

Chevron USA

Piceance

SKR-698-04-AV

SKR-698-04-AV-08 - Slot 8

698-4-13

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

09 February, 2009

Well Coordinates (NAD83): 1,641,095.00 N, 2,199,840.79 E (39° 33' 33.38" N, 108° 20' 18.39" W)

Ground Level: 5,959.00 ft

Local Coordinate Origin: Centered on Well SKR-698-04-AV-08 (Slot 8) - Slot S

Viewing Datum: RFE @ 5984.0ft (RFE)

TVDs to System: N

North Reference: Grid

Unit System: API - US Survey Feet

Version: 2003.16 Build: 431

HALLIBURTON

Project: Piceance
Site: SKR-698-04-AV
Well: SKR-698-04-AV-08
Wellbore: 698-4-13
Plan: Actual Field Surveys

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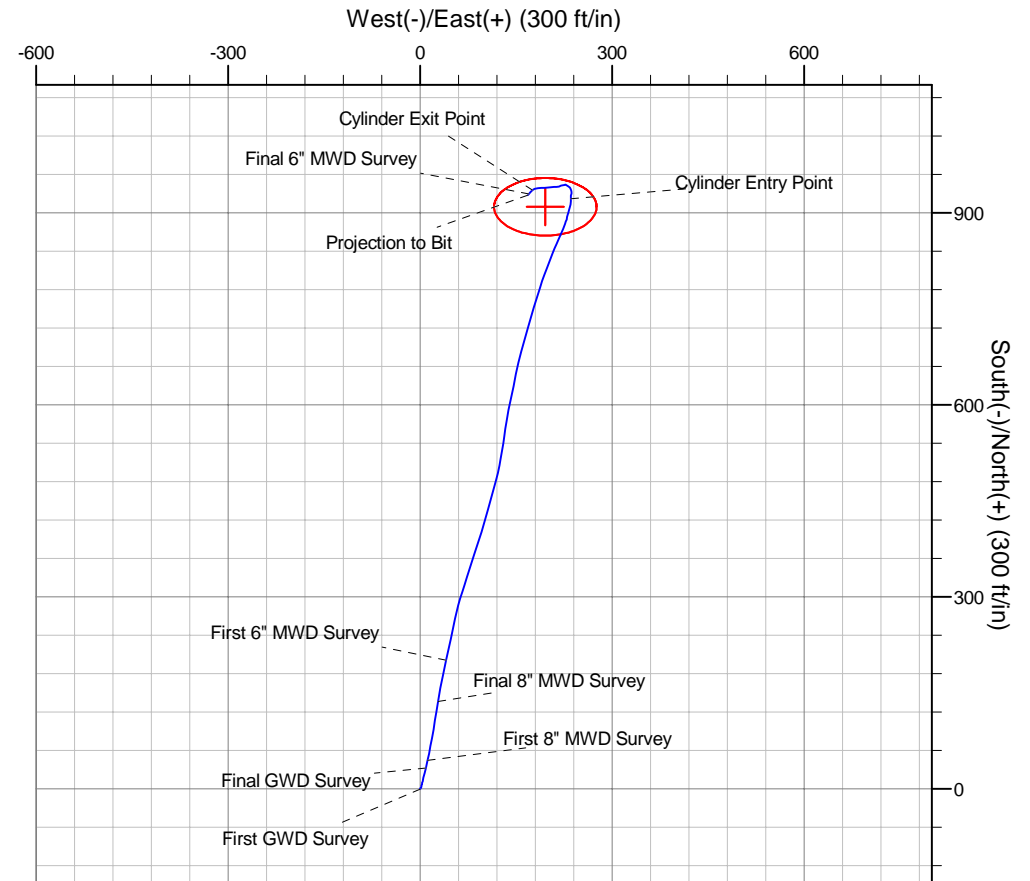
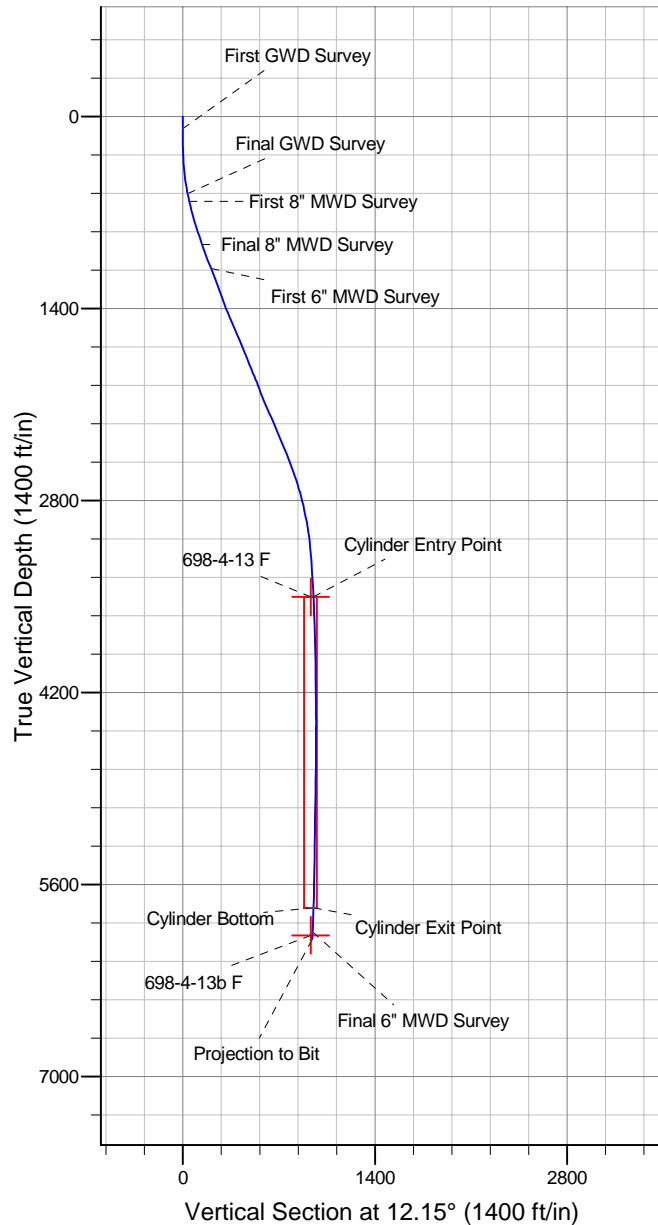
Drilling and Formation
Evaluation

WELL DETAILS: SKR-698-04-AV-08

+N/-S	+E/-W	Northing	Ground Level: 5959.0	Easting	Latitude	Longitude	Slot
0.0	0.0	1641095.00		2199840.79	39° 33' 33.384 N	108° 20' 18.389 W	Slot 8

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
698-4-13 F	3503.0	909.4	195.8	1642004.41	2200036.63	Ellipse (Radii: L45.0 W80.0)
698-4-13b F	5970.0	909.4	195.8	1642004.41	2200036.63	Point



Design Report for SKR-698-04-AV-08 - 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
89.0	0.09	103.76	89.0	0.0	0.1	0.0	0.10
First GWD Survey							
120.0	0.26	32.39	120.0	0.0	0.1	0.1	0.80
150.0	0.26	35.03	150.0	0.2	0.2	0.2	0.04
181.0	0.44	61.29	181.0	0.3	0.3	0.3	0.76
212.0	0.35	41.38	212.0	0.4	0.5	0.5	0.53
242.0	0.79	51.42	242.0	0.6	0.7	0.7	1.50
273.0	1.76	27.28	273.0	1.1	1.1	1.4	3.51
304.0	2.64	18.65	304.0	2.2	1.6	2.5	3.03
335.0	3.70	18.47	334.9	3.9	2.1	4.2	3.42
381.0	5.11	12.66	380.8	7.3	3.0	7.8	3.21
427.0	6.96	14.95	426.5	12.0	4.2	12.6	4.05
473.0	8.28	11.77	472.1	17.9	5.6	18.7	3.01
519.0	9.60	15.65	517.6	24.8	7.3	25.8	3.15
565.0	11.10	12.13	562.8	32.9	9.3	34.1	3.54
Final GWD Survey							
623.0	12.98	12.39	619.5	44.7	11.8	46.2	3.24
First 8" MWD Survey							
669.0	14.34	12.01	664.2	55.3	14.1	57.0	2.96
715.0	15.63	10.93	708.7	67.0	16.5	68.9	2.87
761.0	16.54	10.52	752.9	79.5	18.9	81.7	1.99
808.0	17.39	9.49	797.8	93.0	21.2	95.4	1.92
856.0	17.43	9.21	843.6	107.2	23.6	109.7	0.19
903.0	18.48	8.58	888.3	121.5	25.8	124.2	2.27
950.0	19.57	9.36	932.8	136.6	28.2	139.5	2.38
Final 8" MWD Survey							
1,137.0	21.54	12.57	1,107.9	201.0	40.8	205.1	1.21
First 6" MWD Survey							
1,231.0	20.99	11.97	1,195.5	234.3	48.0	239.2	0.63
1,325.0	19.38	12.01	1,283.7	266.1	54.8	271.6	1.71
1,420.0	20.69	16.65	1,372.9	297.6	62.9	304.1	2.17
1,514.0	22.97	18.25	1,460.2	330.9	73.4	338.9	2.51
1,608.0	23.74	17.58	1,546.5	366.4	84.8	376.0	0.87
1,703.0	22.25	17.65	1,633.9	401.7	96.0	412.9	1.57
1,797.0	23.01	15.93	1,720.7	436.3	106.5	449.0	1.07
1,892.0	21.38	15.11	1,808.7	470.9	116.1	484.8	1.75
1,986.0	23.09	11.24	1,895.7	505.5	124.2	520.4	2.39
2,080.0	20.25	7.61	1,983.0	539.8	129.9	555.0	3.34
2,175.0	22.65	9.64	2,071.4	574.1	135.1	589.7	2.64
2,269.0	24.02	12.08	2,157.7	610.7	142.2	626.9	1.78
2,364.0	22.98	11.06	2,244.9	647.8	149.8	664.8	1.18
2,458.0	23.27	15.49	2,331.3	683.7	158.3	701.7	1.88
2,553.0	22.23	15.90	2,418.9	719.0	168.2	738.3	1.11
2,647.0	20.78	16.76	2,506.4	752.1	177.9	772.7	1.58
2,741.0	20.09	17.87	2,594.5	783.4	187.6	805.4	0.84
2,835.0	17.65	21.02	2,683.4	812.1	197.7	835.5	2.81
2,930.0	14.98	21.61	2,774.6	837.0	207.4	861.9	2.82
3,024.0	12.67	23.67	2,865.8	857.7	216.0	884.0	2.51
3,118.0	10.81	23.44	2,957.9	875.2	223.7	902.7	1.98

Design Report for SKR-698-04-AV-08 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
3,213.0	7.85	15.60	3,051.6	889.7	228.9	917.9	3.38
3,307.0	5.45	13.78	3,145.0	900.2	231.7	928.8	2.56
3,401.0	3.87	17.66	3,238.7	907.5	233.8	936.4	1.71
3,496.0	3.06	10.46	3,333.5	913.1	235.2	942.1	0.97
3,590.0	3.10	359.12	3,427.3	918.1	235.6	947.1	0.65
3,665.1	3.05	358.83	3,502.4	922.1	235.5	951.1	0.07
698-4-13 F							
3,665.8	3.05	358.83	3,503.0	922.2	235.5	951.1	0.07
Cylinder Entry Point							
3,684.0	3.04	358.76	3,521.2	923.1	235.5	952.0	0.07
3,778.0	1.75	18.97	3,615.1	927.0	235.9	955.9	1.62
3,873.0	1.69	8.50	3,710.1	929.7	236.6	958.7	0.34
3,967.0	1.69	356.62	3,804.0	932.5	236.7	961.4	0.37
4,062.0	1.59	342.92	3,899.0	935.2	236.3	963.9	0.42
4,156.0	1.52	336.40	3,993.0	937.5	235.4	966.1	0.20
4,250.0	1.14	316.88	4,086.9	939.4	234.2	967.6	0.62
4,439.0	1.53	304.27	4,275.9	942.2	230.9	969.6	0.26
4,534.0	1.75	299.94	4,370.9	943.6	228.6	970.6	0.27
4,628.0	0.61	248.01	4,464.8	944.1	226.9	970.7	1.55
4,722.0	0.69	254.68	4,558.8	943.8	225.9	970.2	0.12
4,911.0	1.32	257.26	4,747.8	943.0	222.6	968.7	0.33
5,005.0	1.64	251.91	4,841.8	942.4	220.3	967.6	0.37
5,100.0	2.23	252.99	4,936.7	941.4	217.2	966.0	0.62
5,194.0	2.41	267.26	5,030.6	940.8	213.5	964.6	0.64
5,289.0	2.68	267.01	5,125.5	940.5	209.3	963.5	0.28
5,383.0	2.92	262.50	5,219.4	940.1	204.7	962.2	0.35
5,477.0	2.94	263.15	5,313.3	939.5	200.0	960.6	0.04
5,572.0	3.12	270.56	5,408.2	939.3	195.0	959.3	0.45
5,666.0	3.17	266.42	5,502.0	939.1	189.8	958.0	0.25
5,761.0	3.35	260.21	5,596.9	938.5	184.5	956.3	0.42
5,855.0	3.00	252.74	5,690.7	937.3	179.4	954.0	0.58
5,934.4	2.68	231.21	5,770.0	935.5	176.0	951.6	1.39
Cylinder Bottom - Cylinder Exit Point							
5,949.0	2.67	226.85	5,784.6	935.1	175.4	951.0	1.39
6,044.0	2.64	221.14	5,879.5	931.9	172.4	947.3	0.28
6,109.0	2.89	222.58	5,944.5	929.6	170.3	944.6	0.40
Final 6" MWD Survey - 698-4-13b F							
6,165.0	2.89	222.58	6,000.4	927.5	168.4	942.1	0.00
Projection to Bit							

Design Report for SKR-698-04-AV-08 - Actual Field Surveys**Design Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
89.0	89.0	0.0	0.1	First GWD Survey
565.0	562.8	32.9	9.3	Final GWD Survey
623.0	619.5	44.7	11.8	First 8" MWD Survey
950.0	932.8	136.6	28.2	Final 8" MWD Survey
1,137.0	1,107.9	201.0	40.8	First 6" MWD Survey
3,665.8	3,503.0	922.2	235.5	Cylinder Entry Point
5,934.4	5,770.0	935.5	176.0	Cylinder Bottom
5,934.4	5,770.0	935.5	176.0	Cylinder Exit Point
6,109.0	5,944.5	929.6	170.3	Final 6" MWD Survey
6,165.0	6,000.4	927.5	168.4	Projection to Bit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	698-4-13 F	12.15	Slot	0.0	0.0	0.0

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
89.0	565.0	GWD Surveys	GYD_GWD_SS
623.0	950.0	8" MWD Surveys	MWD
1,137.0	6,165.0	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
698-4-13 F	0.00	0.00	3,503.0	909.4	195.8	1,642,004.41	2,200,036.63	39° 33' 42.428 N	108° 20' 16.252 W
- actual wellpath misses target center by 41.7ft at 3665.1ft MD (3502.4 TVD, 922.1 N, 235.5 E)									
- Ellipse (radii L45.0 W80.0 on 0.00 azi) - Target Cylinder 100% Intersected									
698-4-13b F	0.00	0.00	5,970.0	909.4	195.8	1,642,004.41	2,200,036.63	39° 33' 42.428 N	108° 20' 16.252 W
- actual wellpath misses target center by 41.4ft at 6109.0ft MD (5944.5 TVD, 929.6 N, 170.3 E)									
- Point									