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Directional Survey

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DEC 23 2019
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DELAWARE BASIN UNRESTRICTED

Well Name: ARENA ROJA FED UNIT 15-10 3H

Sub-Division DELAWARE BASIN	Region LEA COUNTY CORE	Field Name RATTLESNAKE DBBU		County LEA	State/Province NM	
Surface Legal Location 15-26S-35E	API/UWI 3002546152	Latitude (°) 32° 2' 30.324" N	Longitude (°) 103° 20' 56.967" W	Orig KB Elevation (ft) 3,119.00	Ground Elev MSL (ft) 3,086.00	KB - GL (ft) 33.00

Wellbores

Wellbore Name OH	Parent Wellbore	SAP Well ID	Vertical Section Direction (°) 1.87
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Kick Offs & Key Depths

Date 7/15/2019	Type CURVE	Top Depth (ftKB) 12,110.1	
Date 7/27/2019	Type CURVE	Top Depth (ftKB) 12,080.0	
Actual Deviation Survey	Definitive?	Proposed?	Proposed Deviation Survey

Deviation Survey

Date		Description			
MD Tie In (ftKB)	TVD Tie In (ftKB)	Inclination Tie In (°)	Azimuth Tie In (°)	NSTie In (ft)	EW Tie In (ft)

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
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Wellbore Name ST01	Parent Wellbore OH	SAP Well ID	Vertical Section Direction (°) 1.87
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Kick Offs & Key Depths

Date 8/25/2019	Type CURVE	Top Depth (ftKB) 12,085.0	
Date 8/25/2019	Type CURVE	Top Depth (ftKB) 12,098.2	
Actual Deviation Survey COMPOSITE ST01, Proposed? No	Definitive? No	Proposed? No	Proposed Deviation Survey COMPOSITE WELL PLAN - ST01, Proposed? Yes

Deviation Survey

Date 7/8/2019		Description COMPOSITE ST01			
MD Tie In (ftKB) 0.00	TVD Tie In (ftKB) 0.00	Inclination Tie In (°) 0.00	Azimuth Tie In (°) 0.00	NSTie In (ft) 0.00	EW Tie In (ft) 0.00

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
7/8/2019	137.00	0.80	326.50	137.00	0.78	0.80	-0.53	0.58	MWD	TOTAL DIRECTIONAL SERV...
7/8/2019	225.00	1.20	322.20	224.98	1.99	2.04	-1.43	0.46	MWD	TOTAL DIRECTIONAL SERV...
7/8/2019	320.00	1.10	320.00	319.96	3.43	3.52	-2.63	0.12	MWD	TOTAL DIRECTIONAL SERV...
7/8/2019	414.00	1.00	307.90	413.95	4.59	4.72	-3.85	0.26	MWD	TOTAL DIRECTIONAL SERV...
7/8/2019	509.00	1.10	316.80	508.93	5.72	5.89	-5.13	0.20	MWD	TOTAL DIRECTIONAL SERV...
7/8/2019	604.00	1.00	307.60	603.92	6.85	7.06	-6.41	0.21	MWD	TOTAL DIRECTIONAL SERV...
7/8/2019	699.00	1.10	297.60	698.90	7.73	7.99	-7.88	0.22	MWD	TOTAL DIRECTIONAL SERV...
7/8/2019	794.00	1.20	296.00	793.88	8.53	8.85	-9.58	0.11	MWD	TOTAL DIRECTIONAL SERV...
7/8/2019	888.00	1.20	283.20	887.86	9.13	9.51	-11.42	0.28	MWD	TOTAL DIRECTIONAL SERV...
7/8/2019	999.00	1.40	283.20	998.83	9.62	10.08	-13.88	0.18	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	1,179.00	1.00	250.40	1,178.79	9.48	10.06	-17.50	0.43	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	1,273.00	1.10	258.80	1,272.78	8.97	9.61	-19.15	0.19	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	1,368.00	0.70	277.10	1,367.77	8.82	9.50	-20.62	0.51	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	1,463.00	0.50	284.70	1,462.76	8.97	9.68	-21.60	0.23	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	1,557.00	0.20	289.60	1,556.76	9.11	9.84	-22.15	0.32	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	1,651.00	0.20	21.30	1,650.76	9.31	10.04	-22.25	0.31	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	1,746.00	0.50	45.40	1,745.76	9.77	10.49	-21.89	0.35	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	1,842.00	0.80	43.50	1,841.75	10.57	11.27	-21.13	0.31	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	1,937.00	0.80	50.90	1,936.74	11.50	12.17	-20.16	0.11	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	2,032.00	0.80	56.40	2,031.73	12.32	12.95	-19.09	0.08	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	2,126.00	0.80	72.60	2,125.72	12.92	13.51	-17.92	0.24	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	2,221.00	1.10	77.60	2,220.71	13.36	13.91	-16.40	0.33	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	2,316.00	1.30	79.10	2,315.69	13.83	14.31	-14.45	0.21	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	2,411.00	1.60	80.40	2,410.66	14.33	14.73	-12.08	0.32	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	2,506.00	1.90	77.70	2,505.61	14.98	15.29	-9.24	0.33	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	2,601.00	3.00	43.40	2,600.53	17.23	17.43	-5.99	1.88	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	2,696.00	3.60	21.00	2,695.38	21.90	22.02	-3.21	1.48	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	2,792.00	5.00	3.40	2,791.11	28.94	29.01	-1.88	1.99	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	2,887.00	6.00	354.00	2,885.67	37.99	38.08	-2.16	1.41	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	2,982.00	6.10	342.00	2,980.15	47.66	47.82	-4.24	1.33	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	3,077.00	6.90	335.60	3,074.54	57.52	57.82	-8.15	1.13	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	3,172.00	7.70	327.50	3,168.77	67.89	68.38	-13.93	1.37	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	3,266.00	7.30	330.10	3,261.96	78.17	78.87	-20.29	0.56	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	3,362.00	7.40	331.60	3,357.17	88.69	89.60	-26.27	0.23	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	3,456.00	7.90	328.80	3,450.34	99.33	100.45	-32.50	0.66	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	3,552.00	8.20	317.90	3,545.40	109.79	111.17	-40.51	1.62	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	3,646.00	7.60	314.90	3,638.51	118.86	120.53	-49.40	0.77	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	3,741.00	7.30	315.00	3,732.70	127.27	129.24	-58.12	0.32	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	3,836.00	6.90	313.90	3,826.97	135.22	137.46	-66.50	0.44	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	3,931.00	7.20	321.70	3,921.26	143.59	146.09	-74.30	1.06	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	4,026.00	7.30	323.90	4,015.50	152.89	155.64	-81.55	0.31	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	4,121.00	6.50	321.90	4,109.81	161.77	164.75	-88.42	0.88	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	4,215.00	5.80	321.40	4,203.27	169.46	172.65	-94.67	0.75	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	4,310.00	6.00	336.70	4,297.77	177.61	180.96	-99.63	1.66	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	4,405.00	6.60	346.80	4,392.20	187.38	190.83	-102.84	1.32	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	4,500.00	7.90	343.80	4,486.44	198.86	202.42	-105.91	1.42	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	4,595.00	8.70	331.70	4,580.45	211.27	215.02	-111.14	2.02	MWD	TOTAL DIRECTIONAL SERV...



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				Ground Elev MSL (ft) 3,086.00
				KB - GL (ft) 33.00

Survey Data										
Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
7/12/2019	4,690.00	7.40	336.10	4,674.51	223.00	226.94	-117.02	1.51	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	4,786.00	6.90	333.70	4,769.77	233.65	237.76	-122.08	0.61	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	4,881.00	8.30	324.00	4,863.93	244.09	248.42	-128.64	1.99	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	4,976.00	8.40	320.80	4,957.93	254.74	259.35	-137.06	0.50	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	5,071.00	7.50	322.20	5,052.01	264.74	269.62	-145.24	0.97	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	5,167.00	7.00	320.90	5,147.25	273.98	279.11	-152.77	0.55	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	5,262.00	6.90	324.40	5,241.55	282.88	288.25	-159.74	0.46	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	5,358.00	7.60	328.70	5,336.78	292.77	298.36	-166.40	0.92	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	5,453.00	8.20	325.10	5,430.88	303.46	309.28	-173.54	0.82	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	5,549.00	9.10	321.30	5,525.79	314.71	320.82	-182.20	1.11	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	5,643.00	9.00	321.50	5,618.62	325.96	332.38	-191.43	0.11	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	5,738.00	8.30	319.00	5,712.54	336.64	343.37	-200.55	0.84	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	5,833.00	8.30	318.20	5,806.54	346.63	353.66	-209.62	0.12	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	5,928.00	8.20	317.20	5,900.56	356.41	363.74	-218.79	0.18	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	6,024.00	7.60	315.70	5,995.65	365.67	373.31	-227.88	0.66	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	6,118.00	6.80	314.80	6,088.90	373.77	381.68	-236.17	0.86	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	6,213.00	6.10	312.10	6,183.30	380.86	389.02	-243.91	0.80	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	6,308.00	5.90	311.00	6,277.78	387.20	395.61	-251.34	0.24	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	6,403.00	5.80	309.20	6,372.29	393.19	401.85	-258.74	0.22	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	6,498.00	5.40	308.40	6,466.83	398.76	407.66	-265.96	0.43	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	6,593.00	5.30	309.10	6,561.42	404.08	413.20	-272.87	0.13	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	6,688.00	5.10	310.00	6,656.03	409.34	418.68	-279.51	0.23	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	6,784.00	3.90	312.50	6,751.73	414.10	423.63	-285.19	1.27	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	6,879.00	1.60	319.90	6,846.62	417.19	426.83	-288.42	2.44	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	6,974.00	1.10	327.30	6,941.59	418.93	428.61	-289.77	0.56	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	7,069.00	1.30	321.60	7,036.57	420.50	430.22	-290.93	0.24	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	7,164.00	0.30	329.50	7,131.56	421.53	431.28	-291.73	1.06	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	7,259.00	0.10	334.40	7,226.56	421.82	431.57	-291.89	0.21	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	7,354.00	0.30	302.00	7,321.56	422.01	431.78	-292.14	0.23	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	7,449.00	0.30	261.40	7,416.56	422.09	431.87	-292.59	0.22	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	7,543.00	0.30	244.60	7,510.55	421.94	431.73	-293.06	0.09	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	7,639.00	0.30	183.70	7,606.55	421.57	431.37	-293.30	0.32	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	7,733.00	0.50	144.50	7,700.55	421.00	430.79	-293.08	0.35	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	7,828.00	0.40	151.60	7,795.55	420.38	430.16	-292.68	0.12	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	7,923.00	0.60	141.50	7,890.54	419.72	429.48	-292.22	0.23	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	8,018.00	0.70	135.30	7,985.54	418.94	428.68	-291.50	0.13	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	8,113.00	0.90	132.10	8,080.53	418.06	427.77	-290.54	0.22	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	8,207.00	1.10	128.40	8,174.51	417.04	426.71	-289.28	0.22	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	8,302.00	1.70	121.80	8,269.49	415.80	425.40	-287.37	0.65	MWD	TOTAL DIRECTIONAL SERV...
7/14/2019	8,397.00	2.40	152.70	8,364.43	413.36	422.89	-285.26	1.35	MWD	TOTAL DIRECTIONAL SERV...
7/14/2019	8,492.00	2.30	143.10	8,459.35	410.14	419.60	-283.20	0.43	MWD	TOTAL DIRECTIONAL SERV...
7/14/2019	8,587.00	2.30	138.00	8,554.27	407.27	416.66	-280.78	0.22	MWD	TOTAL DIRECTIONAL SERV...
7/14/2019	8,681.00	2.40	138.90	8,648.19	404.47	413.77	-278.23	0.11	MWD	TOTAL DIRECTIONAL SERV...
7/15/2019	8,776.00	2.40	135.70	8,743.11	401.64	410.85	-275.53	0.14	MWD	TOTAL DIRECTIONAL SERV...
7/15/2019	8,870.00	2.40	138.30	8,837.03	398.85	407.97	-272.85	0.12	MWD	TOTAL DIRECTIONAL SERV...
7/15/2019	8,965.00	1.80	130.10	8,931.96	396.49	405.53	-270.38	0.70	MWD	TOTAL DIRECTIONAL SERV...
7/15/2019	9,060.00	0.70	35.20	9,026.95	396.05	405.04	-268.90	2.09	MWD	TOTAL DIRECTIONAL SERV...
7/15/2019	9,154.00	1.80	23.90	9,120.92	397.90	406.86	-267.98	1.19	MWD	TOTAL DIRECTIONAL SERV...
7/15/2019	9,249.00	1.60	32.50	9,215.88	400.42	409.34	-266.66	0.34	MWD	TOTAL DIRECTIONAL SERV...
7/15/2019	9,344.00	1.10	1.60	9,310.85	402.48	411.37	-265.92	0.91	MWD	TOTAL DIRECTIONAL SERV...
7/15/2019	9,438.00	1.10	359.80	9,404.84	404.28	413.18	-265.90	0.04	MWD	TOTAL DIRECTIONAL SERV...
7/16/2019	9,533.00	1.20	358.90	9,499.82	406.18	415.08	-265.92	0.11	MWD	TOTAL DIRECTIONAL SERV...
7/16/2019	9,628.00	1.10	2.10	9,594.80	408.09	416.99	-265.91	0.13	MWD	TOTAL DIRECTIONAL SERV...
7/16/2019	9,722.00	0.70	0.00	9,688.79	409.57	418.46	-265.87	0.43	MWD	TOTAL DIRECTIONAL SERV...
7/16/2019	9,817.00	0.50	31.90	9,783.78	410.50	419.40	-265.65	0.40	MWD	TOTAL DIRECTIONAL SERV...
7/16/2019	9,912.00	0.70	7.40	9,878.78	411.44	420.32	-265.36	0.34	MWD	TOTAL DIRECTIONAL SERV...
7/16/2019	10,006.00	0.60	3.60	9,972.77	412.50	421.38	-265.26	0.12	MWD	TOTAL DIRECTIONAL SERV...
7/16/2019	10,101.00	0.60	341.10	10,067.77	413.47	422.35	-265.39	0.25	MWD	TOTAL DIRECTIONAL SERV...
7/16/2019	10,196.00	0.10	320.30	10,162.76	413.99	422.89	-265.60	0.53	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	10,291.00	0.70	87.80	10,257.76	414.10	422.97	-265.07	0.81	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	10,386.00	1.40	82.70	10,352.75	414.32	423.14	-263.34	0.74	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	10,480.00	0.80	23.50	10,446.73	415.12	423.89	-261.94	1.28	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	10,575.00	0.80	3.40	10,541.72	416.40	425.16	-261.64	0.29	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	10,670.00	0.80	7.20	10,636.71	417.72	426.48	-261.51	0.06	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	10,765.00	0.70	343.60	10,731.70	418.93	427.69	-261.60	0.34	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	10,859.00	0.60	342.30	10,825.70	419.94	428.71	-261.91	0.11	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	10,954.00	0.60	350.60	10,920.69	420.90	429.68	-262.14	0.09	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	11,049.00	0.50	7.00	11,015.69	421.80	430.58	-262.17	0.20	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	11,143.00	0.50	18.00	11,109.68	422.60	431.38	-261.99	0.10	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	11,238.00	0.60	58.10	11,204.68	423.27	432.04	-261.44	0.41	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	11,333.00	0.50	160.50	11,299.68	423.16	431.91	-260.88	0.90	MWD	TOTAL DIRECTIONAL SERV...
8/23/2019	11,433.00	0.90	151.20	11,399.67	422.08	430.81	-260.36	0.41	MWD	TOTAL DIRECTIONAL SERV...
8/24/2019	11,528.00	1.10	113.70	11,494.66	421.10	429.79	-259.16	0.71	MWD	TOTAL DIRECTIONAL SERV...



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Surface Legal Location 15-26S-35E	API/UWI 3002546152	Latitude (°) 32° 2' 30.324" N	Longitude (°) 103° 20' 56.967" W	Orig KB Elevation (ft) 3,119.00
				Ground Elev MSL (ft) 3,086.00
				KB - GL (ft) 33.00

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
8/24/2019	11,623.00	11.70	52.00	11,588.96	426.96	435.37	-250.71	11.81	MWD	TOTAL DIRECTIONAL SERV...
8/24/2019	11,717.00	12.30	45.20	11,680.91	440.35	448.29	-236.10	1.63	MWD	TOTAL DIRECTIONAL SERV...
8/25/2019	11,812.00	12.00	44.10	11,773.78	455.02	462.52	-222.04	0.40	MWD	TOTAL DIRECTIONAL SERV...
8/25/2019	11,907.00	12.20	42.00	11,866.67	470.01	477.07	-208.45	0.51	MWD	TOTAL DIRECTIONAL SERV...
8/25/2019	12,002.00	11.30	39.00	11,959.68	485.11	491.76	-195.88	1.14	MWD	TOTAL DIRECTIONAL SERV...
8/25/2019	12,097.00	12.80	32.10	12,052.59	501.62	507.91	-184.43	2.19	MWD	TOTAL DIRECTIONAL SERV...
8/25/2019	12,191.00	26.10	37.30	12,141.04	527.58	533.29	-166.28	14.25	MWD	TOTAL DIRECTIONAL SERV...
8/25/2019	12,286.00	40.90	36.80	12,220.03	570.35	575.05	-134.81	15.58	MWD	TOTAL DIRECTIONAL SERV...
8/25/2019	12,381.00	54.00	33.30	12,284.15	628.90	632.33	-94.91	14.05	MWD	TOTAL DIRECTIONAL SERV...
8/25/2019	12,475.00	55.80	30.00	12,338.21	695.64	697.80	-54.58	3.45	MWD	TOTAL DIRECTIONAL SERV...
8/25/2019	12,570.00	60.30	29.00	12,388.47	767.05	767.94	-14.91	4.82	MWD	TOTAL DIRECTIONAL SERV...
8/25/2019	12,664.00	75.00	26.90	12,424.12	844.95	844.57	25.64	15.77	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	12,760.00	90.50	26.20	12,436.19	931.23	929.50	68.07	16.16	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	12,854.00	90.90	22.00	12,435.05	1,018.21	1,015.28	106.44	4.49	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	12,949.00	89.20	20.70	12,434.96	1,107.77	1,103.76	141.03	2.25	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	13,044.00	89.40	20.90	12,436.12	1,197.62	1,192.56	174.76	0.30	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	13,139.00	89.00	18.60	12,437.45	1,288.02	1,281.95	206.86	2.46	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	13,234.00	90.30	17.70	12,438.03	1,379.21	1,372.22	236.45	1.66	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	13,328.00	91.50	14.60	12,436.55	1,470.28	1,462.49	262.59	3.54	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	13,423.00	91.10	12.10	12,434.40	1,563.35	1,554.89	284.52	2.66	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	13,518.00	89.90	9.70	12,433.57	1,657.16	1,648.16	302.48	2.82	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	13,613.00	89.70	6.30	12,433.90	1,751.60	1,742.23	315.70	3.59	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	13,709.00	90.40	3.50	12,433.82	1,847.46	1,837.86	323.90	3.01	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	13,803.00	90.30	1.30	12,433.24	1,941.44	1,931.77	327.83	2.34	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	13,898.00	90.20	2.00	12,432.83	2,036.44	2,026.73	330.57	0.74	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	13,993.00	90.60	3.00	12,432.16	2,131.43	2,121.64	334.71	1.13	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	14,087.00	89.10	358.40	12,432.41	2,225.38	2,215.60	335.86	5.15	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	14,182.00	91.90	0.30	12,431.58	2,320.28	2,310.58	334.78	3.56	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	14,277.00	92.50	1.30	12,427.93	2,415.19	2,405.50	336.11	1.23	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	14,371.00	89.50	0.60	12,426.29	2,509.15	2,499.46	337.67	3.28	MWD	TOTAL DIRECTIONAL SERV...
8/26/2019	14,466.00	89.00	359.90	12,427.54	2,604.10	2,594.45	338.08	0.91	MWD	TOTAL DIRECTIONAL SERV...
8/27/2019	14,560.00	88.50	359.20	12,429.59	2,698.00	2,688.43	337.34	0.91	MWD	TOTAL DIRECTIONAL SERV...
8/27/2019	14,655.00	91.00	359.40	12,430.00	2,792.90	2,783.41	336.18	2.64	MWD	TOTAL DIRECTIONAL SERV...
8/27/2019	14,750.00	91.70	359.70	12,427.76	2,887.79	2,878.38	335.44	0.80	MWD	TOTAL DIRECTIONAL SERV...
8/27/2019	14,845.00	90.90	357.40	12,425.61	2,982.60	2,973.32	333.03	2.56	MWD	TOTAL DIRECTIONAL SERV...
8/27/2019	14,939.00	92.70	2.80	12,422.65	3,076.47	3,067.23	333.19	6.05	MWD	TOTAL DIRECTIONAL SERV...
8/27/2019	15,034.00	90.60	2.30	12,419.92	3,171.42	3,162.09	337.42	2.27	MWD	TOTAL DIRECTIONAL SERV...
8/29/2019	15,144.00	89.00	359.40	12,420.30	3,281.39	3,272.07	339.05	3.01	MWD	TOTAL DIRECTIONAL SERV...
8/29/2019	15,239.00	88.00	359.20	12,422.79	3,376.26	3,367.02	337.89	1.07	MWD	TOTAL DIRECTIONAL SERV...
8/29/2019	15,334.00	88.30	358.30	12,425.86	3,471.07	3,461.95	335.82	1.00	MWD	TOTAL DIRECTIONAL SERV...
8/29/2019	15,429.00	91.80	357.80	12,425.77	3,565.84	3,556.88	332.59	3.72	MWD	TOTAL DIRECTIONAL SERV...
8/29/2019	15,523.00	93.30	358.80	12,421.59	3,659.56	3,650.74	329.80	1.92	MWD	TOTAL DIRECTIONAL SERV...
8/29/2019	15,618.00	90.30	359.90	12,418.61	3,754.41	3,745.68	328.72	3.36	MWD	TOTAL DIRECTIONAL SERV...
8/29/2019	15,714.00	88.00	0.70	12,420.03	3,850.36	3,841.66	329.23	2.54	MWD	TOTAL DIRECTIONAL SERV...
8/29/2019	15,808.00	87.50	0.90	12,423.72	3,944.27	3,935.58	330.54	0.57	MWD	TOTAL DIRECTIONAL SERV...
8/29/2019	15,902.00	88.20	359.70	12,427.25	4,038.16	4,029.51	331.03	1.48	MWD	TOTAL DIRECTIONAL SERV...
8/30/2019	15,996.00	91.10	359.20	12,427.82	4,132.07	4,123.49	330.13	3.13	MWD	TOTAL DIRECTIONAL SERV...
8/30/2019	16,091.00	91.30	359.60	12,425.83	4,226.96	4,218.46	329.13	0.47	MWD	TOTAL DIRECTIONAL SERV...
8/30/2019	16,186.00	89.30	358.80	12,425.34	4,321.85	4,313.45	327.81	2.27	MWD	TOTAL DIRECTIONAL SERV...
8/30/2019	16,280.00	91.00	358.90	12,425.09	4,415.71	4,407.43	325.92	1.81	MWD	TOTAL DIRECTIONAL SERV...
8/30/2019	16,375.00	91.10	358.50	12,423.35	4,510.55	4,502.38	323.76	0.43	MWD	TOTAL DIRECTIONAL SERV...
8/30/2019	16,470.00	90.70	358.70	12,421.86	4,605.39	4,597.34	321.44	0.47	MWD	TOTAL DIRECTIONAL SERV...
8/30/2019	16,565.00	91.70	358.50	12,419.87	4,700.21	4,692.29	319.12	1.07	MWD	TOTAL DIRECTIONAL SERV...
8/30/2019	16,659.00	89.90	356.30	12,418.56	4,793.90	4,786.18	314.86	3.02	MWD	TOTAL DIRECTIONAL SERV...
8/30/2019	16,753.00	93.70	0.40	12,415.60	4,887.64	4,880.06	312.15	5.94	MWD	TOTAL DIRECTIONAL SERV...
8/30/2019	16,848.00	93.10	0.60	12,409.97	4,982.45	4,974.88	312.98	0.67	MWD	TOTAL DIRECTIONAL SERV...
8/30/2019	16,942.00	93.20	1.70	12,404.80	5,076.30	5,068.72	314.86	1.17	MWD	TOTAL DIRECTIONAL SERV...
8/30/2019	17,037.00	90.20	1.20	12,401.98	5,171.24	5,163.64	317.27	3.20	MWD	TOTAL DIRECTIONAL SERV...
8/30/2019	17,133.00	91.00	2.70	12,400.98	5,267.23	5,259.57	320.53	1.77	MWD	TOTAL DIRECTIONAL SERV...
8/30/2019	17,228.00	90.20	1.40	12,399.98	5,362.22	5,354.51	323.93	1.61	MWD	TOTAL DIRECTIONAL SERV...
8/31/2019	17,322.00	88.90	1.60	12,400.72	5,456.22	5,448.47	326.39	1.40	MWD	TOTAL DIRECTIONAL SERV...
8/31/2019	17,417.00	90.20	0.60	12,401.47	5,551.20	5,543.44	328.21	1.73	MWD	TOTAL DIRECTIONAL SERV...
8/31/2019	17,512.00	89.70	0.60	12,401.55	5,646.18	5,638.44	329.21	0.53	MWD	TOTAL DIRECTIONAL SERV...
8/31/2019	17,607.00	90.20	359.10	12,401.63	5,741.12	5,733.44	328.96	1.66	MWD	TOTAL DIRECTIONAL SERV...
8/31/2019	17,701.00	89.70	358.90	12,401.72	5,835.00	5,827.42	327.32	0.57	MWD	TOTAL DIRECTIONAL SERV...
8/31/2019	17,796.00	90.70	358.90	12,401.38	5,929.87	5,922.40	325.50	1.05	MWD	TOTAL DIRECTIONAL SERV...
8/31/2019	17,890.00	89.80	359.10	12,400.97	6,023.75	6,016.39	323.86	0.98	MWD	TOTAL DIRECTIONAL SERV...
8/31/2019	17,986.00	90.70	359.10	12,400.56	6,119.64	6,112.37	322.35	0.94	MWD	TOTAL DIRECTIONAL SERV...
9/2/2019	18,064.00	89.20	358.20	12,400.62	6,197.51	6,190.35	320.51	2.24	MWD	TOTAL DIRECTIONAL SERV...
9/2/2019	18,159.00	91.40	356.10	12,400.13	6,292.17	6,285.22	315.79	3.20	MWD	TOTAL DIRECTIONAL SERV...
9/2/2019	18,253.00	91.90	356.80	12,397.42	6,385.71	6,379.00	309.97	0.91	MWD	TOTAL DIRECTIONAL SERV...
9/2/2019	18,349.00	91.10	355.50	12,394.91	6,481.20	6,474.74	303.53	1.59	MWD	TOTAL DIRECTIONAL SERV...
9/2/2019	18,443.00	90.70	357.00	12,393.43	6,574.73	6,568.53	297.38	1.65	MWD	TOTAL DIRECTIONAL SERV...



Well Name: ARENA ROJA FED UNIT 15-10 3H

Sub-Division DELAWARE BASIN	Region LEA COUNTY CORE	Field Name RATTLESNAKE DBBU	County LEA	State/Province NM
Surface Legal Location 15-26S-35E	API/UWI 3002546152	Latitude (°) 32° 2' 30.324" N	Longitude (°) 103° 20' 56.967" W	Orig KB Elevation (ft) 3,119.00
			Ground Elev MSL (ft) 3,086.00	KB - GL (ft) 33.00

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
9/2/2019	18,538.00	90.60	358.00	12,392.35	6,669.45	6,663.43	293.23	1.06	MWD	TOTAL DIRECTIONAL SERV...
9/2/2019	18,632.00	90.70	359.70	12,391.29	6,763.31	6,757.40	291.35	1.81	MWD	TOTAL DIRECTIONAL SERV...
9/2/2019	18,727.00	90.60	0.30	12,390.21	6,858.25	6,852.40	291.35	0.64	MWD	TOTAL DIRECTIONAL SERV...
9/2/2019	18,822.00	90.80	0.00	12,389.05	6,953.20	6,947.39	291.60	0.38	MWD	TOTAL DIRECTIONAL SERV...
9/2/2019	18,916.00	91.10	0.30	12,387.49	7,047.15	7,041.38	291.84	0.45	MWD	TOTAL DIRECTIONAL SERV...
9/2/2019	19,011.00	90.20	359.60	12,386.41	7,142.09	7,136.37	291.76	1.20	MWD	TOTAL DIRECTIONAL SERV...
9/2/2019	19,106.00	90.90	0.30	12,385.50	7,237.03	7,231.36	291.68	1.04	MWD	TOTAL DIRECTIONAL SERV...
9/3/2019	19,200.00	90.40	359.80	12,384.43	7,330.97	7,325.36	291.76	0.75	MWD	TOTAL DIRECTIONAL SERV...
9/3/2019	19,295.00	90.60	1.30	12,383.60	7,425.94	7,420.34	292.67	1.59	MWD	TOTAL DIRECTIONAL SERV...
9/3/2019	19,389.00	89.70	359.70	12,383.36	7,519.91	7,514.34	293.49	1.95	MWD	TOTAL DIRECTIONAL SERV...
9/3/2019	19,484.00	88.80	357.60	12,384.60	7,614.75	7,609.30	291.25	2.40	MWD	TOTAL DIRECTIONAL SERV...
9/3/2019	19,579.00	91.10	355.10	12,384.68	7,709.29	7,704.09	285.21	3.58	MWD	TOTAL DIRECTIONAL SERV...
9/3/2019	19,673.00	91.00	357.70	12,382.96	7,802.84	7,797.88	279.31	2.77	MWD	TOTAL DIRECTIONAL SERV...
9/3/2019	19,768.00	90.00	358.40	12,382.13	7,897.62	7,892.82	276.07	1.28	MWD	TOTAL DIRECTIONAL SERV...
9/3/2019	19,863.00	89.00	357.90	12,382.96	7,992.42	7,987.76	273.01	1.18	MWD	TOTAL DIRECTIONAL SERV...
9/3/2019	19,958.00	89.20	358.90	12,384.45	8,087.23	8,082.71	270.35	1.07	MWD	TOTAL DIRECTIONAL SERV...
9/3/2019	20,053.00	88.70	359.00	12,386.19	8,182.09	8,177.68	268.61	0.54	MWD	TOTAL DIRECTIONAL SERV...
9/3/2019	20,148.00	88.40	358.50	12,388.60	8,276.92	8,272.63	266.54	0.61	MWD	TOTAL DIRECTIONAL SERV...
9/3/2019	20,242.00	87.80	358.00	12,391.72	8,370.68	8,366.53	263.67	0.83	MWD	TOTAL DIRECTIONAL SERV...
9/3/2019	20,282.00	87.30	357.60	12,393.43	8,410.54	8,406.47	262.14	1.60	MWD	TOTAL DIRECTIONAL SERV...
9/3/2019	20,333.00	87.30	357.60	12,395.83	8,461.35	8,457.37	260.01	0.00	BIT	