

MARSHALL & WINSTON

N. Seven Rivers
Eddy County, NM
Boot Hill 25 #1H
VH - Job #32K12111209

Survey: Gyro

SDI Standard Survey Report

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

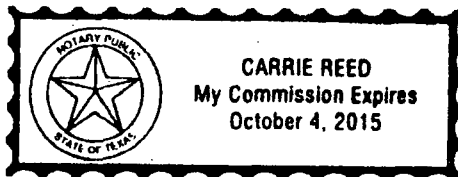
[Signature]

Notarized this date 31st of December, 2011.

[Signature]

Notary Signature
County of Midland
State of Texas

Oil Conservation Division
Case No. 4
Exhibit No. 1



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	MARSHALL & WINSTON	Local Co-ordinate Reference:	Well Boot Hill 25 #1H
Project:	N. Seven Rivers	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Boot Hill 25 #1H	North Reference:	Grid
Wellbore:	VH - Job #32K12111209	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K12111209	Database:	EDM-Regulatory

Project:		N. Seven Rivers	
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		Eddy County, NM			
Site Position:		Northing:	593,691.23 usft	Latitude:	32° 37' 55.596 N
From:	Lat/Long	Easting:	465,423.08 usft	Longitude:	104° 26' 44.344 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	-0.06 °

Well	Boot Hill 25 #1H, Directional (DDC)					
Well Position	+N/-S	0.0 usft	Northing:	590,265.83 usft	Latitude:	32° 37' 21.727 N
	+E/-W	0.0 usft	Easting:	468,215.65 usft	Longitude:	104° 26' 11.648 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	0.0 usft

Wellbore		VH - Job #32K12111209			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/13/2011	7.95	60.39	48,735

Design:		VH - Job #32K12111209			
Audit Notes:					
Version:		1.0	Phase:		ACTUAL
			Tie On Depth:		0.0
Vertical Section:		Depth From (TVD)	+N/-S	+E/-W	Direction
		(usft)	(usft)	(usft)	(°)
		0.0	0.0	0.0	180.26

Survey Program		Date: 1/22/2012		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
100.0	2,300.0	Gyro (VH - Job #32K12111209)	KSRG	Keeper Gyro

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0
100.0	0.36	25.54	100.0	0.3	0.1	25.54	0.3
200.0	0.43	3.16	200.0	0.9	0.3	17.21	1.0
300.0	0.45	6.00	300.0	1.7	0.4	11.70	1.7
400.0	0.52	2.08	400.0	2.6	0.4	9.15	2.6
500.0	0.55	1.45	500.0	3.5	0.4	7.19	3.5
600.0	0.45	20.63	600.0	4.3	0.6	7.76	4.4
700.0	0.40	22.44	700.0	5.0	0.9	9.74	5.1
800.0	0.37	35.48	800.0	5.6	1.2	11.91	5.7
900.0	0.25	42.54	900.0	6.0	1.5	14.12	6.2
1,000.0	0.30	25.43	1,000.0	6.4	1.8	15.45	6.7
1,100.0	0.32	36.12	1,100.0	6.9	2.1	16.60	7.2

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	MARSHALL & WINSTON	Local Co-ordinate Reference:	Well Boot Hill 25 #1H
Project:	N. Seven Rivers	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Boot Hill 25 #1H	North Reference:	Grid
Wellbore:	VH - Job #32K12111209	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K12111209	Database:	EDM-Regulatory

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
1,200.0	0.23	44.24	1,200.0	7.3	2.4	18.00	7.6	
1,300.0	0.35	13.87	1,300.0	7.7	2.6	18.47	8.1	
1,400.0	0.29	26.54	1,400.0	8.2	2.8	18.54	8.7	
1,500.0	0.34	27.19	1,500.0	8.7	3.0	19.04	9.2	
1,600.0	0.28	23.31	1,600.0	9.2	3.2	19.39	9.8	
1,700.0	0.15	349.12	1,700.0	9.6	3.3	19.11	10.1	
1,800.0	0.29	2.65	1,800.0	9.9	3.3	18.36	10.5	
1,900.0	0.26	320.74	1,900.0	10.4	3.2	16.99	10.8	
2,000.0	0.47	296.32	2,000.0	10.7	2.7	13.91	11.0	
2,100.0	0.57	295.35	2,100.0	11.1	1.8	9.39	11.3	
2,200.0	0.60	308.64	2,200.0	11.7	1.0	4.80	11.7	
2,300.0	0.71	273.77	2,299.9	12.0	0.0	359.77	12.0	



Scientific Drilling
Directional Drilling Operations

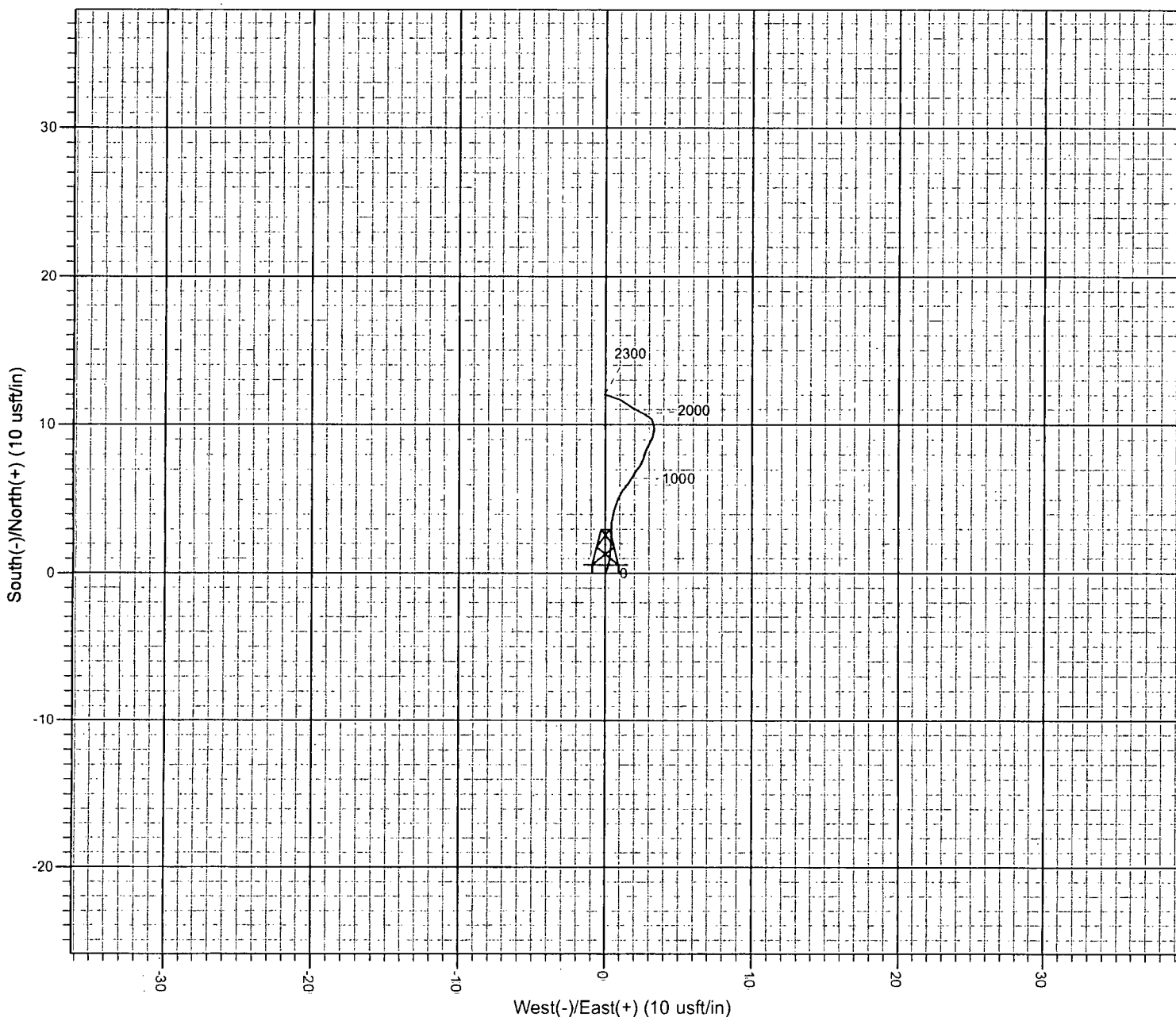
Project: N. Seven Rivers
Eddy County, NM
Well: Boot Hill 25 #1H
Wellbore: VH - Job #32K12111209
Design: VH - Job #32K12111209



Azimuths to Grid North
True North: 0.06°
Magnetic North: 8.01°
Magnetic Field
Strength: 48734.9snT
Dip Angle: 60.39°
Date: 12/13/2011
Model: IGRF2010

WELL DETAILS: Boot Hill 25 #1H
WELL @ 0.0usft (Original Well Elev)
Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	590265.83	468215.65	32° 37' 21.727 N	104° 26' 11.648 W	



PROJECT DETAILS: N. Seven Rivers
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

SITE DETAILS: Eddy County, NM
Site Centre Latitude: 32° 37' 55.596 N
Longitude: 104° 26' 44.344 W
Positional Uncertainty: 0.0
Convergence: -0.06
Local North: Grid



Marshall & Winston, Inc

Eddy County, NM
Sec 25, T19S, R25-E (NEW SHL)
Boothill 25 #1H

Wellbore #1

Survey: MWD

DDC Survey Report

17 January, 2012



Company: Marshall & Winston, Inc
Project: Eddy County, NM
Site: Sec 25, T19S, R25-E (NEW SHL)
Well: Boothill 25 #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Boothill 25 #1H
TVD Reference: WELL @ 0.0usft (Original Well Elev)
MD Reference: WELL @ 0.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project: Eddy County, NM

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site: Sec 25, T19S, R25-E (NEW SHL)

Site Position: Northing: 593,384.50 usft Latitude: 32° 37' 52.590 N
From: Map Easting: 468,342.30 usft Longitude: 104° 26' 10.203 W
Position Uncertainty: 0.0 usft Slot Radius: 13-3/16 " Grid Convergence: -0.06 °

Well: Boothill 25 #1H

Well Position: +N/-S 0.0 usft Northing: 593,384.50 usft Latitude: 32° 37' 52.590 N
+E/-W 0.0 usft Easting: 468,342.30 usft Longitude: 104° 26' 10.203 W
Position Uncertainty: 0.0 usft Wellhead Elevation: usft Ground Level: 0.0 usft

Wellbore: Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/22/2011	7.96	60.40	48,746

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	180.32

Survey Program Date: 12/28/2011

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
2,331.0	4,892.0	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 @ 2300' MD / 2299.9' TVD - Tie In									
2,300.0	0.71	273.77	2,299.9	12.0	-0.1	-12.0	0.00	0.00	0.00
2,331.0	0.90	271.30	2,330.9	12.0	-0.5	-12.0	0.62	0.61	-7.97
2,359.0	0.80	287.80	2,358.9	12.1	-0.9	-12.1	0.94	-0.36	58.93
2,390.0	1.10	217.90	2,389.9	11.9	-1.3	-11.9	3.60	0.97	-225.48
2,421.0	4.60	190.30	2,420.9	10.5	-1.7	-10.5	11.81	11.29	-89.03
2,452.0	9.00	185.00	2,451.7	6.8	-2.1	-6.8	14.32	14.19	-17.10
2,484.0	13.50	182.70	2,483.1	0.6	-2.5	-0.6	14.13	14.06	-7.19
2,515.0	17.70	179.90	2,512.9	-7.7	-2.7	7.7	13.76	13.55	-9.03
2,546.0	22.00	177.80	2,542.1	-18.2	-2.5	18.3	14.06	13.87	-6.77
2,578.0	26.90	178.40	2,571.2	-31.5	-2.0	31.5	15.33	15.31	1.88

Company:	Marshall & Winston, Inc	Local Co-ordinate Reference:	Well Boothill 25 #1H
Project:	Eddy County, NM	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 25, T19S, R25-E (NEW SHL)	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Boothill 25 #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
2,608.0	31.30	178.60	2,597.4	-46.1	-1.7	46.1	14.67	14.67	0.67
2,639.0	35.60	179.00	2,623.2	-63.1	-1.3	63.1	13.89	13.87	1.29
2,670.0	40.10	178.80	2,647.7	-82.2	-0.9	82.2	14.52	14.52	-0.65
2,701.0	44.00	178.90	2,670.7	-102.9	-0.5	102.9	12.58	12.58	0.32
2,731.0	48.00	179.00	2,691.6	-124.5	-0.1	124.5	13.34	13.33	0.33
2,762.0	52.20	179.70	2,711.4	-148.3	0.1	148.2	13.66	13.55	2.26
2,793.0	56.60	180.70	2,729.5	-173.5	0.1	173.4	14.43	14.19	3.23
2,824.0	60.90	181.70	2,745.6	-199.9	-0.5	199.9	14.14	13.87	3.23
2,855.0	65.40	181.50	2,759.6	-227.6	-1.3	227.6	14.53	14.52	-0.65
2,886.0	70.30	180.80	2,771.2	-256.3	-1.9	256.3	15.94	15.81	-2.26
Crossed Hard Line @ 2899.9' MD / 2775.7' TVD									
2,899.9	72.34	180.54	2,775.7	-269.4	-2.0	269.5	14.80	14.69	-1.90
Crossed Hard Line									
2,909.3	73.73	180.36	2,778.4	-278.5	-2.1	278.5	14.80	14.69	-1.87
2,918.0	75.00	180.20	2,780.8	-286.8	-2.1	286.8	14.80	14.69	-1.84
2,949.0	78.90	180.60	2,787.8	-317.0	-2.3	317.0	12.64	12.58	1.29
2,980.0	83.00	181.50	2,792.7	-347.6	-2.9	347.6	13.53	13.23	2.90
3,012.0	87.40	182.10	2,795.3	-379.5	-3.9	379.5	13.88	13.75	1.88
3,043.0	90.20	182.70	2,796.0	-410.4	-5.2	410.5	9.24	9.03	1.94
3,074.0	90.90	182.50	2,795.7	-441.4	-6.6	441.4	2.35	2.26	-0.65
3,106.0	89.70	181.70	2,795.5	-473.4	-7.8	473.4	4.51	-3.75	-2.50
3,136.0	87.70	181.30	2,796.2	-503.4	-8.6	503.4	6.80	-6.67	-1.33
3,168.0	85.70	181.30	2,798.0	-535.3	-9.3	535.3	6.25	-6.25	0.00
3,199.0	85.10	181.40	2,800.5	-566.2	-10.0	566.2	1.96	-1.94	0.32
3,230.0	85.10	181.30	2,803.2	-597.1	-10.7	597.1	0.32	0.00	-0.32
3,260.0	85.40	180.50	2,805.7	-627.0	-11.2	627.0	2.84	1.00	-2.67
3,291.0	85.90	179.80	2,808.0	-657.9	-11.3	657.9	2.77	1.61	-2.26
3,323.0	86.90	179.60	2,810.0	-689.8	-11.1	689.9	3.19	3.13	-0.63
3,355.0	88.60	179.90	2,811.3	-721.8	-11.0	721.8	5.39	5.31	0.94
3,386.0	90.40	179.40	2,811.5	-752.8	-10.8	752.8	6.03	5.81	-1.61
3,417.0	91.20	178.90	2,811.1	-783.8	-10.3	783.8	3.04	2.58	-1.61
3,448.0	91.50	178.70	2,810.4	-814.8	-9.7	814.8	1.16	0.97	-0.65
3,480.0	91.40	178.80	2,809.6	-846.7	-9.0	846.8	0.44	-0.31	0.31
3,511.0	91.10	179.20	2,808.9	-877.7	-8.4	877.8	1.61	-0.97	1.29
3,542.0	91.00	179.50	2,808.3	-908.7	-8.1	908.7	1.02	-0.32	0.97
3,572.0	91.10	179.30	2,807.8	-938.7	-7.8	938.7	0.75	0.33	-0.67
3,603.0	90.70	179.10	2,807.3	-969.7	-7.3	969.7	1.44	-1.29	-0.65
3,634.0	90.80	178.70	2,806.9	-1,000.7	-6.7	1,000.7	1.33	0.32	-1.29
3,665.0	90.20	178.50	2,806.6	-1,031.7	-6.0	1,031.7	2.04	-1.94	-0.65
3,697.0	89.10	178.60	2,806.8	-1,063.7	-5.2	1,063.7	3.45	-3.44	0.31
3,728.0	88.80	178.70	2,807.4	-1,094.7	-4.5	1,094.7	1.02	-0.97	0.32
3,758.0	88.70	178.70	2,808.0	-1,124.6	-3.8	1,124.6	0.33	-0.33	0.00
3,789.0	88.70	178.90	2,808.7	-1,155.6	-3.1	1,155.6	0.64	0.00	0.65

Company: Marshall & Winston, Inc
Project: Eddy County, NM
Site: Sec 25, T19S, R25-E (NEW SHL)
Well: Boothill 25 #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Boothill 25 #1H
TVD Reference: WELL @ 0.0usft (Original Well Elev)
MD Reference: WELL @ 0.0usft (Original Well Elev)
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)
3,820.0	89.10	179.80	2,809.3	-1,186.6	-2.8	1,186.6	3.18	1.29	2.90
3,852.0	89.10	180.30	2,809.8	-1,218.6	-2.8	1,218.6	1.56	0.00	1.56
3,883.0	89.20	180.50	2,810.3	-1,249.6	-3.0	1,249.6	0.72	0.32	0.65
3,913.0	88.90	180.50	2,810.8	-1,279.6	-3.3	1,279.6	1.00	-1.00	0.00
3,944.0	89.00	180.40	2,811.4	-1,310.6	-3.5	1,310.6	0.46	0.32	-0.32
3,975.0	89.90	180.60	2,811.7	-1,341.6	-3.8	1,341.6	2.97	2.90	0.65
4,006.0	90.30	180.80	2,811.6	-1,372.6	-4.2	1,372.6	1.44	1.29	0.65
4,037.0	90.30	181.00	2,811.4	-1,403.6	-4.7	1,403.6	0.65	0.00	0.65
4,068.0	90.50	180.90	2,811.2	-1,434.6	-5.2	1,434.6	0.72	0.65	-0.32
4,099.0	90.50	181.10	2,811.0	-1,465.6	-5.7	1,465.6	0.65	0.00	0.65
4,130.0	90.80	181.10	2,810.6	-1,496.6	-6.3	1,496.6	0.97	0.97	0.00
4,160.0	90.90	181.20	2,810.2	-1,526.6	-6.9	1,526.6	0.47	0.33	0.33
4,192.0	91.00	181.40	2,809.6	-1,558.6	-7.6	1,558.6	0.70	0.31	0.63
4,222.0	91.20	181.50	2,809.1	-1,588.5	-8.4	1,588.6	0.75	0.67	0.33
4,253.0	89.80	181.30	2,808.8	-1,619.5	-9.1	1,619.5	4.56	-4.52	-0.65
4,284.0	89.20	181.10	2,809.1	-1,650.5	-9.8	1,650.5	2.04	-1.94	-0.65
4,315.0	89.10	181.20	2,809.5	-1,681.5	-10.4	1,681.5	0.46	-0.32	0.32
4,346.0	89.30	181.00	2,809.9	-1,712.5	-11.0	1,712.5	0.91	0.65	-0.65
4,378.0	89.50	181.00	2,810.3	-1,744.5	-11.6	1,744.5	0.63	0.63	0.00
4,409.0	89.90	180.80	2,810.4	-1,775.5	-12.1	1,775.5	1.44	1.29	-0.65
4,440.0	90.10	180.60	2,810.4	-1,806.5	-12.4	1,806.5	0.91	0.65	-0.65
4,471.0	90.30	180.80	2,810.3	-1,837.5	-12.8	1,837.5	0.91	0.65	0.65
4,502.0	90.30	180.70	2,810.2	-1,868.5	-13.2	1,868.5	0.32	0.00	-0.32
4,533.0	90.40	180.60	2,810.0	-1,899.5	-13.6	1,899.5	0.46	0.32	-0.32
4,563.0	90.10	180.20	2,809.9	-1,929.5	-13.8	1,929.5	1.67	-1.00	-1.33
4,595.0	90.30	179.80	2,809.7	-1,961.5	-13.8	1,961.5	1.40	0.63	-1.25
4,625.0	90.40	179.80	2,809.6	-1,991.5	-13.7	1,991.5	0.33	0.33	0.00
4,656.0	90.60	179.90	2,809.3	-2,022.5	-13.6	2,022.5	0.72	0.65	0.32
4,687.0	90.60	179.70	2,809.0	-2,053.5	-13.5	2,053.5	0.65	0.00	-0.65
4,719.0	90.80	179.70	2,808.6	-2,085.5	-13.3	2,085.5	0.63	0.63	0.00
4,750.0	89.90	179.80	2,808.4	-2,116.5	-13.2	2,116.5	2.92	-2.90	0.32
4,781.0	89.80	179.50	2,808.5	-2,147.5	-13.0	2,147.5	1.02	-0.32	-0.97
4,812.0	89.70	179.70	2,808.6	-2,178.5	-12.8	2,178.5	0.72	-0.32	0.65
4,835.0	89.60	179.80	2,808.7	-2,201.5	-12.7	2,201.5	0.61	-0.43	0.43

TD @ 4892' MD / 2809.14' TVD - PBHL Boothill 25 #1H Design #2

4,892.0	89.60	179.80	2,809.1	-2,258.5	-12.5	2,258.5	0.00	0.00	0.00
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Company:	Marshall & Winston, Inc	Local Co-ordinate Reference:	Well Boothill 25 #1H
Project:	Eddy County, NM	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 25, T19S, R25-E (NEW SHL)	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Boothill 25 #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,300.0	2,299.9	12.0	-0.1	Tie In @ 2300' MD / 2299.9' TVD
2,899.9	2,775.7	-269.4	-2.0	Crossed Hard Line @ 2899.9' MD / 2775.7' TVD
4,892.0	2,809.1	-2,258.5	-12.5	TD @ 4892' MD / 2809.14' TVD

Checked By: _____ Approved By: _____ Date: _____