



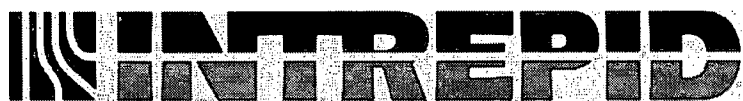
Cimarex

**Eddy County, NM (NAD 83 NME)
(Freedom) Sec-36_T-24-S_R-36-E
Freedom 36 State SWD #1
API# 30-015-44489
OWB**

Design: AWB

Standard Survey Report

31 October, 2018





Company:	Cimarex	Local Co-ordinate Reference:	Well Freedom 36 State SWD #1
Project:	Eddy County, NM (NAD 83 NME)	TVD Reference:	KB @ 3413.0usft (H&P 396)
Site:	(Freedom) Sec-36_T-24-S_R-36-E	MD Reference:	KB @ 3413.0usft (H&P 396)
Well:	Freedom 36 State SWD #1	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWB	Database:	EDM_10_13

Project	Eddy County, NM (NAD 83 NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	(Freedom) Sec-36_T-24-S_R-36-E		
Site Position:		Northing:	425,578.87 usft
From: Map		Easting:	566,200.18 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 10' 11.888 N
		Longitude:	104° 15' 10.726 W
		Grid Convergence:	0.04 °

Well	Freedom 36 State SWD #1		
Well Position	+N/-S	0.0 usft	Northing: 425,578.87 usft
	+E/-W	0.0 usft	Easting: 566,200.18 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 10' 11.888 N
		Longitude:	104° 15' 10.726 W
		Ground Level:	3,387.0 usft

Wellbore	OWB		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	05/02/2018	7.17
		Dip Angle (°)	59.89
		Field Strength (nT)	47,743.38439208

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)
	0.0	0.0	0.0
		Direction (°)	100.36

Survey Program	Date 10/31/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
48.0	2,375.0	Gyro (OWB)	GYRO-NS
2,470.0	4,173.0	MWD (OWB)	MWD
4,331.0	10,979.0	NOV (OWB)	MWD
11,054.0	12,567.0	Intrepid MWD (OWB)	MWD
12,697.0	13,575.0	Inc Only (OWB)	MWD
			Description
			OWSG Gyrocompass Gyro
			OWSG MWD - Standard
			OWSG MWD - Standard
			OWSG MWD - Standard
			OWSG MWD - Standard

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
48.0	0.32	240.73	48.0	-0.1	-0.1	-0.1	0.67	0.67	0.00
147.0	0.53	232.97	147.0	-0.5	-0.7	-0.6	0.22	0.21	-7.84
238.0	0.78	229.54	238.0	-1.1	-1.5	-1.3	0.28	0.27	-3.77
329.0	0.98	226.81	329.0	-2.1	-2.6	-2.2	0.22	0.22	-3.00
419.0	1.13	225.24	419.0	-3.2	-3.8	-3.1	0.17	0.17	-1.74
511.0	1.20	223.47	510.9	-4.6	-5.1	-4.2	0.09	0.08	-1.92



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Well:	Freedom 36 State SWD #1	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)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
601.0	0.93	223.01	600.9	-5.8	-6.2	-5.1	0.30	-0.30	-0.51
691.0	0.38	224.82	690.9	-6.5	-6.9	-5.6	0.61	-0.61	2.01
782.0	0.29	42.02	781.9	-6.6	-7.0	-5.7	0.74	-0.10	194.73
871.0	0.68	46.32	870.9	-6.0	-6.4	-5.3	0.44	0.44	4.83
966.0	0.69	60.42	965.9	-5.4	-5.5	-4.5	0.18	0.01	14.84
1,060.0	0.69	60.56	1,059.9	-4.8	-4.6	-3.6	0.00	0.00	0.15
1,155.0	0.73	72.47	1,154.9	-4.3	-3.5	-2.6	0.16	0.04	12.54
1,249.0	0.88	88.83	1,248.9	-4.1	-2.2	-1.4	0.29	0.16	17.40
1,343.0	1.68	100.36	1,342.9	-4.4	-0.1	0.7	0.89	0.85	12.27
1,438.0	3.43	101.68	1,437.8	-5.2	4.0	4.9	1.84	1.84	1.39
1,532.0	4.94	102.11	1,531.5	-6.6	10.8	11.8	1.61	1.61	0.46
1,627.0	5.02	100.39	1,626.2	-8.2	18.8	20.0	0.18	0.08	-1.81
1,721.0	5.33	98.16	1,719.8	-9.6	27.2	28.5	0.39	0.33	-2.37
1,815.0	5.38	97.55	1,813.4	-10.8	35.9	37.3	0.08	0.05	-0.65
1,910.0	5.42	97.99	1,907.9	-12.0	44.8	46.2	0.06	0.04	0.46
1,993.0	4.15	97.17	1,990.7	-12.9	51.6	53.1	1.53	-1.53	-0.99
2,004.0	4.78	97.61	2,001.6	-13.0	52.5	54.0	5.74	5.73	4.00
2,186.0	3.20	96.60	2,183.2	-14.6	65.0	66.6	0.87	-0.87	-0.55
2,281.0	2.20	311.00	2,278.1	-13.7	66.3	67.7	5.44	-1.05	-153.26
2,375.0	3.10	295.50	2,372.0	-11.4	62.6	63.7	1.22	0.96	-16.49
2,470.0	1.20	0.00	2,467.0	-11.4	62.6	63.7	2.95	-2.00	67.89
2,564.0	0.60	0.00	2,561.0	-11.4	62.6	63.7	0.64	-0.64	0.00
2,659.0	0.50	0.00	2,656.0	-11.4	62.6	63.7	0.11	-0.11	0.00
2,753.0	0.40	0.00	2,750.0	-11.4	62.6	63.7	0.11	-0.11	0.00
2,848.0	0.70	0.00	2,845.0	-11.4	62.6	63.7	0.32	0.32	0.00
2,943.0	0.80	0.00	2,939.9	-11.4	62.6	63.7	0.11	0.11	0.00
3,038.0	0.90	0.00	3,034.9	-11.4	62.6	63.7	0.11	0.11	0.00
3,132.0	0.90	0.00	3,128.9	-11.4	62.6	63.7	0.00	0.00	0.00
3,226.0	1.00	0.00	3,222.9	-11.4	62.6	63.7	0.11	0.11	0.00
3,321.0	0.90	0.00	3,317.9	-11.4	62.6	63.7	0.11	-0.11	0.00
3,415.0	1.10	0.00	3,411.9	-11.4	62.6	63.7	0.21	0.21	0.00
3,510.0	0.90	0.00	3,506.9	-11.4	62.6	63.7	0.21	-0.21	0.00
3,604.0	1.00	0.00	3,600.9	-11.4	62.6	63.7	0.11	0.11	0.00
3,699.0	1.10	0.00	3,695.8	-11.4	62.6	63.7	0.11	0.11	0.00
3,794.0	0.90	0.00	3,790.8	-11.4	62.6	63.7	0.21	-0.21	0.00
3,889.0	0.90	0.00	3,885.8	-11.4	62.6	63.7	0.00	0.00	0.00
3,983.0	1.00	0.00	3,979.8	-11.4	62.6	63.7	0.11	0.11	0.00
4,078.0	0.90	0.00	4,074.8	-11.4	62.6	63.7	0.11	-0.11	0.00
4,173.0	0.80	0.00	4,169.8	-11.4	62.6	63.7	0.11	-0.11	0.00
4,331.0	0.60	0.00	4,327.8	-11.4	62.6	63.7	0.13	-0.13	0.00
4,425.0	0.60	0.00	4,421.8	-11.4	62.6	63.7	0.00	0.00	0.00
4,520.0	0.80	0.00	4,516.8	-11.4	62.6	63.7	0.21	0.21	0.00
4,614.0	0.90	0.00	4,610.7	-11.4	62.6	63.7	0.11	0.11	0.00



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Project:	Eddy County, NM (NAD 83 NME)	TVD Reference:	KB @ 3413.0usft (H&P 396)
Site:	(Freedom) Sec-36_T-24-S_R-36-E	MD Reference:	KB @ 3413.0usft (H&P 396)
Well:	Freedom 36 State SWD #1	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)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,709.0	1.00	0.00	4,705.7	-11.4	62.6	63.7	0.11	0.11	0.00	
4,804.0	1.20	0.00	4,800.7	-11.4	62.6	63.7	0.21	0.21	0.00	
4,899.0	1.10	0.00	4,895.7	-11.4	62.6	63.7	0.11	-0.11	0.00	
4,994.0	1.50	0.00	4,990.7	-11.4	62.6	63.7	0.42	0.42	0.00	
5,088.0	1.50	0.00	5,084.6	-11.4	62.6	63.7	0.00	0.00	0.00	
5,183.0	1.50	0.00	5,179.6	-11.4	62.6	63.7	0.00	0.00	0.00	
5,277.0	1.70	0.00	5,273.6	-11.4	62.6	63.7	0.21	0.21	0.00	
5,372.0	1.60	0.00	5,368.5	-11.4	62.6	63.7	0.11	-0.11	0.00	
5,466.0	2.00	0.00	5,462.5	-11.4	62.6	63.7	0.43	0.43	0.00	
5,561.0	2.00	0.00	5,557.4	-11.4	62.6	63.7	0.00	0.00	0.00	
5,657.0	2.00	0.00	5,653.4	-11.4	62.6	63.7	0.00	0.00	0.00	
5,750.0	1.80	0.00	5,746.3	-11.4	62.6	63.7	0.22	-0.22	0.00	
5,845.0	1.90	0.00	5,841.3	-11.4	62.6	63.7	0.11	0.11	0.00	
5,939.0	0.90	0.00	5,935.2	-11.4	62.6	63.7	1.06	-1.06	0.00	
6,034.0	0.90	0.00	6,030.2	-11.4	62.6	63.7	0.00	0.00	0.00	
6,120.0	1.30	0.00	6,116.2	-11.4	62.6	63.7	0.47	0.47	0.00	
6,215.0	2.30	0.00	6,211.2	-11.4	62.6	63.7	1.05	1.05	0.00	
6,309.0	1.80	0.00	6,305.1	-11.4	62.6	63.7	0.53	-0.53	0.00	
6,404.0	2.30	0.00	6,400.0	-11.4	62.6	63.7	0.53	0.53	0.00	
6,498.0	2.00	0.00	6,494.0	-11.4	62.6	63.7	0.32	-0.32	0.00	
6,593.0	2.20	0.00	6,588.9	-11.4	62.6	63.7	0.21	0.21	0.00	
6,687.0	1.60	0.00	6,682.9	-11.4	62.6	63.7	0.64	-0.64	0.00	
6,782.0	2.10	0.00	6,777.8	-11.4	62.6	63.7	0.53	0.53	0.00	
6,877.0	1.90	0.00	6,872.7	-11.4	62.6	63.7	0.21	-0.21	0.00	
6,971.0	2.20	0.00	6,966.7	-11.4	62.6	63.7	0.32	0.32	0.00	
7,066.0	1.90	0.00	7,061.6	-11.4	62.6	63.7	0.32	-0.32	0.00	
7,160.0	1.00	0.00	7,155.6	-11.4	62.6	63.7	0.96	-0.96	0.00	
7,255.0	0.60	0.00	7,250.6	-11.4	62.6	63.7	0.42	-0.42	0.00	
7,340.0	0.70	0.00	7,335.6	-11.4	62.6	63.7	0.12	0.12	0.00	
7,444.0	0.80	0.00	7,439.6	-11.4	62.6	63.7	0.10	0.10	0.00	
7,538.0	1.20	0.00	7,533.6	-11.4	62.6	63.7	0.43	0.43	0.00	
7,633.0	0.70	0.00	7,628.5	-11.4	62.6	63.7	0.53	-0.53	0.00	
7,727.0	1.30	0.00	7,722.5	-11.4	62.6	63.7	0.64	0.64	0.00	
7,822.0	1.50	0.00	7,817.5	-11.4	62.6	63.7	0.21	0.21	0.00	
7,916.0	1.80	0.00	7,911.5	-11.4	62.6	63.7	0.32	0.32	0.00	
8,011.0	3.30	0.00	8,006.4	-11.4	62.6	63.7	1.58	1.58	0.00	
8,105.0	2.50	0.00	8,100.2	-11.4	62.6	63.7	0.85	-0.85	0.00	
8,200.0	2.10	0.00	8,195.2	-11.4	62.6	63.7	0.42	-0.42	0.00	
8,295.0	2.00	0.00	8,290.1	-11.4	62.6	63.7	0.11	-0.11	0.00	
8,389.0	1.90	0.00	8,384.1	-11.4	62.6	63.7	0.11	-0.11	0.00	
8,483.0	1.80	0.00	8,478.0	-11.4	62.6	63.7	0.11	-0.11	0.00	
8,672.0	1.30	0.00	8,666.9	-11.4	62.6	63.7	0.26	-0.26	0.00	
8,869.0	1.90	0.00	8,863.9	-11.4	62.6	63.7	0.30	0.30	0.00	
9,058.0	0.30	0.00	9,052.8	-11.4	62.6	63.7	0.85	-0.85	0.00	



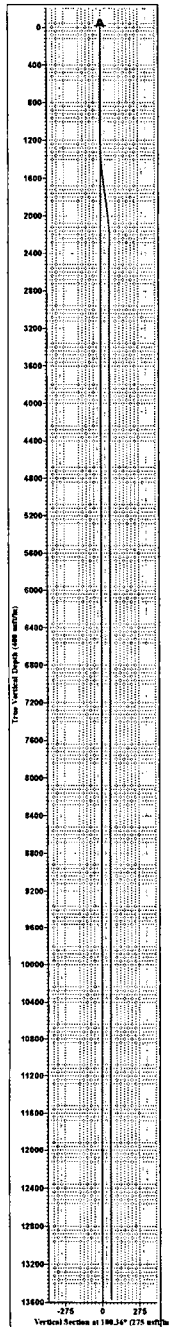
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Well:	Freedom 36 State SWD #1	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWB	Database:	EDM 10-13

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,247.0	0.50	0.00	9,241.8	-11.4	62.6	63.7	0.11	0.11	0.00
9,436.0	0.20	0.00	9,430.8	-11.4	62.6	63.7	0.16	-0.16	0.00
9,720.0	1.40	0.00	9,714.8	-11.4	62.6	63.7	0.42	0.42	0.00
10,003.0	0.60	0.00	9,997.7	-11.4	62.6	63.7	0.28	-0.28	0.00
10,287.0	1.10	0.00	10,281.7	-11.4	62.6	63.7	0.18	0.18	0.00
10,476.0	1.20	0.00	10,470.7	-11.4	62.6	63.7	0.05	0.05	0.00
10,760.0	1.00	0.00	10,754.6	-11.4	62.6	63.7	0.07	-0.07	0.00
10,979.0	1.00	0.00	10,973.6	-11.4	62.6	63.7	0.00	0.00	0.00
11,054.0	1.70	0.00	11,048.6	-11.4	62.6	63.7	0.93	0.93	0.00
11,148.0	1.70	0.00	11,142.5	-11.4	62.6	63.7	0.00	0.00	0.00
11,243.0	1.40	0.00	11,237.5	-11.4	62.6	63.7	0.32	-0.32	0.00
11,337.0	1.80	0.00	11,331.4	-11.4	62.6	63.7	0.43	0.43	0.00
11,432.0	1.60	0.00	11,426.4	-11.4	62.6	63.7	0.21	-0.21	0.00
11,526.0	1.20	0.00	11,520.4	-11.4	62.6	63.7	0.43	-0.43	0.00
11,622.0	1.20	0.00	11,616.3	-11.4	62.6	63.7	0.00	0.00	0.00
11,716.0	1.00	0.00	11,710.3	-11.4	62.6	63.7	0.21	-0.21	0.00
11,811.0	1.10	0.00	11,805.3	-11.4	62.6	63.7	0.11	0.11	0.00
11,905.0	1.00	0.00	11,899.3	-11.4	62.6	63.7	0.11	-0.11	0.00
12,000.0	0.80	0.00	11,994.3	-11.4	62.6	63.7	0.21	-0.21	0.00
12,095.0	0.80	0.00	12,089.3	-11.4	62.6	63.7	0.00	0.00	0.00
12,189.0	1.10	0.00	12,183.3	-11.4	62.6	63.7	0.32	0.32	0.00
12,284.0	1.10	0.00	12,278.2	-11.4	62.6	63.7	0.00	0.00	0.00
12,378.0	1.40	0.00	12,372.2	-11.4	62.6	63.7	0.32	0.32	0.00
12,472.0	1.50	0.00	12,466.2	-11.4	62.6	63.7	0.11	0.11	0.00
12,567.0	1.90	0.00	12,561.2	-11.4	62.6	63.7	0.42	0.42	0.00
12,697.0	2.10	0.00	12,691.1	-11.4	62.6	63.7	0.15	0.15	0.00
12,798.0	1.90	0.00	12,792.0	-11.4	62.6	63.7	0.20	-0.20	0.00
12,893.0	2.00	0.00	12,887.0	-11.4	62.6	63.7	0.11	0.11	0.00
12,988.0	2.00	0.00	12,981.9	-11.4	62.6	63.7	0.00	0.00	0.00
13,083.0	2.80	0.00	13,076.8	-11.4	62.6	63.7	0.84	0.84	0.00
13,178.0	2.30	0.00	13,171.7	-11.4	62.6	63.7	0.53	-0.53	0.00
13,273.0	2.80	0.00	13,266.6	-11.4	62.6	63.7	0.53	0.53	0.00
13,370.0	3.20	0.00	13,363.5	-11.4	62.6	63.7	0.41	0.41	0.00
13,463.0	3.60	0.00	13,456.3	-11.4	62.6	63.7	0.43	0.43	0.00
13,530.0	3.40	0.00	13,523.2	-11.4	62.6	63.7	0.30	-0.30	0.00
13,575.0	3.40	0.00	13,568.1	-11.4	62.6	63.7	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____

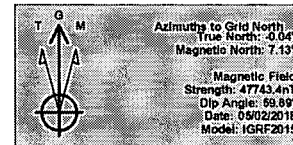


Cimarex
Project: Eddy County, NM (NAD 83 NME)
Site: (Freedom) Sec-36, T-24-S, R-36-E
Well: Freedom 36 State SWD #1
Wellbore: OWB
Design: AWB
Lat: 32° 10' 11.888 N
Long: 104° 15' 10.726 W
Pad GL: 3387.0
KB: KB @ 3413.0ush (H&P 396)



WELL DETAILS: Freedom 36 State SWD #1							
				3387.0			
+N-S	+E-W	North	East	Latitude	Longitude		
0.0	0.0	426575.67	568200.17	32° 10' 11.888 N	104° 15' 10.726 W		

Plan Freedom 36 State SWD #1									
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Deg	TFace	V Sect
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	13600.0	0.00	0.00	13600.0	0.0	0.0	0.00	0.00	0.0



To convert a Magnetic Direction to a Grid Direction, Add 7.13°

