



Directional Survey

Well Name SALADO DRAW WE 23 FED P7 003H		Lease	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) 8,540.0	Vertical Section Direction (°) 183.10
Northing (Y) (ft)	Easting (X) (ft)	UTM Grid Zone	

Date 5/16/2016		Definitive? N		Description MWD		Planned? N	
MD Tie In (ftKB)		TVDTie In (ftKB)		Inclination Tie In (°)		NSTie In (ft)	
				Azimuth Tie In (°)		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
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Magn MWD	Rig	0.00	0.00	0.00	N
165	0.70	62.00	165.00	0.47	0.89	-0.52	0.42	Magn MWD	Rig	0.42	1.01	37.58	N
256	0.90	56.00	255.99	1.13	1.97	-1.24	0.24	Magn MWD	Rig	0.22	2.28	-6.59	N
343	0.50	47.00	342.98	1.77	2.82	-1.92	0.48	Magn MWD	Rig	-0.46	3.33	-10.34	N
532	0.20	142.00	531.98	2.08	3.62	-2.27	0.29	Magn MWD	Rig	-0.16	4.18	50.26	N
625	0.10	143.00	624.98	1.88	3.77	-2.09	0.11	Magn MWD	Rig	-0.11	4.22	1.08	N
717	0.70	276.00	716.98	1.88	3.26	-2.05	0.84	Magn MWD	Rig	0.65	3.76	144.57	N
807	0.70	268.00	806.97	1.92	2.17	-2.03	0.11	Magn MWD	Phoenix Directional	0.00	2.89	-8.89	N
948	1.10	281.60	947.95	2.16	-0.02	-2.16	0.32	Magn MWD	Phoenix Directional	0.28	2.16	9.65	N
1,125	1.00	255.10	1,124.92	2.10	-3.18	-1.93	0.28	Magn MWD	Phoenix Directional	-0.06	3.81	-14.97	N
1,302	1.10	254.20	1,301.89	1.24	-6.31	-0.90	0.06	Magn MWD	Phoenix Directional	0.06	6.43	-0.51	N
1,480	1.30	250.50	1,479.85	0.11	-9.85	0.43	0.12	Magn MWD	Phoenix Directional	0.11	9.85	-2.08	N
1,657	1.70	258.10	1,656.79	-1.11	-14.31	1.88	0.25	Magn MWD	Phoenix Directional	0.23	14.36	4.29	N
1,834	5.40	242.50	1,833.43	-5.50	-24.27	6.80	2.14	Magn MWD	Phoenix Directional	2.09	24.89	-8.81	N
2,013	6.40	243.10	2,011.47	-13.90	-40.64	16.08	0.56	Magn MWD	Phoenix Directional	0.56	42.95	0.34	N
2,191	7.50	242.10	2,188.16	-23.82	-59.76	27.02	0.62	Magn MWD	Phoenix Directional	0.62	64.33	-0.56	N
2,369	6.30	231.20	2,364.88	-35.38	-77.64	39.53	1.00	Magn MWD	Phoenix Directional	-0.67	85.32	-6.12	N
2,546	4.90	232.40	2,541.03	-46.08	-91.20	50.94	0.79	Magn MWD	Phoenix Directional	-0.79	102.17	0.68	N
2,723	5.50	257.40	2,717.32	-52.54	-105.46	58.17	1.31	Magn MWD	Phoenix Directional	0.34	117.83	14.12	N
2,900	5.90	258.20	2,893.45	-56.25	-122.65	62.80	0.23	Magn MWD	Phoenix Directional	0.23	134.93	0.45	N
3,078	5.80	243.00	3,070.53	-62.21	-139.62	69.67	0.87	Magn MWD	Phoenix Directional	-0.06	152.85	-8.54	N
3,256	5.60	236.80	3,247.65	-71.05	-154.90	79.32	0.36	Magn MWD	Phoenix Directional	-0.11	170.41	-3.48	N
3,433	5.00	248.70	3,423.90	-78.58	-169.31	87.62	0.71	Magn MWD	Phoenix Directional	-0.34	186.66	6.72	N
3,611	5.40	251.10	3,601.17	-84.11	-184.46	93.96	0.26	Magn MWD	Phoenix Directional	0.22	202.73	1.35	N
3,789	5.40	249.90	3,778.38	-89.70	-200.25	100.40	0.06	Magn MWD	Phoenix Directional	0.00	219.42	-0.67	N
3,966	5.00	246.30	3,954.65	-95.66	-215.14	107.16	0.29	Magn MWD	Phoenix Directional	-0.23	235.45	-2.03	N
4,143	5.40	246.00	4,130.92	-102.15	-229.81	114.43	0.23	Magn MWD	Phoenix Directional	0.23	251.49	-0.17	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
4,321	5.50	236.50	4,308.12	-110.26	-244.57	123.33	0.51	Magn MWD	Phoenix Directional	0.06	268.28	-5.34	N
4,498	5.40	242.80	4,484.32	-118.75	-259.05	132.59	0.34	Magn MWD	Phoenix Directional	-0.06	284.98	3.56	N
4,519	5.80	245.10	4,505.22	-119.65	-260.90	133.58	2.18	Magn MWD	Phoenix Directional	1.90	287.02	10.95	N
4,599	5.60	244.90	4,584.83	-123.01	-268.10	137.33	0.25	Magn MWD	Phoenix Directional	-0.25	294.97	-0.25	N
4,776	5.50	244.30	4,761.00	-130.35	-283.56	145.49	0.07	Magn MWD	Phoenix Directional	-0.06	312.09	-0.34	N
4,954	4.30	253.60	4,938.35	-135.93	-297.65	151.83	0.81	Magn MWD	Phoenix Directional	-0.67	327.22	5.22	N
5,132	1.80	258.50	5,116.08	-138.38	-306.79	154.76	1.41	Magn MWD	Phoenix Directional	-1.40	336.55	2.75	N
5,309	0.50	80.30	5,293.06	-138.80	-308.76	155.29	1.30	Magn MWD	Phoenix Directional	-0.73	338.52	-	N
5,486	0.40	71.30	5,470.05	-138.47	-307.41	154.89	0.07	Magn MWD	Phoenix Directional	-0.06	337.16	-5.08	N
5,662	1.10	212.10	5,646.04	-139.71	-307.72	156.14	0.81	Magn MWD	Phoenix Directional	0.40	337.95	80.00	N
5,840	1.30	220.00	5,824.00	-142.70	-309.93	159.25	0.15	Magn MWD	Phoenix Directional	0.11	341.20	4.44	N
6,017	1.30	223.90	6,000.96	-145.69	-312.61	162.38	0.05	Magn MWD	Phoenix Directional	0.00	344.89	2.20	N
6,194	1.40	214.60	6,177.91	-148.91	-315.23	165.74	0.14	Magn MWD	Phoenix Directional	0.06	348.64	-5.25	N
6,372	1.30	220.40	6,355.86	-152.24	-317.78	169.20	0.10	Magn MWD	Phoenix Directional	-0.06	352.36	3.26	N
6,549	1.70	289.10	6,532.81	-152.91	-321.56	170.07	0.97	Magn MWD	Phoenix Directional	0.23	356.06	38.81	N
6,727	2.50	332.60	6,710.70	-148.60	-325.84	166.00	0.97	Magn MWD	Phoenix Directional	0.45	358.13	24.44	N
6,904	0.90	11.50	6,887.62	-143.81	-327.34	161.30	1.07	Magn MWD	Phoenix Directional	-0.90	357.54	-	N
7,082	0.70	349.10	7,065.60	-141.37	-327.27	158.86	0.21	Magn MWD	Phoenix Directional	-0.11	356.50	189.66	N
7,260	1.10	63.30	7,243.59	-139.54	-325.95	156.96	0.64	Magn MWD	Phoenix Directional	0.22	354.56	-	N
7,437	1.00	42.90	7,420.56	-137.64	-323.38	154.93	0.22	Magn MWD	Phoenix Directional	-0.06	351.45	-11.53	N
7,614	1.10	49.20	7,597.53	-135.40	-321.04	152.56	0.09	Magn MWD	Phoenix Directional	0.06	348.42	3.56	N
7,792	1.10	78.20	7,775.50	-133.93	-318.07	150.94	0.31	Magn MWD	Phoenix Directional	0.00	345.12	16.29	N
7,970	0.70	103.40	7,953.47	-133.84	-315.34	150.69	0.31	Magn MWD	Phoenix Directional	-0.22	342.57	14.16	N
8,148	0.70	138.40	8,131.46	-134.90	-313.56	151.66	0.24	Magn MWD	Phoenix Directional	0.00	341.35	19.66	N
8,326	1.10	159.40	8,309.44	-137.31	-312.24	154.00	0.29	Magn MWD	Phoenix Directional	0.22	341.10	11.80	N
8,483	1.00	189.70	8,466.41	-140.07	-311.94	156.74	0.35	Magn MWD	Phoenix Directional	-0.06	341.95	19.30	N
8,557	2.67	182.59	8,540.37	-142.43	-312.13	159.10	2.27	Magn MWD	Baker Hughes	2.26	343.09	-9.61	N
8,602	10.86	182.22	8,585.02	-147.72	-312.34	164.40	18.20	Magn MWD	Baker Hughes	18.20	345.51	-0.82	N
8,646	17.56	181.17	8,627.65	-158.52	-312.64	175.19	15.24	Magn MWD	Baker Hughes	15.23	350.53	-2.39	N
8,735	29.26	178.57	8,709.19	-193.81	-312.37	210.41	13.19	Magn MWD	Baker Hughes	13.15	367.61	-2.92	N



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Survey Data

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8,824	37.66	178.56	8,783.37	-242.82	-311.14	259.29	9.44	Magn MWD	Baker Hughes	9.44	394.67	-0.01	N
8,913	46.79	180.17	8,849.21	-302.56	-310.55	318.91	10.33	Magn MWD	Baker Hughes	10.26	433.57	1.81	N
9,002	56.18	181.04	8,904.57	-372.11	-311.32	388.40	10.58	Magn MWD	Baker Hughes	10.55	485.17	0.98	N
9,090	64.87	181.32	8,947.83	-448.63	-312.90	464.90	9.88	Magn MWD	Baker Hughes	9.88	546.97	0.32	N
9,180	72.18	182.30	8,980.75	-532.28	-315.57	548.57	8.19	Magn MWD	Baker Hughes	8.12	618.80	1.09	N
9,268	78.53	181.90	9,002.99	-617.32	-318.68	633.66	7.23	Magn MWD	Baker Hughes	7.22	694.73	-0.45	N
9,357	85.99	181.95	9,014.97	-705.40	-321.64	721.76	8.38	Magn MWD	Baker Hughes	8.38	775.27	0.06	N
9,446	87.97	180.24	9,019.66	-794.25	-323.34	810.58	2.94	Magn MWD	Baker Hughes	2.22	857.55	-1.92	N
9,534	88.00	178.52	9,022.75	-882.19	-322.39	898.33	1.95	Magn MWD	Baker Hughes	0.03	939.25	-1.95	N
9,623	88.83	177.98	9,025.21	-971.11	-319.67	986.98	1.11	Magn MWD	Baker Hughes	0.93	1,022.38	-0.61	N
9,712	88.83	176.34	9,027.03	-1,059.98	-315.26	1,075.48	1.84	Magn MWD	Baker Hughes	0.00	1,105.87	-1.84	N
9,801	90.00	178.06	9,027.94	-1,148.87	-310.91	1,164.00	2.34	Magn MWD	Baker Hughes	1.31	1,190.20	1.93	N
9,889	89.91	177.67	9,028.01	-1,236.81	-307.63	1,251.63	0.45	Magn MWD	Baker Hughes	-0.10	1,274.49	-0.44	N
9,978	89.75	176.92	9,028.27	-1,325.71	-303.43	1,340.18	0.86	Magn MWD	Baker Hughes	-0.18	1,359.99	-0.84	N
10,067	89.91	180.21	9,028.54	-1,414.67	-301.21	1,428.88	3.70	Magn MWD	Baker Hughes	0.18	1,446.38	3.70	N
10,156	90.43	179.44	9,028.27	-1,503.66	-300.93	1,517.74	1.04	Magn MWD	Baker Hughes	0.58	1,533.48	-0.87	N
10,244	90.25	177.34	9,027.75	-1,591.62	-298.46	1,605.43	2.40	Magn MWD	Baker Hughes	-0.20	1,619.37	-2.39	N
10,333	90.52	176.86	9,027.15	-1,680.51	-293.96	1,693.94	0.62	Magn MWD	Baker Hughes	0.30	1,706.02	-0.54	N
10,422	90.62	175.92	9,026.27	-1,769.32	-288.36	1,782.33	1.06	Magn MWD	Baker Hughes	0.11	1,792.67	-1.06	N
10,510	90.55	179.88	9,025.37	-1,857.24	-285.13	1,869.95	4.50	Magn MWD	Baker Hughes	-0.08	1,879.00	4.50	N
10,599	90.65	184.61	9,024.44	-1,946.15	-288.62	1,958.91	5.32	Magn MWD	Baker Hughes	0.11	1,967.43	5.31	N
10,688	90.74	184.06	9,023.36	-2,034.88	-295.34	2,047.88	0.63	Magn MWD	Baker Hughes	0.10	2,056.21	-0.62	N
10,776	90.37	182.50	9,022.51	-2,122.73	-300.38	2,135.87	1.82	Magn MWD	Baker Hughes	-0.42	2,143.88	-1.77	N
10,865	90.59	180.86	9,021.76	-2,211.69	-302.99	2,224.84	1.86	Magn MWD	Baker Hughes	0.25	2,232.35	-1.84	N
10,953	90.71	182.23	9,020.76	-2,299.65	-305.36	2,312.80	1.56	Magn MWD	Baker Hughes	0.14	2,319.83	1.56	N
11,042	90.65	182.29	9,019.71	-2,388.57	-308.87	2,401.78	0.10	Magn MWD	Baker Hughes	-0.07	2,408.46	0.07	N
11,131	90.28	181.22	9,018.98	-2,477.53	-311.59	2,490.75	1.27	Magn MWD	Baker Hughes	-0.42	2,497.04	-1.20	N
11,219	90.25	179.58	9,018.58	-2,565.52	-312.21	2,578.65	1.86	Magn MWD	Baker Hughes	-0.03	2,584.45	-1.86	N
11,308	89.05	179.39	9,019.12	-2,654.51	-311.41	2,667.47	1.37	Magn MWD	Baker Hughes	-1.35	2,672.72	-0.21	N
11,396	88.74	179.11	9,020.82	-2,742.49	-310.26	2,755.25	0.47	Magn MWD	Baker Hughes	-0.35	2,759.98	-0.32	N



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11,485	89.51	176.69	9,022.18	-2,831.41	-307.00	2,843.87	2.85	Magn MWD	Baker Hughes	0.87	2,848. 01	-2.72	N
11,574	90.09	175.34	9,022.49	-2,920.19	-300.81	2,932.19	1.65	Magn MWD	Baker Hughes	0.65	2,935. 65	-1.52	N
11,662	89.88	176.18	9,022.51	-3,007.95	-294.31	3,019.47	0.98	Magn MWD	Baker Hughes	-0.24	3,022. 32	0.95	N
11,751	89.88	174.51	9,022.70	-3,096.66	-287.08	3,107.65	1.88	Magn MWD	Baker Hughes	0.00	3,109. 93	-1.88	N
11,840	90.25	177.76	9,022.59	-3,185.44	-281.08	3,195.98	3.68	Magn MWD	Baker Hughes	0.42	3,197. 82	3.65	N
11,928	90.28	179.12	9,022.19	-3,273.41	-278.69	3,283.69	1.55	Magn MWD	Baker Hughes	0.03	3,285. 25	1.55	N
12,017	90.52	180.64	9,021.57	-3,362.40	-278.50	3,372.54	1.73	Magn MWD	Baker Hughes	0.27	3,373. 91	1.71	N
12,105	90.25	180.00	9,020.98	-3,450.40	-278.99	3,460.43	0.79	Magn MWD	Baker Hughes	-0.31	3,461. 66	-0.73	N
12,194	90.43	181.09	9,020.45	-3,539.39	-279.84	3,549.34	1.24	Magn MWD	Baker Hughes	0.20	3,550. 43	1.22	N
12,284	90.40	185.43	9,019.79	-3,629.22	-284.96	3,639.32	4.82	Magn MWD	Baker Hughes	-0.03	3,640. 39	4.82	N
12,372	89.54	185.91	9,019.84	-3,716.79	-293.65	3,727.23	1.12	Magn MWD	Baker Hughes	-0.98	3,728. 37	0.55	N
12,461	89.45	184.36	9,020.63	-3,805.42	-301.62	3,816.17	1.74	Magn MWD	Baker Hughes	-0.10	3,817. 36	-1.74	N
12,549	89.45	182.20	9,021.47	-3,893.27	-306.65	3,904.16	2.45	Magn MWD	Baker Hughes	0.00	3,905. 33	-2.45	N
12,638	90.18	179.50	9,021.76	-3,982.25	-307.97	3,993.08	3.14	Magn MWD	Baker Hughes	0.82	3,994. 14	-3.03	N
12,726	90.37	178.87	9,021.34	-4,070.24	-306.72	4,080.87	0.75	Magn MWD	Baker Hughes	0.22	4,081. 78	-0.72	N
12,815	90.22	179.24	9,020.88	-4,159.23	-305.25	4,169.65	0.45	Magn MWD	Baker Hughes	-0.17	4,170. 41	0.42	N
12,904	90.40	177.54	9,020.40	-4,248.19	-302.75	4,258.34	1.92	Magn MWD	Baker Hughes	0.20	4,258. 96	-1.91	N
12,992	90.37	178.85	9,019.80	-4,336.14	-299.98	4,346.02	1.49	Magn MWD	Baker Hughes	-0.03	4,346. 51	1.49	N
13,081	90.40	179.93	9,019.21	-4,425.13	-299.03	4,434.83	1.21	Magn MWD	Baker Hughes	0.03	4,435. 22	1.21	N
13,169	90.06	180.37	9,018.85	-4,513.13	-299.26	4,522.71	0.63	Magn MWD	Baker Hughes	-0.39	4,523. 04	0.50	N
13,258	90.37	179.80	9,018.52	-4,602.13	-299.39	4,611.59	0.73	Magn MWD	Baker Hughes	0.35	4,611. 86	-0.64	N
13,347	90.31	180.27	9,017.99	-4,691.13	-299.45	4,700.46	0.53	Magn MWD	Baker Hughes	-0.07	4,700. 68	0.53	N
13,435	90.40	180.40	9,017.45	-4,779.13	-299.96	4,788.35	0.18	Magn MWD	Baker Hughes	0.10	4,788. 53	0.15	N
13,524	89.94	180.76	9,017.18	-4,868.12	-300.86	4,877.27	0.66	Magn MWD	Baker Hughes	-0.52	4,877. 41	0.40	N
13,612	89.94	180.09	9,017.27	-4,956.12	-301.52	4,965.17	0.76	Magn MWD	Baker Hughes	0.00	4,965. 28	-0.76	N
13,701	89.91	177.39	9,017.39	-5,045.09	-299.56	5,053.90	3.03	Magn MWD	Baker Hughes	-0.03	5,053. 97	-3.03	N
13,790	89.85	174.81	9,017.58	-5,133.87	-293.51	5,142.23	2.90	Magn MWD	Baker Hughes	-0.07	5,142. 26	-2.90	N
13,878	90.28	175.55	9,017.48	-5,221.56	-286.11	5,229.39	0.97	Magn MWD	Baker Hughes	0.49	5,229. 39	0.84	N
13,967	90.12	180.87	9,017.17	-5,310.49	-283.33	5,318.04	5.98	Magn MWD	Baker Hughes	-0.18	5,318. 04	5.98	N
14,018	90.15	181.98	9,017.05	-5,361.47	-284.60	5,369.01	2.18	Magn MWD	Baker Hughes	0.06	5,369. 02	2.18	N



Directional Survey

Well Name SALADO DRAW WE 23 FED P7 003H		Lease	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
14,043	90.15	181.98	9,016.98	-5,386.45	-285.47	5,394.01	0.00	Magn MWD	Baker Hughes	0.00	5,394. 01	0.00	N