



Job Number: 09142014
 Company: NightHawk Production LLC
 Lease/Well: Salen 14-35
 Location: Limon,Co
 Rig Name: Extreme 11
 RKB: ☐
 G.L. or M.S.L.: ☐

State/Country: Co
 Declination: 12
 Grid: ☐
 File name: C:\WINSERVE\08312014.SVY
 Date/Time: 25-Sep-14 / 06:03
 Curve Name: Salen 14-35

Salen 14-35

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 231.37
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg FROM PROPOSAL		
							Distance FT	Direction Deg	Severity Deg/100	Left-Right FT	Up-Down FT
Tie-In to Gyro											
287.00	1.47	116.42	286.97	-1.25	3.15	-1.68	3.38	111.64	.00	0.28 R	-3.37 D
453.00	1.90	136.30	452.90	-4.18	6.95	-2.82	8.11	121.05	.43	2.13 R	-7.83 D
665.00	1.80	139.50	664.79	-9.26	11.54	-3.24	14.79	128.73	.07	2.76 R	-14.54 D
851.00	.70	187.80	850.74	-12.60	13.28	-2.51	18.31	133.49	.77	14.87 R	-10.68 D
1064.00	.40	204.00	1063.73	-14.57	12.81	-.91	19.40	138.69	.16	17.62 R	-8.10 D
1265.00	1.20	258.30	1264.72	-15.64	10.46	1.59	18.81	146.23	.51	17.44 R	7.07 U
1478.00	.80	259.20	1477.68	-16.37	6.81	4.90	17.73	157.40	.19	17.36 R	3.63 U
1691.00	2.60	267.20	1690.58	-16.89	.53	10.13	16.89	178.21	.85	13.73 R	4.09 U
1905.00	2.40	259.90	1904.38	-17.91	-8.73	18.00	19.92	205.99	.18	7.44 R	4.19 U
2119.00	2.40	265.30	2118.19	-19.06	-17.61	25.66	25.95	222.73	.11	-0.25 R	7.37 U
2332.00	2.00	262.40	2331.03	-19.92	-25.74	32.54	32.54	232.26	.19	-7.18 R	10.95 U
2545.00	4.10	253.70	2543.72	-22.55	-36.73	42.77	43.10	238.46	1.01	-11.20 R	13.30 U

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100	FROM PROPOSAL	
							Distance FT	Direction Deg		Left-Right FT	Up-Down FT
2759.00	3.40	248.30	2757.26	-27.04	-49.97	55.92	56.82	241.58	.37	-14.63 R	13.50 U
2973.00	4.00	231.80	2970.82	-34.00	-61.73	69.45	70.48	241.15	.57	-12.11 R	17.31 U
3187.00	4.00	232.60	3184.30	-43.15	-73.53	84.38	85.26	239.59	.03	-12.54 R	15.98 U
3400.00	3.90	227.90	3396.79	-52.52	-84.80	99.04	99.75	238.23	.16	-10.97 R	15.98 U
3614.00	4.20	222.10	3610.26	-63.21	-95.46	114.04	114.49	236.49	.24	-7.82 R	15.51 U
3828.00	2.90	217.90	3823.84	-73.30	-104.04	127.03	127.27	234.83	.62	-4.03 R	16.20 U
4041.00	3.10	218.80	4036.55	-82.04	-110.96	137.90	137.99	233.52	.10	-1.22 R	18.37 U
4254.00	3.40	217.50	4249.21	-91.54	-118.41	149.65	149.67	232.29	.15	2.35 R	19.63 U
4468.00	2.30	201.50	4462.95	-100.57	-123.85	159.53	159.54	230.92	.63	12.79 R	19.78 U
4682.00	4.70	240.90	4676.56	-108.83	-133.08	171.91	171.92	230.72	1.53	-2.20 R	24.88 U
4852.00	4.10	240.70	4846.06	-115.19	-144.47	184.77	184.77	231.43	.35	-3.91 R	22.63 U
5066.00	3.40	240.60	5059.60	-122.05	-156.67	198.59	198.60	232.08	.33	-6.10 R	22.23 U
5280.00	4.70	236.20	5273.06	-130.05	-169.48	213.59	213.63	232.50	.62	-6.02 R	21.26 U
5493.00	4.90	236.50	5485.31	-139.92	-184.32	231.34	231.41	232.80	.09	-7.31 R	17.04 U
5709.00	5.30	235.50	5700.45	-150.66	-200.24	250.48	250.59	233.04	.19	-8.18 R	11.81 U
5924.00	4.80	236.00	5914.62	-161.32	-215.88	269.35	269.49	233.23	.23	-8.94 R	1.99 U
6138.00	3.90	239.70	6128.00	-170.00	-229.58	285.48	285.67	233.48	.44	-8.79 R	-12.66 D
6309.00	2.70	250.10	6298.72	-174.30	-238.39	295.05	295.32	233.83	.78	-5.31 R	-23.78 D
6522.00	1.10	234.90	6511.59	-177.18	-244.78	301.84	302.18	234.10	.78	-12.67 R	-28.43 D
6736.00	.90	227.20	6725.56	-179.51	-247.70	305.56	305.90	234.07	.11	-16.64 R	-30.19 D
6949.00	.40	260.10	6938.55	-180.77	-249.66	307.88	308.23	234.09	.28	3.33 R	-36.53 D
7121.00	.80	102.20	7110.54	-181.13	-249.07	307.65	307.97	233.97	.69	-17.05 R	31.95 U
7384.00	1.10	67.80	7373.51	-180.56	-244.94	304.07	304.30	233.60	.24	2.94 R	31.96 U
7547.00	1.40	89.90	7536.47	-179.97	-241.50	301.01	301.18	233.31	.35	-8.71 R	27.28 U
7761.00	1.60	95.70	7750.40	-180.26	-235.92	296.83	296.90	232.62	.12	-11.16 R	20.67 U
7974.00	1.20	112.71	7963.33	-181.42	-230.90	293.63	293.64	231.84	.27	-15.84 R	11.43 U
8187.00	1.10	75.00	8176.29	-181.75	-226.87	290.69	290.69	231.30	.35	-6.91 R	14.92 U
8260.00	1.10	78.80	8249.28	-181.43	-225.50	289.43	289.43	231.18	.10	-7.84 R	13.03 U
Projection to Bit											
8310.00	1.10	78.80	8299.27	-181.25	-224.56	288.57	288.58	231.09	.00	-7.84 R	12.07 U