



30-025-42468

COG Operating LLC

Lea County, NM
Cuatro Hijos fee
#8H

OH

Survey: MWD #1

Survey Report - Geographic

28 April, 2015

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Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #8H
Project:	Lea County, NM	TVD Reference:	WELL @ 3874.3usft (Original Well Elev)
Site:	Cuatro Hijos fee	MD Reference:	WELL @ 3874.3usft (Original Well Elev)
Well:	#8H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Lea County, NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Cuatro Hijos fee		
Site Position:		Northing:	602,563.00 usft
From:	Map	Easting:	760,807.50 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 39' 13.271 N
		Longitude:	103° 29' 9.422 W
		Grid Convergence:	0.46 °

Well	#8H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 39' 13.266 N
		Longitude:	103° 29' 3.693 W
		Ground Level:	3,857.3 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/11/2015	7.11	60.50	48,506

Design	OH				
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	355.50	

Survey Program	Date 4/27/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
115.0	13,667.0	MWD #1 (OH)	MWD	MWD - Standard

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	602,566.40	761,297.30	32° 39' 13.266 N	103° 29' 3.693 W
Mescalero Ridge #8									
115.0	1.10	67.30	115.0	0.4	1.0	602,566.83	761,298.32	32° 39' 13.270 N	103° 29' 3.681 W
210.0	1.10	51.50	210.0	1.3	2.6	602,567.75	761,299.87	32° 39' 13.279 N	103° 29' 3.663 W
298.0	1.20	51.10	298.0	2.5	4.0	602,568.85	761,301.25	32° 39' 13.290 N	103° 29' 3.647 W
388.0	1.20	51.40	387.9	3.6	5.4	602,570.03	761,302.72	32° 39' 13.302 N	103° 29' 3.630 W
478.0	1.10	47.50	477.9	4.8	6.8	602,571.20	761,304.09	32° 39' 13.313 N	103° 29' 3.613 W
565.0	1.00	58.00	564.9	5.8	8.1	602,572.17	761,305.35	32° 39' 13.323 N	103° 29' 3.599 W
653.0	0.90	43.00	652.9	6.7	9.2	602,573.08	761,306.47	32° 39' 13.332 N	103° 29' 3.585 W
716.0	1.00	48.20	715.9	7.4	9.9	602,573.81	761,307.22	32° 39' 13.339 N	103° 29' 3.577 W
810.0	1.00	68.00	809.9	8.3	11.3	602,574.67	761,308.59	32° 39' 13.347 N	103° 29' 3.560 W
905.0	0.90	75.80	904.9	8.8	12.8	602,575.16	761,310.09	32° 39' 13.352 N	103° 29' 3.543 W



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Site:	Cuatro Hijos fee	MD Reference:	WELL @ 3874.3usft (Original Well Elev)
Well:	#8H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
999.0	0.60	67.20	998.8	9.1	14.0	602,575.53	761,311.25	32° 39' 13.355 N	103° 29' 3.529 W
1,094.0	0.80	39.30	1,093.8	9.8	14.8	602,576.24	761,312.13	32° 39' 13.362 N	103° 29' 3.519 W
1,189.0	0.60	39.70	1,188.8	10.7	15.6	602,577.13	761,312.87	32° 39' 13.371 N	103° 29' 3.510 W
1,283.0	0.30	82.00	1,282.8	11.1	16.1	602,577.55	761,313.43	32° 39' 13.375 N	103° 29' 3.504 W
1,378.0	0.40	62.10	1,377.8	11.3	16.7	602,577.74	761,313.97	32° 39' 13.377 N	103° 29' 3.497 W
1,472.0	0.00	307.00	1,471.8	11.5	17.0	602,577.89	761,314.26	32° 39' 13.379 N	103° 29' 3.494 W
1,567.0	0.20	275.20	1,566.8	11.5	16.8	602,577.90	761,314.09	32° 39' 13.379 N	103° 29' 3.496 W
1,661.0	0.40	284.70	1,660.8	11.6	16.3	602,578.00	761,313.61	32° 39' 13.380 N	103° 29' 3.501 W
1,756.0	0.30	282.20	1,755.8	11.7	15.8	602,578.14	761,313.05	32° 39' 13.381 N	103° 29' 3.508 W
1,881.0	0.20	291.50	1,880.8	11.9	15.2	602,578.29	761,312.53	32° 39' 13.383 N	103° 29' 3.514 W
1,951.0	0.40	4.60	1,950.8	12.2	15.1	602,578.58	761,312.43	32° 39' 13.385 N	103° 29' 3.515 W
2,046.0	0.60	47.10	2,045.8	12.8	15.5	602,579.25	761,312.82	32° 39' 13.392 N	103° 29' 3.511 W
2,141.0	0.70	63.80	2,140.8	13.4	16.4	602,579.84	761,313.71	32° 39' 13.398 N	103° 29' 3.500 W
2,235.0	0.60	49.60	2,234.8	14.0	17.3	602,580.41	761,314.60	32° 39' 13.403 N	103° 29' 3.490 W
2,330.0	0.70	49.40	2,329.8	14.7	18.1	602,581.11	761,315.42	32° 39' 13.410 N	103° 29' 3.480 W
2,424.0	0.70	79.90	2,423.8	15.2	19.1	602,581.59	761,316.42	32° 39' 13.415 N	103° 29' 3.468 W
2,519.0	0.70	87.80	2,518.8	15.3	20.3	602,581.71	761,317.57	32° 39' 13.416 N	103° 29' 3.455 W
2,614.0	0.60	106.30	2,613.8	15.2	21.3	602,581.59	761,318.63	32° 39' 13.415 N	103° 29' 3.442 W
2,708.0	0.60	121.50	2,707.8	14.8	22.2	602,581.20	761,319.52	32° 39' 13.411 N	103° 29' 3.432 W
2,803.0	0.90	98.20	2,802.8	14.4	23.4	602,580.83	761,320.68	32° 39' 13.407 N	103° 29' 3.418 W
2,897.0	1.70	80.80	2,896.7	14.5	25.5	602,580.95	761,322.79	32° 39' 13.408 N	103° 29' 3.394 W
2,992.0	1.90	76.20	2,991.7	15.1	28.4	602,581.55	761,325.71	32° 39' 13.414 N	103° 29' 3.360 W
3,086.0	2.10	75.00	3,085.6	16.0	31.6	602,582.37	761,328.89	32° 39' 13.422 N	103° 29' 3.322 W
3,181.0	2.20	72.90	3,180.6	17.0	35.0	602,583.36	761,332.31	32° 39' 13.431 N	103° 29' 3.282 W
3,275.0	1.90	67.80	3,274.5	18.1	38.2	602,584.47	761,335.48	32° 39' 13.442 N	103° 29' 3.245 W
3,370.0	2.20	61.50	3,369.5	19.5	41.2	602,585.94	761,338.54	32° 39' 13.456 N	103° 29' 3.209 W
3,464.0	2.10	58.90	3,463.4	21.3	44.3	602,587.69	761,341.60	32° 39' 13.473 N	103° 29' 3.173 W
3,558.0	1.70	56.20	3,557.3	23.0	46.9	602,589.36	761,344.23	32° 39' 13.490 N	103° 29' 3.142 W
3,666.0	1.50	51.70	3,665.3	24.7	49.4	602,591.12	761,346.67	32° 39' 13.507 N	103° 29' 3.114 W
3,760.0	0.70	95.60	3,759.3	25.4	50.9	602,591.83	761,348.21	32° 39' 13.514 N	103° 29' 3.096 W
3,855.0	0.50	84.20	3,854.3	25.4	51.9	602,591.81	761,349.20	32° 39' 13.514 N	103° 29' 3.084 W
3,949.0	0.70	101.10	3,948.3	25.3	52.9	602,591.75	761,350.17	32° 39' 13.513 N	103° 29' 3.073 W
4,044.0	0.40	196.50	4,043.3	24.9	53.3	602,591.32	761,350.65	32° 39' 13.509 N	103° 29' 3.067 W
4,138.0	0.40	229.60	4,137.3	24.4	53.0	602,590.79	761,350.30	32° 39' 13.503 N	103° 29' 3.071 W
4,233.0	0.40	204.40	4,232.3	23.9	52.6	602,590.27	761,349.91	32° 39' 13.498 N	103° 29' 3.076 W
4,327.0	0.40	230.80	4,326.3	23.4	52.2	602,589.77	761,349.52	32° 39' 13.493 N	103° 29' 3.080 W
4,422.0	0.20	184.50	4,421.3	23.0	52.0	602,589.39	761,349.25	32° 39' 13.490 N	103° 29' 3.084 W
4,517.0	0.10	314.20	4,516.3	22.9	51.9	602,589.28	761,349.18	32° 39' 13.489 N	103° 29' 3.084 W
4,611.0	0.30	312.30	4,610.3	23.1	51.6	602,589.51	761,348.94	32° 39' 13.491 N	103° 29' 3.087 W
4,706.0	0.10	278.20	4,705.3	23.3	51.4	602,589.69	761,348.67	32° 39' 13.493 N	103° 29' 3.090 W
4,800.0	0.20	35.70	4,799.3	23.4	51.4	602,589.83	761,348.69	32° 39' 13.494 N	103° 29' 3.090 W
4,895.0	0.00	332.20	4,894.3	23.6	51.5	602,589.96	761,348.79	32° 39' 13.495 N	103° 29' 3.089 W
4,989.0	0.40	15.30	4,988.3	23.9	51.6	602,590.28	761,348.87	32° 39' 13.498 N	103° 29' 3.088 W
5,084.0	0.40	4.00	5,083.3	24.5	51.7	602,590.93	761,348.98	32° 39' 13.505 N	103° 29' 3.087 W
5,178.0	0.40	24.90	5,177.2	25.2	51.8	602,591.56	761,349.14	32° 39' 13.511 N	103° 29' 3.085 W
5,273.0	0.30	52.50	5,272.2	25.6	52.2	602,592.01	761,349.48	32° 39' 13.515 N	103° 29' 3.081 W
5,367.0	0.40	22.20	5,366.2	26.1	52.5	602,592.46	761,349.80	32° 39' 13.520 N	103° 29' 3.077 W
5,462.0	0.50	69.20	5,461.2	26.5	53.0	602,592.92	761,350.31	32° 39' 13.524 N	103° 29' 3.071 W
5,556.0	0.30	61.60	5,555.2	26.8	53.6	602,593.18	761,350.91	32° 39' 13.527 N	103° 29' 3.064 W
5,651.0	0.40	39.70	5,650.2	27.1	54.0	602,593.55	761,351.34	32° 39' 13.531 N	103° 29' 3.059 W
5,745.0	0.70	55.00	5,744.2	27.7	54.7	602,594.13	761,352.02	32° 39' 13.536 N	103° 29' 3.051 W
5,840.0	0.70	53.90	5,839.2	28.4	55.7	602,594.81	761,352.97	32° 39' 13.543 N	103° 29' 3.040 W
5,934.0	0.20	181.30	5,933.2	28.6	56.1	602,594.98	761,353.43	32° 39' 13.545 N	103° 29' 3.034 W
6,029.0	1.40	246.90	6,028.2	28.0	55.1	602,594.36	761,352.36	32° 39' 13.539 N	103° 29' 3.047 W
6,123.0	1.50	253.90	6,122.2	27.2	52.8	602,593.57	761,350.12	32° 39' 13.531 N	103° 29' 3.073 W



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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,218.0	1.40	254.60	6,217.2	26.5	50.5	602,592.92	761,347.80	32° 39' 13.525 N	103° 29' 3.100 W
6,313.0	1.30	262.90	6,312.1	26.1	48.3	602,592.48	761,345.62	32° 39' 13.520 N	103° 29' 3.126 W
6,408.0	1.40	266.90	6,407.1	25.9	46.1	602,592.28	761,343.39	32° 39' 13.519 N	103° 29' 3.152 W
6,504.0	1.10	298.60	6,503.1	26.3	44.1	602,592.66	761,341.41	32° 39' 13.523 N	103° 29' 3.175 W
6,599.0	1.80	309.70	6,598.0	27.6	42.2	602,594.05	761,339.46	32° 39' 13.536 N	103° 29' 3.198 W
6,694.0	2.50	311.50	6,693.0	30.0	39.5	602,596.37	761,336.76	32° 39' 13.560 N	103° 29' 3.229 W
6,790.0	1.50	311.60	6,788.9	32.2	37.0	602,598.60	761,334.25	32° 39' 13.582 N	103° 29' 3.258 W
6,885.0	1.10	327.80	6,883.9	33.8	35.5	602,600.19	761,332.84	32° 39' 13.598 N	103° 29' 3.275 W
6,980.0	1.10	326.50	6,978.9	35.3	34.5	602,601.72	761,331.85	32° 39' 13.613 N	103° 29' 3.286 W
7,075.0	0.90	322.10	7,073.9	36.7	33.6	602,603.07	761,330.89	32° 39' 13.626 N	103° 29' 3.297 W
7,171.0	1.10	332.20	7,169.9	38.1	32.7	602,604.48	761,329.99	32° 39' 13.640 N	103° 29' 3.307 W
7,266.0	0.50	298.40	7,264.8	39.1	31.9	602,605.49	761,329.20	32° 39' 13.650 N	103° 29' 3.317 W
7,361.0	0.30	260.00	7,359.8	39.2	31.3	602,605.64	761,328.59	32° 39' 13.652 N	103° 29' 3.324 W
7,456.0	0.70	201.60	7,454.8	38.7	30.8	602,605.06	761,328.13	32° 39' 13.646 N	103° 29' 3.329 W
7,552.0	0.50	194.50	7,550.8	37.7	30.5	602,604.11	761,327.81	32° 39' 13.637 N	103° 29' 3.333 W
7,645.0	0.40	181.70	7,643.8	37.0	30.4	602,603.39	761,327.70	32° 39' 13.630 N	103° 29' 3.334 W
7,740.0	0.20	137.90	7,738.8	36.5	30.5	602,602.94	761,327.80	32° 39' 13.625 N	103° 29' 3.333 W
7,836.0	0.40	143.90	7,834.8	36.1	30.8	602,602.54	761,328.11	32° 39' 13.621 N	103° 29' 3.330 W
7,931.0	1.30	185.10	7,929.8	34.8	30.9	602,601.20	761,328.21	32° 39' 13.608 N	103° 29' 3.328 W
8,026.0	1.20	182.00	8,024.8	32.7	30.8	602,599.13	761,328.08	32° 39' 13.588 N	103° 29' 3.330 W
8,121.0	0.90	173.00	8,119.8	31.0	30.8	602,597.40	761,328.14	32° 39' 13.570 N	103° 29' 3.330 W
8,217.0	1.10	175.80	8,215.8	29.3	31.0	602,595.73	761,328.30	32° 39' 13.554 N	103° 29' 3.328 W
8,312.0	1.00	159.30	8,310.7	27.6	31.4	602,594.05	761,328.66	32° 39' 13.537 N	103° 29' 3.324 W
8,407.0	1.00	169.60	8,405.7	26.1	31.8	602,592.45	761,329.10	32° 39' 13.521 N	103° 29' 3.319 W
8,503.0	0.50	143.50	8,501.7	24.9	32.2	602,591.29	761,329.50	32° 39' 13.510 N	103° 29' 3.314 W
8,598.0	0.07	147.10	8,596.7	24.5	32.5	602,590.91	761,329.78	32° 39' 13.506 N	103° 29' 3.311 W
8,693.0	1.20	183.90	8,691.7	23.5	32.4	602,589.87	761,329.74	32° 39' 13.496 N	103° 29' 3.312 W
8,788.0	1.40	191.80	8,786.7	21.3	32.1	602,587.74	761,329.44	32° 39' 13.475 N	103° 29' 3.315 W
8,883.0	1.80	188.20	8,881.7	18.7	31.7	602,585.13	761,328.99	32° 39' 13.449 N	103° 29' 3.321 W
8,979.0	2.30	217.20	8,977.6	15.7	30.3	602,582.10	761,327.61	32° 39' 13.419 N	103° 29' 3.337 W
9,074.0	1.90	223.60	9,072.5	13.0	28.1	602,579.44	761,325.37	32° 39' 13.393 N	103° 29' 3.364 W
9,158.0	1.90	234.80	9,156.5	11.2	26.0	602,577.63	761,323.27	32° 39' 13.375 N	103° 29' 3.388 W
9,253.0	1.70	234.40	9,251.4	9.5	23.5	602,575.90	761,320.84	32° 39' 13.358 N	103° 29' 3.417 W
9,348.0	1.20	263.80	9,346.4	8.6	21.4	602,574.98	761,318.70	32° 39' 13.349 N	103° 29' 3.442 W
9,380.0	2.50	327.70	9,378.4	9.1	20.7	602,575.53	761,318.00	32° 39' 13.355 N	103° 29' 3.450 W
9,411.0	6.40	347.70	9,409.3	11.4	20.0	602,577.79	761,317.27	32° 39' 13.377 N	103° 29' 3.459 W
9,443.0	11.40	349.50	9,440.9	16.2	19.0	602,582.65	761,316.31	32° 39' 13.425 N	103° 29' 3.469 W
9,475.0	16.70	345.50	9,471.9	23.8	17.3	602,590.21	761,314.58	32° 39' 13.500 N	103° 29' 3.489 W
9,506.0	22.20	341.50	9,501.2	33.7	14.3	602,600.09	761,311.61	32° 39' 13.598 N	103° 29' 3.523 W
18 deg dls - 9506.0 MD, 22.20 INC, 341.50 AZI									
9,538.0	26.00	341.90	9,530.4	46.1	10.2	602,612.49	761,307.51	32° 39' 13.721 N	103° 29' 3.570 W
9,570.0	27.90	344.40	9,558.9	60.0	6.0	602,626.37	761,303.31	32° 39' 13.859 N	103° 29' 3.617 W
9,602.0	29.60	346.20	9,586.9	74.9	2.1	602,641.26	761,299.42	32° 39' 14.007 N	103° 29' 3.662 W
9,633.0	32.40	349.60	9,613.5	90.5	-1.2	602,656.87	761,296.09	32° 39' 14.161 N	103° 29' 3.699 W
9,665.0	36.10	352.50	9,640.0	108.2	-4.0	602,674.65	761,293.31	32° 39' 14.338 N	103° 29' 3.730 W
9,697.0	38.50	354.60	9,665.4	127.5	-6.2	602,693.92	761,291.14	32° 39' 14.528 N	103° 29' 3.753 W
9,729.0	40.70	355.80	9,690.1	147.8	-7.9	602,714.24	761,289.44	32° 39' 14.730 N	103° 29' 3.771 W
9,761.0	43.50	356.60	9,713.8	169.2	-9.3	602,735.65	761,288.02	32° 39' 14.942 N	103° 29' 3.786 W
9,791.0	45.50	357.10	9,735.2	190.2	-10.4	602,756.64	761,286.87	32° 39' 15.149 N	103° 29' 3.798 W
9,823.0	48.20	356.90	9,757.1	213.6	-11.7	602,779.95	761,285.65	32° 39' 15.380 N	103° 29' 3.810 W
9,855.0	51.70	356.60	9,777.7	238.0	-13.0	602,804.41	761,284.26	32° 39' 15.622 N	103° 29' 3.824 W
9,887.0	54.10	356.80	9,797.0	263.5	-14.5	602,829.88	761,282.79	32° 39' 15.874 N	103° 29' 3.838 W
9,919.0	56.60	355.80	9,815.2	289.7	-16.2	602,856.15	761,281.09	32° 39' 16.134 N	103° 29' 3.856 W
9,951.0	59.60	354.70	9,832.1	316.8	-18.5	602,883.22	761,278.83	32° 39' 16.402 N	103° 29' 3.880 W
9,983.0	62.30	353.60	9,847.6	344.6	-21.3	602,911.05	761,275.98	32° 39' 16.678 N	103° 29' 3.910 W



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #8H
Project:	Lea County, NM	TVD Reference:	WELL @ 3874.3usft (Original Well Elev)
Site:	Cuatro Hijos fee	MD Reference:	WELL @ 3874.3usft (Original Well Elev)
Well:	#8H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,015.0	65.20	352.90	9,861.8	373.1	-24.7	602,939.54	761,272.60	32° 39' 16.960 N	103° 29' 3.947 W
10,047.0	68.60	352.60	9,874.3	402.3	-28.4	602,968.74	761,268.89	32° 39' 17.249 N	103° 29' 3.988 W
10,078.0	70.70	352.20	9,885.1	431.1	-32.3	602,997.55	761,265.04	32° 39' 17.535 N	103° 29' 4.030 W
10,110.0	72.50	352.40	9,895.2	461.2	-36.3	603,027.64	761,260.97	32° 39' 17.833 N	103° 29' 4.075 W
10,142.0	75.60	353.30	9,904.0	491.8	-40.1	603,058.16	761,257.15	32° 39' 18.135 N	103° 29' 4.117 W
10,171.0	79.20	353.20	9,910.3	519.9	-43.5	603,086.26	761,253.82	32° 39' 18.413 N	103° 29' 4.153 W
10,203.0	81.50	354.00	9,915.7	551.2	-47.0	603,117.61	761,250.31	32° 39' 18.724 N	103° 29' 4.191 W
10,235.0	84.20	353.80	9,919.7	582.8	-50.4	603,149.18	761,246.93	32° 39' 19.037 N	103° 29' 4.228 W
10,298.0	88.60	355.50	9,923.6	645.4	-56.2	603,211.76	761,241.07	32° 39' 19.656 N	103° 29' 4.291 W
10,330.0	89.10	355.20	9,924.3	677.2	-58.8	603,243.65	761,238.48	32° 39' 19.972 N	103° 29' 4.318 W
10,426.0	92.20	355.40	9,923.2	772.9	-66.7	603,339.31	761,230.62	32° 39' 20.919 N	103° 29' 4.401 W
10,521.0	91.90	356.00	9,919.8	867.6	-73.8	603,433.98	761,223.50	32° 39' 21.856 N	103° 29' 4.475 W
10,619.0	93.00	356.10	9,915.6	965.3	-80.5	603,531.66	761,216.75	32° 39' 22.823 N	103° 29' 4.545 W
10,715.0	92.60	354.90	9,910.9	1,060.8	-88.1	603,627.25	761,209.23	32° 39' 23.770 N	103° 29' 4.624 W
10,809.0	93.60	354.40	9,905.8	1,154.3	-96.8	603,720.70	761,200.48	32° 39' 24.695 N	103° 29' 4.718 W
10,904.0	94.30	354.10	9,899.3	1,248.6	-106.3	603,814.99	761,190.98	32° 39' 25.629 N	103° 29' 4.820 W
Drop from 94 to 91 - 10904.0° MD, 94.30° INC, 354.10° AZI									
11,000.0	90.90	352.80	9,894.9	1,343.8	-117.3	603,910.25	761,180.04	32° 39' 26.572 N	103° 29' 4.939 W
11,097.0	89.40	352.60	9,894.7	1,440.1	-129.6	604,006.46	761,167.72	32° 39' 27.525 N	103° 29' 5.074 W
11,191.0	89.80	352.20	9,895.3	1,533.2	-142.0	604,099.64	761,155.29	32° 39' 28.448 N	103° 29' 5.211 W
Raise from 89 to 93.3 - 11191.0° MD, 89.80° INC, 352.20° AZI									
11,287.0	93.30	353.60	9,892.7	1,628.4	-153.9	604,194.85	761,143.43	32° 39' 29.391 N	103° 29' 5.341 W
11,383.0	94.20	353.60	9,886.4	1,723.6	-164.5	604,290.04	761,132.75	32° 39' 30.334 N	103° 29' 5.457 W
11,479.0	92.10	353.70	9,881.2	1,818.9	-175.1	604,385.31	761,122.15	32° 39' 31.277 N	103° 29' 5.572 W
11,574.0	94.20	353.90	9,875.9	1,913.2	-185.4	604,479.60	761,111.90	32° 39' 32.211 N	103° 29' 5.683 W
11,670.0	95.40	354.50	9,867.9	2,008.4	-195.1	604,574.77	761,102.24	32° 39' 33.154 N	103° 29' 5.787 W
11,766.0	96.00	355.70	9,858.4	2,103.5	-203.2	604,669.95	761,094.08	32° 39' 34.096 N	103° 29' 5.874 W
11,861.0	98.00	355.80	9,846.8	2,197.6	-210.2	604,763.97	761,087.09	32° 39' 35.027 N	103° 29' 5.946 W
98 deg inc - 11861.0° MD, 98.00° INC, 355.80° AZI									
11,957.0	94.70	354.50	9,836.2	2,292.6	-218.3	604,859.03	761,079.02	32° 39' 35.968 N	103° 29' 6.032 W
12,052.0	92.50	354.90	9,830.2	2,387.0	-227.0	604,953.43	761,070.26	32° 39' 36.903 N	103° 29' 6.126 W
12,148.0	91.90	355.60	9,826.5	2,482.6	-235.0	605,049.03	761,062.32	32° 39' 37.849 N	103° 29' 6.210 W
12,243.0	93.00	355.50	9,822.5	2,577.3	-242.3	605,143.65	761,054.96	32° 39' 38.786 N	103° 29' 6.287 W
12,338.0	92.10	356.10	9,818.2	2,671.9	-249.3	605,238.30	761,048.00	32° 39' 39.723 N	103° 29' 6.359 W
12,434.0	92.70	357.00	9,814.2	2,767.6	-255.1	605,334.04	761,042.23	32° 39' 40.671 N	103° 29' 6.418 W
12,529.0	93.00	357.30	9,809.5	2,862.4	-259.8	605,428.81	761,037.52	32° 39' 41.609 N	103° 29' 6.464 W
12,623.0	92.80	357.70	9,804.7	2,956.2	-263.9	605,522.60	761,033.42	32° 39' 42.537 N	103° 29' 6.503 W
12,719.0	92.80	356.30	9,800.1	3,051.9	-268.9	605,618.35	761,028.40	32° 39' 43.485 N	103° 29' 6.553 W
12,812.0	93.20	356.30	9,795.2	3,144.6	-274.9	605,711.03	761,022.41	32° 39' 44.403 N	103° 29' 6.614 W
12,907.0	92.10	355.80	9,790.8	3,239.3	-281.4	605,805.70	761,015.87	32° 39' 45.340 N	103° 29' 6.682 W
13,002.0	90.70	356.80	9,788.5	3,334.1	-287.6	605,900.47	761,009.74	32° 39' 46.278 N	103° 29' 6.745 W
13,097.0	89.80	355.50	9,788.1	3,428.8	-293.9	605,995.25	761,003.36	32° 39' 47.217 N	103° 29' 6.811 W
13,191.0	91.40	354.80	9,787.1	3,522.5	-301.9	606,088.91	760,995.42	32° 39' 48.144 N	103° 29' 6.895 W
13,285.0	90.60	353.70	9,785.4	3,616.0	-311.3	606,182.42	760,986.00	32° 39' 49.070 N	103° 29' 6.996 W
13,380.0	90.50	354.10	9,784.5	3,710.5	-321.4	606,276.88	760,975.91	32° 39' 50.005 N	103° 29' 7.106 W
13,475.0	89.70	354.30	9,784.4	3,805.0	-331.0	606,371.39	760,966.31	32° 39' 50.941 N	103° 29' 7.209 W
13,569.0	90.00	353.90	9,784.6	3,898.5	-340.7	606,464.89	760,956.64	32° 39' 51.867 N	103° 29' 7.313 W
13,667.0	90.00	353.90	9,784.6	3,995.9	-351.1	606,562.33	760,946.23	32° 39' 52.832 N	103° 29' 7.426 W
Proj to Bit- 13667.0° MD, 90.00° INC, 353.90° AZI - PBHL(Cuatro Hijos fee #8H)									



Wellplanning
Survey Report - Geographic

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Project:	Lea County, NM	TVD Reference:	WELL @ 3874.3usft (Original Well Elev)
Site:	Cuatro Hijos fee	MD Reference:	WELL @ 3874.3usft (Original Well Elev)
Well:	#8H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,506.0	9,501.2	33.7	14.3	18 deg dls - 9506.0 'MD, 22.20° INC, 341.50° AZI
10,904.0	9,899.3	1,248.6	-106.3	Drop from 94 to 91 - 10904.0 'MD, 94.30° INC, 354.10° AZI
11,191.0	9,895.3	1,533.2	-142.0	Raise from 89 to 93.3 - 11191.0 'MD, 89.80° INC, 352.20° AZI
11,861.0	9,846.8	2,197.6	-210.2	98 deg inc - 11861.0 'MD, 98.00° INC, 355.80° AZI
13,667.0	9,784.6	3,995.9	-351.1	Proj to Bit- 13667.0 'MD, 90.00° INC, 353.90° AZI

Checked By: _____	Approved By: _____	Date: _____
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