

Chevron USA

Piceance

SKR-598-36-BV (New)

SKR-598-36-BV-22 - Slot 22

598-36-38

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

19 March, 2009

Well Coordinates (NAD83): 1,643,822.62 N, 2,197,644.92 E (39° 33' 59.65" N, 108° 20' 47.50" W)

Ground Level: 6,032.60 ft

Local Coordinate Origin: Centered on Well SKR-598-36-BV-22 (Slot 22) - Slot

Viewing Datum: RFE @ 6057.6ft (Original Well Elev)

TVDs to System: N

North Reference: Grid

Unit System: API - US Survey Feet

Version: 2003.16 Build: 431

HALLIBURTON

Project: Piceance
Site: SKR-598-36-BV (New)
Well: SKR-598-36-BV-22
Wellbore: 598-36-38
Plan: Actual Field Surveys

Chevron USA

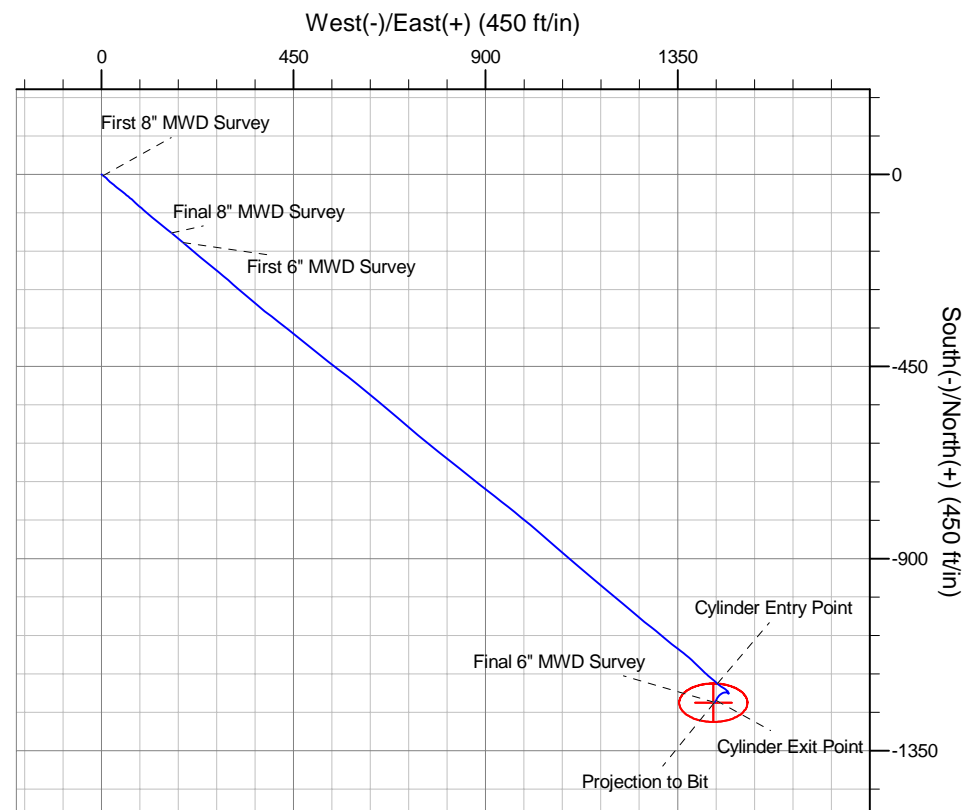
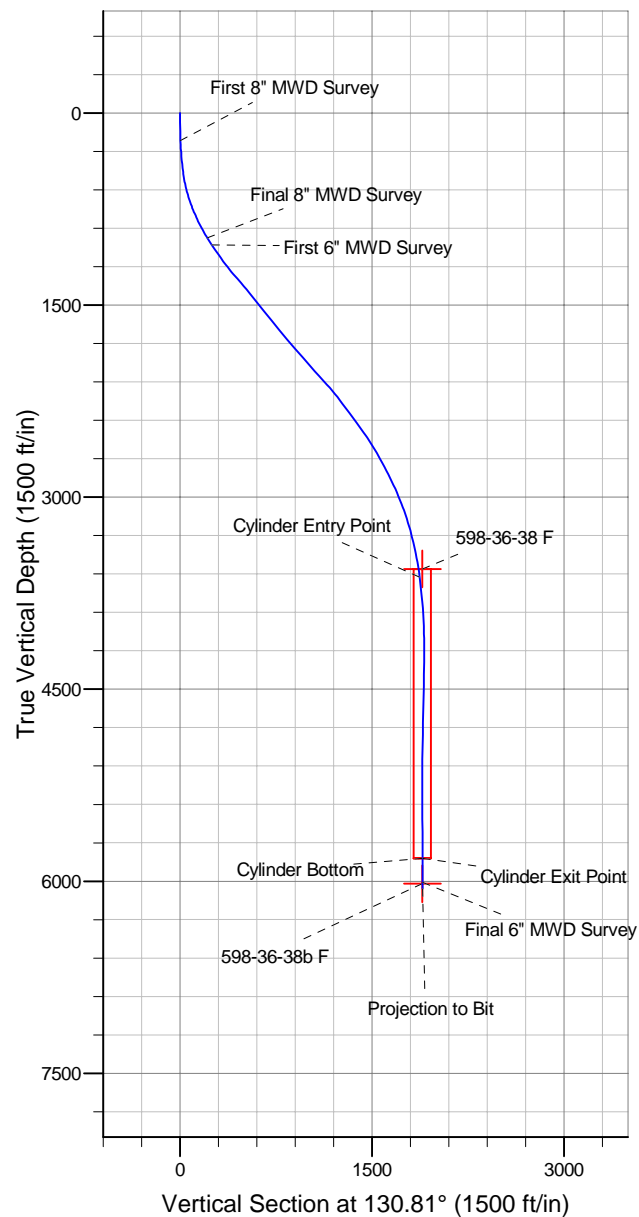
HALLIBURTON
Drilling and Formation
Evaluation

WELL DETAILS: SKR-598-36-BV-22

			Ground Level: 6032.6				
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot	
0.0	0.0	1643822.62	2197644.92	39° 33' 59.650 N	108° 20' 47.504 W	Slot 22	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
598-36-38 F	3561.0	-1237.7	1433.7	1642584.87	2199078.60	Ellipse (Radii: L45.0 W80.0)
598-36-38b F	6020.0	-1237.7	1433.7	1642584.87	2199078.60	Point



Design Report for SKR-598-36-BV-22 - 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
214.0	2.20	126.90	213.9	-2.5	3.3	4.1	1.03
First 8" MWD Survey							
245.0	2.70	121.00	244.9	-3.2	4.4	5.4	1.80
276.0	3.50	123.20	275.9	-4.1	5.8	7.1	2.61
307.0	4.60	129.90	306.8	-5.4	7.5	9.2	3.86
337.0	5.20	126.10	336.7	-7.0	9.6	11.8	2.27
368.0	5.30	135.30	367.6	-8.8	11.7	14.6	2.73
399.0	5.70	139.40	398.4	-11.0	13.7	17.6	1.81
430.0	6.60	136.30	429.2	-13.5	16.0	20.9	3.09
460.0	7.60	131.70	459.0	-16.0	18.6	24.6	3.83
491.0	8.80	129.80	489.7	-18.9	22.0	29.0	3.97
522.0	10.20	130.30	520.3	-22.2	25.9	34.1	4.52
552.0	11.70	128.50	549.7	-25.8	30.3	39.8	5.13
583.0	13.20	127.80	580.0	-30.0	35.6	46.5	4.86
614.0	14.70	128.30	610.1	-34.6	41.4	54.0	4.85
644.0	16.20	128.40	639.0	-39.5	47.7	61.9	5.00
675.0	18.00	128.70	668.6	-45.2	54.8	71.0	5.81
706.0	19.40	130.40	698.0	-51.5	62.5	81.0	4.85
737.0	20.90	131.80	727.1	-58.6	70.5	91.7	5.08
769.0	22.30	132.30	756.8	-66.4	79.3	103.4	4.41
800.0	23.70	132.00	785.4	-74.6	88.3	115.5	4.53
832.0	24.90	130.70	814.5	-83.3	98.2	128.7	4.11
863.0	26.10	129.60	842.5	-91.9	108.4	142.1	4.16
895.0	26.70	129.60	871.2	-100.9	119.3	156.3	1.87
926.0	27.50	129.00	898.8	-109.9	130.2	170.4	2.73
958.0	29.20	129.10	926.9	-119.5	142.0	185.6	5.31
989.0	31.00	129.00	953.7	-129.3	154.1	201.1	5.81
1,013.0	32.10	129.50	974.2	-137.2	163.8	213.7	4.71
Final 8" MWD Survey							
1,078.0	33.70	130.00	1,028.8	-159.8	191.0	249.0	2.50
First 6" MWD Survey							
1,172.0	34.90	129.60	1,106.4	-193.7	231.7	301.9	1.30
1,267.0	37.10	129.20	1,183.3	-229.1	274.8	357.8	2.33
1,361.0	40.30	131.50	1,256.6	-267.2	319.6	416.5	3.73
1,455.0	41.60	129.40	1,327.6	-307.1	366.5	478.1	2.01
1,550.0	39.20	127.60	1,400.0	-345.5	414.6	539.6	2.81
1,644.0	38.10	128.80	1,473.4	-381.8	460.8	598.3	1.42
1,739.0	39.20	129.00	1,547.6	-419.0	506.9	657.6	1.17
1,833.0	38.60	127.20	1,620.7	-455.5	553.4	716.5	1.36
1,928.0	39.60	128.80	1,694.5	-492.4	600.6	776.4	1.50
2,022.0	39.90	130.10	1,766.7	-530.5	647.0	836.4	0.94
2,117.0	40.80	130.60	1,839.1	-570.4	693.9	898.0	1.01
2,211.0	41.70	130.00	1,909.8	-610.5	741.1	959.9	1.05
2,306.0	41.00	128.50	1,981.1	-650.2	789.7	1,022.7	1.28
2,400.0	42.40	127.90	2,051.3	-688.8	838.9	1,085.1	1.55
2,495.0	42.00	129.00	2,121.7	-728.5	888.9	1,148.9	0.88
2,589.0	39.30	127.80	2,193.0	-766.6	936.8	1,210.1	2.99
2,684.0	37.10	128.90	2,267.6	-803.0	982.9	1,268.7	2.42
2,778.0	36.30	131.20	2,343.0	-839.1	1,025.9	1,324.9	1.69

Design Report for SKR-598-36-BV-22 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
2,872.0	36.30	131.00	2,418.8	-875.7	1,067.8	1,380.6	0.13
2,967.0	35.40	130.40	2,495.8	-912.0	1,110.0	1,436.2	1.02
3,061.0	32.10	130.00	2,573.9	-945.7	1,149.9	1,488.4	3.52
3,156.0	30.20	130.20	2,655.2	-977.4	1,187.5	1,537.5	2.00
3,250.0	28.70	130.10	2,737.1	-1,007.2	1,222.8	1,583.8	1.60
3,345.0	26.50	129.60	2,821.3	-1,035.4	1,256.6	1,627.8	2.33
3,439.0	24.90	128.40	2,906.0	-1,061.0	1,288.3	1,668.5	1.79
3,534.0	22.60	130.30	2,992.9	-1,085.3	1,317.9	1,706.7	2.55
3,628.0	20.80	127.50	3,080.2	-1,107.1	1,344.9	1,741.5	2.21
3,722.0	17.60	128.70	3,169.0	-1,126.1	1,369.2	1,772.3	3.43
3,817.0	15.20	134.00	3,260.1	-1,143.8	1,389.4	1,799.1	2.97
3,911.0	14.10	134.50	3,351.1	-1,160.4	1,406.4	1,822.9	1.18
4,006.0	10.80	130.30	3,443.8	-1,174.2	1,421.5	1,843.3	3.60
4,100.0	8.80	131.40	3,536.5	-1,184.7	1,433.6	1,859.3	2.14
4,129.1	8.37	130.53	3,565.3	-1,187.5	1,436.9	1,863.7	1.55
598-36-38 F							
4,188.4	7.50	128.46	3,624.0	-1,192.8	1,443.2	1,871.8	1.55
Cylinder Entry Point							
4,195.0	7.40	128.20	3,630.5	-1,193.3	1,443.8	1,872.7	1.55
4,289.0	6.00	127.20	3,723.9	-1,200.0	1,452.5	1,883.6	1.49
4,384.0	4.80	122.70	3,818.4	-1,205.1	1,459.8	1,892.5	1.34
4,478.0	3.40	125.40	3,912.2	-1,208.9	1,465.4	1,899.2	1.50
4,573.0	3.00	160.20	4,007.1	-1,212.9	1,468.5	1,904.2	2.05
4,667.0	0.50	174.00	4,101.0	-1,215.6	1,469.4	1,906.6	2.68
4,762.0	0.70	217.80	4,196.0	-1,216.5	1,469.1	1,907.0	0.51
4,856.0	0.60	18.40	4,290.0	-1,216.4	1,468.9	1,906.8	1.36
4,951.0	1.00	324.00	4,385.0	-1,215.3	1,468.6	1,905.8	0.86
5,045.0	1.10	294.30	4,479.0	-1,214.3	1,467.3	1,904.1	0.58
5,140.0	1.20	272.70	4,574.0	-1,213.8	1,465.4	1,902.5	0.47
5,234.0	1.60	270.20	4,667.9	-1,213.8	1,463.1	1,900.7	0.43
5,328.0	2.20	261.90	4,761.9	-1,214.0	1,460.1	1,898.5	0.70
5,423.0	1.90	255.80	4,856.8	-1,214.7	1,456.7	1,896.4	0.39
5,517.0	1.90	237.90	4,950.8	-1,215.9	1,453.9	1,895.1	0.63
5,612.0	2.10	233.00	5,045.7	-1,217.8	1,451.2	1,894.2	0.28
5,706.0	2.00	234.80	5,139.6	-1,219.8	1,448.4	1,893.5	0.13
5,801.0	1.70	217.30	5,234.6	-1,221.8	1,446.2	1,893.2	0.67
5,895.0	1.50	220.80	5,328.6	-1,223.9	1,444.6	1,893.3	0.24
5,989.0	1.20	212.10	5,422.5	-1,225.6	1,443.3	1,893.4	0.39
6,084.0	1.10	197.20	5,517.5	-1,227.4	1,442.5	1,893.9	0.33
6,179.0	0.70	195.60	5,612.5	-1,228.8	1,442.0	1,894.5	0.42
6,273.0	1.10	219.70	5,706.5	-1,230.0	1,441.3	1,894.8	0.58
6,367.0	1.50	204.10	5,800.5	-1,231.8	1,440.2	1,895.2	0.56
6,387.5	1.58	207.79	5,821.0	-1,232.3	1,440.0	1,895.3	0.61
Cylinder Bottom - Cylinder Exit Point							
6,462.0	1.90	218.40	5,895.4	-1,234.2	1,438.7	1,895.6	0.61
6,575.0	2.00	221.60	6,008.4	-1,237.2	1,436.3	1,895.6	0.13
Final 6" MWD Survey - 598-36-38b F							
6,625.0	2.00	221.60	6,058.3	-1,238.5	1,435.1	1,895.6	0.00
Projection to Bit							

Design Report for SKR-598-36-BV-22 - Actual Field Surveys**Design Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
214.0	213.9	-2.5	3.3	First 8" MWD Survey
1,013.0	974.2	-137.2	163.8	Final 8" MWD Survey
1,078.0	1,028.8	-159.8	191.0	First 6" MWD Survey
4,188.4	3,624.0	-1,192.8	1,443.2	Cylinder Entry Point
6,387.5	5,821.0	-1,232.3	1,440.0	Cylinder Bottom
6,387.5	5,821.0	-1,232.3	1,440.0	Cylinder Exit Point
6,575.0	6,008.4	-1,237.2	1,436.3	Final 6" MWD Survey
6,625.0	6,058.3	-1,238.5	1,435.1	Projection to Bit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
Target	598-36-38 F	130.81	Slot	0.0	0.0	0.0

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
214.0	1,013.0	8" EM Surveys	MWD
1,078.0	6,625.0	6" EM 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
598-36-38b F	0.00	0.00	6,020.0	-1,237.7	1,433.7	1,642,584.87	2,199,078.60	39° 33' 47.866 N	108° 20' 28.711 W
- actual wellpath misses target center by 11.9ft at 6575.0ft MD (6008.4 TVD, -1237.2 N, 1436.3 E)									
- Point									
598-36-38 F	0.00	0.00	3,561.0	-1,237.7	1,433.7	1,642,584.87	2,199,078.60	39° 33' 47.866 N	108° 20' 28.711 W
- actual wellpath misses target center by 50.5ft at 4129.1ft MD (3565.3 TVD, -1187.5 N, 1436.9 E)									
- Ellipse (radii L45.0 W80.0 on 0.00 azi) - Target Cylinder 97.2% Intersected									