



123 Robert S. Kerr Ave.
Oklahoma City, OK 73102

Survey HARLOW 3119 1-28H

Step #1 - Create a Deviation Survey

Step

#2 - Attach the survey "Description" to the Wellbore - Deviation Survey

Wellbores - Step #2

Actual Deviation Survey Survey, Proposed? No	Wellbore Name Original Hole
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Deviation Surveys - Step #1

Description Survey	Date 8/26/2012	VS Dir (°) 0.83	Comment
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Tie-in Data

Azimuth North Type Grid	Convergence (°)	Declination (°)	MD Tie In (ftKB) 0.00	Azimuth Tie In (°) 0.00	Inclination Tie In (°) 0.00	TVD Tie In (ftKB) 0.00	NSTie In (ft) 0.00	EWTie In (ft) 0.00
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Survey Data

MD (ftKB)	Incl (°)	Azim (°)	Survey Company	Method	TVD (ftKB)	VS (ft)	NS (ft)	EW (ft)	DLS (*/100ft)
250	0.3								
500	0.5								
750	0.6								
1,000	0.6								
1,159	0.4	77.40	DrillRight	MWD	1,159	1	0.88	3.95	0.03
1,622	0.6	79.50	DrillRight	MWD	1,622	2	1.68	7.91	0.04
2,098	1.0	77.70	DrillRight	MWD	2,098	3	3.02	14.42	0.08
2,573	1.1	77.30	DrillRight	MWD	2,573	5	4.90	22.92	0.02
3,047	0.7	89.50	DrillRight	MWD	3,047	6	5.93	30.25	0.09
3,522	0.8	105.70	DrillRight	MWD	3,522	6	5.05	36.34	0.05
4,000	1.4	94.70	DrillRight	MWD	4,000	4	3.67	45.38	0.13
4,286	0.9	86.80	DrillRight	MWD	4,286	4	3.51	51.10	0.18
4,349	1.9	7.90	DrillRight	MWD	4,349	5	4.57	51.74	3.08
4,378	3.8	357.80	DrillRight	MWD	4,378	7	6.01	51.77	6.75
4,412	6.2	355.40	DrillRight	MWD	4,411	10	8.97	51.58	7.08
4,444	8.0	352.90	DrillRight	MWD	4,443	14	12.90	51.16	5.71
4,476	9.5	348.90	DrillRight	MWD	4,475	18	17.70	50.38	5.06
4,507	11.5	349.90	DrillRight	MWD	4,505	24	23.25	49.34	6.48
4,539	14.1	349.90	DrillRight	MWD	4,536	31	30.23	48.10	8.13
4,571	16.8	349.10	DrillRight	MWD	4,567	39	38.61	46.54	8.46
4,602	19.3	347.60	DrillRight	MWD	4,597	49	48.02	44.60	8.20
4,634	22.0	346.50	DrillRight	MWD	4,627	60	59.01	42.06	8.52
4,666	24.5	345.90	DrillRight	MWD	4,656	72	71.28	39.04	7.85
4,698	26.7	345.80	DrillRight	MWD	4,685	85	84.68	35.66	6.88
4,730	28.1	345.40	DrillRight	MWD	4,713	99	98.95	32.00	4.41
4,761	30.0	346.40	DrillRight	MWD	4,740	114	113.55	28.34	6.33
4,793	32.1	347.80	DrillRight	MWD	4,768	130	129.63	24.66	6.94
4,824	33.3	349.10	DrillRight	MWD	4,794	146	146.04	21.31	4.49
4,856	34.3	349.80	DrillRight	MWD	4,821	164	163.54	18.05	3.35
4,888	35.9	349.70	DrillRight	MWD	4,847	182	181.65	14.78	5.00
4,920	38.2	349.80	DrillRight	MWD	4,872	201	200.62	11.35	7.19
4,952	40.6	351.50	DrillRight	MWD	4,897	221	220.66	8.05	8.22
4,983	42.8	353.90	DrillRight	MWD	4,920	241	241.11	5.44	8.77
5,015	44.8	356.70	DrillRight	MWD	4,943	263	263.18	3.64	8.70
5,047	47.0	358.50	DrillRight	MWD	4,966	286	286.14	2.68	7.97
5,078	49.5	358.30	DrillRight	MWD	4,986	309	309.25	2.04	8.08
5,142	53.1	360.00	DrillRight	MWD	5,026	359	359.19	1.32	5.99
5,237	52.7	359.40	DrillRight	MWD	5,083	435	434.95	0.92	0.66
5,268	52.4	359.10	DrillRight	MWD	5,102	460	459.56	0.60	1.24
5,300	52.3	358.80	DrillRight	MWD	5,122	485	484.89	0.13	0.81
5,328	53.8	0.50	DrillRight	MWD	5,139	507	507.27	0.00	7.23
5,363	56.3	2.40	DrillRight	MWD	5,159	536	535.94	0.73	8.41
5,395	59.0	3.20	DrillRight	MWD	5,176	563	562.94	2.06	8.70
5,426	61.7	3.40	DrillRight	MWD	5,191	590	589.83	3.61	8.73
5,457	65.4	3.40	DrillRight	MWD	5,205	618	617.54	5.25	11.94



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Survey Data

MD (ftKB)	Incl (°)	Azm (°)	Survey Company	Method	TVD (ftKB)	VS (ft)	NS (ft)	EW (ft)	DLS (°/100ft)
5,490	68.7	3.00	DrillRight	MWD	5,218	648	647.87	6.95	10.06
5,522	71.6	2.00	DrillRight	MWD	5,229	678	677.94	8.26	9.53
5,553	74.2	0.90	DrillRight	MWD	5,238	708	707.56	9.01	9.05
5,585	77.7	359.60	DrillRight	MWD	5,246	739	738.59	9.14	11.63
5,617	81.1	359.70	DrillRight	MWD	5,252	770	770.04	8.95	10.63
5,649	83.7	0.20	DrillRight	MWD	5,256	802	801.76	8.92	8.27
5,675	86.2	0.90	DrillRight	MWD	5,258	828	827.65	9.17	9.98
5,779	91.6	2.20	DrillRight	MWD	5,260	932	931.55	11.98	5.34
5,810	91.7	2.30	DrillRight	MWD	5,259	963	962.52	13.20	0.46
5,841	90.6	2.00	DrillRight	MWD	5,259	994	993.49	14.36	3.68
5,873	90.3	1.30	DrillRight	MWD	5,258	1,026	1,025.48	15.28	2.38
5,904	90.4	1.30	DrillRight	MWD	5,258	1,057	1,056.47	15.99	0.32
5,936	89.3	1.80	DrillRight	MWD	5,258	1,089	1,088.45	16.85	3.78
6,000	88.9	1.60	DrillRight	MWD	5,259	1,153	1,152.42	18.75	0.70
6,094	88.3	1.00	DrillRight	MWD	5,261	1,247	1,246.36	20.88	0.90
6,190	89.0	0.90	DrillRight	MWD	5,264	1,343	1,342.32	22.47	0.74
6,286	89.8	1.80	DrillRight	MWD	5,265	1,438	1,438.29	24.73	1.25
6,381	91.2	1.30	DrillRight	MWD	5,264	1,533	1,533.25	27.30	1.56
6,477	90.3	1.20	DrillRight	MWD	5,263	1,629	1,629.22	29.40	0.94
6,572	91.0	1.20	DrillRight	MWD	5,262	1,724	1,724.19	31.39	0.74
6,666	90.5	1.00	DrillRight	MWD	5,260	1,818	1,818.16	33.19	0.57
6,761	89.4	0.50	DrillRight	MWD	5,260	1,913	1,913.15	34.44	1.27
6,857	90.4	1.60	DrillRight	MWD	5,261	2,009	2,009.14	36.19	1.55
6,952	91.0	1.40	DrillRight	MWD	5,259	2,104	2,104.10	38.68	0.67
7,046	90.2	1.60	DrillRight	MWD	5,258	2,198	2,198.06	41.14	0.88
7,141	89.7	1.00	DrillRight	MWD	5,259	2,293	2,293.03	43.30	0.82
7,237	90.0	1.10	DrillRight	MWD	5,259	2,389	2,389.02	45.06	0.33
7,332	90.1	1.20	DrillRight	MWD	5,259	2,484	2,484.00	46.96	0.15
7,427	90.8	1.10	DrillRight	MWD	5,258	2,579	2,578.97	48.87	0.74
7,522	91.5	1.00	DrillRight	MWD	5,256	2,674	2,673.94	50.61	0.74
7,617	91.1	0.30	DrillRight	MWD	5,254	2,769	2,768.91	51.69	0.85
7,712	91.3	359.80	DrillRight	MWD	5,252	2,864	2,863.89	51.77	0.57
7,807	92.0	359.70	DrillRight	MWD	5,249	2,959	2,958.84	51.36	0.74
7,901	89.4	358.90	DrillRight	MWD	5,248	3,053	3,052.82	50.21	2.89
7,996	88.7	358.80	DrillRight	MWD	5,250	3,148	3,147.79	48.30	0.74
8,091	88.6	358.80	DrillRight	MWD	5,252	3,243	3,242.74	46.31	0.11
8,186	89.8	359.40	DrillRight	MWD	5,253	3,338	3,337.72	44.82	1.41
8,281	90.6	359.00	DrillRight	MWD	5,253	3,433	3,432.71	43.49	0.94
8,376	91.6	359.00	DrillRight	MWD	5,251	3,528	3,527.67	41.84	1.05
8,471	92.1	358.80	DrillRight	MWD	5,248	3,623	3,622.61	40.01	0.57
8,567	91.9	358.60	DrillRight	MWD	5,245	3,719	3,718.52	37.84	0.29
8,661	91.4	359.80	DrillRight	MWD	5,242	3,813	3,812.47	36.52	1.38
8,756	90.4	1.30	DrillRight	MWD	5,240	3,908	3,907.45	37.44	1.90
8,852	89.9	2.50	DrillRight	MWD	5,240	4,004	4,003.40	40.62	1.35
8,947	89.6	2.30	DrillRight	MWD	5,241	4,099	4,098.31	44.60	0.38
9,042	89.9	2.10	DrillRight	MWD	5,241	4,194	4,193.24	48.24	0.38
9,138	90.0	1.60	DrillRight	MWD	5,241	4,289	4,289.19	51.34	0.53
9,233	90.1	2.00	DrillRight	MWD	5,241	4,384	4,384.15	54.33	0.43
9,329	90.2	2.30	DrillRight	MWD	5,241	4,480	4,480.08	57.93	0.33
9,358	91.2	3.30	DrillRight	MWD	5,240	4,509	4,509.04	59.35	4.88
9,406	91.2	3.30	DrillRight	MWD	5,239	4,557	4,556.95	62.11	0.00