



Directional Survey

Well Name SALADO DRAW WE 23 FED P7 004H		Lease SD 23 FED P7	Field Name JENNINGS	Business Unit Mid-Continent	
Ground Elevation (ft) 3,165.00	Original RKB (ft) 3,197.60	Current RKB Elevation 3,197.60, 3/28/2016		Mud Line Elevation (ft)	Water Depth (ft)

Wellbore Name Original Hole		Parent Wellbore Original Hole		Min Kick Off Depth (ftKB) 8,510.0		Vertical Section Direction (*) 176.66	
Northing (Y) (ft)		Easting (X) (ft)		UTM Grid Zone			
Date 4/20/2016		Definitive? Y		Description MWD		Planned? N	
MD Tie In (ftKB)		TVDTie In (ftKB)		Inclination Tie In (*)		Azimuth Tie In (*)	
						NSTie In (ft)	
						EWTie In (ft)	

Survey Data

MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	NS (ft)	EW (ft)	VS (ft)	DLS (°/100ft)	Method	Survey Company	Build (°/100ft)	Depart (ft)	Turn (°/100ft)	Unuse d data
165	0.40	176.00	165.00	-0.57	0.04	0.58	0.24	Magn MWD	Rig	0.24	0.58	106.67	N
255	0.50	173.00	255.00	-1.28	0.11	1.28	0.11	Magn MWD	Rig	0.11	1.28	-3.33	N
346	1.00	214.00	345.99	-2.33	-0.29	2.31	0.77	Magn MWD	Rig	0.55	2.35	45.05	N
436	0.70	192.00	435.98	-3.52	-0.84	3.46	0.49	Magn MWD	Rig	-0.33	3.62	-24.44	N
532	0.80	208.00	531.97	-4.68	-1.28	4.60	0.24	Magn MWD	Rig	0.10	4.85	16.67	N
625	1.30	254.00	624.96	-5.55	-2.59	5.39	1.01	Magn MWD	Rig	0.54	6.13	49.46	N
717	2.40	252.00	716.91	-6.43	-5.43	6.10	1.20	Magn MWD	Rig	1.20	8.42	-2.17	N
816	2.70	249.00	815.81	-7.91	-9.58	7.34	0.33	Magn MWD	Rig	0.30	12.42	-3.03	N
949	2.50	233.80	948.67	-10.74	-14.84	9.86	0.54	Magn MWD	Phoenix Directional	-0.15	18.32	-11.43	N
1,126	3.20	188.50	1,125.47	-17.91	-18.69	16.79	1.29	Magn MWD	Phoenix Directional	0.40	25.89	-25.59	N
1,303	5.00	141.80	1,302.06	-28.86	-14.65	27.96	2.06	Magn MWD	Phoenix Directional	1.02	32.37	-26.38	N
1,480	7.80	108.80	1,477.99	-38.80	1.50	38.82	2.55	Magn MWD	Phoenix Directional	1.58	38.83	-18.64	N
1,658	7.10	105.90	1,654.49	-45.71	23.51	47.00	0.45	Magn MWD	Phoenix Directional	-0.39	51.40	-1.63	N
1,835	7.10	105.40	1,830.13	-51.61	44.58	54.12	0.03	Magn MWD	Phoenix Directional	0.00	68.20	-0.28	N
2,014	6.50	106.20	2,007.87	-57.37	64.98	61.06	0.34	Magn MWD	Phoenix Directional	-0.34	86.68	0.45	N
2,192	6.20	109.00	2,184.78	-63.31	83.74	68.08	0.24	Magn MWD	Phoenix Directional	-0.17	104.98	1.57	N
2,369	6.60	110.90	2,360.68	-70.05	102.28	75.89	0.26	Magn MWD	Phoenix Directional	0.23	123.97	1.07	N
2,546	7.20	109.90	2,536.40	-77.46	122.21	84.44	0.35	Magn MWD	Phoenix Directional	0.34	144.69	-0.56	N
2,724	7.60	113.00	2,712.91	-85.85	143.54	94.07	0.32	Magn MWD	Phoenix Directional	0.22	167.25	1.74	N
2,901	6.70	112.40	2,888.54	-94.36	163.86	103.75	0.51	Magn MWD	Phoenix Directional	-0.51	189.08	-0.34	N
3,079	6.20	111.90	3,065.41	-101.90	182.37	112.35	0.28	Magn MWD	Phoenix Directional	-0.28	208.91	-0.28	N
3,256	6.80	110.10	3,241.27	-109.07	201.08	120.60	0.36	Magn MWD	Phoenix Directional	0.34	228.76	-1.02	N
3,434	7.90	108.20	3,417.81	-116.51	222.60	129.28	0.63	Magn MWD	Phoenix Directional	0.62	251.25	-1.07	N
3,611	6.80	111.70	3,593.35	-124.19	243.89	138.18	0.67	Magn MWD	Phoenix Directional	-0.62	273.69	1.98	N
3,789	6.40	113.80	3,770.17	-132.08	262.76	147.17	0.26	Magn MWD	Phoenix Directional	-0.22	294.09	1.18	N
3,967	6.40	113.40	3,947.06	-140.03	280.94	156.16	0.03	Magn MWD	Phoenix Directional	0.00	313.91	-0.22	N
4,144	3.40	121.30	4,123.40	-146.67	294.49	163.58	1.73	Magn MWD	Phoenix Directional	-1.69	328.99	4.46	N



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Survey Data

MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	NS (ft)	EW (ft)	VS (ft)	DLS (°/100ft)	Method	Survey Company	Build (°/100ft)	Depart (ft)	Turn (°/100ft)	Unuse d data
4,322	1.90	119.10	4,301.20	-150.85	301.57	168.17	0.84	Magn MWD	Phoenix Directional	-0.84	337.20	-1.24	N
4,499	0.90	124.60	4,478.14	-153.07	305.28	170.59	0.57	Magn MWD	Phoenix Directional	-0.56	341.51	3.11	N
4,529	0.70	124.50	4,508.14	-153.31	305.63	170.85	0.67	Magn MWD	Phoenix Directional	-0.67	341.92	-0.33	N
4,688	0.70	132.90	4,667.13	-154.52	307.14	172.15	0.06	Magn MWD	Phoenix Directional	0.00	343.82	5.28	N
4,865	1.50	220.10	4,844.10	-157.03	306.44	174.61	0.92	Magn MWD	Phoenix Directional	0.45	344.33	49.27	N
5,043	1.60	280.60	5,022.05	-158.35	302.50	175.71	0.88	Magn MWD	Phoenix Directional	0.06	341.44	33.99	N
5,220	1.60	274.90	5,198.98	-157.68	297.60	174.76	0.09	Magn MWD	Phoenix Directional	0.00	336.80	-3.22	N
5,397	1.90	271.10	5,375.90	-157.42	292.21	174.17	0.18	Magn MWD	Phoenix Directional	0.17	331.91	-2.15	N
5,575	1.90	270.60	5,553.80	-157.33	286.31	173.74	0.01	Magn MWD	Phoenix Directional	0.00	326.69	-0.28	N
5,751	0.80	234.50	5,729.75	-158.01	282.39	174.20	0.76	Magn MWD	Phoenix Directional	-0.63	323.59	-20.51	N
5,928	0.70	328.60	5,906.74	-157.81	280.82	173.90	0.62	Magn MWD	Phoenix Directional	-0.06	322.12	53.16	N
6,105	1.00	350.30	6,083.72	-155.36	280.00	171.41	0.25	Magn MWD	Phoenix Directional	0.17	320.21	12.26	N
6,283	1.00	347.30	6,261.70	-152.32	279.39	168.34	0.03	Magn MWD	Phoenix Directional	0.00	318.22	-1.69	N
6,461	0.70	340.20	6,439.68	-149.78	278.68	165.76	0.18	Magn MWD	Phoenix Directional	-0.17	316.38	-3.99	N
6,638	0.80	313.30	6,616.66	-147.91	277.42	163.82	0.20	Magn MWD	Phoenix Directional	0.06	314.39	-15.20	N
6,816	0.50	98.50	6,794.66	-147.18	277.28	163.08	0.70	Magn MWD	Phoenix Directional	-0.17	313.92	-	N
6,993	0.20	102.00	6,971.65	-147.35	278.35	163.32	0.17	Magn MWD	Phoenix Directional	-0.17	314.95	1.98	N
7,171	0.30	160.30	7,149.65	-147.86	278.81	163.85	0.15	Magn MWD	Phoenix Directional	0.06	315.59	32.75	N
7,348	0.30	157.30	7,326.65	-148.72	279.14	164.73	0.01	Magn MWD	Phoenix Directional	0.00	316.29	-1.69	N
7,526	0.70	202.20	7,504.64	-150.16	278.91	166.15	0.30	Magn MWD	Phoenix Directional	0.22	316.76	25.22	N
7,703	0.90	197.90	7,681.63	-152.48	278.08	168.42	0.12	Magn MWD	Phoenix Directional	0.11	317.14	-2.43	N
7,881	1.40	188.80	7,859.59	-155.96	277.31	171.85	0.30	Magn MWD	Phoenix Directional	0.28	318.16	-5.11	N
8,058	2.00	191.40	8,036.51	-161.13	276.37	176.95	0.34	Magn MWD	Phoenix Directional	0.34	319.91	1.47	N
8,235	2.30	188.50	8,213.39	-167.67	275.24	183.42	0.18	Magn MWD	Phoenix Directional	0.17	322.29	-1.64	N
8,409	2.10	202.60	8,387.26	-174.06	273.50	189.70	0.33	Magn MWD	Phoenix Directional	-0.11	324.19	8.10	N
8,466	2.29	199.61	8,444.22	-176.10	272.71	191.69	0.39	Magn MWD	Baker Hughes	0.33	324.63	-5.25	N
8,510	3.81	195.55	8,488.15	-178.34	272.03	193.88	3.49	Magn MWD	Baker Hughes	3.45	325.27	-9.23	N
8,555	10.64	182.64	8,532.77	-183.93	271.43	199.43	15.51	Magn MWD	Baker Hughes	15.18	327.88	-28.69	N
8,599	17.29	178.43	8,575.45	-194.54	271.43	210.02	15.28	Magn MWD	Baker Hughes	15.11	333.94	-9.57	N
8,644	24.12	176.80	8,617.52	-210.42	272.12	225.92	15.23	Magn MWD	Baker Hughes	15.18	343.99	-3.62	N



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Survey Data													
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8,688	27.65	173.93	8,657.10	-229.56	273.70	245.11	8.51	Magn MWD	Baker Hughes	8.02	357.23	-6.52	N
8,732	31.62	173.56	8,695.34	-251.18	276.08	266.84	9.03	Magn MWD	Baker Hughes	9.02	373.24	-0.84	N
8,777	36.99	172.84	8,732.49	-276.35	279.09	292.14	11.97	Magn MWD	Baker Hughes	11.93	392.76	-1.60	N
8,821	40.31	173.83	8,766.85	-303.64	282.27	319.57	7.67	Magn MWD	Baker Hughes	7.55	414.58	2.25	N
8,909	46.56	175.05	8,830.72	-363.83	288.09	380.00	7.17	Magn MWD	Baker Hughes	7.10	464.08	1.39	N
8,954	47.44	175.94	8,861.41	-396.64	290.68	412.90	2.43	Magn MWD	Baker Hughes	1.96	491.75	1.98	N
8,998	49.55	175.97	8,890.57	-429.51	293.00	445.85	4.80	Magn MWD	Baker Hughes	4.80	519.93	0.07	N
9,043	52.07	175.72	8,919.00	-464.29	295.53	480.72	5.62	Magn MWD	Baker Hughes	5.60	550.37	-0.56	N
9,087	56.56	176.31	8,944.66	-499.94	298.01	516.45	10.26	Magn MWD	Baker Hughes	10.20	582.02	1.34	N
9,131	61.56	178.29	8,967.28	-537.62	299.77	554.17	12.00	Magn MWD	Baker Hughes	11.36	615.54	4.50	N
9,176	67.01	177.38	8,986.80	-578.12	301.31	594.69	12.25	Magn MWD	Baker Hughes	12.11	651.92	-2.02	N
9,220	72.84	177.77	9,001.89	-619.39	303.05	635.99	13.28	Magn MWD	Baker Hughes	13.25	689.55	0.89	N
9,264	78.47	179.83	9,012.79	-661.99	303.93	678.57	13.57	Magn MWD	Baker Hughes	12.80	728.43	4.68	N
9,309	84.01	180.13	9,019.64	-706.45	303.95	722.95	12.33	Magn MWD	Baker Hughes	12.31	769.06	0.67	N
9,353	88.74	181.71	9,022.42	-750.34	303.24	766.73	11.33	Magn MWD	Baker Hughes	10.75	809.30	3.59	N
9,397	89.51	180.45	9,023.10	-794.32	302.41	810.59	3.36	Magn MWD	Baker Hughes	1.75	849.94	-2.86	N
9,486	89.29	183.26	9,024.03	-883.26	299.53	899.21	3.17	Magn MWD	Baker Hughes	-0.25	932.67	3.16	N
9,575	91.20	185.90	9,023.65	-971.97	292.43	987.35	3.66	Magn MWD	Baker Hughes	2.15	1,015.00	2.97	N
9,660.05	90.77	183.32	9,022.19	-1,056.72	285.59	1,071.57	3.07	Magn MWD	Baker Hughes	-0.51	1,094.63	-3.03	N
9,752	87.26	177.80	9,023.77	-1,148.60	284.69	1,163.24	7.11	Magn MWD	Baker Hughes	-3.82	1,183.36	-6.00	N
9,841	87.84	174.35	9,027.57	-1,237.30	290.78	1,252.14	3.93	Magn MWD	Baker Hughes	0.65	1,271.01	-3.88	N
9,932	87.54	176.55	9,031.24	-1,327.93	297.99	1,343.04	2.44	Magn MWD	Baker Hughes	-0.33	1,360.96	2.42	N
10,021	89.38	178.33	9,033.63	-1,416.81	301.96	1,431.99	2.88	Magn MWD	Baker Hughes	2.07	1,448.63	2.00	N
10,110	90.00	178.23	9,034.11	-1,505.76	304.64	1,520.95	0.71	Magn MWD	Baker Hughes	0.70	1,536.27	-0.11	N
10,198	89.75	178.37	9,034.31	-1,593.72	307.25	1,608.92	0.33	Magn MWD	Baker Hughes	-0.28	1,623.07	0.16	N
10,287	89.94	179.06	9,034.55	-1,682.70	309.24	1,697.86	0.80	Magn MWD	Baker Hughes	0.21	1,710.88	0.78	N
10,376	89.97	180.25	9,034.62	-1,771.70	309.78	1,786.74	1.34	Magn MWD	Baker Hughes	0.03	1,798.58	1.34	N
10,464	89.85	180.30	9,034.76	-1,859.70	309.36	1,874.56	0.15	Magn MWD	Baker Hughes	-0.14	1,885.25	0.06	N
10,553	89.78	179.54	9,035.04	-1,948.70	309.48	1,963.42	0.86	Magn MWD	Baker Hughes	-0.08	1,973.12	-0.85	N
10,642	90.00	181.00	9,035.21	-2,037.69	309.06	2,052.24	1.66	Magn MWD	Baker Hughes	0.25	2,061.00	1.64	N



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10,730	89.82	182.17	9,035.35	-2,125.66	306.63	2,139.91	1.35	Magn MWD	Baker Hughes	-0.20	2,147.66	1.33	N
10,820	90.03	184.87	9,035.47	-2,215.48	301.10	2,229.26	3.01	Magn MWD	Baker Hughes	0.23	2,235.85	3.00	N
10,908	89.82	189.03	9,035.59	-2,302.81	290.46	2,315.82	4.73	Magn MWD	Baker Hughes	-0.24	2,321.06	4.73	N
10,997	90.80	185.47	9,035.10	-2,391.08	279.23	2,403.29	4.15	Magn MWD	Baker Hughes	1.10	2,407.33	-4.00	N
11,086	90.74	185.70	9,033.91	-2,479.65	270.56	2,491.21	0.27	Magn MWD	Baker Hughes	-0.07	2,494.37	0.26	N
11,175	90.12	179.64	9,033.24	-2,568.51	266.42	2,579.67	6.84	Magn MWD	Baker Hughes	-0.70	2,582.29	-6.81	N
11,264	89.82	174.35	9,033.29	-2,657.36	271.08	2,668.64	5.95	Magn MWD	Baker Hughes	-0.34	2,671.15	-5.94	N
11,352	89.69	174.79	9,033.66	-2,744.96	279.41	2,756.58	0.52	Magn MWD	Baker Hughes	-0.15	2,759.15	0.50	N
11,441	89.82	176.40	9,034.04	-2,833.70	286.25	2,845.56	1.81	Magn MWD	Baker Hughes	0.15	2,848.12	1.81	N
11,530	89.01	176.90	9,034.95	-2,922.54	291.45	2,934.55	1.07	Magn MWD	Baker Hughes	-0.91	2,937.03	0.56	N
11,618	89.60	178.59	9,036.02	-3,010.46	294.91	3,022.53	2.03	Magn MWD	Baker Hughes	0.67	3,024.87	1.92	N
11,707	89.48	179.99	9,036.73	-3,099.45	296.01	3,111.43	1.58	Magn MWD	Baker Hughes	-0.13	3,113.55	1.57	N
11,796	89.72	181.52	9,037.35	-3,188.44	294.84	3,200.20	1.74	Magn MWD	Baker Hughes	0.27	3,202.04	1.72	N
11,884	89.66	184.20	9,037.83	-3,276.32	290.45	3,287.67	3.05	Magn MWD	Baker Hughes	-0.07	3,289.17	3.05	N
11,973	89.66	184.67	9,038.36	-3,365.05	283.57	3,375.85	0.53	Magn MWD	Baker Hughes	0.00	3,376.98	0.53	N
12,062	88.92	181.71	9,039.46	-3,453.89	278.62	3,464.26	3.43	Magn MWD	Baker Hughes	-0.83	3,465.11	-3.33	N
12,150	89.04	178.46	9,041.03	-3,541.87	278.49	3,552.08	3.70	Magn MWD	Baker Hughes	0.14	3,552.80	-3.69	N
12,240	88.83	176.19	9,042.70	-3,631.75	282.68	3,642.05	2.53	Magn MWD	Baker Hughes	-0.23	3,642.73	-2.52	N
12,328	88.89	178.71	9,044.45	-3,719.64	286.60	3,730.02	2.86	Magn MWD	Baker Hughes	0.07	3,730.66	2.86	N
12,417	90.15	179.64	9,045.20	-3,808.62	287.88	3,818.92	1.76	Magn MWD	Baker Hughes	1.42	3,819.49	1.04	N
12,506	91.26	179.19	9,044.10	-3,897.61	288.79	3,907.81	1.35	Magn MWD	Baker Hughes	1.25	3,908.29	-0.51	N
12,595	90.71	180.34	9,042.57	-3,986.59	289.15	3,996.67	1.43	Magn MWD	Baker Hughes	-0.62	3,997.07	1.29	N
12,683	90.18	179.99	9,041.89	-4,074.59	288.90	4,084.50	0.72	Magn MWD	Baker Hughes	-0.60	4,084.82	-0.40	N
12,772	90.18	177.92	9,041.61	-4,163.57	290.52	4,173.42	2.33	Magn MWD	Baker Hughes	0.00	4,173.69	-2.33	N
12,861	90.28	176.08	9,041.25	-4,252.44	295.18	4,262.42	2.07	Magn MWD	Baker Hughes	0.11	4,262.67	-2.07	N
12,949	90.74	175.34	9,040.47	-4,340.19	301.76	4,350.40	0.99	Magn MWD	Baker Hughes	0.52	4,350.67	-0.84	N
13,038	90.25	176.31	9,039.70	-4,428.95	308.24	4,439.39	1.22	Magn MWD	Baker Hughes	-0.55	4,439.66	1.09	N
13,127	90.25	178.72	9,039.31	-4,517.86	312.10	4,528.37	2.71	Magn MWD	Baker Hughes	0.00	4,528.63	2.71	N
13,215	90.31	180.06	9,038.88	-4,605.85	313.04	4,616.27	1.52	Magn MWD	Baker Hughes	0.07	4,616.48	1.52	N
13,304	90.59	178.71	9,038.18	-4,694.84	313.99	4,705.16	1.55	Magn MWD	Baker Hughes	0.31	4,705.33	-1.52	N



Directional Survey

Well Name SALADO DRAW WE 23 FED P7 004H		Lease SD 23 FED P7	Field Name JENNINGS	Business Unit Mid-Continent	
Ground Elevation (ft) 3,165.00	Original RKB (ft) 3,197.60	Current RKB Elevation 3,197.60, 3/28/2016		Mud Line Elevation (ft)	Water Depth (ft)

Survey Data													
MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	NS (ft)	EW (ft)	VS (ft)	DLS (°/100ft)	Method	Survey Company	Build (°/100ft)	Depart (ft)	Turn (°/100ft)	Unuse d data
13,393	90.80	179.20	9,037.10	-4,783.82	315.62	4,794.08	0.60	Magn MWD	Baker Hughes	0.24	4,794. 22	0.55	N
13,482	90.52	180.11	9,036.08	-4,872.81	316.15	4,882.95	1.07	Magn MWD	Baker Hughes	-0.31	4,883. 06	1.02	N
13,571	90.86	180.96	9,035.01	-4,961.80	315.32	4,971.74	1.03	Magn MWD	Baker Hughes	0.38	4,971. 81	0.96	N
13,659	90.52	180.87	9,033.95	-5,049.78	313.92	5,059.49	0.40	Magn MWD	Baker Hughes	-0.39	5,059. 53	-0.10	N
13,749	90.52	180.32	9,033.13	-5,139.77	312.98	5,149.28	0.61	Magn MWD	Baker Hughes	0.00	5,149. 29	-0.61	N
13,838	90.52	178.21	9,032.32	-5,228.76	314.12	5,238.18	2.37	Magn MWD	Baker Hughes	0.00	5,238. 18	-2.37	N
13,926	91.08	179.29	9,031.09	-5,316.73	316.04	5,326.11	1.38	Magn MWD	Baker Hughes	0.64	5,326. 11	1.23	N
13,977	90.74	180.55	9,030.28	-5,367.72	316.11	5,377.02	2.56	Magn MWD	Baker Hughes	-0.67	5,377. 02	2.47	N
14,002	90.74	180.55	9,029.96	-5,392.72	315.87	5,401.96	0.00	Magn MWD	Baker Hughes	0.00	5,401. 96	0.00	N