Chevron USA

Piceance
SKR-598-36-BV (New)
SKR-598-36-BV-06 - Slot 6

598-36-33

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

09 April, 2009

Well Coordinates (NAD83): 1,643,879.16 N, 2,197,624.88 E (39° 34' 00.20" N, 108° 20' 47.78" W)
Ground Level: 6,032.60 ft

Local Coordinate Origin:	Centered on Well SKR-598-36-BV-06 (Slot 6) - Slot S
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: 43I

HALLIBURTON

Project: Piceance
Site: SKR-598-36-BV (New)
Well: SKR-598-36-BV-06
Wellbore: 598-36-33
Plan: Actual Field Surveys

Chevron USA

HALLIBURTON
Drilling and Formation Evaluation

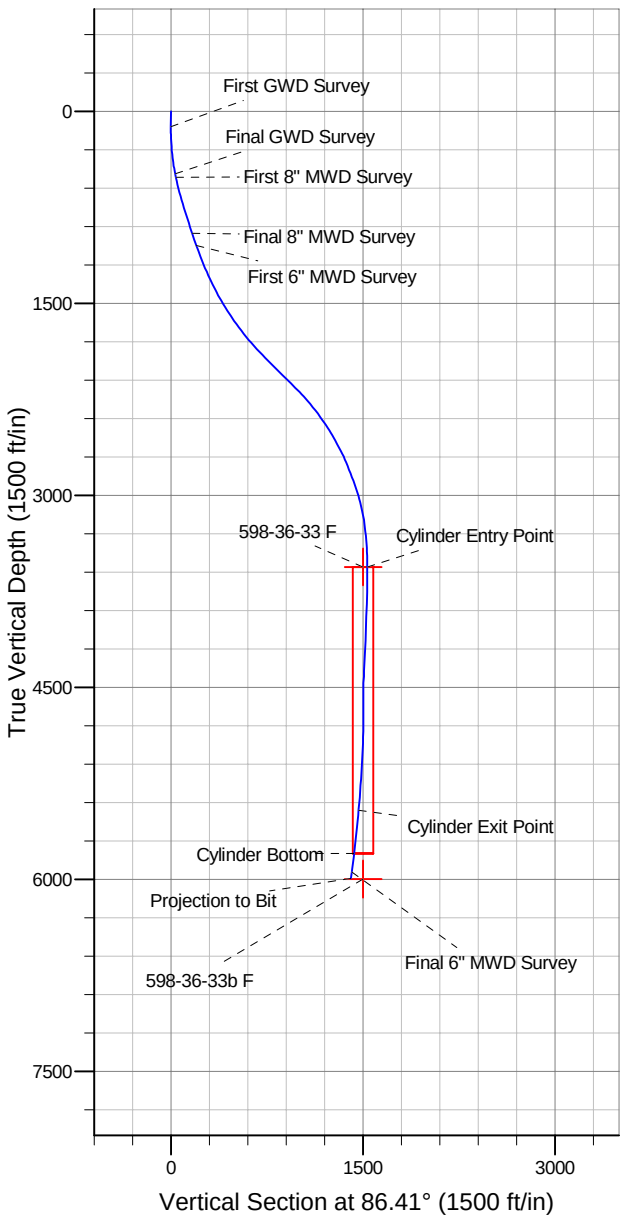
WELL DETAILS: SKR-598-36-BV-06

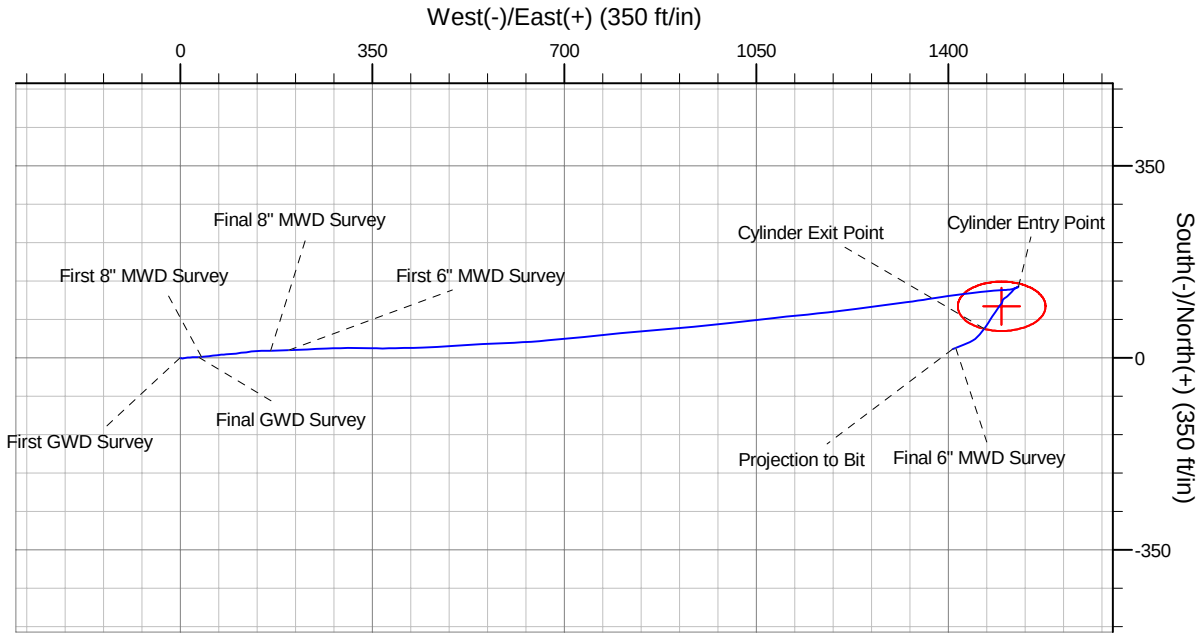
Ground Level: 6032.6

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1643879.16	2197624.88	39° 34' 0.202 N	108° 20' 47.782 W	Slot 6

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
598-36-33 F	3559.0	93.8	1497.1	1643972.96	2199122.02	Ellipse (Radii: L45.0 W80.0)
598-36-33b F	5997.0	93.8	1497.1	1643972.96	2199122.02	Point





Design Report for SKR-598-36-BV-06 - 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
120.0	0.35	255.67	120.0	-0.1	-0.4	-0.4	0.29
First GWD Survey							
151.0	0.70	137.08	151.0	-0.3	-0.3	-0.3	2.97
183.0	1.76	104.12	183.0	-0.5	0.3	0.3	3.85
214.0	2.38	102.01	214.0	-0.8	1.4	1.3	2.01
245.0	3.26	92.49	244.9	-0.9	2.9	2.8	3.21
275.0	3.96	86.50	274.9	-0.9	4.8	4.7	2.65
306.0	5.29	80.51	305.8	-0.6	7.3	7.2	4.56
337.0	6.08	81.74	336.6	-0.1	10.3	10.3	2.58
367.0	6.96	84.04	366.4	0.3	13.7	13.7	3.06
398.0	8.19	86.33	397.2	0.6	17.7	17.7	4.08
429.0	9.07	85.45	427.8	0.9	22.4	22.4	2.87
460.0	10.48	86.86	458.4	1.3	27.6	27.7	4.61
490.0	11.37	88.62	487.8	1.5	33.3	33.3	3.17
Final GWD Survey							
517.0	11.92	86.22	514.3	1.8	38.8	38.8	2.71
First 8" MWD Survey							
548.0	12.88	85.58	544.5	2.2	45.4	45.4	3.13
578.0	13.54	83.08	573.7	2.9	52.2	52.3	2.91
609.0	14.05	83.65	603.8	3.8	59.6	59.7	1.70
640.0	14.91	83.50	633.9	4.6	67.3	67.4	2.78
670.0	15.60	84.24	662.8	5.5	75.1	75.3	2.39
701.0	16.42	86.40	692.6	6.2	83.6	83.9	3.27
733.0	16.57	85.36	723.3	6.8	92.7	92.9	1.03
764.0	16.87	82.74	753.0	7.8	101.6	101.8	2.62
796.0	17.44	82.32	783.5	9.0	110.9	111.3	1.82
827.0	17.54	81.75	813.1	10.3	120.1	120.6	0.64
858.0	17.77	83.81	842.7	11.5	129.5	129.9	2.15
890.0	17.55	86.73	873.1	12.3	139.1	139.6	2.85
921.0	17.43	89.49	902.7	12.6	148.5	148.9	2.70
953.0	17.93	89.37	933.2	12.7	158.2	158.7	1.57
974.0	18.35	88.68	953.2	12.8	164.7	165.2	2.25
Final 8" MWD Survey							
1,075.0	20.10	87.70	1,048.5	13.8	197.9	198.4	1.76
First 6" MWD Survey							
1,169.0	21.20	86.60	1,136.5	15.5	231.1	231.6	1.24
1,263.0	23.00	88.20	1,223.6	17.1	266.4	266.9	2.02
1,358.0	25.30	90.00	1,310.3	17.7	305.2	305.7	2.54
1,452.0	26.80	90.70	1,394.7	17.4	346.5	346.9	1.63
1,547.0	30.40	89.30	1,478.1	17.4	392.0	392.3	3.85
1,641.0	33.20	87.90	1,558.0	18.7	441.5	441.8	3.08
1,736.0	34.90	86.20	1,636.7	21.4	494.6	495.0	2.05
1,830.0	37.20	87.00	1,712.7	24.7	549.8	550.3	2.50
1,924.0	39.80	87.40	1,786.2	27.5	608.3	608.8	2.78
2,019.0	42.60	84.70	1,857.7	31.9	670.7	671.3	3.49
2,113.0	45.20	84.20	1,925.4	38.2	735.5	736.5	2.79
2,208.0	44.70	84.70	1,992.7	44.7	802.3	803.6	0.64
2,303.0	45.00	85.10	2,060.0	50.7	869.1	870.5	0.43
2,397.0	45.70	84.90	2,126.1	56.5	935.7	937.4	0.76

Design Report for SKR-598-36-BV-06 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
2,492.0	44.10	83.60	2,193.4	63.2	1,002.4	1,004.4	1.94
2,586.0	40.60	83.40	2,262.8	70.4	1,065.3	1,067.6	3.73
2,680.0	37.80	84.40	2,335.7	76.7	1,124.4	1,127.0	3.05
2,775.0	35.30	83.20	2,412.0	82.8	1,180.6	1,183.5	2.74
2,870.0	32.10	82.40	2,491.0	89.4	1,232.9	1,236.1	3.40
2,964.0	29.10	82.70	2,571.9	95.6	1,280.3	1,283.8	3.20
3,058.0	26.90	82.50	2,654.9	101.3	1,324.1	1,327.8	2.34
3,153.0	23.20	80.80	2,741.0	107.1	1,363.9	1,367.9	3.97
3,247.0	21.00	82.20	2,828.1	112.3	1,398.9	1,403.1	2.41
3,341.0	18.90	82.30	2,916.4	116.6	1,430.6	1,435.1	2.23
3,436.0	16.60	83.80	3,006.9	120.2	1,459.4	1,464.0	2.47
3,530.0	12.90	86.40	3,097.8	122.3	1,483.2	1,488.0	4.00
3,625.0	9.30	86.80	3,191.0	123.4	1,501.5	1,506.2	3.79
3,719.0	6.40	79.20	3,284.1	124.8	1,514.2	1,519.0	3.27
3,814.0	4.20	70.60	3,378.7	126.9	1,522.7	1,527.6	2.46
3,908.0	1.30	61.50	3,472.6	128.6	1,526.9	1,531.9	3.11
3,993.8	0.45	23.04	3,558.3	129.3	1,527.9	1,533.0	1.15
598-36-33 F							
3,994.5	0.45	22.23	3,559.0	129.3	1,527.9	1,533.0	1.15
Cylinder Entry Point							
4,003.0	0.40	10.50	3,567.5	129.4	1,527.9	1,533.0	1.15
4,097.0	0.30	266.20	3,661.5	129.7	1,527.7	1,532.8	0.59
4,192.0	1.30	243.00	3,756.5	129.2	1,526.5	1,531.6	1.09
4,286.0	1.60	240.50	3,850.5	128.1	1,524.4	1,529.4	0.33
4,381.0	2.10	231.10	3,945.5	126.3	1,521.9	1,526.8	0.61
4,475.0	2.30	226.50	4,039.4	124.0	1,519.2	1,523.9	0.28
4,570.0	3.10	221.90	4,134.3	120.7	1,516.1	1,520.7	0.87
4,664.0	3.80	225.80	4,228.1	116.7	1,512.1	1,516.5	0.78
4,758.0	4.40	228.20	4,321.9	112.1	1,507.2	1,511.3	0.66
4,853.0	3.30	233.30	4,416.7	108.0	1,502.3	1,506.1	1.21
4,947.0	1.50	225.60	4,510.6	105.5	1,499.3	1,502.9	1.94
5,042.0	0.50	189.80	4,605.6	104.3	1,498.3	1,501.9	1.19
5,136.0	0.30	134.00	4,699.5	103.7	1,498.4	1,502.0	0.44
5,231.0	1.30	185.10	4,794.5	102.4	1,498.5	1,502.0	1.20
5,325.0	2.30	212.00	4,888.5	99.8	1,497.4	1,500.7	1.37
5,420.0	3.60	216.70	4,983.4	95.8	1,494.6	1,497.7	1.39
5,514.0	4.70	215.90	5,077.1	90.3	1,490.6	1,493.3	1.17
5,609.0	5.60	215.70	5,171.7	83.4	1,485.6	1,487.9	0.95
5,703.0	6.70	213.10	5,265.2	75.1	1,479.9	1,481.7	1.21
5,798.0	7.80	210.80	5,359.4	64.9	1,473.6	1,474.8	1.20
5,892.0	9.10	216.70	5,452.4	53.4	1,465.9	1,466.4	1.66
5,897.7	9.01	216.96	5,458.0	52.7	1,465.4	1,465.8	1.68
Cylinder Exit Point							
5,987.0	7.70	221.90	5,546.4	42.7	1,457.2	1,457.0	1.68
6,081.0	6.40	231.60	5,639.7	34.7	1,448.8	1,448.2	1.87
6,175.0	7.40	242.90	5,733.0	28.7	1,439.3	1,438.3	1.79
6,239.5	7.53	246.53	5,797.0	25.1	1,431.8	1,430.5	0.76
Cylinder Bottom							
6,270.0	7.60	248.20	5,827.2	23.6	1,428.1	1,426.7	0.76
6,364.0	7.70	249.50	5,920.4	19.1	1,416.4	1,414.8	0.21
6,387.0	7.60	249.90	5,943.1	18.0	1,413.5	1,411.9	0.49

Design Report for SKR-598-36-BV-06 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
Final 6" MWD Survey							
6,426.5	7.60	249.90	5,982.3	16.2	1,408.6	1,406.9	0.00
598-36-33b F							
6,437.0	7.60	249.90	5,992.7	15.8	1,407.3	1,405.5	0.00
Projection to Bit							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
120.0	120.0	-0.1	-0.4	First GWD Survey
490.0	487.8	1.5	33.3	Final GWD Survey
517.0	514.3	1.8	38.8	First 8" MWD Survey
974.0	953.2	12.8	164.7	Final 8" MWD Survey
1,075.0	1,048.5	13.8	197.9	First 6" MWD Survey
3,994.5	3,559.0	129.3	1,527.9	Cylinder Entry Point
5,897.7	5,458.0	52.7	1,465.4	Cylinder Exit Point
6,239.5	5,797.0	25.1	1,431.8	Cylinder Bottom
6,387.0	5,943.1	18.0	1,413.5	Final 6" MWD Survey
6,437.0	5,992.7	15.8	1,407.3	Projection to Bit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	598-36-33 F	86.41	Slot	0.0	0.0	0.0

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
120.0	490.0	GWD Surveys	GYD_DP_MS
517.0	974.0	8" MWD Surveys	MWD
1,075.0	6,437.0	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
598-36-33 F	0.00	0.00	3,559.0	93.8	1,497.1	1,643,972.96	2,199,122.02	39° 34' 1.592 N	108° 20' 28.711 W
- actual wellpath misses target center by 47.0ft at 3994.1ft MD (3558.7 TVD, 129.3 N, 1527.9 E)									
- Ellipse (radii L45.0 W80.0 on 0.00 azi) - Target Cylinder 84.9% Intersected									
598-36-33b F	0.00	0.00	5,997.0	93.8	1,497.1	1,643,972.96	2,199,122.02	39° 34' 1.592 N	108° 20' 28.711 W
- actual wellpath misses target center by 118.6ft at 6426.5ft MD (5982.3 TVD, 16.2 N, 1408.6 E)									
- Point									