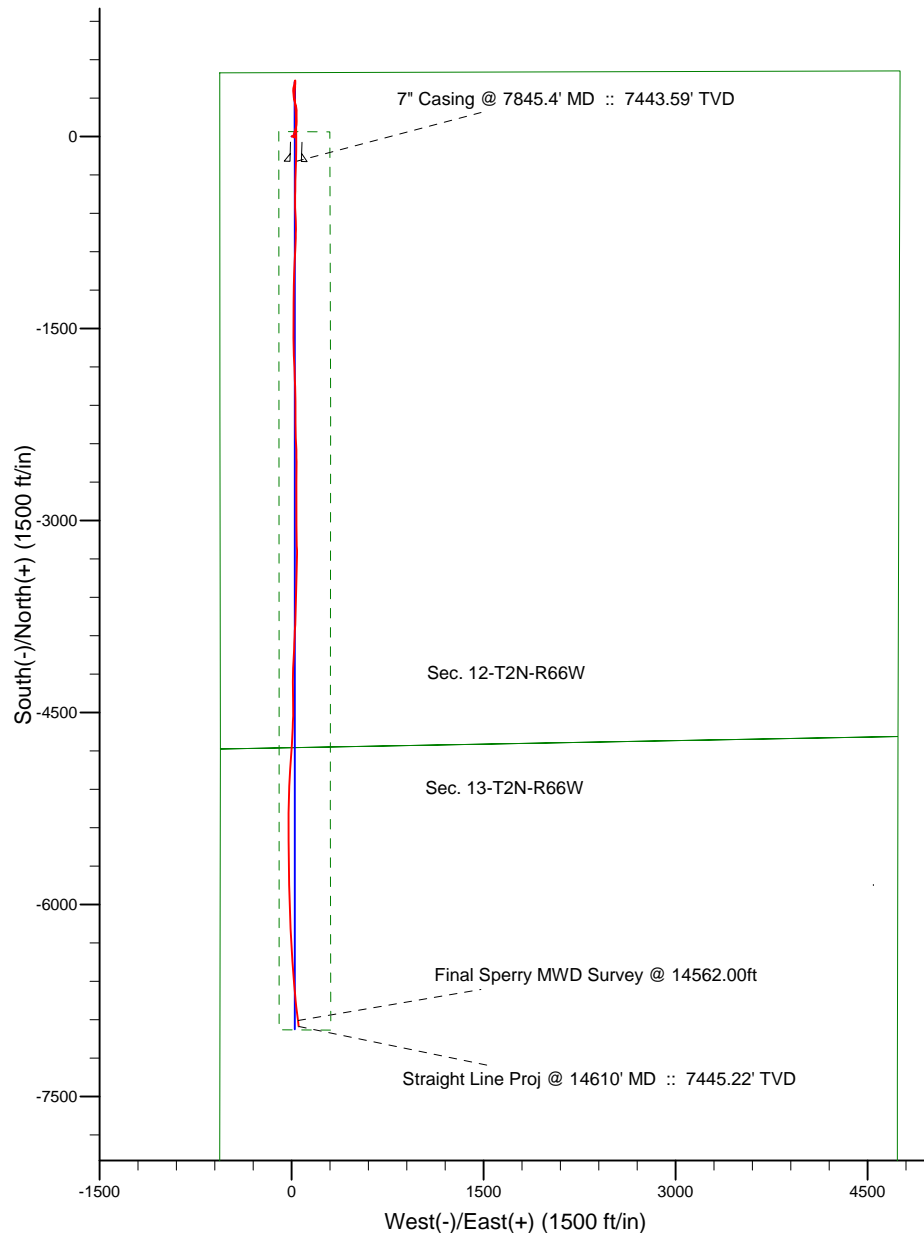
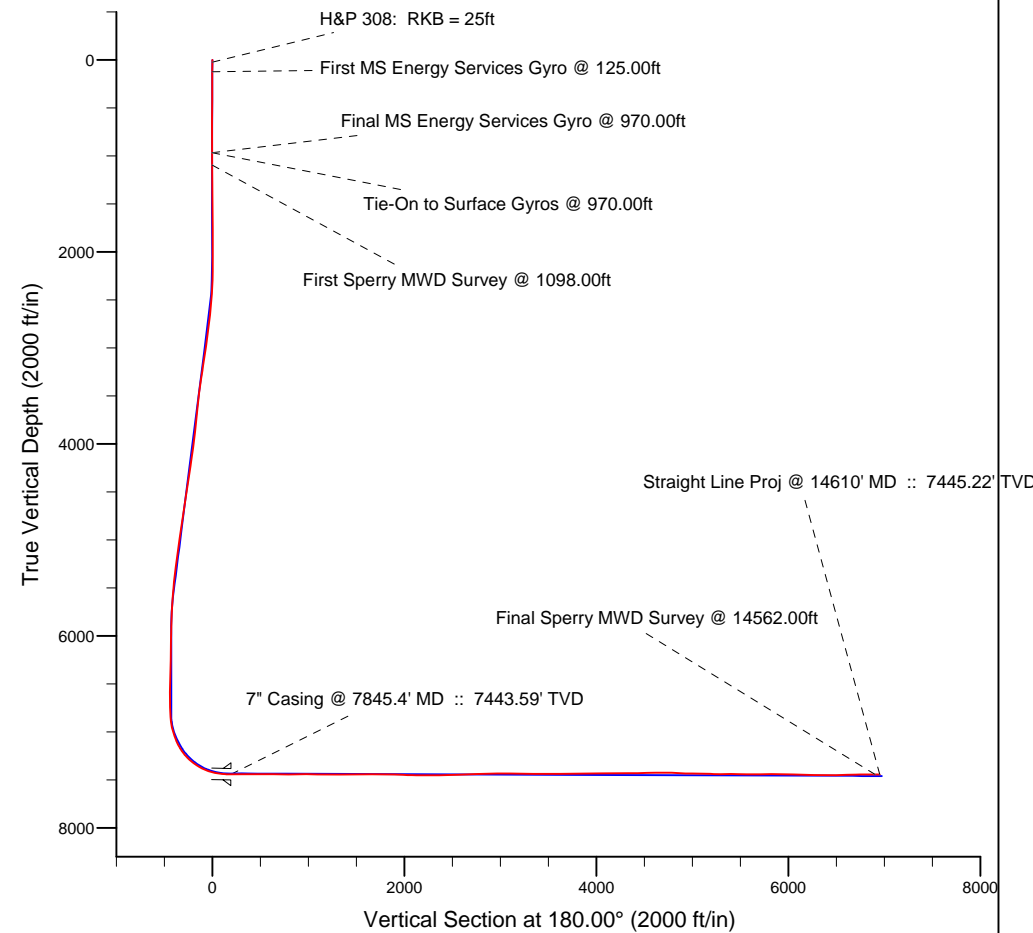


Project: Weld County, CO (NAD 83)  
 Site: Sec. 12-T2N-R66W  
 Well: Dove 5C-13HZ  
 Wellbore: Plan B Rev 1  
 Design: Actual Field Surveys



**LEGEND**

Dove 5C-13HZ, Plan B Rev 1, Plan B Rev 1 - PROPOSAL V0  
 Actual Field Surveys



7" Casing: ~695.25' FNL, ~595.08' FWL  
 Lat/Long: 40.158232 N, -104.732732 E  
 State Planes - CO Northern: 1,301,415.06' N, 3,214,451.47' E  
 Location: Sec. 12-T2N-R66W

BHL: ~2178.75' FNL, ~615.27' FWL  
 Lat/Long: 40.139682 N, -104.732656 E  
 State Planes - CO Northern: 1,294,657.98' N, 3,214,531.25' E  
 Location: Sec. 13-T2N-R66W

WELL DETAILS: Dove 5C-13HZ	
Ground Level:	5001.00
RKB=25 @ 5026.00ft (HP 308)	
Design: Actual Field Surveys (Dove 5C-13HZ/Plan B Rev 1)	
Created By: Fred Hartmann	Date: 06/03/2013
Reviewed: _____	Date: _____

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 12-T2N-R66W

Dove 5C-13HZ

Plan B Rev 1

Design: Actual Field Surveys

## Sperry Drilling Services Standard Report

03 June, 2013

Well Coordinates: 1,301,609.86 N, 3,214,415.40 E (40° 09' 31.56" N, 104° 43' 58.28" W)

Ground Level: 5,001.00 ft

Local Coordinate Origin:

Centered on Well Dove 5C-13HZ

Viewing Datum:

RKB=25 @ 5026.00ft (HP 308)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

**HALLIBURTON**

**Design Report for Dove 5C-13HZ - Actual Field Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00
<b>H&amp;P 308: RKB = 25ft</b>							
125.00	0.48	50.46	125.00	0.27	0.32	-0.27	0.48
<b>First MS Energy Services Gyro @ 125.00ft</b>							
225.00	0.60	55.69	224.99	0.83	1.08	-0.83	0.13
325.00	0.66	90.39	324.99	1.12	2.09	-1.12	0.38
425.00	0.76	85.36	424.98	1.17	3.32	-1.17	0.12
525.00	1.07	78.48	524.97	1.41	4.90	-1.41	0.33
625.00	1.64	81.38	624.94	1.81	7.23	-1.81	0.57
725.00	1.90	78.62	724.89	2.35	10.27	-2.35	0.27
825.00	1.97	78.61	824.83	3.02	13.58	-3.02	0.07
925.00	2.52	85.85	924.76	3.52	17.46	-3.52	0.62
970.00	2.23	91.39	969.72	3.57	19.32	-3.57	0.82
<b>Final MS Energy Services Gyro @ 970.00ft - Tie-On to Surface Gyros @ 970.00ft</b>							
1,098.00	2.74	105.56	1,097.60	2.69	24.76	-2.69	0.62
<b>First Sperry MWD Survey @ 1098.00ft</b>							
1,190.00	1.49	99.88	1,189.54	1.89	28.05	-1.89	1.38
1,282.00	0.55	230.64	1,281.53	1.41	28.89	-1.41	2.06
1,465.00	0.64	173.12	1,464.52	-0.17	28.33	0.17	0.32
1,649.00	1.11	226.83	1,648.50	-2.41	27.16	2.41	0.49
1,832.00	1.03	244.38	1,831.47	-4.33	24.38	4.33	0.18
2,016.00	1.33	236.20	2,015.43	-6.23	21.12	6.23	0.19
2,202.00	1.55	325.75	2,201.39	-5.35	17.91	5.35	1.09
2,297.00	2.13	337.13	2,296.34	-2.66	16.50	2.66	0.72
2,391.00	3.50	8.55	2,390.23	1.78	16.24	-1.78	2.14
2,486.00	4.65	7.96	2,484.99	8.46	17.21	-8.46	1.21
2,580.00	5.42	4.07	2,578.62	16.67	18.05	-16.67	0.90
2,675.00	5.93	17.15	2,673.16	25.83	19.82	-25.83	1.46
2,769.00	6.85	23.21	2,766.58	35.62	23.46	-35.62	1.21
2,864.00	9.51	15.75	2,860.61	48.39	27.82	-48.39	3.01
2,959.00	8.90	12.89	2,954.38	63.10	31.59	-63.10	0.80
3,053.00	8.44	13.07	3,047.31	76.91	34.77	-76.91	0.49
3,148.00	7.51	14.52	3,141.39	89.71	37.91	-89.71	1.00
3,242.00	9.27	2.61	3,234.39	103.22	39.79	-103.22	2.62
3,431.00	7.88	358.58	3,421.27	131.38	40.16	-131.38	0.80
3,621.00	4.81	3.40	3,610.08	152.36	40.31	-152.36	1.64
3,715.00	6.82	358.52	3,703.60	161.88	40.40	-161.88	2.20
3,904.00	5.35	358.33	3,891.53	181.90	39.86	-181.90	0.78
3,999.00	7.43	5.54	3,985.93	192.45	40.32	-192.45	2.34
4,094.00	8.45	352.12	4,080.03	205.47	39.96	-205.47	2.22
4,188.00	7.18	350.64	4,173.15	218.11	38.05	-218.11	1.37
4,377.00	10.01	345.64	4,360.02	245.69	32.06	-245.69	1.55
4,566.00	8.10	344.75	4,546.65	274.45	24.48	-274.45	1.01
4,756.00	9.61	353.14	4,734.39	303.11	19.07	-303.11	1.04
4,945.00	7.96	352.97	4,921.17	331.76	15.58	-331.76	0.87
5,134.00	7.19	357.46	5,108.52	356.57	13.45	-356.57	0.51
5,323.00	8.46	12.60	5,295.77	381.96	15.96	-381.96	1.28
5,512.00	5.18	13.74	5,483.41	403.82	21.02	-403.82	1.74
5,701.00	3.35	8.40	5,671.88	417.57	23.86	-417.57	0.99

**Design Report for Dove 5C-13HZ - Actual Field Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,891.00	1.79	11.51	5,861.68	425.97	25.26	-425.97	0.82
6,081.00	1.59	356.82	6,051.60	431.51	25.71	-431.51	0.25
6,271.00	0.95	31.36	6,241.56	435.49	26.38	-435.49	0.51
6,460.00	0.70	52.74	6,430.54	437.52	28.11	-437.52	0.21
6,650.00	0.10	265.55	6,620.53	438.21	28.87	-438.21	0.41
6,745.00	0.29	49.02	6,715.53	438.36	28.97	-438.36	0.39
6,777.00	0.17	343.41	6,747.53	438.46	29.02	-438.46	0.84
6,840.00	1.10	154.96	6,810.53	438.00	29.25	-438.00	2.01
6,872.00	4.07	176.40	6,842.49	436.59	29.45	-436.59	9.60
6,903.00	6.48	173.99	6,873.36	433.75	29.70	-433.75	7.81
6,935.00	8.60	179.09	6,905.08	429.57	29.93	-429.57	6.94
6,967.00	11.24	183.85	6,936.60	424.06	29.76	-424.06	8.63
6,998.00	14.14	185.21	6,966.84	417.27	29.21	-417.27	9.40
7,030.00	16.21	184.11	6,997.72	408.93	28.53	-408.93	6.53
7,062.00	19.51	178.12	7,028.18	399.13	28.39	-399.13	11.79
7,093.00	20.18	186.21	7,057.34	388.63	27.98	-388.63	9.11
7,125.00	21.33	184.38	7,087.27	377.34	26.94	-377.34	4.13
7,157.00	24.69	184.76	7,116.72	364.88	25.94	-364.88	10.51
7,188.00	27.96	183.38	7,144.50	351.17	24.97	-351.17	10.73
7,220.00	31.30	180.07	7,172.31	335.36	24.52	-335.36	11.62
7,252.00	34.52	179.41	7,199.17	317.98	24.60	-317.98	10.12
7,283.00	38.39	176.40	7,224.10	299.58	25.30	-299.58	13.75
7,315.00	41.36	176.20	7,248.66	279.11	26.62	-279.11	9.29
7,346.00	44.24	175.83	7,271.40	258.10	28.09	-258.10	9.33
7,378.00	48.39	175.46	7,293.50	235.03	29.85	-235.03	13.00
7,410.00	51.35	175.55	7,314.12	210.64	31.77	-210.64	9.25
7,441.00	54.69	177.14	7,332.77	185.93	33.34	-185.93	11.53
7,473.00	56.84	178.41	7,350.77	159.50	34.36	-159.50	7.48
7,505.00	59.15	180.62	7,367.73	132.37	34.58	-132.37	9.30
7,536.00	63.00	178.59	7,382.72	105.24	34.78	-105.24	13.68
7,568.00	66.90	178.83	7,396.27	76.27	35.43	-76.27	12.21
7,600.00	70.26	178.90	7,407.95	46.49	36.02	-46.49	10.50
7,630.00	73.87	179.98	7,417.19	17.95	36.30	-17.95	12.51
7,662.00	76.89	179.02	7,425.27	-13.01	36.57	13.01	9.87
7,694.00	80.85	179.19	7,431.44	-44.40	37.06	44.40	12.39
7,725.00	83.16	180.48	7,435.75	-75.09	37.15	75.09	8.52
7,757.00	84.33	180.52	7,439.24	-106.90	36.87	106.90	3.66
7,789.00	86.08	182.25	7,441.92	-138.78	36.10	138.78	7.68
7,806.00	88.24	181.75	7,442.76	-155.74	35.51	155.74	13.04
7,845.40	89.33	181.52	7,443.59	-195.12	34.38	195.12	2.83
<b>7" Casing @ 7845.4' MD :: 7443.59' TVD</b>							
7,894.00	90.68	181.24	7,443.59	-243.70	33.21	243.70	2.83
7,986.00	91.11	181.44	7,442.15	-335.67	31.06	335.67	0.52
8,078.00	90.06	181.41	7,441.21	-427.63	28.77	427.63	1.14
8,169.00	89.88	179.09	7,441.26	-518.63	28.37	518.63	2.56
8,261.00	89.57	177.37	7,441.70	-610.58	31.22	610.58	1.90
8,353.00	88.27	178.82	7,443.43	-702.50	34.27	702.50	2.12
8,445.00	90.86	182.21	7,444.13	-794.48	33.45	794.48	4.64
8,537.00	91.05	182.87	7,442.60	-886.37	29.37	886.37	0.75
8,629.00	90.80	183.11	7,441.11	-978.24	24.57	978.24	0.38
8,720.00	88.89	181.84	7,441.36	-1,069.14	20.64	1,069.14	2.52

**Design Report for Dove 5C-13HZ - Actual Field Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
8,812.00	88.70	181.14	7,443.30	-1,161.09	18.25	1,161.09	0.79
8,904.00	88.76	180.24	7,445.33	-1,253.06	17.14	1,253.06	0.98
8,996.00	89.20	180.78	7,446.97	-1,345.04	16.32	1,345.04	0.76
9,087.00	90.25	180.30	7,447.41	-1,436.04	15.47	1,436.04	1.27
9,179.00	91.24	179.51	7,446.21	-1,528.03	15.62	1,528.03	1.38
9,271.00	91.60	179.41	7,443.93	-1,619.99	16.49	1,619.99	0.41
9,363.00	90.93	177.76	7,441.90	-1,711.94	18.76	1,711.94	1.94
9,455.00	88.76	177.42	7,442.15	-1,803.85	22.63	1,803.85	2.39
9,547.00	87.96	177.84	7,444.78	-1,895.74	26.43	1,895.74	0.98
9,639.00	87.40	178.61	7,448.51	-1,987.62	29.28	1,987.62	1.03
9,731.00	88.70	179.94	7,451.64	-2,079.55	30.44	2,079.55	2.02
9,823.00	89.94	179.14	7,452.73	-2,171.54	31.18	2,171.54	1.60
9,915.00	90.86	179.72	7,452.09	-2,263.53	32.09	2,263.53	1.18
10,007.00	89.63	177.57	7,451.69	-2,355.50	34.27	2,355.50	2.69
10,099.00	90.56	178.28	7,451.54	-2,447.43	37.60	2,447.43	1.27
10,191.00	92.16	179.92	7,449.36	-2,539.39	39.04	2,539.39	2.49
10,284.00	92.60	180.21	7,445.50	-2,632.31	38.94	2,632.31	0.57
10,376.00	92.47	180.27	7,441.43	-2,724.22	38.55	2,724.22	0.16
10,470.00	90.80	180.14	7,438.75	-2,818.18	38.22	2,818.18	1.78
10,565.00	91.67	179.53	7,436.70	-2,913.15	38.49	2,913.15	1.12
10,660.00	90.80	180.02	7,434.65	-3,008.13	38.86	3,008.13	1.05
10,755.00	88.83	179.21	7,434.96	-3,103.12	39.50	3,103.12	2.24
10,850.00	88.46	178.28	7,437.20	-3,198.07	41.58	3,198.07	1.05
10,945.00	90.43	180.45	7,438.12	-3,293.05	42.63	3,293.05	3.08
11,039.00	89.69	182.21	7,438.03	-3,387.02	40.45	3,387.02	2.03
11,134.00	89.94	181.34	7,438.33	-3,481.97	37.51	3,481.97	0.95
11,229.00	90.25	180.74	7,438.17	-3,576.96	35.79	3,576.96	0.71
11,324.00	89.38	181.51	7,438.48	-3,671.94	33.92	3,671.94	1.22
11,419.00	90.80	181.94	7,438.33	-3,766.89	31.06	3,766.89	1.56
11,514.00	91.11	183.49	7,436.75	-3,861.77	26.56	3,861.77	1.66
11,609.00	90.93	181.76	7,435.06	-3,956.65	22.21	3,956.65	1.83
11,703.00	91.24	183.31	7,433.28	-4,050.54	18.06	4,050.54	1.68
11,798.00	90.99	182.23	7,431.43	-4,145.41	13.46	4,145.41	1.17
11,893.00	90.00	180.19	7,430.61	-4,240.38	11.46	4,240.38	2.39
11,988.00	89.51	179.58	7,431.01	-4,335.38	11.65	4,335.38	0.82
12,083.00	90.56	179.60	7,430.96	-4,430.37	12.33	4,430.37	1.11
12,178.00	91.42	180.53	7,429.31	-4,525.36	12.22	4,525.36	1.33
12,272.00	90.43	182.26	7,427.80	-4,619.31	9.93	4,619.31	2.12
12,367.00	90.31	184.00	7,427.18	-4,714.16	4.75	4,714.16	1.84
12,462.00	87.59	183.57	7,428.92	-4,808.93	-1.52	4,808.93	2.90
12,557.00	87.90	183.94	7,432.66	-4,903.65	-7.74	4,903.65	0.51
12,652.00	88.58	182.49	7,435.58	-4,998.46	-13.06	4,998.46	1.69
12,747.00	89.20	182.60	7,437.42	-5,093.34	-17.28	5,093.34	0.66
12,842.00	88.21	181.49	7,439.57	-5,188.26	-20.67	5,188.26	1.57
12,936.00	90.00	181.25	7,441.04	-5,282.21	-22.92	5,282.21	1.92
13,031.00	90.93	180.09	7,440.26	-5,377.20	-24.03	5,377.20	1.56
13,126.00	88.76	178.99	7,440.52	-5,472.19	-23.27	5,472.19	2.56
13,221.00	89.26	178.90	7,442.16	-5,567.16	-21.52	5,567.16	0.53
13,316.00	89.51	179.22	7,443.18	-5,662.14	-19.96	5,662.14	0.43
13,411.00	90.99	179.25	7,442.77	-5,757.13	-18.69	5,757.13	1.56
13,506.00	90.99	179.14	7,441.13	-5,852.11	-17.36	5,852.11	0.12

## Design Report for Dove 5C-13HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
13,601.00	88.39	178.47	7,441.64	-5,947.08	-15.38	5,947.08	2.83
13,695.00	88.58	178.82	7,444.13	-6,041.02	-13.15	6,041.02	0.42
13,790.00	87.40	177.19	7,447.46	-6,135.90	-9.85	6,135.90	2.12
13,885.00	88.76	177.03	7,450.64	-6,230.72	-5.06	6,230.72	1.44
13,980.00	89.94	176.85	7,451.72	-6,325.58	0.01	6,325.58	1.26
14,074.00	90.06	175.63	7,451.72	-6,419.37	6.17	6,419.37	1.30
14,169.00	90.87	175.89	7,450.95	-6,514.11	13.20	6,514.11	0.90
14,264.00	91.30	175.68	7,449.15	-6,608.83	20.18	6,608.83	0.50
14,359.00	91.54	174.98	7,446.79	-6,703.49	27.91	6,703.49	0.78
14,453.00	90.49	173.61	7,445.13	-6,797.00	37.25	6,797.00	1.84
14,562.00	89.69	173.06	7,444.96	-6,905.27	49.90	6,905.27	0.89
<b>Final Sperry MWD Survey @ 14562.00ft</b>							
14,610.00	89.69	173.06	7,445.22	-6,952.91	55.70	6,952.91	0.00
<b>Straight Line Proj @ 14610' MD :: 7445.22' TVD</b>							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
25.00	25.00	0.00	0.00	H&P 308: RKB = 25ft
125.00	125.00	0.27	0.32	First MS Energy Services Gyro @ 125.00ft
970.00	969.72	3.57	19.32	Final MS Energy Services Gyro @ 970.00ft
970.00	969.72	3.57	19.32	Tie-On to Surface Gyros @ 970.00ft
1,098.00	1,097.60	2.69	24.76	First Sperry MWD Survey @ 1098.00ft
14,562.00	7,444.96	-6,905.27	49.90	Final Sperry MWD Survey @ 14562.00ft
14,610.00	7,445.22	-6,952.91	55.70	Straight Line Proj @ 14610' MD :: 7445.22' TVD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
User	No Target (Freehand)	180.00	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
25.00	970.00	MS Energy Services - Surface Gyros	NS-GYRO-MS
1,098.00	7,806.00	Sperry MWD Surveys - Vert/Build	MWD+IFR1+SC
7,894.00	14,562.00	Sperry MWD Surveys - Lateral	MWD+IFR1+SC

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,845.40	7,443.59	7" Casing @ 7845.4' MD :: 7443.59' TVD	7	8-3/4

## Design Report for Dove 5C-13HZ - Actual Field Surveys

### Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Dove 5C-13HZ_BHL - actual wellpath misses target center by 61.03ft at 14610.00ft MD (7445.22 TVD, -6952.91 N, 55.70 E) - Point	0.00	0.00	7,461.00	-6,974.80	110.44	1,294,636.57	3,214,586.17	40.139622	-104.732460
Dove 5C-13HZ_Sec - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,301,609.87	3,214,415.40	40.158768	-104.732855
Point 1				-560.50	498.50	1,302,103.48	3,213,850.64		
Point 2				-558.41	-2,143.33	1,299,461.88	3,213,875.58		
Point 3				-555.66	-4,785.15	1,296,820.29	3,213,901.18		
Point 4				-560.48	-7,443.60	1,294,162.01	3,213,919.36		
Point 5				-564.18	-10,102.50	1,291,503.29	3,213,938.66		
Point 6				2,084.76	-10,082.64	1,291,546.06	3,216,587.22		
Point 7				4,733.36	-10,063.06	1,291,588.55	3,219,235.44		
Point 8				4,732.91	-7,375.32	1,294,276.08	3,219,211.74		
Point 9				4,737.08	-4,686.21	1,296,965.01	3,219,192.65		
Point 10				4,745.68	-2,087.07	1,299,564.02	3,219,178.76		
Point 11				4,754.34	512.86	1,302,163.82	3,219,164.93		
Point 12				2,097.15	505.86	1,302,133.83	3,216,508.01		
Point 13				-560.50	498.50	1,302,103.48	3,213,850.64		
Dove 5C-13HZ_BHL - actual wellpath misses target center by 39.45ft at 14610.00ft MD (7445.22 TVD, -6952.91 N, 55.70 E) - Point	0.00	0.00	7,461.00	-6,974.80	26.93	1,294,635.85	3,214,502.67	40.139622	-104.732759
Dove 5C-13HZ_LD - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,301,609.87	3,214,415.40	40.158768	-104.732855
Point 1				-100.01	39.73	1,301,648.73	3,214,315.06		
Point 2				-98.39	-2,138.40	1,299,470.79	3,214,335.52		
Point 3				-96.28	-4,316.41	1,297,292.97	3,214,356.47		
Point 4				-96.45	-5,236.65	1,296,372.80	3,214,364.26		
Point 5				-96.43	-6,977.67	1,294,631.92	3,214,379.34		
Point 6				306.59	-6,981.15	1,294,631.92	3,214,782.36		
Point 7				303.47	-5,240.11	1,296,372.80	3,214,764.18		
Point 8				304.67	-2,141.88	1,299,470.79	3,214,738.58		
Point 9				298.57	36.28	1,301,648.73	3,214,713.64		
Point 10				-100.01	39.73	1,301,648.73	3,214,315.06		
Dove 5C-13HZ_SHL - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,301,609.87	3,214,415.40	40.158768	-104.732855
Dove 5C-13HZ_12/1 - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,301,609.87	3,214,415.40	40.158768	-104.732855
Point 1				-555.66	-4,785.15	1,296,820.29	3,213,901.18		
Point 2				2,090.76	-4,735.57	1,296,892.76	3,216,546.96		
Point 3				4,737.07	-4,687.21	1,296,964.01	3,219,192.65		
Point 4				2,090.76	-4,735.57	1,296,892.76	3,216,546.96		
Point 5				-555.66	-4,785.15	1,296,820.29	3,213,901.18		

## North Reference Sheet for Sec. 12-T2N-R66W - Dove 5C-13HZ - Plan B Rev 1

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

Vertical Depths are relative to RKB=25 @ 5026.00ft (HP 308). Northing and Easting are relative to Dove 5C-13HZ

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.500000°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99995813

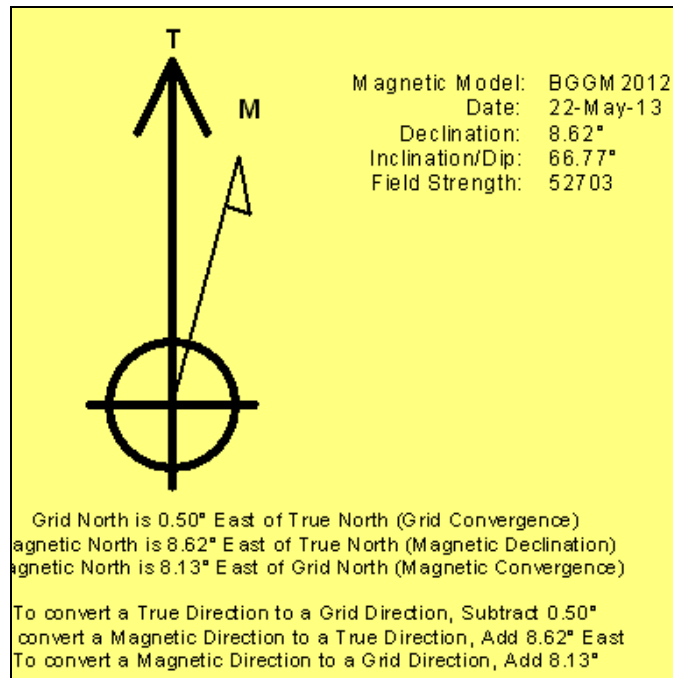
Grid Coordinates of Well: 1,301,609.86 ft N, 3,214,415.40 ft E

Geographical Coordinates of Well: 40° 09' 31.56" N, 104° 43' 58.28" W

Grid Convergence at Surface is: 0.50°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,610.00ft  
the Bottom Hole Displacement is 6,953.14ft in the Direction of 179.54° (True).

Magnetic Convergence at surface is: -8.13° (22 May 2013, , BGGM2012)





# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 12-T2N-R66W

Dove 5C-13HZ

Plan B Rev 1

Design: Actual Field Surveys

## Sperry Drilling Services Geodetic Report

03 June, 2013

Well Coordinates: 1,301,609.86 N, 3,214,415.40 E (40° 09' 31.56" N, 104° 43' 58.28" W)

Ground Level: 5,001.00 ft

Local Coordinate Origin:

Centered on Well Dove 5C-13HZ

Viewing Datum:

RKB=25 @ 5026.00ft (HP 308)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

**HALLIBURTON**

## Design Report for Dove 5C-13HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (ft)	+E/-W (ft)	Latitude (ft)	Longitude (ft)	Northing (ft)	Easting (ft)
0.00	0.00	0.00	0.00	0.00	0.00	40.158768	-104.732855	1,301,609.86	3,214,415.40
25.00	0.00	0.00	25.00	0.00	0.00	40.158768	-104.732855	1,301,609.86	3,214,415.40
125.00	0.48	50.46	125.00	0.27	0.32	40.158769	-104.732854	1,301,610.13	3,214,415.73
225.00	0.60	55.69	224.99	0.83	1.08	40.158770	-104.732851	1,301,610.70	3,214,416.48
325.00	0.66	90.39	324.99	1.12	2.09	40.158771	-104.732848	1,301,611.00	3,214,417.48
425.00	0.76	85.36	424.98	1.17	3.32	40.158771	-104.732843	1,301,611.06	3,214,418.72
525.00	1.07	78.48	524.97	1.41	4.90	40.158772	-104.732837	1,301,611.32	3,214,420.29
625.00	1.64	81.38	624.94	1.81	7.23	40.158773	-104.732829	1,301,611.74	3,214,422.62
725.00	1.90	78.62	724.89	2.35	10.27	40.158774	-104.732818	1,301,612.30	3,214,425.65
825.00	1.97	78.61	824.83	3.02	13.58	40.158776	-104.732806	1,301,613.00	3,214,428.96
925.00	2.52	85.85	924.76	3.52	17.46	40.158778	-104.732793	1,301,613.53	3,214,432.83
970.00	2.23	91.39	969.72	3.57	19.32	40.158778	-104.732786	1,301,613.60	3,214,434.69
1,098.00	2.74	105.56	1,097.60	2.69	24.76	40.158775	-104.732766	1,301,612.76	3,214,440.14
1,190.00	1.49	99.88	1,189.54	1.89	28.05	40.158773	-104.732755	1,301,612.00	3,214,443.44
1,282.00	0.55	230.64	1,281.53	1.41	28.89	40.158772	-104.732752	1,301,611.52	3,214,444.28
1,465.00	0.64	173.12	1,464.52	-0.17	28.33	40.158768	-104.732754	1,301,609.94	3,214,443.74
1,649.00	1.11	226.83	1,648.50	-2.41	27.16	40.158761	-104.732758	1,301,607.69	3,214,442.58
1,832.00	1.03	244.38	1,831.47	-4.33	24.38	40.158756	-104.732768	1,301,605.75	3,214,439.82
2,016.00	1.33	236.20	2,015.43	-6.23	21.12	40.158751	-104.732779	1,301,603.81	3,214,436.57
2,202.00	1.55	325.75	2,201.39	-5.35	17.91	40.158753	-104.732791	1,301,604.66	3,214,433.35
2,297.00	2.13	337.13	2,296.34	-2.66	16.50	40.158761	-104.732796	1,301,607.34	3,214,431.92
2,391.00	3.50	8.55	2,390.23	1.78	16.24	40.158773	-104.732797	1,301,611.79	3,214,431.63
2,486.00	4.65	7.96	2,484.99	8.46	17.21	40.158791	-104.732793	1,301,618.48	3,214,432.54
2,580.00	5.42	4.07	2,578.62	16.67	18.05	40.158814	-104.732790	1,301,626.68	3,214,433.31
2,675.00	5.93	17.15	2,673.16	25.83	19.82	40.158839	-104.732784	1,301,635.86	3,214,435.00
2,769.00	6.85	23.21	2,766.58	35.62	23.46	40.158866	-104.732771	1,301,645.69	3,214,438.55
2,864.00	9.51	15.75	2,860.61	48.39	27.82	40.158901	-104.732755	1,301,658.49	3,214,442.81
2,959.00	8.90	12.89	2,954.38	63.10	31.59	40.158941	-104.732742	1,301,673.23	3,214,446.45
3,053.00	8.44	13.07	3,047.31	76.91	34.77	40.158979	-104.732731	1,301,687.07	3,214,449.51
3,148.00	7.51	14.52	3,141.39	89.71	37.91	40.159014	-104.732719	1,301,699.90	3,214,452.53
3,242.00	9.27	2.61	3,234.39	103.22	39.79	40.159051	-104.732713	1,301,713.42	3,214,454.30
3,431.00	7.88	358.58	3,421.27	131.38	40.16	40.159129	-104.732711	1,301,741.58	3,214,454.43
3,621.00	4.81	3.40	3,610.08	152.36	40.31	40.159186	-104.732711	1,301,762.56	3,214,454.40
3,715.00	6.82	358.52	3,703.60	161.88	40.40	40.159212	-104.732710	1,301,772.08	3,214,454.40
3,904.00	5.35	358.33	3,891.53	181.90	39.86	40.159267	-104.732712	1,301,792.10	3,214,453.68
3,999.00	7.43	5.54	3,985.93	192.45	40.32	40.159296	-104.732711	1,301,802.64	3,214,454.06
4,094.00	8.45	352.12	4,080.03	205.47	39.96	40.159332	-104.732712	1,301,815.67	3,214,453.58
4,188.00	7.18	350.64	4,173.15	218.11	38.05	40.159367	-104.732719	1,301,828.29	3,214,451.57
4,377.00	10.01	345.64	4,360.02	245.69	32.06	40.159442	-104.732740	1,301,855.81	3,214,445.33
4,566.00	8.10	344.75	4,546.65	274.45	24.48	40.159521	-104.732767	1,301,884.50	3,214,437.51
4,756.00	9.61	353.14	4,734.39	303.11	19.07	40.159600	-104.732787	1,301,913.11	3,214,431.85
4,945.00	7.96	352.97	4,921.17	331.76	15.58	40.159679	-104.732799	1,301,941.73	3,214,428.11

## Design Report for Dove 5C-13HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (ft)	+E/-W (ft)	Latitude (ft)	Longitude (ft)	Northing (ft)	Easting (ft)
5,134.00	7.19	357.46	5,108.52	356.57	13.45	40.159747	-104.732807	1,301,966.52	3,214,425.77
5,323.00	8.46	12.60	5,295.77	381.96	15.96	40.159816	-104.732798	1,301,991.93	3,214,428.06
5,512.00	5.18	13.74	5,483.41	403.82	21.02	40.159876	-104.732780	1,302,013.83	3,214,432.93
5,701.00	3.35	8.40	5,671.88	417.57	23.86	40.159914	-104.732770	1,302,027.61	3,214,435.65
5,891.00	1.79	11.51	5,861.68	425.97	25.26	40.159937	-104.732765	1,302,036.02	3,214,436.98
6,081.00	1.59	356.82	6,051.60	431.51	25.71	40.159952	-104.732763	1,302,041.56	3,214,437.38
6,271.00	0.95	31.36	6,241.56	435.49	26.38	40.159963	-104.732761	1,302,045.54	3,214,438.01
6,460.00	0.70	52.74	6,430.54	437.52	28.11	40.159969	-104.732754	1,302,047.59	3,214,439.73
6,650.00	0.10	265.55	6,620.53	438.21	28.87	40.159971	-104.732752	1,302,048.29	3,214,440.48
6,745.00	0.29	49.02	6,715.53	438.36	28.97	40.159971	-104.732751	1,302,048.44	3,214,440.58
6,777.00	0.17	343.41	6,747.53	438.46	29.02	40.159972	-104.732751	1,302,048.54	3,214,440.63
6,840.00	1.10	154.96	6,810.53	438.00	29.25	40.159970	-104.732750	1,302,048.09	3,214,440.86
6,872.00	4.07	176.40	6,842.49	436.59	29.45	40.159966	-104.732750	1,302,046.68	3,214,441.07
6,903.00	6.48	173.99	6,873.36	433.75	29.70	40.159959	-104.732749	1,302,043.84	3,214,441.35
6,935.00	8.60	179.09	6,905.08	429.57	29.93	40.159947	-104.732748	1,302,039.65	3,214,441.61
6,967.00	11.24	183.85	6,936.60	424.06	29.76	40.159932	-104.732749	1,302,034.15	3,214,441.49
6,998.00	14.14	185.21	6,966.84	417.27	29.21	40.159913	-104.732750	1,302,027.36	3,214,441.00
7,030.00	16.21	184.11	6,997.72	408.93	28.53	40.159890	-104.732753	1,302,019.00	3,214,440.40
7,062.00	19.51	178.12	7,028.18	399.13	28.39	40.159864	-104.732753	1,302,009.20	3,214,440.34
7,093.00	20.18	186.21	7,057.34	388.63	27.98	40.159835	-104.732755	1,301,998.71	3,214,440.02
7,125.00	21.33	184.38	7,087.27	377.34	26.94	40.159804	-104.732759	1,301,987.41	3,214,439.08
7,157.00	24.69	184.76	7,116.72	364.88	25.94	40.159770	-104.732762	1,301,974.94	3,214,438.19
7,188.00	27.96	183.38	7,144.50	351.17	24.97	40.159732	-104.732766	1,301,961.22	3,214,437.34
7,220.00	31.30	180.07	7,172.31	335.36	24.52	40.159689	-104.732767	1,301,945.41	3,214,437.02
7,252.00	34.52	179.41	7,199.17	317.98	24.60	40.159641	-104.732767	1,301,928.03	3,214,437.26
7,283.00	38.39	176.40	7,224.10	299.58	25.30	40.159590	-104.732764	1,301,909.64	3,214,438.11
7,315.00	41.36	176.20	7,248.66	279.11	26.62	40.159534	-104.732760	1,301,889.18	3,214,439.61
7,346.00	44.24	175.83	7,271.40	258.10	28.09	40.159476	-104.732755	1,301,868.18	3,214,441.26
7,378.00	48.39	175.46	7,293.50	235.03	29.85	40.159413	-104.732748	1,301,845.13	3,214,443.22
7,410.00	51.35	175.55	7,314.12	210.64	31.77	40.159346	-104.732741	1,301,820.76	3,214,445.35
7,441.00	54.69	177.14	7,332.77	185.93	33.34	40.159278	-104.732736	1,301,796.07	3,214,447.13
7,473.00	56.84	178.41	7,350.77	159.50	34.36	40.159206	-104.732732	1,301,769.65	3,214,448.38
7,505.00	59.15	180.62	7,367.73	132.37	34.58	40.159131	-104.732731	1,301,742.52	3,214,448.84
7,536.00	63.00	178.59	7,382.72	105.24	34.78	40.159057	-104.732731	1,301,715.40	3,214,449.27
7,568.00	66.90	178.83	7,396.27	76.27	35.43	40.158977	-104.732728	1,301,686.43	3,214,450.17
7,600.00	70.26	178.90	7,407.95	46.49	36.02	40.158896	-104.732726	1,301,656.66	3,214,451.02
7,630.00	73.87	179.98	7,417.19	17.95	36.30	40.158817	-104.732725	1,301,628.13	3,214,451.54
7,662.00	76.89	179.02	7,425.27	-13.01	36.57	40.158732	-104.732724	1,301,597.17	3,214,452.08
7,694.00	80.85	179.19	7,431.44	-44.40	37.06	40.158646	-104.732722	1,301,565.79	3,214,452.84
7,725.00	83.16	180.48	7,435.75	-75.09	37.15	40.158562	-104.732722	1,301,535.10	3,214,453.20
7,757.00	84.33	180.52	7,439.24	-106.90	36.87	40.158475	-104.732723	1,301,503.29	3,214,453.20
7,789.00	86.08	182.25	7,441.92	-138.78	36.10	40.158387	-104.732726	1,301,471.41	3,214,452.70

## Design Report for Dove 5C-13HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (ft)	+E/-W (ft)	Latitude (ft)	Longitude (ft)	Northing (ft)	Easting (ft)
7,806.00	88.24	181.75	7,442.76	-155.74	35.51	40.158340	-104.732728	1,301,454.44	3,214,452.25
7,845.40	89.33	181.52	7,443.59	-195.12	34.38	40.158232	-104.732732	1,301,415.06	3,214,451.47
7,894.00	90.68	181.24	7,443.59	-243.70	33.21	40.158099	-104.732736	1,301,366.47	3,214,450.72
7,986.00	91.11	181.44	7,442.15	-335.67	31.06	40.157847	-104.732744	1,301,274.49	3,214,449.36
8,078.00	90.06	181.41	7,441.21	-427.63	28.77	40.157594	-104.732752	1,301,182.51	3,214,447.87
8,169.00	89.88	179.09	7,441.26	-518.63	28.37	40.157344	-104.732753	1,301,091.52	3,214,448.26
8,261.00	89.57	177.37	7,441.70	-610.58	31.22	40.157092	-104.732743	1,300,999.61	3,214,451.90
8,353.00	88.27	178.82	7,443.43	-702.50	34.27	40.156840	-104.732732	1,300,907.71	3,214,455.75
8,445.00	90.86	182.21	7,444.13	-794.48	33.45	40.156587	-104.732735	1,300,815.74	3,214,455.72
8,537.00	91.05	182.87	7,442.60	-886.37	29.37	40.156335	-104.732750	1,300,723.81	3,214,452.44
8,629.00	90.80	183.11	7,441.11	-978.24	24.57	40.156083	-104.732767	1,300,631.92	3,214,448.44
8,720.00	88.89	181.84	7,441.36	-1,069.14	20.64	40.155833	-104.732781	1,300,540.98	3,214,445.29
8,812.00	88.70	181.14	7,443.30	-1,161.09	18.25	40.155581	-104.732790	1,300,449.02	3,214,443.70
8,904.00	88.76	180.24	7,445.33	-1,253.06	17.14	40.155328	-104.732794	1,300,357.05	3,214,443.39
8,996.00	89.20	180.78	7,446.97	-1,345.04	16.32	40.155076	-104.732797	1,300,265.07	3,214,443.36
9,087.00	90.25	180.30	7,447.41	-1,436.04	15.47	40.154826	-104.732800	1,300,174.07	3,214,443.29
9,179.00	91.24	179.51	7,446.21	-1,528.03	15.62	40.154574	-104.732799	1,300,082.09	3,214,444.24
9,271.00	91.60	179.41	7,443.93	-1,619.99	16.49	40.154321	-104.732796	1,299,990.14	3,214,445.90
9,363.00	90.93	177.76	7,441.90	-1,711.94	18.76	40.154069	-104.732788	1,299,898.22	3,214,448.97
9,455.00	88.76	177.42	7,442.15	-1,803.85	22.63	40.153816	-104.732774	1,299,806.35	3,214,453.63
9,547.00	87.96	177.84	7,444.78	-1,895.74	26.43	40.153564	-104.732760	1,299,714.51	3,214,458.23
9,639.00	87.40	178.61	7,448.51	-1,987.62	29.28	40.153312	-104.732750	1,299,622.66	3,214,461.87
9,731.00	88.70	179.94	7,451.64	-2,079.55	30.44	40.153060	-104.732746	1,299,530.74	3,214,463.83
9,823.00	89.94	179.14	7,452.73	-2,171.54	31.18	40.152807	-104.732743	1,299,438.77	3,214,465.36
9,915.00	90.86	179.72	7,452.09	-2,263.53	32.09	40.152555	-104.732740	1,299,346.79	3,214,467.08
10,007.00	89.63	177.57	7,451.69	-2,355.50	34.27	40.152302	-104.732732	1,299,254.85	3,214,470.05
10,099.00	90.56	178.28	7,451.54	-2,447.43	37.60	40.152050	-104.732720	1,299,162.95	3,214,474.17
10,191.00	92.16	179.92	7,449.36	-2,539.39	39.04	40.151797	-104.732715	1,299,071.01	3,214,476.41
10,284.00	92.60	180.21	7,445.50	-2,632.31	38.94	40.151542	-104.732716	1,298,978.10	3,214,477.11
10,376.00	92.47	180.27	7,441.43	-2,724.22	38.55	40.151290	-104.732717	1,298,886.19	3,214,477.52
10,470.00	90.80	180.14	7,438.75	-2,818.18	38.22	40.151032	-104.732718	1,298,792.24	3,214,478.00
10,565.00	91.67	179.53	7,436.70	-2,913.15	38.49	40.150771	-104.732717	1,298,697.27	3,214,479.09
10,660.00	90.80	180.02	7,434.65	-3,008.13	38.86	40.150511	-104.732716	1,298,602.31	3,214,480.29
10,755.00	88.83	179.21	7,434.96	-3,103.12	39.50	40.150250	-104.732714	1,298,507.33	3,214,481.75
10,850.00	88.46	178.28	7,437.20	-3,198.07	41.58	40.149989	-104.732706	1,298,412.41	3,214,484.65
10,945.00	90.43	180.45	7,438.12	-3,293.05	42.63	40.149728	-104.732702	1,298,317.44	3,214,486.52
11,039.00	89.69	182.21	7,438.03	-3,387.02	40.45	40.149471	-104.732710	1,298,223.46	3,214,485.15
11,134.00	89.94	181.34	7,438.33	-3,481.97	37.51	40.149210	-104.732721	1,298,128.49	3,214,483.03
11,229.00	90.25	180.74	7,438.17	-3,576.96	35.79	40.148949	-104.732727	1,298,033.50	3,214,482.13
11,324.00	89.38	181.51	7,438.48	-3,671.94	33.92	40.148688	-104.732734	1,297,938.51	3,214,481.09
11,419.00	90.80	181.94	7,438.33	-3,766.89	31.06	40.148428	-104.732744	1,297,843.54	3,214,479.05
11,514.00	91.11	183.49	7,436.75	-3,861.77	26.56	40.148167	-104.732760	1,297,748.63	3,214,475.37

**Design Report for Dove 5C-13HZ - Actual Field Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (ft)	+E/-W (ft)	Latitude (ft)	Longitude (ft)	Northing (ft)	Easting (ft)
11,609.00	90.93	181.76	7,435.06	-3,956.65	22.21	40.147907	-104.732776	1,297,653.72	3,214,471.84
11,703.00	91.24	183.31	7,433.28	-4,050.54	18.06	40.147649	-104.732790	1,297,559.80	3,214,468.50
11,798.00	90.99	182.23	7,431.43	-4,145.41	13.46	40.147389	-104.732807	1,297,464.90	3,214,464.73
11,893.00	90.00	180.19	7,430.61	-4,240.38	11.46	40.147128	-104.732814	1,297,369.92	3,214,463.55
11,988.00	89.51	179.58	7,431.01	-4,335.38	11.65	40.146867	-104.732813	1,297,274.93	3,214,464.56
12,083.00	90.56	179.60	7,430.96	-4,430.37	12.33	40.146607	-104.732811	1,297,179.95	3,214,466.06
12,178.00	91.42	180.53	7,429.31	-4,525.36	12.22	40.146346	-104.732811	1,297,084.97	3,214,466.77
12,272.00	90.43	182.26	7,427.80	-4,619.31	9.93	40.146088	-104.732819	1,296,991.01	3,214,465.30
12,367.00	90.31	184.00	7,427.18	-4,714.16	4.75	40.145827	-104.732838	1,296,896.12	3,214,460.93
12,462.00	87.59	183.57	7,428.92	-4,808.93	-1.52	40.145567	-104.732860	1,296,801.30	3,214,455.48
12,557.00	87.90	183.94	7,432.66	-4,903.65	-7.74	40.145307	-104.732883	1,296,706.53	3,214,450.09
12,652.00	88.58	182.49	7,435.58	-4,998.46	-13.06	40.145047	-104.732902	1,296,611.69	3,214,445.58
12,747.00	89.20	182.60	7,437.42	-5,093.34	-17.28	40.144787	-104.732917	1,296,516.77	3,214,442.18
12,842.00	88.21	181.49	7,439.57	-5,188.26	-20.67	40.144526	-104.732929	1,296,421.84	3,214,439.62
12,936.00	90.00	181.25	7,441.04	-5,282.21	-22.92	40.144268	-104.732937	1,296,327.87	3,214,438.18
13,031.00	90.93	180.09	7,440.26	-5,377.20	-24.03	40.144007	-104.732941	1,296,232.88	3,214,437.89
13,126.00	88.76	178.99	7,440.52	-5,472.19	-23.27	40.143747	-104.732938	1,296,137.90	3,214,439.48
13,221.00	89.26	178.90	7,442.16	-5,567.16	-21.52	40.143486	-104.732932	1,296,042.96	3,214,442.05
13,316.00	89.51	179.22	7,443.18	-5,662.14	-19.96	40.143225	-104.732926	1,295,948.00	3,214,444.43
13,411.00	90.99	179.25	7,442.77	-5,757.13	-18.69	40.142965	-104.732922	1,295,853.03	3,214,446.52
13,506.00	90.99	179.14	7,441.13	-5,852.11	-17.36	40.142704	-104.732917	1,295,758.07	3,214,448.67
13,601.00	88.39	178.47	7,441.64	-5,947.08	-15.38	40.142443	-104.732910	1,295,663.13	3,214,451.48
13,695.00	88.58	178.82	7,444.13	-6,041.02	-13.15	40.142185	-104.732902	1,295,569.21	3,214,454.51
13,790.00	87.40	177.19	7,447.46	-6,135.90	-9.85	40.141925	-104.732890	1,295,474.37	3,214,458.64
13,885.00	88.76	177.03	7,450.64	-6,230.72	-5.06	40.141665	-104.732873	1,295,379.59	3,214,464.24
13,980.00	89.94	176.85	7,451.72	-6,325.58	0.01	40.141404	-104.732855	1,295,284.79	3,214,470.13
14,074.00	90.06	175.63	7,451.72	-6,419.37	6.17	40.141147	-104.732833	1,295,191.05	3,214,477.11
14,169.00	90.87	175.89	7,450.95	-6,514.11	13.20	40.140887	-104.732808	1,295,096.39	3,214,484.95
14,264.00	91.30	175.68	7,449.15	-6,608.83	20.18	40.140627	-104.732783	1,295,001.73	3,214,492.75
14,359.00	91.54	174.98	7,446.79	-6,703.49	27.91	40.140367	-104.732755	1,294,907.15	3,214,501.30
14,453.00	90.49	173.61	7,445.13	-6,797.00	37.25	40.140110	-104.732722	1,294,813.72	3,214,511.45
14,562.00	89.69	173.06	7,444.96	-6,905.27	49.90	40.139813	-104.732677	1,294,705.58	3,214,525.04
14,610.00	89.69	173.06	7,445.22	-6,952.91	55.70	40.139682	-104.732656	1,294,657.98	3,214,531.25

## Design Report for Dove 5C-13HZ - Actual Field Surveys

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
25.00	25.00	0.00	0.00	H&P 308: RKB = 25ft
125.00	125.00	0.27	0.32	First MS Energy Services Gyro @ 125.00ft
970.00	969.72	3.57	19.32	Final MS Energy Services Gyro @ 970.00ft
970.00	969.72	3.57	19.32	Tie-On to Surface Gyros @ 970.00ft
1,098.00	1,097.60	2.69	24.76	First Sperry MWD Survey @ 1098.00ft
14,562.00	7,444.96	-6,905.27	49.90	Final Sperry MWD Survey @ 14562.00ft
14,610.00	7,445.22	-6,952.91	55.70	Straight Line Proj @ 14610' MD :: 7445.22' TVD

### Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
User	No Target (Freehand)	180.00	Slot	0.00	0.00	0.00

### Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
25.00	970.00	MS Energy Services - Surface Gyros	NS-GYRO-MS
1,098.00	7,806.00	Sperry MWD Surveys - Vert/Build	MWD+IFR1+SC
7,894.00	14,562.00	Sperry MWD Surveys - Lateral	MWD+IFR1+SC

### Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,845.40	7,443.59	7" Casing @ 7845.4' MD :: 7443.59' TVD	7	8-3/4

---

Design Report for Dove 5C-13HZ - Actual Field Surveys

---

*Targets for Plan B Rev 1*

Shape	Target Name	TVD (ft)	Northing (ft)	Easting (ft)	+N/-S ft	+E/-W ft	Created	Updated
Point	Dove 5C-13HZ_BHL	7,461.00	1,294,636.57	3,214,586.17	-6,974.80	110.44	04-18-2013	04-18-2013
Polygon	Dove 5C-13HZ_Sec	0.00	1,301,609.87	3,214,415.40	0.00	0.00	04-29-2013	04-29-2013
Point	Dove 5C-13HZ_BHLnew	7,461.00	1,294,635.85	3,214,502.67	-6,974.80	26.93	05-03-2013	05-03-2013
Polygon	Dove 5C-13HZ_LD	0.00	1,301,609.87	3,214,415.40	0.00	0.00	04-29-2013	04-29-2013
Point	Dove 5C-13HZ_SHL	0.00	1,301,609.87	3,214,415.40	0.00	0.00	04-18-2013	04-18-2013
Polygon	Dove 5C-13HZ_12/13	0.00	1,301,609.87	3,214,415.40	0.00	0.00	04-29-2013	04-29-2013

## North Reference Sheet for Sec. 12-T2N-R66W - Dove 5C-13HZ - Plan B Rev 1

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

Vertical Depths are relative to RKB=25 @ 5026.00ft (HP 308). Northing and Easting are relative to Dove 5C-13HZ

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.500000°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99995813

Grid Coordinates of Well: 1,301,609.86 ft N, 3,214,415.40 ft E

Geographical Coordinates of Well: 40° 09' 31.56" N, 104° 43' 58.28" W

Grid Convergence at Surface is: 0.50°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,610.00ft

the Bottom Hole Displacement is 6,953.14ft in the Direction of 179.54° (True).

Magnetic Convergence at surface is: -8.13° (22 May 2013, , BGGM2012)

