

15- 4/252

MANZANO LLC

Parkway

Eddy County, NM

Meridian Federal Com #2H

VH - Job #320513-KW-536

Survey: Gyro

SDI Standard Survey Report

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

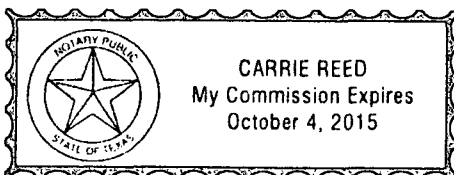
[Signature]

Notarized this date 3rd of June, 2013.

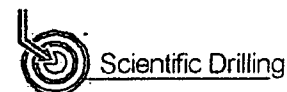
[Signature]

Notary Signature
County of Midland
State of Texas

V-8178'
M-12145'



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	MANZANO LLC	Local Co-ordinate Reference:	Well Meridian Federal Com #2H
Project:	Parkway	TVD Reference:	WELL @ 0.00usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0.00usft (Original Well Elev)
Well:	Meridian Federal Com #2H	North Reference:	Grid
Wellbore:	VH - Job #320513-KW-536	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320513-KW-536	Database:	EDM-Regulatory

Project	Parkway		
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:	585,382.83 usft	Latitude:	32° 36' 32.560 N
From:	Lat/Long	Easting:	581,298.29 usft	Longitude:	104° 4' 9.540 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.14 °

Well	Meridian Federal Com #2H, Directional					
Well Position	+N/-S	0.00 usft	Northing:	585,382.83 usft	Latitude:	32° 36' 32.560 N
	+E/-W	0.00 usft	Easting:	581,298.29 usft	Longitude:	104° 4' 9.540 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	0.00 usft

Wellbore	VH - Job #320513-KW-536				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	05/21/13	7.61	60.41	48,626

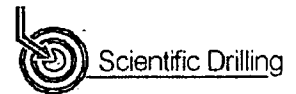
Design		VH - Job #320513-KW-536			
Audit Notes:					
Version:		1.0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Section:		Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
		0.00	0.00	0.00	166.14

Survey Program		Date	06/11/13		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	7,423.00	Gyro (VH - Job #320513-KW-536)	Keeper	Keeper Gyro	

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.73	233.07	100.00	-0.38	-0.51	233.07	0.64
200.00	1.19	215.35	199.98	-1.61	-1.62	225.12	2.29
300.00	1.10	214.83	299.96	-3.25	-2.77	220.45	4.27
400.00	1.02	204.10	399.95	-4.85	-3.68	217.20	6.09
500.00	1.20	179.97	499.93	-6.71	-4.04	211.08	7.83
600.00	0.83	181.33	599.91	-8.48	-4.06	205.58	9.40
700.00	0.86	144.35	699.90	-9.81	-3.64	200.34	10.47
800.00	1.11	117.62	799.89	-10.87	-2.34	192.16	11.12
900.00	2.04	109.95	899.85	-11.93	0.19	179.09	11.93
1,000.00	2.70	109.10	999.76	-13.31	4.09	162.92	13.92
1,100.00	2.70	106.49	1,099.65	-14.74	8.57	149.83	17.06

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SDI Standard Survey Report



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Project:	Parkway	TVD Reference:	WELL @ 0.00usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0.00usft (Original Well Elev)
Well:	Meridian Federal Com #2H	North Reference:	Grid
Wellbore:	VH - Job #320513-KW-536	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320513-KW-536	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,200.00	2.52	105.98	1,199.55	-16.02	12.94	141.06	20.59
1,300.00	2.16	104.58	1,299.46	-17.10	16.88	135.37	24.03
1,400.00	2.17	104.83	1,399.39	-18.06	20.53	131.33	27.34
1,500.00	1.94	105.32	1,499.33	-18.99	24.00	128.35	30.60
1,600.00	1.67	118.06	1,599.28	-20.12	26.92	126.78	33.61
1,700.00	1.63	128.76	1,699.24	-21.70	29.31	126.51	36.47
1,800.00	1.66	137.34	1,799.20	-23.65	31.40	126.99	39.31
1,900.00	1.70	142.40	1,899.15	-25.89	33.29	127.88	42.17
2,000.00	1.28	154.96	1,999.12	-28.08	34.67	129.01	44.61
2,100.00	1.03	160.94	2,099.10	-29.94	35.43	130.20	46.39
2,200.00	1.08	159.97	2,199.08	-31.68	36.05	131.31	47.99
2,300.00	0.98	168.15	2,299.07	-33.40	36.55	132.42	49.51
2,400.00	1.13	164.58	2,399.05	-35.19	36.98	133.57	51.05
2,500.00	1.16	173.56	2,499.03	-37.14	37.36	134.83	52.68
2,600.00	1.09	173.03	2,599.01	-39.09	37.59	136.12	54.23
2,700.00	0.98	172.62	2,698.99	-40.89	37.81	137.24	55.69
2,800.00	1.18	161.22	2,798.98	-42.71	38.26	138.15	57.34
2,900.00	1.33	151.20	2,898.95	-44.70	39.15	138.79	59.42
3,000.00	1.85	114.39	2,998.92	-46.38	41.18	138.40	62.02
3,100.00	1.88	109.72	3,098.86	-47.60	44.19	137.13	64.95
3,200.00	1.72	105.32	3,198.81	-48.55	47.18	135.82	67.70
3,300.00	1.86	109.01	3,298.77	-49.48	50.16	134.61	70.46
3,400.00	1.21	108.15	3,398.73	-50.34	52.70	133.69	72.88
3,500.00	1.01	122.82	3,498.71	-51.14	54.44	133.21	74.70
3,600.00	0.85	125.88	3,598.70	-52.06	55.79	133.02	76.30
3,700.00	0.85	136.95	3,698.69	-53.03	56.89	132.99	77.78
3,800.00	0.87	130.56	3,798.68	-54.07	57.98	133.00	79.28
3,900.00	0.93	130.59	3,898.66	-55.09	59.17	132.96	80.85
4,000.00	0.76	135.21	3,998.65	-56.09	60.25	132.95	82.32
4,100.00	0.44	144.52	4,098.65	-56.87	60.94	133.02	83.36
4,200.00	0.24	132.06	4,198.64	-57.32	61.32	133.07	83.94
4,300.00	0.18	167.80	4,298.64	-57.62	61.51	133.13	84.28
4,400.00	0.28	184.23	4,398.64	-58.02	61.53	133.32	84.56
4,500.00	0.37	269.01	4,498.64	-58.27	61.18	133.60	84.49
4,600.00	0.39	232.38	4,598.64	-58.48	60.59	133.98	84.21
4,700.00	0.47	261.67	4,698.64	-58.75	59.92	134.43	83.91
4,800.00	0.67	251.05	4,798.63	-58.99	58.96	135.02	83.41
4,900.00	0.61	260.77	4,898.63	-59.27	57.88	135.68	82.84
5,000.00	0.97	261.56	4,998.62	-59.48	56.52	136.46	82.05
5,100.00	1.63	250.23	5,098.59	-60.09	54.34	137.87	81.01
5,200.00	1.62	255.51	5,198.55	-60.92	51.63	139.72	79.86
5,300.00	1.40	263.99	5,298.52	-61.40	49.05	141.38	78.59
5,400.00	1.53	284.01	5,398.48	-61.21	46.54	142.75	76.89
5,500.00	1.58	285.86	5,498.45	-60.51	43.92	144.03	74.77

Scientific Drilling International, Inc.

SDI Standard Survey Report



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Project:	Parkway	TVD Reference:	WELL @ 0.00usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0.00usft (Original Well Elev)
Well:	Meridian Federal Com #2H	North Reference:	Grid
Wellbore:	VH - Job #320513-KW-536	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320513-KW-536	Database:	EDM-Regulatory

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
5,600.00	1.79	291.07	5,598.40	-59.57	41.14	145.37	72.39	
5,700.00	1.94	295.49	5,698.35	-58.28	38.15	146.79	69.65	
5,800.00	1.80	302.02	5,798.30	-56.72	35.29	148.11	66.80	
5,900.00	1.84	300.84	5,898.25	-55.06	32.58	149.39	63.98	
6,000.00	1.57	299.34	5,998.20	-53.57	30.01	150.74	61.40	
6,100.00	0.98	306.98	6,098.18	-52.38	28.13	151.76	59.46	
6,200.00	1.34	336.02	6,198.16	-50.80	26.97	152.03	57.52	
6,300.00	1.44	335.36	6,298.13	-48.59	25.97	151.87	55.09	
6,400.00	1.53	336.53	6,398.09	-46.22	24.92	151.67	52.51	
6,500.00	1.54	335.83	6,498.06	-43.77	23.84	151.43	49.84	
6,600.00	1.54	328.66	6,598.02	-41.40	22.59	151.38	47.16	
6,700.00	1.16	311.83	6,697.99	-39.57	21.13	151.90	44.86	
6,800.00	1.03	328.62	6,797.98	-38.13	19.91	152.43	43.02	
6,900.00	0.88	296.54	6,897.96	-37.02	18.76	153.13	41.50	
7,000.00	1.27	287.80	6,997.95	-36.34	17.01	154.91	40.13	
7,100.00	0.83	266.57	7,097.93	-36.04	15.24	157.09	39.13	
7,200.00	0.93	258.00	7,197.92	-36.26	13.72	159.27	38.77	
7,300.00	1.30	257.48	7,297.90	-36.67	11.82	162.14	38.53	
7,400.00	1.96	202.52	7,397.86	-38.50	10.06	165.36	39.79	
7,423.00	2.71	200.92	7,420.84	-39.37	9.71	166.14	40.55	



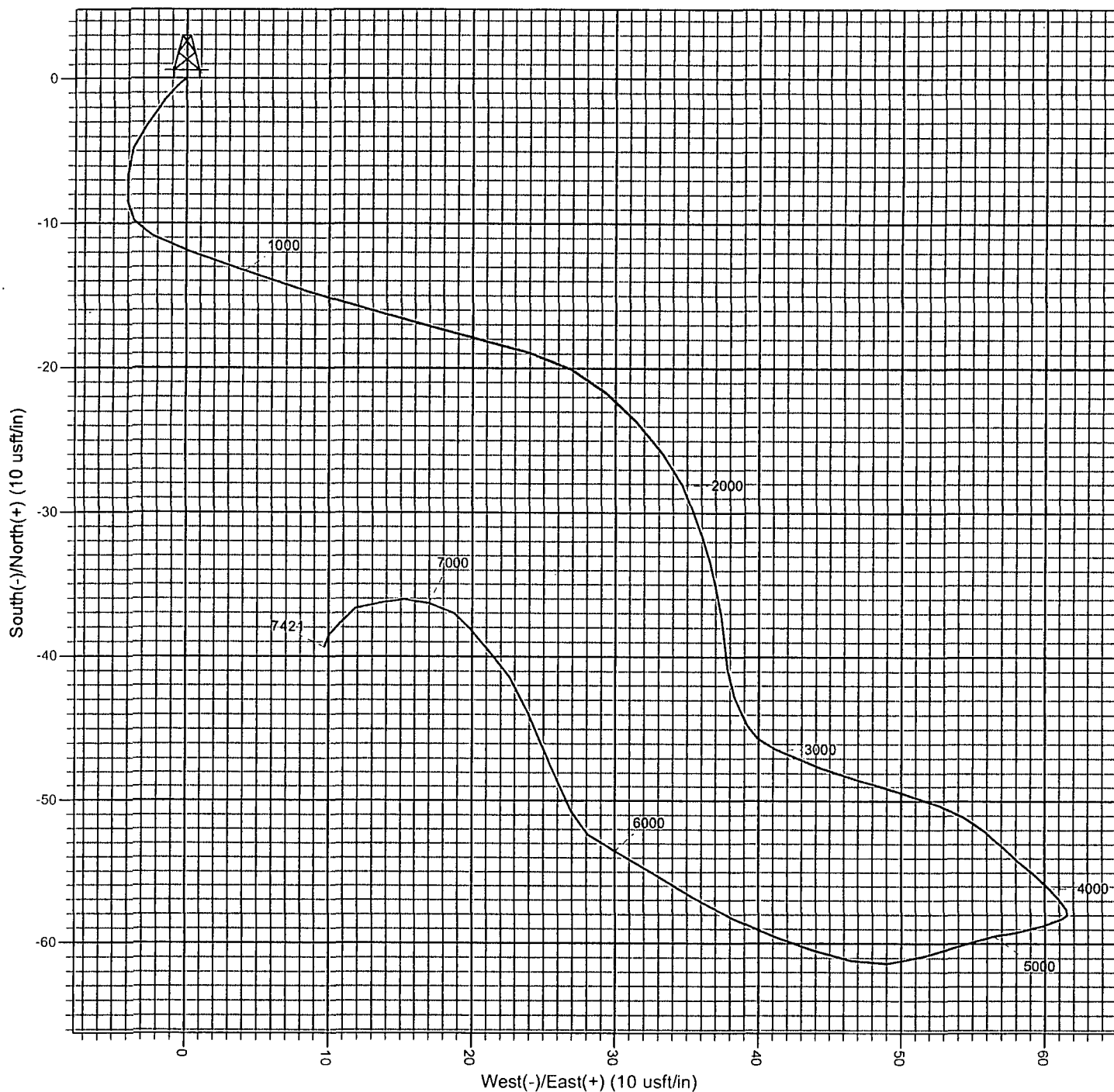
Scientific Drilling

Project: Parkway
Eddy County, NM
Well: Meridian Federal Com #2H
Wellbore: VH - Job #320513-KW-536
Design: VH - Job #320513-KW-536

WELL DETAILS: Meridian Federal Com #2H
WELL @ 0.00usft (Original Well Elev)

Ground Level: 0.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	585382.83	581298.29	32° 36' 32.560 N	104° 4' 9.540 W	



PROJECT DETAILS: Parkway	SITE DETAILS: Eddy County, NM
Geodetic System: US State Plane 1927 (Exact solution)	Site Centre Latitude: 32° 36' 32.560 N
Datum: NAD 1927 (NADCON CONUS)	Longitude: 104° 4' 9.540 W
Ellipsoid: Clarke 1866	Positional Uncertainty: 0.00
Zone: New Mexico East 3001	Convergence: 0.14
System Datum: Mean Sea Level	Local North: Grid



Weatherford

Client : Manzano
Well : Meridian Federal Com # 2H
Location : Eddy, Co.
Formation: 8044
Dip Azi : 98.71
License :
Comment : Horizontal

Page: 1
Date : 5/31/2013
File : 4029256

Dip Inc : -1.51

UWI #:

Vertical Section Calculated Along Azimuth 98.71°

	KB Elevation = 3362.00ft				GR. Elevation = 3348.00ft					
	MD	Inc	Azi	TVD	North	East	V'Sect	D'Leg	Build	Turn
	ft	deg	deg	ft	ft	ft	ft	%100	%100	%100
0	7423.00	2.71	200.92	7420.84	-39.42	9.74	15.60	0.00	0.00	0.00
1	7450.00	3.52	164.78	7447.80	-40.82	9.73	15.80	7.70	3.00	-133.85
2	7482.00	6.03	137.23	7479.69	-43.00	11.13	17.51	10.41	7.84	-86.09
3	7513.00	9.24	121.66	7510.42	-45.50	14.35	21.08	12.23	10.35	-50.23
4	7545.00	12.33	113.75	7541.85	-48.23	19.67	26.75	10.69	9.66	-24.72
5	7577.00	15.35	113.11	7572.92	-51.27	26.69	34.15	9.45	9.44	-2.00
6	7608.00	18.38	114.83	7602.58	-54.93	34.91	42.82	9.90	9.77	5.55
7	7640.00	21.24	114.60	7632.68	-59.46	44.76	53.25	8.94	8.94	-0.72
8	7672.00	24.58	113.48	7662.16	-64.53	56.14	65.26	10.53	10.44	-3.50
9	7703.00	27.97	112.40	7689.95	-69.87	68.77	78.56	11.04	10.94	-3.48
10	7735.00	31.02	111.28	7717.80	-75.72	83.40	93.90	9.69	9.53	-3.50
11	7766.00	34.40	108.93	7743.88	-81.46	99.13	110.32	11.65	10.90	-7.58
12	7798.00	37.27	106.34	7769.82	-87.12	116.98	128.83	10.14	8.97	-8.09
13	7830.00	39.94	103.27	7794.83	-92.21	136.28	148.68	10.27	8.34	-9.59
14	7861.00	42.07	101.10	7818.22	-96.49	156.16	168.97	8.26	6.87	-7.00
15	7893.00	44.39	99.41	7841.54	-100.39	177.73	190.88	8.10	7.25	-5.28
16	7925.00	47.09	99.25	7863.87	-104.10	200.34	213.80	8.45	8.44	-0.50
17	7956.00	50.24	99.00	7884.34	-107.79	223.32	237.07	10.18	10.16	-0.81
18	7988.00	52.83	97.92	7904.24	-111.47	248.10	262.12	8.51	8.09	-3.38
19	8019.00	55.64	97.21	7922.36	-114.78	273.03	287.27	9.25	9.06	-2.29
20	8051.00	58.26	97.13	7939.81	-118.13	299.64	314.08	8.19	8.19	-0.25
21	8083.00	60.37	97.47	7956.14	-121.63	326.94	341.59	6.66	6.59	1.06
22	8114.00	62.82	98.16	7970.89	-125.34	353.95	368.85	8.14	7.90	2.23
23	8146.00	65.01	98.36	7984.96	-129.46	382.39	397.59	6.87	6.84	0.63
24	8177.00	68.16	98.81	7997.27	-133.71	410.52	426.03	10.25	10.16	1.45
25	8208.00	70.47	98.37	8008.22	-138.04	439.19	455.03	7.57	7.45	-1.42
26	8239.00	72.39	98.50	8018.09	-142.35	468.26	484.41	6.21	6.19	0.42
27	8271.00	74.06	98.81	8027.33	-146.96	498.55	515.05	5.30	5.22	0.97
28	8302.00	76.52	99.07	8035.20	-151.62	528.16	545.03	7.98	7.94	0.84
29	8334.00	79.02	99.75	8041.98	-156.74	559.01	576.30	8.08	7.81	2.12
30	8366.00	81.72	100.33	8047.33	-162.24	590.08	607.84	8.62	8.44	1.81
31	8397.00	83.61	100.35	8051.29	-167.76	620.32	638.57	6.10	6.10	0.06
32	8429.00	85.23	99.80	8054.40	-173.33	651.68	670.41	5.34	5.06	-1.72
33	8492.00	88.25	100.27	8057.98	-184.29	713.61	733.28	4.85	4.79	0.75
34	8587.00	90.84	100.53	8058.74	-201.43	807.03	828.23	2.74	2.73	0.27



Weatherford

Client : Manzano
Well : Meridian Federal Com # 2H
Location : Eddy, Co.
Formation: 8044
Dip Azi : 98.71
License :
Comment : Horizontal

Page: 2
Date : 5/31/2013
File : 4029256

Dip Inc : -1.51

UWI #:

Vertical Section Calculated Along Azimuth 98.71°

	KB Elevation = 3362.00ft				GR. Elevation = 3348.00ft					
	MD	Inc	Azi	TVD	North	East	V'Sect	D'Leg	Build	Turn
	ft	deg	deg	ft	ft	ft	ft	%/100	%/100	%/100
35	8681.00	91.75	99.07	8056.61	-217.43	899.64	922.19	1.83	0.97	-1.55
36	8776.00	90.91	98.05	8054.41	-231.56	993.55	1017.16	1.39	-0.88	-1.07
37	8871.00	89.58	98.25	8054.00	-245.03	1087.59	1112.15	1.42	-1.40	0.21
38	8966.00	87.97	98.09	8056.03	-258.53	1181.60	1207.12	1.70	-1.69	-0.17
39	9061.00	87.69	97.42	8059.63	-271.34	1275.66	1302.04	0.76	-0.29	-0.71
40	9156.00	87.62	96.72	8063.52	-283.02	1369.86	1396.92	0.74	-0.07	-0.74
41	9251.00	87.06	97.04	8067.93	-294.39	1464.07	1491.77	0.68	-0.59	0.34
42	9346.00	88.74	96.57	8071.41	-305.64	1558.34	1586.65	1.84	1.77	-0.49
43	9440.00	87.90	96.22	8074.16	-316.10	1651.71	1680.53	0.97	-0.89	-0.37
44	9535.00	87.06	96.38	8078.34	-326.52	1746.05	1775.36	0.90	-0.88	0.17
45	9630.00	86.92	96.45	8083.33	-337.12	1840.32	1870.15	0.16	-0.15	0.07
46	9727.00	86.64	95.95	8088.78	-347.58	1936.60	1966.90	0.59	-0.29	-0.52
47	9822.00	86.92	95.62	8094.11	-357.14	2030.97	2061.63	0.46	0.29	-0.35
48	9916.00	86.64	95.29	8099.39	-366.06	2124.39	2155.33	0.46	-0.30	-0.35
49	10011.00	88.18	96.55	8103.69	-375.85	2218.79	2250.11	2.09	1.62	1.33
50	10106.00	88.53	96.60	8106.41	-386.72	2313.12	2345.01	0.37	0.37	0.05
51	10201.00	88.04	95.97	8109.26	-397.12	2407.51	2439.88	0.84	-0.52	-0.66
52	10296.00	88.32	95.80	8112.27	-406.85	2501.96	2534.72	0.34	0.29	-0.18
53	10391.00	86.22	96.52	8116.80	-417.03	2596.30	2629.51	2.34	-2.21	0.76
54	10485.00	86.15	96.31	8123.05	-427.51	2689.50	2723.23	0.24	-0.07	-0.22
55	10580.00	86.08	96.10	8129.49	-437.76	2783.73	2817.92	0.23	-0.07	-0.22
56	10675.00	87.27	97.17	8135.00	-448.72	2877.93	2912.69	1.68	1.25	1.13
57	10770.00	87.97	97.42	8138.94	-460.77	2972.08	3007.58	0.78	0.74	0.26
58	10865.00	88.11	96.84	8142.19	-472.55	3066.29	3102.49	0.63	0.15	-0.61
59	10959.00	87.20	98.29	8146.04	-484.92	3159.39	3196.39	1.82	-0.97	1.54
60	11054.00	87.20	97.96	8150.68	-498.33	3253.32	3291.27	0.35	0.00	-0.35
61	11149.00	87.69	99.41	8154.91	-512.66	3347.14	3386.17	1.61	0.52	1.53
62	11244.00	87.62	98.89	8158.80	-527.75	3440.85	3481.09	0.55	-0.07	-0.55
63	11339.00	87.97	98.76	8162.46	-542.32	3534.66	3576.02	0.39	0.37	-0.14
64	11434.00	88.11	98.69	8165.71	-556.72	3628.50	3670.96	0.16	0.15	-0.07
65	11529.00	88.18	98.40	8168.78	-570.83	3722.40	3765.91	0.31	0.07	-0.31
66	11623.00	88.11	98.18	8171.82	-584.37	3815.37	3859.86	0.25	-0.07	-0.23
67	11718.00	88.04	98.15	8175.02	-597.86	3909.35	3954.80	0.08	-0.07	-0.03
68	11813.00	87.90	97.56	8178.38	-610.83	4003.40	4049.73	0.64	-0.15	-0.62
69	11908.00	88.74	97.22	8181.17	-623.05	4097.57	4144.66	0.95	0.88	-0.36



Weatherford

Client : Manzano
Well : Meridian Federal Com # 2H
Location : Eddy, Co.
Formation: 8044
Dip Azi : 98.71
License :
Comment : Horizontal

Page: 3
Date : 5/31/2013
File : 4029256

Dip Inc : -1.51

UWI #:

Vertical Section Calculated Along Azimuth 98.71°

KB Elevation = 3362.00ft GR. Elevation = 3348.00ft

	MD	Inc	Azi	TVD	North	East	V'Sect	D'Leg	Build	Turn
	ft	deg	deg	ft	ft	ft	ft	%100	%100	%100
70	12003.00	91.40	96.85	8181.05	-634.68	4191.85	4239.61	2.83	2.80	-0.39
71	12077.00	91.33	96.48	8179.29	-643.27	4265.32	4313.55	0.51	-0.09	-0.50
Project to Bit										
EXT	12145.00	91.33	96.48	8177.71	-650.94	4332.87	4381.48	0.00	0.00	0.00

Bottom Hole Closure 4381.49ft Along Azimuth 98.54°