

Noble Energy (Rockies)

Garfield County, CO

Sec. 35-T7S-R95W (SGV 35D2 PAD)

BM 34-41B - B 3

Wellbore #1

Plan: Plan #1 Proposal

Sperry Drilling Services Proposal Report

20 October, 2009

Well Coordinates: 579,183.02 N, 1,301,231.84 E (39° 23' 51.14" N, 107° 58' 22.52" W)

Ground Level: 8,846.00 ft

Local Coordinate Origin:

Centered on Well BM 34-41B - Slot B 3

Viewing Datum:

RKB - 24' @ 8870.00ft

TVDs to System:

N

North Reference:

Grid

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

HALLIBURTON

Plan Report for BM 34-41B - Plan #1 Proposal

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)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kickoff at 225.00ft										
300.00	1.50	313.92	299.99	0.68	-0.71	0.98	2.00	2.00	0.00	313.92
400.00	3.50	313.92	399.89	3.71	-3.85	5.34	2.00	2.00	0.00	0.00
500.00	5.50	313.92	499.58	9.15	-9.50	13.19	2.00	2.00	0.00	0.00
555.00	6.60	313.92	554.27	13.17	-13.68	18.98	2.00	2.00	0.00	0.00
Build Rate = 2.00°/100ft										
600.00	7.50	313.92	598.93	17.00	-17.66	24.51	2.00	2.00	0.00	0.00
700.00	9.50	313.92	697.83	27.25	-28.30	39.28	2.00	2.00	0.00	0.00
748.04	10.46	313.92	745.14	33.03	-34.30	47.61	2.00	2.00	0.00	0.00
End Build at 748.04ft										
800.00	10.46	313.92	796.24	39.57	-41.10	57.04	0.00	0.00	0.00	0.00
900.00	10.46	313.92	894.57	52.16	-54.18	75.20	0.00	0.00	0.00	0.00
1,000.00	10.46	313.92	992.91	64.75	-67.25	93.35	0.00	0.00	0.00	0.00
1,100.00	10.46	313.92	1,091.25	77.35	-80.33	111.51	0.00	0.00	0.00	0.00
1,200.00	10.46	313.92	1,189.59	89.94	-93.41	129.66	0.00	0.00	0.00	0.00
1,300.00	10.46	313.92	1,287.93	102.53	-106.49	147.81	0.00	0.00	0.00	0.00
1,400.00	10.46	313.92	1,386.26	115.13	-119.57	165.97	0.00	0.00	0.00	0.00
1,500.00	10.46	313.92	1,484.60	127.72	-132.65	184.12	0.00	0.00	0.00	0.00
1,600.00	10.46	313.92	1,582.94	140.31	-145.73	202.28	0.00	0.00	0.00	0.00
1,700.00	10.46	313.92	1,681.28	152.91	-158.81	220.43	0.00	0.00	0.00	0.00
1,800.00	10.46	313.92	1,779.61	165.50	-171.89	238.59	0.00	0.00	0.00	0.00
1,900.00	10.46	313.92	1,877.95	178.09	-184.97	256.74	0.00	0.00	0.00	0.00
2,000.00	10.46	313.92	1,976.29	190.69	-198.05	274.89	0.00	0.00	0.00	0.00
2,100.00	10.46	313.92	2,074.63	203.28	-211.13	293.05	0.00	0.00	0.00	0.00
2,200.00	10.46	313.92	2,172.97	215.87	-224.20	311.20	0.00	0.00	0.00	0.00
2,300.00	10.46	313.92	2,271.30	228.46	-237.28	329.36	0.00	0.00	0.00	0.00
2,380.00	10.46	313.92	2,349.97	238.54	-247.75	343.88	0.00	0.00	0.00	0.00
8 5/8" Casing Pt.										
2,400.00	10.46	313.92	2,369.64	241.06	-250.36	347.51	0.00	0.00	0.00	0.00
2,500.00	10.46	313.92	2,467.98	253.65	-263.44	365.67	0.00	0.00	0.00	0.00
2,600.00	10.46	313.92	2,566.32	266.24	-276.52	383.82	0.00	0.00	0.00	0.00
2,700.00	10.46	313.92	2,664.66	278.84	-289.60	401.97	0.00	0.00	0.00	0.00
2,800.00	10.46	313.92	2,762.99	291.43	-302.68	420.13	0.00	0.00	0.00	0.00
2,900.00	10.46	313.92	2,861.33	304.02	-315.76	438.28	0.00	0.00	0.00	0.00
3,000.00	10.46	313.92	2,959.67	316.62	-328.84	456.44	0.00	0.00	0.00	0.00
3,100.00	10.46	313.92	3,058.01	329.21	-341.92	474.59	0.00	0.00	0.00	0.00
3,200.00	10.46	313.92	3,156.35	341.80	-355.00	492.75	0.00	0.00	0.00	0.00
3,300.00	10.46	313.92	3,254.68	354.40	-368.08	510.90	0.00	0.00	0.00	0.00
3,400.00	10.46	313.92	3,353.02	366.99	-381.15	529.05	0.00	0.00	0.00	0.00
3,470.00	10.46	313.92	3,421.86	375.80	-390.31	541.76	0.00	0.00	0.00	0.00
10.46 Inclination										
3,500.00	10.46	313.92	3,451.36	379.58	-394.23	547.21	0.00	0.00	0.00	0.00
3,600.00	10.46	313.92	3,549.70	392.17	-407.31	565.36	0.00	0.00	0.00	0.00
3,700.00	10.46	313.92	3,648.04	404.77	-420.39	583.52	0.00	0.00	0.00	0.00
3,800.00	10.46	313.92	3,746.37	417.36	-433.47	601.67	0.00	0.00	0.00	0.00
3,900.00	10.46	313.92	3,844.71	429.95	-446.55	619.83	0.00	0.00	0.00	0.00
4,000.00	10.46	313.92	3,943.05	442.55	-459.63	637.98	0.00	0.00	0.00	0.00
4,100.00	10.46	313.92	4,041.39	455.14	-472.71	656.13	0.00	0.00	0.00	0.00
4,200.00	10.46	313.92	4,139.73	467.73	-485.79	674.29	0.00	0.00	0.00	0.00
4,300.00	10.46	313.92	4,238.06	480.33	-498.87	692.44	0.00	0.00	0.00	0.00
4,400.00	10.46	313.92	4,336.40	492.92	-511.95	710.60	0.00	0.00	0.00	0.00
4,500.00	10.46	313.92	4,434.74	505.51	-525.03	728.75	0.00	0.00	0.00	0.00
4,600.00	10.46	313.92	4,533.08	518.11	-538.11	746.91	0.00	0.00	0.00	0.00
4,700.00	10.46	313.92	4,631.41	530.70	-551.18	765.06	0.00	0.00	0.00	0.00

Plan Report for BM 34-41B - Plan #1 Proposal

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)	Toolface Azimuth (°)
4,800.00	10.46	313.92	4,729.75	543.29	-564.26	783.21	0.00	0.00	0.00	0.00
4,900.00	10.46	313.92	4,828.09	555.88	-577.34	801.37	0.00	0.00	0.00	0.00
5,000.00	10.46	313.92	4,926.43	568.48	-590.42	819.52	0.00	0.00	0.00	0.00
5,100.00	10.46	313.92	5,024.77	581.07	-603.50	837.68	0.00	0.00	0.00	0.00
5,200.00	10.46	313.92	5,123.10	593.66	-616.58	855.83	0.00	0.00	0.00	0.00
5,300.00	10.46	313.92	5,221.44	606.26	-629.66	873.99	0.00	0.00	0.00	0.00
5,400.00	10.46	313.92	5,319.78	618.85	-642.74	892.14	0.00	0.00	0.00	0.00
5,500.00	10.46	313.92	5,418.12	631.44	-655.82	910.30	0.00	0.00	0.00	0.00
5,600.00	10.46	313.92	5,516.46	644.04	-668.90	928.45	0.00	0.00	0.00	0.00
5,700.00	10.46	313.92	5,614.79	656.63	-681.98	946.60	0.00	0.00	0.00	0.00
5,800.00	10.46	313.92	5,713.13	669.22	-695.06	964.76	0.00	0.00	0.00	0.00
5,900.00	10.46	313.92	5,811.47	681.81	-708.13	982.91	0.00	0.00	0.00	0.00
6,000.00	10.46	313.92	5,909.81	694.41	-721.21	1,001.07	0.00	0.00	0.00	0.00
6,072.88	10.46	313.92	5,981.48	703.59	-730.75	1,014.30	0.00	0.00	0.00	0.00
Begin Drop at 6072.88ft										
6,100.00	10.05	313.92	6,008.16	706.94	-734.22	1,019.13	1.50	-1.50	0.00	180.00
6,200.00	8.55	313.92	6,106.84	718.15	-745.87	1,035.29	1.50	-1.50	0.00	180.00
6,300.00	7.05	313.92	6,205.92	727.57	-755.65	1,048.87	1.50	-1.50	0.00	180.00
6,400.00	5.55	313.92	6,305.31	735.18	-763.56	1,059.85	1.50	-1.50	0.00	180.00
6,440.00	4.95	313.92	6,345.14	737.72	-766.20	1,063.51	1.50	-1.50	0.00	180.00
Drop Rate = 1.50°/100ft										
6,500.00	4.05	313.92	6,404.95	740.99	-769.59	1,068.22	1.50	-1.50	0.00	-180.00
6,600.00	2.55	313.92	6,504.79	744.99	-773.75	1,073.98	1.50	-1.50	0.00	180.00
6,700.00	1.05	313.92	6,604.73	747.17	-776.01	1,077.13	1.50	-1.50	0.00	180.00
6,770.27	0.00	0.00	6,675.00	747.62	-776.48	1,077.78	1.50	-1.50	0.00	180.00
End Drop at 6770.27ft - Williams Fork - BM 34-41B Plan #1 Driller's Tgt										
6,770.28	0.00	296.57	6,675.01	747.62	-776.48	1,077.78	0.00	0.00	0.00	296.57
BM 34-41B Plan #1 Zone Tgt										
6,800.00	0.02	296.57	6,704.73	747.62	-776.49	1,077.78	0.08	0.08	0.00	296.57
6,900.00	0.10	296.57	6,804.73	747.67	-776.59	1,077.89	0.08	0.08	0.00	0.00
7,000.00	0.18	296.57	6,904.73	747.78	-776.81	1,078.13	0.08	0.08	0.00	0.00
7,100.00	0.26	296.57	7,004.73	747.96	-777.16	1,078.51	0.08	0.08	0.00	0.00
7,200.00	0.34	296.57	7,104.73	748.20	-777.63	1,079.01	0.08	0.08	0.00	0.00
7,300.00	0.42	296.57	7,204.72	748.50	-778.23	1,079.66	0.08	0.08	0.00	0.00
7,400.00	0.50	296.57	7,304.72	748.86	-778.96	1,080.43	0.08	0.08	0.00	0.00
7,500.00	0.58	296.57	7,404.72	749.28	-779.81	1,081.34	0.08	0.08	0.00	0.00
7,600.00	0.66	296.57	7,504.71	749.77	-780.78	1,082.39	0.08	0.08	0.00	0.00
7,700.00	0.74	296.57	7,604.70	750.32	-781.88	1,083.56	0.08	0.08	0.00	0.00
7,752.30	0.79	296.57	7,657.00	750.63	-782.50	1,084.23	0.08	0.08	0.00	0.00
Top of Gas										
7,800.00	0.82	296.57	7,704.69	750.93	-783.10	1,084.88	0.08	0.08	0.00	0.00
7,900.00	0.90	296.57	7,804.68	751.60	-784.45	1,086.32	0.08	0.08	0.00	0.00
8,000.00	0.98	296.57	7,904.67	752.34	-785.92	1,087.90	0.08	0.08	0.00	0.00
8,100.00	1.06	296.57	8,004.65	753.14	-787.52	1,089.61	0.08	0.08	0.00	0.00
8,200.00	1.14	296.57	8,104.63	754.00	-789.24	1,091.46	0.08	0.08	0.00	0.00
8,300.00	1.22	296.57	8,204.61	754.93	-791.09	1,093.44	0.08	0.08	0.00	0.00
8,400.00	1.30	296.57	8,304.59	755.91	-793.06	1,095.56	0.08	0.08	0.00	0.00
8,500.00	1.38	296.57	8,404.56	756.96	-795.16	1,097.80	0.08	0.08	0.00	0.00
8,600.00	1.46	296.57	8,504.53	758.07	-797.38	1,100.19	0.08	0.08	0.00	0.00
8,700.00	1.54	296.57	8,604.50	759.25	-799.73	1,102.70	0.08	0.08	0.00	0.00
8,746.37	1.58	296.57	8,650.85	759.81	-800.86	1,103.91	0.08	0.08	0.00	0.00
8,800.00	1.54	296.57	8,704.46	760.46	-802.17	1,105.31	0.08	-0.08	0.00	180.00
8,900.00	1.46	296.57	8,804.42	761.64	-804.51	1,107.83	0.08	-0.08	0.00	180.00
9,000.00	1.39	296.57	8,904.39	762.75	-806.74	1,110.21	0.08	-0.08	0.00	180.00
9,100.00	1.31	296.57	9,004.36	763.80	-808.84	1,112.47	0.08	-0.08	0.00	180.00
9,200.00	1.24	296.57	9,104.34	764.80	-810.83	1,114.60	0.08	-0.08	0.00	180.00
9,300.00	1.16	296.57	9,204.32	765.73	-812.70	1,116.61	0.08	-0.08	0.00	180.00
9,313.68	1.15	296.57	9,218.00	765.86	-812.95	1,116.87	0.08	-0.08	0.00	-180.00
Cameo										

Plan Report for BM 34-41B - Plan #1 Proposal

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)	Toolface Azimuth (°)
9,400.00	1.08	296.57	9,304.30	766.61	-814.45	1,118.48	0.08	-0.08	0.00	180.00
9,500.00	1.01	296.57	9,404.28	767.42	-816.08	1,120.23	0.08	-0.08	0.00	180.00
9,600.00	0.93	296.57	9,504.27	768.18	-817.60	1,121.85	0.08	-0.08	0.00	180.00
9,614.73	0.92	296.57	9,519.00	768.29	-817.81	1,122.08	0.08	-0.08	0.00	180.00
Rollins										
9,700.00	0.85	296.57	9,604.26	768.88	-818.99	1,123.35	0.08	-0.08	0.00	-180.00
9,800.00	0.78	296.57	9,704.25	769.51	-820.27	1,124.71	0.08	-0.08	0.00	180.00
9,900.00	0.70	296.57	9,804.24	770.09	-821.42	1,125.95	0.08	-0.08	0.00	180.00
10,000.00	0.63	296.57	9,904.23	770.61	-822.46	1,127.07	0.08	-0.08	0.00	180.00
10,034.77	0.60	296.57	9,939.00	770.78	-822.79	1,127.42	0.08	-0.08	0.00	180.00
Cozzette										
10,100.00	0.55	296.57	10,004.23	771.07	-823.38	1,128.05	0.08	-0.08	0.00	-180.00
10,200.00	0.47	296.57	10,104.22	771.47	-824.18	1,128.91	0.08	-0.08	0.00	180.00
10,300.00	0.40	296.57	10,204.22	771.81	-824.86	1,129.64	0.08	-0.08	0.00	180.00
10,331.78	0.37	296.57	10,236.00	771.91	-825.05	1,129.84	0.08	-0.08	0.00	-180.00
Corcora										
10,400.00	0.32	296.57	10,304.22	772.09	-825.42	1,130.24	0.08	-0.08	0.00	180.00
10,500.00	0.25	296.57	10,404.22	772.31	-825.86	1,130.71	0.08	-0.08	0.00	180.00
10,572.79	0.19	296.57	10,477.00	772.44	-826.11	1,130.98	0.08	-0.08	0.00	-180.00
Mancos										
10,600.00	0.17	296.57	10,504.21	772.47	-826.19	1,131.06	0.08	-0.08	0.00	180.00
10,700.00	0.09	296.57	10,604.21	772.58	-826.39	1,131.28	0.08	-0.08	0.00	180.00
10,800.00	0.02	296.57	10,704.21	772.62	-826.48	1,131.37	0.08	-0.08	0.00	180.00
10,822.79	0.00	0.00	10,727.00	772.62	-826.48	1,131.38	0.08	-0.08	0.00	180.00

BM 34-41B Plan #1 BH Tgt

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
225.00	225.00	0.00	0.00	Kickoff at 225.00ft
555.00	554.27	13.17	-13.68	Build Rate = 2.00°/100ft
748.04	745.14	33.03	-34.30	End Build at 748.04ft
3,470.00	3,421.86	375.80	-390.31	10.46 Inclination
6,072.88	5,981.48	703.59	-730.75	Begin Drop at 6072.88ft
6,440.00	6,345.14	737.72	-766.20	Drop Rate = 1.50°/100ft
6,770.27	6,675.00	747.62	-776.48	End Drop at 6770.27ft
10,822.79	10,727.00	772.62	-826.48	Total Depth = 10822.79ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	BM 34-41B Plan #1 BH Tgt	313.07	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	10,822.79	Plan #1 Proposal	MWD

Plan Report for BM 34-41B - Plan #1 Proposal

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
2,380.00	2,349.97	8 5/8" Casing Pt.	8-5/8	11

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,770.27	6,675.00	Williams Fork		0.00	
7,752.30	7,657.00	Top of Gas		0.00	
9,313.68	9,218.00	Cameo		0.00	
9,614.73	9,519.00	Rollins		0.00	
10,034.77	9,939.00	Cozzette		0.00	
10,331.78	10,236.00	Corcora		0.00	
10,572.79	10,477.00	Mancos		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
BM 34-41B Plan #1 Driller's Tgt	6,675.00	747.62	-776.48	Rectangle
BM 34-41B Plan #1 Zone Tgt	6,675.00	772.62	-826.48	Rectangle
BM 34-41B Plan #1 BH Tgt	10,727.00	772.62	-826.48	Point

North Reference Sheet for Sec. 35-T7S-R95W (SGV 35D2 PAD) - BM 34-41B - Wellbore #1

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to RKB - 24' @ 8870.00ft. Northing and Easting are relative to BM 34-41B - Slot B 3

Coordinate System is US State Plane 1927 (Exact solution), Colorado Central 502 using datum NAD 1927 (NADCON CONUS), ellipsoid Clarke 1866

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.50°, Longitude Origin: 0° 0' 0.000 E°, Latitude Origin: 39° 45' 0.000 N°

False Easting: 2,000,000.00ft, False Northing: 0.00ft, Scale Reduction: 0.99994927

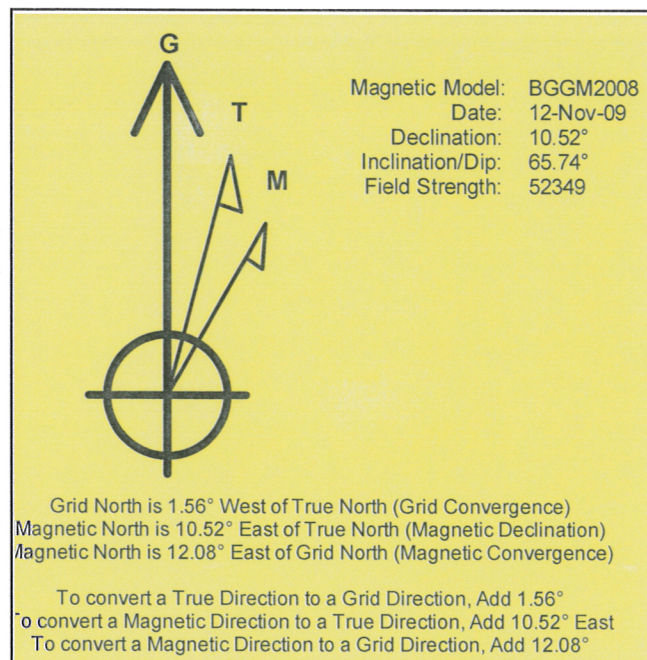
Grid Coordinates of Well: 579,183.02 ft N, 1,301,231.84 ft E

Geographical Coordinates of Well: 39° 23' 51.14" N, 107° 58' 22.52" W

Grid Convergence at Surface is: -1.56°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,822.79ft
the Bottom Hole Displacement is 1,131.38ft in the Direction of 313.07° (Grid).

Magnetic Convergence at surface is: -12.08° (12 November 2009, , BGGM2008)



Project: Garfield County, CO
Site: Sec. 35-T7S-R95W (SGV 35D2 PAD)
Well: BM 34-41B
Wellbore: Wellbore #1
Plan: Plan #1 Proposal

Noble Energy (Rockies)

HALLIBURTON

SECTION DETAILS

MD	Inc	Azi	TVD	+N-S	+E-W	DLeg	TFace	VSec
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00
748.04	10.46	313.92	745.14	33.03	-34.30	2.00	313.92	47.61
6072.88	10.46	313.92	5981.48	703.59	-730.75	0.00	0.00	1014.30
6770.27	0.00	0.00	6675.00	747.62	-776.48	1.50	180.00	1077.78
8746.37	1.58	296.57	8650.85	759.81	-800.86	0.08	296.57	1103.91
10822.79	0.00	0.00	10727.00	772.62	-826.48	0.08	180.00	1131.38

WELL DETAILS: BM 34-41B

Ground Level:	8846.00	Longitude	B 3
North	579183.02	Latitude	107° 58' 22.524 W
East	1301231.84	Latitude	39° 23' 51.136 N

WELLBORE TARGET DETAILS

Name	TVD	+N-S	+E-W	Shape
BM 34-41B Plan #1 Driller's Tgt	6675.00	747.62	-776.48	Rectangle (Sides: L25.00 W25.00)
BM 34-41B Plan #1 Zone Tgt	6675.00	772.62	-826.48	Rectangle (Sides: L100.00 W200.00)
BM 34-41B Plan #1 BH Tgt	10727.00	772.62	-826.48	Point



Azimuths to Grid North
True North: 1.56°
Magnetic North: 12.08°
Magnetic Field
Strength: 52348.8nT
Dip Angle: 65.74°
Date: 11/12/2009
Model: BGGM2008

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6675.00	6770.27	Williams Fork
7657.00	7752.30	Top of Gas
9218.00	9313.68	Cameo
9519.00	9614.73	Rollins
9939.00	10034.77	Cozzette
10236.00	10331.78	Corcora
10477.00	10572.79	Mancos

