094.2	1,093.0	3.6	2.4	167.30	30.2	-8.2	146.5	141.6	4.85	30.181		
1,200.0	1,179.8	1,192.5	1,190.1	4.2	2.7	164.78	38.9	-20.6	172.8	167.3	5.44	31.763		
1,300.0	1,273.2	1,290.1	1,285.9	5.0	3.0	162.22	49.5	-35.5	201.4	195.3	6.10	32.996		
1,400.0	1,365.2	1,385.0	1,378.7	5.8	3.3	160.07	60.9	-51.6	232.9	226.1	6.84	34.067		
1,471.7	1,430.3	1,452.2	1,444.5	6.4	3.6	158.97	68.9	-63.1	257.5	250.1	7.39	34.857		
1,500.0	1,455.9	1,478.6	1,470.4	6.6	3.7	158.68	72.1	-67.5	267.5	259.9	7.62	35.121		
1,600.0	1,546.2	1,572.0	1,561.7	7.5	4.1	157.83	83.3	-83.4	303.0	294.6	8.45	35.870		
1,700.0	1,636.5	1,665.5	1,653.1	8.4	4.4	157.15	94.5	-99.3	338.5	329.2	9.30	36.408		
1,800.0	1,726.8	1,758.9	1,744.5	9.3	4.8	156.60	105.7	-115.1	374.1	363.9	10.17	36.797		
1,900.0	1,817.1	1,852.3	1,835.8	10.2	5.2	156.14	116.9	-131.0	409.7	398.6	11.05	37.087		
2,000.0	1,907.4	1,945.7	1,927.2	11.2	5.6	155.76	128.1	-146.9	445.3	433.3	11.94	37.306		
2,100.0	1,997.8	2,039.1	2,018.6	12.1	6.0	155.43	139.3	-162.7	480.9	468.1	12.83	37.473		
2,200.0	2,088.1	2,132.5	2,109.9	13.0	6.4	155.15	150.5	-178.6	516.5	502.8	13.74	37.602		
2,300.0	2,178.4	2,225.9	2,201.3	13.9	6.9	154.91	161.7	-194.5	552.1	537.5	14.64	37.703		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Apollo Operating, LLC.	Local Co-ordinate Reference:	Well Murdock 34SW-BL
Project:	SEC.34-T5N-68W	TVD Reference:	WELL @ 5071.0ft (Original Well Elev)
Reference Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	MD Reference:	WELL @ 5071.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Murdock 34SW-BL	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-19-12)	Offset TVD Reference:	Offset Datum

Offset Design Murdock 34SW-BL Pad Sec.34-T5N-R68W - Murdock 35-34D - Wellbore #1 - Plan #1 (6-19-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
2,400.0	2,268.7	2,319.3	2,292.7	14.8	7.3	154.69	172.9	-210.3	587.8	572.2	15.56	37.782		
2,500.0	2,359.0	2,412.7	2,384.0	15.8	7.7	154.50	184.1	-226.2	623.4	607.0	16.47	37.844		
2,600.0	2,449.3	2,506.2	2,475.4	16.7	8.1	154.33	195.3	-242.1	659.1	641.7	17.39	37.894		
2,700.0	2,539.6	2,599.6	2,566.8	17.6	8.5	154.18	206.5	-257.9	694.8	676.4	18.32	37.933		
2,800.0	2,629.9	2,693.0	2,658.2	18.5	8.9	154.04	217.7	-273.8	730.4	711.2	19.24	37.964		
2,900.0	2,720.2	2,786.4	2,749.5	19.4	9.3	153.92	228.9	-289.7	766.1	745.9	20.17	37.989		
3,000.0	2,810.5	2,879.8	2,840.9	20.4	9.8	153.81	240.1	-305.5	801.7	780.7	21.09	38.009		
3,100.0	2,900.8	2,973.2	2,932.3	21.3	10.2	153.70	251.3	-321.4	837.4	815.4	22.02	38.025		
3,200.0	2,991.1	3,066.6	3,023.6	22.2	10.6	153.61	262.5	-337.3	873.1	850.1	22.95	38.037		
3,300.0	3,081.5	3,160.0	3,115.0	23.1	11.0	153.52	273.7	-353.1	908.8	884.9	23.89	38.047		
3,400.0	3,171.8	3,253.4	3,206.4	24.1	11.4	153.44	284.9	-369.0	944.4	919.6	24.82	38.054		
3,500.0	3,262.1	3,346.9	3,297.7	25.0	11.9	153.36	296.1	-384.9	980.1	954.4	25.75	38.059		
3,600.0	3,352.4	3,440.3	3,389.1	25.9	12.3	153.29	307.4	-400.7	1,015.8	989.1	26.69	38.063		
3,700.0	3,442.7	3,533.7	3,480.5	26.9	12.7	153.23	318.6	-416.6	1,051.5	1,023.9	27.62	38.066		
3,800.0	3,533.0	3,627.1	3,571.9	27.8	13.1	153.17	329.8	-432.5	1,087.2	1,058.6	28.56	38.068		
3,900.0	3,623.3	3,720.5	3,663.2	28.7	13.6	153.11	341.0	-448.3	1,122.9	1,093.4	29.50	38.068		
4,000.0	3,713.6	3,813.9	3,754.6	29.6	14.0	153.05	352.2	-464.2	1,158.5	1,128.1	30.43	38.068		
4,100.0	3,803.9	3,907.3	3,846.0	30.6	14.4	153.00	363.4	-480.1	1,194.2	1,162.8	31.37	38.068		
4,200.0	3,894.2	4,000.7	3,937.3	31.5	14.8	152.96	374.6	-495.9	1,229.9	1,197.6	32.31	38.066		
4,300.0	3,984.5	4,094.1	4,028.7	32.4	15.2	152.91	385.8	-511.8	1,265.6	1,232.3	33.25	38.065		
4,400.0	4,074.8	4,187.6	4,120.1	33.3	15.7	152.87	397.0	-527.7	1,301.3	1,267.1	34.19	38.063		
4,500.0	4,165.2	4,281.0	4,211.4	34.3	16.1	152.83	408.2	-543.5	1,337.0	1,301.8	35.13	38.060		
4,600.0	4,255.5	4,374.4	4,302.8	35.2	16.5	152.79	419.4	-559.4	1,372.7	1,336.6	36.07	38.058		
4,700.0	4,345.8	4,467.8	4,394.2	36.1	16.9	152.76	430.6	-575.3	1,408.3	1,371.3	37.01	38.055		
4,800.0	4,436.1	4,561.2	4,485.5	37.0	17.4	152.72	441.8	-591.1	1,444.0	1,406.1	37.95	38.052		
4,900.0	4,526.4	4,654.6	4,576.9	38.0	17.8	152.69	453.0	-607.0	1,479.7	1,440.8	38.89	38.049		
5,000.0	4,616.7	4,748.0	4,668.3	38.9	18.2	152.66	464.2	-622.9	1,515.4	1,475.6	39.83	38.045		
5,100.0	4,707.0	4,841.4	4,759.7	39.8	18.6	152.63	475.4	-638.7	1,551.1	1,510.3	40.77	38.042		
5,200.0	4,797.3	4,934.8	4,851.0	40.8	19.1	152.60	486.6	-654.6	1,586.8	1,545.1	41.72	38.039		
5,280.1	4,869.7	5,009.7	4,924.2	41.5	19.4	152.58	495.6	-667.3	1,615.4	1,572.9	42.47	38.036		
5,300.0	4,887.7	5,028.3	4,942.4	41.7	19.5	152.64	497.8	-670.5	1,622.4	1,579.8	42.66	38.030		
5,400.0	4,979.0	5,122.4	5,034.5	42.4	19.9	152.90	509.1	-686.5	1,656.1	1,612.5	43.59	37.996		
5,500.0	5,071.7	5,215.5	5,125.5	43.0	20.3	153.08	520.2	-702.2	1,686.8	1,642.4	44.47	37.931		
5,600.0	5,165.6	5,300.0	5,208.6	43.6	20.6	153.26	529.3	-715.1	1,714.9	1,669.7	45.19	37.951		
5,700.0	5,260.7	5,391.5	5,298.9	44.1	20.9	153.45	537.5	-726.7	1,740.5	1,694.7	45.83	37.979		
5,800.0	5,356.8	5,480.3	5,387.0	44.6	21.1	153.66	543.9	-735.7	1,763.5	1,717.1	46.36	38.038		
5,900.0	5,453.8	5,569.4	5,475.8	45.0	21.3	153.88	548.7	-742.6	1,783.9	1,737.1	46.80	38.120		
6,000.0	5,551.6	5,658.9	5,565.1	45.3	21.4	154.13	551.9	-747.2	1,801.8	1,754.6	47.13	38.227		
6,100.0	5,650.1	5,748.6	5,654.7	45.6	21.6	154.39	553.6	-749.5	1,817.0	1,769.6	47.37	38.358		
6,200.0	5,749.1	5,842.9	5,749.1	45.9	21.7	154.67	553.8	-749.7	1,829.6	1,782.1	47.53	38.494		
6,300.0	5,848.5	5,942.4	5,848.5	46.1	21.8	154.89	553.8	-749.7	1,839.1	1,791.5	47.66	38.586		
6,400.0	5,948.3	6,042.1	5,948.3	46.2	21.9	155.04	553.8	-749.7	1,845.5	1,797.7	47.77	38.629		
6,500.0	6,048.2	6,142.1	6,048.2	46.3	22.1	155.11	553.8	-749.7	1,848.7	1,800.9	47.87	38.623		
6,551.8	6,100.0	6,193.9	6,100.0	46.4	22.1	44.99	553.8	-749.7	1,849.1	1,801.2	47.91	38.599		
6,600.0	6,148.2	6,242.1	6,148.2	46.4	22.2	44.99	553.8	-749.7	1,849.1	1,801.1	48.02	38.510		
6,700.0	6,248.2	6,342.1	6,248.2	46.4	22.3	44.99	553.8	-749.7	1,849.1	1,800.9	48.25	38.323		
6,800.0	6,348.2	6,442.1	6,348.2	46.5	22.5	44.99	553.8	-749.7	1,849.1	1,800.7	48.49	38.136		
6,900.0	6,448.2	6,542.1	6,448.2	46.6	22.6	44.99	553.8	-749.7	1,849.1	1,800.4	48.73	37.949		
7,000.0	6,548.2	6,642.1	6,548.2	46.6	22.7	44.99	553.8	-749.7	1,849.1	1,800.2	48.97	37.761		
7,100.0	6,648.2	6,742.1	6,648.2	46.7	22.9	44.99	553.8	-749.7	1,849.1	1,799.9	49.22	37.572		
7,200.0	6,748.2	6,842.1	6,748.2	46.8	23.0	44.99	553.8	-749.7	1,849.1	1,799.7	49.46	37.384		
7,300.0	6,848.2	6,942.1	6,848.2	46.8	23.2	44.99	553.8	-749.7	1,849.1	1,799.4	49.71	37.195		

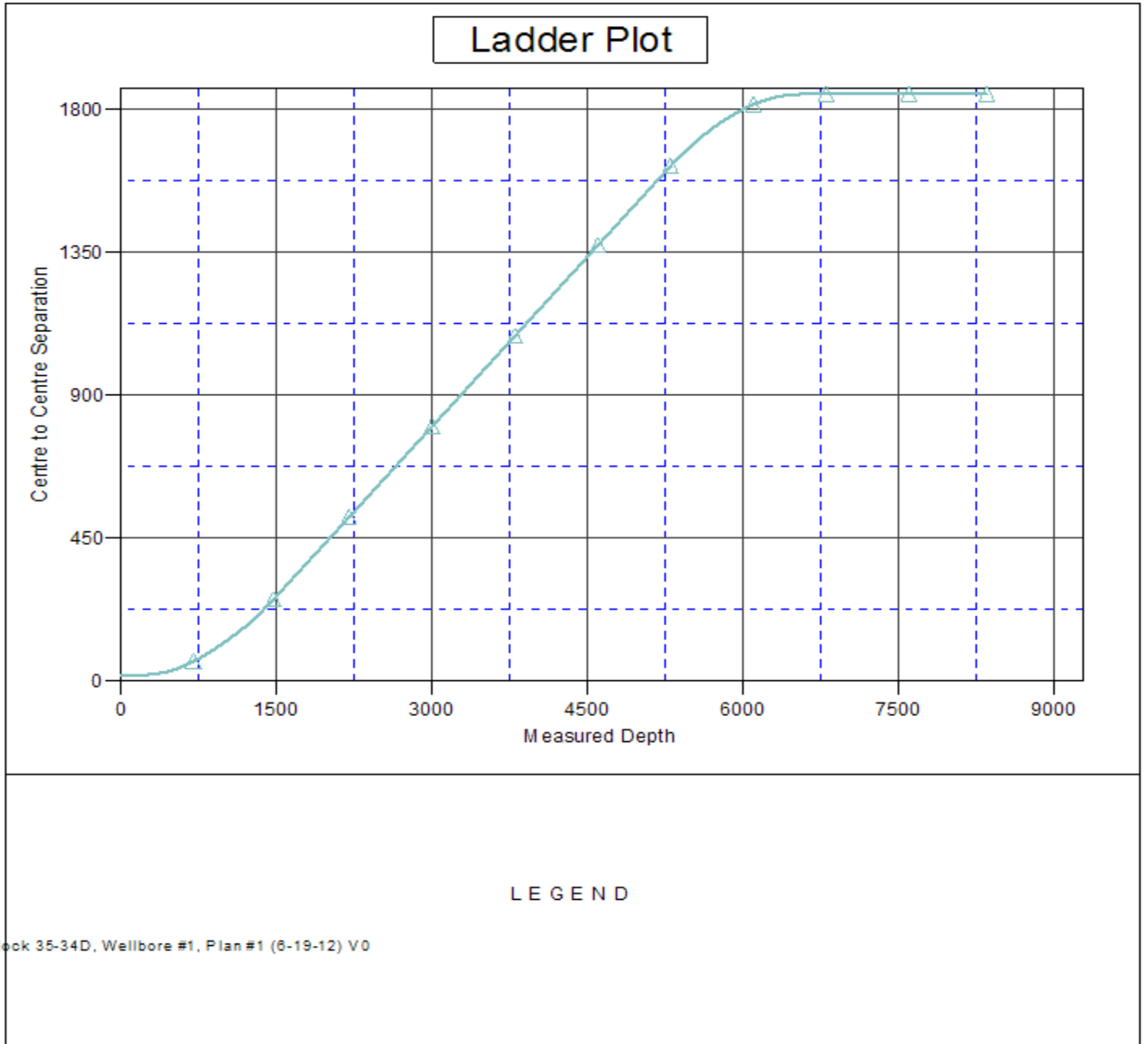
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Apollo Operating, LLC.	Local Co-ordinate Reference:	Well Murdock 34SW-BL
Project:	SEC.34-T5N-68W	TVD Reference:	WELL @ 5071.0ft (Original Well Elev)
Reference Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	MD Reference:	WELL @ 5071.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Murdock 34SW-BL	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-19-12)	Offset TVD Reference:	Offset Datum

Offset Design Murdock 34SW-BL Pad Sec.34-T5N-R68W - Murdock 35-34D - Wellbore #1 - Plan #1 (6-19-12)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,400.0	6,948.2	7,042.1	6,948.2	46.9	23.3	44.99	553.8	-749.7	1,849.1	1,799.2	49.97	37.006	
7,500.0	7,048.2	7,142.1	7,048.2	47.0	23.4	44.99	553.8	-749.7	1,849.1	1,798.9	50.23	36.817	
7,600.0	7,148.2	7,242.1	7,148.2	47.0	23.6	44.99	553.8	-749.7	1,849.1	1,798.7	50.48	36.628	
7,700.0	7,248.2	7,342.1	7,248.2	47.1	23.7	44.99	553.8	-749.7	1,849.1	1,798.4	50.75	36.439	
7,800.0	7,348.2	7,442.1	7,348.2	47.2	23.9	44.99	553.8	-749.7	1,849.1	1,798.1	51.01	36.250	
7,900.0	7,448.2	7,542.1	7,448.2	47.2	24.0	44.99	553.8	-749.7	1,849.1	1,797.9	51.28	36.061	
8,000.0	7,548.2	7,642.1	7,548.2	47.3	24.2	44.99	553.8	-749.7	1,849.1	1,797.6	51.55	35.873	
8,100.0	7,648.2	7,742.1	7,648.2	47.4	24.3	44.99	553.8	-749.7	1,849.1	1,797.3	51.82	35.685	
8,200.0	7,748.2	7,842.1	7,748.2	47.5	24.5	44.99	553.8	-749.7	1,849.1	1,797.1	52.09	35.497	
8,300.0	7,848.2	7,942.1	7,848.2	47.5	24.6	44.99	553.8	-749.7	1,849.1	1,796.8	52.37	35.309	
8,351.8	7,900.0	7,993.9	7,900.0	47.6	24.7	44.99	553.8	-749.7	1,849.1	1,796.6	52.51	35.212	

Company:	Apollo Operating, LLC.	Local Co-ordinate Reference:	Well Murdock 34SW-BL
Project:	SEC.34-T5N-68W	TVD Reference:	WELL @ 5071.0ft (Original Well Elev)
Reference Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	MD Reference:	WELL @ 5071.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Murdock 34SW-BL	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-19-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5071.0ft (Original Well Elev) Coordinates are relative to: Murdock 34SW-BL
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
 Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.33°



Company:	Apollo Operating, LLC.	Local Co-ordinate Reference:	Well Murdock 34SW-BL
Project:	SEC.34-T5N-68W	TVD Reference:	WELL @ 5071.0ft (Original Well Elev)
Reference Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	MD Reference:	WELL @ 5071.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Murdock 34SW-BL	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-19-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5071.0ft (Original Well Elev) Coordinates are relative to: Murdock 34SW-BL
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.33°

