CIMAREX

Cimarex

Lea County, NM (NAD 83)
(James) Sec19_T-23-S_R-32-E
James 19 Federal #34H

OWB

Design: AWB

Survey Report - Geographic

23 April, 2019

INTREPID

CIMAREX

Microsoft
Survey Report - Geographic

INTREPID

Company:	Cimarex	**Local Co-ordinate Reference:**	Well James 19 Federal #34H
Project:	Lea County, NM (NAD 83)	**TVD Reference:**	KB @ 3662.4usft (Cactus 148)
Site:	(James) Sec19_T-23-S_R-32-E	**MD Reference:**	KB @ 3662.4usft (Cactus 148)
Well:	James 19 Federal #34H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	AWB	**Database:**	EDM 10_13

Project Lea County, NM (NAD 83)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site (James) Sec19_T-23-S_R-32-E

Site Position:		**Northing:**	472,031.92 usft	**Latitude:**	32.2961637
From:	Map	**Easting:**	733,112.62 usft	**Longitude:**	-103.7126820
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.33 °

Well James 19 Federal #34H

Well Position	**+N/-S**	0.0 usft	**Northing:**	472,031.92 usft	**Latitude:**	32.2961637
	+E/-W	0.0 usft	**Easting:**	733,112.62 usft	**Longitude:**	-103.7126820
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,639.4 usft

Wellbore OWB

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/19/2018	6.88	60.09	47,826.72085901

Design AWB

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	179.68

Survey Program **Date** 04/23/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
196.0	8,510.0	Extreme MWD (OWB)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction
8,603.0	13,650.0	Intrepid MWD (OWB)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	472,031.92	733,112.62	32.2961637	-103.7126820
196.0	0.54	272.24	196.0	0.0	-0.9	472,031.96	733,111.69	32.2961638	-103.7126850
290.0	0.63	261.91	290.0	0.0	-1.9	472,031.90	733,110.74	32.2961637	-103.7126881
386.0	0.79	250.69	386.0	-0.3	-3.0	472,031.61	733,109.59	32.2961629	-103.7126918
476.0	0.68	246.51	476.0	-0.7	-4.1	472,031.19	733,108.52	32.2961617	-103.7126953
565.0	0.93	246.16	565.0	-1.2	-5.2	472,030.69	733,107.37	32.2961604	-103.7126990
656.0	0.81	249.28	656.0	-1.8	-6.5	472,030.16	733,106.09	32.2961590	-103.7127032
747.0	0.94	238.32	746.9	-2.4	-7.8	472,029.54	733,104.86	32.2961573	-103.7127072
837.0	1.31	238.63	836.9	-3.3	-9.3	472,028.62	733,103.35	32.2961548	-103.7127121
932.0	1.43	245.33	931.9	-4.4	-11.3	472,027.56	733,101.35	32.2961519	-103.7127186
1,027.0	1.46	247.19	1,026.9	-5.3	-13.5	472,026.59	733,099.15	32.2961493	-103.7127257

CIMAREX

Microsoft

Survey Report - Geographic

INTREPID

Company:	Cimarex	**Local Co-ordinate Reference:**	Well James 19 Federal #34H
Project:	Lea County, NM (NAD 83)	**TVD Reference:**	KB @ 3662.4usft (Cactus 148)
Site:	(James) Sec19_T-23-S_R-32-E	**MD Reference:**	KB @ 3662.4usft (Cactus 148)
Well:	James 19 Federal #34H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	AWB	**Database:**	EDM 10_13

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,115.0	1.49	251.25	1,114.8	-6.1	-15.6	472,025.79	733,097.04	32.2961471	-103.7127325
1,214.0	1.13	274.49	1,213.8	-6.5	-17.8	472,025.46	733,094.85	32.2961462	-103.7127396
1,294.0	0.97	269.09	1,293.8	-6.4	-19.2	472,025.51	733,093.38	32.2961464	-103.7127444
1,402.0	1.46	64.23	1,401.8	-5.8	-18.9	472,026.09	733,093.71	32.2961480	-103.7127433
1,488.0	1.62	59.84	1,487.8	-4.7	-16.9	472,027.18	733,095.74	32.2961509	-103.7127367
1,590.0	1.49	58.99	1,589.7	-3.3	-14.5	472,028.58	733,098.13	32.2961547	-103.7127290
1,685.0	1.67	63.90	1,684.7	-2.1	-12.2	472,029.83	733,100.43	32.2961581	-103.7127215
1,779.0	1.55	63.62	1,778.7	-0.9	-9.8	472,031.00	733,102.80	32.2961613	-103.7127138
1,873.0	1.55	65.55	1,872.6	0.2	-7.5	472,032.09	733,105.09	32.2961643	-103.7127064
1,967.0	1.53	61.20	1,966.6	1.3	-5.3	472,033.22	733,107.35	32.2961673	-103.7126990
2,062.0	1.39	66.59	2,061.6	2.4	-3.1	472,034.29	733,109.52	32.2961702	-103.7126920
2,156.0	1.37	66.28	2,155.5	3.3	-1.0	472,035.19	733,111.60	32.2961727	-103.7126853
2,251.0	1.53	61.97	2,250.5	4.3	1.1	472,036.25	733,113.75	32.2961756	-103.7126782
2,345.0	1.60	68.05	2,344.5	5.4	3.5	472,037.33	733,116.08	32.2961785	-103.7126707
2,440.0	1.44	69.14	2,439.4	6.3	5.8	472,038.25	733,118.43	32.2961810	-103.7126631
2,535.0	1.58	72.48	2,534.4	7.1	8.2	472,039.07	733,120.79	32.2961832	-103.7126554
2,629.0	1.55	72.67	2,628.4	7.9	10.6	472,039.83	733,123.24	32.2961853	-103.7126475
2,723.0	1.51	88.21	2,722.3	8.3	13.1	472,040.25	733,125.69	32.2961864	-103.7126395
2,911.0	1.46	118.41	2,910.3	7.3	17.7	472,039.19	733,130.27	32.2961834	-103.7126247
3,006.0	1.50	123.52	3,005.2	6.0	19.8	472,037.93	733,132.37	32.2961799	-103.7126180
3,101.0	1.38	124.78	3,100.2	4.7	21.7	472,036.59	733,134.35	32.2961762	-103.7126116
3,195.0	1.30	124.32	3,194.2	3.4	23.5	472,035.34	733,136.16	32.2961727	-103.7126058
3,290.0	1.14	118.35	3,289.2	2.4	25.3	472,034.29	733,137.88	32.2961698	-103.7126002
3,385.0	1.01	105.38	3,384.1	1.7	26.9	472,033.61	733,139.52	32.2961679	-103.7125949
3,479.0	0.96	111.69	3,478.1	1.2	28.4	472,033.10	733,141.05	32.2961665	-103.7125900
3,573.0	0.90	134.13	3,572.1	0.4	29.7	472,032.30	733,142.31	32.2961643	-103.7125859
3,668.0	0.31	147.30	3,667.1	-0.4	30.4	472,031.56	733,142.99	32.2961622	-103.7125837
3,763.0	0.67	274.66	3,762.1	-0.5	30.0	472,031.39	733,142.57	32.2961618	-103.7125851
3,857.0	0.75	337.11	3,856.1	0.1	29.2	472,032.00	733,141.79	32.2961634	-103.7125876
3,951.0	0.34	22.08	3,950.1	0.9	29.0	472,032.83	733,141.65	32.2961657	-103.7125880
4,140.0	0.11	240.35	4,139.1	1.3	29.1	472,033.26	733,141.70	32.2961669	-103.7125879
4,234.0	0.56	229.37	4,233.1	1.0	28.7	472,032.91	733,141.28	32.2961660	-103.7125892
4,329.0	1.12	183.86	4,328.1	-0.2	28.2	472,031.69	733,140.86	32.2961626	-103.7125906
4,423.0	1.14	169.72	4,422.1	-2.1	28.4	472,029.85	733,140.97	32.2961575	-103.7125903
4,591.0	1.09	170.29	4,590.0	-5.3	28.9	472,026.63	733,141.54	32.2961487	-103.7125885
4,710.0	0.88	187.44	4,709.0	-7.3	29.0	472,024.61	733,141.61	32.2961431	-103.7125883
4,803.0	1.75	236.61	4,802.0	-8.8	27.7	472,023.12	733,140.33	32.2961391	-103.7125925
4,898.0	2.26	242.86	4,896.9	-10.5	24.8	472,021.47	733,137.45	32.2961346	-103.7126018
5,086.0	2.52	245.04	5,084.8	-13.9	17.8	472,018.03	733,130.41	32.2961252	-103.7126247
5,179.0	2.69	257.83	5,177.7	-15.2	13.8	472,016.71	733,126.42	32.2961217	-103.7126376
5,273.0	3.04	271.18	5,271.6	-15.6	9.2	472,016.29	733,121.77	32.2961206	-103.7126527
5,367.0	2.25	307.79	5,365.5	-14.4	5.2	472,017.48	733,117.82	32.2961239	-103.7126654
5,462.0	2.19	305.54	5,460.4	-12.2	2.3	472,019.67	733,114.87	32.2961300	-103.7126750
5,556.0	2.35	305.83	5,554.3	-10.1	-0.8	472,021.85	733,111.85	32.2961360	-103.7126847
5,651.0	2.28	322.87	5,649.2	-7.4	-3.5	472,024.49	733,109.13	32.2961433	-103.7126934
5,745.0	2.25	348.65	5,743.2	-4.1	-5.0	472,027.79	733,107.63	32.2961524	-103.7126982
5,839.0	2.23	344.87	5,837.1	-0.6	-5.8	472,031.37	733,106.79	32.2961623	-103.7127009
5,934.0	2.19	346.26	5,932.0	3.0	-6.7	472,034.91	733,105.88	32.2961720	-103.7127038
6,029.0	1.96	4.71	6,027.0	6.4	-7.0	472,038.30	733,105.58	32.2961813	-103.7127047
6,123.0	1.77	42.90	6,120.9	9.0	-5.9	472,040.96	733,106.70	32.2961886	-103.7127010
6,218.0	1.74	40.96	6,215.9	11.2	-4.0	472,043.13	733,108.65	32.2961946	-103.7126947
6,309.0	2.19	75.17	6,306.8	12.7	-1.4	472,044.61	733,111.23	32.2961986	-103.7126863
6,407.0	2.18	86.44	6,404.8	13.3	2.3	472,045.21	733,114.90	32.2962002	-103.7126744
6,502.0	2.04	89.81	6,499.7	13.4	5.8	472,045.33	733,118.40	32.2962004	-103.7126631
6,596.0	1.77	93.90	6,593.6	13.3	8.9	472,045.23	733,121.52	32.2962001	-103.7126530

Company:	Cimarex	**Local Co-ordinate Reference:**	Well James 19 Federal #34H
Project:	Lea County, NM (NAD 83)	**TVD Reference:**	KB @ 3662.4usft (Cactus 148)
Site:	(James) Sec19_T-23-S_R-32-E	**MD Reference:**	KB @ 3662.4usft (Cactus 148)
Well:	James 19 Federal #34H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	AWB	**Database:**	EDM 10_13

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,690.0	1.88	93.36	6,687.6	13.1	11.9	472,045.05	733,124.51	32.2961996	-103.7126433
6,785.0	1.82	90.62	6,782.5	13.0	15.0	472,044.94	733,127.57	32.2961992	-103.7126334
6,880.0	1.47	85.65	6,877.5	13.1	17.7	472,045.01	733,130.29	32.2961994	-103.7126246
6,973.0	1.63	120.08	6,970.5	12.5	20.0	472,044.44	733,132.63	32.2961978	-103.7126170
7,067.0	2.09	134.94	7,064.4	10.6	22.4	472,042.56	733,135.00	32.2961926	-103.7126094
7,161.0	2.04	142.39	7,158.4	8.1	24.6	472,040.02	733,137.23	32.2961856	-103.7126022
7,256.0	1.80	146.13	7,253.3	5.5	26.5	472,037.45	733,139.10	32.2961785	-103.7125962
7,350.0	1.60	150.75	7,347.3	3.2	27.9	472,035.08	733,140.56	32.2961719	-103.7125915
7,444.0	1.64	153.33	7,441.2	0.8	29.2	472,032.73	733,141.81	32.2961654	-103.7125875
7,538.0	1.70	156.18	7,535.2	-1.7	30.4	472,030.25	733,142.97	32.2961586	-103.7125838
7,633.0	1.66	159.27	7,630.1	-4.2	31.4	472,027.67	733,144.03	32.2961515	-103.7125804
7,821.0	1.39	167.41	7,818.1	-9.0	32.9	472,022.90	733,145.49	32.2961384	-103.7125758
7,917.0	1.21	184.21	7,914.1	-11.2	33.1	472,020.76	733,145.67	32.2961325	-103.7125753
8,011.0	1.22	181.77	8,008.0	-13.2	32.9	472,018.77	733,145.57	32.2961270	-103.7125756
8,105.0	1.17	193.56	8,102.0	-15.1	32.7	472,016.83	733,145.31	32.2961217	-103.7125765
8,200.0	1.49	198.98	8,197.0	-17.2	32.1	472,014.72	733,144.68	32.2961159	-103.7125786
8,389.0	1.67	210.01	8,385.9	-21.9	29.9	472,010.01	733,142.50	32.2961030	-103.7125857
8,483.0	1.66	218.36	8,479.9	-24.2	28.4	472,007.76	733,140.97	32.2960968	-103.7125907
8,510.0	1.69	220.63	8,506.9	-24.8	27.9	472,007.15	733,140.47	32.2960952	-103.7125923
TIE ON									
8,577.0	3.96	196.83	8,573.8	-27.7	26.5	472,004.18	733,139.16	32.2960870	-103.7125966
KOP @ 8577' MD, 418' FNL, 358' FWL									
8,603.0	4.91	193.74	8,599.7	-29.7	26.0	472,002.24	733,138.63	32.2960817	-103.7125984
8,634.0	8.40	186.80	8,630.5	-33.2	25.4	471,998.70	733,138.05	32.2960720	-103.7126003
8,666.0	11.81	183.32	8,662.0	-38.8	25.0	471,993.11	733,137.58	32.2960566	-103.7126019
8,698.0	13.93	182.25	8,693.2	-45.9	24.6	471,985.99	733,137.24	32.2960371	-103.7126032
8,729.0	15.64	173.33	8,723.2	-53.8	25.0	471,978.11	733,137.58	32.2960154	-103.7126022
8,760.0	18.16	171.49	8,752.8	-62.7	26.2	471,969.18	733,138.78	32.2959908	-103.7125985
8,791.0	20.95	174.99	8,782.0	-73.0	27.4	471,958.88	733,139.98	32.2959625	-103.7125948
8,823.0	23.95	178.86	8,811.6	-85.2	28.0	471,946.69	733,140.61	32.2959290	-103.7125930
8,855.0	26.92	180.04	8,840.5	-99.0	28.1	471,932.94	733,140.73	32.2958912	-103.7125929
8,886.0	30.15	180.67	8,867.7	-113.8	28.0	471,918.14	733,140.64	32.2958505	-103.7125935
8,918.0	33.94	181.65	8,894.9	-130.8	27.7	471,901.17	733,140.29	32.2958038	-103.7125949
8,948.0	37.53	182.18	8,919.2	-148.3	27.1	471,883.66	733,139.70	32.2957557	-103.7125972
8,980.0	40.91	181.52	8,944.0	-168.5	26.4	471,863.44	733,139.05	32.2957002	-103.7125996
9,011.0	45.09	179.93	8,966.7	-189.6	26.2	471,842.30	733,138.79	32.2956421	-103.7126009
9,043.0	48.65	177.45	8,988.5	-213.0	26.7	471,818.96	733,139.34	32.2955779	-103.7125995
9,074.0	51.69	176.09	9,008.4	-236.7	28.1	471,795.20	733,140.69	32.2955126	-103.7125956
9,106.0	55.36	174.33	9,027.4	-262.4	30.2	471,769.57	733,142.85	32.2954421	-103.7125891
9,137.0	59.65	174.60	9,044.1	-288.4	32.7	471,743.55	733,145.37	32.2953705	-103.7125814
9,169.0	62.84	174.59	9,059.4	-316.3	35.4	471,715.62	733,148.01	32.2952937	-103.7125734
9,200.0	66.56	174.89	9,072.7	-344.2	38.0	471,687.72	733,150.58	32.2952170	-103.7125656
9,231.0	71.04	175.36	9,083.9	-373.0	40.4	471,658.93	733,153.03	32.2951378	-103.7125582
9,263.0	75.22	175.67	9,093.2	-403.5	42.8	471,628.40	733,155.42	32.2950539	-103.7125510
9,294.0	80.41	176.27	9,099.7	-433.7	44.9	471,598.19	733,157.55	32.2949708	-103.7125447
9,326.0	83.94	178.12	9,104.1	-465.4	46.5	471,566.53	733,159.10	32.2948837	-103.7125403
9,421.0	89.76	179.96	9,109.3	-560.2	48.1	471,471.73	733,160.68	32.2946231	-103.7125370
9,516.0	91.13	179.96	9,108.6	-655.2	48.1	471,376.74	733,160.75	32.2943620	-103.7125385
9,610.0	93.06	179.80	9,105.1	-749.1	48.3	471,282.81	733,160.95	32.2941038	-103.7125396
9,704.0	93.90	179.68	9,099.4	-842.9	48.8	471,188.98	733,161.37	32.2938459	-103.7125400
9,799.0	95.17	179.64	9,091.9	-937.6	49.3	471,094.28	733,161.93	32.2935856	-103.7125400
9,893.0	95.70	179.80	9,083.0	-1,031.2	49.8	471,000.71	733,162.39	32.2933284	-103.7125403
9,987.0	95.07	179.45	9,074.2	-1,124.8	50.4	470,907.12	733,163.00	32.2930711	-103.7125400
10,082.0	92.33	179.66	9,068.1	-1,219.6	51.1	470,812.33	733,163.74	32.2928106	-103.7125394
10,177.0	92.10	179.56	9,064.4	-1,314.5	51.8	470,717.41	733,164.39	32.2925496	-103.7125391

Company:	Cimarex	**Local Co-ordinate Reference:**	Well James 19 Federal #34H
Project:	Lea County, NM (NAD 83)	**TVD Reference:**	KB @ 3662.4usft (Cactus 148)
Site:	(James) Sec19_T-23-S_R-32-E	**MD Reference:**	KB @ 3662.4usft (Cactus 148)
Well:	James 19 Federal #34H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	AWB	**Database:**	EDM 10_13

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,271.0	87.92	177.75	9,064.4	-1,408.5	54.0	470,623.46	733,166.59	32.2922914	-103.7125337
10,366.0	88.57	177.45	9,067.3	-1,503.3	58.0	470,528.59	733,170.57	32.2920305	-103.7125226
10,461.0	89.78	177.83	9,068.6	-1,598.2	61.9	470,433.68	733,174.48	32.2917696	-103.7125118
10,556.0	91.42	177.96	9,067.6	-1,693.2	65.4	470,338.75	733,177.97	32.2915086	-103.7125022
10,650.0	91.99	177.80	9,064.9	-1,787.1	68.8	470,244.86	733,181.44	32.2912505	-103.7124928
10,745.0	93.03	177.94	9,060.7	-1,881.9	72.4	470,150.01	733,184.97	32.2909897	-103.7124831
10,839.0	90.95	178.68	9,057.4	-1,975.8	75.1	470,056.12	733,187.74	32.2907316	-103.7124759
10,934.0	91.27	178.80	9,055.6	-2,070.8	77.2	469,961.16	733,189.83	32.2904705	-103.7124709
11,028.0	92.61	179.07	9,052.4	-2,164.7	79.0	469,867.23	733,191.58	32.2902123	-103.7124670
11,122.0	90.13	179.66	9,050.2	-2,258.6	80.0	469,773.27	733,192.62	32.2899540	-103.7124654
11,216.0	90.26	179.49	9,049.8	-2,352.6	80.7	469,679.27	733,193.31	32.2896956	-103.7124649
11,310.0	89.87	179.12	9,049.7	-2,446.6	81.8	469,585.28	733,194.46	32.2894373	-103.7124630
11,406.0	90.67	178.94	9,049.3	-2,542.6	83.5	469,489.30	733,196.08	32.2891734	-103.7124595
11,500.0	90.79	178.74	9,048.1	-2,636.6	85.4	469,395.32	733,197.98	32.2889151	-103.7124552
11,594.0	91.86	179.02	9,045.9	-2,730.6	87.2	469,301.37	733,199.82	32.2886568	-103.7124510
11,689.0	91.86	180.61	9,042.8	-2,825.5	87.5	469,206.42	733,200.13	32.2883958	-103.7124518
11,783.0	92.67	180.76	9,039.1	-2,919.4	86.4	469,112.50	733,199.00	32.2881377	-103.7124571
11,878.0	93.31	181.17	9,034.2	-3,014.3	84.8	469,017.65	733,197.41	32.2878770	-103.7124641
11,972.0	94.25	181.29	9,028.0	-3,108.0	82.8	468,923.87	733,195.39	32.2876192	-103.7124724
12,067.0	92.68	180.72	9,022.2	-3,202.9	81.1	468,829.07	733,193.73	32.2873587	-103.7124795
12,161.0	92.27	180.57	9,018.2	-3,296.8	80.1	468,735.16	733,192.67	32.2871006	-103.7124847
12,256.0	92.42	180.69	9,014.3	-3,391.7	79.0	468,640.25	733,191.63	32.2868397	-103.7124899
12,349.0	93.05	180.99	9,009.8	-3,484.6	77.7	468,547.36	733,190.27	32.2865844	-103.7124960
12,443.0	90.64	180.11	9,006.8	-3,578.5	76.7	468,453.42	733,189.37	32.2863262	-103.7125007
12,538.0	89.45	179.86	9,006.7	-3,673.5	76.8	468,358.42	733,189.39	32.2860651	-103.7125024
12,633.0	90.20	179.63	9,007.0	-3,768.5	77.2	468,263.43	733,189.81	32.2858039	-103.7125028
12,728.0	91.58	180.11	9,005.5	-3,863.5	77.4	468,168.44	733,190.03	32.2855428	-103.7125039
12,821.0	91.25	179.67	9,003.2	-3,956.5	77.6	468,075.47	733,190.21	32.2852873	-103.7125050
12,916.0	89.70	179.02	9,002.5	-4,051.4	78.7	467,980.48	733,191.29	32.2850262	-103.7125033
13,010.0	89.24	179.32	9,003.3	-4,145.4	80.0	467,886.50	733,192.66	32.2847678	-103.7125007
13,104.0	89.35	179.02	9,004.5	-4,239.4	81.4	467,792.51	733,194.02	32.2845095	-103.7124980
13,198.0	90.22	179.84	9,004.8	-4,333.4	82.3	467,698.52	733,194.95	32.2842511	-103.7124967
13,293.0	91.25	180.33	9,003.6	-4,428.4	82.2	467,603.53	733,194.81	32.2839900	-103.7124990
13,387.0	89.66	181.03	9,002.9	-4,522.4	81.1	467,509.54	733,193.70	32.2837317	-103.7125043
13,482.0	89.20	179.96	9,003.8	-4,617.4	80.3	467,414.55	733,192.87	32.2834706	-103.7125088
13,577.0	90.92	180.39	9,003.7	-4,712.4	80.0	467,319.56	733,192.58	32.2832095	-103.7125115
LAST SVY									
13,650.0	91.00	180.39	9,002.5	-4,785.4	79.5	467,246.57	733,192.09	32.2830088	-103.7125145

PTD @ 13650.0' MD, 102' FSL, 381' FWL

Company:	Cimarex	**Local Co-ordinate Reference:**	Well James 19 Federal #34H
Project:	Lea County, NM (NAD 83)	**TVD Reference:**	KB @ 3662.4usft (Cactus 148)
Site:	(James) Sec19_T-23-S_R-32-E	**MD Reference:**	KB @ 3662.4usft (Cactus 148)
Well:	James 19 Federal #34H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	AWB	**Database:**	EDM 10_13

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Vertical Box (J 19 Fec - actual wellpath hits target center - Rectangle (sides W120.0 H80.0 D0.0)	0.00	0.00	0.0	0.0	0.0	472,031.92	733,112.62	32.2961637	-103.7126820
SHL (J 19 Fed #34H) - actual wellpath hits target center - Point	0.00	0.00	0.0	0.0	0.0	472,031.92	733,112.62	32.2961637	-103.7126820
PBHL (J 19 Fed #34H - actual wellpath misses target center by 11.5usft at 13650.0usft MD (9002.5 TVD, -4785.4 N, 79.5 E) - Rectangle (sides W50.0 H1,200.0 D20.0)	0.00	359.68	9,013.6	-4,787.4	77.7	467,244.49	733,190.31	32.2830032	-103.7125203
T1 J 19 Fed #34H) - actual wellpath misses target center by 9.0usft at 12452.2usft MD (9006.7 TVD, -3587.7 N, 76.7 E) - Rectangle (sides W50.0 H3,098.0 D20.0)	1.50	359.68	9,013.6	-3,587.7	71.0	468,444.22	733,183.64	32.2863010	-103.7125194

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
8,510.0	8,506.9	-24.8	27.9	TIE ON
8,577.0	8,573.8	-27.7	26.5	KOP @ 8577' MD, 418' FNL, 358' FWL
13,577.0	9,003.7	-4,712.4	80.0	LAST SVY
13,650.0	9,002.5	-4,785.4	79.5	PTD @ 13650.0' MD, 102' FSL, 381' FWL

Checked By: _____ Approved By: _____ Date: _____

CIMAREX

INTREPID

Cimarex
Project: Lea County, NM (NAD 83)
Site: (James) Sec19_T-23-S_R-32-E
Well: James 19 Federal #34H
Wellbore: OWB
Design: AWB
Lat: 32° 17' 46.189 N
Long: 103° 42' 45.655 W
Ped GL: 3639.4
KB: KB @ 3662.4usft (Cactus 148)

WELL DETAILS: James 19 Federal #34H

3639.4

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	472031.92	733112.62	32° 17' 46.189 N	103° 42' 45.655 W

SECTION DETAILS

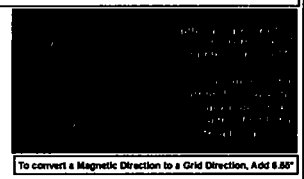
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
8294.0	89.41	176.27	9099.7	-433.7	44.9	0.00	0.00	434.0	LAST SVY- DLS 16.83 TFO 4.71
8347.0	89.30	177.00	9104.5	-486.4	49.0	16.83	4.71	486.6	PTB- DLS 2.00 TFO 37.30
9563.9	92.75	179.63	9100.6	-703.1	64.4	2.00	37.30	703.4	Start 500.0 hold at 9563.9 MD
10063.9	92.75	179.63	9076.6	-1202.5	67.6	0.00	0.00	1202.8	Start DLS 2.00 TFO 177.77
10126.7	91.50	179.68	9074.3	-1265.2	68.0	2.00	177.77	1265.6	Start 2323.3 hold at 10126.7 MD
12450.0	91.50	179.68	9013.8	-3587.7	71.0	0.00	0.00	3588.0	Start DLS 3.00 TFO 179.90
12499.8	90.00	179.68	9013.0	-3637.5	71.3	3.00	179.90	3637.8	Start 1149.9 hold at 12499.8 MD
13649.7	90.00	179.68	9013.0	-4787.4	77.7	0.00	0.00	4787.8	TD at 13649.7

DESIGN TARGET DETAILS

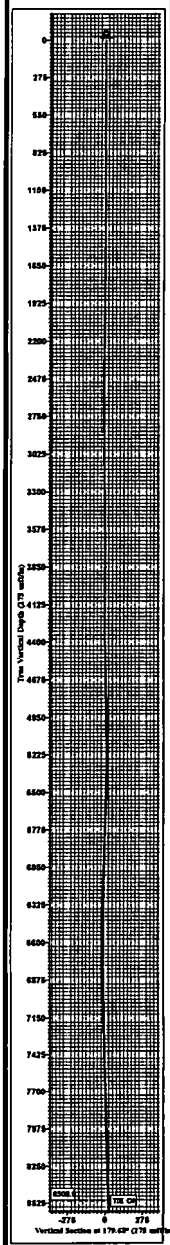
Name	TVD	+N/-S	+E/-W	Northing	Easting
SHL (J 19 Fed #34H) 390' FNL, 2310' FEL	0.0	0.0	0.0	472031.92	733112.62
Vertical Box (J 19 Fed #34H)30'N,50'S,20'W, 100'ED	0.0		0.0	472031.92	733112.62
PBHL (J 19 Fed #34H) 100' FSL, 2260' FEL v4	9013.6	-4787.4	77.7	467244.49	733190.31
T1 J 19 Fed #34H)	9013.6	-3587.7	71.0	468444.22	733183.84

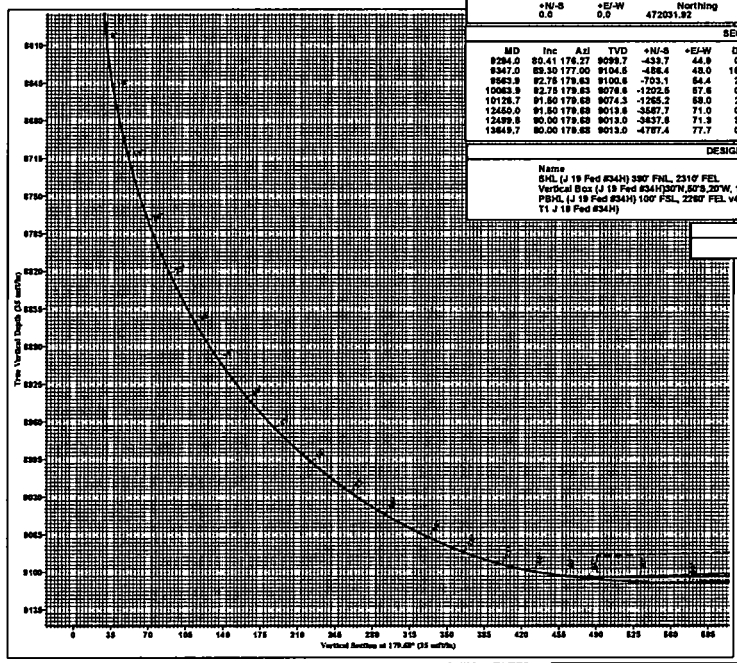
FORMATION TOP DETAILS

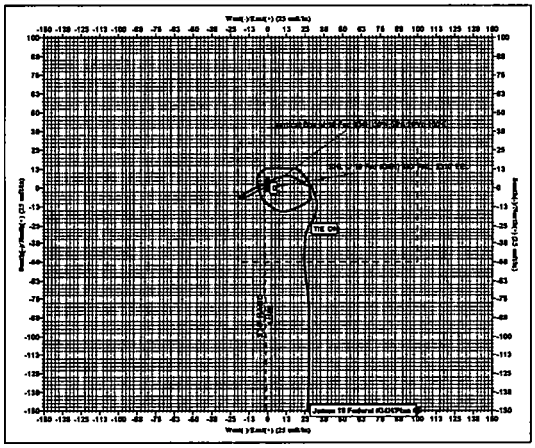
No formation data is available

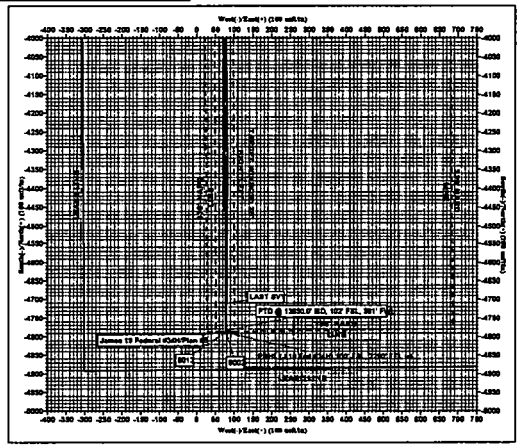


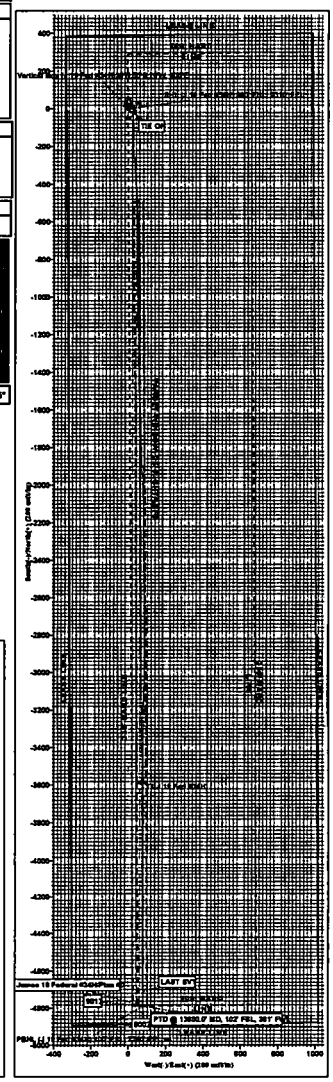
To convert a Magnetic Direction to a Grid Direction, Add 6.55°











TARGET WINDOW: 10' ABOVE/BELOW