

# Chevron USA

Piceance

SKR-598-36-AV

SKR-598-36-AV-14 - slot 14

598-36-39

Design: Actual Field Surveys

## Sperry Drilling Services

### Standard Report

02 December, 2008

Well Coordinates (NAD83): 1,645,982.38 N, 2,199,532.51 E (39° 34' 21.57" N, 108° 20' 24.27" W)

Ground Level: 6,342.00 ft

Local Coordinate Origin: Centered on Well SKR-598-36-AV-14 - Slot slot 14

Viewing Datum: RFE @ 6367.0ft (Original Well Elev)

TVDs to System: N

North Reference: Grid

Unit System: API - US Survey Feet

Version: 2003.16 Build: 42B

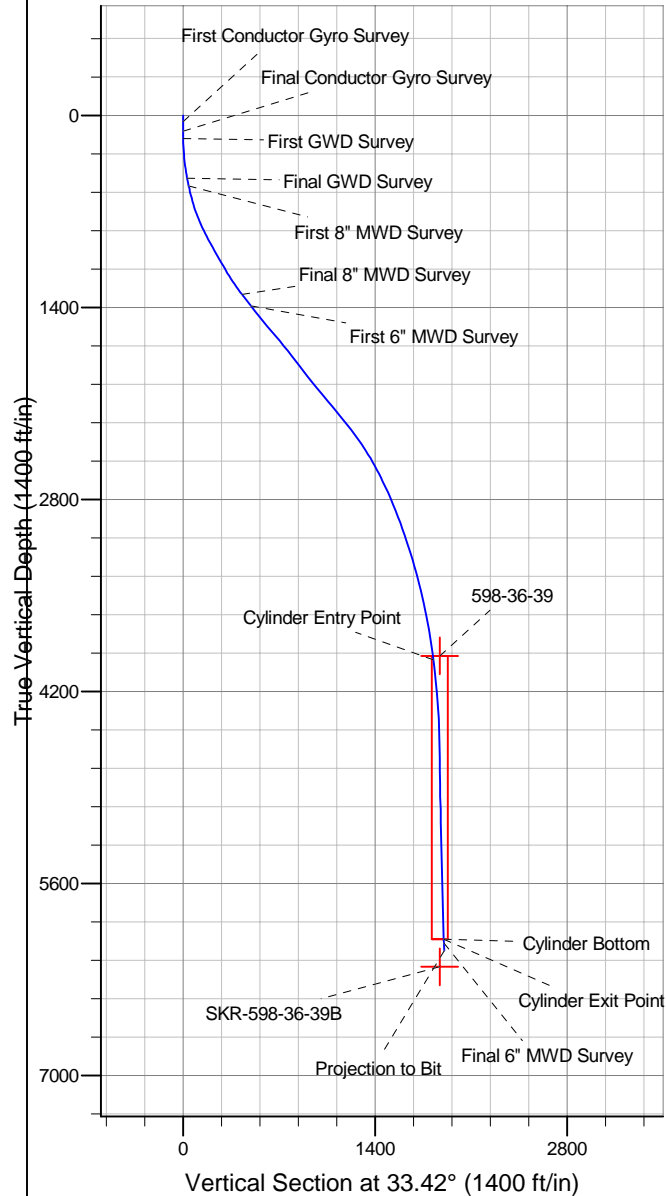
**HALLIBURTON**

Project: Piceance  
Site: SKR-598-36-AV  
Well: SKR-598-36-AV-14  
Wellbore: 598-36-39  
Plan: Actual Field Surveys

# Chevron USA

HALLIBURTON

Drilling and Formation  
Evaluation

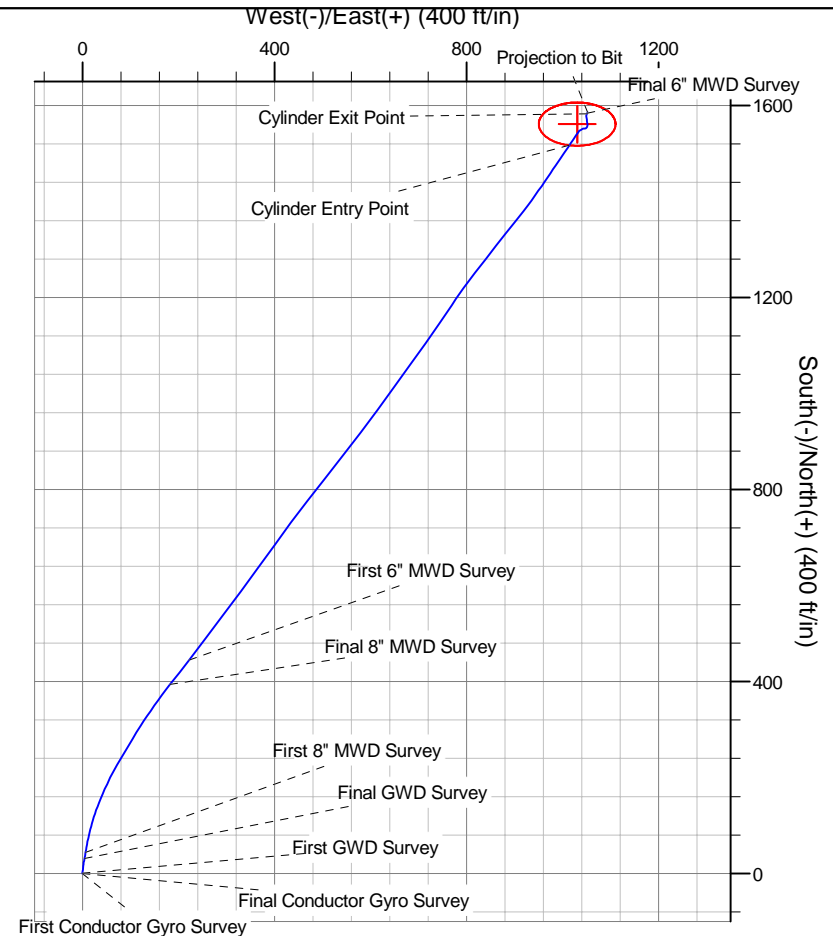


## WELL DETAILS: SKR-598-36-AV-14

+N/-S	+E/-W	Northing	Ground Level: 6342.0 Easting	Latitude	Longitude	Slot
0.0	0.0	1645982.38	2199532.51	39° 34' 21.569 N	108° 20' 24.274 W	slot 14

## WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
598-36-39	3941.0	1561.6	1030.5	1647543.97	2200563.00	Ellipse (Radii: L45.0 W80.0)
SKR-598-36-39B	6207.0	1561.6	1030.5	1647543.97	2200563.00	Point



## Design Report for SKR-598-36-AV-14 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
45.0	0.47	287.01	45.0	0.1	-0.2	-0.1	1.04
<b>First Conductor Gyro Survey</b>							
65.0	0.23	289.46	65.0	0.1	-0.3	-0.1	1.20
85.0	0.19	290.43	85.0	0.1	-0.4	-0.1	0.20
105.0	0.11	297.54	105.0	0.1	-0.4	-0.1	0.41
115.0	0.10	291.86	115.0	0.1	-0.4	-0.1	0.14
<b>Final Conductor Gyro Survey</b>							
168.0	1.50	3.17	168.0	0.9	-0.4	0.5	2.78
<b>First GWD Survey</b>							
230.0	3.35	15.16	229.9	3.4	0.1	2.9	3.08
291.0	5.02	5.82	290.8	7.8	0.8	7.0	2.95
368.0	8.02	5.82	367.3	16.5	1.7	14.7	3.90
460.0	11.63	11.46	457.9	32.0	4.2	29.0	4.06
<b>Final GWD Survey</b>							
518.0	13.46	9.00	514.5	44.4	6.4	40.6	3.29
<b>First 8" MWD Survey</b>							
564.0	14.76	10.23	559.1	55.4	8.3	50.8	2.90
656.0	17.74	13.42	647.4	80.6	13.6	74.8	3.38
749.0	22.18	16.32	734.8	111.2	21.9	104.9	4.89
843.0	25.87	21.12	820.7	147.4	34.2	141.9	4.44
937.0	28.17	25.64	904.4	186.6	51.2	183.9	3.28
1,032.0	29.79	29.90	987.5	227.2	72.7	229.7	2.76
1,126.0	29.43	30.74	1,069.3	267.3	96.2	276.1	0.58
1,220.0	31.31	32.55	1,150.4	307.8	121.1	323.6	2.22
1,315.0	34.20	35.03	1,230.3	350.4	149.7	375.0	3.35
1,409.0	37.12	38.70	1,306.6	394.2	182.6	429.6	3.85
<b>Final 8" MWD Survey</b>							
1,514.0	38.23	37.24	1,389.7	444.8	222.1	493.6	1.36
<b>First 6" MWD Survey</b>							
1,608.0	39.41	37.10	1,463.0	491.8	257.7	552.4	1.26
1,702.0	39.78	36.86	1,535.4	539.6	293.7	612.2	0.43
1,797.0	40.56	36.53	1,608.0	588.8	330.4	673.4	0.85
1,891.0	38.99	35.73	1,680.2	637.3	365.8	733.4	1.76
1,985.0	37.96	36.14	1,753.8	684.7	400.1	791.9	1.13
2,080.0	37.42	36.45	1,829.0	731.5	434.5	849.9	0.60
2,174.0	37.64	38.10	1,903.6	777.1	469.2	907.0	1.09
2,268.0	39.62	37.94	1,977.0	823.3	505.3	965.5	2.11
2,363.0	40.40	37.90	2,049.7	871.5	542.9	1,026.4	0.82
2,457.0	39.20	37.44	2,122.0	919.1	579.6	1,086.4	1.31
2,551.0	38.89	35.96	2,195.0	966.6	615.0	1,145.5	1.05
2,646.0	38.65	35.81	2,269.0	1,014.8	649.9	1,204.9	0.27
2,740.0	36.37	35.58	2,343.6	1,061.3	683.3	1,262.1	2.43
2,834.0	33.51	35.43	2,420.6	1,105.1	714.6	1,315.9	3.04
2,929.0	30.90	34.73	2,501.0	1,146.5	743.7	1,366.5	2.78
3,023.0	28.13	33.78	2,582.8	1,184.8	769.7	1,412.8	2.99
3,117.0	25.50	36.10	2,666.7	1,219.5	794.0	1,455.2	3.01
3,212.0	23.83	37.08	2,753.0	1,251.4	817.6	1,494.8	1.81
3,306.0	22.60	38.05	2,839.4	1,280.7	840.2	1,531.7	1.37
3,400.0	20.77	38.06	2,926.8	1,308.1	861.6	1,566.4	1.95

## Design Report for SKR-598-36-AV-14 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
3,495.0	19.67	38.37	3,015.9	1,333.9	881.9	1,599.1	1.16
3,589.0	18.28	38.23	3,104.8	1,357.9	900.9	1,629.5	1.48
3,683.0	17.57	37.92	3,194.2	1,380.6	918.7	1,658.4	0.76
3,778.0	16.18	35.96	3,285.1	1,402.7	935.3	1,685.9	1.58
3,872.0	14.66	35.96	3,375.8	1,422.9	950.0	1,710.8	1.62
3,966.0	13.32	34.62	3,467.0	1,441.4	963.1	1,733.6	1.47
4,061.0	12.41	32.91	3,559.6	1,459.0	974.9	1,754.7	1.04
4,155.0	11.23	34.11	3,651.6	1,475.1	985.5	1,774.0	1.28
4,250.0	9.74	34.90	3,745.0	1,489.3	995.3	1,791.2	1.58
4,344.0	8.83	34.10	3,837.8	1,501.8	1,003.9	1,806.4	0.98
4,438.0	7.57	33.91	3,930.8	1,512.9	1,011.4	1,819.8	1.34
4,454.7	7.40	33.95	3,947.3	1,514.7	1,012.6	1,822.0	1.00
<b>598-36-39</b>							
4,478.5	7.16	34.01	3,971.0	1,517.2	1,014.3	1,825.0	1.00
<b>Cylinder Entry Point</b>							
4,533.0	6.62	34.16	4,025.1	1,522.7	1,017.9	1,831.5	1.00
4,627.0	5.55	32.78	4,118.5	1,531.0	1,023.4	1,841.5	1.15
4,721.0	5.03	35.21	4,212.1	1,538.2	1,028.3	1,850.2	0.60
4,816.0	4.16	35.86	4,306.8	1,544.4	1,032.7	1,857.8	0.92
4,910.0	1.99	53.67	4,400.7	1,548.1	1,036.0	1,862.7	2.50
5,004.0	2.22	60.40	4,494.6	1,549.9	1,038.9	1,865.9	0.36
5,099.0	1.68	67.04	4,589.6	1,551.4	1,041.8	1,868.7	0.62
5,193.0	1.32	81.02	4,683.5	1,552.1	1,044.1	1,870.5	0.54
5,288.0	1.57	79.99	4,778.5	1,552.5	1,046.5	1,872.2	0.26
5,382.0	0.94	63.54	4,872.5	1,553.1	1,048.4	1,873.7	0.77
5,476.0	0.91	58.97	4,966.5	1,553.8	1,049.8	1,875.1	0.08
5,571.0	1.10	36.75	5,061.5	1,554.9	1,051.0	1,876.7	0.45
5,665.0	1.64	18.67	5,155.4	1,556.9	1,051.9	1,878.9	0.73
5,759.0	1.47	0.10	5,249.4	1,559.4	1,052.4	1,881.2	0.56
5,854.0	1.06	343.09	5,344.4	1,561.5	1,052.1	1,882.8	0.58
5,948.0	1.80	347.36	5,438.4	1,563.7	1,051.5	1,884.3	0.79
6,043.0	2.45	354.92	5,533.3	1,567.2	1,051.0	1,887.0	0.74
6,137.0	2.37	352.77	5,627.2	1,571.1	1,050.6	1,890.0	0.13
6,231.0	1.99	354.18	5,721.1	1,574.7	1,050.2	1,892.7	0.41
6,326.0	1.28	356.57	5,816.1	1,577.4	1,050.0	1,894.9	0.75
6,420.0	1.83	2.60	5,910.1	1,579.9	1,050.0	1,897.0	0.61
6,515.0	2.11	23.67	6,005.0	1,583.1	1,050.7	1,900.0	0.81
6,517.0	2.12	23.92	6,007.0	1,583.1	1,050.8	1,900.1	0.76
<b>Cylinder Bottom - Cylinder Exit Point</b>							
6,544.0	2.29	27.00	6,034.0	1,584.1	1,051.2	1,901.1	0.76
<b>Final 6" MWD Survey</b>							
6,600.0	2.29	27.00	6,089.9	1,586.1	1,052.2	1,903.4	0.00
<b>Projection to Bit - SKR-598-36-39B</b>							

**Design Report for SKR-598-36-AV-14 - Actual Field Surveys****Design Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
45.0	45.0	0.1	-0.2	First Conductor Gyro Survey
115.0	115.0	0.1	-0.4	Final Conductor Gyro Survey
168.0	168.0	0.9	-0.4	First GWD Survey
460.0	457.9	32.0	4.2	Final GWD Survey
518.0	514.5	44.4	6.4	First 8" MWD Survey
1,409.0	1,306.6	394.2	182.6	Final 8" MWD Survey
1,514.0	1,389.7	444.8	222.1	First 6" MWD Survey
4,478.5	3,971.0	1,517.2	1,014.3	Cylinder Entry Point
6,517.0	6,007.0	1,583.1	1,050.8	Cylinder Bottom
6,517.0	6,007.0	1,583.1	1,050.8	Cylinder Exit Point
6,544.0	6,034.0	1,584.1	1,051.2	Final 6" MWD Survey
6,600.0	6,089.9	1,586.1	1,052.2	Projection to Bit

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
User	598-36-39	33.42	Slot	0.0	0.0	0.0

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
45.0	115.0	Conductor Gyros	NS-GYRO-MS
168.0	460.0	GWD Surveys	GYD_GWD_SS
518.0	1,409.0	8" MWD Surveys	MWD
1,514.0	6,600.0	6" MWD Surveys	MWD

**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
SKR-598-36-39B	0.00	0.00	6,207.0	1,561.6	1,030.5	1,647,543.97	2,200,563.00	39° 34' 37.313 N	108° 20' 11.743 W
- actual wellpath misses by 121.5ft at 6600.0ft MD (6089.9 TVD, 1586.1 N, 1052.2 E)									
- Point									
598-36-39	0.00	0.00	3,941.0	1,561.6	1,030.5	1,647,543.97	2,200,563.00	39° 34' 37.313 N	108° 20' 11.743 W
- actual wellpath misses by 50.6ft at 4454.7ft MD (3947.3 TVD, 1514.7 N, 1012.6 E)									
- Ellipse (radii L45.0 W80.0 on 0.00 azi) - Target Cylinder 99% Intersected									