

Apollo Operating, LLC

Margil Farms Multi Well Plan

Sec. 2, T3N R68W

Margil Farms 12-2D - Slot 12-2D

Wellbore #1

Plan: Plan #1

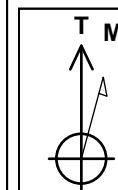
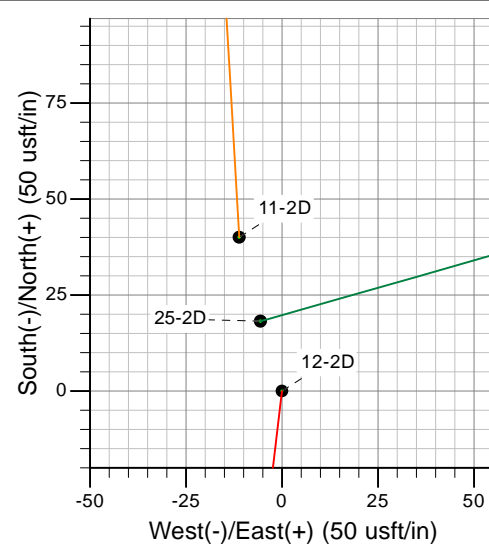
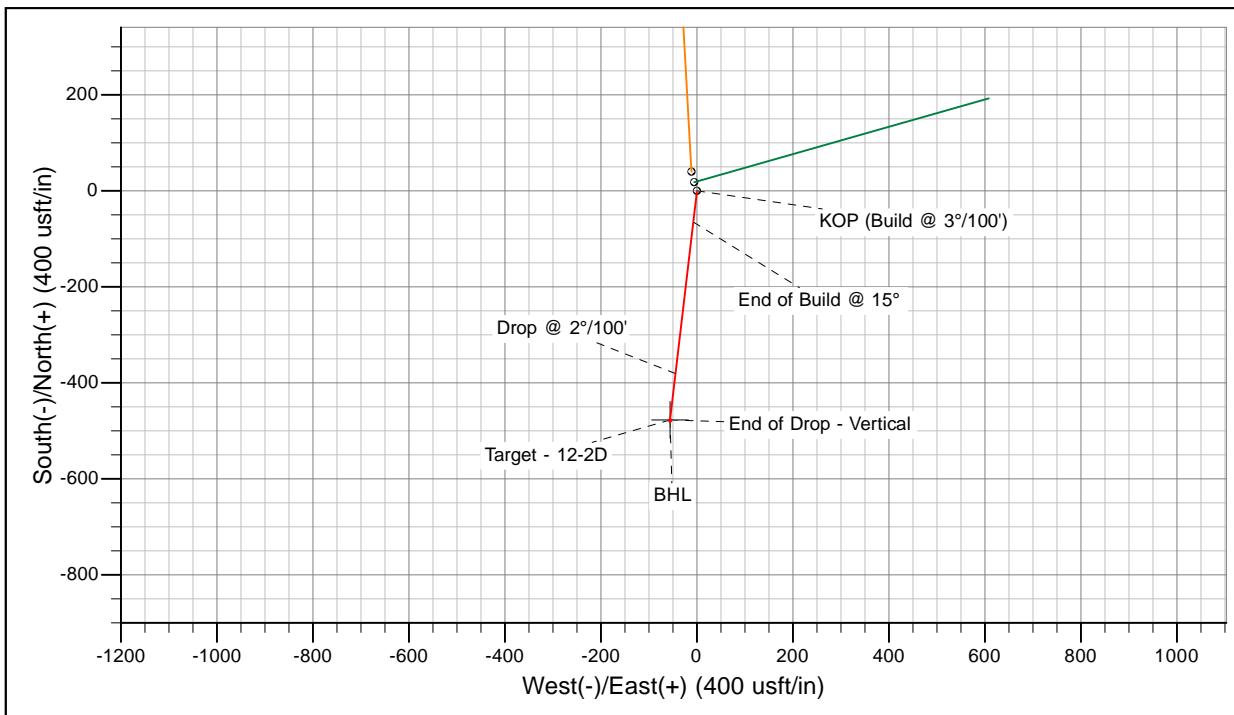
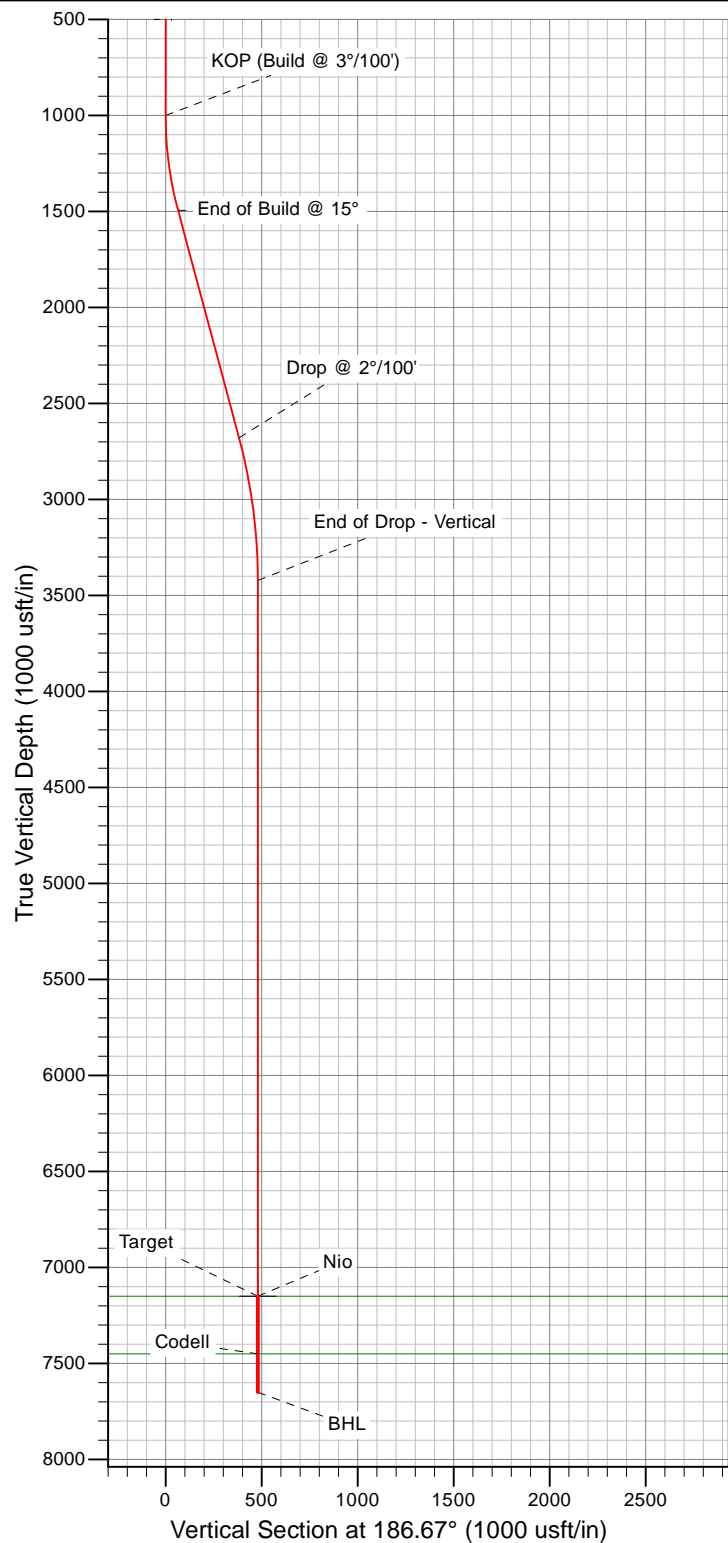
16 May, 2011

Directional Planning Report



Apollo Operating, LLC

Project: Margil Farms Multi Well Plan
 Site: Sec. 2, T3N R68W
 Well: Margil Farms 12-2D
 Wellbore: Wellbore #1
 Design: Plan #1



Azimuths to True North
 Magnetic North: 8.98°

Magnetic Field
 Strength: 53040.8snT
 Dip Angle: 66.90°
 Date: 5/16/2011
 Model: IGRF2010



Plan: Plan #1 (Margil Farms 12-2D/Wellbore #1)

Created By: Roopa Dattan Date: 15:09, May 16 2011

Total Directional Services

Directional Planning Report



Database:	Total	Local Co-ordinate Reference:	Well Margil Farms 12-2D - Slot 12-2D
Company:	Apollo Operating, LLC	TVD Reference:	Est. KB @ 5035.00usft (Original Well Elev)
Project:	Margil Farms Multi Well Plan	MD Reference:	Est. KB @ 5035.00usft (Original Well Elev)
Site:	Sec. 2, T3N R68W	North Reference:	True
Well:	Margil Farms 12-2D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project	Margil Farms Multi Well Plan		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD83 Colorado - HARN		
Map Zone:	Zone 13N (108 W to 102 W)		

Site	Sec. 2, T3N R68W		
Site Position:		Northing:	4,456,446.86 m
From:	Lat/Long	Easting:	501,929.49 m
Position Uncertainty:	0.00usft	Slot Radius:	13-3/16 "
		Latitude:	40° 15' 30.528 N
		Longitude:	104° 58' 38.316 W
		Grid Convergence:	0.01 °

Well	Margil Farms 12-2D - Slot 12-2D					
Well Position	+N/-S	0.00 usft	Northing:	4,456,434.65 m	Latitude:	40° 15' 30.132 N
	+E/-W	0.00 usft	Easting:	501,932.89 m	Longitude:	104° 58' 38.172 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,014.00 usft

Wellbore	Wellbore #1					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)	
	IGRF2010	5/16/2011	8.98	66.90	53,041	

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	186.67

Total Directional Services

Directional Planning Report



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Project:	Margil Farms Multi Well Plan	MD Reference:	Est. KB @ 5035.00usft (Original Well Elev)
Site:	Sec. 2, T3N R68W	North Reference:	True
Well:	Margil Farms 12-2D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	15.00	186.67	1,494.31	-64.64	-7.56	3.00	3.00	0.00	186.67	
2,727.12	15.00	186.67	2,679.61	-380.09	-44.45	0.00	0.00	0.00	0.00	
3,477.12	0.00	0.00	3,421.08	-477.04	-55.79	2.00	-2.00	0.00	180.00	
7,206.04	0.00	0.00	7,150.00	-477.04	-55.79	0.00	0.00	0.00	0.00	Target - 12-2D
7,706.04	0.00	0.00	7,650.00	-477.04	-55.79	0.00	0.00	0.00	0.00	

Total Directional Services

Directional Planning Report



Database:	Total	Local Co-ordinate Reference:	Well Margil Farms 12-2D - Slot 12-2D
Company:	Apollo Operating, LLC	TVD Reference:	Est. KB @ 5035.00usft (Original Well Elev)
Project:	Margil Farms Multi Well Plan	MD Reference:	Est. KB @ 5035.00usft (Original Well Elev)
Site:	Sec. 2, T3N R68W	North Reference:	True
Well:	Margil Farms 12-2D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	TVD (usft)	Sub Sea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Dogleg Rate (°/100usft)	Comment/Formation
0.00	0.00	0.00	0.00	5,035.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	4,935.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	4,835.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	4,735.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	4,635.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	4,535.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	4,435.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	4,335.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	4,235.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	4,135.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	4,035.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP (Build @ 3°/100')
1,100.00	3.00	186.67	1,099.95	3,935.05	-2.60	-0.30	2.62	3.00	0.00	3.00	
1,200.00	6.00	186.67	1,199.63	3,835.37	-10.39	-1.22	10.46	3.00	0.00	3.00	
1,300.00	9.00	186.67	1,298.77	3,736.23	-23.35	-2.73	23.51	3.00	0.00	3.00	
1,400.00	12.00	186.67	1,397.08	3,637.92	-41.45	-4.85	41.74	3.00	0.00	3.00	
1,500.00	15.00	186.67	1,494.31	3,540.69	-64.64	-7.56	65.08	3.00	0.00	3.00	End of Build @ 15°
1,600.00	15.00	186.67	1,590.90	3,444.10	-90.34	-10.57	90.96	0.00	0.00	0.00	
1,700.00	15.00	186.67	1,687.49	3,347.51	-116.05	-13.57	116.84	0.00	0.00	0.00	
1,800.00	15.00	186.67	1,784.09	3,250.91	-141.76	-16.58	142.72	0.00	0.00	0.00	
1,900.00	15.00	186.67	1,880.68	3,154.32	-167.46	-19.58	168.60	0.00	0.00	0.00	
2,000.00	15.00	186.67	1,977.27	3,057.73	-193.17	-22.59	194.49	0.00	0.00	0.00	
2,100.00	15.00	186.67	2,073.86	2,961.14	-218.88	-25.60	220.37	0.00	0.00	0.00	
2,200.00	15.00	186.67	2,170.46	2,864.54	-244.58	-28.60	246.25	0.00	0.00	0.00	

Total Directional Services

Directional Planning Report



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Company:	Apollo Operating, LLC	TVD Reference:	Est. KB @ 5035.00usft (Original Well Elev)
Project:	Margil Farms Multi Well Plan	MD Reference:	Est. KB @ 5035.00usft (Original Well Elev)
Site:	Sec. 2, T3N R68W	North Reference:	True
Well:	Margil Farms 12-2D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	TVD (usft)	Sub Sea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Dogleg Rate (°/100usft)	Comment/Formation
2,300.00	15.00	186.67	2,267.05	2,767.95	-270.29	-31.61	272.13	0.00	0.00	0.00	
2,400.00	15.00	186.67	2,363.64	2,671.36	-296.00	-34.62	298.01	0.00	0.00	0.00	
2,500.00	15.00	186.67	2,460.23	2,574.77	-321.70	-37.62	323.90	0.00	0.00	0.00	
2,600.00	15.00	186.67	2,556.83	2,478.17	-347.41	-40.63	349.78	0.00	0.00	0.00	
2,700.00	15.00	186.67	2,653.42	2,381.58	-373.12	-43.63	375.66	0.00	0.00	0.00	
2,727.12	15.00	186.67	2,679.61	2,355.39	-380.09	-44.45	382.68	0.00	0.00	0.00	Drop @ 2°/100'
2,800.00	13.54	186.67	2,750.24	2,284.76	-397.93	-46.54	400.64	-2.00	0.00	2.00	
2,900.00	11.54	186.67	2,847.85	2,187.15	-419.50	-49.06	422.36	-2.00	0.00	2.00	
3,000.00	9.54	186.67	2,946.16	2,088.84	-437.67	-51.18	440.65	-2.00	0.00	2.00	
3,100.00	7.54	186.67	3,045.05	1,989.95	-452.42	-52.91	455.51	-2.00	0.00	2.00	
3,200.00	5.54	186.67	3,144.39	1,890.61	-463.74	-54.23	466.90	-2.00	0.00	2.00	
3,300.00	3.54	186.67	3,244.07	1,790.93	-471.61	-55.15	474.82	-2.00	0.00	2.00	
3,400.00	1.54	186.67	3,343.97	1,691.03	-476.01	-55.67	479.26	-2.00	0.00	2.00	
3,477.12	0.00	0.00	3,421.08	1,613.92	-477.04	-55.79	480.29	-2.00	0.00	2.00	End of Drop - Vertical
3,500.00	0.00	0.00	3,443.96	1,591.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
3,600.00	0.00	0.00	3,543.96	1,491.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
3,700.00	0.00	0.00	3,643.96	1,391.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
3,800.00	0.00	0.00	3,743.96	1,291.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
3,900.00	0.00	0.00	3,843.96	1,191.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
4,000.00	0.00	0.00	3,943.96	1,091.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
4,100.00	0.00	0.00	4,043.96	991.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
4,200.00	0.00	0.00	4,143.96	891.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
4,300.00	0.00	0.00	4,243.96	791.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
4,400.00	0.00	0.00	4,343.96	691.04	-477.04	-55.79	480.29	0.00	0.00	0.00	

Total Directional Services

Directional Planning Report



Database:	Total	Local Co-ordinate Reference:	Well Margil Farms 12-2D - Slot 12-2D
Company:	Apollo Operating, LLC	TVD Reference:	Est. KB @ 5035.00usft (Original Well Elev)
Project:	Margil Farms Multi Well Plan	MD Reference:	Est. KB @ 5035.00usft (Original Well Elev)
Site:	Sec. 2, T3N R68W	North Reference:	True
Well:	Margil Farms 12-2D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	TVD (usft)	Sub Sea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Dogleg Rate (°/100usft)	Comment/Formation
4,500.00	0.00	0.00	4,443.96	591.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
4,600.00	0.00	0.00	4,543.96	491.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
4,700.00	0.00	0.00	4,643.96	391.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
4,800.00	0.00	0.00	4,743.96	291.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
4,900.00	0.00	0.00	4,843.96	191.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
5,000.00	0.00	0.00	4,943.96	91.04	-477.04	-55.79	480.29	0.00	0.00	0.00	
5,100.00	0.00	0.00	5,043.96	-8.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,143.96	-108.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,243.96	-208.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,343.96	-308.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,443.96	-408.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,543.96	-508.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,643.96	-608.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,743.96	-708.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,843.96	-808.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
6,000.00	0.00	0.00	5,943.96	-908.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
6,100.00	0.00	0.00	6,043.96	-1,008.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,143.96	-1,108.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,243.96	-1,208.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,343.96	-1,308.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,443.96	-1,408.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,543.96	-1,508.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,643.96	-1,608.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,743.96	-1,708.96	-477.04	-55.79	480.29	0.00	0.00	0.00	

Total Directional Services

Directional Planning Report



Database:	Total	Local Co-ordinate Reference:	Well Margil Farms 12-2D - Slot 12-2D
Company:	Apollo Operating, LLC	TVD Reference:	Est. KB @ 5035.00usft (Original Well Elev)
Project:	Margil Farms Multi Well Plan	MD Reference:	Est. KB @ 5035.00usft (Original Well Elev)
Site:	Sec. 2, T3N R68W	North Reference:	True
Well:	Margil Farms 12-2D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	TVD (usft)	Sub Sea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Dogleg Rate (°/100usft)	Comment/Formation
6,900.00	0.00	0.00	6,843.96	-1,808.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
7,000.00	0.00	0.00	6,943.96	-1,908.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
7,100.00	0.00	0.00	7,043.96	-2,008.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
7,200.00	0.00	0.00	7,143.96	-2,108.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
7,206.04	0.00	0.00	7,150.00	-2,115.00	-477.04	-55.79	480.29	0.00	0.00	0.00	Target - Nio
7,300.00	0.00	0.00	7,243.96	-2,208.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
7,400.00	0.00	0.00	7,343.96	-2,308.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
7,500.00	0.00	0.00	7,443.96	-2,408.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
7,506.04	0.00	0.00	7,450.00	-2,415.00	-477.04	-55.79	480.29	0.00	0.00	0.00	Codell
7,600.00	0.00	0.00	7,543.96	-2,508.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
7,700.00	0.00	0.00	7,643.96	-2,608.96	-477.04	-55.79	480.29	0.00	0.00	0.00	
7,706.04	0.00	0.00	7,650.00	-2,615.00	-477.04	-55.79	480.29	0.00	0.00	0.00	BHL

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
500.00	500.00	Surface Casing	0	0	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,206.04	7,150.00	Nio		0.00	
7,506.04	7,450.00	Codell		0.00	

Total Directional Services

Directional Planning Report



Database:	Total	Local Co-ordinate Reference:	Well Margil Farms 12-2D - Slot 12-2D
Company:	Apollo Operating, LLC	TVD Reference:	Est. KB @ 5035.00usft (Original Well Elev)
Project:	Margil Farms Multi Well Plan	MD Reference:	Est. KB @ 5035.00usft (Original Well Elev)
Site:	Sec. 2, T3N R68W	North Reference:	True
Well:	Margil Farms 12-2D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,000.00	1,000.00	0.00	0.00	KOP (Build @ 3°/100')	
1,500.00	1,494.31	-64.64	-7.56	End of Build @ 15°	
2,727.12	2,679.61	-380.09	-44.45	Drop @ 2°/100'	
3,477.12	3,421.08	-477.04	-55.79	End of Drop - Vertical	
7,206.04	7,150.00	-477.04	-55.79	Target	
7,706.04	7,650.00	-477.04	-55.79	BHL	