



Directional Survey

Well Name: **ALTER C16-28DX**

API 05-123-34721	Quarter Quarter SWSW	Regulatory Field WATTENBERG	County/Parish WELD	State/Province COLORADO	Well Configuration Type DIRECTIONAL
Ground Elevation (ft) 4,700.00	Casing Flange Elevation (ft)	KB - GL / MSL (ftKB) 24	KB-Casing Flange Distance (ft)	Spud Date 1/25/2012 5:30:00 AM	Rig Release Date
Wellbore Name ORIGINAL HOLE		Parent Wellbore ORIGINAL HOLE		Kick Off Depth (ftKB)	
Date 1/25/2012		Definitive? No		Description ORIGINAL	
MD Tie In (ftKB)		TVDTie In (ftKB)		Inclination Tie In (°)	
				Azimuth Tie In (°)	
				NSTie In (ft)	
				EWTie In (ft)	

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	+N / -S (ft)	+E / -W (ft)	DLS (°/100ft)	Method	Survey Company
1/26/2012	283.00	0.75	0.00	282.99	-0.53	1.85	0.00	0.27	GYRO SS	
1/26/2012	556.00	0.75	0.00	555.97	-1.56	5.43	0.00	0.00	GYRO SS	
1/26/2012	759.00	0.50	0.00	758.96	-2.19	7.64	0.00	0.12	GYRO SS	
	1,063.00	7.63	116.85	1,062.08	17.32	-0.16	18.03	2.59	MWD	
	1,158.00	9.64	108.32	1,156.00	31.48	-5.51	31.21	2.50	MWD	
	1,252.00	11.06	107.55	1,248.47	48.37	-10.70	47.28	1.52	MWD	
	1,346.00	12.25	107.04	1,340.53	67.35	-16.34	65.42	1.27	MWD	
	1,441.00	12.79	106.03	1,433.27	87.95	-22.20	85.16	0.61	MWD	
	1,535.00	12.88	107.21	1,524.92	108.83	-28.17	105.17	0.29	MWD	
	1,630.00	13.84	106.64	1,617.35	130.78	-34.56	126.17	1.02	MWD	
	1,724.00	15.62	106.29	1,708.26	154.68	-41.33	149.09	1.90	MWD	
	1,818.00	16.93	108.47	1,798.49	181.01	-49.22	174.22	1.54	MWD	
	1,912.00	18.34	110.12	1,888.07	209.46	-58.64	201.09	1.59	MWD	
	2,007.00	18.86	112.63	1,978.11	239.65	-69.69	229.29	1.00	MWD	
	2,101.00	21.34	111.35	2,066.38	271.81	-81.77	259.25	2.68	MWD	
	2,195.00	22.99	113.37	2,153.43	307.10	-95.27	292.04	1.93	MWD	
	2,290.00	24.28	113.04	2,240.46	344.94	-110.28	327.04	1.37	MWD	
	2,384.00	25.87	109.83	2,325.60	384.62	-124.80	364.12	2.23	MWD	
	2,479.00	28.16	107.03	2,410.24	427.74	-138.40	405.06	2.76	MWD	
	2,573.00	30.80	110.23	2,492.06	473.95	-153.22	448.86	3.27	MWD	
	2,667.00	31.83	106.88	2,572.37	522.77	-168.74	495.17	2.15	MWD	
	2,762.00	32.61	104.77	2,652.75	573.41	-182.54	543.89	1.44	MWD	
	2,856.00	32.62	104.21	2,731.92	624.03	-195.22	592.95	0.32	MWD	
	2,951.00	29.88	102.00	2,813.14	673.21	-206.43	640.93	3.13	MWD	
	3,045.00	27.75	99.94	2,895.49	718.28	-215.07	685.39	2.50	MWD	
	3,139.00	26.58	104.19	2,979.13	761.03	-224.01	727.34	2.41	MWD	
	3,233.00	26.75	109.39	3,063.15	803.18	-236.19	767.69	2.49	MWD	
	3,328.00	25.59	111.26	3,148.41	844.99	-250.73	806.98	1.50	MWD	
	3,422.00	23.62	112.60	3,233.87	883.96	-265.33	843.29	2.18	MWD	
	3,516.00	24.10	113.68	3,319.84	921.74	-280.27	878.25	0.69	MWD	
	3,611.00	25.19	115.11	3,406.18	960.99	-296.64	914.32	1.31	MWD	
	3,705.00	27.30	113.80	3,490.49	1,002.18	-313.83	952.16	2.33	MWD	
	3,799.00	27.03	106.36	3,574.14	1,044.94	-328.55	992.39	3.62	MWD	
	3,894.00	29.64	110.09	3,657.76	1,089.99	-342.70	1,035.17	3.32	MWD	
	3,988.00	31.27	106.20	3,738.80	1,137.59	-357.50	1,080.44	2.72	MWD	
	4,082.00	31.02	104.86	3,819.25	1,186.20	-370.51	1,127.28	0.78	MWD	
	4,177.00	29.32	104.56	3,901.38	1,233.91	-382.64	1,173.46	1.80	MWD	
	4,271.00	25.18	102.58	3,984.93	1,276.88	-392.79	1,215.27	4.51	MWD	
	4,365.00	25.74	105.34	4,069.80	1,317.23	-402.54	1,254.47	1.40	MWD	
	4,460.00	25.99	110.42	4,155.29	1,358.63	-415.26	1,293.88	2.35	MWD	
	4,554.00	27.00	109.00	4,239.42	1,400.50	-429.40	1,333.35	1.27	MWD	
	4,648.00	27.55	108.00	4,322.97	1,443.56	-443.06	1,374.20	0.76	MWD	
	4,742.00	27.92	110.59	4,406.17	1,487.25	-457.52	1,415.48	1.34	MWD	
	4,837.00	26.06	110.49	4,490.82	1,530.26	-472.65	1,455.85	1.96	MWD	
	4,931.00	25.39	108.08	4,575.51	1,571.01	-486.13	1,494.35	1.32	MWD	
	5,026.00	26.49	110.09	4,660.94	1,612.53	-499.73	1,533.61	1.48	MWD	
	5,120.00	25.66	109.95	4,745.37	1,653.77	-513.87	1,572.43	0.89	MWD	
	5,214.00	22.72	108.74	4,831.11	1,692.24	-526.65	1,608.76	3.17	MWD	
	5,308.00	22.16	106.96	4,917.99	1,728.11	-537.66	1,642.91	0.94	MWD	
	5,403.00	25.53	106.11	5,004.87	1,766.51	-548.57	1,679.73	3.57	MWD	
	5,497.00	22.42	105.05	5,090.75	1,804.69	-558.84	1,716.51	3.34	MWD	
	5,592.00	16.73	103.34	5,180.22	1,836.48	-566.71	1,747.33	6.02	MWD	
	5,686.00	11.74	101.12	5,271.31	1,859.52	-571.68	1,769.90	5.34	MWD	
	5,780.00	9.49	101.49	5,363.69	1,876.76	-575.07	1,786.88	2.39	MWD	



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	5,875.00	9.26	109.40	5,457.43	1,892.19	-579.17	1,801.76	1.38	MWD	
	5,969.00	6.92	102.61	5,550.49	1,905.40	-582.92	1,814.42	2.68	MWD	
	6,063.00	7.57	104.44	5,643.74	1,917.23	-585.70	1,825.94	0.73	MWD	
	6,157.00	5.33	96.80	5,737.14	1,927.72	-587.76	1,836.28	2.55	MWD	
	6,252.00	3.83	84.28	5,831.83	1,935.00	-587.96	1,843.82	1.89	MWD	
	6,346.00	2.84	70.72	5,925.68	1,939.79	-586.88	1,849.14	1.34	MWD	
	6,440.00	2.42	48.93	6,019.58	1,942.73	-584.81	1,852.83	1.14	MWD	
	6,535.00	2.31	33.73	6,114.50	1,944.36	-581.90	1,855.41	0.67	MWD	
	6,629.00	2.31	24.59	6,208.42	1,945.18	-578.60	1,857.25	0.39	MWD	
	6,723.00	1.00	351.11	6,302.38	1,945.08	-576.07	1,857.91	1.68	MWD	
	6,818.00	0.76	17.23	6,397.37	1,944.73	-574.65	1,857.97	0.49	MWD	
	6,912.00	0.87	24.84	6,491.36	1,944.84	-573.40	1,858.45	0.16	MWD	
	7,006.00	1.28	15.72	6,585.35	1,944.92	-571.75	1,859.04	0.47	MWD	
	7,101.00	1.83	5.75	6,680.31	1,944.62	-569.21	1,859.48	0.64	MWD	
	7,195.00	1.29	44.67	6,774.28	1,944.83	-566.97	1,860.37	1.23	MWD	
	7,290.00	1.94	24.51	6,869.24	1,945.55	-564.75	1,861.79	0.90	MWD	
	7,430.00	2.36	11.96	7,009.14	1,945.63	-559.77	1,863.37	0.45	MWD	
	7,498.00	2.36	11.96	7,077.09	1,945.40	-557.03	1,863.95	0.00	MWD	