



Directional Survey

DELAWARE BASIN UNRESTRICTED

HOBBS OCD

JAN 10 2020

RECEIVED

Well Name: JAYHAWK 7-6 FED FEE COM 6H

Sub-Division	Region	Field Name	County	State/Province		
DELAWARE BASIN	LEA COUNTY CORE	RATTLESNAKE DBBU	LEA	NM		
Surface Legal Location	API/UWI	Latitude (°)	Longitude (°)	Orig KB Elevation (ft)	Ground Elev MSL (ft)	KB - GL (ft)
7-26S-34E	3002545532	32° 3' 8.487" N	103° 30' 25.517" W	3,398.20	3,373.20	25.00

Wellbores	Parent Wellbore	SAP Well ID	Vertical Section Direction (°)
OH			9.23

Kick Offs & Key Depths			
Date	Type	Top Depth (ftKB)	
2/27/2019	CURVE	12,347.7	
Date	Type	Top Depth (ftKB)	
3/4/2019	CURVE	12,342.0	
Actual Deviation Survey	Definitive?	Proposed?	Proposed Deviation Survey
COMPOSITE OH, Proposed? No	No	No	COMPOSITE WELL PLAN - OH, Proposed? Yes

Deviation Survey						
Date		Description				
2/12/2019		COMPOSITE OH				
MD Tie In (ftKB)	TVD Tie In (ftKB)	Inclination Tie In (°)	Azimuth Tie In (°)	NSTie In (ft)	EWTie In (ft)	
0.00	0.00	0.00	0.00	0.00	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
2/16/2019	124.00	0.80	136.70	124.00	-0.53	-0.63	0.59	0.65	MWD	TOTAL DIRECTIONAL SERV...
2/16/2019	216.00	1.10	138.60	215.98	-1.48	-1.76	1.62	0.33	MWD	TOTAL DIRECTIONAL SERV...
2/16/2019	307.00	1.20	135.90	306.96	-2.60	-3.10	2.86	0.12	MWD	TOTAL DIRECTIONAL SERV...
2/16/2019	399.00	1.40	136.30	398.94	-3.85	-4.60	4.31	0.22	MWD	TOTAL DIRECTIONAL SERV...
2/16/2019	490.00	1.40	135.30	489.91	-5.18	-6.20	5.86	0.03	MWD	TOTAL DIRECTIONAL SERV...
2/16/2019	582.00	1.20	143.70	581.89	-6.51	-7.77	7.22	0.30	MWD	TOTAL DIRECTIONAL SERV...
2/16/2019	674.00	1.50	135.40	673.86	-7.90	-9.41	8.63	0.39	MWD	TOTAL DIRECTIONAL SERV...
2/17/2019	765.00	1.50	136.40	764.83	-9.32	-11.12	10.29	0.03	MWD	TOTAL DIRECTIONAL SERV...
2/17/2019	840.00	1.60	137.30	839.81	-10.56	-12.60	11.68	0.14	MWD	TOTAL DIRECTIONAL SERV...
2/18/2019	976.00	1.40	135.40	975.76	-12.71	-15.18	14.13	0.15	MWD	TOTAL DIRECTIONAL SERV...
2/18/2019	1,067.00	1.30	134.50	1,066.73	-13.96	-16.69	15.65	0.11	MWD	TOTAL DIRECTIONAL SERV...
2/18/2019	1,159.00	1.70	135.00	1,158.70	-15.37	-18.39	17.36	0.44	MWD	TOTAL DIRECTIONAL SERV...
2/18/2019	1,250.00	0.60	120.60	1,249.68	-16.33	-19.58	18.72	1.24	MWD	TOTAL DIRECTIONAL SERV...
2/18/2019	1,341.00	0.40	120.80	1,340.68	-16.62	-19.99	19.41	0.22	MWD	TOTAL DIRECTIONAL SERV...
2/18/2019	1,433.00	0.50	134.30	1,432.68	-16.97	-20.43	19.97	0.16	MWD	TOTAL DIRECTIONAL SERV...
2/18/2019	1,525.00	0.60	135.80	1,524.67	-17.48	-21.06	20.59	0.11	MWD	TOTAL DIRECTIONAL SERV...
2/18/2019	1,617.00	0.50	136.10	1,616.67	-18.01	-21.69	21.21	0.11	MWD	TOTAL DIRECTIONAL SERV...
2/18/2019	1,709.00	0.50	141.40	1,708.66	-18.52	-22.30	21.73	0.05	MWD	TOTAL DIRECTIONAL SERV...
2/18/2019	1,803.00	0.50	120.50	1,802.66	-18.95	-22.83	22.34	0.19	MWD	TOTAL DIRECTIONAL SERV...
2/18/2019	1,898.00	0.40	108.90	1,897.66	-19.15	-23.14	23.01	0.14	MWD	TOTAL DIRECTIONAL SERV...
2/18/2019	1,991.00	0.40	140.80	1,990.66	-19.42	-23.50	23.53	0.24	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	2,086.00	0.40	143.00	2,085.65	-19.87	-24.02	23.94	0.02	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	2,180.00	0.60	150.40	2,179.65	-20.48	-24.71	24.38	0.22	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	2,275.00	0.80	130.60	2,274.64	-21.22	-25.58	25.13	0.33	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	2,369.00	1.20	109.90	2,368.63	-21.74	-26.34	26.55	0.57	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	2,463.00	1.60	113.20	2,462.60	-22.24	-27.19	28.68	0.43	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	2,558.00	2.00	111.80	2,557.55	-22.92	-28.33	31.44	0.42	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	2,652.00	2.20	119.70	2,651.49	-23.91	-29.83	34.53	0.37	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	2,747.00	2.40	121.10	2,746.41	-25.29	-31.76	37.82	0.22	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	2,841.00	2.20	127.60	2,840.34	-26.88	-33.88	40.93	0.35	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	2,935.00	2.90	111.90	2,934.25	-28.26	-35.87	44.57	1.05	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	3,029.00	4.20	104.60	3,028.06	-29.10	-37.62	50.10	1.46	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	3,123.00	5.90	105.60	3,121.70	-29.96	-39.79	58.09	1.81	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	3,217.00	7.10	106.70	3,215.09	-31.25	-42.76	68.31	1.28	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	3,311.00	7.60	107.60	3,308.32	-32.91	-46.31	79.80	0.55	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	3,405.00	7.80	111.20	3,401.47	-35.14	-50.49	91.67	0.56	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	3,499.00	8.00	114.80	3,494.58	-38.22	-55.54	103.55	0.57	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	3,593.00	8.30	114.80	3,587.63	-41.79	-61.13	115.65	0.32	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	3,687.00	8.40	115.70	3,680.63	-45.56	-66.96	128.00	0.18	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	3,781.00	8.40	117.40	3,773.62	-49.65	-73.09	140.28	0.26	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	3,875.00	9.00	114.60	3,866.54	-53.74	-79.31	153.06	0.78	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	3,969.00	9.60	112.90	3,959.31	-57.54	-85.43	166.97	0.70	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	4,063.00	9.10	112.70	4,052.06	-61.12	-91.34	181.04	0.53	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	4,157.00	9.40	107.70	4,144.84	-63.98	-96.55	195.21	0.91	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	4,251.00	9.60	107.20	4,237.55	-66.20	-101.20	210.02	0.23	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	4,346.00	9.80	108.70	4,331.19	-68.63	-106.13	225.24	0.34	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	4,439.00	9.90	109.60	4,422.82	-71.37	-111.35	240.27	0.20	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	4,534.00	10.60	109.90	4,516.30	-74.46	-117.07	256.18	0.74	MWD	TOTAL DIRECTIONAL SERV...
2/19/2019	4,627.00	10.60	107.60	4,607.72	-77.29	-122.56	272.37	0.45	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	4,721.00	10.70	107.50	4,700.10	-79.80	-127.80	288.94	0.11	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	4,815.00	9.30	109.00	4,792.67	-82.35	-132.90	304.44	1.51	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	4,909.00	9.80	108.00	4,885.36	-84.86	-137.84	319.23	0.56	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	5,003.00	10.40	109.50	4,977.91	-87.59	-143.15	334.84	0.70	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	5,097.00	9.90	112.30	5,070.44	-90.93	-149.05	350.31	0.75	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	5,192.00	8.90	111.80	5,164.16	-94.37	-154.88	364.69	1.06	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	5,286.00	8.00	110.40	5,257.14	-97.22	-159.86	377.58	0.98	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	5,380.00	7.60	105.30	5,350.27	-99.15	-163.78	389.70	0.85	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	5,474.00	8.80	101.70	5,443.31	-100.12	-166.87	402.74	1.39	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	5,568.00	10.10	102.60	5,536.03	-100.91	-170.13	417.83	1.39	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	5,662.00	10.20	103.00	5,628.56	-101.94	-173.80	433.98	0.13	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	5,756.00	9.70	102.80	5,721.14	-102.98	-177.43	449.81	0.53	MWD	TOTAL DIRECTIONAL SERV...



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DELAWARE BASIN	LEA COUNTY CORE	RATTLESNAKE DBBU	LEA	NM		
Surface Legal Location	API/UWI	Latitude (°)	Longitude (°)	Orig KB Elevation (ft)	Ground Elev MSL (ft)	KB - GL (ft)
7-26S-34E	3002545532	32° 3' 8.487" N	103° 30' 25.517" W	3,398.20	3,373.20	25.00

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
2/20/2019	5,850.00	9.30	101.10	5,813.85	-103.72	-180.64	464.99	0.52	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	5,944.00	8.80	98.10	5,906.68	-103.83	-183.12	479.56	0.73	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	6,038.00	9.90	98.80	5,999.43	-103.63	-185.37	494.66	1.18	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	6,132.00	10.20	98.70	6,091.99	-103.49	-187.86	510.88	0.32	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	6,226.00	9.90	97.80	6,184.55	-103.21	-190.22	527.11	0.36	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	6,320.00	9.40	96.00	6,277.22	-102.58	-192.12	542.75	0.62	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	6,414.00	9.60	105.60	6,369.94	-103.01	-195.03	557.93	1.70	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	6,508.00	9.00	104.60	6,462.70	-104.57	-198.99	572.60	0.66	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	6,602.00	9.00	104.90	6,555.54	-105.99	-202.73	586.82	0.05	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	6,696.00	8.60	104.30	6,648.44	-107.33	-206.36	600.73	0.44	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	6,791.00	8.50	105.90	6,742.38	-108.78	-210.04	614.37	0.27	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	6,885.00	9.30	105.10	6,835.25	-110.36	-213.92	628.38	0.86	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	6,979.00	10.20	106.90	6,927.89	-112.25	-218.32	643.68	1.01	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	7,073.00	11.20	109.50	7,020.25	-114.99	-223.79	660.25	1.18	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	7,167.00	11.10	108.90	7,112.48	-118.13	-229.76	677.42	0.16	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	7,261.00	11.20	110.10	7,204.71	-121.37	-235.83	694.55	0.27	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	7,355.00	10.90	110.50	7,296.96	-124.83	-242.08	711.45	0.33	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	7,450.00	10.50	110.60	7,390.31	-128.30	-248.27	727.96	0.42	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	7,544.00	10.20	111.50	7,482.78	-131.75	-254.34	743.73	0.36	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	7,638.00	9.90	111.60	7,575.34	-135.25	-260.36	758.98	0.32	MWD	TOTAL DIRECTIONAL SERV...
2/20/2019	7,732.00	9.30	111.80	7,668.02	-138.64	-266.16	773.55	0.64	MWD	TOTAL DIRECTIONAL SERV...
2/21/2019	7,826.00	9.30	112.00	7,760.79	-141.97	-271.82	787.64	0.03	MWD	TOTAL DIRECTIONAL SERV...
2/21/2019	7,920.00	10.10	111.30	7,853.44	-145.37	-277.66	802.36	0.86	MWD	TOTAL DIRECTIONAL SERV...
2/21/2019	8,015.00	10.10	110.20	7,946.97	-148.70	-283.57	817.94	0.20	MWD	TOTAL DIRECTIONAL SERV...
2/21/2019	8,109.00	9.10	109.90	8,039.65	-151.64	-288.94	832.67	1.07	MWD	TOTAL DIRECTIONAL SERV...
2/21/2019	8,203.00	8.20	110.30	8,132.58	-154.31	-293.80	845.94	0.96	MWD	TOTAL DIRECTIONAL SERV...
2/21/2019	8,297.00	8.10	109.30	8,225.63	-156.75	-298.31	858.48	0.18	MWD	TOTAL DIRECTIONAL SERV...
2/21/2019	8,392.00	7.70	110.00	8,319.73	-159.11	-302.70	870.78	0.43	MWD	TOTAL DIRECTIONAL SERV...
2/21/2019	8,486.00	8.80	107.90	8,412.76	-161.37	-307.07	883.54	1.21	MWD	TOTAL DIRECTIONAL SERV...
2/21/2019	8,580.00	9.60	107.40	8,505.55	-163.57	-311.62	897.86	0.86	MWD	TOTAL DIRECTIONAL SERV...
2/21/2019	8,674.00	9.40	106.80	8,598.26	-165.69	-316.18	912.69	0.24	MWD	TOTAL DIRECTIONAL SERV...
2/21/2019	8,768.00	10.40	112.50	8,690.86	-168.65	-321.65	927.88	1.49	MWD	TOTAL DIRECTIONAL SERV...
2/21/2019	8,862.00	10.00	113.90	8,783.37	-172.67	-328.20	943.18	0.50	MWD	TOTAL DIRECTIONAL SERV...
2/21/2019	8,956.00	9.90	112.20	8,875.96	-176.55	-334.56	958.12	0.33	MWD	TOTAL DIRECTIONAL SERV...
2/22/2019	9,050.00	10.50	110.20	8,968.47	-179.99	-340.57	973.64	0.74	MWD	TOTAL DIRECTIONAL SERV...
2/22/2019	9,144.00	9.90	110.90	9,060.99	-183.26	-346.41	989.23	0.65	MWD	TOTAL DIRECTIONAL SERV...
2/22/2019	9,238.00	9.70	110.80	9,153.62	-186.48	-352.11	1,004.18	0.21	MWD	TOTAL DIRECTIONAL SERV...
2/22/2019	9,333.00	9.40	111.00	9,247.30	-189.67	-357.73	1,018.91	0.32	MWD	TOTAL DIRECTIONAL SERV...
2/22/2019	9,428.00	9.70	112.20	9,340.98	-193.05	-363.53	1,033.56	0.38	MWD	TOTAL DIRECTIONAL SERV...
2/22/2019	9,522.00	9.20	112.60	9,433.71	-196.56	-369.41	1,047.83	0.54	MWD	TOTAL DIRECTIONAL SERV...
2/22/2019	9,616.00	10.50	111.30	9,526.32	-200.09	-375.41	1,062.75	1.40	MWD	TOTAL DIRECTIONAL SERV...
2/22/2019	9,710.00	9.10	110.20	9,618.95	-203.30	-381.09	1,077.70	1.50	MWD	TOTAL DIRECTIONAL SERV...
2/23/2019	9,804.00	8.60	108.80	9,711.83	-205.88	-385.92	1,091.33	0.58	MWD	TOTAL DIRECTIONAL SERV...
2/23/2019	9,898.00	7.90	109.20	9,804.85	-208.17	-390.31	1,104.09	0.75	MWD	TOTAL DIRECTIONAL SERV...
2/23/2019	9,992.00	7.30	114.20	9,898.03	-210.83	-394.88	1,115.63	0.95	MWD	TOTAL DIRECTIONAL SERV...
2/24/2019	10,085.00	6.40	117.60	9,990.36	-213.99	-399.71	1,125.62	1.06	MWD	TOTAL DIRECTIONAL SERV...
2/25/2019	10,179.00	8.30	120.50	10,083.59	-218.10	-405.58	1,136.11	2.06	MWD	TOTAL DIRECTIONAL SERV...
2/25/2019	10,273.00	9.50	112.90	10,176.46	-222.39	-412.04	1,149.10	1.78	MWD	TOTAL DIRECTIONAL SERV...
2/25/2019	10,367.00	12.10	108.00	10,268.79	-225.73	-418.11	1,165.62	2.93	MWD	TOTAL DIRECTIONAL SERV...
2/25/2019	10,461.00	11.40	106.10	10,360.82	-228.34	-423.73	1,183.91	0.85	MWD	TOTAL DIRECTIONAL SERV...
2/25/2019	10,554.00	10.30	104.00	10,452.15	-230.13	-428.29	1,200.81	1.26	MWD	TOTAL DIRECTIONAL SERV...
2/25/2019	10,648.00	10.60	100.10	10,544.59	-230.96	-431.84	1,217.48	0.82	MWD	TOTAL DIRECTIONAL SERV...
2/25/2019	10,743.00	11.20	97.70	10,637.88	-230.85	-434.60	1,235.22	0.79	MWD	TOTAL DIRECTIONAL SERV...
2/26/2019	10,836.00	11.60	99.50	10,729.05	-230.65	-437.36	1,253.40	0.58	MWD	TOTAL DIRECTIONAL SERV...
2/26/2019	10,930.00	13.10	107.10	10,820.87	-232.16	-442.05	1,272.90	2.35	MWD	TOTAL DIRECTIONAL SERV...
2/26/2019	11,024.00	15.20	110.50	10,912.02	-236.02	-449.50	1,294.63	2.40	MWD	TOTAL DIRECTIONAL SERV...
2/27/2019	11,120.00	15.30	108.90	11,004.64	-240.61	-458.01	1,318.40	0.45	MWD	TOTAL DIRECTIONAL SERV...
2/27/2019	11,214.00	13.50	110.30	11,095.68	-244.80	-465.83	1,340.43	1.95	MWD	TOTAL DIRECTIONAL SERV...
2/27/2019	11,308.00	13.10	110.50	11,187.16	-248.99	-473.37	1,360.69	0.43	MWD	TOTAL DIRECTIONAL SERV...
2/27/2019	11,402.00	11.80	107.40	11,278.95	-252.44	-479.98	1,379.84	1.55	MWD	TOTAL DIRECTIONAL SERV...
2/27/2019	11,496.00	11.00	108.20	11,371.09	-255.20	-485.65	1,397.54	0.87	MWD	TOTAL DIRECTIONAL SERV...
2/27/2019	11,589.00	11.70	114.50	11,462.28	-259.07	-492.33	1,414.55	1.53	MWD	TOTAL DIRECTIONAL SERV...
2/27/2019	11,684.00	11.10	118.40	11,555.41	-264.61	-500.68	1,431.36	1.03	MWD	TOTAL DIRECTIONAL SERV...
2/27/2019	11,778.00	9.90	119.40	11,647.83	-270.37	-508.95	1,446.36	1.29	MWD	TOTAL DIRECTIONAL SERV...
2/28/2019	11,872.00	9.90	115.60	11,740.43	-275.43	-516.41	1,460.68	0.69	MWD	TOTAL DIRECTIONAL SERV...
2/28/2019	11,966.00	10.80	115.50	11,832.90	-280.18	-523.69	1,475.92	0.96	MWD	TOTAL DIRECTIONAL SERV...
2/28/2019	12,060.00	9.50	112.60	11,925.43	-284.44	-530.46	1,491.03	1.49	MWD	TOTAL DIRECTIONAL SERV...
2/28/2019	12,155.00	9.90	108.20	12,019.07	-287.52	-536.03	1,506.03	0.89	MWD	TOTAL DIRECTIONAL SERV...
2/28/2019	12,249.00	8.60	108.30	12,111.85	-289.89	-540.76	1,520.38	1.38	MWD	TOTAL DIRECTIONAL SERV...
2/28/2019	12,273.00	8.10	109.20	12,135.59	-290.47	-541.88	1,523.68	2.15	MWD	TOTAL DIRECTIONAL SERV...
3/3/2019	12,343.00	7.50	107.50	12,204.94	-291.98	-544.87	1,532.69	0.92	MWD	TOTAL DIRECTIONAL SERV...
3/4/2019	12,437.00	11.90	67.40	12,297.68	-287.74	-542.99	1,547.51	8.31	MWD	TOTAL DIRECTIONAL SERV...
3/4/2019	12,531.00	19.60	35.00	12,388.24	-268.37	-526.30	1,565.56	12.14	MWD	TOTAL DIRECTIONAL SERV...



Directional Survey

DELAWARE BASIN UNRESTRICTED

Well Name: JAYHAWK 7-6 FED FEE COM 6H

Sub-Division DELAWARE BASIN	Region LEA COUNTY CORE	Field Name RATTLESNAKE DBBU		County LEA	State/Province NM	
Surface Legal Location 7-26S-34E	API/UWI 3002545532	Latitude (°) 32° 3' 8.487" N	Longitude (°) 103° 30' 25.517" W	Orig KB Elevation (ft) 3,398.20	Ground Elev MSL (ft) 3,373.20	KB - GL (ft) 25.00

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
3/4/2019	12,625.00	27.00	11.00	12,474.71	-232.71	-492.31	1,578.73	12.66	MWD	TOTAL DIRECTIONAL SERV...
3/4/2019	12,719.00	37.60	357.00	12,554.16	-183.15	-442.52	1,581.31	13.74	MWD	TOTAL DIRECTIONAL SERV...
3/4/2019	12,813.00	49.00	353.40	12,622.47	-120.78	-378.42	1,575.71	12.40	MWD	TOTAL DIRECTIONAL SERV...
3/4/2019	12,907.00	61.90	350.20	12,675.67	-47.14	-302.00	1,564.53	14.00	MWD	TOTAL DIRECTIONAL SERV...
3/4/2019	13,001.00	75.80	351.40	12,709.51	35.84	-215.66	1,550.59	14.83	MWD	TOTAL DIRECTIONAL SERV...
3/4/2019	13,095.00	87.10	354.90	12,723.46	125.01	-123.53	1,539.56	12.57	MWD	TOTAL DIRECTIONAL SERV...
3/4/2019	13,142.00	88.20	355.20	12,725.39	170.54	-76.75	1,535.51	2.43	MWD	TOTAL DIRECTIONAL SERV...
3/4/2019	13,189.00	92.40	0.10	12,725.15	216.56	-29.81	1,533.58	13.73	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	13,283.00	92.20	2.60	12,721.37	309.59	64.08	1,535.80	2.67	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	13,377.00	89.00	2.60	12,720.39	402.94	157.97	1,540.06	3.40	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	13,471.00	90.10	2.10	12,721.13	496.26	251.88	1,543.91	1.29	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	13,565.00	89.80	2.50	12,721.21	589.57	345.81	1,547.69	0.53	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	13,660.00	90.10	3.00	12,721.29	683.97	440.70	1,552.24	0.61	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	13,754.00	91.10	3.60	12,720.31	777.46	534.53	1,557.66	1.24	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	13,848.00	90.40	3.20	12,719.08	870.96	628.36	1,563.23	0.86	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	13,942.00	88.50	2.40	12,719.98	964.36	722.24	1,567.82	2.19	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	14,036.00	89.00	2.50	12,722.03	1,057.68	816.13	1,571.84	0.54	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	14,130.00	87.40	3.10	12,724.98	1,151.04	909.97	1,576.43	1.82	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	14,224.00	88.00	3.00	12,728.75	1,244.42	1,003.76	1,581.42	0.65	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	14,318.00	85.60	3.20	12,734.00	1,337.73	1,097.47	1,586.50	2.56	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	14,411.00	85.50	2.50	12,741.22	1,429.87	1,190.07	1,591.11	0.76	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	14,505.00	89.40	1.90	12,745.40	1,523.06	1,283.89	1,594.71	4.20	MWD	TOTAL DIRECTIONAL SERV...
3/5/2019	14,599.00	91.70	1.00	12,744.50	1,616.18	1,377.85	1,597.09	2.63	MWD	TOTAL DIRECTIONAL SERV...
3/6/2019	14,693.00	90.00	2.80	12,743.10	1,709.39	1,471.78	1,600.21	2.63	MWD	TOTAL DIRECTIONAL SERV...
3/6/2019	14,787.00	90.60	2.80	12,742.61	1,802.80	1,565.67	1,604.80	0.64	MWD	TOTAL DIRECTIONAL SERV...
3/6/2019	14,881.00	90.90	2.00	12,741.38	1,896.12	1,659.57	1,608.74	0.91	MWD	TOTAL DIRECTIONAL SERV...
3/6/2019	14,976.00	88.30	1.80	12,742.04	1,990.34	1,754.51	1,611.89	2.74	MWD	TOTAL DIRECTIONAL SERV...
3/6/2019	15,070.00	88.80	1.30	12,744.42	2,083.46	1,848.45	1,614.43	0.75	MWD	TOTAL DIRECTIONAL SERV...
3/6/2019	15,163.00	90.10	1.10	12,745.31	2,175.55	1,941.42	1,616.37	1.41	MWD	TOTAL DIRECTIONAL SERV...
3/6/2019	15,257.00	90.50	0.60	12,744.82	2,268.54	2,035.41	1,617.77	0.68	MWD	TOTAL DIRECTIONAL SERV...
3/6/2019	15,351.00	90.60	0.80	12,743.92	2,361.50	2,129.40	1,618.92	0.24	MWD	TOTAL DIRECTIONAL SERV...
3/6/2019	15,446.00	91.60	0.50	12,742.10	2,455.41	2,224.37	1,619.99	1.10	MWD	TOTAL DIRECTIONAL SERV...
3/6/2019	15,540.00	90.40	1.70	12,740.45	2,548.45	2,318.34	1,621.80	1.81	MWD	TOTAL DIRECTIONAL SERV...
3/6/2019	15,634.00	89.60	1.80	12,740.45	2,641.65	2,412.29	1,624.67	0.86	MWD	TOTAL DIRECTIONAL SERV...
3/6/2019	15,728.00	90.70	2.60	12,740.21	2,734.94	2,506.22	1,628.28	1.45	MWD	TOTAL DIRECTIONAL SERV...
3/7/2019	15,758.00	90.90	2.40	12,739.79	2,764.73	2,536.19	1,629.59	0.94	MWD	TOTAL DIRECTIONAL SERV...
3/7/2019	15,853.00	89.80	2.20	12,739.21	2,859.04	2,631.11	1,633.40	1.18	MWD	TOTAL DIRECTIONAL SERV...
3/7/2019	15,947.00	87.90	0.10	12,741.10	2,952.07	2,725.06	1,635.29	3.01	MWD	TOTAL DIRECTIONAL SERV...
3/7/2019	16,041.00	86.90	358.10	12,745.36	3,044.51	2,818.95	1,633.81	2.38	MWD	TOTAL DIRECTIONAL SERV...
3/7/2019	16,135.00	88.10	358.40	12,749.46	3,136.70	2,912.81	1,630.94	1.32	MWD	TOTAL DIRECTIONAL SERV...
3/7/2019	16,229.00	89.80	358.60	12,751.18	3,229.04	3,006.76	1,628.48	1.82	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	16,323.00	90.30	358.60	12,751.10	3,321.42	3,100.73	1,626.19	0.53	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	16,417.00	88.70	359.40	12,751.92	3,413.92	3,194.71	1,624.55	1.90	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	16,511.00	90.70	359.40	12,752.41	3,506.53	3,288.70	1,623.56	2.13	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	16,605.00	90.80	359.30	12,751.18	3,599.13	3,382.68	1,622.50	0.15	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	16,699.00	90.20	359.00	12,750.36	3,691.68	3,476.67	1,621.10	0.71	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	16,793.00	90.60	358.60	12,749.71	3,784.12	3,570.65	1,619.13	0.60	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	16,887.00	91.40	359.00	12,748.07	3,876.55	3,664.61	1,617.16	0.95	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	16,982.00	89.30	356.80	12,747.49	3,969.69	3,759.53	1,613.68	3.20	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	17,076.00	89.00	357.10	12,748.88	4,061.53	3,853.39	1,608.68	0.45	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	17,170.00	89.40	358.30	12,750.19	4,153.62	3,947.30	1,604.91	1.35	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	17,264.00	91.40	0.20	12,749.54	4,246.19	4,041.28	1,603.68	2.93	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	17,358.00	90.00	1.90	12,748.39	4,339.22	4,135.26	1,605.40	2.34	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	17,451.00	90.00	359.90	12,748.39	4,431.23	4,228.24	1,606.86	2.15	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	17,545.00	90.40	2.10	12,748.06	4,524.26	4,322.22	1,608.50	2.38	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	17,640.00	89.40	2.30	12,748.23	4,618.54	4,417.15	1,612.15	1.07	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	17,734.00	89.60	1.30	12,749.05	4,711.75	4,511.10	1,615.10	1.08	MWD	TOTAL DIRECTIONAL SERV...
3/8/2019	17,828.00	89.10	357.90	12,750.11	4,804.40	4,605.07	1,614.45	3.66	MWD	TOTAL DIRECTIONAL SERV...
3/9/2019	17,922.00	88.70	357.90	12,751.92	4,896.55	4,698.99	1,611.00	0.43	MWD	TOTAL DIRECTIONAL SERV...
3/9/2019	18,016.00	87.80	358.70	12,754.79	4,988.80	4,792.91	1,608.22	1.28	MWD	TOTAL DIRECTIONAL SERV...
3/10/2019	18,109.00	92.40	1.10	12,754.63	5,080.54	4,885.87	1,608.05	5.58	MWD	TOTAL DIRECTIONAL SERV...
3/10/2019	18,204.00	92.00	1.50	12,750.98	5,174.56	4,980.78	1,610.21	0.60	MWD	TOTAL DIRECTIONAL SERV...
3/10/2019	18,298.00	91.50	1.50	12,748.11	5,267.67	5,074.70	1,612.67	0.53	MWD	TOTAL DIRECTIONAL SERV...
3/10/2019	18,392.00	90.30	0.90	12,746.63	5,360.73	5,168.67	1,614.64	1.43	MWD	TOTAL DIRECTIONAL SERV...
3/11/2019	18,486.00	90.80	1.50	12,745.73	5,453.80	5,262.64	1,616.60	0.83	MWD	TOTAL DIRECTIONAL SERV...
3/11/2019	18,580.00	90.50	1.30	12,744.66	5,546.92	5,356.61	1,618.90	0.38	MWD	TOTAL DIRECTIONAL SERV...
3/11/2019	18,674.00	89.90	1.00	12,744.34	5,639.99	5,450.59	1,620.79	0.71	MWD	TOTAL DIRECTIONAL SERV...
3/11/2019	18,768.00	89.50	1.30	12,744.83	5,733.05	5,544.57	1,622.67	0.53	MWD	TOTAL DIRECTIONAL SERV...
3/11/2019	18,862.00	89.60	0.80	12,745.57	5,826.09	5,638.55	1,624.40	0.54	MWD	TOTAL DIRECTIONAL SERV...
3/11/2019	18,956.00	90.80	0.80	12,745.24	5,919.08	5,732.54	1,625.71	1.28	MWD	TOTAL DIRECTIONAL SERV...
3/11/2019	19,050.00	89.80	0.80	12,744.75	6,012.06	5,826.53	1,627.02	1.06	MWD	TOTAL DIRECTIONAL SERV...
3/11/2019	19,144.00	91.20	0.10	12,743.92	6,104.95	5,920.52	1,627.76	1.67	MWD	TOTAL DIRECTIONAL SERV...
3/11/2019	19,238.00	90.70	0.10	12,742.37	6,197.75	6,014.50	1,627.92	0.53	MWD	TOTAL DIRECTIONAL SERV...



Directional Survey

DELAWARE BASIN UNRESTRICTED

Well Name: JAYHAWK 7-6 FED FEE COM 6H

Sub-Division DELAWARE BASIN	Region LEA COUNTY CORE	Field Name RATTLESNAKE DBBU	County LEA	State/Province NM		
Surface Legal Location 7-26S-34E	API/UWI 3002545532	Latitude (°) 32° 3' 8.487" N	Longitude (°) 103° 30' 25.517" W	Orig KB Elevation (ft) 3,398.20	Ground Elev MSL (ft) 3,373.20	KB - GL (ft) 25.00

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS ("/100ft)	Survey Tool	Survey Company
3/11/2019	19,333.00	88.90	359.30	12,742.70	6,291.43	6,109.50	1,627.43	2.07	MWD	TOTAL DIRECTIONAL SERV...
4/9/2019	19,412.00	90.60	1.40	12,743.04	6,369.47	6,188.49	1,627.91	3.42	MWD	TOTAL DIRECTIONAL SERV...
3/11/2019	19,427.00	90.10	357.80	12,742.95	6,384.26	6,203.48	1,627.80	24.23	MWD	TOTAL DIRECTIONAL SERV...
3/11/2019	19,521.00	90.90	359.00	12,742.13	6,476.58	6,297.44	1,625.18	1.53	MWD	TOTAL DIRECTIONAL SERV...
3/11/2019	19,615.00	89.80	358.00	12,741.56	6,568.93	6,391.40	1,622.72	1.58	MWD	TOTAL DIRECTIONAL SERV...
3/12/2019	19,709.00	91.80	359.80	12,740.24	6,661.39	6,485.37	1,620.91	2.86	MWD	TOTAL DIRECTIONAL SERV...
3/12/2019	19,803.00	92.00	0.20	12,737.13	6,754.12	6,579.32	1,620.91	0.48	MWD	TOTAL DIRECTIONAL SERV...
3/12/2019	19,897.00	90.10	358.80	12,735.40	6,846.75	6,673.29	1,620.09	2.51	MWD	TOTAL DIRECTIONAL SERV...
3/12/2019	19,991.00	91.90	358.40	12,733.76	6,939.12	6,767.24	1,617.80	1.96	MWD	TOTAL DIRECTIONAL SERV...
3/12/2019	20,085.00	92.00	358.70	12,730.57	7,031.43	6,861.16	1,615.42	0.34	MWD	TOTAL DIRECTIONAL SERV...
3/12/2019	20,179.00	91.60	359.50	12,727.61	7,123.92	6,955.10	1,613.94	0.95	MWD	TOTAL DIRECTIONAL SERV...
3/13/2019	20,273.00	91.80	360.00	12,724.82	7,216.60	7,049.06	1,613.53	0.57	MWD	TOTAL DIRECTIONAL SERV...
3/12/2019	20,367.00	91.30	359.40	12,722.28	7,309.27	7,143.02	1,613.04	0.83	MWD	TOTAL DIRECTIONAL SERV...
3/12/2019	20,461.00	90.50	359.40	12,720.81	7,401.87	7,237.00	1,612.06	0.85	MWD	TOTAL DIRECTIONAL SERV...
3/13/2019	20,555.00	89.90	359.10	12,720.48	7,494.45	7,331.00	1,610.83	0.71	MWD	TOTAL DIRECTIONAL SERV...
3/13/2019	20,649.00	88.40	358.40	12,721.87	7,586.87	7,424.96	1,608.78	1.76	MWD	TOTAL DIRECTIONAL SERV...
3/13/2019	20,743.00	88.30	359.20	12,724.58	7,679.28	7,518.90	1,606.81	0.86	MWD	TOTAL DIRECTIONAL SERV...
3/13/2019	20,837.00	89.00	359.40	12,726.79	7,771.84	7,612.87	1,605.66	0.77	MWD	TOTAL DIRECTIONAL SERV...
3/13/2019	20,931.00	89.10	359.10	12,728.35	7,864.41	7,706.84	1,604.43	0.34	MWD	TOTAL DIRECTIONAL SERV...
3/13/2019	21,025.00	91.50	359.00	12,727.86	7,956.92	7,800.82	1,602.87	2.56	MWD	TOTAL DIRECTIONAL SERV...
3/13/2019	21,119.00	93.70	359.20	12,723.60	8,049.35	7,894.71	1,601.40	2.35	MWD	TOTAL DIRECTIONAL SERV...
3/13/2019	21,214.00	90.40	359.40	12,720.20	8,142.86	7,989.63	1,600.24	3.48	MWD	TOTAL DIRECTIONAL SERV...
3/13/2019	21,308.00	91.30	359.70	12,718.80	8,235.51	8,083.61	1,599.50	1.01	MWD	TOTAL DIRECTIONAL SERV...
3/14/2019	21,402.00	90.20	0.40	12,717.57	8,328.29	8,177.60	1,599.58	1.39	MWD	TOTAL DIRECTIONAL SERV...
3/14/2019	21,496.00	90.20	1.00	12,717.24	8,421.25	8,271.60	1,600.73	0.64	MWD	TOTAL DIRECTIONAL SERV...
3/14/2019	21,590.00	88.70	1.10	12,718.15	8,514.29	8,365.57	1,602.45	1.60	MWD	TOTAL DIRECTIONAL SERV...
3/14/2019	21,684.00	88.30	2.20	12,720.61	8,607.43	8,459.50	1,605.16	1.24	MWD	TOTAL DIRECTIONAL SERV...
3/16/2019	21,767.00	86.70	2.60	12,724.23	8,689.76	8,542.35	1,608.63	1.99	MWD	TOTAL DIRECTIONAL SERV...
3/16/2019	21,861.00	86.00	2.70	12,730.21	8,782.95	8,636.05	1,612.97	0.75	MWD	TOTAL DIRECTIONAL SERV...
3/16/2019	21,955.00	85.10	4.00	12,737.51	8,876.18	8,729.61	1,618.44	1.68	MWD	TOTAL DIRECTIONAL SERV...
3/17/2019	22,049.00	86.00	4.50	12,744.80	8,969.54	8,823.06	1,625.39	1.09	MWD	TOTAL DIRECTIONAL SERV...
3/17/2019	22,143.00	87.70	4.10	12,749.96	9,063.04	8,916.66	1,632.43	1.86	MWD	TOTAL DIRECTIONAL SERV...
3/17/2019	22,237.00	91.60	6.40	12,750.54	9,156.79	9,010.23	1,641.02	4.82	MWD	TOTAL DIRECTIONAL SERV...
3/17/2019	22,331.00	93.10	5.30	12,746.68	9,250.54	9,103.66	1,650.60	1.98	MWD	TOTAL DIRECTIONAL SERV...
3/17/2019	22,425.00	93.60	3.40	12,741.19	9,344.04	9,197.23	1,657.72	2.09	MWD	TOTAL DIRECTIONAL SERV...
3/18/2019	22,519.00	92.60	2.10	12,736.11	9,437.30	9,290.98	1,662.22	1.74	MWD	TOTAL DIRECTIONAL SERV...
3/18/2019	22,613.00	92.20	0.80	12,732.17	9,530.35	9,384.86	1,664.59	1.45	MWD	TOTAL DIRECTIONAL SERV...
3/18/2019	22,707.00	92.30	1.20	12,728.48	9,623.31	9,478.78	1,666.23	0.44	MWD	TOTAL DIRECTIONAL SERV...
3/18/2019	22,801.00	94.20	358.70	12,723.15	9,715.92	9,572.61	1,666.15	3.34	MWD	TOTAL DIRECTIONAL SERV...
3/18/2019	22,895.00	92.20	357.60	12,717.90	9,808.02	9,666.41	1,663.12	2.43	MWD	TOTAL DIRECTIONAL SERV...
3/19/2019	22,989.00	92.60	358.00	12,713.97	9,900.07	9,760.26	1,659.52	0.60	MWD	TOTAL DIRECTIONAL SERV...
3/19/2019	23,083.00	93.20	358.20	12,709.21	9,992.18	9,854.09	1,656.41	0.67	MWD	TOTAL DIRECTIONAL SERV...
3/19/2019	23,177.00	93.80	358.60	12,703.47	10,084.34	9,947.87	1,653.79	0.77	MWD	TOTAL DIRECTIONAL SERV...
3/19/2019	23,212.00	93.50	358.60	12,701.24	10,118.67	9,982.79	1,652.93	0.86	MWD	TOTAL DIRECTIONAL SERV...
4/9/2019	23,262.00	93.50	358.60	12,698.19	10,167.72	10,032.68	1,651.71	0.00	BIT	