

MARBOB ENERGY

Willow Lake
Eddy County, NM
Showstopper 19 Federal #3H
32K0710547
VH - Job #32K0710547

30-015-37682

Survey: Actual

Standard Survey Report

18 August, 2010

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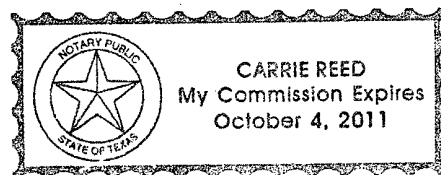
This survey is correct to the best of my knowledge and is supported by actual field data.

Carrie Reed

Notorized this date 20th of August, 2010.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.

Survey Report

Company:	MARBOB ENERGY	Local Co-ordinate Reference:	Well Showstopper 19 Federal #3H
Project:	Willow Lake	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Showstopper 19 Federal #3H	North Reference:	Grid
Wellbore:	VH - Job #32K0710547	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0710547	Database:	EDM-Regulatory

Project	Willow Lake		
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:	403,667.40 usft	Latitude:	32° 6' 33.842 N
From:	Map	Easting:	598,219.30 usft	Longitude:	104° 0' 58.014 W
Position Uncertainty:	0.0 usft	Slot Radius:	0 "	Grid Convergence:	0.17 °

Well	Showstopper 19 Federal #3H					
Well Position	+N/-S	0.0 usft	Northing:	403,667.40 usft	Latitude:	32° 6' 33.842 N
	+E/-W	0.0 usft	Easting:	598,219.30 usft	Longitude:	104° 0' 58.014 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	0.0 usft	

Wellbore	VH - Job #32K0710547				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2000	12/31/2004	8.76	60.24	49,323

Design:	VH - Job #32K0710547				
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	183.67	

Survey Program		Date	8/18/2010		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	6,474.1	Actual (VH - Job #32K0710547)	Keeper	Keeper Gyro	

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
100.0	0.50	142.33	100.0	-0.3	0.3	0.3	0.50	0.50	0.00
200.0	0.93	144.48	200.0	-1.4	1.0	1.3	0.43	0.43	2.15
300.0	0.74	144.40	300.0	-2.5	1.9	2.4	0.19	-0.19	-0.08
400.0	0.81	136.58	400.0	-3.6	2.7	3.4	0.13	0.07	-7.82
500.0	0.82	145.68	500.0	-4.7	3.6	4.4	0.13	0.01	9.10
600.0	0.81	161.63	600.0	-5.9	4.2	5.7	0.23	-0.01	15.95
700.0	0.95	175.75	699.9	-7.4	4.5	7.1	0.26	0.14	14.12
800.0	1.31	184.00	799.9	-9.4	4.5	9.1	0.39	0.36	8.25
900.0	1.51	187.05	899.9	-11.9	4.3	11.6	0.21	0.20	3.05

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Wellbore:	VH - Job #32K0710547	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0710547	Database:	EDM-Regulatory

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)	
1,000.0	1.93	195.32	999.8	-14.8	3.6	14.5	0.49	0.42	8.27	
1,100.0	2.50	196.38	1,099.8	-18.5	2.6	18.3	0.57	0.57	1.06	
1,200.0	3.11	191.41	1,199.6	-23.3	1.4	23.1	0.66	0.61	-4.97	
1,300.0	3.19	191.18	1,299.5	-28.6	0.4	28.6	0.08	0.08	-0.23	
1,400.0	3.14	191.90	1,399.3	-34.1	-0.7	34.0	0.06	-0.05	0.72	
1,500.0	3.33	192.38	1,499.2	-39.6	-1.9	39.6	0.19	0.19	0.48	
1,600.0	3.44	191.62	1,599.0	-45.3	-3.2	45.5	0.12	0.11	-0.76	
1,700.0	3.41	195.22	1,698.8	-51.2	-4.5	51.3	0.22	-0.03	3.60	
1,800.0	3.55	203.15	1,798.6	-56.9	-6.5	57.2	0.50	0.14	7.93	
1,900.0	3.35	211.61	1,898.5	-62.2	-9.3	62.7	0.55	-0.20	8.46	
2,000.0	2.70	211.48	1,998.3	-66.7	-12.1	67.3	0.65	-0.65	-0.13	
2,100.0	2.33	192.78	2,098.2	-70.7	-13.7	71.4	0.89	-0.37	-18.70	
2,200.0	2.13	180.49	2,198.2	-74.5	-14.2	75.3	0.52	-0.20	-12.29	
2,300.0	1.88	173.54	2,298.1	-78.0	-14.0	78.8	0.35	-0.25	-6.95	
2,400.0	1.79	147.58	2,398.0	-81.0	-13.0	81.6	0.83	-0.09	-25.96	
2,500.0	2.20	130.01	2,498.0	-83.5	-10.7	84.0	0.73	0.41	-17.57	
2,600.0	2.10	126.37	2,597.9	-85.8	-7.8	86.2	0.17	-0.10	-3.64	
2,700.0	1.62	127.95	2,697.9	-87.8	-5.2	87.9	0.48	-0.48	1.58	
2,800.0	1.04	124.39	2,797.8	-89.2	-3.3	89.2	0.59	-0.58	-3.56	
2,900.0	0.76	128.24	2,897.8	-90.1	-2.0	90.0	0.29	-0.28	3.85	
3,000.0	0.73	124.88	2,997.8	-90.9	-1.0	90.8	0.05	-0.03	-3.36	
3,100.0	0.59	132.59	3,097.8	-91.6	-0.1	91.4	0.17	-0.14	7.71	
3,200.0	0.69	137.50	3,197.8	-92.4	0.7	92.1	0.11	0.10	4.91	
3,300.0	0.53	137.13	3,297.8	-93.2	1.4	92.9	0.16	-0.16	-0.37	
3,400.0	0.52	142.08	3,397.8	-93.9	2.0	93.5	0.05	-0.01	4.95	
3,500.0	0.47	142.80	3,497.8	-94.5	2.5	94.2	0.05	-0.05	0.72	
3,600.0	0.48	142.73	3,597.8	-95.2	3.0	94.8	0.01	0.01	-0.07	
3,700.0	0.37	152.77	3,697.8	-95.8	3.4	95.4	0.13	-0.11	10.04	
3,800.0	0.38	159.04	3,797.8	-96.4	3.7	96.0	0.04	0.01	6.27	
3,900.0	0.38	164.10	3,897.8	-97.1	3.9	96.6	0.03	0.00	5.06	
4,000.0	0.30	171.68	3,997.8	-97.6	4.0	97.2	0.09	-0.08	7.58	
4,100.0	0.36	186.68	4,097.8	-98.2	4.1	97.7	0.10	0.06	15.00	
4,200.0	0.44	175.25	4,197.8	-98.9	4.0	98.4	0.11	0.08	-11.43	
4,300.0	0.42	177.80	4,297.8	-99.6	4.1	99.2	0.03	-0.02	2.55	
4,400.0	0.40	192.27	4,397.8	-100.4	4.0	99.9	0.11	-0.02	14.47	
4,500.0	0.53	194.36	4,497.8	-101.1	3.8	100.7	0.13	0.13	2.09	
4,600.0	0.54	191.90	4,597.8	-102.1	3.6	101.6	0.03	0.01	-2.46	
4,700.0	0.62	187.94	4,697.8	-103.0	3.5	102.6	0.09	0.08	-3.96	
4,800.0	0.76	189.18	4,797.7	-104.2	3.3	103.8	0.14	0.14	1.24	
4,900.0	0.94	182.70	4,897.7	-105.7	3.1	105.3	0.20	0.18	-6.48	
5,000.0	0.96	190.90	4,997.7	-107.4	2.9	106.9	0.14	0.02	8.20	
5,100.0	1.21	197.79	5,097.7	-109.2	2.5	108.8	0.28	0.25	6.89	
5,200.0	1.06	191.71	5,197.7	-111.1	1.9	110.7	0.19	-0.15	-6.08	
5,300.0	0.91	204.00	5,297.7	-112.7	1.4	112.4	0.26	-0.15	12.29	

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Wellbore:	VH - Job #32K0710547	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0710547	Database:	EDM-Regulatory

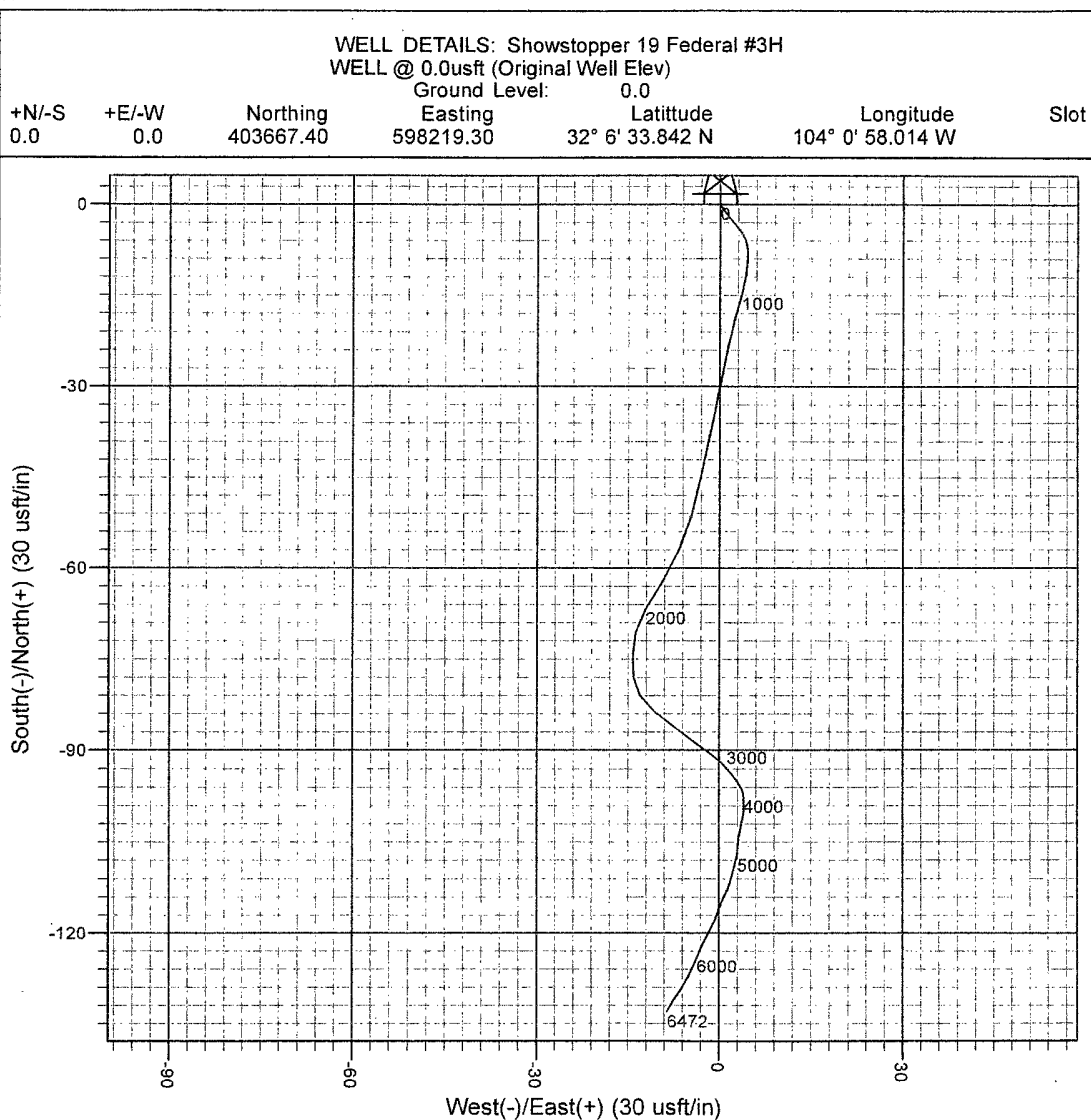
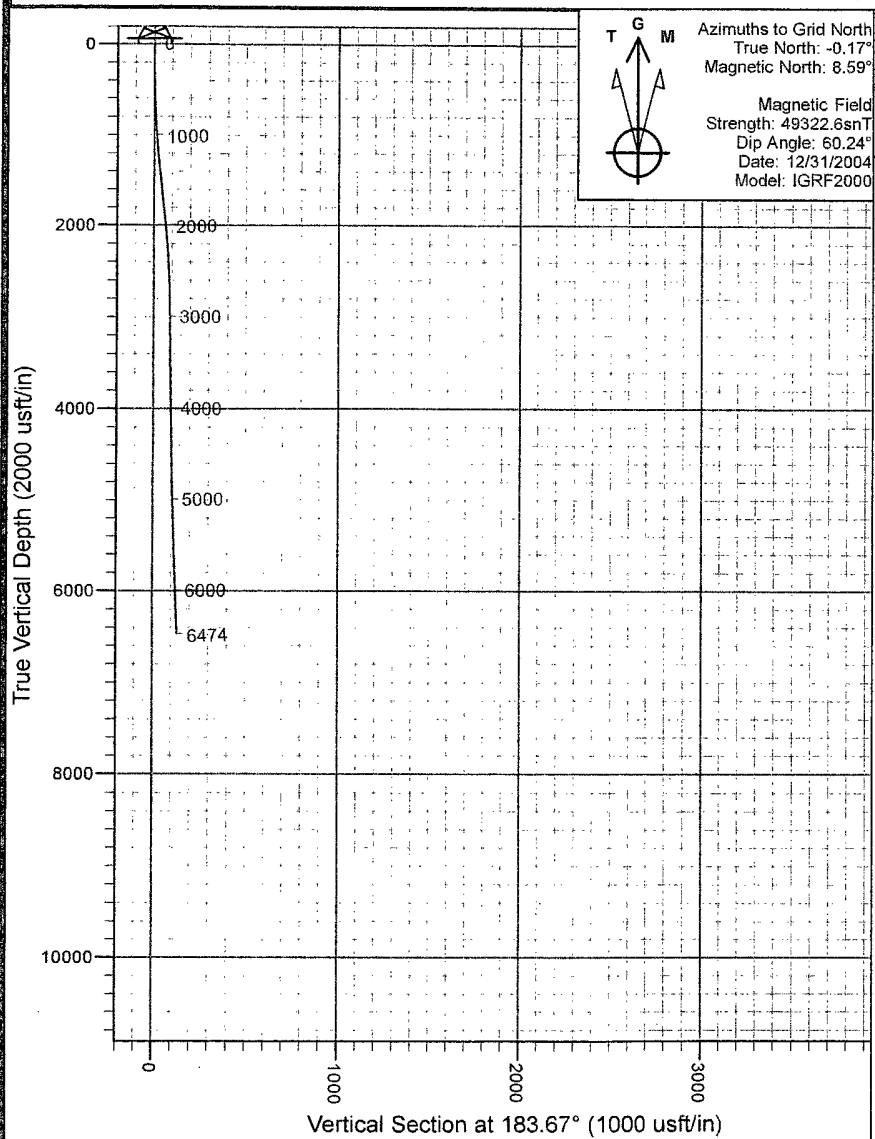
Survey

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)
5,400.0	1.07	207.15	5,397.7	-114.3	0.7	114.0	0.17	0.16	3.15
5,500.0	0.88	196.31	5,497.6	-115.8	0.0	115.6	0.26	-0.19	-10.84
5,600.0	1.03	200.57	5,597.6	-117.4	-0.5	117.2	0.17	0.15	4.26
5,700.0	1.05	207.33	5,697.6	-119.1	-1.2	118.9	0.12	0.02	6.76
5,800.0	1.08	207.97	5,797.6	-120.7	-2.1	120.6	0.03	0.03	0.64
5,900.0	0.96	204.96	5,897.6	-122.3	-2.9	122.3	0.13	-0.12	-3.01
6,000.0	0.96	202.03	5,997.6	-123.9	-3.5	123.8	0.05	0.00	-2.93
6,100.0	1.10	202.86	6,097.5	-125.5	-4.2	125.5	0.14	0.14	0.83
6,200.0	1.20	207.93	6,197.5	-127.3	-5.1	127.4	0.14	0.10	5.07
6,300.0	1.27	210.64	6,297.5	-129.2	-6.2	129.3	0.09	0.07	2.71
6,400.0	1.48	214.91	6,397.5	-131.2	-7.5	131.4	0.23	0.21	4.27
6,474.1	1.91	205.34	6,471.5	-133.1	-8.5	133.4	0.69	0.58	-12.92



Scientific Drilling
Directional Drilling Operations

Project: Willow Lake
Eddy County, NM
Well: Showstopper 19 Federal #3H
Wellbore: VH - Job #32K0710547
Design: VH - Job #32K0710547
Site:



PROJECT DETAILS: Willow Lake
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° 6' 33.842 N
Longitude: 104° 0' 58.014 W
Positional Uncertainty: 0.0
Convergence: 0.17
Local North: Grid