



Project: Lea Co., NM (NAD 83)
 Site: Sec 05-T10S-R36E
 Rig: Norton 4
 Well: West Crossroads Unit #324H
 Wellbore: HZ [440737]
 Design: FINAL



Azimuths to Grid North
 True North: -0.58°
 Magnetic North: 6.07°

Magnetic Field
 Strength: 48592.8nT
 Dip Angle: 61.15°
 Date: 12/24/2018
 Model: HDGM_FILE

+N/-S
 0.00

+E/-W
 0.00

Northing
 904451.40

Gravity = 0.9986°
 Easting
 861733.10

Latitude
 33.481789

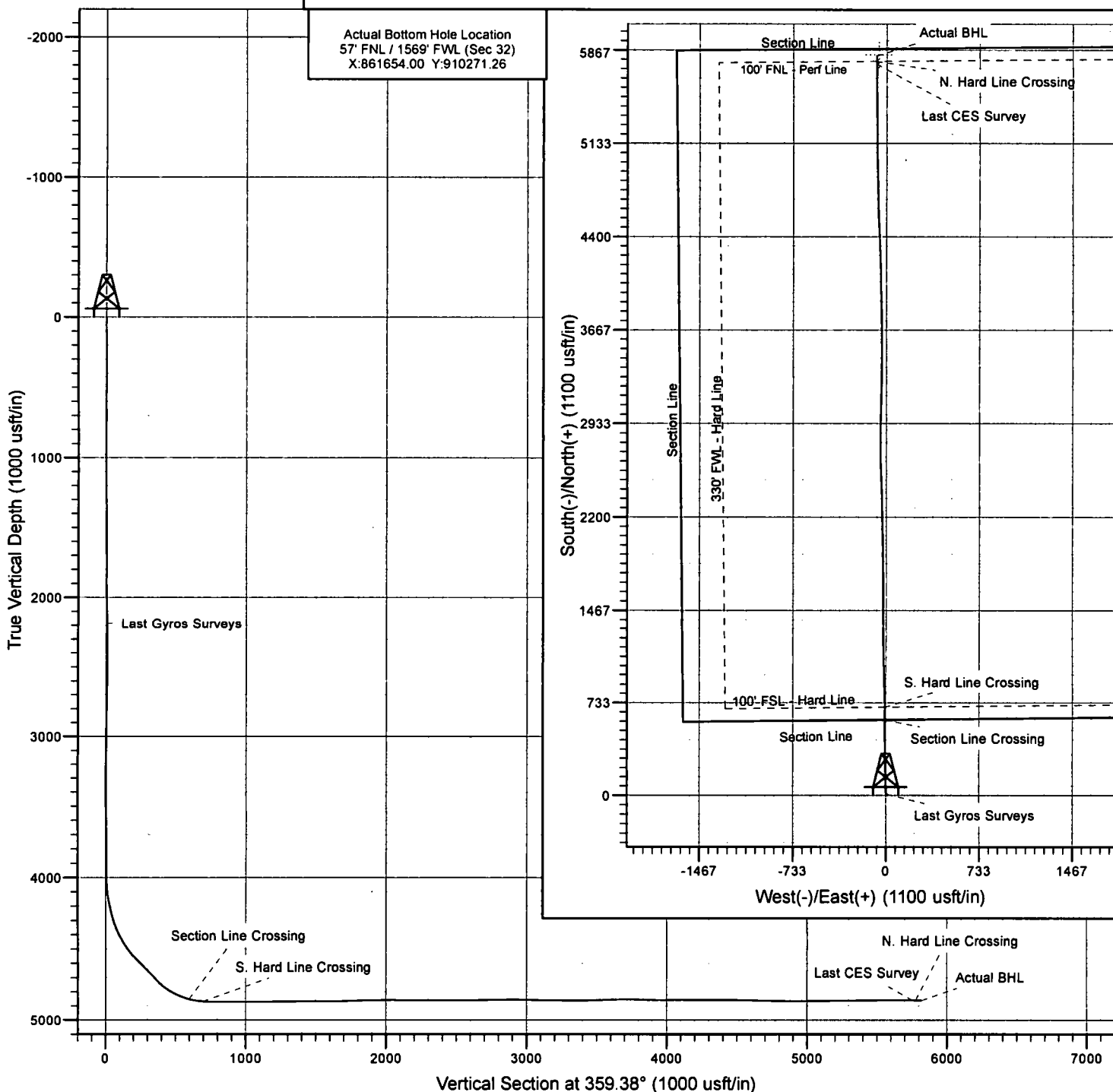
Longitude
 -103.282533

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Annotation
2185.00	1.10	22.16	2184.83	7.63	12.76	7.50	Last Gyros Surveys
5107.00	75.17	0.83	4853.69	598.58	-6.61	598.61	Section Line Crossing
5208.00	85.98	359.41	4869.93	698.13	-6.82	698.16	S. Hard Line Crossing
10267.00	89.40	359.60	4860.74	5754.87	-78.65	5755.38	Last CES Survey
10289.00	89.40	359.60	4860.97	5776.87	-78.80	5777.38	N. Hard Line Crossing
10332.00	89.40	359.60	4861.42	5819.86	-79.10	5820.38	Actual BHL

TARGET LINE
 90.15° INC @ 4882' TVD @ 0' VS
 10' Up / 10' Down
 30' Left / 30' Right

Actual Bottom Hole Location
 57' FNL / 1569' FWL (Sec 32)
 X:861654.00 Y:910271.26



Survey Report

Company:	Manzano LLC	Local Co-ordinate Reference:	Well West Crossroads Unit #324H
Project:	Lea Co., NM (NAD 83)	TVD Reference:	13' KB @ 4062.00usft (Norton 4)
Site:	Sec 05-T10S-R36E	MD Reference:	13' KB @ 4062.00usft (Norton 4)
Well:	West Crossroads Unit #324H	North Reference:	Grid
Wellbore:	HZ [440737]	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Project	Lea Co., 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		Sec 05-T10S-R36E, 0.9986°			
Site Position:		Northing:	904,451.40 usft	Latitude:	33.481789
From:	Map	Easting:	861,733.10 usft	Longitude:	-103.282533
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.58 °

Well	West Crossroads Unit #324H					
Well Position	+N/-S	0.00 usft	Northing:	904,451.40 usft	Latitude:	33.481789
	+E/-W	0.00 usft	Easting:	861,733.10 usft	Longitude:	-103.282533
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,049.00 usft

Wellbore	HZ [440737]				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM_FILE	12/24/2018	6.65	61.15	48,592.80000000

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	359.38	

Survey Program	Date 1/4/2019				
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
90.00	2,185.00	Surface (HZ [440737])	ISCWSA MWD	MWD - ISCWSA	
2,321.00	10,332.00	CES MWD (HZ [440737])	MWD+HDGM	OWSG MWD + HDGM	

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Formations /	
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Comments	
(usft)			(usft)			(usft)	(°/100usf	(°/100u		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
90.00	0.60	325.16	90.00	0.39	-0.27	0.39	0.67	0.67		
179.00	0.50	4.16	178.99	1.16	-0.51	1.16	0.43	-0.11		
268.00	0.40	10.16	267.99	1.85	-0.42	1.85	0.12	-0.11		
358.00	0.40	90.16	357.99	2.16	-0.05	2.16	0.57	0.00		
448.00	0.50	98.16	447.99	2.10	0.65	2.09	0.13	0.11		
536.00	0.70	144.16	535.98	1.61	1.34	1.60	0.57	0.23		
628.00	0.90	126.16	627.97	0.73	2.26	0.70	0.35	0.22		
724.00	0.60	191.16	723.97	-0.21	2.77	-0.24	0.88	-0.31		
818.00	0.80	113.16	817.96	-0.95	3.27	-0.99	0.95	0.21		
910.00	0.80	112.16	909.95	-1.44	4.46	-1.49	0.02	0.00		
1,004.00	0.80	71.16	1,003.94	-1.48	5.69	-1.54	0.60	0.00		

Survey Report

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Wellbore: HZ [440737]
Design: FINAL

Local Co-ordinate Reference: Well West Crossroads Unit #324H
TVD Reference: 13' KB @ 4062.00usft (Norton 4)
MD Reference: 13' KB @ 4062.00usft (Norton 4)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA EDM 5000 Multi Users DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
1,099.00	0.40	122.16	1,098.94	-1.44	6.60	-1.51	0.66	-0.42	
1,191.00	1.30	59.16	1,190.93	-1.08	7.77	-1.16	1.28	0.98	
1,285.00	1.20	39.16	1,284.91	0.23	9.30	0.13	0.47	-0.11	
1,473.00	0.80	86.16	1,472.88	1.85	11.86	1.72	0.47	-0.21	
1,567.00	0.30	97.16	1,566.88	1.86	12.75	1.72	0.54	-0.53	
1,662.00	0.70	302.16	1,661.88	2.14	12.51	2.00	1.03	0.42	
1,846.00	0.40	58.16	1,845.87	3.07	12.10	2.94	0.51	-0.16	
1,942.00	0.60	69.16	1,941.87	3.43	12.86	3.29	0.23	0.21	
2,036.00	1.50	350.16	2,035.85	4.82	13.11	4.67	1.60	0.96	
2,129.00	0.90	343.16	2,128.83	6.72	12.69	6.58	0.66	-0.65	
2,185.00	1.10	22.16	2,184.83	7.63	12.76	7.50	1.24	0.36	Last Gyros Surveys
2,321.00	0.60	289.90	2,320.81	9.09	12.59	8.95	0.94	-0.37	
2,415.00	0.60	303.00	2,414.81	9.52	11.71	9.39	0.15	0.00	
2,509.00	0.90	222.40	2,508.80	9.24	10.80	9.13	1.06	0.32	
2,603.00	0.80	216.90	2,602.79	8.17	9.91	8.07	0.14	-0.11	
2,697.00	0.70	236.20	2,696.79	7.33	9.04	7.23	0.29	-0.11	
2,791.00	0.90	234.00	2,790.78	6.58	7.96	6.49	0.22	0.21	
2,885.00	1.10	236.90	2,884.76	5.65	6.61	5.58	0.22	0.21	
2,979.00	1.20	236.20	2,978.74	4.61	5.04	4.55	0.11	0.11	
3,073.00	1.10	211.90	3,072.72	3.30	3.74	3.26	0.53	-0.11	
3,167.00	0.80	229.00	3,166.71	2.10	2.77	2.07	0.44	-0.32	
3,261.00	0.60	244.20	3,260.70	1.45	1.83	1.43	0.29	-0.21	
3,355.00	0.20	316.90	3,354.70	1.36	1.28	1.35	0.61	-0.43	
3,450.00	0.40	327.80	3,449.70	1.76	0.99	1.75	0.22	0.21	
3,544.00	0.60	6.90	3,543.70	2.53	0.87	2.52	0.41	0.21	
3,636.00	0.60	10.80	3,635.69	3.48	1.02	3.47	0.04	0.00	
3,730.00	0.70	4.30	3,729.69	4.54	1.15	4.52	0.13	0.11	
3,825.00	0.60	13.80	3,824.68	5.60	1.32	5.58	0.15	-0.11	
3,918.00	0.60	13.20	3,917.68	6.54	1.54	6.53	0.01	0.00	
4,012.00	0.40	349.70	4,011.67	7.35	1.60	7.33	0.30	-0.21	
4,044.00	1.30	357.90	4,043.67	7.82	1.56	7.80	2.83	2.81	
4,075.00	3.90	4.00	4,074.63	9.22	1.62	9.20	8.42	8.39	
4,107.00	6.80	1.20	4,106.49	12.20	1.74	12.18	9.10	9.06	
4,139.00	9.80	358.10	4,138.15	16.82	1.69	16.80	9.48	9.37	
4,170.00	11.80	355.80	4,168.60	22.62	1.37	22.60	6.60	6.45	
4,201.00	12.30	355.70	4,198.92	29.07	0.89	29.06	1.61	1.61	
4,233.00	12.70	355.70	4,230.16	35.98	0.37	35.97	1.25	1.25	
4,264.00	14.40	356.10	4,260.30	43.22	-0.15	43.22	5.49	5.48	
4,296.00	16.70	357.50	4,291.12	51.79	-0.62	51.79	7.28	7.19	
4,327.00	19.40	357.90	4,320.59	61.38	-1.00	61.39	8.72	8.71	
4,359.00	21.80	359.80	4,350.55	72.64	-1.22	72.65	7.78	7.50	
4,390.00	23.70	0.30	4,379.13	84.63	-1.20	84.63	6.16	6.13	
4,421.00	26.90	0.30	4,407.16	97.87	-1.14	97.88	10.32	10.32	
4,453.00	29.90	0.00	4,435.30	113.09	-1.10	113.10	9.39	9.37	
4,484.00	32.80	359.80	4,461.77	129.22	-1.13	129.22	9.36	9.35	
4,515.00	34.90	359.70	4,487.52	146.48	-1.20	146.49	6.78	6.77	
4,547.00	38.10	359.90	4,513.24	165.52	-1.27	165.52	10.01	10.00	
4,578.00	41.10	359.90	4,537.12	185.27	-1.30	185.28	9.68	9.68	
4,609.00	44.10	359.60	4,559.94	206.25	-1.40	206.26	9.70	9.68	
4,642.00	45.80	359.10	4,583.29	229.57	-1.66	229.57	5.26	5.15	
4,673.00	45.80	358.70	4,604.90	251.79	-2.09	251.79	0.93	0.00	
4,704.00	45.10	358.40	4,626.65	273.87	-2.65	273.88	2.36	-2.26	
4,736.00	44.80	358.90	4,649.30	296.47	-3.18	296.49	1.45	-0.94	

Survey Report

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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
4,767.00	44.40	358.20	4,671.37	318.23	-3.73	318.25	2.04	-1.29	
4,799.00	43.60	358.40	4,694.39	340.45	-4.39	340.48	2.54	-2.50	
4,831.00	43.90	358.10	4,717.50	362.57	-5.07	362.60	1.14	0.94	
4,862.00	47.40	358.00	4,739.17	384.72	-5.82	384.76	11.29	11.29	
4,894.00	51.30	357.90	4,760.01	408.98	-6.69	409.03	12.19	12.19	
4,925.00	55.20	358.40	4,778.56	433.80	-7.49	433.85	12.65	12.58	
4,956.00	58.80	358.80	4,795.44	459.78	-8.12	459.85	11.66	11.61	
4,988.00	62.70	0.30	4,811.07	487.70	-8.33	487.76	12.85	12.19	
5,019.00	66.60	0.70	4,824.34	515.71	-8.09	515.76	12.63	12.58	
5,051.00	69.40	1.00	4,836.33	545.37	-7.65	545.42	8.79	8.75	
5,083.00	72.00	1.30	4,846.90	575.56	-7.04	575.60	8.17	8.12	
5,107.00	75.17	0.83	4,853.69	598.58	-6.61	598.61	13.36	13.23	Section Line Crossing
5,114.00	76.10	0.70	4,855.42	605.36	-6.52	605.39	13.36	13.23	
5,145.00	80.10	359.70	4,861.81	635.68	-6.42	635.72	13.28	12.90	
5,177.00	82.20	359.70	4,866.74	667.30	-6.58	667.33	6.56	6.56	
5,208.00	85.98	359.41	4,869.93	698.13	-8.82	698.16	12.22	12.19	S. Hard Line Crossing
5,209.00	86.10	359.40	4,870.00	699.13	-8.83	699.16	12.22	12.19	
5,240.00	89.30	358.90	4,871.24	730.10	-7.29	730.13	10.45	10.32	
5,333.00	90.70	358.90	4,871.24	823.08	-9.08	823.13	1.51	1.51	
5,427.00	88.90	357.40	4,871.57	917.02	-12.11	917.10	2.49	-1.91	
5,522.00	89.10	357.70	4,873.23	1,011.92	-16.17	1,012.03	0.38	0.21	
5,615.00	91.50	359.60	4,872.74	1,104.88	-18.36	1,105.01	3.29	2.58	
5,710.00	90.80	358.90	4,870.83	1,199.85	-19.61	1,199.99	1.04	-0.74	
5,805.00	89.50	358.90	4,870.58	1,294.83	-21.43	1,294.99	1.37	-1.37	
5,897.00	91.40	359.60	4,869.86	1,386.82	-22.64	1,386.98	2.20	2.07	
5,992.00	90.00	0.30	4,868.70	1,481.81	-22.72	1,481.97	1.65	-1.47	
6,086.00	89.30	359.60	4,869.28	1,575.80	-22.80	1,575.96	1.05	-0.74	
6,181.00	92.00	359.80	4,868.20	1,670.79	-23.30	1,670.94	2.85	2.84	
6,276.00	91.90	359.80	4,864.97	1,765.73	-23.63	1,765.88	0.11	-0.11	
6,370.00	91.40	359.00	4,862.26	1,859.69	-24.61	1,859.84	1.00	-0.53	
6,462.00	91.20	358.60	4,860.17	1,951.64	-26.54	1,951.81	0.49	-0.22	
6,553.00	89.40	358.50	4,859.69	2,042.61	-28.84	2,042.80	1.98	-1.98	
6,646.00	88.90	358.60	4,861.07	2,135.57	-31.19	2,135.78	0.55	-0.54	
6,738.00	90.20	359.50	4,861.80	2,227.55	-32.72	2,227.77	1.72	1.41	
6,831.00	89.80	359.00	4,861.80	2,320.54	-33.94	2,320.77	0.69	-0.43	
6,923.00	89.80	358.20	4,862.12	2,412.51	-36.18	2,412.76	0.87	0.00	
7,014.00	89.40	357.00	4,862.75	2,503.43	-40.00	2,503.71	1.39	-0.44	
7,106.00	90.60	357.60	4,862.75	2,595.32	-44.33	2,595.65	1.46	1.30	
7,197.00	92.00	359.90	4,860.69	2,686.27	-46.31	2,686.61	2.96	1.54	
7,289.00	92.40	359.50	4,857.16	2,778.20	-46.80	2,778.54	0.61	0.43	
7,382.00	89.30	1.30	4,855.78	2,871.17	-46.15	2,871.50	3.85	-3.33	
7,475.00	88.70	1.70	4,857.40	2,964.13	-43.71	2,964.43	0.78	-0.65	
7,569.00	88.30	2.40	4,859.86	3,058.03	-40.35	3,058.29	0.86	-0.43	
7,664.00	89.50	0.70	4,861.68	3,152.98	-37.78	3,153.20	2.19	1.26	
7,757.00	89.20	359.90	4,862.74	3,245.97	-37.29	3,246.18	0.92	-0.32	
7,851.00	89.10	0.20	4,864.13	3,339.96	-37.21	3,340.16	0.34	-0.11	
7,945.00	92.00	0.30	4,863.23	3,433.94	-36.80	3,434.14	3.09	3.09	
8,039.00	92.60	0.30	4,859.46	3,527.86	-36.31	3,528.05	0.64	0.64	
8,133.00	91.40	359.70	4,856.18	3,621.81	-36.31	3,621.99	1.43	-1.28	
8,226.00	90.60	359.70	4,854.56	3,714.79	-36.80	3,714.97	0.86	-0.86	
8,320.00	88.20	358.60	4,855.54	3,808.77	-38.19	3,808.96	2.81	-2.55	
8,414.00	88.10	358.70	4,858.58	3,902.69	-40.41	3,902.90	0.15	-0.11	
8,509.00	90.30	359.00	4,859.90	3,997.66	-42.31	3,997.88	2.34	2.32	

Survey Report

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8,603.00	91.70	359.40	4,858.26	4,091.63	-43.62	4,091.86	1.55	1.49	
8,698.00	89.80	358.10	4,857.02	4,186.59	-45.70	4,186.84	2.42	-2.00	
8,793.00	89.70	357.90	4,857.43	4,281.53	-49.01	4,281.81	0.24	-0.11	
8,887.00	89.70	357.10	4,857.92	4,375.44	-53.11	4,375.76	0.85	0.00	
8,981.00	89.60	356.60	4,858.50	4,469.30	-58.28	4,469.67	0.54	-0.11	
9,075.00	88.50	358.20	4,860.06	4,563.18	-62.54	4,563.59	2.07	-1.17	
9,170.00	88.60	358.80	4,862.46	4,658.12	-65.03	4,658.55	0.64	0.11	
9,265.00	88.90	358.80	4,864.53	4,753.08	-67.02	4,753.52	0.32	0.32	
9,358.00	89.30	358.10	4,865.99	4,846.03	-69.53	4,846.50	0.87	0.43	
9,453.00	90.40	357.90	4,866.24	4,940.97	-72.85	4,941.47	1.18	1.16	
9,547.00	90.30	0.30	4,865.67	5,034.95	-74.32	5,035.46	2.56	-0.11	
9,640.00	90.90	0.30	4,864.69	5,127.94	-73.84	5,128.44	0.65	0.65	
9,734.00	91.40	359.90	4,862.81	5,221.92	-73.67	5,222.42	0.68	0.53	
9,829.00	89.80	359.20	4,861.81	5,316.91	-74.42	5,317.41	1.84	-1.68	
9,923.00	89.90	358.90	4,862.06	5,410.90	-75.98	5,411.40	0.34	0.11	
10,017.00	91.20	359.50	4,861.16	5,504.88	-77.29	5,505.40	1.52	1.38	
10,111.00	90.10	359.80	4,860.09	5,598.87	-77.86	5,599.39	1.21	-1.17	
10,206.00	89.70	359.70	4,860.26	5,693.87	-78.28	5,694.39	0.43	-0.42	
10,267.00	89.40	359.60	4,860.74	5,754.87	-78.65	5,755.38	0.52	-0.49	Last CES Survey
10,289.00	89.40	359.60	4,860.97	5,776.87	-78.80	5,777.38	0.00	0.00	N. Hard Line Crossing
10,332.00	89.40	359.60	4,861.42	5,819.86	-79.10	5,820.38	0.00	0.00	Actual BHL

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
PBHL - WCU #324H	0.00	0.00	4,867.00	5,828.80	-62.60	910,280.20	861,670.50	33.497807	-103.282545
- actual wellpath misses target center by 19.58usft at 10332.00usft MD (4861.42 TVD, 5819.86 N, -79.10 E)									
- Point									
PBHL P2 - WCU #324H	0.00	0.00	4,865.00	5,828.80	-62.60	910,280.20	861,670.50	33.497807	-103.282545
- actual wellpath misses target center by 19.11usft at 10332.00usft MD (4861.42 TVD, 5819.86 N, -79.10 E)									
- Point									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,185.00	2,184.83	7.63	12.76	Last Gyros Surveys
5,107.00	4,853.69	598.58	-6.61	Section Line Crossing
5,208.00	4,869.93	698.13	-6.82	S. Hard Line Crossing
10,267.00	4,860.74	5,754.87	-78.65	Last CES Survey
10,289.00	4,860.97	5,776.87	-78.80	N. Hard Line Crossing
10,332.00	4,861.42	5,819.86	-79.10	Actual BHL

Checked By: _____	Approved By: _____	Date: _____
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H HEADER INFORMATION -----

H COMPANY : Manzano LLC 30-025-45433

H FIELD : Lea Co., NM (NAD 83)

H SITE : Sec 05-T10S-R36E

H WELL : West Crossroads Unit #324H

H WELLPATH: HZ [440737]

H DEPTHUNT: usft

H SURVDATE: 12/29/2018

H-----

H WELL INFORMATION

H WELL EW MAP : 861733.10

H WELL NS MAP : 904451.40

H DATUM ELEV N : 4062.00

H VSECT ANGLE : 359.38

H VSECT NORTH : 0.00

H VSECT EAST : 0.00

H-----

H SURVEY TYPE INFORMATION

H 90.00 - 2185.00 SURFACE : ISCWSA MWD

H 2321.00 - 10332.00 CES MWD : MWD+HDGM

H-----

H SURVEY LIST

MD (ft)	Inc (Deg)	Azim. (Deg)	SSTVD (ft)	TVD (ft)	N/S (ft)	E/W (ft)	Y (ft)	X (ft)	DLS (dega/100f)	V.S. (ft)	Comment
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0.00	0.00	0.00	-4062.00	0.00	0.00	N	0.00	E	904451.40	N	861733.10	E	0.00	0.00	
90.00	0.60	325.16	-3972.00	90.00	0.39	N	0.27	W	904451.79	N	861732.83	E	0.67	0.39	
179.00	0.50	4.16	-3883.01	179.00	1.16	N	0.51	W	904452.56	N	861732.59	E	0.43	1.16	
268.00	0.40	10.16	-3794.01	267.99	1.85	N	0.42	W	904453.25	N	861732.68	E	0.12	1.85	
358.00	0.40	90.16	-3704.01	357.99	2.16	N	0.06	W	904453.56	N	861733.05	E	0.57	2.16	
448.00	0.50	98.16	-3614.01	447.99	2.10	N	0.65	E	904453.50	N	861733.75	E	0.13	2.09	
536.00	0.70	144.16	-3526.02	535.98	1.61	N	1.34	E	904453.01	N	861734.44	E	0.57	1.60	
628.00	0.90	126.16	-3434.03	627.97	0.73	N	2.26	E	904452.13	N	861735.36	E	0.35	0.71	
724.00	0.60	191.16	-3338.03	723.97	0.21	S	2.77	E	904451.19	N	861735.87	E	0.88	-0.24	
818.00	0.80	113.16	-3244.04	817.96	0.95	S	3.28	E	904450.45	N	861736.38	E	0.95	-0.99	

910.00	0.80	112.16	-3152.05	909.95	1.45	S	4.46	E	904449.96	N	861737.56	E	0.02	-1.49	
1004.00	0.80	71.16	-3058.06	1003.95	1.48	S	5.69	E	904449.92	N	861738.79	E	0.60	-1.54	
1099.00	0.40	122.16	-2963.06	1098.94	1.44	S	6.60	E	904449.96	N	861739.70	E	0.66	-1.51	
1191.00	1.30	59.16	-2871.07	1190.93	1.08	S	7.77	E	904450.32	N	861740.87	E	1.28	-1.16	
1285.00	1.20	39.16	-2777.09	1284.91	0.23	N	9.30	E	904451.63	N	861742.40	E	0.47	0.13	
1473.00	0.80	86.16	-2589.12	1472.88	1.85	N	11.86	E	904453.25	N	861744.96	E	0.47	1.72	
1567.00	0.30	97.16	-2495.12	1566.88	1.86	N	12.75	E	904453.26	N	861745.85	E	0.54	1.72	
1662.00	0.70	302.16	-2400.12	1661.88	2.14	N	12.51	E	904453.54	N	861745.61	E	1.03	2.00	
1846.00	0.40	58.16	-2216.13	1845.87	3.07	N	12.10	E	904454.47	N	861745.20	E	0.51	2.94	
1942.00	0.60	69.16	-2120.13	1941.87	3.43	N	12.86	E	904454.83	N	861745.96	E	0.23	3.29	
2036.00	1.50	350.16	-2026.15	2035.85	4.82	N	13.11	E	904456.22	N	861746.21	E	1.60	4.68	
2129.00	0.90	343.16	-1933.17	2128.83	6.72	N	12.69	E	904458.12	N	861745.79	E	0.66	6.58	
2185.00	1.10	22.16	-1877.18	2184.83	7.63	N	12.76	E	904459.03	N	861745.86	E	1.24	7.50	Last Gyros Surveys
2321.00	0.60	289.90	-1741.19	2320.81	9.09	N	12.59	E	904460.49	N	861745.69	E	0.94	8.95	
2415.00	0.60	303.00	-1647.19	2414.81	9.52	N	11.71	E	904460.92	N	861744.81	E	0.15	9.39	
2509.00	0.90	222.40	-1553.20	2508.80	9.24	N	10.80	E	904460.64	N	861743.90	E	1.06	9.13	
2603.00	0.80	216.90	-1459.21	2602.79	8.17	N	9.91	E	904459.57	N	861743.01	E	0.14	8.07	
2697.00	0.70	236.20	-1365.22	2696.79	7.33	N	9.04	E	904458.73	N	861742.14	E	0.29	7.23	
2791.00	0.90	234.00	-1271.22	2790.78	6.58	N	7.96	E	904457.98	N	861741.06	E	0.22	6.49	
2885.00	1.10	236.90	-1177.24	2884.76	5.65	N	6.61	E	904457.05	N	861739.71	E	0.22	5.58	
2979.00	1.20	236.20	-1083.26	2978.74	4.61	N	5.04	E	904456.01	N	861738.14	E	0.11	4.56	
3073.00	1.10	211.90	-989.28	3072.72	3.30	N	3.74	E	904454.70	N	861736.84	E	0.53	3.26	
3167.00	0.80	229.00	-895.29	3166.71	2.10	N	2.77	E	904453.50	N	861735.87	E	0.44	2.07	
3261.00	0.60	244.20	-801.30	3260.70	1.46	N	1.83	E	904452.86	N	861734.93	E	0.29	1.44	
3355.00	0.20	316.90	-707.30	3354.70	1.36	N	1.28	E	904452.76	N	861734.38	E	0.61	1.35	
3450.00	0.40	327.80	-612.30	3449.70	1.76	N	0.99	E	904453.16	N	861734.09	E	0.22	1.75	
3544.00	0.60	6.90	-518.30	3543.70	2.53	N	0.87	E	904453.93	N	861733.97	E	0.41	2.52	
3636.00	0.60	10.80	-426.31	3635.69	3.48	N	1.02	E	904454.88	N	861734.12	E	0.04	3.47	
3730.00	0.70	4.30	-332.31	3729.69	4.54	N	1.15	E	904455.94	N	861734.25	E	0.13	4.52	
3825.00	0.60	13.80	-237.32	3824.68	5.60	N	1.32	E	904457.00	N	861734.42	E	0.15	5.58	
3918.00	0.60	13.20	-144.33	3917.68	6.54	N	1.54	E	904457.94	N	861734.64	E	0.01	6.53	
4012.00	0.40	349.70	-50.33	4011.67	7.35	N	1.60	E	904458.75	N	861734.70	E	0.30	7.33	
4044.00	1.30	357.90	-18.33	4043.67	7.82	N	1.56	E	904459.22	N	861734.66	E	2.83	7.80	
4075.00	3.90	4.00	12.63	4074.63	9.22	N	1.62	E	904460.62	N	861734.72	E	8.42	9.20	
4107.00	6.80	1.20	44.49	4106.49	12.20	N	1.74	E	904463.60	N	861734.84	E	9.10	12.18	

4139.00	9.80	358.10	76.15	4138.15	16.82	N	1.69	E	904468.22	N	861734.79	E	9.48	16.80	
4170.00	11.80	355.80	106.60	4168.60	22.62	N	1.37	E	904474.02	N	861734.47	E	6.60	22.60	
4201.00	12.30	355.70	136.92	4198.92	29.07	N	0.89	E	904480.47	N	861733.99	E	1.61	29.06	
4233.00	12.70	355.70	168.16	4230.16	35.98	N	0.37	E	904487.38	N	861733.47	E	1.25	35.97	
4264.00	14.40	356.10	198.30	4260.30	43.22	N	0.15	W	904494.62	N	861732.95	E	5.49	43.22	
4296.00	16.70	357.50	229.12	4291.12	51.79	N	0.62	W	904503.19	N	861732.48	E	7.28	51.79	
4327.00	19.40	357.90	258.59	4320.59	61.38	N	1.00	W	904512.78	N	861732.10	E	8.72	61.39	
4359.00	21.80	359.80	288.55	4350.55	72.64	N	1.22	W	904524.04	N	861731.88	E	7.79	72.65	
4390.00	23.70	0.30	317.13	4379.13	84.63	N	1.21	W	904536.03	N	861731.90	E	6.16	84.63	
4421.00	26.90	0.30	345.16	4407.16	97.87	N	1.14	W	904549.27	N	861731.97	E	10.32	97.88	
4453.00	29.90	0.00	373.30	4435.30	113.09	N	1.10	W	904564.49	N	861732.00	E	9.39	113.10	
4484.00	32.80	359.80	399.77	4461.77	129.22	N	1.13	W	904580.62	N	861731.97	E	9.36	129.22	
4515.00	34.90	359.70	425.52	4487.52	146.48	N	1.20	W	904597.88	N	861731.90	E	6.78	146.49	
4547.00	38.10	359.90	451.24	4513.24	165.52	N	1.27	W	904616.92	N	861731.83	E	10.01	165.52	
4578.00	41.10	359.90	475.12	4537.12	185.27	N	1.30	W	904636.67	N	861731.80	E	9.68	185.28	
4609.00	44.10	359.60	497.94	4559.94	206.25	N	1.40	W	904657.65	N	861731.71	E	9.70	206.26	
4642.00	45.80	359.10	521.29	4583.29	229.57	N	1.66	W	904680.97	N	861731.44	E	5.26	229.57	
4673.00	45.80	358.70	542.90	4604.90	251.79	N	2.09	W	904703.19	N	861731.01	E	0.93	251.79	
4704.00	45.10	358.40	564.65	4626.65	273.87	N	2.65	W	904725.27	N	861730.45	E	2.36	273.88	
4736.00	44.80	358.90	587.30	4649.30	296.47	N	3.18	W	904747.87	N	861729.92	E	1.45	296.49	
4767.00	44.40	358.20	609.37	4671.37	318.23	N	3.73	W	904769.63	N	861729.37	E	2.04	318.25	
4799.00	43.60	358.40	632.39	4694.39	340.45	N	4.39	W	904791.85	N	861728.71	E	2.54	340.48	
4831.00	43.90	358.10	655.51	4717.51	362.57	N	5.07	W	904813.97	N	861728.04	E	1.14	362.60	
4862.00	47.40	358.00	677.17	4739.17	384.72	N	5.82	W	904836.12	N	861727.28	E	11.29	384.76	
4894.00	51.30	357.90	698.01	4760.01	408.98	N	6.69	W	904860.38	N	861726.41	E	12.19	409.03	
4925.00	55.20	358.40	716.56	4778.56	433.80	N	7.49	W	904885.20	N	861725.61	E	12.65	433.85	
4956.00	58.80	358.80	733.44	4795.44	459.79	N	8.12	W	904911.19	N	861724.98	E	11.66	459.85	
4988.00	62.70	0.30	749.07	4811.07	487.70	N	8.33	W	904939.10	N	861724.77	E	12.86	487.76	
5019.00	66.60	0.70	762.34	4824.34	515.71	N	8.09	W	904967.11	N	861725.01	E	12.64	515.76	
5051.00	69.40	1.00	774.33	4836.33	545.37	N	7.65	W	904996.77	N	861725.45	E	8.79	545.42	
5083.00	72.00	1.30	784.91	4846.91	575.56	N	7.04	W	905026.96	N	861726.06	E	8.17	575.61	Section Line Crossing
5107.00	75.17	0.83	791.69	4853.69	598.58	N	6.61	W	905049.98	N	861726.49	E	13.36	598.61	
5114.00	76.10	0.70	793.42	4855.42	605.36	N	6.52	W	905056.76	N	861726.58	E	13.36	605.39	
5145.00	80.10	359.70	799.81	4861.81	635.69	N	6.42	W	905087.09	N	861726.68	E	13.28	635.72	
5177.00	82.20	359.70	804.74	4866.74	667.30	N	6.58	W	905118.70	N	861726.52	E	6.56	667.33	

5208.00	85.98	359.41	807.93	4869.93	698.13	N	6.82	W	905149.53	N	861726.28	E	12.22	698.16	S. Hard Line Crossing
5209.00	86.10	359.40	808.00	4870.00	699.13	N	6.83	W	905150.53	N	861726.27	E	12.22	699.16	
5240.00	89.30	358.90	809.24	4871.24	730.10	N	7.29	W	905181.50	N	861725.81	E	10.45	730.13	
5333.00	90.70	358.90	809.24	4871.24	823.08	N	9.08	W	905274.48	N	861724.02	E	1.51	823.13	
5427.00	88.90	357.40	809.57	4871.57	917.02	N	12.11	W	905368.42	N	861720.99	E	2.49	917.10	
5522.00	89.10	357.70	811.23	4873.23	1011.92	N	16.17	W	905463.32	N	861716.93	E	0.38	1012.03	
5615.00	91.50	359.60	810.74	4872.74	1104.88	N	18.36	W	905556.28	N	861714.74	E	3.29	1105.01	
5710.00	90.80	358.90	808.83	4870.83	1199.85	N	19.61	W	905651.25	N	861713.49	E	1.04	1199.99	
5805.00	89.50	358.90	808.58	4870.58	1294.83	N	21.43	W	905746.23	N	861711.67	E	1.37	1294.99	
5897.00	91.40	359.60	807.86	4869.86	1386.82	N	22.64	W	905838.22	N	861710.47	E	2.20	1386.98	
5992.00	90.00	0.30	806.70	4868.70	1481.81	N	22.72	W	905933.21	N	861710.38	E	1.65	1481.97	
6086.00	89.30	359.60	807.28	4869.28	1575.80	N	22.80	W	906027.20	N	861710.30	E	1.05	1575.96	
6181.00	92.00	359.80	806.20	4868.20	1670.79	N	23.30	W	906122.19	N	861709.80	E	2.85	1670.94	
6276.00	91.90	359.80	802.97	4864.97	1765.73	N	23.63	W	906217.13	N	861709.47	E	0.11	1765.88	
6370.00	91.40	359.00	800.26	4862.26	1859.69	N	24.61	W	906311.09	N	861708.49	E	1.00	1859.84	
6462.00	91.20	358.60	798.17	4860.17	1951.64	N	26.54	W	906403.04	N	861706.56	E	0.49	1951.82	
6553.00	89.40	358.50	797.70	4859.70	2042.61	N	28.84	W	906494.01	N	861704.26	E	1.98	2042.80	
6646.00	88.90	358.60	799.07	4861.07	2135.57	N	31.20	W	906586.97	N	861701.91	E	0.55	2135.78	
6738.00	90.20	359.50	799.80	4861.80	2227.55	N	32.72	W	906678.95	N	861700.38	E	1.72	2227.77	
6831.00	89.80	359.00	799.80	4861.80	2320.54	N	33.94	W	906771.94	N	861699.16	E	0.69	2320.77	
6923.00	89.80	358.20	800.12	4862.12	2412.51	N	36.19	W	906863.91	N	861696.92	E	0.87	2412.76	
7014.00	89.40	357.00	800.75	4862.75	2503.43	N	40.00	W	906954.83	N	861693.11	E	1.39	2503.71	
7106.00	90.60	357.60	800.75	4862.75	2595.32	N	44.33	W	907046.72	N	861688.77	E	1.46	2595.65	
7197.00	92.00	359.90	798.69	4860.69	2686.27	N	46.31	W	907137.67	N	861686.79	E	2.96	2686.61	
7289.00	92.40	359.50	795.16	4857.16	2778.20	N	46.80	W	907229.60	N	861686.31	E	0.62	2778.55	
7382.00	89.30	1.30	793.78	4855.78	2871.17	N	46.15	W	907322.57	N	861686.95	E	3.85	2871.51	
7475.00	88.70	1.70	795.40	4857.40	2964.13	N	43.71	W	907415.53	N	861689.39	E	0.78	2964.43	
7569.00	88.30	2.40	797.86	4859.86	3058.03	N	40.35	W	907509.43	N	861692.75	E	0.86	3058.29	
7664.00	89.50	0.70	799.69	4861.69	3152.98	N	37.78	W	907604.38	N	861695.32	E	2.19	3153.20	
7757.00	89.20	359.90	800.74	4862.74	3245.97	N	37.30	W	907697.37	N	861695.81	E	0.92	3246.18	
7851.00	89.10	0.20	802.14	4864.14	3339.96	N	37.21	W	907791.36	N	861695.89	E	0.34	3340.17	
7945.00	92.00	0.30	801.23	4863.23	3433.94	N	36.80	W	907885.34	N	861696.30	E	3.09	3434.14	
8039.00	92.60	0.30	797.46	4859.46	3527.87	N	36.31	W	907979.27	N	861696.79	E	0.64	3528.05	
8133.00	91.40	359.70	794.18	4856.18	3621.81	N	36.31	W	908073.21	N	861696.79	E	1.43	3621.99	
8226.00	90.60	359.70	792.56	4854.56	3714.79	N	36.80	W	908166.19	N	861696.30	E	0.86	3714.97	

8320.00	88.20	358.60	793.54	4855.54	3808.77	N	38.19	W	908260.17	N	861694.91	E	2.81	3808.96	
8414.00	88.10	358.70	796.58	4858.58	3902.69	N	40.41	W	908354.09	N	861692.70	E	0.15	3902.90	
8509.00	90.30	359.00	797.90	4859.90	3997.66	N	42.31	W	908449.06	N	861690.79	E	2.34	3997.88	
8603.00	91.70	359.40	796.26	4858.26	4091.63	N	43.62	W	908543.03	N	861689.48	E	1.55	4091.86	
8698.00	89.80	358.10	795.02	4857.02	4186.59	N	45.70	W	908637.99	N	861687.40	E	2.42	4186.84	
8793.00	89.70	357.90	795.43	4857.43	4281.53	N	49.01	W	908732.93	N	861684.09	E	0.24	4281.81	
8887.00	89.70	357.10	795.92	4857.92	4375.44	N	53.11	W	908826.84	N	861679.99	E	0.85	4375.76	
8981.00	89.60	356.60	796.50	4858.50	4469.30	N	58.28	W	908920.70	N	861674.82	E	0.54	4469.67	
9075.00	88.50	358.20	798.06	4860.06	4563.18	N	62.54	W	909014.58	N	861670.56	E	2.07	4563.59	
9170.00	88.60	358.80	800.46	4862.46	4658.12	N	65.03	W	909109.52	N	861668.07	E	0.64	4658.55	
9265.00	88.90	358.80	802.53	4864.53	4753.08	N	67.02	W	909204.48	N	861666.08	E	0.32	4753.52	
9358.00	89.30	358.10	803.99	4865.99	4846.03	N	69.53	W	909297.43	N	861663.57	E	0.87	4846.50	
9453.00	90.40	357.90	804.24	4866.24	4940.97	N	72.85	W	909392.37	N	861660.25	E	1.18	4941.47	
9547.00	90.30	0.30	803.67	4865.67	5034.95	N	74.32	W	909486.35	N	861658.78	E	2.56	5035.46	
9640.00	90.90	0.30	802.70	4864.70	5127.94	N	73.84	W	909579.34	N	861659.26	E	0.65	5128.44	
9734.00	91.40	359.90	800.81	4862.81	5221.93	N	73.67	W	909673.33	N	861659.43	E	0.68	5222.42	
9829.00	89.80	359.20	799.81	4861.81	5316.91	N	74.42	W	909768.31	N	861658.68	E	1.84	5317.41	
9923.00	89.90	358.90	800.06	4862.06	5410.90	N	75.98	W	909862.30	N	861657.12	E	0.34	5411.41	
10017.00	91.20	359.50	799.16	4861.16	5504.88	N	77.29	W	909956.28	N	861655.81	E	1.52	5505.40	
10111.00	90.10	359.80	798.09	4860.09	5598.87	N	77.86	W	910050.27	N	861655.24	E	1.21	5599.39	
10206.00	89.70	359.70	798.26	4860.26	5693.87	N	78.28	W	910145.27	N	861654.82	E	0.43	5694.39	
10267.00	89.40	359.60	798.74	4860.74	5754.87	N	78.65	W	910206.27	N	861654.45	E	0.52	5755.38	Last CES Survey
10289.00	89.40	359.60	798.97	4860.97	5776.87	N	78.80	W	910228.27	N	861654.30	E	0.00	5777.38	N. Hard Line Crossing
10332.00	89.40	359.60	799.42	4861.42	5819.87	N	79.10	W	910271.27	N	861654.00	E	0.00	5820.38	Actual BHL