



Scientific Drilling

Directional Survey Certification

2948 I-70 Business Loop
Grand Junction, CO 81504
(970)-245-9447 Fax (970)-245-9454

Operator	DJR Operating
Well Name & No.	Betonne Tsosie A03 2308 717H
County & State	San Juan, NM
SDI Job No.	OP.022798
Rig	Aztec 920

I, Janie Collins, having personal knowledge of all the facts, hereby
certify that the attached directional survey run from a measured depth of 442 feet to a
measured depth of 14,744 feet is true and correct as determined from all available records.


Signature

30-Dec-19
Date

Janie Collins

Colorado District Well Planner
Scientific Drilling International

Company:	DJR Operating	Local Co-ordinate Reference:	Well # 717H
Project:	Betonne Tsoie Unit	TVD Reference:	GL 6880' & RKB 14' @ 6894.00usft (Aztec 920)
Site:	A03 2308 Pad	MD Reference:	GL 6880' & RKB 14' @ 6894.00usft (Aztec 920)
Well:	# 717H	North Reference:	True
Wellbore:	Original drilling	Survey Calculation Method:	Minimum Curvature
Design:	Original drilling	Database:	Grand Junction

Project	Betonne Tsoie Unit		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	A03 2308 Pad				
Site Position:		Northing:	1,882,120.91 usft	Latitude:	36.1724680
From:	Lat/Long	Easting:	2,774,230.16 usft	Longitude:	-107.6600660
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.10 °

Well	# 717H					
Well Position	+N/-S	0.00 usft	Northing:	1,882,120.91 usft	Latitude:	36.1724680
	+E/-W	0.00 usft	Easting:	2,774,230.16 usft	Longitude:	-107.6600660
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,880.00 usft

Wellbore	Original drilling				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM_FILE	12/11/2019	8.77	62.72	49,318.30000000

Design	Original drilling				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	310.074	

Survey Program	Date	12/30/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
442.00	4,169.00	Survey #1 - Surface MWD Survey (Original)	MWD+HDGM	OWSG MWD + HDGM	
4,231.00	5,233.00	Survey #2 - Curve MWD Survey (Original)	MWD+HDGM	OWSG MWD + HDGM	
5,311.00	14,744.00	Survey #3 - Lateral MWD Survey (Original)	MWD+HDGM	OWSG MWD + HDGM	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
442.00	0.64	265.290	441.99	-0.20	-2.46	1.75	0.14	0.14	0.00	
502.00	1.18	220.480	501.98	-0.70	-3.20	1.99	1.42	0.90	-74.68	
563.00	2.69	199.920	562.95	-2.52	-4.09	1.51	2.69	2.48	-33.70	
624.00	4.02	192.630	623.84	-5.96	-5.05	0.03	2.29	2.18	-11.95	
684.00	5.47	190.020	683.63	-10.82	-6.00	-2.37	2.44	2.42	-4.35	
746.00	7.25	190.650	745.25	-17.58	-7.24	-5.78	2.87	2.87	1.02	
807.00	8.48	194.340	805.68	-25.72	-9.07	-9.62	2.18	2.02	6.05	
869.00	8.89	190.780	866.97	-34.86	-11.09	-13.95	1.09	0.66	-5.74	

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Well:	# 717H	North Reference:	True
Wellbore:	Original drilling	Survey Calculation Method:	Minimum Curvature
Design:	Original drilling	Database:	Grand Junction

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
929.00	9.97	188.860	926.15	-44.54	-12.76	-18.91	1.87	1.80	-3.20
990.00	11.05	190.940	986.13	-55.50	-14.68	-24.49	1.88	1.77	3.41
1,051.00	12.78	192.610	1,045.81	-67.82	-17.27	-30.45	2.89	2.84	2.74
1,113.00	12.98	193.480	1,106.25	-81.29	-20.39	-36.73	0.45	0.32	1.40
1,173.00	12.74	192.560	1,164.75	-94.30	-23.40	-42.80	0.53	-0.40	-1.53
1,235.00	12.72	192.420	1,225.22	-107.64	-26.35	-49.13	0.06	-0.03	-0.23
1,297.00	14.36	192.400	1,285.50	-121.81	-29.47	-55.87	2.65	2.65	-0.03
1,358.00	15.06	194.220	1,344.50	-136.88	-33.04	-62.84	1.37	1.15	2.98
1,419.00	15.29	194.500	1,403.37	-152.35	-37.00	-69.77	0.40	0.38	0.46
1,480.00	15.21	192.610	1,462.23	-167.95	-40.76	-76.93	0.83	-0.13	-3.10
1,542.00	13.87	196.740	1,522.24	-183.00	-44.68	-83.62	2.73	-2.16	6.66
1,603.00	13.27	196.410	1,581.54	-196.72	-48.76	-89.33	0.99	-0.98	-0.54
1,664.00	13.90	195.870	1,640.83	-210.48	-52.74	-95.14	1.05	1.03	-0.89
1,725.00	13.86	196.190	1,700.05	-224.55	-56.79	-101.11	0.14	-0.07	0.52
1,785.00	14.15	195.040	1,758.27	-238.53	-60.69	-107.12	0.67	0.48	-1.92
1,848.00	13.74	196.320	1,819.41	-253.15	-64.79	-113.39	0.81	-0.65	2.03
1,911.00	14.11	198.170	1,880.56	-267.63	-69.29	-119.27	0.92	0.59	2.94
1,974.00	13.85	198.390	1,941.69	-282.08	-74.06	-124.92	0.42	-0.41	0.35
2,037.00	14.64	199.700	2,002.75	-296.73	-79.13	-130.48	1.35	1.25	2.08
2,100.00	15.24	199.150	2,063.62	-312.05	-84.53	-136.21	0.98	0.95	-0.87
2,164.00	15.31	199.440	2,125.36	-327.96	-90.10	-142.19	0.16	0.11	0.45
2,227.00	15.90	197.480	2,186.04	-344.03	-95.46	-148.44	1.26	0.94	-3.11
2,290.00	16.54	196.320	2,246.53	-360.87	-100.57	-155.36	1.14	1.02	-1.84
2,353.00	16.62	194.220	2,306.91	-378.21	-105.30	-162.90	0.96	0.13	-3.33
2,416.00	16.50	194.890	2,367.30	-395.59	-109.82	-170.64	0.36	-0.19	1.06
2,479.00	15.57	194.030	2,427.85	-412.44	-114.16	-178.16	1.52	-1.48	-1.37
2,542.00	14.57	193.480	2,488.68	-428.35	-118.06	-185.42	1.60	-1.59	-0.87
2,605.00	14.68	192.430	2,549.64	-443.85	-121.63	-192.67	0.46	0.17	-1.67
2,669.00	14.51	193.360	2,611.58	-459.57	-125.22	-200.04	0.45	-0.27	1.45
2,732.00	14.06	194.370	2,672.63	-474.66	-128.95	-206.90	0.82	-0.71	1.60
2,795.00	14.60	195.870	2,733.67	-489.71	-133.02	-213.48	1.04	0.86	2.38
2,858.00	14.06	194.530	2,794.71	-504.76	-137.11	-220.03	1.01	-0.86	-2.13
2,921.00	13.66	192.910	2,855.87	-519.42	-140.69	-226.73	0.88	-0.63	-2.57
2,984.00	13.80	192.200	2,917.07	-534.01	-143.94	-233.64	0.35	0.22	-1.13
3,047.00	13.39	191.520	2,978.31	-548.51	-146.99	-240.64	0.70	-0.65	-1.08
3,110.00	13.44	196.140	3,039.59	-562.69	-150.48	-247.10	1.70	0.08	7.33
3,173.00	13.78	196.320	3,100.82	-576.92	-154.62	-253.09	0.54	0.54	0.29
3,236.00	13.44	194.400	3,162.05	-591.21	-158.55	-259.28	0.90	-0.54	-3.05
3,300.00	13.39	196.770	3,224.31	-605.51	-162.54	-265.44	0.86	-0.08	3.70
3,362.00	12.86	194.480	3,284.69	-619.07	-166.34	-271.26	1.20	-0.85	-3.69
3,425.00	13.52	199.950	3,346.03	-632.78	-170.60	-276.82	2.24	1.05	8.68
3,488.00	14.03	199.870	3,407.22	-646.88	-175.71	-281.99	0.81	0.81	-0.13
3,551.00	14.29	195.330	3,468.30	-661.56	-180.36	-287.88	1.81	0.41	-7.21

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Well:	# 717H	North Reference:	True
Wellbore:	Original drilling	Survey Calculation Method:	Minimum Curvature
Design:	Original drilling	Database:	Grand Junction

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,614.00	14.53	194.160	3,529.32	-676.72	-184.35	-294.59	0.60	0.38	-1.86
3,677.00	14.11	193.260	3,590.36	-691.86	-188.04	-301.51	0.75	-0.67	-1.43
3,740.00	14.18	194.140	3,651.45	-706.82	-191.69	-308.35	0.36	0.11	1.40
3,804.00	14.84	192.180	3,713.41	-722.43	-195.34	-315.61	1.29	1.03	-3.06
3,867.00	14.27	192.500	3,774.39	-737.90	-198.72	-322.98	0.91	-0.90	0.51
3,930.00	13.60	194.860	3,835.54	-752.64	-202.30	-329.73	1.39	-1.06	3.75
3,993.00	13.21	193.740	3,896.82	-766.79	-205.91	-336.08	0.74	-0.62	-1.78
4,056.00	12.30	193.300	3,958.26	-780.31	-209.16	-342.29	1.45	-1.44	-0.70
4,106.00	11.97	191.410	4,007.15	-790.58	-211.41	-347.18	1.03	-0.66	-3.78
4,169.00	11.33	197.020	4,068.85	-802.90	-214.52	-352.74	2.06	-1.02	8.90
4,231.00	14.14	239.950	4,129.45	-812.54	-222.87	-352.55	15.51	4.53	69.24
4,294.00	16.83	275.060	4,190.29	-815.60	-238.66	-342.44	15.22	4.27	55.73
4,357.00	21.98	280.450	4,249.69	-812.65	-259.35	-324.71	8.65	8.17	8.56
4,420.00	24.65	287.150	4,307.56	-806.64	-283.51	-302.35	5.97	4.24	10.63
4,483.00	27.64	293.350	4,364.11	-796.97	-309.49	-276.24	6.42	4.75	9.84
4,547.00	31.07	296.610	4,419.89	-783.68	-337.89	-245.95	5.91	5.36	5.09
4,610.00	33.06	297.590	4,473.28	-768.44	-367.66	-213.36	3.26	3.16	1.56
4,673.00	37.63	304.010	4,524.67	-749.71	-398.86	-177.43	9.34	7.25	10.19
4,736.00	42.60	307.270	4,572.84	-726.02	-431.80	-136.98	8.56	7.89	5.17
4,799.00	46.64	307.580	4,617.67	-699.13	-466.93	-92.78	6.42	6.41	0.49
4,862.00	52.48	308.540	4,658.52	-669.57	-504.65	-44.89	9.34	9.27	1.52
4,925.00	58.10	309.060	4,694.38	-637.13	-544.99	6.87	8.95	8.92	0.83
4,988.00	65.08	308.350	4,724.34	-602.51	-588.22	62.23	11.12	11.08	-1.13
5,052.00	69.65	309.690	4,748.96	-565.32	-634.09	121.27	7.40	7.14	2.09
5,114.00	73.77	311.580	4,768.42	-526.98	-678.74	180.12	7.25	6.65	3.05
5,177.00	78.24	313.870	4,783.65	-485.51	-723.63	241.17	7.92	7.10	3.63
5,233.00	81.61	314.910	4,793.45	-446.95	-763.02	296.14	6.29	6.02	1.86
5,311.00	84.59	316.710	4,802.82	-391.43	-816.98	373.17	4.45	3.82	2.31
5,374.00	85.32	314.980	4,808.36	-346.41	-860.70	435.61	2.97	1.16	-2.75
5,436.00	87.45	314.060	4,812.27	-303.02	-904.81	497.29	3.74	3.44	-1.48
5,500.00	89.53	313.310	4,813.95	-258.84	-951.07	561.14	3.45	3.25	-1.17
5,562.00	90.17	313.290	4,814.11	-216.32	-996.20	623.04	1.03	1.03	-0.03
5,625.00	89.97	313.450	4,814.04	-173.06	-1,041.99	685.94	0.41	-0.32	0.25
5,688.00	89.83	313.280	4,814.15	-129.80	-1,087.79	748.83	0.35	-0.22	-0.27
5,751.00	89.90	313.500	4,814.30	-86.52	-1,133.58	811.73	0.37	0.11	0.35
5,814.00	89.70	313.160	4,814.52	-43.29	-1,179.40	874.63	0.63	-0.32	-0.54
5,877.00	89.23	313.000	4,815.10	-0.26	-1,225.42	937.54	0.79	-0.75	-0.25
5,940.00	88.89	314.190	4,816.14	43.18	-1,271.03	1,000.41	1.96	-0.54	1.89
6,002.00	89.87	316.430	4,816.81	87.25	-1,314.63	1,062.14	3.94	1.58	3.61
6,066.00	89.97	316.850	4,816.90	133.78	-1,358.57	1,125.72	0.67	0.16	0.66
6,128.00	90.07	317.280	4,816.88	179.17	-1,400.80	1,187.26	0.71	0.16	0.69
6,190.00	89.63	316.870	4,817.04	224.57	-1,443.03	1,248.80	0.97	-0.71	-0.66
6,253.00	89.36	316.240	4,817.59	270.31	-1,486.35	1,311.39	1.09	-0.43	-1.00

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6,316.00	89.23	316.080	4,818.37	315.74	-1,529.98	1,374.03	0.33	-0.21	-0.25
6,379.00	88.82	315.380	4,819.44	360.85	-1,573.95	1,436.72	1.29	-0.65	-1.11
6,442.00	90.17	316.470	4,820.00	406.11	-1,617.77	1,499.38	2.75	2.14	1.73
6,505.00	89.50	316.640	4,820.18	451.85	-1,661.09	1,561.98	1.10	-1.06	0.27
6,567.00	88.46	316.050	4,821.28	496.70	-1,703.89	1,623.60	1.93	-1.68	-0.95
6,629.00	90.34	315.870	4,821.93	541.26	-1,746.98	1,685.26	3.05	3.03	-0.29
6,692.00	90.00	315.040	4,821.74	586.16	-1,791.17	1,747.99	1.42	-0.54	-1.32
6,755.00	89.23	314.480	4,822.17	630.52	-1,835.91	1,810.77	1.51	-1.22	-0.89
6,817.00	90.54	313.710	4,822.29	673.66	-1,880.43	1,872.62	2.45	2.11	-1.24
6,880.00	89.93	312.470	4,822.03	716.70	-1,926.44	1,935.53	2.19	-0.97	-1.97
6,943.00	88.42	310.510	4,822.94	758.43	-1,973.62	1,998.50	3.93	-2.40	-3.11
7,006.00	89.97	311.230	4,823.82	799.64	-2,021.26	2,061.48	2.71	2.46	1.14
7,069.00	91.48	312.580	4,823.03	841.72	-2,068.14	2,124.44	3.21	2.40	2.14
7,132.00	91.11	313.890	4,821.60	884.86	-2,114.02	2,187.33	2.16	-0.59	2.08
7,195.00	90.87	314.090	4,820.52	928.61	-2,159.34	2,250.17	0.50	-0.38	0.32
7,258.00	90.20	316.050	4,819.93	973.21	-2,203.83	2,312.93	3.29	-1.06	3.11
7,320.00	88.49	314.080	4,820.64	1,017.09	-2,247.61	2,374.68	4.21	-2.76	-3.18
7,383.00	88.86	315.040	4,822.09	1,061.28	-2,292.49	2,437.47	1.63	0.59	1.52
7,446.00	89.80	317.380	4,822.83	1,106.75	-2,336.08	2,500.10	4.00	1.49	3.71
7,510.00	89.80	317.270	4,823.05	1,153.81	-2,379.46	2,563.59	0.17	0.00	-0.17
7,572.00	89.36	316.540	4,823.51	1,199.08	-2,421.82	2,625.15	1.37	-0.71	-1.18
7,635.00	89.13	316.330	4,824.34	1,244.72	-2,465.23	2,687.75	0.49	-0.37	-0.33
7,698.00	90.57	316.720	4,824.50	1,290.44	-2,508.58	2,750.35	2.37	2.29	0.62
7,761.00	89.90	315.570	4,824.24	1,335.87	-2,552.23	2,813.00	2.11	-1.06	-1.83
7,824.00	88.52	316.950	4,825.11	1,381.38	-2,595.78	2,875.62	3.10	-2.19	2.19
7,886.00	87.75	315.950	4,827.13	1,426.29	-2,638.47	2,937.21	2.03	-1.24	-1.61
7,950.00	89.29	316.170	4,828.78	1,472.36	-2,682.87	3,000.83	2.43	2.41	0.34
8,013.00	89.50	316.230	4,829.45	1,517.82	-2,726.47	3,063.47	0.35	0.33	0.10
8,075.00	89.26	315.780	4,830.12	1,562.42	-2,769.53	3,125.13	0.82	-0.39	-0.73
8,138.00	89.09	315.350	4,831.03	1,607.40	-2,813.63	3,187.84	0.73	-0.27	-0.68
8,201.00	88.82	314.820	4,832.18	1,652.01	-2,858.11	3,250.59	0.94	-0.43	-0.84
8,264.00	88.59	314.530	4,833.60	1,696.29	-2,902.89	3,313.37	0.59	-0.37	-0.46
8,326.00	88.12	313.890	4,835.38	1,739.51	-2,947.32	3,375.18	1.28	-0.76	-1.03
8,389.00	87.75	313.550	4,837.65	1,783.02	-2,992.82	3,438.01	0.80	-0.59	-0.54
8,451.00	89.23	314.860	4,839.28	1,826.23	-3,037.25	3,499.83	3.19	2.39	2.11
8,514.00	90.94	316.300	4,839.19	1,871.23	-3,081.34	3,562.53	3.55	2.71	2.29
8,577.00	89.56	316.560	4,838.91	1,916.87	-3,124.76	3,625.14	2.23	-2.19	0.41
8,639.00	89.13	315.770	4,839.62	1,961.59	-3,167.69	3,686.79	1.45	-0.69	-1.27
8,702.00	89.02	315.180	4,840.64	2,006.50	-3,211.87	3,749.50	0.95	-0.17	-0.94
8,765.00	88.96	314.920	4,841.75	2,051.08	-3,256.37	3,812.25	0.42	-0.10	-0.41
8,828.00	89.87	314.770	4,842.39	2,095.50	-3,301.03	3,875.03	1.46	1.44	-0.24
8,890.00	90.30	316.500	4,842.30	2,139.82	-3,344.38	3,936.74	2.88	0.69	2.79
8,953.00	89.03	318.560	4,842.67	2,186.29	-3,386.92	3,999.20	3.84	-2.02	3.27
9,017.00	88.89	318.700	4,843.83	2,234.31	-3,429.21	4,062.47	0.31	-0.22	0.22

Company:	DJR Operating	Local Co-ordinate Reference:	Well # 717H
Project:	Betonnies Tsosie Unit	TVD Reference:	GL 6880' & RKB 14' @ 6894.00usft (Aztec 920)
Site:	A03 2308 Pad	MD Reference:	GL 6880' & RKB 14' @ 6894.00usft (Aztec 920)
Well:	# 717H	North Reference:	True
Wellbore:	Original drilling	Survey Calculation Method:	Minimum Curvature
Design:	Original drilling	Database:	Grand Junction

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,080.00	88.59	317.830	4,845.22	2,281.31	-3,471.14	4,124.82	1.46	-0.48	-1.38
9,143.00	88.46	317.270	4,846.84	2,327.78	-3,513.64	4,187.26	0.91	-0.21	-0.89
9,206.00	88.32	316.720	4,848.61	2,373.84	-3,556.60	4,249.78	0.90	-0.22	-0.87
9,268.00	88.15	315.740	4,850.52	2,418.59	-3,599.46	4,311.39	1.60	-0.27	-1.58
9,331.00	89.53	315.270	4,851.79	2,463.51	-3,643.61	4,374.09	2.31	2.19	-0.75
9,394.00	89.46	314.380	4,852.35	2,507.92	-3,688.29	4,436.87	1.42	-0.11	-1.41
9,457.00	89.23	314.100	4,853.07	2,551.87	-3,733.42	4,499.70	0.58	-0.37	-0.44
9,520.00	88.82	313.500	4,854.14	2,595.47	-3,778.89	4,562.56	1.15	-0.65	-0.95
9,583.00	88.45	312.410	4,855.64	2,638.39	-3,824.98	4,625.46	1.83	-0.59	-1.73
9,645.00	87.45	311.200	4,857.86	2,679.69	-3,871.16	4,687.39	2.53	-1.61	-1.95
9,709.00	88.82	311.880	4,859.94	2,722.11	-3,919.04	4,751.33	2.39	2.14	1.06
9,772.00	89.56	315.080	4,860.83	2,765.45	-3,964.74	4,814.21	5.21	1.17	5.08
9,835.00	90.03	315.230	4,861.06	2,810.12	-4,009.17	4,876.96	0.78	0.75	0.24
9,897.00	89.09	314.110	4,861.54	2,853.70	-4,053.26	4,938.76	2.36	-1.52	-1.81
9,958.00	88.49	313.690	4,862.82	2,895.99	-4,097.20	4,999.61	1.20	-0.98	-0.69
10,019.00	91.01	316.310	4,863.09	2,939.11	-4,140.33	5,060.37	5.96	4.13	4.30
10,080.00	91.65	316.860	4,861.67	2,983.41	-4,182.24	5,120.96	1.38	1.05	0.90
10,141.00	90.54	316.030	4,860.51	3,027.61	-4,224.27	5,181.57	2.27	-1.82	-1.36
10,202.00	90.10	315.720	4,860.17	3,071.40	-4,266.73	5,242.26	0.88	-0.72	-0.51
10,262.00	89.83	315.620	4,860.20	3,114.32	-4,308.66	5,301.97	0.48	-0.45	-0.17
10,322.00	89.46	315.270	4,860.58	3,157.07	-4,350.76	5,361.71	0.85	-0.62	-0.58
10,382.00	88.86	314.880	4,861.46	3,199.55	-4,393.12	5,421.47	1.19	-1.00	-0.65
10,443.00	89.56	315.090	4,862.30	3,242.66	-4,436.26	5,482.24	1.20	1.15	0.34
10,504.00	91.04	316.110	4,861.98	3,286.24	-4,478.94	5,542.95	2.95	2.43	1.67
10,565.00	89.56	315.220	4,861.66	3,329.87	-4,521.57	5,603.66	2.83	-2.43	-1.46
10,626.00	89.16	314.680	4,862.34	3,372.97	-4,564.74	5,664.44	1.10	-0.66	-0.89
10,685.00	90.97	316.680	4,862.27	3,415.17	-4,605.95	5,723.15	4.57	3.07	3.39
10,746.00	90.27	315.350	4,861.61	3,459.06	-4,648.31	5,783.81	2.46	-1.15	-2.18
10,807.00	89.80	314.660	4,861.58	3,502.20	-4,691.44	5,844.59	1.37	-0.77	-1.13
10,868.00	90.67	315.270	4,861.33	3,545.30	-4,734.60	5,905.36	1.74	1.43	1.00
10,929.00	89.70	315.370	4,861.13	3,588.68	-4,777.49	5,966.11	1.60	-1.59	0.16
10,989.00	89.66	315.470	4,861.46	3,631.41	-4,819.61	6,025.85	0.18	-0.07	0.17
11,050.00	89.56	315.690	4,861.88	3,674.98	-4,862.30	6,086.56	0.40	-0.16	0.36
11,111.00	90.03	316.180	4,862.10	3,718.81	-4,904.72	6,147.24	1.11	0.77	0.80
11,172.00	91.95	317.760	4,861.04	3,763.39	-4,946.34	6,207.79	4.08	3.15	2.59
11,233.00	89.63	317.140	4,860.20	3,808.32	-4,987.58	6,268.27	3.94	-3.80	-1.02
11,294.00	89.40	317.180	4,860.72	3,853.05	-5,029.06	6,328.81	0.38	-0.38	0.07
11,356.00	90.17	318.800	4,860.95	3,899.11	-5,070.55	6,390.21	2.89	1.24	2.61
11,417.00	88.29	317.250	4,861.77	3,944.46	-5,111.34	6,450.62	3.99	-3.08	-2.54
11,478.00	86.41	315.180	4,864.59	3,988.44	-5,153.50	6,511.19	4.58	-3.08	-3.39
11,540.00	87.31	313.990	4,867.99	4,031.90	-5,197.59	6,572.91	2.40	1.45	-1.92
11,600.00	89.23	313.680	4,869.80	4,073.43	-5,240.85	6,632.75	3.24	3.20	-0.52
11,661.00	90.57	312.690	4,869.91	4,115.18	-5,285.32	6,693.66	2.73	2.20	-1.62

Company:	DJR Operating	Local Co-ordinate Reference:	Well # 717H
Project:	Betonnies Tsoie Unit	TVD Reference:	GL 6880' & RKB 14' @ 6894.00usft (Aztec 920)
Site:	A03 2308 Pad	MD Reference:	GL 6880' & RKB 14' @ 6894.00usft (Aztec 920)
Well:	# 717H	North Reference:	True
Wellbore:	Original drilling	Survey Calculation Method:	Minimum Curvature
Design:	Original drilling	Database:	Grand Junction

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,722.00	90.50	312.260	4,869.34	4,156.37	-5,330.31	6,754.60	0.71	-0.11	-0.70
11,783.00	90.71	311.800	4,868.69	4,197.21	-5,375.62	6,815.56	0.83	0.34	-0.75
11,844.00	89.60	312.290	4,868.53	4,238.06	-5,420.92	6,876.52	1.99	-1.82	0.80
11,906.00	89.43	312.250	4,869.05	4,279.76	-5,466.80	6,938.48	0.28	-0.27	-0.06
11,967.00	89.53	313.600	4,869.60	4,321.30	-5,511.46	6,999.40	2.22	0.16	2.21
12,028.00	89.83	313.700	4,869.95	4,363.40	-5,555.60	7,060.28	0.52	0.49	0.16
12,089.00	90.34	314.870	4,869.86	4,405.99	-5,599.27	7,121.11	2.09	0.84	1.92
12,149.00	90.74	314.810	4,869.29	4,448.30	-5,641.81	7,180.90	0.67	0.67	-0.10
12,210.00	90.17	314.460	4,868.81	4,491.16	-5,685.22	7,241.70	1.10	-0.93	-0.57
12,271.00	90.27	314.220	4,868.57	4,533.79	-5,728.84	7,302.54	0.43	0.16	-0.39
12,332.00	90.40	314.310	4,868.21	4,576.37	-5,772.52	7,363.37	0.26	0.21	0.15
12,393.00	89.90	313.780	4,868.05	4,618.77	-5,816.37	7,424.22	1.19	-0.82	-0.87
12,453.00	89.90	313.480	4,868.16	4,660.17	-5,859.80	7,484.11	0.50	0.00	-0.50
12,514.00	90.67	315.430	4,867.86	4,702.89	-5,903.34	7,544.93	3.44	1.26	3.20
12,575.00	91.28	315.680	4,866.82	4,746.43	-5,946.05	7,605.64	1.08	1.00	0.41
12,636.00	91.24	315.350	4,865.48	4,789.94	-5,988.78	7,666.35	0.54	-0.07	-0.54
12,696.00	91.34	314.690	4,864.13	4,832.37	-6,031.18	7,726.11	1.11	0.17	-1.10
12,757.00	91.11	315.450	4,862.82	4,875.55	-6,074.25	7,786.86	1.30	-0.38	1.25
12,817.00	91.44	316.220	4,861.49	4,918.58	-6,116.04	7,846.54	1.40	0.55	1.28
12,876.00	90.94	317.250	4,860.26	4,961.53	-6,156.47	7,905.13	1.94	-0.85	1.75
12,937.00	91.07	316.520	4,859.19	5,006.05	-6,198.16	7,965.69	1.22	0.21	-1.20
12,997.00	90.57	315.460	4,858.33	5,049.20	-6,239.84	8,025.37	1.95	-0.83	-1.77
13,058.00	89.90	314.310	4,858.08	5,092.25	-6,283.06	8,086.15	2.18	-1.10	-1.89
13,118.00	89.16	313.170	4,858.57	5,133.73	-6,326.40	8,146.02	2.27	-1.23	-1.90
13,179.00	90.10	313.940	4,858.97	5,175.76	-6,370.61	8,206.91	1.99	1.54	1.26
13,238.00	90.84	314.530	4,858.48	5,216.92	-6,412.88	8,265.75	1.60	1.25	1.00
13,299.00	91.28	314.170	4,857.36	5,259.55	-6,456.49	8,326.57	0.93	0.72	-0.59
13,360.00	90.67	315.360	4,856.32	5,302.50	-6,499.79	8,387.36	2.19	-1.00	1.95
13,421.00	90.10	315.680	4,855.91	5,346.02	-6,542.53	8,448.08	1.07	-0.93	0.52
13,482.00	89.33	314.330	4,856.21	5,389.16	-6,585.66	8,508.85	2.55	-1.26	-2.21
13,542.00	90.37	313.560	4,856.37	5,430.79	-6,628.86	8,568.71	2.16	1.73	-1.28
13,602.00	90.97	314.340	4,855.67	5,472.43	-6,672.05	8,628.57	1.64	1.00	1.30
13,662.00	90.97	316.140	4,854.65	5,515.03	-6,714.29	8,688.31	3.00	0.00	3.00
13,722.00	90.70	315.690	4,853.78	5,558.12	-6,756.03	8,748.00	0.87	-0.45	-0.75
13,784.00	89.80	315.190	4,853.51	5,602.30	-6,799.54	8,809.72	1.66	-1.45	-0.81
13,845.00	88.82	313.930	4,854.24	5,645.09	-6,842.99	8,870.53	2.62	-1.61	-2.07
13,906.00	91.51	314.820	4,854.07	5,687.75	-6,886.59	8,931.35	4.64	4.41	1.46
13,965.00	91.75	316.050	4,852.39	5,729.77	-6,927.97	8,990.07	2.12	0.41	2.08
14,027.00	91.01	317.390	4,850.89	5,774.89	-6,970.47	9,051.63	2.47	-1.19	2.16
14,088.00	90.47	317.050	4,850.11	5,819.66	-7,011.89	9,112.15	1.05	-0.89	-0.56
14,149.00	90.07	316.410	4,849.82	5,864.07	-7,053.70	9,172.74	1.24	-0.66	-1.05
14,209.00	89.63	315.790	4,849.98	5,907.30	-7,095.31	9,232.41	1.27	-0.73	-1.03
14,269.00	89.73	315.430	4,850.31	5,950.18	-7,137.28	9,292.13	0.62	0.17	-0.60

Company: DJR Operating
Project: Betonnie Tsosie Unit
Site: A03 2308 Pad
Well: # 717H
Wellbore: Original drilling
Design: Original drilling

Local Co-ordinate Reference: Well # 717H
TVD Reference: GL 6880' & RKB 14' @ 6894.00usft (Aztec 920)
MD Reference: GL 6880' & RKB 14' @ 6894.00usft (Aztec 920)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: Grand Junction

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,331.00	89.66	315.670	4,850.64	5,994.44	-7,180.70	9,353.84	0.40	-0.11	0.39
14,391.00	89.93	315.530	4,850.86	6,037.31	-7,222.68	9,413.56	0.51	0.45	-0.23
14,451.00	90.07	315.490	4,850.86	6,080.11	-7,264.72	9,473.29	0.24	0.23	-0.07
14,514.00	90.17	315.090	4,850.72	6,124.88	-7,309.04	9,536.03	0.65	0.16	-0.63
14,575.00	90.13	314.500	4,850.56	6,167.86	-7,352.33	9,596.83	0.97	-0.07	-0.97
14,636.00	90.07	314.010	4,850.46	6,210.43	-7,396.02	9,657.66	0.81	-0.10	-0.80
14,692.00	89.90	313.520	4,850.47	6,249.16	-7,436.46	9,713.55	0.93	-0.30	-0.88
14,744.00	89.90	313.520	4,850.56	6,284.97	-7,474.17	9,765.45	0.00	0.00	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
442.00	441.99	-0.20	-2.46	First SDI Surface MWD Survey
4,169.00	4,068.85	-802.90	-214.52	Last SDI Surface MWD Survey
4,231.00	4,129.45	-812.54	-222.87	First SDI Curve MWD Survey
5,233.00	4,793.45	-446.95	-763.02	Last SDI Curve MWD Survey
5,311.00	4,802.82	-391.43	-816.98	First SDI Lateral MWD Survey
14,692.00	4,850.47	6,249.16	-7,436.46	Last SDI Lateral MWD Survey
14,744.00	4,850.56	6,284.97	-7,474.17	Projection to TD

Checked By: _____ Approved By: _____ Date: _____

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	3/11/2020
Job End Date:	3/16/2020
State:	New Mexico
County:	San Juan
API Number:	30-045-35668-00-00
Operator Name:	DJR OPERATING, LLC
Well Name and Number:	Betonnies Tsose Wash Unit 717H
Latitude:	36.17245484
Longitude:	-107.65946870
Datum:	NAD83
Federal Well:	YES
Indian Well:	NO
True Vertical Depth:	4,870
Total Base Water Volume (gal):	2,186,486
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Service Abstract Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Operator	Carrier	Water	7732-18-5	100.00000	53.43139	None
Crystalline Silica Quartz / Santrol	Liberty Oilfield Services	Sand	Crystalline Silica in the form of Quartz	14808-60-7	99.90000	27.09437	None
Nitrogen	Praxair	Flowback Enhancer	Nitrogen, Liquid	7727-37-9	100.00000	19.09189	None
LGA-3H	Liberty Oilfield Services	Guar	Distillates, petroleum, hydrotreated light	64742-47-8	60.00000	0.09447	None
FN2-02	Liberty Oilfield Services	Foamer	Surfactant 1	Proprietary	50.00000	0.07547	None
FN2-01	Liberty Oilfield Services	Surfactant	Cocamidopropyl hydroxysultaine	68139-30-0	60.00000	0.01112	None
SFT-NE45B	Liberty Oilfield Services	Surfactant	Methanol	67-56-1	20.00000	0.00234	None

			Alkyl Sulfonic Acid	Proprietary	10.00000	0.00117	None
			Surfactant 1	Proprietary	10.00000	0.00117	None
			Surfactant 2	Proprietary	5.00000	0.00058	None
Bardac 2210	Lonza	Biocide					
			Didecylidimethylammonium chloride	7173-51-5	11.50000	0.00177	None
			Ethanol	64-17-5	2.00000	0.00031	None
BLR-18	Liberty Oilfield Services	Powder Breaker					
			Ammonium Persulfate	7727-54-0	100.00000	0.00124	None
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)