



# Directional Survey

Well Name: Perrin 1-10H

State Colorado	County Weld	API # 05 123 34205 00	Well Nbr 210661	Permit No	Type of Well Oil	Field Name	Section 10	Township 7N	Range 62W
Spud Date 10/10/2011 11:00	KB Elevation (ft) 4,917.00	Ground Elevation (ft) 4,905.00	Total Measured Depth (ftKB) 10,636.0		PB Depth (ftKB)		TVD (ftKB)		
Wellbore Name Original Hole		Parent Wellbore		Kick Off Depth (ftKB) 6,106.0		Vertical Section Direction (°)			
Date		Definitive? No		Description		Proposed? No			
MD Tie In (ftKB) 0.00	TVDTie In (ftKB) 0.00	Inclination Tie In (°) 0.00		Azimuth Tie In (°) 0.00		NSTie In (ft) 0.00		EWTie In (ft) 0.00	

## Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Build (°/100ft)	Turn (°/100ft)	Unwrap Displace (ft)	Method	Survey Company
10/11/2011	577	0.4	27.2	577	-2	1.8	0.9	0.1	0.1	4.71	2	MWD	Sperry-Sun Drilling Services
10/11/2011	669	0.1	75.1	669	-2	2.1	1.1	0.4	-0.4	52.03	2.4	MWD	Sperry-Sun Drilling Services
10/11/2011	759	0.2	73.7	759	-2	2.1	1.3	0.1	0.1	-1.56	2.6	MWD	Sperry-Sun Drilling Services
10/11/2011	849	0.6	83.2	849	-2	2.2	1.9	0.4	0.4	10.57	3.2	MWD	Sperry-Sun Drilling Services
10/11/2011	940	0.5	73.2	940	-2	2.4	2.7	0.1	-0.1	-11.01	4	MWD	Sperry-Sun Drilling Services
10/11/2011	1,031	0.6	72.1	1,031	-3	2.7	3.5	0.1	0.1	-1.21	4.9	MWD	Sperry-Sun Drilling Services
10/11/2011	1,121	0.5	87.3	1,121	-3	2.8	4.4	0.2	-0.1	16.92	5.7	MWD	Sperry-Sun Drilling Services
10/11/2011	1,212	0.6	79.9	1,212	-3	2.9	5.2	0.1	0.1	-8.15	6.6	MWD	Sperry-Sun Drilling Services
10/11/2011	1,303	0.6	92.1	1,303	-3	3	6.2	0.2	0.1	13.47	7.5	MWD	Sperry-Sun Drilling Services
10/11/2011	1,394	0.7	65.3	1,394	-3	3.2	7.2	0.4	0.1	-29.53	8.6	MWD	Sperry-Sun Drilling Services
10/11/2011	1,486	0.6	86.3	1,486	-4	3.5	8.2	0.3	-0.2	22.91	9.6	MWD	Sperry-Sun Drilling Services
10/11/2011	1,546	0.6	71.6	1,546	-4	3.6	8.8	0.3	0	-24.58	10.2	MWD	Sperry-Sun Drilling Services
10/11/2011	1,641	0.4	58.6	1,641	-4	3.9	9.6	0.2	-0.2	-13.71	11.1	MWD	Sperry-Sun Drilling Services
10/11/2011	1,734	0.6	72.6	1,734	-4	4.3	10.3	0.2	0.2	15.10	11.9	MWD	Sperry-Sun Drilling Services
10/11/2011	1,829	0.5	75.8	1,829	-5	4.5	11.2	0.1	-0.1	3.31	12.8	MWD	Sperry-Sun Drilling Services
10/11/2011	1,923	0.4	76.1	1,923	-5	4.7	12	0.1	-0.1	0.41	13.6	MWD	Sperry-Sun Drilling Services
10/11/2011	2,016	0.2	70.7	2,016	-5	4.9	12.5	0.2	-0.2	-5.83	14.1	MWD	Sperry-Sun Drilling Services



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State <b>Colorado</b>	County <b>Weld</b>	API # <b>05 123 34205 00</b>	Well Nbr <b>210661</b>	Permit No	Type of Well <b>Oil</b>	Field Name	Section <b>10</b>	Township <b>7N</b>	Range <b>62W</b>
Spud Date <b>10/10/2011 11:00</b>		KB Elevation (ft) <b>4,917.00</b>	Ground Elevation (ft) <b>4,905.00</b>	Total Measured Depth (ftKB) <b>10,636.0</b>		PB Depth (ftKB)	TVD (ftKB)		

## Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Build (°/100ft)	Turn (°/100ft)	Unwrap Displace (ft)	Method	Survey Company
10/11/2011	2,109	0.4	44	2,109	-5	5.1	12.9	0.2	0.2	-28.73	14.6	MWD	Sperry-Sun Drilling Services
10/11/2011	2,203	0.4	50.4	2,203	-6	5.5	13.3	0	0	6.80	15.2	MWD	Sperry-Sun Drilling Services
10/11/2011	2,295	0.3	111.1	2,295	-6	5.7	13.7	0.4	-0.1	65.96	15.6	MWD	Sperry-Sun Drilling Services
10/11/2011	2,389	0.4	159.4	2,389	-6	5.2	14	0.3	0.2	51.38	16.1	MWD	Sperry-Sun Drilling Services
10/11/2011	2,483	0.3	136.2	2,483	-5	4.8	14.3	0.2	-0.2	-24.69	16.7	MWD	Sperry-Sun Drilling Services
10/11/2011	2,576	0.4	140.8	2,576	-5	4.3	14.7	0.2	0.2	4.96	17.3	MWD	Sperry-Sun Drilling Services
10/11/2011	2,670	0.4	161.2	2,670	-4	3.7	15	0.2	0	21.78	18	MWD	Sperry-Sun Drilling Services
10/11/2011	2,763	0.3	99.1	2,763	-4	3.3	15.4	0.4	-0.2	-66.83	18.5	MWD	Sperry-Sun Drilling Services
10/11/2011	2,856	0.6	139	2,856	-3	2.9	15.9	0.5	0.3	42.86	19.2	MWD	Sperry-Sun Drilling Services
10/11/2011	2,949	0.3	115.9	2,949	-3	2.5	16.4	0.4	-0.3	-24.80	19.8	MWD	Sperry-Sun Drilling Services
10/11/2011	3,043	0.3	127.7	3,043	-3	2.2	16.8	0.1	0	12.51	20.3	MWD	Sperry-Sun Drilling Services
10/11/2011	3,136	0.3	123.3	3,136	-2	2	17.2	0.1	0.1	-4.69	20.8	MWD	Sperry-Sun Drilling Services
10/11/2011	3,230	0.6	74.3	3,230	-2	1.9	17.9	0.5	0.3	-52.11	21.5	MWD	Sperry-Sun Drilling Services
10/11/2011	3,324	0.4	69.7	3,324	-3	2.2	18.7	0.2	-0.2	-4.86	22.3	MWD	Sperry-Sun Drilling Services
10/11/2011	3,418	0.4	106.8	3,418	-3	2.2	19.3	0.3	0	39.38	22.9	MWD	Sperry-Sun Drilling Services
10/11/2011	3,512	0.5	77.1	3,512	-3	2.2	20	0.3	0.1	-31.60	23.6	MWD	Sperry-Sun Drilling Services
10/11/2011	3,605	0.8	65.3	3,605	-3	2.6	21	0.4	0.3	-12.69	24.7	MWD	Sperry-Sun Drilling Services
10/11/2011	3,699	0.6	79.2	3,699	-3	2.9	22	0.3	-0.2	14.80	25.8	MWD	Sperry-Sun Drilling Services
10/11/2011	3,793	0.7	89	3,793	-3	3	23.1	0.2	0.1	10.46	26.8	MWD	Sperry-Sun Drilling Services



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Spud Date <b>10/10/2011 11:00</b>		KB Elevation (ft) <b>4,917.00</b>	Ground Elevation (ft) <b>4,905.00</b>	Total Measured Depth (ftKB) <b>10,636.0</b>		PB Depth (ftKB)	TVD (ftKB)		

## Survey Data

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10/11/2011	3,887	0.5	80.9	3,887	-4	3.1	24	0.2	-0.2	-8.65	27.8	MWD	Sperry-Sun Drilling Services
10/11/2011	3,981	0.7	78.9	3,981	-4	3.3	25	0.3	0.3	-2.07	28.8	MWD	Sperry-Sun Drilling Services
10/11/2011	4,075	0.8	113.4	4,075	-4	3.1	26.2	0.5	0.1	36.68	30	MWD	Sperry-Sun Drilling Services
10/11/2011	4,169	1.2	111	4,169	-3	2.5	27.7	0.4	0.4	-2.54	31.6	MWD	Sperry-Sun Drilling Services
10/11/2011	4,263	1.4	111.1	4,263	-2	1.7	29.7	0.2	0.2	0.05	33.8	MWD	Sperry-Sun Drilling Services
10/11/2011	4,356	1.2	115.8	4,356	-1	0.9	31.7	0.2	-0.2	5.12	35.9	MWD	Sperry-Sun Drilling Services
10/11/2011	4,450	1.1	98.8	4,450	-1	0.3	33.5	0.4	-0.2	-18.06	37.8	MWD	Sperry-Sun Drilling Services
10/11/2011	4,542	1	100.3	4,542	-1	0	35.2	0.1	-0.1	1.53	39.5	MWD	Sperry-Sun Drilling Services
10/11/2011	4,637	0.9	90	4,637	-1	-0.1	36.8	0.2	-0.1	-10.79	41.1	MWD	Sperry-Sun Drilling Services
10/11/2011	4,731	1.1	82.8	4,731	-1	0	38.3	0.2	0.2	-7.67	42.7	MWD	Sperry-Sun Drilling Services
10/11/2011	4,825	0.7	85.4	4,825	-1	0.1	39.8	0.3	-0.3	2.76	44.2	MWD	Sperry-Sun Drilling Services
10/11/2011	4,919	0.8	81.7	4,919	-1	0.3	41	0.1	0	-3.94	45.4	MWD	Sperry-Sun Drilling Services
10/11/2011	5,012	0.7	73.5	5,012	-1	0.5	42.2	0.1	0	-8.80	46.5	MWD	Sperry-Sun Drilling Services
10/11/2011	5,106	0.4	102.8	5,106	-1	0.6	43	0.5	-0.4	31.21	47.4	MWD	Sperry-Sun Drilling Services
10/11/2011	5,199	0.3	78.9	5,199	-1	0.6	43.6	0.2	0	-25.72	48	MWD	Sperry-Sun Drilling Services
10/11/2011	5,292	0.6	64.7	5,292	-2	0.8	44.3	0.3	0.3	-15.34	48.7	MWD	Sperry-Sun Drilling Services
10/11/2011	5,387	0.6	57.4	5,387	-2	1.3	45.1	0.1	0.1	-7.63	49.7	MWD	Sperry-Sun Drilling Services
10/11/2011	5,481	0.5	56.1	5,481	-3	1.8	45.9	0.2	-0.2	-1.38	50.6	MWD	Sperry-Sun Drilling Services
10/11/2011	5,575	0.6	34.5	5,575	-3	2.4	46.5	0.2	0.1	-22.96	51.4	MWD	Sperry-Sun Drilling Services



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Spud Date <b>10/10/2011 11:00</b>		KB Elevation (ft) <b>4,917.00</b>	Ground Elevation (ft) <b>4,905.00</b>	Total Measured Depth (ftKB) <b>10,636.0</b>		PB Depth (ftKB)	TVD (ftKB)		

## Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Build (°/100ft)	Turn (°/100ft)	Unwrap Displace (ft)	Method	Survey Company
10/11/2011	5,669	0.7	39.6	5,669	-4	3.3	47.1	0.2	0.2	5.38	52.5	MWD	Sperry-Sun Drilling Services
10/11/2011	5,763	0.5	24.1	5,763	-5	4.1	47.7	0.3	-0.2	-16.50	53.5	MWD	Sperry-Sun Drilling Services
10/11/2011	5,856	0.6	54.6	5,856	-6	4.7	48.2	0.3	0	32.80	54.3	MWD	Sperry-Sun Drilling Services
10/11/2011	5,949	0.5	41	5,949	-6	5.3	48.8	0.1	-0.1	-14.57	55.2	MWD	Sperry-Sun Drilling Services
10/11/2011	6,043	0.6	34.1	6,043	-7	6	49.4	0.1	0.1	-7.35	56.1	MWD	Sperry-Sun Drilling Services
10/11/2011	6,057	0.4	49.5	6,057	-7	6.1	49.5	1.7	-1.4	110.00	56.2	MWD	Sperry-Sun Drilling Services
10/11/2011	6,075	0.4	28.9	6,075	-7	6.2	49.6	0.9	0	-114.72	56.4	MWD	Sperry-Sun Drilling Services
10/11/2011	6,106	0.8	211.4	6,106	-7	6.2	49.5	3.9	1.1	588.97	56.5	MWD	Sperry-Sun Drilling Services
10/11/2011	6,138	3.7	189.2	6,138	-6	5	49.2	9.4	9.2	-69.38	57.7	MWD	Sperry-Sun Drilling Services
10/11/2011	6,169	7.7	198.9	6,168	-3	2	48.4	13.3	13	31.10	60.8	MWD	Sperry-Sun Drilling Services
10/11/2011	6,200	12.3	203.9	6,199	2	-3	46.4	14.8	14.6	16.10	66.2	MWD	Sperry-Sun Drilling Services
10/11/2011	6,231	17	207.7	6,229	9	-10	42.9	15.6	15.3	12.48	74	MWD	Sperry-Sun Drilling Services
10/11/2011	6,262	21.7	209.8	6,258	18	-19	38	15.3	15.1	6.52	84.2	MWD	Sperry-Sun Drilling Services
10/11/2011	6,293	26.3	213.5	6,287	29	-29.7	31.4	15.5	14.7	12.10	96.8	MWD	Sperry-Sun Drilling Services
10/11/2011	6,324	30.2	217.4	6,314	41	-41.6	22.8	14.2	12.9	12.55	111.5	MWD	Sperry-Sun Drilling Services
10/11/2011	6,355	32.4	219.3	6,340	54	-54.2	12.8	7.7	7	6.23	127.6	MWD	Sperry-Sun Drilling Services
10/11/2011	6,387	33.1	219.4	6,367	68	-67.6	1.8	2.2	2.2	0.19	144.9	MWD	Sperry-Sun Drilling Services
10/11/2011	6,418	32.9	219.3	6,393	81	-80.7	-8.9	0.6	-0.6	-0.26	161.8	MWD	Sperry-Sun Drilling Services
10/11/2011	6,450	32.5	220.5	6,420	94	-94	-20	2.3	-1.2	3.59	179.1	MWD	Sperry-Sun Drilling Services



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Spud Date <b>10/10/2011 11:00</b>		KB Elevation (ft) <b>4,917.00</b>	Ground Elevation (ft) <b>4,905.00</b>	Total Measured Depth (ftKB) <b>10,636.0</b>		PB Depth (ftKB)	TVD (ftKB)		

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Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Build (°/100ft)	Turn (°/100ft)	Unwrap Displace (ft)	Method	Survey Company
10/11/2011	6,481	34.1	218.5	6,446	108	-107.1	-30.8	6	4.9	-6.26	196.1	MWD	Sperry-Sun Drilling Services
10/11/2011	6,511	37.3	216.9	6,470	122	-120.9	-41.5	11.2	10.8	-5.57	213.6	MWD	Sperry-Sun Drilling Services
10/11/2011	6,542	42	215.2	6,494	138	-137	-53.1	15.6	15.2	-5.32	233.4	MWD	Sperry-Sun Drilling Services
10/11/2011	6,574	47.4	213.9	6,517	157	-155.5	-65.8	17	16.8	-3.94	255.9	MWD	Sperry-Sun Drilling Services
10/11/2011	6,605	53.1	213.9	6,537	177	-175.3	-79.1	18.5	18.5	-0.26	279.7	MWD	Sperry-Sun Drilling Services
10/11/2011	6,635	59.4	213.2	6,554	198	-196	-92.9	20.8	20.8	-2.17	304.6	MWD	Sperry-Sun Drilling Services
10/11/2011	6,667	65.5	211.7	6,568	222	-220	-108.1	19.7	19.3	-4.75	333	MWD	Sperry-Sun Drilling Services
10/11/2011	6,698	70.3	210.1	6,580	247	-244.6	-122.8	16.1	15.4	-5.29	361.7	MWD	Sperry-Sun Drilling Services
10/11/2011	6,729	74.2	209	6,589	273	-270.3	-137.4	13.1	12.7	-3.39	391.2	MWD	Sperry-Sun Drilling Services
10/11/2011	6,761	78.6	207.7	6,597	301	-297.7	-152.1	14.3	13.8	-3.97	422.3	MWD	Sperry-Sun Drilling Services
10/11/2011	6,792	79.7	207.9	6,603	328	-324.6	-166.3	3.5	3.5	0.39	452.8	MWD	Sperry-Sun Drilling Services
10/11/2011	6,823	80.7	206.7	6,608	355	-351.8	-180.4	4.7	3.1	-3.58	483.3	MWD	Sperry-Sun Drilling Services
10/11/2011	6,854	82.2	204	6,613	383	-379.5	-193.5	9.9	4.8	-8.74	514	MWD	Sperry-Sun Drilling Services
10/11/2011	6,886	83.7	200.9	6,617	413	-408.8	-205.6	10.8	4.8	-9.69	545.7	MWD	Sperry-Sun Drilling Services
10/11/2011	6,917	85.9	197.8	6,619	442	-437.9	-215.9	12.3	7.1	-10.03	576.6	MWD	Sperry-Sun Drilling Services
10/11/2011	6,948	87.6	196	6,621	472	-467.5	-224.9	7.9	5.4	-5.81	607.5	MWD	Sperry-Sun Drilling Services
10/11/2011	6,980	88.4	196.1	6,622	503	-498.3	-233.7	2.5	2.5	0.19	639.5	MWD	Sperry-Sun Drilling Services
10/11/2011	6,986	88.4	196.2	6,622	508	-504	-235.4	1.7	0.5	1.67	645.5	MWD	Sperry-Sun Drilling Services
10/11/2011	7,069	89.8	195.8	6,624	589	-583.8	-258.2	1.7	1.6	-0.52	728.5	MWD	Sperry-Sun Drilling Services



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10/11/2011	7,101	89.8	195.5	6,624	620	-614.6	-266.8	0.9	0.2	-0.84	760.5	MWD	Sperry-Sun Drilling Services
10/11/2011	7,197	91.1	193.9	6,623	713	-707.5	-291.1	2.2	1.4	-1.69	856.5	MWD	Sperry-Sun Drilling Services
10/11/2011	7,291	92.4	192.2	6,620	805	-799	-312.3	2.2	1.4	-1.77	950.4	MWD	Sperry-Sun Drilling Services
10/11/2011	7,323	93	191.9	6,619	836	-830.3	-319	1.9	1.8	-0.84	982.4	MWD	Sperry-Sun Drilling Services
10/11/2011	7,386	92.4	191	6,616	898	-892	-331.5	1.7	-0.9	-1.44	1,045.3	MWD	Sperry-Sun Drilling Services
10/11/2011	7,418	93.1	190.5	6,614	930	-923.4	-337.5	2.7	2.1	-1.66	1,077.3	MWD	Sperry-Sun Drilling Services
10/11/2011	7,468	92.3	189.6	6,612	979	-972.5	-346.2	2.4	-1.6	-1.84	1,127.2	MWD	Sperry-Sun Drilling Services
10/11/2011	7,512	92	189.1	6,610	1,023	-1,015.9	-353.3	1.2	-0.6	-1.07	1,171.2	MWD	Sperry-Sun Drilling Services
10/11/2011	7,564	90.6	188.7	6,609	1,074	-1,067.3	-361.3	3	-2.8	-0.83	1,223.2	MWD	Sperry-Sun Drilling Services
10/11/2011	7,607	90.6	188.9	6,609	1,117	-1,109.8	-367.9	0.5	0.1	0.47	1,266.2	MWD	Sperry-Sun Drilling Services
10/11/2011	7,650	90.3	187.4	6,608	1,159	-1,152.3	-374	3.4	-0.7	-3.33	1,309.2	MWD	Sperry-Sun Drilling Services
10/11/2011	7,692	89.8	186.7	6,608	1,201	-1,194	-379.2	2.2	-1.3	-1.69	1,351.2	MWD	Sperry-Sun Drilling Services
10/11/2011	7,765	89.9	186.6	6,608	1,274	-1,266.5	-387.6	0.3	0.3	-0.23	1,424.2	MWD	Sperry-Sun Drilling Services
10/11/2011	7,809	89.3	186	6,609	1,318	-1,310.3	-392.4	1.9	-1.4	-1.25	1,468.2	MWD	Sperry-Sun Drilling Services
10/11/2011	7,860	89.2	186.2	6,609	1,368	-1,361	-397.8	0.4	-0.2	0.27	1,519.2	MWD	Sperry-Sun Drilling Services
10/11/2011	7,902	88.3	184.9	6,610	1,410	-1,402.8	-401.9	3.7	-2.2	-2.95	1,561.2	MWD	Sperry-Sun Drilling Services
10/11/2011	7,956	88.2	184.9	6,612	1,464	-1,456.5	-406.5	0.1	-0.1	-0.06	1,615.1	MWD	Sperry-Sun Drilling Services
10/11/2011	8,004	88.1	183.1	6,613	1,512	-1,504.4	-409.8	3.7	-0.2	-3.71	1,663.1	MWD	Sperry-Sun Drilling Services
10/11/2011	8,051	88.5	182.1	6,615	1,559	-1,551.3	-412	2.4	0.9	-2.17	1,710.1	MWD	Sperry-Sun Drilling Services



# Directional Survey

Well Name: Perrin 1-10H

State <b>Colorado</b>	County <b>Weld</b>	API # <b>05 123 34205 00</b>	Well Nbr <b>210661</b>	Permit No	Type of Well <b>Oil</b>	Field Name	Section <b>10</b>	Township <b>7N</b>	Range <b>62W</b>
Spud Date <b>10/10/2011 11:00</b>		KB Elevation (ft) <b>4,917.00</b>	Ground Elevation (ft) <b>4,905.00</b>	Total Measured Depth (ftKB) <b>10,636.0</b>		PB Depth (ftKB)	TVD (ftKB)		

## Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Build (°/100ft)	Turn (°/100ft)	Unwrap Displace (ft)	Method	Survey Company
10/11/2011	8,114	88.9	181	6,616	1,622	-1,614.3	-413.6	1.8	0.6	-1.75	1,773.1	MWD	Sperry-Sun Drilling Services
10/11/2011	8,178	89.5	179.7	6,617	1,686	-1,678.3	-414	2.2	1	-1.95	1,837.1	MWD	Sperry-Sun Drilling Services
10/11/2011	8,242	89.3	179.2	6,618	1,750	-1,742.3	-413.4	0.9	-0.3	-0.83	1,901.1	MWD	Sperry-Sun Drilling Services
10/11/2011	8,305	88.8	178.1	6,619	1,813	-1,805.2	-412	1.9	-0.8	-1.73	1,964.1	MWD	Sperry-Sun Drilling Services
10/11/2011	8,369	88.9	177.5	6,620	1,877	-1,869.2	-409.5	1	0.1	-0.95	2,028	MWD	Sperry-Sun Drilling Services
10/11/2011	8,432	89.6	176.8	6,621	1,940	-1,932.1	-406.3	1.6	1.1	-1.19	2,091	MWD	Sperry-Sun Drilling Services
10/11/2011	8,495	89.9	176.4	6,621	2,002	-1,995	-402.6	0.7	0.5	-0.54	2,154	MWD	Sperry-Sun Drilling Services
10/11/2011	8,558	90.6	176	6,621	2,065	-2,057.8	-398.4	1.3	1.2	-0.60	2,217	MWD	Sperry-Sun Drilling Services
10/11/2011	8,621	90.3	174.8	6,620	2,128	-2,120.6	-393.4	2	-0.5	-1.95	2,280	MWD	Sperry-Sun Drilling Services
10/11/2011	8,684	90.1	174.6	6,620	2,190	-2,183.4	-387.6	0.4	-0.3	-0.32	2,343	MWD	Sperry-Sun Drilling Services
10/11/2011	8,748	89.9	173.5	6,620	2,254	-2,247	-381	1.7	-0.4	-1.67	2,407	MWD	Sperry-Sun Drilling Services
10/11/2011	8,811	89.9	173	6,620	2,316	-2,309.6	-373.6	0.8	0	-0.79	2,470	MWD	Sperry-Sun Drilling Services
10/11/2011	8,874	90.7	173.5	6,620	2,379	-2,372.2	-366.2	1.6	1.4	0.76	2,533	MWD	Sperry-Sun Drilling Services
10/11/2011	8,937	90.9	172.3	6,619	2,441	-2,434.7	-358.4	1.9	0.2	-1.89	2,596	MWD	Sperry-Sun Drilling Services
10/11/2011	9,000	92	171.5	6,618	2,503	-2,497	-349.5	2.2	1.8	-1.38	2,659	MWD	Sperry-Sun Drilling Services
10/11/2011	9,063	90.7	171	6,616	2,565	-2,559.3	-339.9	2.2	-2.1	-0.70	2,722	MWD	Sperry-Sun Drilling Services
10/11/2011	9,126	89.3	170.4	6,616	2,627	-2,621.4	-329.8	2.3	-2.2	-0.90	2,785	MWD	Sperry-Sun Drilling Services
10/11/2011	9,190	90.2	170.6	6,616	2,690	-2,684.6	-319.2	1.4	1.4	0.20	2,849	MWD	Sperry-Sun Drilling Services
10/11/2011	9,253	91.5	170.6	6,615	2,752	-2,746.7	-308.9	2	2	0.10	2,912	MWD	Sperry-Sun Drilling Services



# Directional Survey

Well Name: Perrin 1-10H

State <b>Colorado</b>	County <b>Weld</b>	API # <b>05 123 34205 00</b>	Well Nbr <b>210661</b>	Permit No	Type of Well <b>Oil</b>	Field Name	Section <b>10</b>	Township <b>7N</b>	Range <b>62W</b>
Spud Date <b>10/10/2011 11:00</b>		KB Elevation (ft) <b>4,917.00</b>	Ground Elevation (ft) <b>4,905.00</b>	Total Measured Depth (ftKB) <b>10,636.0</b>		PB Depth (ftKB)	TVD (ftKB)		

## Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Build (°/100ft)	Turn (°/100ft)	Unwrap Displace (ft)	Method	Survey Company
10/11/2011	9,316	90.3	170.5	6,614	2,814	-2,808.9	-298.6	2	-2	-0.17	2,975	MWD	Sperry-Sun Drilling Services
10/11/2011	9,379	89.3	170.4	6,615	2,876	-2,871	-288.2	1.6	-1.6	-0.19	3,038	MWD	Sperry-Sun Drilling Services
10/11/2011	9,411	89.8	170.3	6,615	2,907	-2,902.5	-282.8	1.7	1.7	-0.28	3,070	MWD	Sperry-Sun Drilling Services
10/11/2011	9,474	88.8	170.4	6,616	2,969	-2,964.6	-272.3	1.7	-1.7	0.13	3,133	MWD	Sperry-Sun Drilling Services
10/11/2011	9,505	89	170.8	6,616	3,000	-2,995.2	-267.2	1.3	0.6	1.19	3,164	MWD	Sperry-Sun Drilling Services
10/11/2011	9,537	89.4	170.9	6,617	3,031	-3,026.8	-262.1	1.4	1.3	0.53	3,195.9	MWD	Sperry-Sun Drilling Services
10/11/2011	9,600	89.8	170.6	6,617	3,093	-3,089	-252	0.9	0.7	-0.54	3,258.9	MWD	Sperry-Sun Drilling Services
10/11/2011	9,632	90	170.7	6,617	3,125	-3,120.5	-246.8	0.7	0.6	0.31	3,290.9	MWD	Sperry-Sun Drilling Services
10/11/2011	9,695	90.6	170.8	6,617	3,187	-3,182.7	-236.7	0.9	0.9	0.21	3,353.9	MWD	Sperry-Sun Drilling Services
10/11/2011	9,758	90.1	170.3	6,617	3,249	-3,244.9	-226.3	1.1	-0.7	-0.84	3,416.9	MWD	Sperry-Sun Drilling Services
10/11/2011	9,822	89.6	170.4	6,617	3,311	-3,308	-215.6	0.9	-0.9	0.09	3,480.9	MWD	Sperry-Sun Drilling Services
10/11/2011	9,853	89.8	170.4	6,617	3,342	-3,338.5	-210.4	0.6	0.6	0.23	3,511.9	MWD	Sperry-Sun Drilling Services
10/11/2011	9,885	89.8	170.5	6,617	3,373	-3,370.1	-205.1	0.3	0.2	0.19	3,543.9	MWD	Sperry-Sun Drilling Services
10/11/2011	9,917	90.8	170.6	6,617	3,405	-3,401.6	-199.8	3.1	3.1	0.50	3,575.9	MWD	Sperry-Sun Drilling Services
10/11/2011	9,980	91.6	170.5	6,616	3,467	-3,463.8	-189.5	1.3	1.3	-0.25	3,638.9	MWD	Sperry-Sun Drilling Services
10/11/2011	10,044	90.3	169.8	6,615	3,530	-3,526.8	-178.5	2.3	-2	-1.06	3,702.9	MWD	Sperry-Sun Drilling Services
10/11/2011	10,108	89.3	170.3	6,615	3,592	-3,589.9	-167.5	1.8	-1.6	0.73	3,766.9	MWD	Sperry-Sun Drilling Services
10/11/2011	10,171	89.6	170.7	6,616	3,654	-3,652	-157	0.8	0.5	0.62	3,829.9	MWD	Sperry-Sun Drilling Services
10/11/2011	10,203	89.9	170.4	6,616	3,686	-3,683.5	-151.8	1.3	1.2	-0.69	3,861.9	MWD	Sperry-Sun Drilling Services





## Directional Survey

Well Name: Perrin 1-10H

State Colorado	County Weld	API # 05 123 34205 00	Well Nbr 210661	Permit No	Type of Well Oil	Field Name	Section 10	Township 7N	Range 62W
Spud Date 10/10/2011 11:00		KB Elevation (ft) 4,917.00	Ground Elevation (ft) 4,905.00	Total Measured Depth (ftKB) 10,636.0		PB Depth (ftKB)	TVD (ftKB)		

### Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Build (°/100ft)	Turn (°/100ft)	Unwrap Displace (ft)	Method	Survey Company
10/11/2011	10,234	90.6	171.3	6,615	3,716	-3,714.2	-146.8	3.5	2.2	2.68	3,892.9	MWD	Sperry-Sun Drilling Services
10/11/2011	10,298	89.3	169.6	6,616	3,779	-3,777.3	-136.2	3.4	-2.1	-2.67	3,956.9	MWD	Sperry-Sun Drilling Services
10/11/2011	10,361	90.4	169.9	6,616	3,841	-3,839.2	-125	1.9	1.8	0.60	4,019.9	MWD	Sperry-Sun Drilling Services
10/11/2011	10,393	90.7	169.7	6,615	3,872	-3,870.7	-119.3	1.3	1.2	-0.62	4,051.9	MWD	Sperry-Sun Drilling Services
10/11/2011	10,424	91	169.5	6,615	3,903	-3,901.2	-113.8	1.1	0.8	-0.71	4,082.9	MWD	Sperry-Sun Drilling Services
10/11/2011	10,488	90.6	168.9	6,614	3,965	-3,964.1	-101.8	1.2	-0.7	-0.98	4,146.9	MWD	Sperry-Sun Drilling Services
10/11/2011	10,551	89.6	168.2	6,614	4,027	-4,025.8	-89.3	1.8	-1.5	-1.05	4,209.9	MWD	Sperry-Sun Drilling Services
10/11/2011	10,604	90.2	168.4	6,614	4,078	-4,077.7	-78.5	1.1	1.1	0.23	4,262.9	MWD	Sperry-Sun Drilling Services