

Chevron USA

Piceance

SKR-598-36-BV (New)

SKR-598-36-BV-08 - Slot 8

598-36-71

Design: Actual Field Surveys

Sperry Drilling Services

Proposal Report

21 April, 2009

Well Coordinates (NAD83): 1,643,872.02 N, 2,197,627.41 E (39° 34' 00.13" N, 108° 20' 47.75" W)

Ground Level: 6,032.60 ft

Local Coordinate Origin:

Centered on Well SKR-598-36-BV-08 (Slot 8) - Slot Slot 8

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-08
Wellbore: 598-36-71
Plan: Actual Field Surveys

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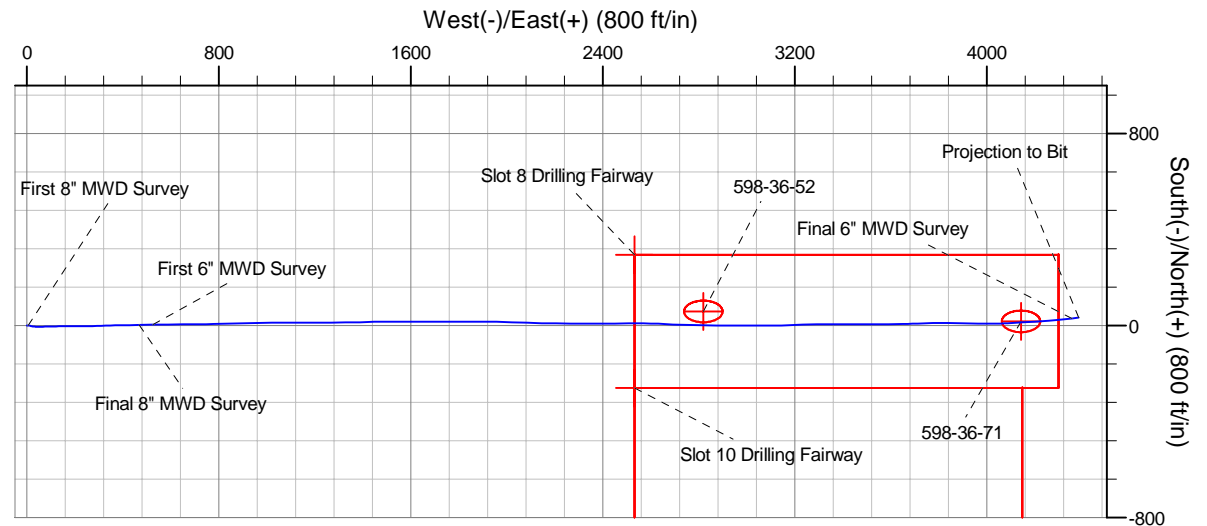
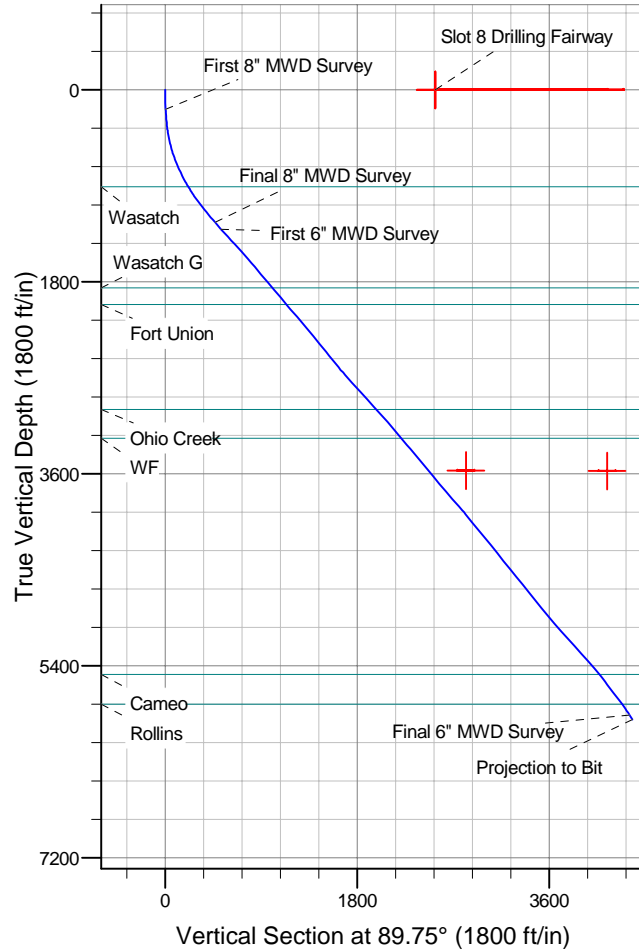
Drilling and Formation
Evaluation

WELL DETAILS: SKR-598-36-BV-08

+N/-S	+E/-W	Northing	Ground Level: 6032.6	Easting	Latitude	Longitude	Slot
0.0	0.0	1643872.02		2197627.41	39° 34' 0.133 N	108° 20' 47.747 W	Slot 8

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Slot 10 Drilling Fairway	-259.3	2531.6	1643612.70	2200159.00	Polygon	
Slot 8 Drilling Fairway	295.7	2531.6	1644167.70	2200159.00	Polygon	
598-36-52	3570.0	59.6	2818.2	1643931.59	2200445.61	Ellipse (Radii: L45.0 W80.0)
598-36-71	3573.0	18.3	4141.8	1643890.30	2201769.20	Ellipse (Radii: L45.0 W80.0)



Design Report for SKR-598-36-BV-08 - Actual Field Surveys

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 (°)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
184.0	2.90	85.20	183.9	0.4	4.6	4.6	1.58	1.58	0.00	85.20
First 8" MWD Survey										
214.0	3.90	86.30	213.9	0.5	6.4	6.4	3.34	3.33	3.67	4.28
245.0	4.60	91.90	244.8	0.5	8.7	8.7	2.62	2.26	18.06	33.47
276.0	5.20	100.50	275.7	0.2	11.3	11.3	3.05	1.94	27.74	55.10
307.0	5.60	106.60	306.5	-0.4	14.2	14.2	2.26	1.29	19.68	58.19
337.0	6.60	106.00	336.4	-1.3	17.2	17.2	3.34	3.33	-2.00	-3.95
368.0	7.80	102.50	367.1	-2.3	21.0	21.0	4.12	3.87	-11.29	-21.82
399.0	9.00	98.90	397.8	-3.1	25.4	25.4	4.22	3.87	-11.61	-25.45
430.0	10.10	95.80	428.4	-3.8	30.5	30.5	3.92	3.55	-10.00	-26.59
460.0	11.40	92.50	457.8	-4.2	36.1	36.1	4.79	4.33	-11.00	-26.96
491.0	12.80	90.40	488.1	-4.3	42.6	42.6	4.73	4.52	-6.77	-18.48
522.0	14.10	89.00	518.3	-4.3	49.8	49.8	4.32	4.19	-4.52	-14.74
552.0	16.00	89.60	547.3	-4.2	57.6	57.6	6.35	6.33	2.00	4.98
583.0	17.50	88.80	576.9	-4.1	66.5	66.5	4.90	4.84	-2.58	-9.12
614.0	18.80	88.80	606.4	-3.8	76.2	76.2	4.19	4.19	0.00	0.00
644.0	20.10	88.40	634.7	-3.6	86.2	86.2	4.36	4.33	-1.33	-6.04
675.0	21.30	88.30	663.7	-3.3	97.1	97.1	3.87	3.87	-0.32	-1.73
706.0	22.20	88.10	692.5	-2.9	108.6	108.6	2.91	2.90	-0.65	-4.80
737.0	23.60	88.30	721.0	-2.5	120.7	120.7	4.52	4.52	0.65	3.27
769.0	24.80	88.30	750.2	-2.2	133.8	133.8	3.75	3.75	0.00	0.00
800.0	26.20	87.90	778.2	-1.7	147.1	147.1	4.55	4.52	-1.29	-7.19
832.0	26.80	88.10	806.8	-1.2	161.4	161.4	1.90	1.87	0.62	8.55
863.0	27.50	89.70	834.4	-0.9	175.5	175.5	3.26	2.26	5.16	46.92
895.0	28.30	90.70	862.7	-1.0	190.5	190.5	2.90	2.50	3.12	30.77
926.0	29.60	90.90	889.8	-1.2	205.5	205.5	4.21	4.19	0.65	4.35
945.4	30.63	90.47	906.6	-1.3	215.2	215.2	5.43	5.31	-2.23	-12.09
Wasatch										
958.0	31.30	90.20	917.4	-1.4	221.7	221.7	5.43	5.32	-2.12	-11.72
989.0	32.40	89.60	943.7	-1.3	238.1	238.1	3.69	3.55	-1.94	-16.31
1,021.0	33.60	89.00	970.6	-1.1	255.5	255.5	3.89	3.75	-1.87	-15.49
1,052.0	35.00	89.00	996.2	-0.8	273.0	273.0	4.52	4.52	0.00	0.00
1,083.0	36.00	88.90	1,021.4	-0.5	291.0	291.0	3.23	3.23	-0.32	-3.36
1,115.0	36.80	88.70	1,047.2	-0.1	310.0	310.0	2.53	2.50	-0.62	-8.52
1,146.0	37.50	88.00	1,071.9	0.5	328.7	328.7	2.64	2.26	-2.26	-31.41
1,178.0	38.10	87.90	1,097.2	1.2	348.3	348.3	1.88	1.87	-0.31	-5.87
1,209.0	38.60	88.20	1,121.5	1.8	367.5	367.5	1.72	1.61	0.97	20.54
1,241.0	38.80	88.90	1,146.5	2.3	387.5	387.5	1.50	0.62	2.19	65.71
1,272.0	39.20	88.80	1,170.6	2.7	407.0	407.0	1.31	1.29	-0.32	-8.98
1,304.0	39.90	89.00	1,195.2	3.1	427.4	427.4	2.22	2.19	0.62	10.39
1,366.0	40.90	89.10	1,242.4	3.8	467.6	467.6	1.62	1.61	0.16	3.75
Final 8" MWD Survey										
1,452.0	42.20	89.00	1,306.8	4.7	524.6	524.6	1.51	1.51	-0.12	-2.96
First 6" MWD Survey										
1,546.0	42.90	89.40	1,376.1	5.6	588.1	588.2	0.80	0.74	0.43	21.28
1,641.0	41.80	89.20	1,446.3	6.4	652.1	652.2	1.17	-1.16	-0.21	-173.09
1,735.0	41.90	90.30	1,516.3	6.6	714.9	714.9	0.79	0.11	1.17	82.65
1,799.1	41.29	89.09	1,564.2	6.9	757.4	757.4	1.57	-0.95	-1.88	-127.74
Slot 10 Drilling Fairway - Slot 8 Drilling Fairway										
1,830.0	41.00	88.50	1,587.5	7.3	777.7	777.8	1.57	-0.94	-1.92	-126.83
1,924.0	39.70	88.30	1,659.1	9.0	838.6	838.6	1.39	-1.38	-0.21	-174.39
2,018.0	39.80	88.80	1,731.4	10.5	898.7	898.7	0.36	0.11	0.53	72.82
2,113.0	40.50	88.60	1,804.0	11.9	959.9	959.9	0.75	0.74	-0.21	-10.51
2,181.9	40.06	89.26	1,856.6	12.7	1,004.5	1,004.5	0.89	-0.64	0.95	136.27
Wasatch G										
2,207.0	39.90	89.50	1,875.8	12.9	1,020.6	1,020.6	0.89	-0.64	0.97	135.77
2,302.0	40.20	89.90	1,948.5	13.2	1,081.7	1,081.7	0.42	0.32	0.42	40.78

Design Report for SKR-598-36-BV-08 - Actual Field Surveys

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 (°)
2,385.9	40.29	90.61	2,012.6	13.0	1,135.9	1,136.0	0.55	0.10	0.84	79.36
Fort Union										
2,397.0	40.30	90.70	2,021.0	12.9	1,143.1	1,143.1	0.55	0.11	0.84	78.82
2,491.0	41.50	90.00	2,092.1	12.5	1,204.6	1,204.6	1.37	1.28	-0.74	-21.17
2,586.0	40.50	89.10	2,163.8	13.0	1,266.9	1,267.0	1.22	-1.05	-0.95	-149.78
2,680.0	39.60	89.80	2,235.7	13.6	1,327.4	1,327.5	1.07	-0.96	0.74	153.68
2,775.0	39.30	88.10	2,309.1	14.7	1,387.8	1,387.8	1.18	-0.32	-1.79	-106.18
2,869.0	39.70	89.40	2,381.6	16.0	1,447.5	1,447.6	0.98	0.43	1.38	64.69
2,964.0	39.30	89.70	2,454.9	16.5	1,508.0	1,508.0	0.47	-0.42	0.32	154.61
3,058.0	38.20	89.60	2,528.2	16.8	1,566.8	1,566.8	1.17	-1.17	-0.11	-176.78
3,152.0	39.40	89.90	2,601.5	17.1	1,625.7	1,625.7	1.29	1.28	0.32	9.02
3,247.0	42.10	89.50	2,673.5	17.4	1,687.7	1,687.8	2.86	2.84	-0.42	-5.68
3,341.0	42.00	90.50	2,743.3	17.4	1,750.7	1,750.7	0.72	-0.11	1.06	98.86
3,460.0	41.90	90.60	2,831.8	16.7	1,830.2	1,830.3	0.10	-0.08	0.08	146.28
3,555.0	42.70	89.90	2,902.0	16.4	1,894.1	1,894.2	0.98	0.84	-0.74	-30.75
3,649.0	41.80	90.40	2,971.6	16.2	1,957.3	1,957.4	1.02	-0.96	0.53	159.70
3,679.9	42.06	90.90	2,994.6	16.0	1,978.0	1,978.0	1.37	0.84	1.61	52.11
Ohio Creek										
3,743.0	42.60	91.90	3,041.2	15.0	2,020.5	2,020.5	1.37	0.85	1.59	51.74
3,838.0	41.30	92.10	3,111.9	12.7	2,083.9	2,084.0	1.38	-1.37	0.21	174.20
3,932.0	39.60	90.90	3,183.4	11.1	2,144.9	2,144.9	1.99	-1.81	-1.28	-155.85
4,027.0	39.90	91.20	3,256.5	10.0	2,205.6	2,205.6	0.37	0.32	0.32	32.71
4,038.3	39.91	91.14	3,265.1	9.9	2,212.8	2,212.9	0.36	0.11	-0.53	-72.89
WF										
4,121.0	40.00	90.70	3,328.5	9.0	2,266.0	2,266.0	0.36	0.11	-0.53	-72.85
4,216.0	41.10	90.40	3,400.7	8.4	2,327.7	2,327.7	1.18	1.16	-0.32	-10.17
4,310.0	39.50	89.70	3,472.4	8.4	2,388.5	2,388.5	1.77	-1.70	-0.74	-164.47
4,405.0	38.80	89.00	3,546.1	9.1	2,448.5	2,448.5	0.87	-0.74	-0.74	-148.00
4,499.0	39.50	89.40	3,619.0	9.9	2,507.8	2,507.9	0.79	0.74	0.43	19.99
4,594.0	40.40	90.60	3,691.8	9.9	2,568.8	2,568.9	1.25	0.95	1.26	41.03
4,661.2	40.18	92.03	3,743.0	8.9	2,612.3	2,612.3	1.41	-0.32	2.12	103.83
598-36-52										
4,688.0	40.10	92.60	3,763.5	8.2	2,629.5	2,629.5	1.41	-0.31	2.14	102.74
4,783.0	41.00	92.40	3,835.7	5.5	2,691.2	2,691.2	0.96	0.95	-0.21	-8.30
4,877.0	42.50	91.50	3,905.9	3.4	2,753.8	2,753.8	1.72	1.60	-0.96	-22.11
4,972.0	38.60	91.40	3,978.0	1.8	2,815.5	2,815.5	4.11	-4.11	-0.11	-179.08
5,066.0	39.00	90.40	4,051.3	0.9	2,874.4	2,874.4	0.79	0.43	-1.06	-57.84
5,160.0	40.40	89.90	4,123.6	0.7	2,934.5	2,934.4	1.53	1.49	-0.53	-13.04
5,255.0	39.20	90.10	4,196.6	0.7	2,995.3	2,995.2	1.27	-1.26	0.21	173.99
5,349.0	38.70	90.50	4,269.7	0.4	3,054.4	3,054.3	0.60	-0.53	0.43	153.46
5,444.0	38.50	89.30	4,343.9	0.5	3,113.6	3,113.6	0.82	-0.21	-1.26	-105.43
5,489.6	38.88	88.37	4,379.6	1.1	3,142.1	3,142.1	1.53	0.84	-2.04	-56.90
598-36-71										
5,538.0	39.30	87.40	4,417.1	2.2	3,172.6	3,172.6	1.53	0.86	-2.00	-56.17
5,633.0	38.30	88.20	4,491.1	4.5	3,232.1	3,232.1	1.18	-1.05	0.84	153.69
5,727.0	39.00	89.00	4,564.5	5.9	3,290.8	3,290.8	0.91	0.74	0.85	35.83
5,822.0	39.00	89.00	4,638.4	7.0	3,350.6	3,350.6	0.00	0.00	0.00	0.00
5,916.0	39.10	91.40	4,711.4	6.8	3,409.8	3,409.8	1.61	0.11	2.55	87.15
6,011.0	39.00	90.00	4,785.2	6.1	3,469.6	3,469.6	0.93	-0.11	-1.47	-97.01
6,105.0	38.90	89.20	4,858.3	6.5	3,528.7	3,528.7	0.55	-0.11	-0.85	-101.56
6,200.0	39.90	89.70	4,931.7	7.0	3,589.0	3,589.0	1.10	1.05	0.53	17.80
6,294.0	40.00	89.30	5,003.7	7.6	3,649.4	3,649.4	0.29	0.11	-0.43	-68.88
6,388.0	42.40	87.30	5,074.5	9.4	3,711.2	3,711.2	2.91	2.55	-2.13	-29.52
6,483.0	42.30	89.00	5,144.7	11.5	3,775.2	3,775.2	1.21	-0.11	1.79	95.62
6,577.0	41.70	91.00	5,214.5	11.5	3,838.1	3,838.1	1.56	-0.64	2.13	114.89
6,672.0	42.30	90.80	5,285.1	10.5	3,901.6	3,901.7	0.65	0.63	-0.21	-12.65
6,766.0	41.10	91.00	5,355.3	9.5	3,964.2	3,964.2	1.28	-1.28	0.21	173.75
6,861.0	40.50	90.30	5,427.2	8.8	4,026.2	4,026.2	0.79	-0.63	-0.74	-142.95
6,930.5	39.16	87.37	5,480.6	9.7	4,070.7	4,070.7	3.32	-1.93	-4.21	-126.75

Design Report for SKR-598-36-BV-08 - Actual Field Surveys

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 (°)
Cameo										
6,955.0	38.70	86.30	5,499.7	10.6	4,086.1	4,086.1	3.32	-1.86	-4.38	-124.50
7,050.0	36.50	86.40	5,574.9	14.2	4,143.9	4,144.0	2.32	-2.32	0.11	178.45
7,144.0	37.10	86.90	5,650.2	17.5	4,200.2	4,200.2	0.71	0.64	0.53	26.73
7,238.0	37.60	85.70	5,724.9	21.2	4,257.1	4,257.1	0.94	0.53	-1.28	-56.00
7,280.3	36.75	85.27	5,758.6	23.2	4,282.5	4,282.6	2.10	-2.00	-1.03	-162.96
Rollins										
7,333.0	35.70	84.70	5,801.1	25.9	4,313.6	4,313.6	2.10	-2.00	-1.07	-162.61
7,405.0	34.00	82.80	5,860.2	30.4	4,354.5	4,354.6	2.80	-2.36	-2.64	-148.21
Final 6" MWD Survey										
7,455.0	34.00	82.80	5,901.7	33.9	4,382.2	4,382.3	0.00	0.00	0.00	0.00
Projection to Bit										

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
184.0	183.9	0.4	4.6	First 8" MWD Survey
1,366.0	1,242.4	3.8	467.6	Final 8" MWD Survey
1,452.0	1,306.8	4.7	524.6	First 6" MWD Survey
7,405.0	5,860.2	30.4	4,354.5	Final 6" MWD Survey
7,455.0	5,901.7	33.9	4,382.2	Projection to Bit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	+E/-W (ft)	Start TVD (ft)
Target	598-36-71	89.75	Slot	0.0	0.0	0.0

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
184.0	1,366.0	8" MWD Surveys	MWD
1,452.0	7,455.0	6" MWD Surveys	MWD

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
945.4	906.6	Wasatch		0.00	
2,181.9	1,856.6	Wasatch G		0.00	
2,385.9	2,012.6	Fort Union		0.00	
3,679.9	2,994.6	Ohio Creek		0.00	
4,038.3	3,265.1	WF		0.00	
6,930.5	5,480.6	Cameo		0.00	
7,280.3	5,758.6	Rollins		0.00	



Design Report for SKR-598-36-BV-08 - Actual Field Surveys

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Slot 8 Drilling Fairway	0.0	295.7	2,531.6	Polygon
Slot 10 Drilling Fairway	0.0	-259.3	2,531.6	Polygon
598-36-52	3,570.0	59.6	2,818.2	Ellipse
598-36-71	3,573.0	18.3	4,141.8	Ellipse