

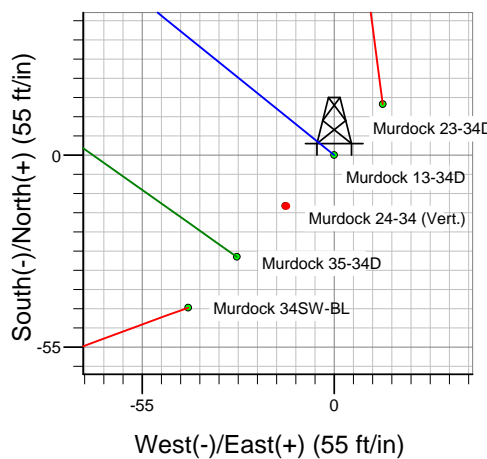
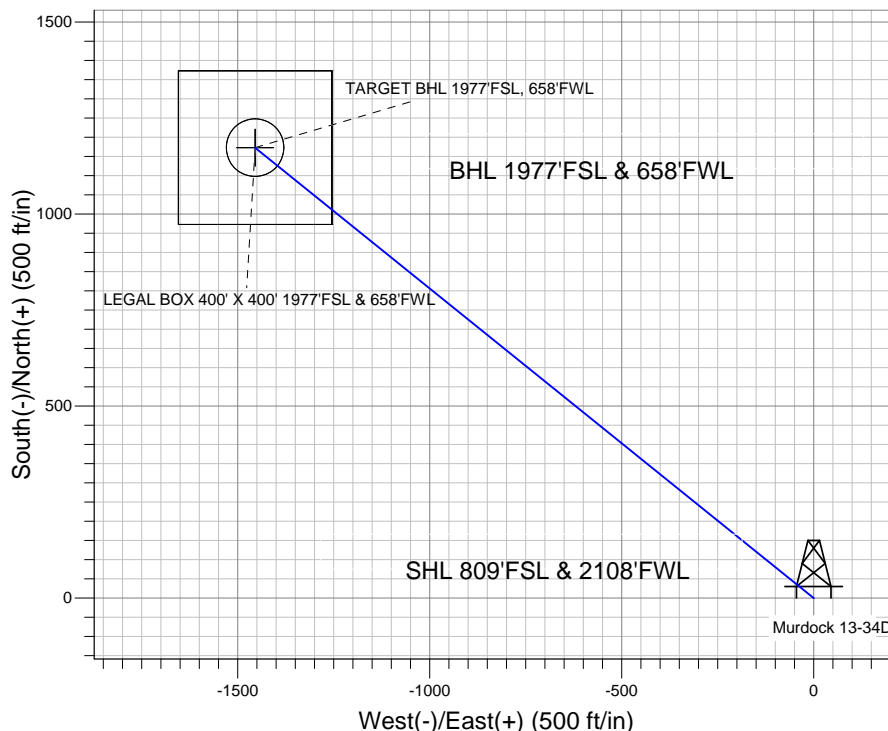
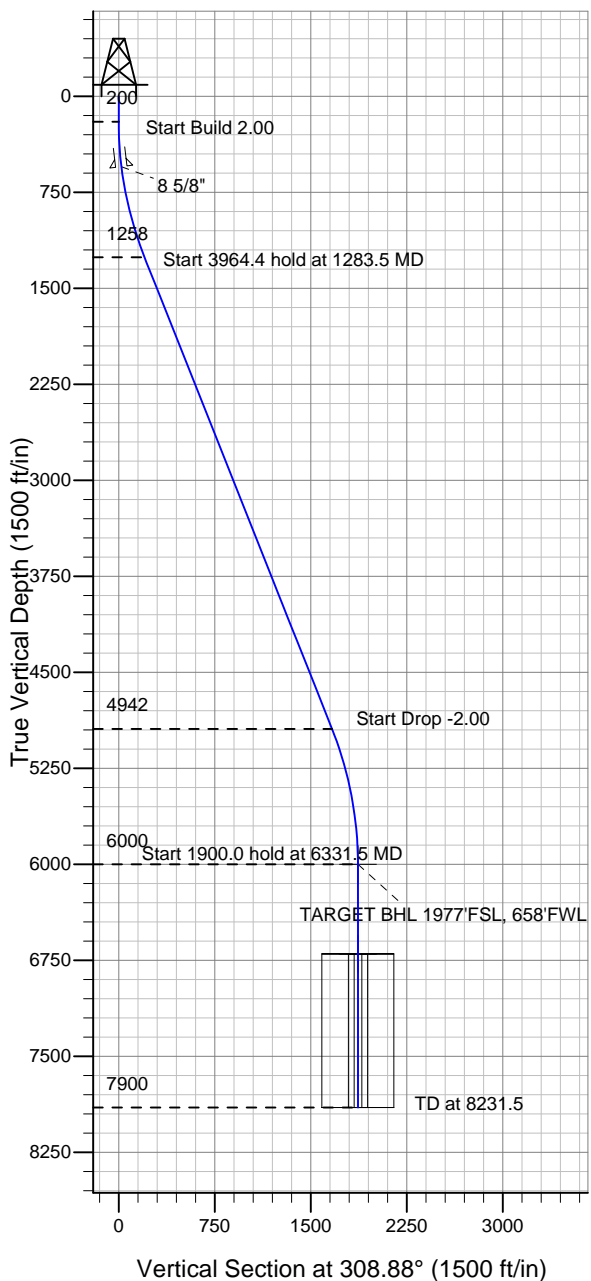
ENSIGN

Directional

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 Slot
 0.0 0.0 1371271.20 3140783.95 40.351440 -104.994870
 Original Well Elev WELL @ 5070.0ft (Original Well Elev)

Apollo Operating, LLC.



Murdock 34SW-BL Pad Sec.34-T5N-R68W
 Murdock 13-34D
 Plan #1 (6-19-12)
 10:42, June 22 2012



Azimuths to True North
 Magnetic North: 8.85°

Magnetic Field
 Strength: 52971.6snT
 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 1977'FSL, 658'FWL	6000.0	1173.1	-1454.9	40.354660	-105.000090	Point
LEGAL BOX 400' X 400' 1977'FSL & 658'FWL	6700.0	1173.1	-1454.9	40.354660	-105.000090	Rectangle (Sides: L400.0 W400.0)
TARGET CIRCLE 1977'FSL & 658'FWL	6700.0	1173.1	-1454.9	40.354660	-105.000090	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	1283.5	21.67	308.88	1257.9	127.1	-157.6	2.00	308.88	202.5	
4	5248.0	21.67	308.88	4942.1	1046.0	-1297.2	0.00	0.00	1666.4	
5	6331.5	0.00	0.00	6000.0	1173.1	-1454.9	2.00	180.00	1868.9	TARGET BHL 1977'FSL, 658'FWL
6	8231.5	0.00	0.00	7900.0	1173.1	-1454.9	0.00	0.00	1868.9	



Directional

Apollo Operating, LLC.

SEC.34-T5N-68W

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

Murdock 13-34D

Wellbore #1

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

Standard Planning Report

22 June, 2012

Database:	Landmark	Local Co-ordinate Reference:	Well Murdock 13-34D
Company:	Apollo Operating, LLC.	TVD Reference:	WELL @ 5070.0ft (Original Well Elev)
Project:	SEC.34-T5N-68W	MD Reference:	WELL @ 5070.0ft (Original Well Elev)
Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	North Reference:	True
Well:	Murdock 13-34D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-19-12)		

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	Latitude:	40.351320	
From:	Lat/Long	Easting:	3,140,742.39ft	Longitude:	-104.995020	
Position Uncertainty:		0.0 ft	Slot Radius:	"	Grid Convergence:	0.33 °

Well	Murdock 13-34D					
Well Position	+N-S	43.7 ft	Northing:	1,371,271.20 ft	Latitude:	40.351440
	+E-W	41.8 ft	Easting:	3,140,783.95 ft	Longitude:	-104.994870
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,057.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/22/2012	8.85	66.94	52,972

Design	Plan #1 (6-19-12)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	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

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	
1,283.5	21.67	308.88	1,257.9	127.1	-157.6	2.00	2.00	0.00	308.88	
5,248.0	21.67	308.88	4,942.1	1,046.0	-1,297.2	0.00	0.00	0.00	0.00	
6,331.5	0.00	0.00	6,000.0	1,173.1	-1,454.9	2.00	-2.00	0.00	180.00	TARGET BHL 1977
8,231.5	0.00	0.00	7,900.0	1,173.1	-1,454.9	0.00	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Murdock 13-34D
Company:	Apollo Operating, LLC.	TVD Reference:	WELL @ 5070.0ft (Original Well Elev)
Project:	SEC.34-T5N-68W	MD Reference:	WELL @ 5070.0ft (Original Well Elev)
Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	North Reference:	True
Well:	Murdock 13-34D	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	308.88	240.0	0.2	-0.2	0.3	2.00	2.00	0.00
280.0	1.60	308.88	280.0	0.7	-0.9	1.1	2.00	2.00	0.00
320.0	2.40	308.88	320.0	1.6	-2.0	2.5	2.00	2.00	0.00
360.0	3.20	308.88	359.9	2.8	-3.5	4.5	2.00	2.00	0.00
400.0	4.00	308.88	399.8	4.4	-5.4	7.0	2.00	2.00	0.00
440.0	4.80	308.88	439.7	6.3	-7.8	10.0	2.00	2.00	0.00
480.0	5.60	308.88	479.6	8.6	-10.6	13.7	2.00	2.00	0.00
520.0	6.40	308.88	519.3	11.2	-13.9	17.9	2.00	2.00	0.00
550.9	7.02	308.88	550.0	13.5	-16.7	21.5	2.00	2.00	0.00
8 5/8"									
560.0	7.20	308.88	559.1	14.2	-17.6	22.6	2.00	2.00	0.00
600.0	8.00	308.88	598.7	17.5	-21.7	27.9	2.00	2.00	0.00
640.0	8.80	308.88	638.3	21.2	-26.3	33.7	2.00	2.00	0.00
680.0	9.60	308.88	677.8	25.2	-31.2	40.1	2.00	2.00	0.00
720.0	10.40	308.88	717.1	29.5	-36.6	47.1	2.00	2.00	0.00
760.0	11.20	308.88	756.4	34.2	-42.5	54.6	2.00	2.00	0.00
800.0	12.00	308.88	795.6	39.3	-48.7	62.6	2.00	2.00	0.00
840.0	12.80	308.88	834.7	44.7	-55.4	71.2	2.00	2.00	0.00
880.0	13.60	308.88	873.6	50.4	-62.5	80.3	2.00	2.00	0.00
920.0	14.40	308.88	912.4	56.5	-70.1	90.0	2.00	2.00	0.00
960.0	15.20	308.88	951.1	62.9	-78.0	100.2	2.00	2.00	0.00
1,000.0	16.00	308.88	989.6	69.7	-86.4	111.0	2.00	2.00	0.00
1,040.0	16.80	308.88	1,028.0	76.7	-95.2	122.3	2.00	2.00	0.00
1,080.0	17.60	308.88	1,066.2	84.2	-104.4	134.1	2.00	2.00	0.00
1,120.0	18.40	308.88	1,104.3	91.9	-114.0	146.5	2.00	2.00	0.00
1,160.0	19.20	308.88	1,142.1	100.0	-124.0	159.3	2.00	2.00	0.00
1,200.0	20.00	308.88	1,179.8	108.4	-134.5	172.8	2.00	2.00	0.00
1,240.0	20.80	308.88	1,217.3	117.2	-145.3	186.7	2.00	2.00	0.00
1,280.0	21.60	308.88	1,254.6	126.3	-156.6	201.2	2.00	2.00	0.00
1,283.5	21.67	308.88	1,257.9	127.1	-157.6	202.5	2.00	2.00	0.00
1,320.0	21.67	308.88	1,291.8	135.5	-168.1	215.9	0.00	0.00	0.00
1,360.0	21.67	308.88	1,328.9	144.8	-179.6	230.7	0.00	0.00	0.00
1,400.0	21.67	308.88	1,366.1	154.1	-191.1	245.5	0.00	0.00	0.00
1,440.0	21.67	308.88	1,403.3	163.4	-202.6	260.3	0.00	0.00	0.00
1,480.0	21.67	308.88	1,440.5	172.6	-214.1	275.0	0.00	0.00	0.00
1,520.0	21.67	308.88	1,477.6	181.9	-225.6	289.8	0.00	0.00	0.00
1,560.0	21.67	308.88	1,514.8	191.2	-237.1	304.6	0.00	0.00	0.00
1,600.0	21.67	308.88	1,552.0	200.5	-248.6	319.3	0.00	0.00	0.00
1,640.0	21.67	308.88	1,589.2	209.7	-260.1	334.1	0.00	0.00	0.00
1,680.0	21.67	308.88	1,626.3	219.0	-271.6	348.9	0.00	0.00	0.00
1,720.0	21.67	308.88	1,663.5	228.3	-283.1	363.7	0.00	0.00	0.00
1,760.0	21.67	308.88	1,700.7	237.5	-294.6	378.4	0.00	0.00	0.00
1,800.0	21.67	308.88	1,737.8	246.8	-306.1	393.2	0.00	0.00	0.00
1,840.0	21.67	308.88	1,775.0	256.1	-317.6	408.0	0.00	0.00	0.00
1,880.0	21.67	308.88	1,812.2	265.4	-329.1	422.7	0.00	0.00	0.00
1,920.0	21.67	308.88	1,849.4	274.6	-340.6	437.5	0.00	0.00	0.00
1,960.0	21.67	308.88	1,886.5	283.9	-352.1	452.3	0.00	0.00	0.00
2,000.0	21.67	308.88	1,923.7	293.2	-363.6	467.0	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Murdock 13-34D
Company:	Apollo Operating, LLC.	TVD Reference:	WELL @ 5070.0ft (Original Well Elev)
Project:	SEC.34-T5N-68W	MD Reference:	WELL @ 5070.0ft (Original Well Elev)
Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	North Reference:	True
Well:	Murdock 13-34D	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	21.67	308.88	1,960.9	302.4	-375.1	481.8	0.00	0.00	0.00
2,080.0	21.67	308.88	1,998.1	311.7	-386.6	496.6	0.00	0.00	0.00
2,120.0	21.67	308.88	2,035.2	321.0	-398.1	511.4	0.00	0.00	0.00
2,160.0	21.67	308.88	2,072.4	330.3	-409.6	526.1	0.00	0.00	0.00
2,200.0	21.67	308.88	2,109.6	339.5	-421.1	540.9	0.00	0.00	0.00
2,240.0	21.67	308.88	2,146.7	348.8	-432.6	555.7	0.00	0.00	0.00
2,280.0	21.67	308.88	2,183.9	358.1	-444.1	570.4	0.00	0.00	0.00
2,320.0	21.67	308.88	2,221.1	367.3	-455.6	585.2	0.00	0.00	0.00
2,360.0	21.67	308.88	2,258.3	376.6	-467.1	600.0	0.00	0.00	0.00
2,400.0	21.67	308.88	2,295.4	385.9	-478.6	614.8	0.00	0.00	0.00
2,440.0	21.67	308.88	2,332.6	395.2	-490.1	629.5	0.00	0.00	0.00
2,480.0	21.67	308.88	2,369.8	404.4	-501.6	644.3	0.00	0.00	0.00
2,520.0	21.67	308.88	2,407.0	413.7	-513.1	659.1	0.00	0.00	0.00
2,560.0	21.67	308.88	2,444.1	423.0	-524.6	673.8	0.00	0.00	0.00
2,600.0	21.67	308.88	2,481.3	432.2	-536.1	688.6	0.00	0.00	0.00
2,640.0	21.67	308.88	2,518.5	441.5	-547.6	703.4	0.00	0.00	0.00
2,680.0	21.67	308.88	2,555.6	450.8	-559.0	718.2	0.00	0.00	0.00
2,720.0	21.67	308.88	2,592.8	460.1	-570.5	732.9	0.00	0.00	0.00
2,760.0	21.67	308.88	2,630.0	469.3	-582.0	747.7	0.00	0.00	0.00
2,800.0	21.67	308.88	2,667.2	478.6	-593.5	762.5	0.00	0.00	0.00
2,840.0	21.67	308.88	2,704.3	487.9	-605.0	777.2	0.00	0.00	0.00
2,880.0	21.67	308.88	2,741.5	497.1	-616.5	792.0	0.00	0.00	0.00
2,920.0	21.67	308.88	2,778.7	506.4	-628.0	806.8	0.00	0.00	0.00
2,960.0	21.67	308.88	2,815.9	515.7	-639.5	821.6	0.00	0.00	0.00
3,000.0	21.67	308.88	2,853.0	525.0	-651.0	836.3	0.00	0.00	0.00
3,040.0	21.67	308.88	2,890.2	534.2	-662.5	851.1	0.00	0.00	0.00
3,080.0	21.67	308.88	2,927.4	543.5	-674.0	865.9	0.00	0.00	0.00
3,120.0	21.67	308.88	2,964.6	552.8	-685.5	880.6	0.00	0.00	0.00
3,160.0	21.67	308.88	3,001.7	562.1	-697.0	895.4	0.00	0.00	0.00
3,200.0	21.67	308.88	3,038.9	571.3	-708.5	910.2	0.00	0.00	0.00
3,240.0	21.67	308.88	3,076.1	580.6	-720.0	924.9	0.00	0.00	0.00
3,280.0	21.67	308.88	3,113.2	589.9	-731.5	939.7	0.00	0.00	0.00
3,320.0	21.67	308.88	3,150.4	599.1	-743.0	954.5	0.00	0.00	0.00
3,360.0	21.67	308.88	3,187.6	608.4	-754.5	969.3	0.00	0.00	0.00
3,400.0	21.67	308.88	3,224.8	617.7	-766.0	984.0	0.00	0.00	0.00
3,440.0	21.67	308.88	3,261.9	627.0	-777.5	998.8	0.00	0.00	0.00
3,480.0	21.67	308.88	3,299.1	636.2	-789.0	1,013.6	0.00	0.00	0.00
3,520.0	21.67	308.88	3,336.3	645.5	-800.5	1,028.3	0.00	0.00	0.00
3,560.0	21.67	308.88	3,373.5	654.8	-812.0	1,043.1	0.00	0.00	0.00
3,600.0	21.67	308.88	3,410.6	664.0	-823.5	1,057.9	0.00	0.00	0.00
3,640.0	21.67	308.88	3,447.8	673.3	-835.0	1,072.7	0.00	0.00	0.00
3,680.0	21.67	308.88	3,485.0	682.6	-846.5	1,087.4	0.00	0.00	0.00
3,720.0	21.67	308.88	3,522.1	691.9	-858.0	1,102.2	0.00	0.00	0.00
3,760.0	21.67	308.88	3,559.3	701.1	-869.5	1,117.0	0.00	0.00	0.00
3,800.0	21.67	308.88	3,596.5	710.4	-881.0	1,131.7	0.00	0.00	0.00
3,840.0	21.67	308.88	3,633.7	719.7	-892.5	1,146.5	0.00	0.00	0.00
3,880.0	21.67	308.88	3,670.8	728.9	-904.0	1,161.3	0.00	0.00	0.00
3,920.0	21.67	308.88	3,708.0	738.2	-915.5	1,176.1	0.00	0.00	0.00
3,960.0	21.67	308.88	3,745.2	747.5	-927.0	1,190.8	0.00	0.00	0.00
4,000.0	21.67	308.88	3,782.4	756.8	-938.5	1,205.6	0.00	0.00	0.00
4,040.0	21.67	308.88	3,819.5	766.0	-950.0	1,220.4	0.00	0.00	0.00
4,080.0	21.67	308.88	3,856.7	775.3	-961.5	1,235.1	0.00	0.00	0.00
4,120.0	21.67	308.88	3,893.9	784.6	-973.0	1,249.9	0.00	0.00	0.00
4,160.0	21.67	308.88	3,931.0	793.8	-984.5	1,264.7	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Murdock 13-34D
Company:	Apollo Operating, LLC.	TVD Reference:	WELL @ 5070.0ft (Original Well Elev)
Project:	SEC.34-T5N-68W	MD Reference:	WELL @ 5070.0ft (Original Well Elev)
Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	North Reference:	True
Well:	Murdock 13-34D	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	21.67	308.88	3,968.2	803.1	-996.0	1,279.5	0.00	0.00	0.00
4,240.0	21.67	308.88	4,005.4	812.4	-1,007.5	1,294.2	0.00	0.00	0.00
4,280.0	21.67	308.88	4,042.6	821.7	-1,019.0	1,309.0	0.00	0.00	0.00
4,320.0	21.67	308.88	4,079.7	830.9	-1,030.5	1,323.8	0.00	0.00	0.00
4,360.0	21.67	308.88	4,116.9	840.2	-1,042.0	1,338.5	0.00	0.00	0.00
4,400.0	21.67	308.88	4,154.1	849.5	-1,053.5	1,353.3	0.00	0.00	0.00
4,440.0	21.67	308.88	4,191.3	858.7	-1,065.0	1,368.1	0.00	0.00	0.00
4,480.0	21.67	308.88	4,228.4	868.0	-1,076.5	1,382.8	0.00	0.00	0.00
4,520.0	21.67	308.88	4,265.6	877.3	-1,088.0	1,397.6	0.00	0.00	0.00
4,560.0	21.67	308.88	4,302.8	886.6	-1,099.5	1,412.4	0.00	0.00	0.00
4,600.0	21.67	308.88	4,339.9	895.8	-1,111.0	1,427.2	0.00	0.00	0.00
4,640.0	21.67	308.88	4,377.1	905.1	-1,122.5	1,441.9	0.00	0.00	0.00
4,680.0	21.67	308.88	4,414.3	914.4	-1,134.0	1,456.7	0.00	0.00	0.00
4,720.0	21.67	308.88	4,451.5	923.7	-1,145.5	1,471.5	0.00	0.00	0.00
4,760.0	21.67	308.88	4,488.6	932.9	-1,157.0	1,486.2	0.00	0.00	0.00
4,800.0	21.67	308.88	4,525.8	942.2	-1,168.5	1,501.0	0.00	0.00	0.00
4,840.0	21.67	308.88	4,563.0	951.5	-1,180.0	1,515.8	0.00	0.00	0.00
4,880.0	21.67	308.88	4,600.2	960.7	-1,191.5	1,530.6	0.00	0.00	0.00
4,920.0	21.67	308.88	4,637.3	970.0	-1,203.0	1,545.3	0.00	0.00	0.00
4,960.0	21.67	308.88	4,674.5	979.3	-1,214.5	1,560.1	0.00	0.00	0.00
5,000.0	21.67	308.88	4,711.7	988.6	-1,226.0	1,574.9	0.00	0.00	0.00
5,040.0	21.67	308.88	4,748.8	997.8	-1,237.5	1,589.6	0.00	0.00	0.00
5,080.0	21.67	308.88	4,786.0	1,007.1	-1,249.0	1,604.4	0.00	0.00	0.00
5,120.0	21.67	308.88	4,823.2	1,016.4	-1,260.5	1,619.2	0.00	0.00	0.00
5,160.0	21.67	308.88	4,860.4	1,025.6	-1,272.0	1,634.0	0.00	0.00	0.00
5,200.0	21.67	308.88	4,897.5	1,034.9	-1,283.5	1,648.7	0.00	0.00	0.00
5,240.0	21.67	308.88	4,934.7	1,044.2	-1,294.9	1,663.5	0.00	0.00	0.00
5,280.0	21.67	308.88	4,971.9	1,053.4	-1,306.3	1,678.1	0.00	0.00	0.00
5,320.0	21.03	308.88	4,971.9	1,053.4	-1,306.3	1,678.1	2.00	-2.00	0.00
5,360.0	20.23	308.88	5,009.4	1,062.2	-1,317.3	1,692.2	2.00	-2.00	0.00
5,400.0	19.43	308.88	5,047.0	1,070.7	-1,327.9	1,705.8	2.00	-2.00	0.00
5,440.0	18.63	308.88	5,084.8	1,078.9	-1,338.0	1,718.8	2.00	-2.00	0.00
5,480.0	17.83	308.88	5,122.8	1,086.8	-1,347.7	1,731.3	2.00	-2.00	0.00
5,520.0	17.03	308.88	5,161.0	1,094.3	-1,357.1	1,743.3	2.00	-2.00	0.00
5,560.0	16.23	308.88	5,199.3	1,101.5	-1,366.0	1,754.7	2.00	-2.00	0.00
5,600.0	15.43	308.88	5,237.8	1,108.3	-1,374.5	1,765.7	2.00	-2.00	0.00
5,640.0	14.63	308.88	5,276.4	1,114.8	-1,382.6	1,776.0	2.00	-2.00	0.00
5,680.0	13.83	308.88	5,315.2	1,121.0	-1,390.2	1,785.9	2.00	-2.00	0.00
5,720.0	13.03	308.88	5,354.1	1,126.8	-1,397.4	1,795.2	2.00	-2.00	0.00
5,760.0	12.23	308.88	5,393.1	1,132.3	-1,404.2	1,803.9	2.00	-2.00	0.00
5,800.0	11.43	308.88	5,432.3	1,137.5	-1,410.6	1,812.1	2.00	-2.00	0.00
5,840.0	10.63	308.88	5,471.5	1,142.3	-1,416.6	1,819.8	2.00	-2.00	0.00
5,880.0	9.83	308.88	5,510.9	1,146.7	-1,422.1	1,826.9	2.00	-2.00	0.00
5,920.0	9.03	308.88	5,550.4	1,150.8	-1,427.2	1,833.4	2.00	-2.00	0.00
5,960.0	8.23	308.88	5,589.9	1,154.6	-1,431.9	1,839.4	2.00	-2.00	0.00
6,000.0	7.43	308.88	5,629.5	1,158.0	-1,436.1	1,844.9	2.00	-2.00	0.00
6,040.0	6.63	308.88	5,669.2	1,161.1	-1,439.9	1,849.8	2.00	-2.00	0.00
6,080.0	5.83	308.88	5,709.0	1,163.8	-1,443.3	1,854.1	2.00	-2.00	0.00
6,120.0	5.03	308.88	5,748.8	1,166.2	-1,446.3	1,857.9	2.00	-2.00	0.00
6,160.0	4.23	308.88	5,788.7	1,168.2	-1,448.8	1,861.1	2.00	-2.00	0.00
6,200.0	3.43	308.88	5,828.6	1,169.9	-1,450.9	1,863.8	2.00	-2.00	0.00
6,240.0	2.63	308.88	5,868.5	1,171.2	-1,452.5	1,865.9	2.00	-2.00	0.00
6,280.0	1.83	308.88	5,908.5	1,172.2	-1,453.7	1,867.5	2.00	-2.00	0.00
6,320.0	1.03	308.88	5,948.5	1,172.8	-1,454.5	1,868.5	2.00	-2.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Murdock 13-34D
Company:	Apollo Operating, LLC.	TVD Reference:	WELL @ 5070.0ft (Original Well Elev)
Project:	SEC.34-T5N-68W	MD Reference:	WELL @ 5070.0ft (Original Well Elev)
Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	North Reference:	True
Well:	Murdock 13-34D	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	0.23	308.88	5,988.5	1,173.1	-1,454.8	1,868.9	2.00	-2.00	0.00
6,331.5	0.00	0.00	6,000.0	1,173.1	-1,454.9	1,868.9	2.00	-2.00	0.00
6,360.0	0.00	0.00	6,028.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,400.0	0.00	0.00	6,068.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,440.0	0.00	0.00	6,108.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,480.0	0.00	0.00	6,148.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,520.0	0.00	0.00	6,188.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,560.0	0.00	0.00	6,228.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,600.0	0.00	0.00	6,268.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,640.0	0.00	0.00	6,308.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,680.0	0.00	0.00	6,348.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,720.0	0.00	0.00	6,388.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,760.0	0.00	0.00	6,428.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,800.0	0.00	0.00	6,468.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,840.0	0.00	0.00	6,508.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,880.0	0.00	0.00	6,548.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,920.0	0.00	0.00	6,588.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
6,960.0	0.00	0.00	6,628.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,000.0	0.00	0.00	6,668.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,040.0	0.00	0.00	6,708.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,080.0	0.00	0.00	6,748.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,120.0	0.00	0.00	6,788.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,160.0	0.00	0.00	6,828.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,200.0	0.00	0.00	6,868.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,240.0	0.00	0.00	6,908.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,280.0	0.00	0.00	6,948.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,320.0	0.00	0.00	6,988.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,360.0	0.00	0.00	7,028.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,400.0	0.00	0.00	7,068.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,440.0	0.00	0.00	7,108.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,480.0	0.00	0.00	7,148.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,520.0	0.00	0.00	7,188.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,560.0	0.00	0.00	7,228.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,600.0	0.00	0.00	7,268.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,640.0	0.00	0.00	7,308.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,680.0	0.00	0.00	7,348.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,720.0	0.00	0.00	7,388.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,760.0	0.00	0.00	7,428.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,800.0	0.00	0.00	7,468.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,840.0	0.00	0.00	7,508.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,880.0	0.00	0.00	7,548.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,920.0	0.00	0.00	7,588.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
7,960.0	0.00	0.00	7,628.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
8,000.0	0.00	0.00	7,668.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
8,040.0	0.00	0.00	7,708.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
8,080.0	0.00	0.00	7,748.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
8,120.0	0.00	0.00	7,788.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
8,160.0	0.00	0.00	7,828.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
8,200.0	0.00	0.00	7,868.5	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00
8,231.5	0.00	0.00	7,900.0	1,173.1	-1,454.9	1,868.9	0.00	0.00	0.00

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

Wellbore #1

Plan #1 (6-19-12)

Anticollision Report

22 June, 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)
Reference Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	MD Reference:	WELL @ 5070.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Murdock 13-34D	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												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	
1,700.0	1,644.9	1,685.7	1,670.7	7.9	4.5	153.65	159.5	-5.0	281.1	271.6	9.44	29.759	
1,800.0	1,737.8	1,782.4	1,764.0	8.6	5.0	152.13	184.5	-8.3	305.5	295.0	10.41	29.334	
1,900.0	1,830.8	1,879.1	1,857.3	9.4	5.4	150.83	209.6	-11.6	330.0	318.6	11.41	28.934	
2,000.0	1,923.7	1,975.7	1,950.7	10.2	5.9	149.71	234.6	-14.8	354.7	342.3	12.42	28.569	
2,100.0	2,016.6	2,072.4	2,044.0	10.9	6.4	148.74	259.7	-18.1	379.5	366.1	13.44	28.238	
2,200.0	2,109.6	2,169.1	2,137.3	11.7	6.9	147.88	284.7	-21.4	404.4	390.0	14.48	27.940	
2,300.0	2,202.5	2,265.8	2,230.6	12.5	7.4	147.12	309.8	-24.7	429.4	413.9	15.52	27.671	
2,400.0	2,295.4	2,362.5	2,324.0	13.2	7.9	146.45	334.9	-27.9	454.5	437.9	16.57	27.427	
2,500.0	2,388.4	2,459.1	2,417.3	14.0	8.3	145.85	359.9	-31.2	479.6	461.9	17.63	27.207	
2,600.0	2,481.3	2,555.8	2,510.6	14.8	8.8	145.31	385.0	-34.5	504.7	486.0	18.69	27.008	
2,700.0	2,574.2	2,652.5	2,603.9	15.6	9.4	144.81	410.0	-37.8	529.9	510.1	19.75	26.826	
2,800.0	2,667.2	2,749.2	2,697.2	16.3	9.9	144.37	435.1	-41.0	555.1	534.3	20.82	26.661	
2,900.0	2,760.1	2,845.9	2,790.6	17.1	10.4	143.96	460.1	-44.3	580.3	558.4	21.89	26.509	
3,000.0	2,853.0	2,942.6	2,883.9	17.9	10.9	143.59	485.2	-47.6	605.6	582.6	22.97	26.370	
3,100.0	2,946.0	3,039.2	2,977.2	18.6	11.4	143.24	510.2	-50.9	630.9	606.8	24.04	26.242	
3,200.0	3,038.9	3,135.9	3,070.5	19.4	11.9	142.92	535.3	-54.1	656.2	631.1	25.12	26.124	
3,300.0	3,131.8	3,232.6	3,163.9	20.2	12.4	142.63	560.3	-57.4	681.5	655.3	26.20	26.015	
3,400.0	3,224.8	3,329.3	3,257.2	21.0	12.9	142.36	585.4	-60.7	706.9	679.6	27.28	25.913	
3,500.0	3,317.7	3,426.0	3,350.5	21.7	13.4	142.10	610.5	-64.0	732.2	703.9	28.36	25.819	
3,600.0	3,410.6	3,522.7	3,443.8	22.5	13.9	141.87	635.5	-67.2	757.6	728.1	29.44	25.731	
3,700.0	3,503.6	3,619.3	3,537.2	23.3	14.4	141.64	660.6	-70.5	783.0	752.4	30.53	25.649	
3,800.0	3,596.5	3,716.0	3,630.5	24.1	14.9	141.44	685.6	-73.8	808.4	776.7	31.61	25.572	
3,900.0	3,689.4	3,812.7	3,723.8	24.8	15.5	141.24	710.7	-77.1	833.8	801.1	32.70	25.500	
4,000.0	3,782.4	3,909.4	3,817.1	25.6	16.0	141.06	735.7	-80.3	859.2	825.4	33.78	25.433	
4,100.0	3,875.3	4,006.1	3,910.4	26.4	16.5	140.88	760.8	-83.6	884.6	849.7	34.87	25.369	
4,200.0	3,968.2	4,102.8	4,003.8	27.2	17.0	140.72	785.8	-86.9	910.0	874.0	35.96	25.309	
4,300.0	4,061.1	4,199.4	4,097.1	27.9	17.5	140.57	810.9	-90.2	935.4	898.4	37.04	25.252	
4,400.0	4,154.1	4,296.1	4,190.4	28.7	18.0	140.42	835.9	-93.4	960.9	922.7	38.13	25.199	
4,500.0	4,247.0	4,392.8	4,283.7	29.5	18.5	140.28	861.0	-96.7	986.3	947.1	39.22	25.148	
4,600.0	4,339.9	4,489.5	4,377.1	30.2	19.0	140.15	886.1	-100.0	1,011.7	971.4	40.31	25.100	
4,700.0	4,432.9	4,586.2	4,470.4	31.0	19.6	140.02	911.1	-103.3	1,037.2	995.8	41.40	25.054	
4,800.0	4,525.8	4,682.9	4,563.7	31.8	20.1	139.90	936.2	-106.5	1,062.6	1,020.2	42.49	25.011	
4,900.0	4,618.7	4,779.5	4,657.0	32.6	20.6	139.79	961.2	-109.8	1,088.1	1,044.5	43.58	24.969	
5,000.0	4,711.7	4,876.2	4,750.3	33.3	21.1	139.68	986.3	-113.1	1,113.6	1,068.9	44.67	24.930	
5,100.0	4,804.6	4,972.9	4,843.7	34.1	21.6	139.58	1,011.3	-116.4	1,139.0	1,093.3	45.76	24.892	
5,200.0	4,897.5	5,069.6	4,937.0	34.9	22.1	139.48	1,036.4	-119.6	1,164.5	1,117.7	46.85	24.856	
5,248.0	4,942.1	5,116.0	4,981.7	35.3	22.4	139.43	1,048.4	-121.2	1,176.7	1,129.4	47.37	24.840	
5,300.0	4,990.6	5,166.4	5,030.4	35.6	22.6	139.54	1,061.5	-122.9	1,189.6	1,141.7	47.93	24.819	
5,400.0	5,084.8	5,259.7	5,120.7	36.2	23.1	139.70	1,084.8	-126.0	1,212.6	1,163.8	48.84	24.828	
5,500.0	5,180.1	5,352.5	5,211.2	36.7	23.4	139.86	1,105.1	-128.6	1,233.4	1,183.8	49.63	24.853	
5,600.0	5,276.4	5,445.6	5,302.7	37.2	23.7	140.04	1,122.7	-130.9	1,251.9	1,201.6	50.32	24.879	
5,700.0	5,373.6	5,539.1	5,395.0	37.6	24.0	140.23	1,137.3	-132.8	1,268.3	1,217.4	50.92	24.907	
5,800.0	5,471.5	5,632.9	5,488.0	37.9	24.2	140.43	1,148.9	-134.4	1,282.4	1,230.9	51.42	24.939	
5,900.0	5,570.1	5,726.9	5,581.6	38.2	24.4	140.64	1,157.5	-135.5	1,294.2	1,242.4	51.82	24.975	
6,000.0	5,669.2	5,821.0	5,675.5	38.4	24.6	140.87	1,163.1	-136.2	1,303.8	1,251.6	52.12	25.015	
6,100.0	5,768.7	5,915.1	5,769.6	38.6	24.7	141.10	1,165.6	-136.5	1,311.0	1,258.7	52.32	25.060	
6,200.0	5,868.5	6,013.1	5,867.5	38.8	24.8	141.33	1,165.8	-136.6	1,316.0	1,263.5	52.44	25.094	
6,300.0	5,968.5	6,113.0	5,967.5	38.9	24.9	141.43	1,165.8	-136.6	1,318.2	1,265.6	52.56	25.079	
6,331.5	6,000.0	6,144.5	5,999.0	38.9	25.0	90.32	1,165.8	-136.6	1,318.3	1,265.7	52.60	25.063	
6,400.0	6,068.5	6,213.0	6,067.5	39.0	25.0	90.32	1,165.8	-136.6	1,318.3	1,265.6	52.74	24.997	
6,500.0	6,168.5	6,313.0	6,167.5	39.0	25.1	90.32	1,165.8	-136.6	1,318.3	1,265.4	52.95	24.899	
6,600.0	6,268.5	6,413.0	6,267.5	39.1	25.3	90.32	1,165.8	-136.6	1,318.3	1,265.2	53.16	24.800	

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

Offset Design Murdock 34SW-BL Pad Sec.34-T5N-R68W - Murdock 23-34D - 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	
6,700.0	6,368.5	6,513.0	6,367.5	39.2	25.4	90.32	1,165.8	-136.6	1,318.3	1,264.9	53.37	24.700	
6,800.0	6,468.5	6,613.0	6,467.5	39.3	25.5	90.32	1,165.8	-136.6	1,318.3	1,264.7	53.59	24.599	
6,900.0	6,568.5	6,713.0	6,567.5	39.3	25.6	90.32	1,165.8	-136.6	1,318.3	1,264.5	53.81	24.499	
7,000.0	6,668.5	6,813.0	6,667.5	39.4	25.7	90.32	1,165.8	-136.6	1,318.3	1,264.3	54.03	24.397	
7,100.0	6,768.5	6,913.0	6,767.5	39.5	25.8	90.32	1,165.8	-136.6	1,318.3	1,264.1	54.26	24.296	
7,200.0	6,868.5	7,013.0	6,867.5	39.6	26.0	90.32	1,165.8	-136.6	1,318.3	1,263.8	54.49	24.194	
7,300.0	6,968.5	7,113.0	6,967.5	39.7	26.1	90.32	1,165.8	-136.6	1,318.3	1,263.6	54.72	24.091	
7,400.0	7,068.5	7,213.0	7,067.5	39.8	26.2	90.32	1,165.8	-136.6	1,318.3	1,263.4	54.96	23.989	
7,500.0	7,168.5	7,313.0	7,167.5	39.8	26.3	90.32	1,165.8	-136.6	1,318.3	1,263.1	55.19	23.886	
7,600.0	7,268.5	7,413.0	7,267.5	39.9	26.5	90.32	1,165.8	-136.6	1,318.3	1,262.9	55.43	23.782	
7,700.0	7,368.5	7,513.0	7,367.5	40.0	26.6	90.32	1,165.8	-136.6	1,318.3	1,262.6	55.67	23.679	
7,800.0	7,468.5	7,613.0	7,467.5	40.1	26.7	90.32	1,165.8	-136.6	1,318.3	1,262.4	55.92	23.575	
7,900.0	7,568.5	7,713.0	7,567.5	40.2	26.9	90.32	1,165.8	-136.6	1,318.3	1,262.1	56.17	23.471	
8,000.0	7,668.5	7,813.0	7,667.5	40.3	27.0	90.32	1,165.8	-136.6	1,318.3	1,261.9	56.42	23.367	
8,100.0	7,768.5	7,913.0	7,767.5	40.4	27.1	90.32	1,165.8	-136.6	1,318.3	1,261.6	56.67	23.263	
8,200.0	7,868.5	8,013.0	7,867.5	40.5	27.3	90.32	1,165.8	-136.6	1,318.3	1,261.4	56.92	23.159	
8,231.5	7,900.0	8,044.5	7,899.0	40.5	27.3	90.32	1,165.8	-136.6	1,318.3	1,261.3	57.00	23.127	

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)
Reference Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	MD Reference:	WELL @ 5070.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Murdock 13-34D	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												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
0.0	0.0	0.0	0.0	0.0	0.0	-136.28	-14.6	-13.9	20.2				
100.0	100.0	100.0	100.0	0.1	0.1	-136.28	-14.6	-13.9	20.2	19.9	0.22	89.709	
200.0	200.0	200.0	200.0	0.3	0.3	-136.28	-14.6	-13.9	20.2	19.5	0.67	29.903	
298.7	298.7	298.7	298.7	0.6	0.6	-90.00	-14.6	-13.9	20.1	19.0	1.11	18.022 CC	
300.0	300.0	300.0	300.0	0.6	0.6	-90.12	-14.6	-13.9	20.1	19.0	1.12	17.931 ES	
400.0	399.8	399.8	399.8	0.8	0.8	-104.68	-14.6	-13.9	20.8	19.2	1.58	13.180	
500.0	499.5	499.5	499.5	1.0	1.0	-124.71	-14.6	-13.9	24.5	22.4	2.05	11.927 SF	
600.0	598.7	598.7	598.7	1.3	1.2	-142.22	-14.6	-13.9	33.0	30.5	2.53	13.026	
700.0	697.5	697.5	697.5	1.7	1.5	-154.00	-14.6	-13.9	46.4	43.4	3.01	15.440	
800.0	795.6	795.6	795.6	2.0	1.7	-161.36	-14.6	-13.9	64.1	60.7	3.47	18.475	
900.0	893.1	893.1	893.1	2.5	1.9	-166.06	-14.6	-13.9	85.8	81.8	3.94	21.793	
1,000.0	989.6	989.6	989.6	3.0	2.1	-169.17	-14.6	-13.9	111.1	106.7	4.40	25.238	
1,100.0	1,085.3	1,085.3	1,085.3	3.5	2.3	-171.33	-14.6	-13.9	140.0	135.1	4.87	28.735	
1,200.0	1,179.8	1,179.8	1,179.8	4.2	2.5	-172.88	-14.6	-13.9	172.2	166.9	5.34	32.246	
1,283.5	1,257.9	1,257.9	1,257.9	4.8	2.7	-173.85	-14.6	-13.9	201.8	196.0	5.74	35.174	
1,300.0	1,273.2	1,273.2	1,273.2	4.9	2.7	-174.03	-14.6	-13.9	207.8	202.0	5.82	35.717	
1,400.0	1,366.1	1,366.1	1,366.1	5.6	3.0	-174.93	-14.6	-13.9	244.6	238.3	6.32	38.689	
1,500.0	1,459.1	1,459.1	1,459.1	6.4	3.2	-175.60	-14.6	-13.9	281.4	274.6	6.83	41.193	
1,600.0	1,552.0	1,552.0	1,552.0	7.1	3.4	-176.11	-14.6	-13.9	318.3	310.9	7.35	43.324	
1,700.0	1,644.9	1,644.9	1,644.9	7.9	3.6	-176.51	-14.6	-13.9	355.1	347.3	7.86	45.157	
1,800.0	1,737.8	1,737.8	1,737.8	8.6	3.8	-176.84	-14.6	-13.9	392.0	383.6	8.39	46.748	
1,900.0	1,830.8	1,830.8	1,830.8	9.4	4.0	-177.11	-14.6	-13.9	428.9	420.0	8.91	48.141	
2,000.0	1,923.7	1,923.7	1,923.7	10.2	4.2	-177.34	-14.6	-13.9	465.8	456.3	9.43	49.369	
2,100.0	2,016.6	2,016.6	2,016.6	10.9	4.4	-177.54	-14.6	-13.9	502.7	492.7	9.96	50.459	
2,200.0	2,109.6	2,109.6	2,109.6	11.7	4.6	-177.70	-14.6	-13.9	539.6	529.1	10.49	51.433	
2,300.0	2,202.5	2,202.5	2,202.5	12.5	4.8	-177.85	-14.6	-13.9	576.5	565.5	11.02	52.308	
2,400.0	2,295.4	2,295.4	2,295.4	13.2	5.0	-177.98	-14.6	-13.9	613.4	601.8	11.55	53.097	
2,500.0	2,388.4	2,388.4	2,388.4	14.0	5.3	-178.09	-14.6	-13.9	650.3	638.2	12.08	53.813	
2,600.0	2,481.3	2,481.3	2,481.3	14.8	5.5	-178.20	-14.6	-13.9	687.2	674.6	12.62	54.465	
2,700.0	2,574.2	2,574.2	2,574.2	15.6	5.7	-178.29	-14.6	-13.9	724.1	711.0	13.15	55.061	
2,800.0	2,667.2	2,667.2	2,667.2	16.3	5.9	-178.37	-14.6	-13.9	761.0	747.3	13.69	55.608	
2,900.0	2,760.1	2,760.1	2,760.1	17.1	6.1	-178.45	-14.6	-13.9	797.9	783.7	14.22	56.112	
3,000.0	2,853.0	2,853.0	2,853.0	17.9	6.3	-178.52	-14.6	-13.9	834.9	820.1	14.76	56.577	
3,100.0	2,946.0	2,946.0	2,946.0	18.6	6.5	-178.58	-14.6	-13.9	871.8	856.5	15.29	57.008	
3,200.0	3,038.9	3,038.9	3,038.9	19.4	6.7	-178.64	-14.6	-13.9	908.7	892.9	15.83	57.407	
3,300.0	3,131.8	3,131.8	3,131.8	20.2	6.9	-178.69	-14.6	-13.9	945.6	929.3	16.37	57.780	
3,400.0	3,224.8	3,224.8	3,224.8	21.0	7.1	-178.74	-14.6	-13.9	982.5	965.6	16.90	58.127	
3,500.0	3,317.7	3,317.7	3,317.7	21.7	7.3	-178.78	-14.6	-13.9	1,019.5	1,002.0	17.44	58.451	
3,600.0	3,410.6	3,410.6	3,410.6	22.5	7.6	-178.83	-14.6	-13.9	1,056.4	1,038.4	17.98	58.755	
3,700.0	3,503.6	3,503.6	3,503.6	23.3	7.8	-178.87	-14.6	-13.9	1,093.3	1,074.8	18.52	59.040	
3,800.0	3,596.5	3,596.5	3,596.5	24.1	8.0	-178.90	-14.6	-13.9	1,130.2	1,111.2	19.06	59.309	
3,900.0	3,689.4	3,689.4	3,689.4	24.8	8.2	-178.94	-14.6	-13.9	1,167.1	1,147.5	19.60	59.561	
4,000.0	3,782.4	3,782.4	3,782.4	25.6	8.4	-178.97	-14.6	-13.9	1,204.1	1,183.9	20.14	59.799	
4,100.0	3,875.3	3,875.3	3,875.3	26.4	8.6	-179.00	-14.6	-13.9	1,241.0	1,220.3	20.67	60.024	
4,200.0	3,968.2	3,968.2	3,968.2	27.2	8.8	-179.03	-14.6	-13.9	1,277.9	1,256.7	21.21	60.237	
4,300.0	4,061.1	4,061.1	4,061.1	27.9	9.0	-179.06	-14.6	-13.9	1,314.8	1,293.1	21.75	60.438	
4,400.0	4,154.1	4,154.1	4,154.1	28.7	9.2	-179.08	-14.6	-13.9	1,351.8	1,329.5	22.30	60.629	
4,500.0	4,247.0	4,247.0	4,247.0	29.5	9.4	-179.11	-14.6	-13.9	1,388.7	1,365.8	22.84	60.811	
4,600.0	4,339.9	4,339.9	4,339.9	30.2	9.6	-179.13	-14.6	-13.9	1,425.6	1,402.2	23.38	60.983	
4,700.0	4,432.9	4,432.9	4,432.9	31.0	9.9	-179.15	-14.6	-13.9	1,462.5	1,438.6	23.92	61.147	
4,800.0	4,525.8	4,525.8	4,525.8	31.8	10.1	-179.17	-14.6	-13.9	1,499.4	1,475.0	24.46	61.303	
4,900.0	4,618.7	4,618.7	4,618.7	32.6	10.3	-179.19	-14.6	-13.9	1,536.4	1,511.4	25.00	61.452	

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

Offset Design											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	
5,000.0	4,711.7	4,711.7	4,711.7	33.3	10.5	-179.21	-14.6	-13.9	1,573.3	1,547.8	25.54	61.594	
5,100.0	4,804.6	4,804.6	4,804.6	34.1	10.7	-179.23	-14.6	-13.9	1,610.2	1,584.1	26.09	61.729	
5,200.0	4,897.5	4,897.5	4,897.5	34.9	10.9	-179.25	-14.6	-13.9	1,647.1	1,620.5	26.63	61.859	
5,248.0	4,942.1	4,942.1	4,942.1	35.3	11.0	-179.26	-14.6	-13.9	1,664.9	1,638.0	26.89	61.919	
5,300.0	4,990.6	4,990.6	4,990.6	35.6	11.1	-179.27	-14.6	-13.9	1,683.6	1,656.4	27.22	61.844	
5,400.0	5,084.8	5,084.8	5,084.8	36.2	11.3	-179.29	-14.6	-13.9	1,717.2	1,689.4	27.82	61.721	
5,500.0	5,180.1	5,180.1	5,180.1	36.7	11.5	-179.31	-14.6	-13.9	1,747.5	1,719.1	28.38	61.572	
5,600.0	5,276.4	5,276.4	5,276.4	37.2	11.7	-179.33	-14.6	-13.9	1,774.4	1,745.5	28.90	61.401	
5,700.0	5,373.6	5,373.6	5,373.6	37.6	12.0	-179.34	-14.6	-13.9	1,798.0	1,768.6	29.37	61.210	
5,800.0	5,471.5	5,471.5	5,471.5	37.9	12.2	-179.36	-14.6	-13.9	1,818.2	1,788.4	29.81	61.001	
5,900.0	5,570.1	5,570.1	5,570.1	38.2	12.4	-179.37	-14.6	-13.9	1,834.9	1,804.7	30.19	60.775	
6,000.0	5,669.2	5,669.2	5,669.2	38.4	12.6	-179.37	-14.6	-13.9	1,848.2	1,817.6	30.53	60.534	
6,100.0	5,768.7	5,768.7	5,768.7	38.6	12.9	-179.38	-14.6	-13.9	1,858.0	1,827.2	30.82	60.278	
6,200.0	5,868.5	5,868.5	5,868.5	38.8	13.1	-179.38	-14.6	-13.9	1,864.3	1,833.2	31.07	60.008	
6,300.0	5,968.5	5,968.5	5,968.5	38.9	13.3	-179.38	-14.6	-13.9	1,867.1	1,835.9	31.26	59.721	
6,331.5	6,000.0	6,000.0	6,000.0	38.9	13.4	129.50	-14.6	-13.9	1,867.3	1,836.0	31.32	59.627	
6,400.0	6,068.5	6,068.5	6,068.5	39.0	13.5	129.50	-14.6	-13.9	1,867.3	1,835.8	31.57	59.157	
6,500.0	6,168.5	6,168.5	6,168.5	39.0	13.8	129.50	-14.6	-13.9	1,867.3	1,835.4	31.94	58.466	
6,600.0	6,268.5	6,268.5	6,268.5	39.1	14.0	129.50	-14.6	-13.9	1,867.3	1,835.0	32.31	57.788	
6,700.0	6,368.5	6,368.5	6,368.5	39.2	14.2	129.50	-14.6	-13.9	1,867.3	1,834.6	32.69	57.123	
6,800.0	6,468.5	6,468.5	6,468.5	39.3	14.4	129.50	-14.6	-13.9	1,867.3	1,834.3	33.07	56.470	
6,900.0	6,568.5	6,568.5	6,568.5	39.3	14.7	129.50	-14.6	-13.9	1,867.3	1,833.9	33.45	55.830	
7,000.0	6,668.5	6,668.5	6,668.5	39.4	14.9	129.50	-14.6	-13.9	1,867.3	1,833.5	33.83	55.202	
7,100.0	6,768.5	6,768.5	6,768.5	39.5	15.1	129.50	-14.6	-13.9	1,867.3	1,833.1	34.21	54.586	
7,200.0	6,868.5	6,868.5	6,868.5	39.6	15.3	129.50	-14.6	-13.9	1,867.3	1,832.7	34.59	53.981	
7,300.0	6,968.5	6,968.5	6,968.5	39.7	15.6	129.50	-14.6	-13.9	1,867.3	1,832.3	34.98	53.388	
7,400.0	7,068.5	7,068.5	7,068.5	39.8	15.8	129.50	-14.6	-13.9	1,867.3	1,832.0	35.36	52.805	
7,500.0	7,168.5	7,168.5	7,168.5	39.8	16.0	129.50	-14.6	-13.9	1,867.3	1,831.6	35.75	52.233	
7,600.0	7,268.5	7,268.5	7,268.5	39.9	16.2	129.50	-14.6	-13.9	1,867.3	1,831.2	36.14	51.672	
7,700.0	7,368.5	7,368.5	7,368.5	40.0	16.4	129.50	-14.6	-13.9	1,867.3	1,830.8	36.53	51.121	
7,800.0	7,468.5	7,468.5	7,468.5	40.1	16.7	129.50	-14.6	-13.9	1,867.3	1,830.4	36.92	50.580	
7,900.0	7,568.5	7,568.5	7,568.5	40.2	16.9	129.50	-14.6	-13.9	1,867.3	1,830.0	37.31	50.049	
8,000.0	7,668.5	7,668.5	7,668.5	40.3	17.1	129.50	-14.6	-13.9	1,867.3	1,829.6	37.70	49.528	
8,100.0	7,768.5	7,768.5	7,768.5	40.4	17.3	129.50	-14.6	-13.9	1,867.3	1,829.2	38.10	49.016	
8,200.0	7,868.5	7,868.5	7,868.5	40.5	17.6	129.50	-14.6	-13.9	1,867.3	1,828.8	38.49	48.513	
8,231.5	7,900.0	7,900.0	7,900.0	40.5	17.6	129.50	-14.6	-13.9	1,867.3	1,828.7	38.62	48.356	

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)
Reference Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	MD Reference:	WELL @ 5070.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Murdock 13-34D	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												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 Tooface (")	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-136.28	-29.1	-27.9	40.3	40.3	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-136.28	-29.1	-27.9	40.3	40.1	0.23	177.655	
200.0	200.0	201.0	201.0	0.3	0.3	-136.28	-29.1	-27.9	40.3	39.7	0.68	59.612	
300.0	300.0	301.0	301.0	0.6	0.6	-87.64	-29.1	-27.9	40.2	39.1	1.12	35.824	
339.5	339.5	340.5	340.5	0.7	0.7	-90.00	-29.1	-27.9	40.2	38.9	1.30	30.859 CC	
400.0	399.8	400.8	400.8	0.8	0.8	-95.08	-29.1	-27.9	40.3	38.8	1.58	25.583 ES	
500.0	499.5	500.5	500.5	1.0	1.0	-106.92	-29.1	-27.9	42.0	40.0	2.05	20.450	
600.0	598.7	599.7	599.7	1.3	1.2	-121.10	-29.1	-27.9	47.1	44.5	2.56	18.416 SF	
700.0	697.5	698.5	698.5	1.7	1.5	-134.52	-29.1	-27.9	56.8	53.7	3.06	18.575	
800.0	795.6	798.5	798.5	2.0	1.7	-144.57	-28.2	-29.3	70.2	66.7	3.54	19.826	
900.0	893.1	899.2	899.1	2.5	1.9	-151.16	-25.2	-33.5	85.3	81.2	4.02	21.209	
1,000.0	989.6	1,000.6	1,000.0	3.0	2.1	-155.62	-20.1	-40.7	101.1	96.6	4.51	22.437	
1,100.0	1,085.3	1,102.5	1,101.2	3.5	2.4	-158.74	-12.9	-50.9	117.4	112.4	5.01	23.446	
1,200.0	1,179.8	1,205.2	1,202.6	4.2	2.7	-161.00	-3.5	-64.2	134.0	128.5	5.53	24.231	
1,283.5	1,257.9	1,291.4	1,287.2	4.8	3.0	-162.42	5.9	-77.6	148.0	142.0	5.98	24.724	
1,300.0	1,273.2	1,308.1	1,303.5	4.9	3.0	-162.66	7.9	-80.4	150.7	144.6	6.08	24.784	
1,400.0	1,366.1	1,406.6	1,399.9	5.6	3.4	-163.95	19.7	-97.1	167.2	160.5	6.66	25.094	
1,500.0	1,459.1	1,505.2	1,496.3	6.4	3.8	-165.00	31.6	-113.9	183.8	176.5	7.26	25.328	
1,600.0	1,552.0	1,603.7	1,592.7	7.1	4.2	-165.88	43.4	-130.6	200.4	192.6	7.85	25.527	
1,700.0	1,644.9	1,702.3	1,689.1	7.9	4.6	-166.63	55.2	-147.3	217.1	208.6	8.45	25.691	
1,800.0	1,737.8	1,800.9	1,785.5	8.6	5.0	-167.26	67.0	-164.1	233.8	224.8	9.05	25.830	
1,900.0	1,830.8	1,899.4	1,882.0	9.4	5.4	-167.82	78.8	-180.8	250.5	240.9	9.65	25.950	
2,000.0	1,923.7	1,998.0	1,978.4	10.2	5.9	-168.30	90.7	-197.6	267.3	257.0	10.26	26.053	
2,100.0	2,016.6	2,096.6	2,074.8	10.9	6.3	-168.73	102.5	-214.3	284.1	273.2	10.87	26.143	
2,200.0	2,109.6	2,195.1	2,171.2	11.7	6.7	-169.11	114.3	-231.1	300.8	289.4	11.47	26.222	
2,300.0	2,202.5	2,293.7	2,267.6	12.5	7.2	-169.44	126.1	-247.8	317.6	305.5	12.08	26.292	
2,400.0	2,295.4	2,392.3	2,364.0	13.2	7.6	-169.75	138.0	-264.5	334.4	321.7	12.69	26.354	
2,500.0	2,388.4	2,490.8	2,460.4	14.0	8.0	-170.03	149.8	-281.3	351.2	337.9	13.30	26.409	
2,600.0	2,481.3	2,589.4	2,556.8	14.8	8.5	-170.28	161.6	-298.0	368.1	354.1	13.91	26.459	
2,700.0	2,574.2	2,687.9	2,653.2	15.6	8.9	-170.50	173.4	-314.8	384.9	370.4	14.52	26.504	
2,800.0	2,667.2	2,786.5	2,749.6	16.3	9.3	-170.71	185.2	-331.5	401.7	386.6	15.13	26.545	
2,900.0	2,760.1	2,885.1	2,846.1	17.1	9.8	-170.91	197.1	-348.2	418.5	402.8	15.75	26.581	
3,000.0	2,853.0	2,983.6	2,942.5	17.9	10.2	-171.08	208.9	-365.0	435.4	419.0	16.36	26.615	
3,100.0	2,946.0	3,082.2	3,038.9	18.6	10.7	-171.25	220.7	-381.7	452.2	435.2	16.97	26.646	
3,200.0	3,038.9	3,180.8	3,135.3	19.4	11.1	-171.40	232.5	-398.5	469.1	451.5	17.59	26.674	
3,300.0	3,131.8	3,279.3	3,231.7	20.2	11.6	-171.54	244.3	-415.2	485.9	467.7	18.20	26.700	
3,400.0	3,224.8	3,377.9	3,328.1	21.0	12.0	-171.68	256.2	-432.0	502.8	483.9	18.81	26.723	
3,500.0	3,317.7	3,476.5	3,424.5	21.7	12.5	-171.80	268.0	-448.7	519.6	500.2	19.43	26.746	
3,600.0	3,410.6	3,575.0	3,520.9	22.5	12.9	-171.92	279.8	-465.4	536.5	516.4	20.04	26.766	
3,700.0	3,503.6	3,673.6	3,617.3	23.3	13.3	-172.03	291.6	-482.2	553.3	532.7	20.66	26.785	
3,800.0	3,596.5	3,772.1	3,713.7	24.1	13.8	-172.13	303.4	-498.9	570.2	548.9	21.27	26.803	
3,900.0	3,689.4	3,870.7	3,810.1	24.8	14.2	-172.23	315.3	-515.7	587.0	565.2	21.89	26.819	
4,000.0	3,782.4	3,969.3	3,906.6	25.6	14.7	-172.32	327.1	-532.4	603.9	581.4	22.51	26.834	
4,100.0	3,875.3	4,067.8	4,003.0	26.4	15.1	-172.40	338.9	-549.2	620.8	597.7	23.12	26.849	
4,200.0	3,968.2	4,166.4	4,099.4	27.2	15.6	-172.49	350.7	-565.9	637.6	613.9	23.74	26.862	
4,300.0	4,061.1	4,265.0	4,195.8	27.9	16.0	-172.56	362.5	-582.6	654.5	630.2	24.35	26.875	
4,400.0	4,154.1	4,363.5	4,292.2	28.7	16.5	-172.64	374.4	-599.4	671.4	646.4	24.97	26.887	
4,500.0	4,247.0	4,462.1	4,388.6	29.5	16.9	-172.71	386.2	-616.1	688.2	662.7	25.59	26.898	
4,600.0	4,339.9	4,560.7	4,485.0	30.2	17.4	-172.77	398.0	-632.9	705.1	678.9	26.20	26.909	
4,700.0	4,432.9	4,659.2	4,581.4	31.0	17.8	-172.84	409.8	-649.6	722.0	695.2	26.82	26.918	
4,800.0	4,525.8	4,757.8	4,677.8	31.8	18.3	-172.90	421.6	-666.3	738.9	711.4	27.44	26.928	
4,900.0	4,618.7	4,856.3	4,774.2	32.6	18.7	-172.96	433.5	-683.1	755.7	727.7	28.06	26.937	

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

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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,000.0	4,711.7	4,954.9	4,870.6	33.3	19.2	-173.01	445.3	-699.8	772.6	743.9	28.67	26.945		
5,100.0	4,804.6	5,053.5	4,967.1	34.1	19.6	-173.06	457.1	-716.6	789.5	760.2	29.29	26.953		
5,200.0	4,897.5	5,152.0	5,063.5	34.9	20.1	-173.12	468.9	-733.3	806.3	776.4	29.91	26.961		
5,248.0	4,942.1	5,198.1	5,108.5	35.3	20.3	-173.14	474.5	-741.1	814.4	784.2	30.20	26.968		
5,300.0	4,990.6	5,238.1	5,147.8	35.6	20.4	-173.18	479.1	-747.7	823.2	792.7	30.49	26.995		
5,400.0	5,084.8	5,314.9	5,223.3	36.2	20.6	-173.26	487.0	-758.9	839.4	808.4	31.00	27.077		
5,500.0	5,180.1	5,400.0	5,307.4	36.7	20.9	-173.35	494.5	-769.5	854.8	823.3	31.47	27.166		
5,600.0	5,276.4	5,467.8	5,374.6	37.2	21.0	-173.42	499.4	-776.4	869.3	837.4	31.84	27.300		
5,700.0	5,373.6	5,543.9	5,450.4	37.6	21.2	-173.50	503.8	-782.7	883.0	850.8	32.18	27.441		
5,800.0	5,471.5	5,619.8	5,526.1	37.9	21.4	-173.57	507.0	-787.2	895.8	863.4	32.46	27.602		
5,900.0	5,570.1	5,700.0	5,606.2	38.2	21.5	-173.65	509.2	-790.3	907.8	875.2	32.68	27.777		
6,000.0	5,669.2	5,771.2	5,677.4	38.4	21.6	-173.73	510.0	-791.5	919.0	886.1	32.84	27.984		
6,100.0	5,768.7	5,863.6	5,769.7	38.6	21.7	-173.81	510.1	-791.6	928.6	895.6	32.99	28.145		
6,200.0	5,868.5	5,963.4	5,869.5	38.8	21.8	-173.86	510.1	-791.6	934.9	901.8	33.12	28.225		
6,300.0	5,968.5	6,063.4	5,969.5	38.9	22.0	-173.89	510.1	-791.6	937.7	904.5	33.21	28.236		
6,331.5	6,000.0	6,094.9	6,001.0	38.9	22.0	134.99	510.1	-791.6	937.9	904.7	33.23	28.225		
6,400.0	6,068.5	6,163.4	6,069.5	39.0	22.1	134.99	510.1	-791.6	937.9	904.4	33.45	28.037		
6,500.0	6,168.5	6,263.4	6,169.5	39.0	22.2	134.99	510.1	-791.6	937.9	904.1	33.79	27.759		
6,600.0	6,268.5	6,363.4	6,269.5	39.1	22.3	134.99	510.1	-791.6	937.9	903.8	34.13	27.484		
6,700.0	6,368.5	6,463.4	6,369.5	39.2	22.5	134.99	510.1	-791.6	937.9	903.4	34.47	27.212		
6,800.0	6,468.5	6,563.4	6,469.5	39.3	22.6	134.99	510.1	-791.6	937.9	903.1	34.81	26.944		
6,900.0	6,568.5	6,663.4	6,569.5	39.3	22.8	134.99	510.1	-791.6	937.9	902.7	35.15	26.680		
7,000.0	6,668.5	6,763.4	6,669.5	39.4	22.9	134.99	510.1	-791.6	937.9	902.4	35.50	26.419		
7,100.0	6,768.5	6,863.4	6,769.5	39.5	23.0	134.99	510.1	-791.6	937.9	902.0	35.85	26.161		
7,200.0	6,868.5	6,963.4	6,869.5	39.6	23.2	134.99	510.1	-791.6	937.9	901.7	36.20	25.907		
7,300.0	6,968.5	7,063.4	6,969.5	39.7	23.3	134.99	510.1	-791.6	937.9	901.3	36.56	25.657		
7,400.0	7,068.5	7,163.4	7,069.5	39.8	23.5	134.99	510.1	-791.6	937.9	901.0	36.91	25.409		
7,500.0	7,168.5	7,263.4	7,169.5	39.8	23.6	134.99	510.1	-791.6	937.9	900.6	37.27	25.165		
7,600.0	7,268.5	7,363.4	7,269.5	39.9	23.8	134.99	510.1	-791.6	937.9	900.3	37.63	24.925		
7,700.0	7,368.5	7,463.4	7,369.5	40.0	23.9	134.99	510.1	-791.6	937.9	899.9	37.99	24.688		
7,800.0	7,468.5	7,563.4	7,469.5	40.1	24.1	134.99	510.1	-791.6	937.9	899.5	38.35	24.454		
7,900.0	7,568.5	7,663.4	7,569.5	40.2	24.2	134.99	510.1	-791.6	937.9	899.2	38.72	24.224		
8,000.0	7,668.5	7,763.4	7,669.5	40.3	24.4	134.99	510.1	-791.6	937.9	898.8	39.08	23.996		
8,100.0	7,768.5	7,863.4	7,769.5	40.4	24.5	134.99	510.1	-791.6	937.9	898.4	39.45	23.773		
8,200.0	7,868.5	7,963.4	7,869.5	40.5	24.7	134.99	510.1	-791.6	937.9	898.1	39.82	23.552		
8,220.7	7,889.2	7,984.0	7,890.2	40.5	24.7	134.99	510.1	-791.6	937.9	898.0	39.90	23.507		
8,231.5	7,900.0	7,993.9	7,900.0	40.5	24.7	134.99	510.1	-791.6	937.9	898.0	39.94	23.484		

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)
Reference Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	MD Reference:	WELL @ 5070.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Murdock 13-34D	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 @ 5070.0ft (Original Well Elev) Coordinates are relative to: Murdock 13-34D
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.33°



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)
Reference Site:	Murdock 34SW-BL Pad Sec.34-T5N-R68W	MD Reference:	WELL @ 5070.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Murdock 13-34D	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 @ 5070.0ft (Original Well Elev) Coordinates are relative to: Murdock 13-34D
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°

