

Results of Directional Survey

API number:	30-025-41186		
OGRID:		Operator:	NADEL AND GUSSMAN PERMIAN, LLC
		Property:	RAPTOR WEST 3 STATE # 2H

surface	ULSTR:	P	03	T 19S	R 34E
				330 FSL	950 FEL

5421.2

BH Loc	ULSTR:	A	03	T 19S	R 34E
14505	MD	9915.6	TVD	297 FNL	957 FEL
			5124 FSL		

Top Perf/OH	ULSTR:	P	03	T 19S	R 34E
10319	MD	9996.0	TVD	941 FSL	898 FEL

Bot Perf/OH	ULSTR:	A	03	T 19S	R 34E
14363	MD	9922.4	TVD	439 FNL	949 FEL
			4982 FSL		

	MD	N/S	E/W	VD
	10299	590.70	51.80	9994
TOP PERFS/OH	10319	610.58	52.30	9996.00
	10331	622.50	52.60	9997.20
	14317	4606.00	2.90	9924.50
BOT PERFS/OH	14363	4651.90	0.58	9922.42
	14412	4700.80	-1.90	9920.20

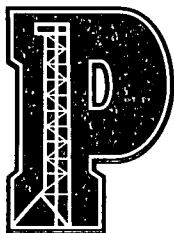
NEXT TO LAST	14455	4743.70	-4.20	9918.10
LAST READING	14520	4808.50	-7.60	9914.80
TD	14505	4793.55	-6.82	9915.56

Surface Location	330	FS	950	FE
Projected BHL	5124	FS	957	FE
Location of				
Top Perfs/OH	941	FS	898	FE
Bottom Perfs/OH	4982	FS	949	FE

SUMMARY of Subsurface Locations

Surface Location	P-03-19S-34E	330	FS	950	FE	Vert. Depth
Top Perfs/OH	P-03-19S-34E	941	FS	898	FE	9996.00
Bottom Perfs/OH	A-03-19S-34E	4982	FS	949	FE	9922.42
Projected TD	A-03-19S-34E	5124	FS	957	FE	9915.56

SEP 23 2014



OPERATOR: Nadle & Gussman Permian, LLC
WELL/LEASE: Raptor West 3 State # 2 H
COUNTY: Lea Co., New Mexico
Sec. 3, T19S, R34E

PATRIOT DRILLING, LLC

**STATE OF NEW MEXICO
DEVIATION REPORT**

<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
200	1/4	5,773	1
435	1/2	6,222	1/2
485	1/4	6,724	1
935	1/4	6,974	1 1/4
1,435	1	7,236	1 1/2
1,683	1/2	7,525	1
1,815	1	7,769	3/4
2,142	3/4	8,250	1/2
2,614	1/2	9,064	2
3,089	5	9,275	2 1/2
3,216	4		
3,336	4		
3,497	2		
3,746	1/2		
4,028	3/4		
4,320	3/4		
4,820	3/4		
5,273	3/4		

HOBBS OCD

AUG 15 2014

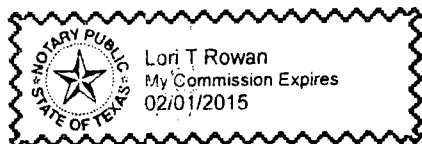
RECEIVED

Patriot Drilling, LLC

M. Leroy Peterson, Executive Vice-President

The foregoing instrument was acknowledged before me on this 5th day of June, 2014 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling, LLC.

My Commission Expires: 02/01/2015



Lori T. Rowan
Notary Public for Ector Co., Texas

NADEL & GUSSMAN LLC

Scharb
Lea County, NM
Raptor West 3 State #2H
VH - Job #320514-K-635

HOBBS OCD

AUG 15 2014

RECEIVED

Survey: Gyro

SDI Survey Report

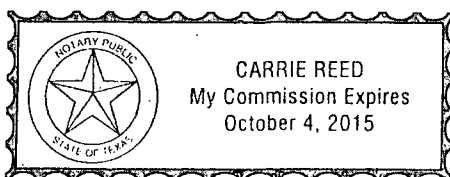
This survey is correct to the best of my knowledge and is supported by actual field data.

Robert

Notarized this date 2nd of June, 2014.

Carrie Reed

Notary Signature
County of Midland
State of Texas



SDI

SDI Survey Report

Company: NADEL & GUSSMAN LLC
Project: Scharb
Site: Lea County, NM
Well: Raptor West 3 State #2H
Wellbore: VH - Job #320514-K-635
Design: VH - Job #320514-K-635

Local Co-ordinate Reference: Well Raptor West 3 State #2H
TVD Reference: Mean Sea Level (System)
MD Reference: Mean Sea Level (System)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM-Regulatory

Project	Scharb		
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	Lea County, NM				
Site Position:		Northing:	613,038.37 usft	Latitude:	32° 40' 58.249 N
From:	Lat/Long	Easting:	743,423.81 usft	Longitude:	103° 32' 31.823 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.43 °

Well	Raptor West 3 State #2H, Vertical					
Well Position	+N/-S	0.0 usft	Northing:	613,038.37 usft	Latitude:	32° 40' 58.249 N
	+E/-W	0.0 usft	Easting:	743,423.81 usft	Longitude:	103° 32' 31.823 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	0.0 usft

Wellbore	VH - Job #320514-K-635				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/11/2014	7.25	60.54	48,630

Design:	VH - Job #320514-K-635			
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	359.69

Survey Program		Date	5/16/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
84.0	8,773.0	Gyro (VH - Job #320514-K-635)	Keeper	Keeper Gyro	

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)		
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0		
84.0	0.20	269.63	84.0	0.0	-0.1	269.63	0.1		
170.0	0.12	341.45	170.0	0.1	-0.3	284.39	0.3		
258.0	0.12	336.47	258.0	0.3	-0.4	303.11	0.5		
347.0	0.10	305.13	347.0	0.4	-0.5	308.07	0.6		
437.0	0.17	302.32	437.0	0.5	-0.7	306.88	0.8		
528.0	0.15	264.20	528.0	0.6	-0.9	301.94	1.1		
624.0	0.10	302.38	624.0	0.6	-1.1	298.44	1.2		
719.0	0.03	57.01	719.0	0.7	-1.1	299.63	1.3		
814.0	0.00	220.80	814.0	0.7	-1.1	300.60	1.3		
909.0	0.03	37.66	909.0	0.7	-1.1	301.68	1.3		
1,004.0	0.03	136.27	1,004.0	0.7	-1.1	302.51	1.3		

SDI

SDI Survey Report

Company: NADEL & GUSSMAN LLC
Project: Scharb
Site: Lea County, NM
Well: Raptor West 3 State #2H
Wellbore: VH - Job #320514-K-635
Design: VH - Job #320514-K-635

Local Co-ordinate Reference: Well Raptor West 3 State #2H
TVD Reference: Mean Sea Level (System)
MD Reference: Mean Sea Level (System)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM-Regulatory

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,099.0	0.09	223.01	1,099.0	0.6	-1.1	298.93	1.3
1,195.0	0.07	297.09	1,195.0	0.6	-1.2	295.75	1.3
1,290.0	0.17	281.13	1,290.0	0.6	-1.4	294.48	1.5
1,385.0	0.27	286.04	1,385.0	0.7	-1.8	292.51	1.9
1,480.0	0.21	275.15	1,480.0	0.8	-2.1	290.58	2.3
1,575.0	0.38	240.44	1,575.0	0.7	-2.6	284.41	2.7
1,670.0	0.28	240.53	1,670.0	0.4	-3.1	277.37	3.1
1,765.0	0.28	251.04	1,765.0	0.2	-3.5	273.40	3.5
1,860.0	0.12	215.93	1,860.0	0.1	-3.8	270.78	3.8
1,955.0	0.16	179.91	1,955.0	-0.2	-3.8	267.58	3.8
2,050.0	0.75	111.63	2,050.0	-0.5	-3.3	260.85	3.3
2,145.0	0.64	95.80	2,145.0	-0.8	-2.1	249.39	2.3
2,240.0	0.61	88.12	2,240.0	-0.8	-1.1	232.81	1.4
2,335.0	0.82	75.07	2,335.0	-0.7	0.1	175.55	0.7
2,431.0	0.59	71.89	2,431.0	-0.3	1.2	105.17	1.2
2,526.0	0.63	61.56	2,526.0	0.1	2.1	87.84	2.1
2,621.0	0.58	86.64	2,621.0	0.4	3.0	83.33	3.1
2,716.0	0.80	79.23	2,715.9	0.5	4.2	83.06	4.2
2,812.0	2.38	62.19	2,811.9	1.6	6.6	76.67	6.8
2,906.0	4.41	52.94	2,905.7	4.7	11.2	67.46	12.1
3,001.0	5.19	65.14	3,000.4	8.7	18.0	64.34	20.0
3,096.0	5.25	66.99	3,095.0	12.2	25.9	64.86	28.6
3,191.0	4.73	67.04	3,189.6	15.4	33.5	65.34	36.9
3,286.0	4.51	65.00	3,284.3	18.5	40.5	65.46	44.5
3,381.0	3.50	67.94	3,379.1	21.2	46.6	65.57	51.2
3,476.0	2.71	69.97	3,474.0	23.0	51.4	65.87	56.3
3,572.0	1.91	73.63	3,569.9	24.3	55.1	66.23	60.2
3,667.0	1.26	73.42	3,664.9	25.0	57.6	66.53	62.8
3,761.0	0.66	72.84	3,758.8	25.5	59.1	66.70	64.3
3,856.0	0.27	40.12	3,853.8	25.8	59.8	66.66	65.1
3,951.0	0.30	15.02	3,948.8	26.2	60.0	66.40	65.4
4,047.0	0.80	317.34	4,044.8	26.9	59.6	65.67	65.4
4,142.0	0.80	304.24	4,139.8	27.8	58.6	64.62	64.8
4,237.0	0.60	309.92	4,234.8	28.5	57.6	63.70	64.3
4,332.0	0.59	330.75	4,329.8	29.2	57.0	62.86	64.1
4,427.0	0.39	344.66	4,424.8	30.0	56.7	62.14	64.1
4,523.0	0.47	16.04	4,520.8	30.7	56.7	61.61	64.5
4,618.0	0.44	38.81	4,615.8	31.3	57.1	61.24	65.1
4,713.0	0.52	70.76	4,710.8	31.7	57.7	61.18	65.9
4,808.0	0.59	78.73	4,805.8	32.0	58.6	61.37	66.7
4,903.0	0.50	77.22	4,900.8	32.2	59.5	61.59	67.6
4,999.0	0.38	91.10	4,996.8	32.3	60.2	61.81	68.3
5,094.0	0.62	84.07	5,091.8	32.3	61.0	62.10	69.0
5,189.0	0.57	69.45	5,186.8	32.5	62.0	62.31	70.0

SDI

SDI Survey Report

Company: NADEL & GUSSMAN LLC
Project: Scharb
Site: Lea County, NM
Well: Raptor West 3 State #2H
Wellbore: VH - Job #320514-K-635
Design: VH - Job #320514-K-635

Local Co-ordinate Reference: Well Raptor West 3 State #2H
TVD Reference: Mean Sea Level (System)
MD Reference: Mean Sea Level (System)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM-Regulatory

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)
5,284.0	0.52	69.73	5,281.8	32.8	62.8	62.40	70.9
5,379.0	0.67	67.58	5,376.8	33.2	63.7	62.48	71.9
5,474.0	0.89	84.26	5,471.8	33.5	65.0	62.74	73.1
5,570.0	0.92	71.51	5,567.7	33.8	66.5	63.04	74.6
5,665.0	0.87	38.20	5,662.7	34.6	67.6	62.89	76.0
5,760.0	0.94	52.65	5,757.7	35.7	68.7	62.57	77.4
5,855.0	0.58	51.58	5,852.7	36.4	69.7	62.40	78.6
5,950.0	0.85	39.80	5,947.7	37.3	70.5	62.15	79.8
6,045.0	0.61	44.68	6,042.7	38.2	71.3	61.85	80.9
6,141.0	0.54	35.66	6,138.7	38.9	71.9	61.60	81.8
6,236.0	0.50	19.47	6,233.7	39.7	72.3	61.27	82.5
6,331.0	0.40	12.49	6,328.7	40.4	72.6	60.91	83.0
6,426.0	0.32	4.73	6,423.7	41.0	72.7	60.59	83.4
6,521.0	0.42	84.54	6,518.7	41.3	73.0	60.54	83.9
6,617.0	0.18	124.29	6,614.7	41.2	73.5	60.72	84.3
6,712.0	0.77	239.41	6,709.7	40.8	73.1	60.83	83.7
6,807.0	1.24	248.02	6,804.7	40.1	71.6	60.75	82.0
6,902.0	1.49	259.06	6,899.6	39.5	69.4	60.38	79.8
6,997.0	1.94	262.15	6,994.6	39.0	66.6	59.64	77.2
7,092.0	1.78	260.40	7,089.5	38.5	63.5	58.76	74.3
7,188.0	1.78	266.06	7,185.5	38.2	60.6	57.77	71.6
7,283.0	1.55	269.42	7,280.5	38.1	57.8	56.64	69.2
7,378.0	1.33	270.42	7,375.4	38.1	55.4	55.52	67.3
7,473.0	1.20	274.74	7,470.4	38.2	53.4	54.42	65.6
7,568.0	1.01	276.73	7,565.4	38.3	51.5	53.34	64.2
7,664.0	1.02	288.66	7,661.4	38.7	49.9	52.18	63.1
7,759.0	0.77	297.97	7,756.4	39.3	48.5	51.00	62.4
7,854.0	0.57	304.90	7,851.4	39.9	47.6	50.04	62.1
7,949.0	0.40	342.07	7,946.4	40.4	47.1	49.33	62.1
8,045.0	0.31	12.40	8,042.4	41.0	47.0	48.90	62.4
8,140.0	0.37	60.52	8,137.3	41.4	47.3	48.82	62.9
8,235.0	0.72	158.39	8,232.3	41.0	47.8	49.39	63.0
8,331.0	0.87	152.85	8,328.3	39.8	48.4	50.56	62.7
8,426.0	0.79	171.95	8,423.3	38.5	48.8	51.72	62.2
8,521.0	0.84	214.03	8,518.3	37.3	48.5	52.45	61.2
8,616.0	1.34	214.87	8,613.3	35.8	47.5	52.99	59.5
8,712.0	1.23	183.80	8,709.3	33.9	46.8	54.11	57.7
8,773.0	2.26	149.62	8,770.3	32.2	47.3	55.81	57.2



Scientific Drilling

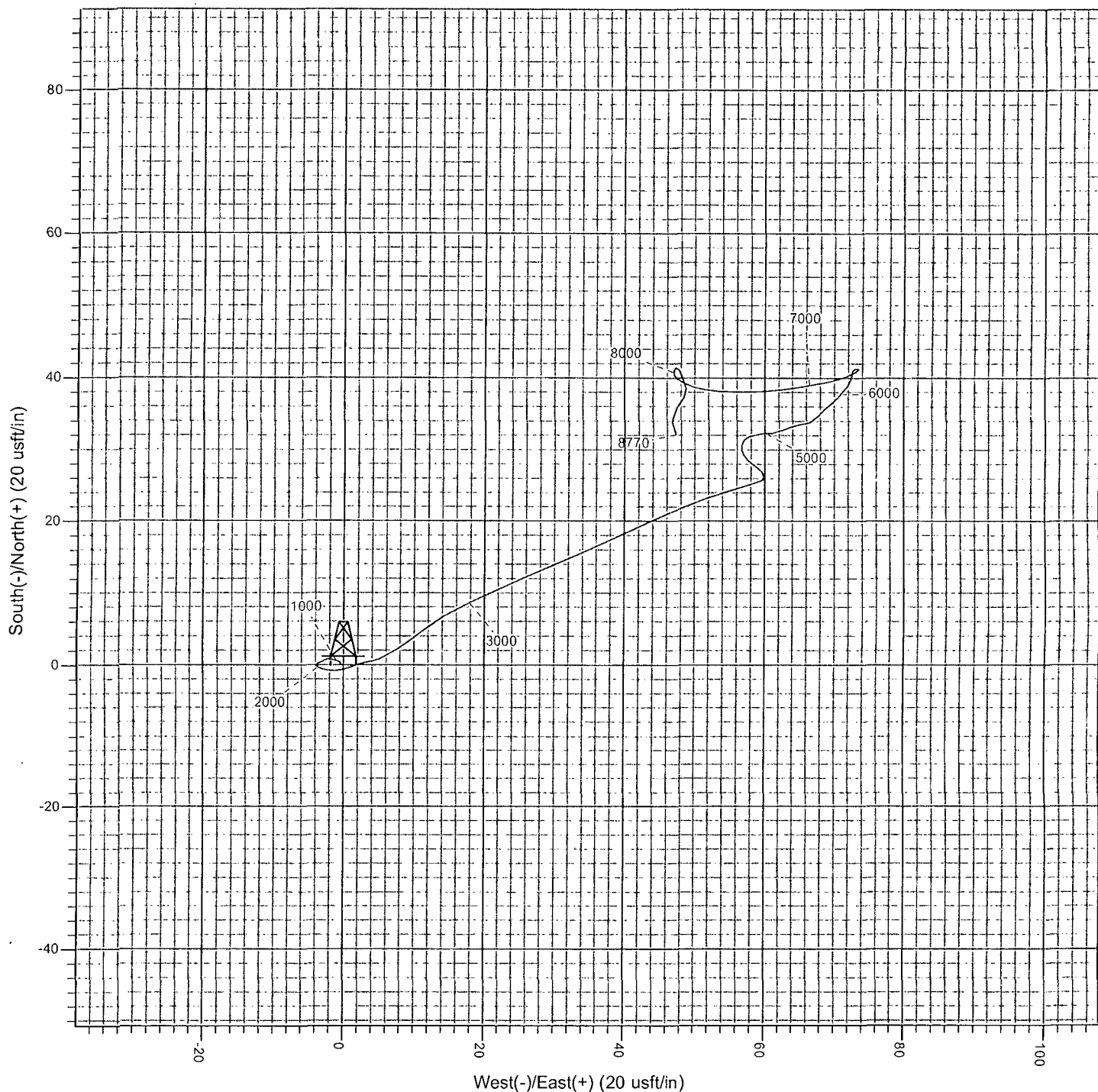
Project: Scharb
Lea County, NM
Well: Raptor West 3 State #2H
Wellbore: VH - Job #320514-K-635
Design: VH - Job #320514-K-635

WELL DETAILS: Raptor West 3 State #2H

Mean Sea Level (System)

Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	613038.37	743423.81	32° 40' 58.249 N	103° 32' 31.823 W	



PROJECT DETAILS: Scharb	SITE DETAILS: Lea County, NM
Geodetic System: US State Plane 1927 (Exact solution)	Site Centre Latitude: 32° 40' 58.249 N
Datum: NAD 1927 (NADCON CONUS)	Longitude: 103° 32' 31.823 W
Ellipsoid: Clarke 1866	Positional Uncertainty: 0.0
Zone: New Mexico East 3001	Convergence: 0.43
System Datum: Mean Sea Level	Local North: Grid

HOBBS OCD

SEP 04 2014

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Nadel & Gussman Permian, LLC

Lea County, NM (NAD 27)

Sec 3, T19-S,34-E

Raptor West 3 State #2H

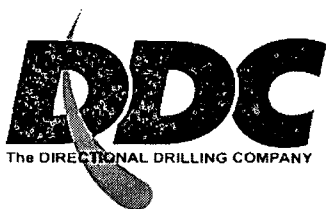
Wellbore #1

Survey: MWD

DDC Survey Report

03 June, 2014





Survey Certification Sheet

Nadel & Gussman Permian,LLC
Company

WT-140442
Job Number

6/6/14
Date

Sec 3, T19-S, 34E
Lease

Raptor West 3 State #2H
Well Name

Lea, NM
County & State

API: 30-025-41186

Surveyed from a depth of: 8773 feet to 14520 feet MD

Type of Survey: MWD

Directional Supervisor/Surveyor: George Sample

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by **The Directional Drilling Company (DDC)**. This report represents a true and correct Directional survey of this well based on the original data obtained at the well site. Wellbore Coordinates are calculated using minimum curvature.

Digitally signed by Larry Wright
DN: cn=Larry Wright, o=The
Directional Drilling Company,
ou=GM of Guidance Services,
email=larryw@directionaldrillers.
com, c=US
Date: 2014.06.06 12:19:37 -05'00'.

Larry Wright
MWD General Manager

DDC
Survey Report



Company:	Nadel & Gussman Permian, LLC	Local Co-ordinate Reference:	Well Raptor West 3 State #2H
Project:	Lea County, NM (NAD 27)	TVD Reference:	WELL @ 3990.0usft (Patriot #5)
Site:	Sec 3, T19-S,34-E	MD Reference:	WELL @ 3990.0usft (Patriot #5)
Well:	Raptor West 3 State #2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project	Lea County, NM (NAD 27)		
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		Sec 3, T19-S,34-E			
Site Position:		Northing:	613,038.40 usft	Latitude:	32° 40' 58.250 N
From:	Map	Easting:	743,423.90 usft	Longitude:	103° 32' 31.822 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.43 °

Well	Raptor West 3 State #2H					
Well Position	+N/-S	0.0 usft	Northing:	613,038.40 usft	Latitude:	32° 40' 58.250 N
	+E/-W	0.0 usft	Easting:	743,423.90 usft	Longitude:	103° 32' 31.822 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,990.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/29/2014	7.25	60.54	48,604

Design	Wellbore #1				
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	359.69	

Survey Program	Date 6/3/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
84.0	8,773.0	Gyro (Wellbore #1)	Good_gyro	Good Gyro
8,874.0	14,520.0	MWD (Wellbore #1)	MWD default	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)
Tie-in @ 8773' MD / 8770' TVD									
8,773.0	2.26	149.62	8,770.2	32.2	47.3	31.9	0.00	0.00	0.00
8,874.0	2.00	175.20	8,871.2	28.7	48.5	28.4	0.97	-0.26	25.33
8,969.0	2.20	170.30	8,966.1	25.2	48.9	25.0	0.28	0.21	-5.16
9,064.0	2.00	171.70	9,061.1	21.8	49.5	21.5	0.22	-0.21	1.47
9,159.0	2.20	137.40	9,156.0	18.8	51.0	18.5	1.32	0.21	-36.11
9,254.0	2.40	130.00	9,250.9	16.2	53.7	15.9	0.38	0.21	-7.79
9,348.0	2.50	134.10	9,344.8	13.5	56.7	13.2	0.21	0.11	4.36
9,380.0	2.40	129.50	9,376.8	12.6	57.7	12.3	0.69	-0.31	-14.38
9,412.0	1.60	34.20	9,408.8	12.5	58.5	12.2	9.39	-2.50	-297.81

DDC Survey Report



Company: Nadel & Gussman Permian, LLC
Project: Lea County, NM (NAD 27)
Site: Sec 3, T19-S,34-E
Well: Raptor West 3 State #2H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Raptor West 3 State #2H
TVD Reference: WELL @ 3990.0usft (Patriot #5)
MD Reference: WELL @ 3990.0usft (Patriot #5)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

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)
9,443.0	6.00	359.40	9,439.7	14.5	58.7	14.2	15.40	14.19	-112.26
9,475.0	10.70	355.20	9,471.4	19.1	58.4	18.8	14.80	14.69	-13.13
9,507.0	14.50	354.70	9,502.6	26.1	57.8	25.8	11.88	11.88	-1.56
9,539.0	17.10	356.30	9,533.4	34.8	57.2	34.5	8.24	8.13	5.00
9,570.0	19.50	359.80	9,562.8	44.5	56.8	44.2	8.51	7.74	11.29
9,602.0	22.70	0.10	9,592.7	56.0	56.8	55.7	10.01	10.00	0.94
9,634.0	25.50	0.10	9,621.9	69.1	56.9	68.8	8.75	8.75	0.00
9,666.0	29.80	359.80	9,650.2	83.9	56.8	83.6	13.44	13.44	-0.94
9,698.0	33.80	359.40	9,677.4	100.8	56.7	100.5	12.52	12.50	-1.25
9,729.0	37.40	359.60	9,702.6	118.8	56.6	118.5	11.62	11.61	0.65
9,761.0	41.50	359.40	9,727.3	139.2	56.4	138.9	12.82	12.81	-0.63
9,793.0	44.60	359.40	9,750.7	161.0	56.2	160.7	9.69	9.69	0.00
9,825.0	45.30	359.40	9,773.3	183.6	55.9	183.3	2.19	2.19	0.00
9,856.0	45.50	358.90	9,795.1	205.7	55.6	205.4	1.32	0.65	-1.61
9,888.0	46.10	358.60	9,817.4	228.6	55.1	228.3	1.99	1.88	-0.94
9,920.0	47.50	358.00	9,839.3	251.9	54.4	251.6	4.58	4.38	-1.88
9,951.0	50.90	357.50	9,859.6	275.4	53.5	275.1	11.04	10.97	-1.61
9,983.0	53.70	356.60	9,879.1	300.7	52.2	300.4	9.03	8.75	-2.81
10,015.0	56.30	357.10	9,897.5	326.8	50.7	326.6	8.23	8.13	1.56
10,047.0	59.00	358.00	9,914.6	353.8	49.6	353.6	8.77	8.44	2.81
10,078.0	61.50	358.90	9,930.0	380.7	48.9	380.5	8.45	8.06	2.90
10,110.0	64.30	0.00	9,944.6	409.2	48.6	409.0	9.27	8.75	3.44
10,142.0	67.90	0.80	9,957.5	438.5	48.8	438.2	11.48	11.25	2.50
10,174.0	72.20	1.00	9,968.4	468.5	49.3	468.3	13.45	13.44	0.63
10,205.0	75.60	0.80	9,977.0	498.3	49.7	498.0	10.99	10.97	-0.65
10,236.0	78.60	1.40	9,984.0	528.5	50.3	528.2	9.86	9.68	1.94
10,267.0	80.90	1.40	9,989.5	559.0	51.1	558.7	7.42	7.42	0.00
10,299.0	82.90	1.20	9,994.0	590.7	51.8	590.4	6.28	6.25	-0.63
10,331.0	85.40	1.70	9,997.2	622.5	52.6	622.2	7.97	7.81	1.56
10,363.0	87.10	1.90	9,999.3	654.4	53.6	654.1	5.35	5.31	0.63
10,394.0	89.10	1.00	10,000.4	685.4	54.4	685.1	7.07	6.45	-2.90
10,426.0	89.90	0.50	10,000.6	717.4	54.8	717.1	2.95	2.50	-1.56
10,458.0	91.40	0.00	10,000.3	749.4	54.9	749.1	4.94	4.69	-1.56
10,522.0	92.40	0.00	9,998.2	813.4	54.9	813.0	1.56	1.56	0.00
10,617.0	91.50	359.30	9,994.9	908.3	54.3	908.0	1.20	-0.95	-0.74
10,712.0	91.60	358.40	9,992.4	1,003.2	52.4	1,002.9	0.95	0.11	-0.95
10,807.0	91.20	357.90	9,990.0	1,098.2	49.4	1,097.9	0.67	-0.42	-0.53
10,902.0	91.40	358.20	9,987.9	1,193.1	46.1	1,192.8	0.38	0.21	0.32
10,997.0	90.60	358.00	9,986.2	1,288.0	43.0	1,287.8	0.87	-0.84	-0.21
11,093.0	90.10	357.30	9,985.6	1,383.9	39.1	1,383.7	0.90	-0.52	-0.73
11,188.0	90.40	358.60	9,985.2	1,478.9	35.7	1,478.7	1.40	0.32	1.37
11,283.0	90.80	359.80	9,984.2	1,573.9	34.3	1,573.6	1.33	0.42	1.26
11,378.0	91.80	358.60	9,982.1	1,668.8	33.0	1,668.6	1.64	1.05	-1.26

DDC
Survey Report



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MD Reference: WELL @ 3990.0usft (Patriot #5)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

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)
11,473.0	90.80	359.40	9,979.9	1,763.8	31.3	1,763.6	1.35	-1.05	0.84
11,568.0	91.30	358.70	9,978.2	1,858.7	29.8	1,858.6	0.91	0.53	-0.74
11,663.0	90.40	359.80	9,976.8	1,953.7	28.5	1,953.5	1.50	-0.95	1.16
11,758.0	89.30	0.50	9,977.0	2,048.7	28.8	2,048.5	1.37	-1.16	0.74
11,853.0	89.80	359.80	9,977.8	2,143.7	29.0	2,143.5	0.91	0.53	-0.74
11,949.0	91.10	359.60	9,977.0	2,239.7	28.5	2,239.5	1.37	1.35	-0.21
12,044.0	91.40	0.80	9,974.9	2,334.7	28.9	2,334.5	1.30	0.32	1.26
12,139.0	90.10	0.10	9,973.7	2,429.7	29.6	2,429.5	1.55	-1.37	-0.74
12,234.0	90.10	359.60	9,973.5	2,524.7	29.4	2,524.5	0.53	0.00	-0.53
12,329.0	90.90	358.90	9,972.7	2,619.7	28.1	2,619.5	1.12	0.84	-0.74
12,424.0	91.60	358.20	9,970.6	2,714.6	25.7	2,714.4	1.04	0.74	-0.74
12,520.0	89.70	357.10	9,969.5	2,810.5	21.8	2,810.4	2.29	-1.98	-1.15
12,615.0	89.30	358.60	9,970.4	2,905.4	18.2	2,905.3	1.63	-0.42	1.58
12,710.0	91.40	0.80	9,969.8	3,000.4	17.7	3,000.3	3.20	2.21	2.32
12,805.0	93.40	359.80	9,965.8	3,095.3	18.2	3,095.2	2.35	2.11	-1.05
12,900.0	91.60	359.60	9,961.7	3,190.2	17.7	3,190.1	1.91	-1.89	-0.21
12,996.0	91.40	0.10	9,959.2	3,286.2	17.5	3,286.1	0.56	-0.21	0.52
13,091.0	93.00	359.60	9,955.5	3,381.1	17.2	3,381.0	1.76	1.68	-0.53
13,186.0	92.90	359.60	9,950.6	3,476.0	16.5	3,475.9	0.11	-0.11	0.00
13,281.0	91.80	1.00	9,946.7	3,570.9	17.0	3,570.8	1.87	-1.16	1.47
13,365.0	92.50	0.50	9,943.6	3,654.9	18.1	3,654.7	1.02	0.83	-0.60
13,460.0	92.00	0.50	9,939.8	3,749.8	19.0	3,749.6	0.53	-0.53	0.00
13,555.0	91.40	0.30	9,937.0	3,844.7	19.6	3,844.6	0.67	-0.63	-0.21
13,650.0	91.10	0.70	9,935.0	3,939.7	20.5	3,939.5	0.53	-0.32	0.42
13,745.0	89.20	0.80	9,934.7	4,034.7	21.7	4,034.5	2.00	-2.00	0.11
13,841.0	89.50	359.80	9,935.8	4,130.7	22.2	4,130.5	1.09	0.31	-1.04
13,936.0	89.80	358.20	9,936.4	4,225.7	20.6	4,225.5	1.71	0.32	-1.68
14,031.0	91.50	357.50	9,935.3	4,320.6	17.0	4,320.4	1.94	1.79	-0.74
14,126.0	92.10	357.50	9,932.3	4,415.4	12.8	4,415.3	0.63	0.63	0.00
14,221.0	92.40	356.80	9,928.6	4,510.3	8.1	4,510.1	0.80	0.32	-0.74
14,317.0	92.50	357.00	9,924.5	4,606.0	2.9	4,605.9	0.23	0.10	0.21
14,412.0	92.70	357.10	9,920.2	4,700.8	-1.9	4,700.7	0.24	0.21	0.11
14,455.0	92.90	357.00	9,918.1	4,743.7	-4.2	4,743.6	0.52	0.47	-0.23
TD @ 14520' MD / 9915' TVD									
14,520.0	92.90	357.00	9,914.8	4,808.5	-7.6	4,808.5	0.00	0.00	0.00

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
8,773.0	8,770.2	32.2	47.3	Tie-in @ 8773' MD / 8770' TVD
14,520.0	9,914.8	4,808.5	-7.6	TD @ 14520' MD / 9915' TVD

DDC
Survey Report



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Checked By: _____ Approved By: _____ Date: _____