

 MURCHISON OIL & GAS, INC.

Murchison Oil and Gas

Mustang

Mustang Section 21

War Horse Federal Com #3H

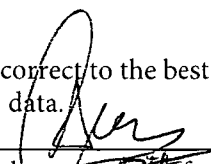


Survey: War Horse Fed Com #3H

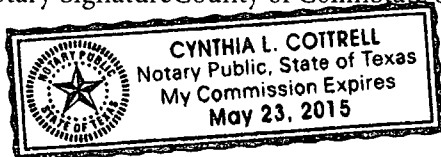
MOJO Standard Survey

10 March, 2014

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

 (Signature)
Notarized this date 13th of MARCH, 2014

Cynthia L. Cottrell
Notary Signature County of Collin State of Texas



MOJO
DIRECTIONAL CORPORATION

30 015 41227

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well War Horse Federal Com #3H
Project:	Mustang	TVD Reference:	WELL @ 3501.3usft (Original Well Elev)
Site:	Mustang Section 21	MD Reference:	WELL @ 3501.3usft (Original Well Elev)
Well:	War Horse Federal Com #3H	North Reference:	Grid
Wellbore:	War Horse Fed Com #3H	Survey Calculation Method:	Minimum Curvature
Design:	War Horse Fed Com #3H	Database:	EDM 5000.1 Single User Db

Project	Mustang		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		Using geodetic scale factor

Site	Mustang Section 21		
Site Position:	Northing:	632,777.80 usft	Latitude: 32° 44' 21.376 N
From: Lat/Long	Easting:	621,766.69 usft	Longitude: 104° 4' 18.315 W
Position Uncertainty: 1.0 usft	Slot Radius:	16 "	Grid Convergence: 0.14 °

Well	War Horse Federal Com #3H		
Well Position +N/-S	0.0 usft	Northing:	630,131.98 usft
+E/-W	0.0 usft	Easting:	621,773.05 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 43' 55.195 N
		Longitude:	104° 4' 18.317 W
		Ground Level:	3,479.3 usft

Wellbore	War Horse Fed Com #3H		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	01/10/2012	7.70
			Dip Angle (°)
			60.54
			Field Strength (nT)
			48.737

Design	War Horse Fed Com #3H		
Audit Notes:			
Version: 1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction (°)
			269.51

Survey Program	Date 10/03/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
100.0	12,431.0	War Horse Fed Com #3H (War Horse Fed	MWD
			Description
			MWD - Standard

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Well: War Horse Federal Com #3H		North Reference: Grid	
Wellbore: War Horse Fed Com #3H		Survey Calculation Method: Minimum Curvature	
Design: War Horse Fed Com #3H		Database: EDM 5000.1 Single User Db	

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
0.0	0.00	0.00	0.0	-3,501.3	0.0	0.0	0.0	0.00	630,131.98	621,773.05	
100.0	0.52	312.30	100.0	-3,401.3	0.3	-0.3	0.3	0.52	630,132.28	621,772.72	
120.0	0.50	313.75	120.0	-3,381.3	0.4	-0.5	0.5	0.11	630,132.40	621,772.59	
20"											
200.0	0.43	320.76	200.0	-3,301.3	0.9	-0.9	0.9	0.11	630,132.88	621,772.15	
280.0	0.13	345.32	280.0	-3,221.3	1.2	-1.1	1.1	0.39	630,133.20	621,771.93	
13 3/8"											
300.0	0.08	19.27	300.0	-3,201.3	1.3	-1.1	1.1	0.39	630,133.23	621,771.93	
301.3	0.08	19.94	301.3	-3,200.0	1.3	-1.1	1.1	0.14	630,133.24	621,771.93	
Salt											
400.0	0.08	141.09	400.0	-3,101.3	1.3	-1.1	1.0	0.14	630,133.25	621,772.00	
500.0	0.13	142.83	500.0	-3,001.3	1.1	-0.9	0.9	0.05	630,133.10	621,772.11	
600.0	0.23	142.65	600.0	-2,901.3	0.9	-0.8	0.7	0.10	630,132.85	621,772.30	
700.0	0.84	99.42	700.0	-2,801.3	0.6	0.1	-0.1	0.69	630,132.57	621,773.15	
800.0	1.05	98.25	800.0	-2,701.3	0.3	1.7	-1.7	0.21	630,132.32	621,774.78	
831.3	1.18	98.02	831.3	-2,670.0	0.3	2.3	-2.3	0.41	630,132.23	621,775.38	
Salt Base											
900.0	1.46	97.67	900.0	-2,601.3	0.0	3.9	-3.9	0.41	630,132.02	621,776.94	
921.4	1.58	97.03	921.3	-2,580.0	0.0	4.5	-4.5	0.57	630,131.95	621,777.51	
Tansil											
1,000.0	2.03	95.35	999.9	-2,501.4	-0.3	6.9	-6.9	0.57	630,131.68	621,779.97	
1,100.0	2.62	94.30	1,099.8	-2,401.5	-0.6	11.0	-11.0	0.59	630,131.35	621,784.01	
1,131.5	2.67	93.88	1,131.3	-2,370.0	-0.7	12.4	-12.4	0.16	630,131.24	621,785.46	
Yates											
1,200.0	2.77	93.02	1,199.7	-2,301.6	-0.9	15.7	-15.6	0.16	630,131.05	621,788.70	
1,300.0	1.76	75.59	1,299.6	-2,201.7	-0.7	19.6	-19.5	1.21	630,131.30	621,792.60	
1,400.0	1.05	59.20	1,399.6	-2,101.7	0.2	21.8	-21.8	0.81	630,132.16	621,794.88	

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Wellbore: War Horse Fed Com #3H		Survey Calculation Method: Minimum Curvature			
Design: War Horse Fed Com #3H		Database: EDM 5000.1 Single User Db			

Survey											
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1,431.7	0.98	55.64	1,431.3	-2,070.0	0.5	22.3	-22.3	0.29	630,132.46	621,795.35	
Seven Rivers											
1,500.0	0.86	46.23	1,499.6	-2,001.7	1.2	23.2	-23.2	0.29	630,133.14	621,796.21	
1,600.0	0.65	14.07	1,599.6	-1,901.7	2.2	23.8	-23.9	0.46	630,134.21	621,796.89	
1,700.0	1.05	327.17	1,699.6	-1,801.7	3.6	23.5	-23.5	0.77	630,135.53	621,796.53	
1,800.0	1.25	322.36	1,799.5	-1,701.8	5.2	22.3	-22.4	0.22	630,137.17	621,795.37	
1,900.0	1.34	319.46	1,899.5	-1,601.8	6.9	20.9	-20.9	0.11	630,138.92	621,793.94	
2,000.0	1.44	314.48	1,999.5	-1,501.8	8.7	19.2	-19.3	0.16	630,140.69	621,792.28	
2,056.8	1.47	313.43	2,056.3	-1,445.0	9.7	18.2	-18.3	0.07	630,141.69	621,791.25	
Queen											
2,100.0	1.49	312.66	2,099.5	-1,401.8	10.5	17.4	-17.5	0.07	630,142.45	621,790.43	
2,200.0	1.64	311.61	2,199.4	-1,301.9	12.3	15.4	-15.5	0.15	630,144.28	621,788.40	
2,300.0	1.64	306.75	2,299.4	-1,201.9	14.1	13.1	-13.3	0.14	630,146.09	621,786.19	
2,400.0	1.34	306.16	2,399.4	-1,101.9	15.7	11.0	-11.2	0.30	630,147.63	621,784.10	
2,402.0	1.33	306.12	2,401.3	-1,100.0	15.7	11.0	-11.1	0.36	630,147.66	621,784.06	
Grayburg											
2,500.0	0.98	303.49	2,499.3	-1,002.0	16.8	9.4	-9.5	0.36	630,148.79	621,782.44	
2,600.0	0.85	306.88	2,599.3	-902.0	17.7	8.1	-8.2	0.14	630,149.71	621,781.13	
2,700.0	0.68	312.05	2,699.3	-802.0	18.6	7.0	-7.2	0.18	630,150.55	621,780.10	
2,800.0	0.61	297.78	2,799.3	-702.0	19.2	6.1	-6.3	0.17	630,151.20	621,779.19	
2,900.0	0.61	286.82	2,899.3	-602.0	19.6	5.2	-5.3	0.12	630,151.60	621,778.21	
2,902.0	0.61	286.91	2,901.3	-600.0	19.6	5.1	-5.3	0.22	630,151.61	621,778.19	
San Andres											
3,000.0	0.40	293.60	2,999.3	-502.0	19.9	4.3	-4.5	0.22	630,151.89	621,777.38	
3,100.0	0.39	268.55	3,099.3	-402.0	20.1	3.7	-3.8	0.17	630,152.03	621,776.72	
3,200.0	0.36	242.33	3,199.3	-302.0	19.9	3.0	-3.2	0.17	630,151.87	621,776.10	
3,300.0	0.11	189.50	3,299.3	-202.0	19.7	2.8	-2.9	0.31	630,151.63	621,775.81	
3,400.0	0.28	227.05	3,399.3	-102.0	19.4	2.6	-2.7	0.20	630,151.37	621,775.61	

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3,500.0	0.31	219.59	3,499.3	-2.0	19.0	2.2	-2.4	0.05	630,150.99	621,775.26	
3,600.0	0.47	192.26	3,599.3	98.0	18.4	1.9	-2.1	0.24	630,150.39	621,775.00	
3,700.0	0.69	195.17	3,699.3	198.0	17.4	1.7	-1.9	0.22	630,149.40	621,774.76	
3,800.0	0.61	220.87	3,799.3	298.0	16.4	1.2	-1.3	0.30	630,148.42	621,774.25	
3,900.0	1.02	226.78	3,899.3	398.0	15.4	0.2	-0.3	0.42	630,147.41	621,773.25	
3,967.1	1.19	224.73	3,966.3	465.0	14.5	-0.7	0.6	0.26	630,146.51	621,772.33	
Bone Spring Lime											
4,000.0	1.27	223.92	3,999.2	497.9	14.0	-1.2	1.1	0.26	630,146.00	621,771.84	
4,100.0	1.35	235.65	4,099.2	597.9	12.6	-3.0	2.9	0.28	630,144.54	621,770.10	
4,200.0	1.69	241.72	4,199.2	697.9	11.2	-5.2	5.1	0.38	630,143.17	621,767.82	
4,300.0	1.44	249.93	4,299.1	797.8	10.1	-7.7	7.6	0.34	630,142.04	621,765.35	
4,400.0	1.71	259.45	4,399.1	897.8	9.4	-10.4	10.3	0.38	630,141.34	621,762.70	
4,500.0	1.59	249.66	4,499.1	997.8	8.6	-13.1	13.0	0.31	630,140.58	621,759.93	
4,600.0	1.19	244.77	4,599.0	1,097.7	7.7	-15.4	15.3	0.42	630,139.66	621,757.69	
4,700.0	0.77	233.72	4,699.0	1,197.7	6.8	-16.8	16.8	0.46	630,138.82	621,756.21	
4,800.0	1.10	209.70	4,799.0	1,297.7	5.6	-17.9	17.8	0.51	630,137.59	621,755.19	
4,900.0	1.26	199.12	4,899.0	1,397.7	3.7	-18.7	18.7	0.27	630,135.72	621,754.36	
5,000.0	1.79	133.89	4,999.0	1,497.7	1.6	-17.9	17.9	1.70	630,133.59	621,755.12	
5,100.0	1.82	131.69	5,098.9	1,597.6	-0.5	-15.6	15.6	0.08	630,131.46	621,757.44	
5,200.0	1.81	128.49	5,198.9	1,697.6	-2.6	-13.2	13.2	0.10	630,129.42	621,759.86	
5,300.0	1.39	128.85	5,298.8	1,797.5	-4.3	-11.0	11.1	0.42	630,127.67	621,762.04	
5,400.0	1.38	115.53	5,398.8	1,897.5	-5.6	-9.0	9.0	0.32	630,126.39	621,764.07	
5,500.0	1.25	131.65	5,498.8	1,997.5	-6.8	-7.1	7.1	0.39	630,125.15	621,765.97	
5,600.0	0.81	126.83	5,598.7	2,097.4	-8.0	-5.7	5.8	0.45	630,124.00	621,767.35	
5,700.0	0.92	118.88	5,698.7	2,197.4	-8.8	-4.4	4.5	0.16	630,123.19	621,768.62	
5,800.0	0.80	121.91	5,798.7	2,297.4	-9.5	-3.1	3.2	0.13	630,122.43	621,769.91	
5,900.0	0.50	91.45	5,898.7	2,397.4	-9.9	-2.1	2.2	0.45	630,122.05	621,770.94	

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7,650.0	45.30	267.20	7,616.4	4,115.1	-18.8	-112.7	112.9	11.07	630,113.14	621,660.32	
7,682.0	47.60	267.80	7,638.5	4,137.2	-19.9	-135.9	136.1	7.31	630,112.13	621,637.15	
7,714.0	50.10	268.40	7,659.5	4,158.2	-20.6	-160.0	160.2	7.94	630,111.33	621,613.08	
7,746.0	52.80	268.50	7,679.4	4,178.1	-21.3	-185.0	185.2	8.44	630,110.66	621,588.06	
7,777.0	55.40	268.20	7,697.6	4,196.3	-22.0	-210.1	210.3	8.42	630,109.93	621,562.97	
7,809.0	58.60	267.00	7,715.1	4,213.8	-23.2	-236.9	237.1	10.48	630,108.80	621,536.16	
7,841.0	61.70	263.80	7,731.0	4,229.7	-25.4	-264.6	264.8	13.00	630,106.57	621,508.51	
7,873.0	63.80	263.70	7,745.6	4,244.3	-28.5	-292.8	293.1	6.57	630,103.47	621,480.23	
7,905.0	66.50	263.00	7,759.1	4,257.8	-31.9	-321.7	321.9	8.67	630,100.11	621,451.39	
7,937.0	70.60	262.60	7,770.8	4,269.5	-35.6	-351.2	351.5	12.87	630,096.37	621,421.86	
7,969.0	74.60	261.70	7,780.3	4,279.0	-39.8	-381.5	381.8	12.78	630,092.20	621,391.62	
8,000.0	78.80	260.80	7,787.5	4,286.2	-44.4	-411.3	411.6	13.84	630,087.61	621,361.81	
8,032.0	82.20	259.60	7,792.8	4,291.5	-49.7	-442.4	442.8	11.25	630,082.24	621,330.71	
8,064.0	86.90	261.00	7,795.8	4,294.5	-55.1	-473.8	474.2	15.32	630,076.87	621,299.33	
8,096.0	90.30	262.70	7,796.6	4,295.3	-59.6	-505.4	505.9	11.88	630,072.34	621,267.67	
8,128.0	91.30	263.20	7,796.1	4,294.8	-63.6	-537.2	537.7	3.49	630,068.41	621,235.92	
8,160.0	91.60	263.00	7,795.3	4,294.0	-67.4	-568.9	569.5	1.13	630,064.57	621,204.16	
8,192.0	91.30	264.70	7,794.5	4,293.2	-70.8	-600.7	601.3	5.39	630,061.14	621,172.36	
8,224.0	91.60	267.00	7,793.7	4,292.4	-73.2	-632.6	633.3	7.25	630,058.83	621,140.46	
8,255.0	92.30	269.50	7,792.6	4,291.3	-74.1	-663.6	664.2	8.37	630,057.88	621,109.50	
8,287.0	91.30	271.60	7,791.6	4,290.3	-73.8	-695.6	696.2	7.27	630,058.19	621,077.52	
8,319.0	90.20	272.20	7,791.2	4,289.9	-72.7	-727.6	728.2	3.92	630,059.25	621,045.54	
8,415.0	90.20	272.00	7,790.9	4,289.6	-69.2	-823.5	824.1	0.21	630,062.77	620,949.61	
8,510.0	90.00	271.90	7,790.7	4,289.4	-66.0	-918.5	919.0	0.24	630,066.00	620,854.68	
8,605.0	90.00	271.50	7,790.7	4,289.4	-63.2	-1,013.4	1,013.9	0.42	630,068.82	620,759.73	
8,701.0	89.70	271.40	7,791.0	4,289.7	-60.7	-1,109.4	1,109.9	0.33	630,071.25	620,663.77	
8,797.0	89.60	270.60	7,791.6	4,290.3	-59.1	-1,205.4	1,205.8	0.84	630,072.92	620,567.79	

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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
5,965.0	0.88	71.46	5,963.7	2,462.4	-9.8	-1.4	1.4	0.68	630,122.20	621,771.70	
6,075.0	0.76	67.57	6,073.7	2,572.4	-9.2	0.1	0.0	0.12	630,122.75	621,773.17	
9 5/8"											
6,126.0	0.70	65.30	6,124.7	2,623.4	-9.0	0.7	-0.6	0.12	630,123.01	621,773.77	
6,221.0	0.60	70.30	6,219.7	2,718.4	-8.6	1.7	-1.6	0.12	630,123.42	621,774.76	
6,316.0	0.50	61.60	6,314.7	2,813.4	-8.2	2.5	-2.5	0.14	630,123.78	621,775.59	
6,411.0	0.40	67.10	6,409.7	2,908.4	-7.9	3.2	-3.1	0.11	630,124.11	621,776.26	
6,506.0	0.00	48.30	6,504.7	3,003.4	-7.7	3.5	-3.4	0.42	630,124.24	621,776.57	
6,682.6	0.09	125.90	6,681.3	3,180.0	-7.8	3.6	-3.6	0.05	630,124.16	621,776.68	
First Bone Spring Sand											
6,697.0	0.10	125.90	6,695.7	3,194.4	-7.8	3.7	-3.6	0.05	630,124.14	621,776.70	
6,887.0	0.20	87.80	6,885.7	3,384.4	-7.9	4.1	-4.0	0.07	630,124.06	621,777.17	
7,078.0	0.20	160.80	7,076.7	3,575.4	-8.2	4.6	-4.5	0.12	630,123.75	621,777.61	
7,215.0	0.20	157.30	7,213.7	3,712.4	-8.7	4.7	-4.7	0.01	630,123.31	621,777.78	
7,270.0	0.30	114.00	7,268.7	3,767.4	-8.8	4.9	-4.8	0.38	630,123.16	621,777.95	
7,301.0	0.30	131.70	7,299.7	3,798.4	-8.9	5.0	-5.0	0.30	630,123.07	621,778.09	
7,363.0	2.90	255.50	7,361.7	3,860.4	-9.4	3.6	-3.6	4.96	630,122.57	621,776.69	
7,395.0	8.00	260.40	7,393.5	3,892.2	-10.0	0.7	-0.6	15.99	630,122.00	621,773.71	
7,427.0	12.80	262.80	7,425.0	3,923.7	-10.8	-5.1	5.2	15.06	630,121.18	621,767.99	
7,459.0	17.30	263.50	7,455.9	3,954.6	-11.8	-13.3	13.4	14.07	630,120.20	621,759.75	
7,491.0	22.30	264.60	7,486.0	3,984.7	-12.9	-24.1	24.2	15.67	630,119.09	621,748.97	
7,522.0	26.80	265.20	7,514.1	4,012.8	-14.0	-36.9	37.0	14.54	630,117.95	621,736.14	
7,541.5	29.72	265.71	7,531.3	4,030.0	-14.8	-46.1	46.2	15.05	630,117.22	621,726.95	
Second Bone Spring Sand											
7,554.0	31.60	266.00	7,542.1	4,040.8	-15.2	-52.5	52.6	15.05	630,116.76	621,720.58	
7,586.0	37.00	266.60	7,568.5	4,067.2	-16.4	-70.5	70.6	16.91	630,115.60	621,702.60	
7,618.0	41.80	266.40	7,593.2	4,091.9	-17.6	-90.7	90.9	15.01	630,114.36	621,682.33	

Company: Murchison Oil and Gas		Local Co-ordinate Reference: Well War Horse Federal Com #3H	
Project: Mustang		TVD Reference: WELL @ 3501.3usft (Original Well Elev)	
Site: Mustang Section 21		MD Reference: WELL @ 3501.3usft (Original Well Elev)	
Well: War Horse Federal Com #3H		North Reference: Grid	
Wellbore: War Horse Fed Com #3H		Survey Calculation Method: Minimum Curvature	
Design: War Horse Fed Com #3H		Database: EDM 5000.1 Single User Db	

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
8,892.0	89.30	270.00	7,792.5	4,291.2	-58.6	-1,300.4	1,300.8	0.71	630,073.42	620,472.81	
8,988.0	89.10	269.90	7,793.8	4,292.5	-58.6	-1,396.3	1,396.8	0.23	630,073.34	620,376.82	
9,084.0	88.80	269.30	7,795.6	4,294.3	-59.3	-1,492.3	1,492.8	0.70	630,072.67	620,280.85	
9,179.0	89.40	270.00	7,797.1	4,295.8	-59.9	-1,587.3	1,587.8	0.97	630,072.09	620,185.87	
9,275.0	90.50	270.60	7,797.1	4,295.8	-59.4	-1,683.3	1,683.8	1.31	630,072.59	620,089.88	
9,370.0	91.90	271.10	7,795.2	4,293.9	-58.0	-1,778.3	1,778.7	1.56	630,074.00	619,994.93	
9,466.0	92.50	270.70	7,791.5	4,290.2	-56.5	-1,874.2	1,874.6	0.75	630,075.51	619,899.02	
9,562.0	92.80	269.70	7,787.0	4,285.7	-56.1	-1,970.1	1,970.5	1.09	630,075.84	619,803.13	
9,657.0	91.30	270.20	7,783.6	4,282.3	-56.2	-2,065.0	2,065.4	1.66	630,075.76	619,708.20	
9,752.0	91.10	270.00	7,781.6	4,280.3	-56.1	-2,160.0	2,160.4	0.30	630,075.92	619,613.23	
9,874.0	91.10	269.60	7,779.3	4,278.0	-56.5	-2,282.0	2,282.4	0.33	630,075.50	619,491.26	
9,943.0	91.00	269.30	7,778.0	4,276.7	-57.1	-2,351.0	2,351.4	0.46	630,074.84	619,422.29	
10,038.0	90.90	267.80	7,776.5	4,275.2	-59.6	-2,445.9	2,446.3	1.58	630,072.43	619,327.34	
10,134.0	92.80	268.40	7,773.4	4,272.1	-62.7	-2,541.8	2,542.3	2.08	630,069.25	619,231.45	
10,229.0	92.00	270.00	7,769.4	4,268.1	-64.1	-2,636.7	2,637.2	1.88	630,067.93	619,136.56	
10,324.0	91.80	269.70	7,766.2	4,264.9	-64.3	-2,731.7	2,732.1	0.38	630,067.68	619,041.62	
10,420.0	91.80	269.30	7,763.2	4,261.9	-65.1	-2,827.6	2,828.1	0.42	630,066.84	618,945.68	
10,515.0	90.80	271.00	7,761.1	4,259.8	-64.9	-2,922.6	2,923.0	2.08	630,067.09	618,850.72	
10,611.0	90.40	270.40	7,760.1	4,258.8	-63.7	-3,018.6	3,019.0	0.75	630,068.26	618,754.74	
10,706.0	90.00	269.70	7,759.7	4,258.4	-63.6	-3,113.6	3,114.0	0.85	630,068.34	618,659.75	
10,802.0	91.40	270.30	7,758.6	4,257.3	-63.6	-3,209.6	3,210.0	1.59	630,068.34	618,563.76	
10,897.0	91.40	269.70	7,756.2	4,254.9	-63.6	-3,304.5	3,305.0	0.63	630,068.34	618,468.80	
10,992.0	91.60	269.30	7,753.7	4,252.4	-64.5	-3,399.5	3,399.9	0.47	630,067.52	618,373.85	
11,088.0	91.70	268.70	7,751.0	4,249.7	-66.1	-3,495.4	3,495.9	0.63	630,065.84	618,277.91	
11,184.0	91.80	268.10	7,748.1	4,246.8	-68.8	-3,591.4	3,591.8	0.63	630,063.16	618,182.00	
11,279.0	90.90	269.60	7,745.8	4,244.5	-70.7	-3,686.3	3,686.8	1.84	630,061.26	618,087.06	
11,375.0	90.70	269.30	7,744.5	4,243.2	-71.6	-3,782.3	3,782.8	0.38	630,060.34	617,991.08	

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well War Horse Federal Com #3H
Project:	Mustang	TVD Reference:	WELL @ 3501.3usft (Original Well Elev)
Site:	Mustang Section 21	MD Reference:	WELL @ 3501.3usft (Original Well Elev)
Well:	War Horse Federal Com #3H	North Reference:	Grid
Wellbore:	War Horse Fed Com #3H	Survey Calculation Method:	Minimum Curvature
Design:	War Horse Fed Com #3H	Database:	EDM 5000.1 Single User Db

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
11,470.0	91.10	270.00	7,743.0	4,241.7	-72.2	-3,877.3	3,877.8	0.85	630,059.75	617,896.10	
11,566.0	91.00	270.10	7,741.2	4,239.9	-72.1	-3,973.3	3,973.7	0.15	630,059.84	617,800.13	
11,661.0	91.40	269.80	7,739.2	4,237.9	-72.2	-4,068.2	4,068.7	0.53	630,059.76	617,705.15	
11,757.0	91.30	269.70	7,737.0	4,235.7	-72.6	-4,164.2	4,164.7	0.15	630,059.34	617,609.19	
11,852.0	90.90	269.30	7,735.1	4,233.8	-73.5	-4,259.2	4,259.7	0.60	630,058.51	617,514.22	
11,948.0	90.10	270.70	7,734.3	4,233.0	-73.5	-4,355.2	4,355.7	1.68	630,058.51	617,418.23	
12,043.0	88.00	271.30	7,735.9	4,234.6	-71.8	-4,450.2	4,450.6	2.30	630,060.17	617,323.28	
12,139.0	87.10	271.00	7,740.0	4,238.7	-69.9	-4,546.0	4,546.5	0.99	630,062.09	617,227.39	
12,230.0	87.80	270.30	7,744.0	4,242.7	-68.9	-4,636.9	4,637.4	1.09	630,063.12	617,136.50	
12,331.0	86.90	270.00	7,748.7	4,247.4	-68.6	-4,737.8	4,738.2	0.94	630,063.39	617,035.61	
12,383.0	86.20	269.80	7,751.8	4,250.5	-68.7	-4,789.7	4,790.2	1.40	630,063.30	616,983.71	
12,421.0	85.72	269.64	7,754.5	4,253.2	-68.9	-4,827.6	4,828.1	1.32	630,063.11	616,945.81	
5 1/2"											
12,431.0	85.60	269.60	7,755.3	4,254.0	-68.9	-4,837.6	4,838.0	1.32	630,063.04	616,935.84	

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well War Horse Federal Com #3H
Project:	Mustang	TVD Reference:	WELL @ 3501.3usft (Original Well Elev)
Site:	Mustang Section 21	MD Reference:	WELL @ 3501.3usft (Original Well Elev)
Well:	War Horse Federal Com #3H	North Reference:	Grid
Wellbore:	War Horse Fed Com #3H	Survey Calculation Method:	Minimum Curvature
Design:	War Horse Fed Com #3H	Database:	EDM 5000.1 Single User Db

Formations				
Measured Depth (usft)	Vertical Depth (usft)	Name	Dip (°)	
3,967.1	3,966.3	Bone Spring Lime	0.00	
2,056.8	2,056.3	Queen	0.00	
301.3	301.3	Salt	0.00	
1,131.5	1,131.3	Yates	0.00	
2,902.0	2,901.3	San Andres	0.00	
7,541.5	7,531.3	Second Bone Spring Sand	0.00	
2,402.0	2,401.3	Grayburg	0.00	
6,682.6	6,681.3	First Bone Spring Sand	0.00	
921.4	921.3	Tansil	0.00	
1,431.7	1,431.3	Seven Rivers	0.00	
831.3	831.3	Salt Base	0.00	

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,707.0	7,655.0	-20.5	-154.6	Cross Heel Hard Boundary @ 7707ft MD
12,366.0	7,750.7	-68.6	-4,772.8	Cross Toe Hard Boundary @ 12366ft MD

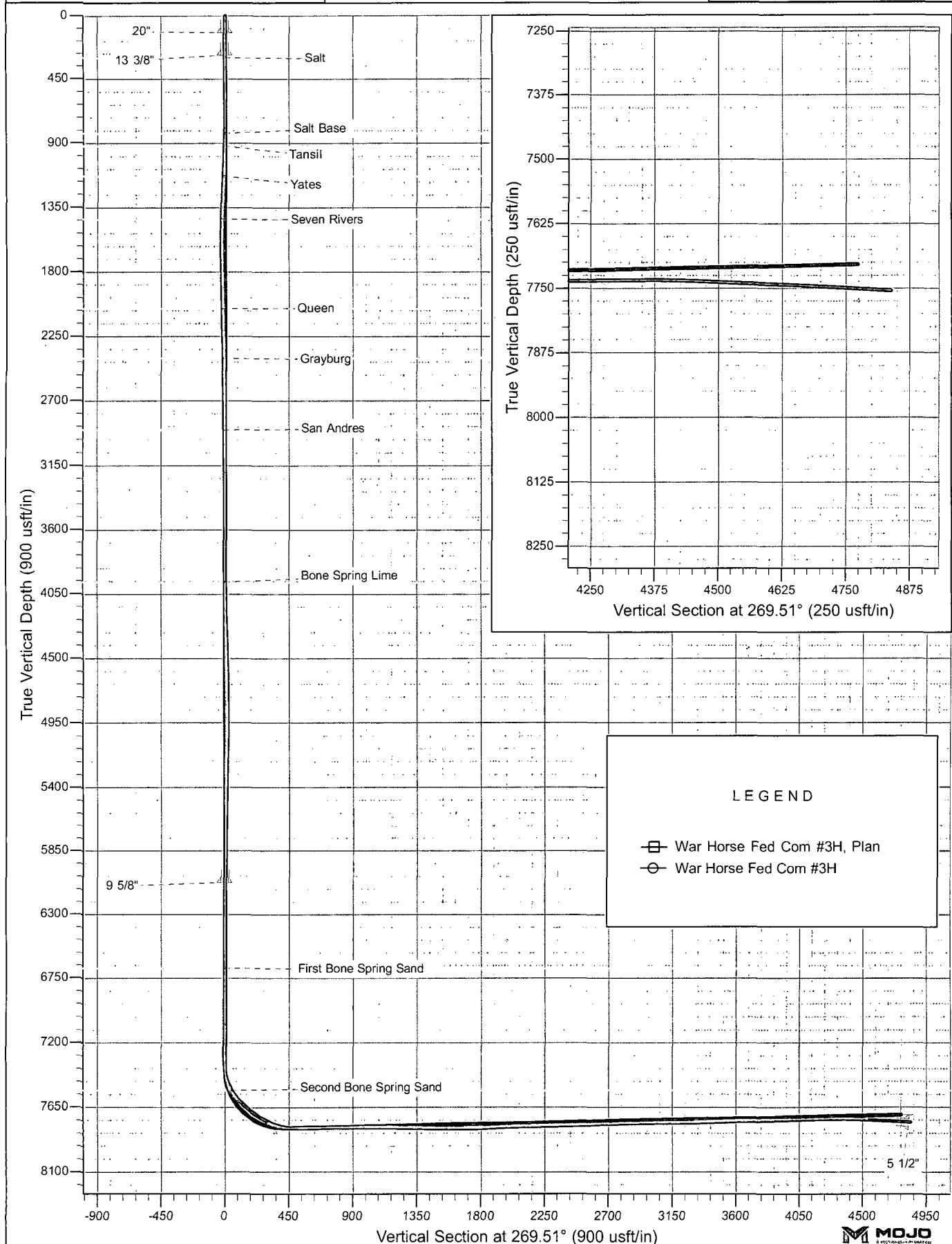
Checked By: _____	Approved By: _____	Date: _____
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Project: Mustang
 Site: Mustang Section 21
 Well: War Horse Federal Com #3H
 Wellbore: War Horse Fed Com #3H
 Design: War Horse Fed Com #3H



Azimuths to Grid North
 True North: -0.14°
 Magnetic North: 7.55°

Magnetic Field
 Strength: 48736.5nT
 Dip Angle: 60.54°
 Date: 01/10/2012
 Model: IGRF2010

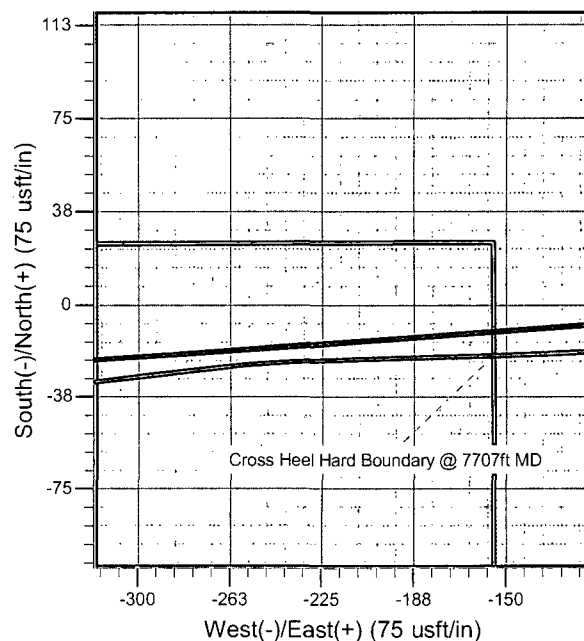
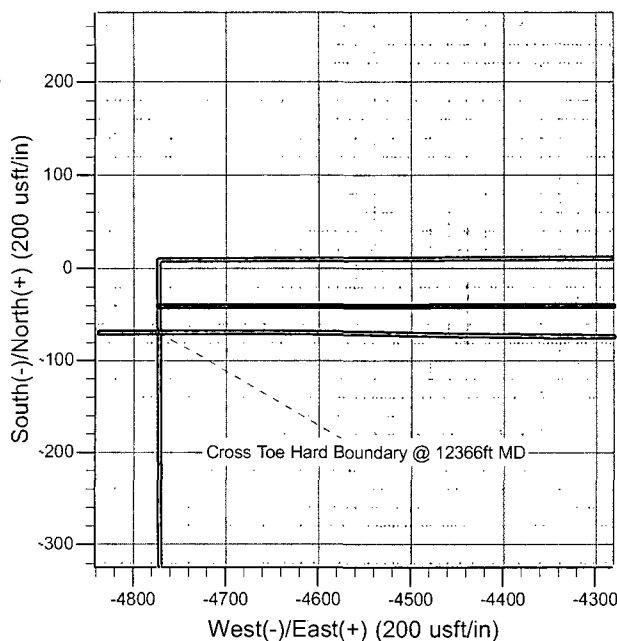
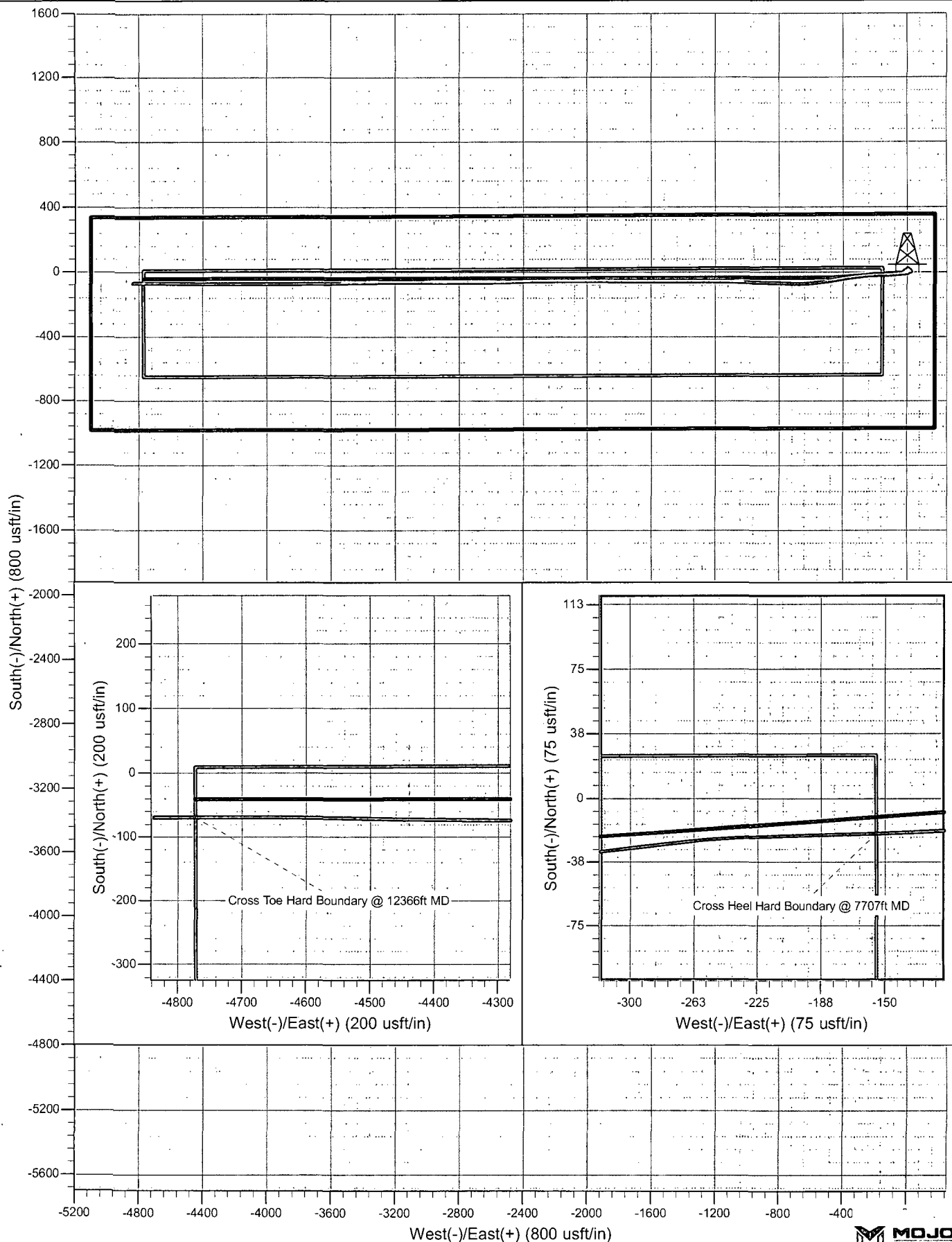


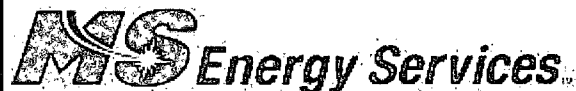
Project: Mustang
 Site: Mustang Section 21
 Well: War Horse Federal Com #3H
 Wellbore: War Horse Fed Com #3H
 Design: War Horse Fed Com #3H

 **MURCHISON OIL & GAS, INC.**



Azimuths to Grid North
 True North: -0.14°
 Magnetic North: 7.55°
 Magnetic Field
 Strength: 48736.5nT
 Dip Angle: 60.54°
 Date: 01/10/2012
 Model: IGRF2010





Job Number: SVMO-140214
 Company: Murchison Oil & Gas
 Lease/Well: War Horse Fed Com 3H
 Location: Eddy County, NM
 Rig Name: Nabors #M28
 RKB: 22'
 G.L. or M.S.L.: GL

State/Country: New Mexico/USA
 Declination: 7.56°
 Grid: East To Grid North
 File name: S:\2014SU~1\MURCHI~1\MO\WARHOR~1\3H.SVY
 Date/Time: 20-Feb-14 / 14:48
 Curve Name: Surface - 5965' M.D. (SRG)

MS SURVEY

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 269.51
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

We hereby certify that our survey data from
 Surface MD to 5965 MD is, to the best of
 our knowledge a true and accurate account of the
 well bore.
Eric Zirngible 2/20/14
 MS Energy Services Date



Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	.52	312.30	100.00	.31	-.34	.33	.45	312.30	.52
200.00	.43	320.76	200.00	.90	-.91	.90	1.28	314.77	.11
300.00	.08	19.27	299.99	1.26	-1.12	1.11	1.69	318.25	.39
400.00	.08	141.09	399.99	1.27	-1.06	1.05	1.65	320.24	.14
500.00	.13	142.83	499.99	1.12	-.94	.93	1.47	320.01	.05
600.00	.23	142.65	599.99	.87	-.75	.75	1.15	319.27	.10
700.00	.84	99.42	699.99	.60	.09	-.10	.60	8.74	.69
800.00	1.05	98.25	799.98	.34	1.72	-1.72	1.76	78.70	.21
900.00	1.46	97.67	899.95	.04	3.89	-3.89	3.89	89.38	.41

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
1000.00	2.03	95.35	999.90	-.29	6.92	-6.91	6.92	92.42	.57
1100.00	2.62	94.30	1099.82	-.63	10.96	-10.95	10.98	93.29	.59
1200.00	2.77	93.02	1199.71	-.93	15.65	-15.64	15.68	93.39	.16
1300.00	1.76	75.59	1299.63	-.67	19.55	-19.55	19.56	91.97	1.21
1400.00	1.05	59.20	1399.60	.18	21.83	-21.83	21.83	89.53	.81
1500.00	.86	46.23	1499.59	1.17	23.16	-23.16	23.18	87.12	.29
1600.00	.65	14.07	1599.58	2.24	23.84	-23.85	23.94	84.64	.46
1700.00	1.05	327.17	1699.57	3.56	23.48	-23.51	23.74	81.39	.77
1800.00	1.25	322.36	1799.55	5.19	22.31	-22.36	22.91	76.91	.22
1900.00	1.34	319.46	1899.52	6.94	20.89	-20.95	22.01	71.62	.11
2000.00	1.44	314.48	1999.49	8.71	19.23	-19.30	21.11	65.63	.16
2100.00	1.49	312.66	2099.46	10.47	17.38	-17.47	20.29	58.93	.07
2200.00	1.64	311.61	2199.42	12.30	15.35	-15.46	19.67	51.29	.15
2300.00	1.64	306.75	2299.38	14.11	13.14	-13.26	19.28	42.95	.14
2400.00	1.34	306.16	2399.35	15.66	11.05	-11.18	19.16	35.20	.30
2500.00	.98	303.49	2499.33	16.82	9.39	-9.53	19.26	29.17	.36
2600.00	.85	306.88	2599.32	17.73	8.08	-8.23	19.49	24.50	.14
2700.00	.68	312.05	2699.31	18.58	7.05	-7.21	19.87	20.77	.18
2800.00	.61	297.78	2799.30	19.22	6.14	-6.30	20.18	17.70	.17
2900.00	.61	286.82	2899.30	19.63	5.16	-5.32	20.29	14.72	.12
3000.00	.40	293.60	2999.29	19.92	4.33	-4.50	20.38	12.25	.22
3100.00	.39	268.55	3099.29	20.05	3.67	-3.84	20.38	10.36	.17
3200.00	.36	242.33	3199.29	19.90	3.05	-3.22	20.13	8.71	.17
3300.00	.11	189.50	3299.29	19.66	2.75	-2.92	19.85	7.97	.31
3400.00	.28	227.05	3399.29	19.39	2.56	-2.72	19.56	7.52	.20
3500.00	.31	219.59	3499.28	19.02	2.21	-2.37	19.15	6.62	.05
3600.00	.47	192.26	3599.28	18.41	1.95	-2.11	18.51	6.04	.24
3700.00	.69	195.17	3699.28	17.43	1.70	-1.85	17.51	5.58	.22
3800.00	.61	220.87	3799.27	16.44	1.20	-1.34	16.49	4.16	.30

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
3900.00	1.02	226.78	3899.26	15.43	.20	-.33	15.43	.74	.42
4000.00	1.27	223.92	3999.24	14.02	-1.22	1.10	14.08	355.04	.26
4100.00	1.35	235.65	4099.21	12.56	-2.96	2.85	12.90	346.75	.28
4200.00	1.69	241.72	4199.18	11.20	-5.23	5.13	12.36	334.97	.38
4300.00	1.44	249.93	4299.14	10.07	-7.71	7.62	12.68	322.56	.34
4400.00	1.71	259.45	4399.10	9.36	-10.36	10.27	13.96	312.12	.38
4500.00	1.59	249.66	4499.06	8.61	-13.12	13.05	15.69	303.26	.31
4600.00	1.19	244.77	4599.03	7.68	-15.36	15.30	17.18	296.57	.42
4700.00	.77	233.72	4699.02	6.84	-16.84	16.78	18.18	292.11	.46
4800.00	1.10	209.70	4799.01	5.61	-17.86	17.81	18.72	287.44	.51
4900.00	1.26	199.12	4898.98	3.74	-18.70	18.66	19.07	281.31	.27
5000.00	1.79	133.89	4998.96	1.62	-17.93	17.92	18.00	275.15	1.70
5100.00	1.82	131.69	5098.91	-.52	-15.62	15.62	15.63	268.09	.08
5200.00	1.81	128.49	5198.86	-2.56	-13.20	13.22	13.44	259.02	.10
5300.00	1.39	128.85	5298.82	-4.30	-11.02	11.05	11.83	248.66	.42
5400.00	1.38	115.53	5398.79	-5.58	-8.99	9.03	10.58	238.14	.32
5500.00	1.25	131.65	5498.76	-6.83	-7.08	7.14	9.84	226.06	.39
5600.00	.81	126.83	5598.75	-7.98	-5.70	5.77	9.81	215.57	.45
5700.00	.92	118.88	5698.73	-8.79	-4.44	4.51	9.84	206.78	.16
5800.00	.80	121.91	5798.72	-9.54	-3.14	3.22	10.05	198.21	.13
5900.00	.50	91.45	5898.72	-9.92	-2.11	2.20	10.15	192.01	.45
Last Survey Depth Recorded									
5965.00	.88	71.46	5963.71	-9.77	-1.35	1.44	9.87	187.89	.68