



Gyroscopic Survey Report  
for  
K. P. KAUFFMAN  
1675 BROADWAY SUITE 2800  
DENVER, CO 80202

Well Location	WELD COUNTY, CO
Well Name	ALBERT SACK F-1
Rig Number	NABORS 92-3376
Survey Date	6/30/2014
Latitude	40.0061600°N
Longitude	104.9302300°W
North Reference	True North
Grid Correction	None
Depth Reference	GROUND LEVEL (5043.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 264.99Azim (deg)
Definitive Survey	ALBERT SACK F-1
Operator(s)	C JAQUES

**Well Notes**

# Survey Report

**Well Name:** ALBERT SACK F-1  
**Survey:** ALBERT SACK F-1  
**Survey Date:** 6/30/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft	Closure Distance ft	Closure Direction deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00	0.00
100.14	0.28	331.66	100.14	0.10	0.21	-0.12	0.28	0.24	331.66
123.46	0.29	311.92	123.46	0.16	0.30	-0.19	0.42	0.36	328.45
148.98	0.07	229.71	148.98	0.22	0.34	-0.25	1.13	0.42	323.72
174.58	0.20	162.52	174.58	0.22	0.28	-0.25	0.73	0.37	319.01
199.15	0.35	156.86	199.15	0.19	0.17	-0.20	0.61	0.27	310.32
224.89	0.66	145.18	224.89	0.09	-0.02	-0.09	1.28	0.09	255.82
248.95	0.71	142.62	248.95	-0.06	-0.26	0.08	0.24	0.27	161.94
274.71	0.82	150.74	274.70	-0.22	-0.54	0.27	0.58	0.61	153.53
299.16	0.85	141.21	299.15	-0.39	-0.84	0.47	0.58	0.96	150.72
324.44	0.80	148.62	324.42	-0.58	-1.13	0.68	0.46	1.32	149.09
348.95	0.87	147.46	348.94	-0.74	-1.44	0.87	0.31	1.68	148.86
374.21	0.82	145.32	374.20	-0.92	-1.75	1.07	0.25	2.05	148.42
399.52	0.86	150.47	399.50	-1.09	-2.06	1.27	0.34	2.42	148.35
424.76	0.98	146.93	424.74	-1.27	-2.41	1.48	0.54	2.83	148.38
448.87	0.93	156.64	448.84	-1.43	-2.76	1.67	0.70	3.23	148.79
474.21	0.90	152.73	474.18	-1.57	-3.13	1.85	0.28	3.63	149.45
499.01	0.91	150.08	498.98	-1.72	-3.47	2.03	0.18	4.02	149.64
524.35	1.13	147.94	524.31	-1.92	-3.86	2.27	0.89	4.48	149.56
549.64	0.83	140.51	549.60	-2.14	-4.21	2.52	1.31	4.91	149.15
574.96	0.84	153.78	574.92	-2.31	-4.52	2.71	0.76	5.27	149.01
599.80	0.89	151.78	599.76	-2.45	-4.85	2.89	0.25	5.64	149.26
624.24	0.94	153.01	624.19	-2.60	-5.20	3.07	0.22	6.03	149.46
649.14	0.93	147.18	649.08	-2.77	-5.55	3.27	0.38	6.44	149.50
674.41	0.94	144.39	674.36	-2.97	-5.89	3.50	0.19	6.85	149.28
699.71	0.89	146.43	699.66	-3.17	-6.23	3.73	0.25	7.26	149.06
724.94	0.93	144.78	724.88	-3.37	-6.55	3.96	0.19	7.66	148.88
749.04	0.91	142.66	748.97	-3.57	-6.87	4.19	0.16	8.04	148.63
774.36	0.89	140.72	774.30	-3.79	-7.18	4.43	0.14	8.44	148.31
799.14	0.94	150.11	799.07	-3.98	-7.50	4.66	0.64	8.83	148.18
824.44	0.85	145.55	824.37	-4.16	-7.84	4.87	0.45	9.23	148.17
849.67	0.85	144.02	849.59	-4.35	-8.14	5.08	0.10	9.60	148.04
874.94	0.76	145.72	874.86	-4.53	-8.43	5.28	0.36	9.95	147.93
898.99	0.70	137.57	898.91	-4.69	-8.67	5.47	0.50	10.26	147.75
924.30	0.79	143.95	924.21	-4.88	-8.93	5.68	0.48	10.58	147.54
949.19	0.81	138.89	949.10	-5.07	-9.20	5.89	0.29	10.92	147.34

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**Survey Date:** 6/30/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft	Closure Distance ft	Closure Direction deg
974.39	0.82	144.07	974.30	-5.27	-9.48	6.12	0.30	11.28	147.16
999.61	0.83	148.35	999.52	-5.44	-9.78	6.32	0.25	11.64	147.13
1024.93	0.83	142.73	1024.83	-5.62	-10.08	6.53	0.32	12.01	147.08
1049.10	0.89	144.64	1049.00	-5.81	-10.37	6.74	0.26	12.37	146.98
1074.34	0.84	154.24	1074.24	-5.97	-10.70	6.93	0.60	12.75	147.05
1099.20	0.90	147.12	1099.10	-6.13	-11.03	7.12	0.49	13.13	147.15
1124.38	0.89	146.25	1124.27	-6.31	-11.36	7.34	0.06	13.52	147.14
1149.76	0.86	146.55	1149.65	-6.50	-11.68	7.55	0.15	13.91	147.12
1174.11	0.83	149.01	1174.00	-6.66	-11.98	7.74	0.19	14.26	147.13
1198.99	0.81	152.33	1198.88	-6.81	-12.29	7.92	0.20	14.62	147.22
1224.17	0.77	156.03	1224.05	-6.93	-12.60	8.07	0.25	14.96	147.38
1248.81	0.81	156.61	1248.69	-7.04	-12.92	8.20	0.16	15.30	147.58
1274.59	0.65	163.02	1274.47	-7.13	-13.22	8.32	0.70	15.62	147.83
1298.97	0.65	159.09	1298.85	-7.20	-13.48	8.41	0.18	15.89	148.05
1323.81	0.59	165.39	1323.69	-7.26	-13.74	8.49	0.37	16.15	148.28
1349.98	0.64	177.94	1349.85	-7.27	-14.01	8.53	0.55	16.40	148.67
1374.46	0.52	166.86	1374.34	-7.28	-14.26	8.56	0.65	16.63	149.02
1399.41	0.53	175.53	1399.28	-7.30	-14.49	8.59	0.32	16.84	149.32
1424.40	0.55	173.25	1424.27	-7.30	-14.72	8.62	0.12	17.06	149.66
1449.96	0.53	172.88	1449.83	-7.31	-14.96	8.65	0.09	17.28	149.98
1474.03	0.95	205.32	1473.89	-7.21	-15.25	8.58	2.41	17.50	150.66
1499.47	0.57	179.39	1499.34	-7.09	-15.57	8.49	1.98	17.74	151.41
1524.44	0.58	182.67	1524.30	-7.07	-15.83	8.48	0.14	17.95	151.81
1549.10	0.55	188.62	1548.96	-7.02	-16.07	8.46	0.28	18.16	152.24
1574.08	0.61	182.67	1573.94	-6.98	-16.32	8.43	0.35	18.37	152.67
1599.68	0.56	184.75	1599.54	-6.94	-16.58	8.42	0.22	18.59	153.09
1624.70	0.59	187.82	1624.56	-6.89	-16.83	8.39	0.18	18.81	153.51
1648.92	0.55	185.11	1648.78	-6.84	-17.07	8.36	0.20	19.01	153.90
1673.95	0.59	201.13	1673.81	-6.76	-17.31	8.30	0.65	19.20	154.37
1699.09	0.50	184.91	1698.94	-6.68	-17.54	8.25	0.71	19.38	154.81
1723.73	0.49	189.63	1723.59	-6.64	-17.75	8.22	0.17	19.56	155.15
1749.97	0.49	195.17	1749.83	-6.57	-17.97	8.17	0.18	19.74	155.54
1773.99	0.46	193.63	1773.84	-6.51	-18.16	8.12	0.12	19.90	155.90
1799.16	0.39	194.51	1799.01	-6.45	-18.34	8.08	0.30	20.04	156.23
1824.19	0.48	204.30	1824.04	-6.37	-18.52	8.01	0.49	20.18	156.60
1848.85	0.36	189.88	1848.70	-6.29	-18.69	7.96	0.67	20.31	156.94

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**Survey Date:** 6/30/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft	Closure Distance ft	Closure Direction deg
1873.86	0.41	198.57	1873.71	-6.24	-18.85	7.92	0.32	20.45	157.22
1899.06	0.42	214.56	1898.91	-6.14	-19.01	7.84	0.46	20.57	157.60
1923.67	0.45	209.53	1923.52	-6.03	-19.17	7.74	0.19	20.67	158.02
1949.99	0.57	219.61	1949.84	-5.88	-19.36	7.60	0.58	20.80	158.56
1973.79	0.50	217.00	1973.64	-5.73	-19.54	7.47	0.31	20.91	159.09
1998.86	0.50	231.60	1998.71	-5.57	-19.69	7.31	0.51	21.01	159.62
2024.74	0.47	226.10	2024.59	-5.39	-19.83	7.15	0.21	21.08	160.18
2049.81	0.55	233.71	2049.66	-5.21	-19.98	6.98	0.42	21.16	160.74
2074.91	0.61	241.00	2074.75	-4.98	-20.11	6.77	0.37	21.22	161.40
2099.81	0.59	239.21	2099.65	-4.75	-20.24	6.54	0.11	21.27	162.09
2123.96	0.56	242.68	2123.80	-4.53	-20.36	6.33	0.18	21.32	162.72
2149.81	0.63	244.88	2149.65	-4.28	-20.48	6.09	0.28	21.36	163.44
2173.95	0.61	245.78	2173.78	-4.03	-20.58	5.85	0.10	21.40	164.13
2199.36	0.57	248.40	2199.20	-3.78	-20.69	5.61	0.19	21.43	164.82
2223.93	0.45	243.11	2223.77	-3.58	-20.77	5.42	0.52	21.47	165.39
2249.73	0.50	243.06	2249.57	-3.38	-20.87	5.23	0.19	21.52	165.94
2274.35	0.52	277.11	2274.18	-3.17	-20.91	5.02	1.21	21.50	166.50
2298.50	0.61	285.97	2298.33	-2.95	-20.86	4.79	0.53	21.40	167.07
2324.30	0.62	298.96	2324.13	-2.70	-20.75	4.53	0.54	21.24	167.67
2348.80	0.77	316.81	2348.63	-2.49	-20.57	4.30	1.08	21.01	168.18
2374.61	0.76	308.35	2374.44	-2.26	-20.33	4.05	0.44	20.73	168.73
2399.23	0.82	315.58	2399.05	-2.03	-20.11	3.80	0.46	20.46	169.30
2424.55	0.83	321.13	2424.37	-1.81	-19.83	3.56	0.32	20.15	169.83
2449.10	0.84	318.65	2448.92	-1.61	-19.56	3.33	0.15	19.84	170.34
2474.85	0.87	315.44	2474.67	-1.37	-19.28	3.07	0.21	19.52	170.97
2499.22	0.90	320.88	2499.03	-1.14	-19.00	2.82	0.36	19.21	171.57
2524.74	1.02	316.50	2524.55	-0.89	-18.68	2.53	0.56	18.85	172.28
2549.45	1.05	312.25	2549.25	-0.60	-18.37	2.21	0.33	18.50	173.12
2574.68	1.07	314.82	2574.48	-0.29	-18.05	1.88	0.21	18.14	174.06
2599.76	1.02	310.20	2599.56	0.02	-17.74	1.54	0.39	17.80	175.04
2624.55	0.98	321.41	2624.34	0.29	-17.43	1.24	0.81	17.47	175.94
2649.73	1.17	313.99	2649.52	0.58	-17.08	0.92	0.94	17.11	176.92
2674.29	1.10	319.73	2674.07	0.88	-16.73	0.59	0.54	16.74	177.99
2699.34	1.22	315.31	2699.12	1.19	-16.36	0.24	0.60	16.36	179.14
2724.45	1.20	314.78	2724.23	1.53	-15.98	-0.13	0.08	15.98	180.47
2749.70	1.26	322.72	2749.46	1.85	-15.57	-0.49	0.71	15.58	181.79

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<b>Survey Date:</b>		6/30/2014							
MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft	Closure Distance ft	Closure Direction deg
2774.42	1.43	312.69	2774.18	2.20	-15.15	-0.88	1.18	15.17	183.32
2799.44	1.23	325.27	2799.19	2.54	-14.71	-1.26	1.41	14.77	184.90
2824.73	1.38	324.59	2824.48	2.83	-14.24	-1.59	0.59	14.33	186.38
2849.99	1.48	321.23	2849.73	3.17	-13.74	-1.97	0.51	13.88	188.17
2874.77	1.46	326.25	2874.50	3.50	-13.23	-2.35	0.52	13.43	190.07
2899.91	1.47	336.39	2899.64	3.75	-12.66	-2.66	1.03	12.94	191.85
2923.89	1.44	342.13	2923.60	3.92	-12.10	-2.87	0.62	12.43	193.36
2949.85	1.42	337.25	2949.55	4.09	-11.49	-3.10	0.47	11.90	195.09
2974.98	1.46	341.14	2974.68	4.26	-10.90	-3.32	0.41	11.39	196.95
2999.89	1.89	352.17	2999.58	4.36	-10.19	-3.48	2.15	10.77	198.85
3024.62	1.42	1.40	3024.30	4.34	-9.48	-3.53	2.18	10.12	200.41
3048.96	1.39	10.10	3048.63	4.23	-8.89	-3.47	0.88	9.54	201.32
3074.95	1.28	6.41	3074.61	4.09	-8.29	-3.38	0.54	8.96	202.19
3099.69	1.11	12.53	3099.35	3.97	-7.79	-3.30	0.86	8.46	202.97
3124.53	1.02	21.46	3124.19	3.80	-7.34	-3.17	0.75	8.00	203.32
3148.78	0.94	16.66	3148.43	3.63	-6.95	-3.03	0.48	7.58	203.55
3174.76	0.90	19.71	3174.41	3.46	-6.56	-2.90	0.24	7.17	203.86
3199.47	0.97	36.83	3199.12	3.24	-6.21	-2.71	1.15	6.77	203.58
3224.32	0.87	52.19	3223.96	2.94	-5.92	-2.43	1.06	6.40	202.34
3249.79	0.40	64.80	3249.43	2.70	-5.77	-2.20	1.93	6.17	200.90
3274.91	0.32	49.51	3274.55	2.56	-5.68	-2.07	0.48	6.05	200.00
3299.22	0.54	98.02	3298.86	2.39	-5.65	-1.90	1.66	5.97	198.61
3324.00	0.59	96.44	3323.64	2.15	-5.68	-1.66	0.21	5.92	196.31
3349.48	0.44	68.48	3349.11	1.93	-5.66	-1.44	1.12	5.84	194.29
3374.06	0.45	103.60	3373.70	1.75	-5.65	-1.26	1.09	5.79	192.58
3399.03	0.57	115.59	3398.66	1.55	-5.73	-1.05	0.64	5.82	190.42
3423.79	0.52	81.01	3423.42	1.33	-5.76	-0.83	1.32	5.82	188.20
3449.33	0.53	100.49	3448.97	1.10	-5.77	-0.60	0.70	5.80	185.94
3474.00	0.57	129.68	3473.63	0.90	-5.87	-0.39	1.14	5.88	183.82
3499.93	0.17	122.22	3499.56	0.78	-5.97	-0.26	1.56	5.98	182.49
3524.71	0.30	125.78	3524.34	0.70	-6.03	-0.18	0.51	6.03	181.67
3548.99	0.20	126.68	3548.62	0.62	-6.09	-0.09	0.39	6.09	180.85
3574.95	0.30	146.76	3574.59	0.56	-6.17	-0.02	0.49	6.17	180.16
3599.68	0.23	175.27	3599.31	0.53	-6.28	0.02	0.58	6.28	179.79
3624.38	0.33	178.97	3624.01	0.53	-6.40	0.03	0.40	6.40	179.75
3648.52	0.26	174.54	3648.15	0.54	-6.52	0.03	0.31	6.52	179.70

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MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft	Closure Distance ft	Closure Direction deg
3674.64	0.07	168.77	3674.27	0.53	-6.60	0.04	0.71	6.60	179.62
3699.41	0.15	136.52	3699.04	0.51	-6.64	0.07	0.39	6.64	179.40
3724.18	0.19	179.97	3723.81	0.49	-6.70	0.09	0.52	6.70	179.21
3748.50	0.24	151.72	3748.13	0.48	-6.79	0.12	0.48	6.79	179.02
3773.21	0.21	191.92	3772.84	0.47	-6.88	0.13	0.64	6.88	178.90
3799.65	0.29	213.75	3799.28	0.53	-6.98	0.08	0.48	6.98	179.31
3824.41	0.33	217.62	3824.04	0.61	-7.09	0.01	0.16	7.09	179.95
3849.17	0.37	217.90	3848.80	0.72	-7.21	-0.09	0.19	7.21	180.69
3874.74	0.25	223.61	3874.36	0.82	-7.32	-0.18	0.50	7.32	181.38
3899.41	0.38	227.80	3899.04	0.92	-7.41	-0.27	0.55	7.42	182.12
3924.49	0.46	232.27	3924.12	1.07	-7.53	-0.42	0.32	7.54	183.16
3949.32	0.50	256.26	3948.95	1.26	-7.61	-0.60	0.81	7.64	184.50
3974.84	0.34	252.85	3974.47	1.45	-7.66	-0.78	0.62	7.70	185.81
3999.77	0.32	259.08	3999.40	1.59	-7.70	-0.92	0.18	7.75	186.80
4024.14	0.32	251.46	4023.77	1.72	-7.73	-1.05	0.18	7.80	187.72
4049.76	0.46	279.09	4049.38	1.89	-7.74	-1.22	0.89	7.83	188.95
4073.96	0.51	276.41	4073.58	2.09	-7.71	-1.42	0.25	7.84	190.45
4099.46	0.29	282.84	4099.08	2.26	-7.69	-1.60	0.90	7.85	191.75
4124.63	0.44	279.34	4124.25	2.42	-7.66	-1.76	0.62	7.85	192.93
4148.80	0.55	271.73	4148.42	2.63	-7.64	-1.97	0.53	7.89	194.44
4174.73	0.45	268.30	4174.35	2.85	-7.64	-2.19	0.40	7.94	196.03
4199.06	0.45	287.92	4198.68	3.04	-7.61	-2.38	0.63	7.97	197.37
4224.56	0.50	292.16	4224.18	3.23	-7.54	-2.58	0.25	7.97	198.89
4248.88	0.58	293.97	4248.50	3.43	-7.45	-2.79	0.33	7.95	200.54
4273.95	0.87	281.24	4273.57	3.72	-7.36	-3.09	1.33	7.98	202.80
4299.39	0.62	273.50	4299.01	4.05	-7.31	-3.42	1.09	8.07	205.06
4324.90	0.49	290.33	4324.51	4.28	-7.27	-3.66	0.79	8.13	206.73
4349.08	0.33	279.67	4348.69	4.44	-7.22	-3.83	0.73	8.17	207.93
4374.70	0.66	297.66	4374.31	4.64	-7.14	-4.03	1.38	8.20	209.45
4398.45	0.81	301.22	4398.06	4.89	-6.99	-4.29	0.69	8.20	211.58
4424.07	0.79	295.77	4423.68	5.19	-6.81	-4.61	0.31	8.23	214.07
4449.19	0.82	299.07	4448.79	5.49	-6.65	-4.92	0.21	8.28	216.50
4474.69	0.79	296.41	4474.29	5.79	-6.49	-5.24	0.18	8.34	218.93
4498.49	0.73	309.23	4498.09	6.03	-6.32	-5.50	0.75	8.38	221.07
4524.02	0.88	315.27	4523.62	6.28	-6.07	-5.77	0.67	8.38	223.52
4549.37	1.00	314.22	4548.96	6.55	-5.78	-6.06	0.49	8.38	226.37

**Well Name:** ALBERT SACK F-1  
**Survey:** ALBERT SACK F-1  
**Survey Date:** 6/30/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft	Closure Distance ft	Closure Direction deg
4574.91	1.27	318.92	4574.49	6.86	-5.41	-6.41	1.11	8.39	229.82
4599.23	1.24	316.49	4598.82	7.18	-5.02	-6.77	0.24	8.43	233.45
4624.74	1.26	318.45	4624.32	7.52	-4.61	-7.15	0.17	8.50	237.19
4649.39	1.42	322.84	4648.96	7.84	-4.16	-7.51	0.78	8.58	241.01
4674.47	1.68	329.88	4674.03	8.16	-3.60	-7.88	1.28	8.66	245.47
4699.61	1.68	327.37	4699.16	8.49	-2.97	-8.26	0.29	8.78	250.25
4724.86	1.53	319.52	4724.40	8.86	-2.40	-8.68	1.06	9.01	254.55
4749.15	1.42	327.46	4748.69	9.19	-1.90	-9.05	0.94	9.25	258.15
4774.16	1.34	325.05	4773.68	9.48	-1.40	-9.39	0.39	9.49	261.54
4800.40	1.45	331.01	4799.91	9.76	-0.85	-9.73	0.69	9.76	264.99