

# Noble Energy (Rockies)

Garfield County, CO

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

BM 35-13C - A 8

Wellbore #1

Plan: Plan #1

## Sperry Drilling Services

### Proposal Report

12 November, 2009

Well Coordinates: 577,314.00 N, 1,301,591.80 E (39° 23' 32.77" N, 107° 58' 17.29" W)

Ground Level: 9,203.00 ft

Local Coordinate Origin:

Centered on Well BM 35-13C - Slot A 8

Viewing Datum:

RKB - 24' @ 9227.00ft

TVDs to System:

N

North Reference:

Grid

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

**HALLIBURTON**

**Plan Report for BM 35-13C - Plan #1**

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
<b>Kickoff at 225.00ft</b>										
285.00	1.20	159.76	285.00	-0.59	0.22	0.62	2.00	2.00	0.00	159.76
<b>Build Rate = 2.00°/100ft</b>										
300.00	1.50	159.76	299.99	-0.92	0.34	0.96	2.00	2.00	0.00	0.00
349.59	2.49	159.76	349.55	-2.54	0.94	2.66	2.00	2.00	0.00	0.00
<b>End Build at 349.59ft</b>										
400.00	2.49	159.76	399.91	-4.60	1.70	4.82	0.00	0.00	0.00	0.00
500.00	2.49	159.76	499.82	-8.68	3.20	9.09	0.00	0.00	0.00	0.00
600.00	2.49	159.76	599.72	-12.76	4.70	13.36	0.00	0.00	0.00	0.00
700.00	2.49	159.76	699.63	-16.83	6.21	17.63	0.00	0.00	0.00	0.00
800.00	2.49	159.76	799.53	-20.91	7.71	21.90	0.00	0.00	0.00	0.00
900.00	2.49	159.76	899.44	-24.99	9.22	26.17	0.00	0.00	0.00	0.00
1,000.00	2.49	159.76	999.35	-29.07	10.72	30.45	0.00	0.00	0.00	0.00
1,100.00	2.49	159.76	1,099.25	-33.15	12.22	34.72	0.00	0.00	0.00	0.00
1,200.00	2.49	159.76	1,199.16	-37.23	13.73	38.99	0.00	0.00	0.00	0.00
1,300.00	2.49	159.76	1,299.06	-41.31	15.23	43.26	0.00	0.00	0.00	0.00
1,400.00	2.49	159.76	1,398.97	-45.39	16.74	47.53	0.00	0.00	0.00	0.00
1,500.00	2.49	159.76	1,498.87	-49.47	18.24	51.81	0.00	0.00	0.00	0.00
<b>8 5/8" Casing Pt.</b>										
1,600.00	2.49	159.76	1,598.78	-53.55	19.74	56.08	0.00	0.00	0.00	0.00
1,700.00	2.49	159.76	1,698.68	-57.63	21.25	60.35	0.00	0.00	0.00	0.00
1,800.00	2.49	159.76	1,798.59	-61.70	22.75	64.62	0.00	0.00	0.00	0.00
1,900.00	2.49	159.76	1,898.49	-65.78	24.26	68.89	0.00	0.00	0.00	0.00
2,000.00	2.49	159.76	1,998.40	-69.86	25.76	73.17	0.00	0.00	0.00	0.00
2,100.00	2.49	159.76	2,098.31	-73.94	27.26	77.44	0.00	0.00	0.00	0.00
2,200.00	2.49	159.76	2,198.21	-78.02	28.77	81.71	0.00	0.00	0.00	0.00
2,300.00	2.49	159.76	2,298.12	-82.10	30.27	85.98	0.00	0.00	0.00	0.00
2,400.00	2.49	159.76	2,398.02	-86.18	31.78	90.25	0.00	0.00	0.00	0.00
2,500.00	2.49	159.76	2,497.93	-90.26	33.28	94.53	0.00	0.00	0.00	0.00
2,600.00	2.49	159.76	2,597.83	-94.34	34.79	98.80	0.00	0.00	0.00	0.00
2,700.00	2.49	159.76	2,697.74	-98.42	36.29	103.07	0.00	0.00	0.00	0.00
2,800.00	2.49	159.76	2,797.64	-102.50	37.79	107.34	0.00	0.00	0.00	0.00
2,900.00	2.49	159.76	2,897.55	-106.57	39.30	111.61	0.00	0.00	0.00	0.00
3,000.00	2.49	159.76	2,997.45	-110.65	40.80	115.89	0.00	0.00	0.00	0.00
3,100.00	2.49	159.76	3,097.36	-114.73	42.31	120.16	0.00	0.00	0.00	0.00
3,200.00	2.49	159.76	3,197.27	-118.81	43.81	124.43	0.00	0.00	0.00	0.00
3,300.00	2.49	159.76	3,297.17	-122.89	45.31	128.70	0.00	0.00	0.00	0.00
3,400.00	2.49	159.76	3,397.08	-126.97	46.82	132.97	0.00	0.00	0.00	0.00
3,500.00	2.49	159.76	3,496.98	-131.05	48.32	137.25	0.00	0.00	0.00	0.00
3,520.00	2.49	159.76	3,516.96	-131.86	48.62	138.10	0.00	0.00	0.00	0.00
<b>2.49 Inclination</b>										
3,600.00	2.49	159.76	3,596.89	-135.13	49.83	141.52	0.00	0.00	0.00	0.00
3,700.00	2.49	159.76	3,696.79	-139.21	51.33	145.79	0.00	0.00	0.00	0.00
3,800.00	2.49	159.76	3,796.70	-143.29	52.83	150.06	0.00	0.00	0.00	0.00
3,900.00	2.49	159.76	3,896.60	-147.36	54.34	154.33	0.00	0.00	0.00	0.00
4,000.00	2.49	159.76	3,996.51	-151.44	55.84	158.61	0.00	0.00	0.00	0.00
4,100.00	2.49	159.76	4,096.41	-155.52	57.35	162.88	0.00	0.00	0.00	0.00
4,200.00	2.49	159.76	4,196.32	-159.60	58.85	167.15	0.00	0.00	0.00	0.00
4,300.00	2.49	159.76	4,296.23	-163.68	60.35	171.42	0.00	0.00	0.00	0.00
4,400.00	2.49	159.76	4,396.13	-167.76	61.86	175.69	0.00	0.00	0.00	0.00
4,500.00	2.49	159.76	4,496.04	-171.84	63.36	179.97	0.00	0.00	0.00	0.00
4,600.00	2.49	159.76	4,595.94	-175.92	64.87	184.24	0.00	0.00	0.00	0.00
4,700.00	2.49	159.76	4,695.85	-180.00	66.37	188.51	0.00	0.00	0.00	0.00
4,800.00	2.49	159.76	4,795.75	-184.08	67.88	192.78	0.00	0.00	0.00	0.00

## Plan Report for BM 35-13C - Plan #1

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 (°)
4,900.00	2.49	159.76	4,895.66	-188.16	69.38	197.05	0.00	0.00	0.00	0.00
5,000.00	2.49	159.76	4,995.56	-192.23	70.88	201.32	0.00	0.00	0.00	0.00
5,100.00	2.49	159.76	5,095.47	-196.31	72.39	205.60	0.00	0.00	0.00	0.00
5,200.00	2.49	159.76	5,195.37	-200.39	73.89	209.87	0.00	0.00	0.00	0.00
5,300.00	2.49	159.76	5,295.28	-204.47	75.40	214.14	0.00	0.00	0.00	0.00
5,400.00	2.49	159.76	5,395.19	-208.55	76.90	218.41	0.00	0.00	0.00	0.00
5,500.00	2.49	159.76	5,495.09	-212.63	78.40	222.68	0.00	0.00	0.00	0.00
5,600.00	2.49	159.76	5,595.00	-216.71	79.91	226.96	0.00	0.00	0.00	0.00
5,700.00	2.49	159.76	5,694.90	-220.79	81.41	231.23	0.00	0.00	0.00	0.00
5,800.00	2.49	159.76	5,794.81	-224.87	82.92	235.50	0.00	0.00	0.00	0.00
5,900.00	2.49	159.76	5,894.71	-228.95	84.42	239.77	0.00	0.00	0.00	0.00
6,000.00	2.49	159.76	5,994.62	-233.03	85.92	244.04	0.00	0.00	0.00	0.00
6,100.00	2.49	159.76	6,094.52	-237.10	87.43	248.32	0.00	0.00	0.00	0.00
6,200.00	2.49	159.76	6,194.43	-241.18	88.93	252.59	0.00	0.00	0.00	0.00
6,300.00	2.49	159.76	6,294.33	-245.26	90.44	256.86	0.00	0.00	0.00	0.00
6,400.00	2.49	159.76	6,394.24	-249.34	91.94	261.13	0.00	0.00	0.00	0.00
6,500.00	2.49	159.76	6,494.15	-253.42	93.45	265.40	0.00	0.00	0.00	0.00
6,600.00	2.49	159.76	6,594.05	-257.50	94.95	269.68	0.00	0.00	0.00	0.00
6,700.00	2.49	159.76	6,693.96	-261.58	96.45	273.95	0.00	0.00	0.00	0.00
6,800.00	2.49	159.76	6,793.86	-265.66	97.96	278.22	0.00	0.00	0.00	0.00
6,826.10	2.49	159.76	6,819.94	-266.72	98.35	279.33	0.00	0.00	0.00	0.00
Begin Drop at 6826.10ft										
6,900.00	1.38	159.76	6,893.79	-269.07	99.21	281.79	1.50	-1.50	0.00	180.00
6,915.00	1.16	159.76	6,908.79	-269.38	99.33	282.12	1.50	-1.50	0.00	180.00
Drop Rate = 1.50°/100ft										
6,992.22	0.00	360.00	6,986.00	-270.11	99.60	282.88	1.50	-1.50	0.00	-180.00
End Drop at 6992.22ft - Williams Fork - BM 35-13C Plan #1 Driller's Tgt - BM 35-13C Plan #1 Zone Tgt										
7,000.00	0.01	243.43	6,993.78	-270.11	99.60	282.88	0.09	0.09	0.00	243.43
7,100.00	0.10	243.43	7,093.78	-270.15	99.52	282.91	0.09	0.09	0.00	0.00
7,200.00	0.19	243.43	7,193.78	-270.26	99.30	282.98	0.09	0.09	0.00	0.00
7,300.00	0.28	243.43	7,293.78	-270.44	98.93	283.10	0.09	0.09	0.00	0.00
7,400.00	0.37	243.43	7,393.78	-270.70	98.43	283.27	0.09	0.09	0.00	0.00
7,500.00	0.46	243.43	7,493.78	-271.02	97.79	283.48	0.09	0.09	0.00	0.00
7,600.00	0.55	243.43	7,593.78	-271.41	97.00	283.73	0.09	0.09	0.00	0.00
7,700.00	0.64	243.43	7,693.77	-271.87	96.08	284.04	0.09	0.09	0.00	0.00
7,800.00	0.73	243.43	7,793.76	-272.40	95.02	284.38	0.09	0.09	0.00	0.00
7,900.00	0.82	243.43	7,893.75	-273.01	93.81	284.78	0.09	0.09	0.00	0.00
8,000.00	0.91	243.43	7,993.74	-273.68	92.47	285.22	0.09	0.09	0.00	0.00
8,081.27	0.98	243.43	8,075.00	-274.28	91.27	285.61	0.09	0.09	0.00	0.00
Top of Gas										
8,100.00	1.00	243.43	8,093.73	-274.42	90.98	285.71	0.09	0.09	0.00	0.00
8,200.00	1.09	243.43	8,193.71	-275.24	89.35	286.24	0.09	0.09	0.00	0.00
8,300.00	1.18	243.43	8,293.69	-276.12	87.59	286.82	0.09	0.09	0.00	0.00
8,400.00	1.27	243.43	8,393.67	-277.07	85.68	287.44	0.09	0.09	0.00	0.00
8,500.00	1.36	243.43	8,493.64	-278.10	83.63	288.11	0.09	0.09	0.00	0.00
8,600.00	1.45	243.43	8,593.61	-279.19	81.44	288.83	0.09	0.09	0.00	0.00
8,700.00	1.54	243.43	8,693.58	-280.36	79.11	289.59	0.09	0.09	0.00	0.00
8,800.00	1.63	243.43	8,793.54	-281.59	76.64	290.40	0.09	0.09	0.00	0.00
8,858.72	1.68	243.43	8,852.24	-282.35	75.13	290.90	0.09	0.09	0.00	0.00
8,900.00	1.64	243.43	8,893.50	-282.88	74.06	291.25	0.09	-0.09	0.00	180.00
9,000.00	1.56	243.43	8,993.46	-284.13	71.56	292.07	0.09	-0.09	0.00	180.00
9,100.00	1.47	243.43	9,093.43	-285.32	69.19	292.84	0.09	-0.09	0.00	180.00
9,200.00	1.39	243.43	9,193.39	-286.43	66.96	293.57	0.09	-0.09	0.00	180.00
9,300.00	1.30	243.43	9,293.37	-287.48	64.87	294.26	0.09	-0.09	0.00	180.00
9,397.66	1.21	243.43	9,391.00	-288.44	62.95	294.88	0.09	-0.09	0.00	-180.00
Cameo										
9,400.00	1.21	243.43	9,393.34	-288.46	62.91	294.90	0.09	-0.09	0.00	180.00
9,500.00	1.13	243.43	9,493.32	-289.37	61.08	295.50	0.09	-0.09	0.00	180.00
9,600.00	1.04	243.43	9,593.30	-290.22	59.39	296.05	0.09	-0.09	0.00	180.00

**Plan Report for BM 35-13C - Plan #1**

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 (°)
9,700.00	0.95	243.43	9,693.29	-291.00	57.84	296.56	0.09	-0.09	0.00	180.00
9,800.00	0.87	243.43	9,793.28	-291.71	56.41	297.02	0.09	-0.09	0.00	180.00
9,878.73	0.80	243.43	9,872.00	-292.22	55.39	297.36	0.09	-0.09	0.00	180.00
<b>Rollins</b>										
9,900.00	0.78	243.43	9,893.27	-292.35	55.13	297.45	0.09	-0.09	0.00	-180.00
10,000.00	0.70	243.43	9,993.26	-292.93	53.97	297.82	0.09	-0.09	0.00	180.00
10,100.00	0.61	243.43	10,093.25	-293.44	52.96	298.16	0.09	-0.09	0.00	180.00
10,184.75	0.54	243.43	10,178.00	-293.82	52.20	298.40	0.09	-0.09	0.00	180.00
<b>Cozzette</b>										
10,200.00	0.52	243.43	10,193.25	-293.88	52.07	298.45	0.09	-0.09	0.00	-180.00
10,300.00	0.44	243.43	10,293.24	-294.25	51.33	298.69	0.09	-0.09	0.00	180.00
10,400.00	0.35	243.43	10,393.24	-294.56	50.71	298.89	0.09	-0.09	0.00	180.00
10,423.76	0.33	243.43	10,417.00	-294.62	50.59	298.93	0.09	-0.09	0.00	180.00
<b>Corcora</b>										
10,500.00	0.26	243.43	10,493.24	-294.80	50.23	299.05	0.09	-0.09	0.00	-180.00
10,555.76	0.22	243.43	10,549.00	-294.90	50.02	299.12	0.09	-0.09	0.00	180.00
<b>Mancos</b>										
10,600.00	0.18	243.43	10,593.24	-294.97	49.89	299.16	0.09	-0.09	0.00	-180.00
10,700.00	0.09	243.43	10,693.24	-295.08	49.68	299.23	0.09	-0.09	0.00	180.00
10,800.00	0.00	243.43	10,793.24	-295.11	49.60	299.25	0.09	-0.09	0.00	-180.00
10,805.76	0.00	0.00	10,799.00	-295.12	49.60	299.25	0.09	-0.09	2,023.79	179.98
<b>Total Depth = 10805.76ft - BM 35-13C Plan #1 BH Tgt</b>										

**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
285.00	285.00	-0.59	0.22	Build Rate = 2.00°/100ft
349.59	349.55	-2.54	0.94	End Build at 349.59ft
3,520.00	3,516.96	-131.86	48.62	2.49 Inclination
6,826.10	6,819.94	-266.72	98.35	Begin Drop at 6826.10ft
6,915.00	6,908.79	-269.38	99.33	Drop Rate = 1.50°/100ft
6,992.22	6,986.00	-270.11	99.60	End Drop at 6992.22ft
10,805.76	10,799.00	-295.12	49.60	Total Depth = 10805.76ft

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	BM 35-13C Plan #1 BH Tgt	170.46	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	10,805.27	Plan #1	MWD

**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,500.00	1,498.87	8 5/8" Casing Pt.	8-5/8	11

## Plan Report for BM 35-13C - Plan #1

**Formation Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,992.22	6,986.00	Williams Fork		0.00	
8,081.27	8,075.00	Top of Gas		0.00	
9,397.66	9,391.00	Cameo		0.00	
9,878.73	9,872.00	Rollins		0.00	
10,184.75	10,178.00	Cozzette		0.00	
10,423.76	10,417.00	Corcora		0.00	
10,555.76	10,549.00	Mancos		0.00	

***Targets associated with this wellbore***

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
BM 35-13C Plan #1 BH Tgt	10,799.00	-295.12	49.60	Point
BM 35-13C Plan #1 Zone Tgt	6,986.00	-295.12	49.60	Rectangle
BM 35-13C Plan #1 Driller's Tgt	6,986.00	-270.11	99.60	Rectangle

## North Reference Sheet for Sec. 35-T7S-R95W (SGV 35L PAD) - BM 35-13C - 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' @ 9227.00ft. Northing and Easting are relative to BM 35-13C - Slot A 8

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: 0.99994881

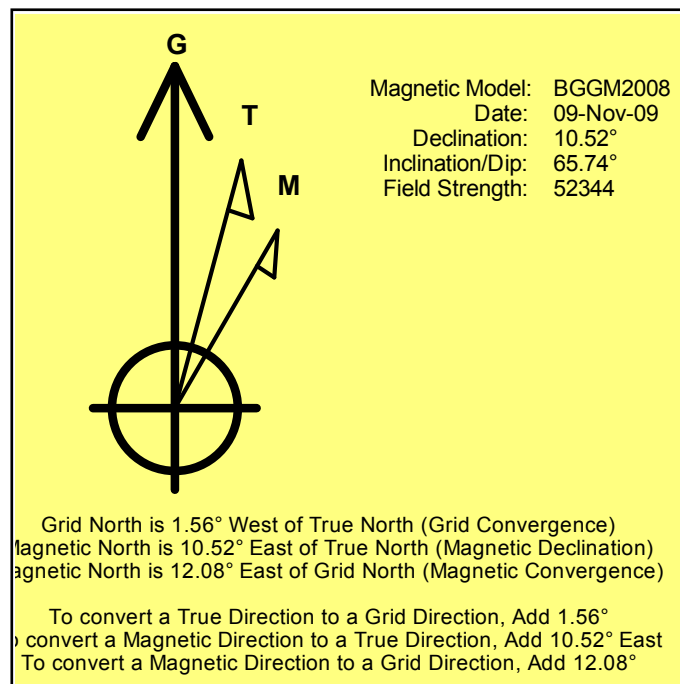
Grid Coordinates of Well: 577,314.00 ft N, 1,301,591.80 ft E

Geographical Coordinates of Well: 39° 23' 32.77" N, 107° 58' 17.29" W

Grid Convergence at Surface is: -1.56°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,805.76ft  
the Bottom Hole Displacement is 299.25ft in the Direction of 170.46° (Grid).

Magnetic Convergence at surface is: -12.08° ( 9 November 2009, , BGGM2008)



Project: Garfield County, CO  
Site: Sec. 35-T7S-R95W (SGV 35L PAD)  
Well: BM 35-13C  
Wellbore: Wellbore #1  
Plan: Plan #1

# 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
349.59	2.49	159.76	349.55	-2.54	0.94	2.00	159.76	2.66
6826.10	2.49	159.76	6819.94	-266.72	98.35	0.00	0.00	279.33
6992.22	0.00	360.00	6986.00	-270.11	99.60	1.50	180.00	282.88
8858.72	1.68	243.43	8852.24	-282.35	75.13	0.09	243.43	290.90
10805.76	0.00	360.00	10799.00	-295.12	49.60	0.09	180.00	299.25

BM 35-13C Plan #1 Driller's Tgt

BM 35-13C Plan #1 BH Tgt

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
BM 35-13C Plan #1 Driller's Tgt	6986.00	-270.11	99.60	Rectangle (Sides: L25.00 W25.00)
BM 35-13C Plan #1 Zone Tgt	6986.00	-295.12	49.60	Rectangle (Sides: L100.00 W200.00)
BM 35-13C Plan #1 BH Tgt	10799.00	-295.12	49.60	Point

## WELL DETAILS: BM 35-13C

North	Ground Level:	9203.00	Longitude
0.00730 4.00	Easting	1301591.80	39° 23' 32.766 N 107° 58' 17.293 W A 8



Azimuths to Grid North  
True North: 1.56°  
Magnetic North: 12.08°  
Magnetic Field  
Strength: 52344.1snT  
Dip Angle: 65.74°  
Date: 11/9/2009  
Model: BGM2008

## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6986.00	6992.22	Williams Fork
8075.00	8081.27	Top of Gas
9391.00	9397.66	Cameo
9872.00	9878.73	Rollins
10178.00	10184.75	Cozzette
10417.00	10423.76	Corcora
10549.00	10555.76	Mancos

