



Job Number: SVM0-141509
 Company: Murchison Oil & Gas
 Lease/Well: Mogi 9 State Com 11H
 Location: Lea County, NM
 Rig Name: Nabors #M29
 RKB: 22'
 G.L. or M.S.L.: GL

State/Country: New Mexico/USA
 Declination: 6.76°
 Grid: East To Grid North
 File name: S:\2014SU~1\MURCHI~1\MO\MOJ\I9STC11H.SVY
 Date/Time: 11-Nov-14 / 15:06
 Curve Name: Surface - 10400' M.D. (SRG)

MS SURVEY

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 359.35
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

We hereby certify that our survey data from
 Surface MD to 10,400' MD is, to the best of
 our knowledge a true and accurate account of the
 well bore.

Daniel West 11/11/14
 HOBBS OGD Energy Services Date

DEC 04 2014

RECEIVED

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
200.00	.92	292.16	199.99	.61	-1.49	.62	1.61	292.16	.46
400.00	.94	296.45	399.97	1.94	-4.44	1.99	4.85	293.61	.04
600.00	.98	297.53	599.94	3.46	-7.43	3.55	8.20	295.00	.02
800.00	1.30	303.35	799.90	5.50	-10.84	5.62	12.16	296.91	.17
1000.00	1.86	304.49	999.82	8.59	-15.41	8.76	17.64	299.13	.28
1200.00	3.27	308.95	1199.62	14.01	-22.52	14.26	26.52	301.88	.71
1400.00	3.64	311.41	1399.25	21.80	-31.72	22.15	38.49	304.49	.20
1600.00	3.53	315.18	1598.86	30.36	-40.82	30.82	50.87	306.64	.13
1800.00	3.01	312.81	1798.53	38.30	-49.01	38.85	62.20	308.00	.27

FEB 24 2015

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	
2000.00	2.79	309.07	1998.28	44.93	-56.65	45.57	72.30	308.42	.15
2200.00	2.18	303.19	2198.09	50.08	-63.61	50.80	80.96	308.22	.33
2400.00	1.84	304.77	2397.97	54.00	-69.43	54.78	87.96	307.87	.17
2600.00	1.19	311.33	2597.90	57.20	-73.63	58.03	93.23	307.84	.34
2800.00	1.39	320.19	2797.84	60.44	-76.74	61.30	97.68	308.22	.14
3000.00	1.37	333.33	2997.79	64.44	-79.36	65.33	102.23	309.07	.16
3200.00	1.26	343.99	3197.73	68.69	-81.04	69.60	106.23	310.28	.13
3400.00	1.48	5.31	3397.68	73.37	-81.41	74.29	109.60	312.03	.28
3600.00	1.73	10.83	3597.60	78.91	-80.61	79.82	112.80	314.39	.15
3800.00	1.38	26.36	3797.53	84.03	-78.97	84.92	115.31	316.78	.27
4000.00	.59	17.37	3997.50	87.17	-77.59	88.05	116.70	318.33	.40
4200.00	.50	342.61	4197.49	88.99	-77.55	89.86	118.03	318.93	.17
4400.00	.39	15.83	4397.48	90.48	-77.62	91.35	119.21	319.37	.14
4600.00	1.83	117.26	4597.45	89.67	-74.60	90.51	116.64	320.24	.97
4800.00	2.35	120.62	4797.31	86.12	-68.23	86.88	109.87	321.61	.27
5000.00	3.13	124.00	4997.08	80.97	-60.17	81.65	100.88	323.38	.40
5200.00	2.58	126.77	5196.83	75.23	-52.04	75.81	91.47	325.33	.28
5400.00	2.05	124.52	5396.67	70.50	-45.49	71.02	83.90	327.17	.27
5600.00	1.57	132.09	5596.57	66.64	-40.51	67.10	77.99	328.71	.27
5800.00	1.28	133.60	5796.51	63.26	-36.86	63.68	73.22	329.78	.15
6000.00	1.04	139.51	5996.47	60.34	-34.06	60.73	69.29	330.56	.13
6200.00	.69	145.40	6196.44	57.97	-32.20	58.33	66.31	330.95	.18
6400.00	.59	150.22	6396.43	56.09	-31.00	56.43	64.08	331.07	.06
6600.00	.37	149.00	6596.43	54.64	-30.16	54.98	62.41	331.10	.11
6800.00	.31	159.90	6796.42	53.58	-29.64	53.91	61.23	331.05	.04
7000.00	.23	160.91	6996.42	52.69	-29.32	53.02	60.30	330.90	.04
7200.00	.18	166.59	7196.42	52.01	-29.12	52.33	59.60	330.76	.03
7400.00	.50	210.37	7396.41	50.95	-29.49	51.28	58.86	329.94	.20
7600.00	.73	203.68	7596.40	49.03	-30.44	49.37	57.71	328.17	.12

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	
7800.00	.91	201.87	7796.38	46.39	-31.54	46.74	56.09	325.78	.09
8000.00	.73	189.90	7996.36	43.66	-32.35	44.02	54.34	323.46	.12
8200.00	.78	140.44	8196.35	41.35	-31.70	41.71	52.11	322.52	.32
8400.00	.75	133.17	8396.33	39.41	-29.88	39.74	49.46	322.83	.05
8600.00	.77	132.15	8596.31	37.61	-27.93	37.92	46.85	323.40	.01
8800.00	.76	132.17	8796.29	35.82	-25.95	36.11	44.23	324.07	.01
9000.00	.73	146.56	8996.28	33.86	-24.27	34.14	41.66	324.37	.09
9200.00	.83	150.57	9196.26	31.54	-22.85	31.80	38.95	324.07	.06
9400.00	.74	87.42	9396.24	30.34	-20.85	30.57	36.81	325.50	.41
9600.00	1.02	97.32	9596.22	30.17	-17.80	30.37	35.03	329.46	.16
9800.00	.31	240.71	9796.21	29.68	-16.50	29.86	33.96	330.92	.64
10000.00	2.27	242.61	9996.15	27.59	-20.49	27.82	34.37	323.40	.98
10200.00	3.11	206.57	10195.94	20.91	-26.44	21.21	33.71	308.35	.92
Last Survey Depth Recorded									
10400.00	2.45	220.19	10395.71	12.80	-31.62	13.15	34.11	292.03	.46

Murchison Oil and Gas

Jackson Unit Section 9

MOGI 9 State Com 11H

Survey: MOGI 9 State Com 11H

MOJO Standard Survey

19 November, 2014

HOBBS OCD

DEC 04 2014

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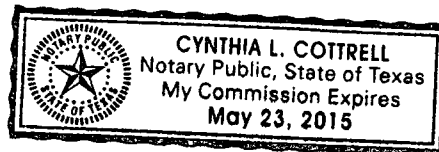


This survey is correct to the best of my knowledge and is supported by actual field data.

(Signature)

Notarized this date 19th of November, 2014

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



Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well MOGI 9 State Com #11H
Project:	Jackson Unit Section 9	TVD Reference:	WELL @ 3643.9usft (Original Well Elev)
Site:	MOGI 9 State Com 11H	MD Reference:	WELL @ 3643.9usft (Original Well Elev)
Well:	MOGI 9 State Com #11H	North Reference:	Grid
Wellbore:	MOGI 9 State Com 11H	Survey Calculation Method:	Minimum Curvature
Design:	MOGI 9 State Com 11H	Database:	EDM 5000.1 Single User Db

Project	Jackson Unit Section 9		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	MOGI 9 State Com 11H		
Site Position:		Northing:	446,584.58 usft
From:	Lat/Long	Easting:	777,431.91 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 13' 31.553 N
		Longitude:	103° 34' 11.442 W
		Grid Convergence:	0.41 °

Well	MOGI 9 State Com #11H				
Well Position	+N/-S	0.0 usft	Latitude:	32° 13' 31.553 N	
	+E/-W	0.0 usft	Longitude:	103° 34' 11.442 W	
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,621.9 usft

Wellbore	MOGI 9 State Com 11H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	15/10/2014	7.17	60.10	48,282

Design	MOGI 9 State Com 11H				
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	359.35	

Survey Program	Date 19/11/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
200.0	15,670.0	MOGI 9 State Com 11H (MOGI 9 State Co	MWD	MWD - Standard

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well MOGI 9 State Com #11H
Project:	Jackson Unit Section 9	TVD Reference:	WELL @ 3643.9usft (Original Well Elev)
Site:	MOGI 9 State Com 11H	MD Reference:	WELL @ 3643.9usft (Original Well Elev)
Well:	MOGI 9 State Com #11H	North Reference:	Grid
Wellbore:	MOGI 9 State Com 11H	Survey Calculation Method:	Minimum Curvature
Design:	MOGI 9 State Com 11H	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	-3,643.9	0.0	0.0	0.0	0.00	446,584.58	777,431.91
200.0	0.92	292.16	200.0	-3,443.9	0.6	-1.5	0.6	0.46	446,585.19	777,430.42
400.0	0.94	296.45	400.0	-3,243.9	1.9	-4.4	2.0	0.04	446,586.52	777,427.47
600.0	0.98	297.53	599.9	-3,044.0	3.5	-7.4	3.5	0.02	446,588.04	777,424.48
800.0	1.30	303.35	799.9	-2,844.0	5.5	-10.8	5.6	0.17	446,590.08	777,421.07
1,000.0	1.86	304.49	999.8	-2,644.1	8.6	-15.4	8.8	0.28	446,593.17	777,416.50
1,200.0	3.27	308.95	1,199.6	-2,444.3	14.0	-22.5	14.3	0.71	446,598.59	777,409.39
1,287.4	3.43	310.09	1,286.9	-2,357.0	17.3	-26.5	17.6	0.20	446,601.84	777,405.45
Rustler										
1,303.0	3.46	310.28	1,302.4	-2,341.5	17.9	-27.2	18.2	0.20	446,602.45	777,404.73
13 3/8"										
1,400.0	3.64	311.41	1,399.3	-2,244.6	21.8	-31.7	22.2	0.20	446,606.38	777,400.19
1,600.0	3.53	315.18	1,598.9	-2,045.0	30.4	-40.8	30.8	0.13	446,614.94	777,391.09
1,800.0	3.01	312.81	1,798.5	-1,845.4	38.3	-49.0	38.9	0.27	446,622.88	777,382.90
2,000.0	2.79	309.07	1,998.3	-1,645.6	44.9	-56.6	45.6	0.15	446,629.52	777,375.27
2,200.0	2.18	303.19	2,198.1	-1,445.8	50.1	-63.6	50.8	0.33	446,634.67	777,368.30
2,400.0	1.84	304.77	2,398.0	-1,245.9	54.0	-69.4	54.8	0.17	446,638.58	777,362.48
2,600.0	1.19	311.33	2,597.9	-1,046.0	57.2	-73.6	58.0	0.34	446,641.78	777,358.29
2,800.0	1.39	320.19	2,797.8	-846.1	60.4	-76.7	61.3	0.14	446,645.02	777,355.17
3,000.0	1.37	333.33	2,997.8	-646.1	64.4	-79.4	65.3	0.16	446,649.02	777,352.55
3,200.0	1.26	343.99	3,197.7	-446.2	68.7	-81.0	69.6	0.13	446,653.27	777,350.87
3,400.0	1.48	5.31	3,397.7	-246.2	73.4	-81.4	74.3	0.28	446,657.95	777,350.50
3,600.0	1.73	10.83	3,597.6	-46.3	78.9	-80.6	79.8	0.15	446,663.49	777,351.31
3,800.0	1.38	26.36	3,797.5	153.6	84.0	-79.0	84.9	0.27	446,668.61	777,352.94
4,000.0	0.59	17.37	3,997.5	353.6	87.2	-77.6	88.0	0.40	446,671.75	777,354.32
4,200.0	0.50	342.61	4,197.5	553.6	89.0	-77.5	89.9	0.17	446,673.57	777,354.37
4,400.0	0.39	15.83	4,397.5	753.6	90.5	-77.6	91.3	0.14	446,675.06	777,354.29

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well MOGI 9 State Com #11H
Project:	Jackson Unit Section 9	TVD Reference:	WELL @ 3643.9usft (Original Well Elev)
Site:	MOGI 9 State Com 11H	MD Reference:	WELL @ 3643.9usft (Original Well Elev)
Well:	MOGI 9 State Com #11H	North Reference:	Grid
Wellbore:	MOGI 9 State Com 11H	Survey Calculation Method:	Minimum Curvature
Design:	MOGI 9 State Com 11H	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)
4,600.0	1.83	117.26	4,597.4	953.5	89.7	-74.6	90.5	0.97	446,674.25	777,357.32
4,800.0	2.35	120.62	4,797.3	1,153.4	86.1	-68.2	86.9	0.27	446,670.70	777,363.68
5,000.0	3.13	124.00	4,997.1	1,353.2	81.0	-60.2	81.7	0.40	446,665.56	777,371.74
5,191.0	2.60	126.62	5,187.8	1,543.9	75.5	-52.4	76.1	0.28	446,660.05	777,379.54
9 5/8"										
5,200.0	2.58	126.77	5,196.8	1,552.9	75.2	-52.0	75.8	0.28	446,659.81	777,379.87
5,222.1	2.52	126.57	5,218.9	1,575.0	74.6	-51.3	75.2	0.27	446,659.22	777,380.66
Delaware										
5,400.0	2.05	124.52	5,396.7	1,752.8	70.5	-45.5	71.0	0.27	446,655.09	777,386.42
5,600.0	1.57	132.09	5,596.6	1,952.7	66.6	-40.5	67.1	0.27	446,651.22	777,391.40
5,800.0	1.28	133.60	5,796.5	2,152.6	63.3	-36.9	63.7	0.15	446,647.85	777,395.06
6,000.0	1.04	139.51	5,996.5	2,352.6	60.3	-34.1	60.7	0.13	446,644.92	777,397.85
6,197.5	0.69	145.29	6,193.9	2,550.0	58.0	-32.2	58.4	0.18	446,642.58	777,399.70
Cherry Canyon										
6,200.0	0.69	145.40	6,196.4	2,552.5	58.0	-32.2	58.3	0.18	446,642.55	777,399.71
6,400.0	0.59	150.22	6,396.4	2,752.5	56.1	-31.0	56.4	0.06	446,640.67	777,400.91
6,600.0	0.37	149.00	6,596.4	2,952.5	54.6	-30.2	55.0	0.11	446,639.22	777,401.75
6,800.0	0.31	159.90	6,796.4	3,152.5	53.6	-29.6	53.9	0.04	446,638.16	777,402.27
7,000.0	0.23	160.91	6,996.4	3,352.5	52.7	-29.3	53.0	0.04	446,637.27	777,402.59
7,200.0	0.18	166.59	7,196.4	3,552.5	52.0	-29.1	52.3	0.03	446,636.59	777,402.79
7,400.0	0.50	210.37	7,396.4	3,752.5	50.9	-29.5	51.3	0.20	446,635.53	777,402.42
7,582.5	0.71	204.09	7,578.9	3,935.0	49.2	-30.3	49.6	0.12	446,633.81	777,401.56
Brushy Canyon										
7,600.0	0.73	203.68	7,596.4	3,952.5	49.0	-30.4	49.4	0.12	446,633.61	777,401.47
7,800.0	0.91	201.87	7,796.4	4,152.5	46.4	-31.5	46.7	0.09	446,630.97	777,400.37
8,000.0	0.73	189.90	7,996.4	4,352.5	43.7	-32.4	44.0	0.12	446,628.24	777,399.56
8,200.0	0.78	140.44	8,196.3	4,552.4	41.4	-31.7	41.7	0.32	446,625.93	777,400.21
8,400.0	0.75	133.17	8,396.3	4,752.4	39.4	-29.9	39.7	0.05	446,623.99	777,402.03

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Well:	MOGI 9 State Com #11H	North Reference:	Grid
Wellbore:	MOGI 9 State Com 11H	Survey Calculation Method:	Minimum Curvature
Design:	MOGI 9 State Com 11H	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)	
8,600.0	0.77	132.15	8,596.3	4,952.4	37.6	-27.9	37.9	0.01	446,622.19	777,403.98	
8,800.0	0.76	132.17	8,796.3	5,152.4	35.8	-26.0	36.1	0.01	446,620.40	777,405.96	
9,000.0	0.73	146.56	8,996.3	5,352.4	33.9	-24.3	34.1	0.09	446,618.45	777,407.64	
9,132.6	0.80	149.33	9,128.9	5,485.0	32.4	-23.3	32.6	0.06	446,616.95	777,408.58	
Bone Spring											
9,200.0	0.83	150.57	9,196.3	5,552.4	31.5	-22.9	31.8	0.06	446,616.12	777,409.06	
9,262.6	0.71	133.53	9,258.9	5,615.0	30.9	-22.4	31.1	0.41	446,615.46	777,409.56	
Avalon Shale											
9,400.0	0.74	87.42	9,396.2	5,752.3	30.3	-20.9	30.6	0.41	446,614.92	777,411.06	
9,600.0	1.02	97.32	9,596.2	5,952.3	30.2	-17.8	30.4	0.16	446,614.75	777,414.11	
9,800.0	0.31	240.71	9,796.2	6,152.3	29.7	-16.5	29.9	0.64	446,614.26	777,415.41	
10,000.0	2.27	242.61	9,996.1	6,352.2	27.6	-20.5	27.8	0.98	446,612.17	777,411.42	
10,200.0	3.11	206.57	10,195.9	6,552.0	20.9	-26.4	21.2	0.92	446,605.49	777,405.48	
10,208.0	3.08	207.00	10,203.9	6,560.0	20.5	-26.6	20.8	0.46	446,605.11	777,405.28	
1st Bone Spring Sand											
10,400.0	2.45	220.19	10,395.7	6,751.8	12.8	-31.6	13.2	0.46	446,597.38	777,400.29	
10,445.0	2.10	225.40	10,440.7	6,796.8	11.5	-32.8	11.9	0.90	446,596.06	777,399.08	
10,496.0	1.70	242.80	10,491.6	6,847.7	10.5	-34.2	10.9	1.37	446,595.06	777,397.74	
10,528.0	3.30	343.90	10,523.6	6,879.7	11.1	-34.8	11.5	12.48	446,595.73	777,397.07	
10,559.0	7.70	359.00	10,554.5	6,910.6	14.1	-35.1	14.5	14.82	446,598.66	777,396.78	
10,591.0	10.80	7.70	10,586.1	6,942.2	19.2	-34.8	19.6	10.60	446,603.78	777,397.15	
10,623.0	14.50	5.30	10,617.3	6,973.4	26.2	-34.0	26.5	11.68	446,610.74	777,397.92	
10,654.0	18.10	9.00	10,647.0	7,003.1	34.8	-32.9	35.2	12.08	446,619.37	777,399.03	
10,686.0	21.30	4.50	10,677.1	7,033.2	45.5	-31.6	45.8	11.06	446,630.07	777,400.27	
10,717.0	25.40	359.90	10,705.6	7,061.7	57.8	-31.2	58.1	14.47	446,642.34	777,400.70	
10,749.0	29.70	358.00	10,734.0	7,090.1	72.6	-31.5	72.9	13.71	446,657.13	777,400.41	
10,781.0	33.70	356.00	10,761.2	7,117.3	89.3	-32.4	89.7	12.92	446,673.92	777,399.51	

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well MOGI 9 State Com #11H
Project:	Jackson Unit Section 9	TVD Reference:	WELL @ 3643.9usft (Original Well Elev)
Site:	MOGI 9 State Com 11H	MD Reference:	WELL @ 3643.9usft (Original Well Elev)
Well:	MOGI 9 State Com #11H	North Reference:	Grid
Wellbore:	MOGI 9 State Com 11H	Survey Calculation Method:	Minimum Curvature
Design:	MOGI 9 State Com 11H	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)
10,812.0	38.10	355.80	10,786.3	7,142.4	107.5	-33.7	107.8	14.20	446,692.05	777,398.21
10,844.0	40.90	356.60	10,811.0	7,167.1	127.8	-35.0	128.2	8.89	446,712.35	777,396.86
10,848.0	41.17	356.71	10,814.0	7,170.1	130.4	-35.2	130.8	6.99	446,714.98	777,396.71
Cross South Hard Boundary@10848ftMD										
10,875.0	43.00	357.40	10,834.0	7,190.1	148.5	-36.1	148.9	6.99	446,733.05	777,395.78
10,907.0	45.90	359.30	10,856.9	7,213.0	170.9	-36.8	171.3	9.97	446,755.44	777,395.15
10,938.0	48.80	0.40	10,877.9	7,234.0	193.7	-36.8	194.1	9.71	446,778.24	777,395.09
10,970.0	51.40	2.40	10,898.4	7,254.5	218.2	-36.2	218.6	9.43	446,802.78	777,395.70
11,001.0	54.80	2.10	10,917.0	7,273.1	243.0	-35.2	243.3	10.99	446,827.55	777,396.67
11,033.0	58.10	1.30	10,934.7	7,290.8	269.6	-34.5	270.0	10.52	446,854.20	777,397.46
11,050.8	59.60	0.12	10,943.9	7,300.0	284.8	-34.3	285.2	10.15	446,869.41	777,397.65
2nd Bone Spring Sand										
11,065.0	60.80	359.20	10,951.0	7,307.1	297.2	-34.3	297.5	10.15	446,881.75	777,397.57
11,096.0	63.00	358.10	10,965.6	7,321.7	324.5	-35.0	324.9	7.76	446,909.09	777,396.93
11,128.0	65.70	356.00	10,979.4	7,335.5	353.3	-36.5	353.7	10.30	446,937.89	777,395.44
11,159.0	67.80	354.80	10,991.7	7,347.8	381.7	-38.8	382.1	7.65	446,966.28	777,393.15
11,191.0	71.40	355.10	11,002.8	7,358.9	411.6	-41.4	412.0	11.28	446,996.15	777,390.51
11,223.0	74.90	355.50	11,012.1	7,368.2	442.1	-43.9	442.6	11.00	447,026.67	777,388.00
11,254.0	77.40	357.10	11,019.5	7,375.6	472.1	-45.8	472.6	9.49	447,056.70	777,386.06
11,286.0	79.50	358.80	11,025.9	7,382.0	503.4	-47.0	503.9	8.38	447,088.03	777,384.94
11,318.0	82.50	359.40	11,030.9	7,387.0	535.0	-47.5	535.6	9.56	447,119.63	777,384.45
11,350.0	85.10	359.70	11,034.4	7,390.5	566.9	-47.7	567.4	8.18	447,151.44	777,384.20
11,381.0	88.50	0.60	11,036.1	7,392.2	597.8	-47.6	598.3	11.34	447,182.39	777,384.28
11,413.0	89.50	0.50	11,036.7	7,392.8	629.8	-47.3	630.3	3.14	447,214.38	777,384.59
11,445.0	89.70	0.40	11,036.9	7,393.0	661.8	-47.1	662.3	0.70	447,246.38	777,384.84
11,476.0	91.20	0.40	11,036.6	7,392.7	692.8	-46.9	693.3	4.84	447,277.37	777,385.05
11,508.0	91.60	0.40	11,035.9	7,392.0	724.8	-46.6	725.3	1.25	447,309.36	777,385.28

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well MOGI 9 State Com #11H
Project:	Jackson Unit Section 9	TVD Reference:	WELL @ 3643.9usft (Original Well Elev)
Site:	MOGI 9 State Com 11H	MD Reference:	WELL @ 3643.9usft (Original Well Elev)
Well:	MOGI 9 State Com #11H	North Reference:	Grid
Wellbore:	MOGI 9 State Com 11H	Survey Calculation Method:	Minimum Curvature
Design:	MOGI 9 State Com 11H	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)
11,540.0	91.70	0.50	11,034.9	7,391.0	756.8	-46.4	757.2	0.44	447,341.35	777,385.53
11,572.0	91.10	0.20	11,034.2	7,390.3	788.8	-46.2	789.2	2.10	447,373.34	777,385.72
11,603.0	90.90	0.10	11,033.6	7,389.7	819.8	-46.1	820.2	0.72	447,404.33	777,385.81
11,635.0	91.00	359.50	11,033.1	7,389.2	851.7	-46.2	852.2	1.90	447,436.33	777,385.69
11,667.0	91.30	359.10	11,032.4	7,388.5	883.7	-46.6	884.2	1.56	447,468.32	777,385.30
11,698.0	90.90	359.40	11,031.8	7,387.9	914.7	-47.0	915.2	1.61	447,499.31	777,384.90
11,730.0	90.10	358.90	11,031.6	7,387.7	946.7	-47.5	947.2	2.95	447,531.31	777,384.42
11,762.0	87.90	358.90	11,032.1	7,388.2	978.7	-48.1	979.2	6.87	447,563.29	777,383.81
11,793.0	87.50	358.30	11,033.4	7,389.5	1,009.7	-48.9	1,010.2	2.32	447,594.26	777,383.05
11,825.0	88.20	358.90	11,034.6	7,390.7	1,041.6	-49.6	1,042.1	2.88	447,626.23	777,382.27
11,856.0	88.30	358.80	11,035.5	7,391.6	1,072.6	-50.3	1,073.1	0.46	447,657.21	777,381.65
11,888.0	89.20	358.80	11,036.2	7,392.3	1,104.6	-50.9	1,105.1	2.81	447,689.19	777,380.98
11,920.0	89.20	358.80	11,036.7	7,392.8	1,136.6	-51.6	1,137.1	0.00	447,721.18	777,380.31
11,952.0	89.30	358.60	11,037.1	7,393.2	1,168.6	-52.3	1,169.1	0.70	447,753.17	777,379.58
12,015.0	89.70	358.90	11,037.6	7,393.7	1,231.6	-53.7	1,232.1	0.79	447,816.15	777,378.21
12,110.0	90.20	358.70	11,037.7	7,393.8	1,326.6	-55.7	1,327.1	0.57	447,911.13	777,376.22
12,205.0	90.20	358.90	11,037.4	7,393.5	1,421.5	-57.7	1,422.1	0.21	448,006.11	777,374.23
12,300.0	89.20	359.40	11,037.9	7,394.0	1,516.5	-59.1	1,517.1	1.18	448,101.10	777,372.82
12,395.0	89.50	359.00	11,039.0	7,395.1	1,611.5	-60.4	1,612.1	0.53	448,196.08	777,371.49
12,490.0	89.90	358.90	11,039.5	7,395.6	1,706.5	-62.2	1,707.1	0.43	448,291.06	777,369.75
12,585.0	90.50	358.50	11,039.1	7,395.2	1,801.5	-64.3	1,802.1	0.76	448,386.04	777,367.60
12,679.0	90.00	358.30	11,038.7	7,394.8	1,895.4	-66.9	1,896.1	0.57	448,480.00	777,364.97
12,773.0	89.80	358.40	11,038.9	7,395.0	1,989.4	-69.6	1,990.0	0.24	448,573.96	777,362.27
12,866.0	90.10	359.50	11,039.0	7,395.1	2,082.4	-71.3	2,083.0	1.23	448,666.94	777,360.56
12,961.0	90.20	359.10	11,038.7	7,394.8	2,177.4	-72.5	2,178.0	0.43	448,761.94	777,359.40
13,056.0	90.60	0.40	11,038.0	7,394.1	2,272.3	-72.9	2,273.0	1.43	448,856.93	777,358.99
13,151.0	91.00	0.00	11,036.7	7,392.8	2,367.3	-72.6	2,368.0	0.60	448,951.92	777,359.32

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well MOGI 9 State Com #11H
Project:	Jackson Unit Section 9	TVD Reference:	WELL @ 3643.9usft (Original Well Elev)
Site:	MOGI 9 State Com 11H	MD Reference:	WELL @ 3643.9usft (Original Well Elev)
Well:	MOGI 9 State Com #11H	North Reference:	Grid
Wellbore:	MOGI 9 State Com 11H	Survey Calculation Method:	Minimum Curvature
Design:	MOGI 9 State Com 11H	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)
13,246.0	91.80	0.30	11,034.4	7,390.5	2,462.3	-72.3	2,463.0	0.90	449,046.89	777,359.57
13,342.0	90.60	1.70	11,032.4	7,388.5	2,558.3	-70.7	2,558.9	1.92	449,142.85	777,361.24
13,436.0	89.60	1.50	11,032.2	7,388.3	2,652.2	-68.0	2,652.8	1.08	449,236.81	777,363.87
13,532.0	90.30	1.10	11,032.3	7,388.4	2,748.2	-65.9	2,748.8	0.84	449,332.79	777,366.04
13,627.0	90.40	0.90	11,031.7	7,387.8	2,843.2	-64.2	2,843.7	0.24	449,427.77	777,367.70
13,722.0	90.70	0.60	11,030.8	7,386.9	2,938.2	-63.0	2,938.7	0.45	449,522.76	777,368.95
13,816.0	90.60	0.50	11,029.8	7,385.9	3,032.2	-62.1	3,032.7	0.15	449,616.75	777,369.85
13,911.0	91.30	0.10	11,028.2	7,384.3	3,127.2	-61.6	3,127.6	0.85	449,711.73	777,370.35
14,005.0	91.00	0.60	11,026.3	7,382.4	3,221.1	-61.0	3,221.6	0.62	449,805.71	777,370.92
14,099.0	91.70	1.30	11,024.1	7,380.2	3,315.1	-59.4	3,315.6	1.05	449,899.67	777,372.48
14,193.0	90.60	0.90	11,022.2	7,378.3	3,409.1	-57.6	3,409.5	1.25	449,993.63	777,374.28
14,288.0	90.30	0.70	11,021.4	7,377.5	3,504.0	-56.3	3,504.5	0.38	450,088.62	777,375.61
14,382.0	89.60	0.70	11,021.5	7,377.6	3,598.0	-55.2	3,598.4	0.74	450,182.61	777,376.76
14,476.0	90.50	0.80	11,021.4	7,377.5	3,692.0	-53.9	3,692.4	0.96	450,276.60	777,377.99
14,570.0	89.70	0.80	11,021.3	7,377.4	3,786.0	-52.6	3,786.4	0.85	450,370.59	777,379.30
14,664.0	90.20	0.30	11,021.4	7,377.5	3,880.0	-51.7	3,880.3	0.75	450,464.59	777,380.20
14,759.0	90.20	359.60	11,021.0	7,377.1	3,975.0	-51.8	3,975.3	0.74	450,559.59	777,380.12
14,853.0	90.80	359.50	11,020.2	7,376.3	4,069.0	-52.5	4,069.3	0.65	450,653.58	777,379.38
14,947.0	91.70	359.50	11,018.2	7,374.3	4,163.0	-53.4	4,163.3	0.96	450,747.55	777,378.56
15,042.0	90.90	359.20	11,016.0	7,372.1	4,257.9	-54.4	4,258.3	0.90	450,842.52	777,377.48
15,137.0	91.10	359.30	11,014.3	7,370.4	4,352.9	-55.7	4,353.3	0.24	450,937.50	777,376.24
15,232.0	90.00	359.20	11,013.4	7,369.5	4,447.9	-56.9	4,448.3	1.16	451,032.49	777,375.00
15,326.0	90.60	358.50	11,012.9	7,369.0	4,541.9	-58.8	4,542.3	0.98	451,126.47	777,373.11
15,421.0	91.20	358.30	11,011.4	7,367.5	4,636.8	-61.5	4,637.2	0.67	451,221.42	777,370.46
15,516.0	92.00	358.00	11,008.8	7,364.9	4,731.7	-64.5	4,732.2	0.90	451,316.33	777,367.39
15,533.0	92.07	357.91	11,008.2	7,364.3	4,748.7	-65.1	4,749.2	0.67	451,333.31	777,366.79
Cross North Hard Boundary@15433ftMD										

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well MOGI 9 State Com #11H
Project:	Jackson Unit Section 9	TVD Reference:	WELL @ 3643.9usft (Original Well Elev)
Site:	MOGI 9 State Com 11H	MD Reference:	WELL @ 3643.9usft (Original Well Elev)
Well:	MOGI 9 State Com #11H	North Reference:	Grid
Wellbore:	MOGI 9 State Com 11H	Survey Calculation Method:	Minimum Curvature
Design:	MOGI 9 State Com 11H	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)
15,612.0	92.40	357.50	11,005.1	7,361.2	4,827.6	-68.3	4,828.1	0.67	451,412.18	777,363.63
15,670.0	92.40	357.50	11,002.7	7,358.8	4,885.5	-70.8	4,886.0	0.00	451,470.08	777,361.10

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,303.0	1,302.4	13 3/8"	13-3/8	16	
5,191.0	5,187.8	9 5/8"	9-5/8	12-1/4	

Formations				
Measured Depth (usft)	Vertical Depth (usft)	Name	Dip (°)	
6,197.5	6,193.9	Cherry Canyon	0.00	
10,208.0	10,203.9	1st Bone Spring Sand	0.00	
9,132.6	9,128.9	Bone Spring	0.00	
11,050.8	10,943.9	2nd Bone Spring Sand	0.00	
7,582.5	7,578.9	Brushy Canyon	0.00	
1,287.4	1,286.9	Rustler	0.00	
9,262.6	9,258.9	Avalon Shale	0.00	
5,222.1	5,218.9	Delaware	0.00	

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,848.0	10,814.0	130.4	-35.2	Cross South Hard Boundary@10848ftMD
15,533.0	11,008.2	4,748.7	-65.1	Cross North Hard Boundary@15433ftMD

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well MOGI 9 State Com #11H
Project:	Jackson Unit Section 9	TVD Reference:	WELL @ 3643.9usft (Original Well Elev)
Site:	MOGI 9 State Com 11H	MD Reference:	WELL @ 3643.9usft (Original Well Elev)
Well:	MOGI 9 State Com #11H	North Reference:	Grid
Wellbore:	MOGI 9 State Com 11H	Survey Calculation Method:	Minimum Curvature
Design:	MOGI 9 State Com 11H	Database:	EDM 5000.1 Single User Db

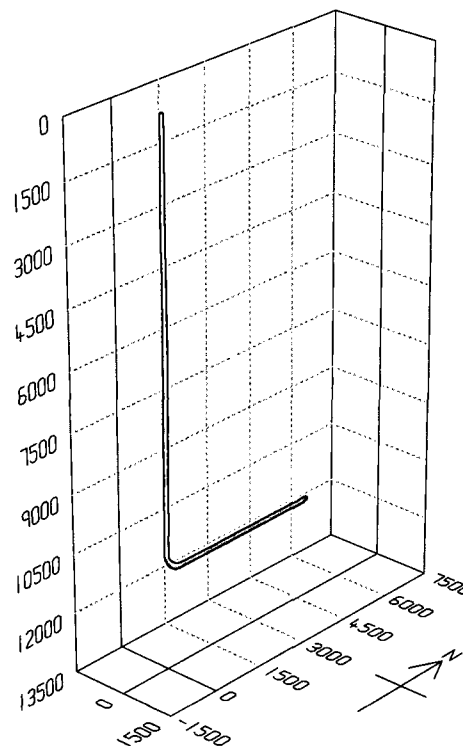
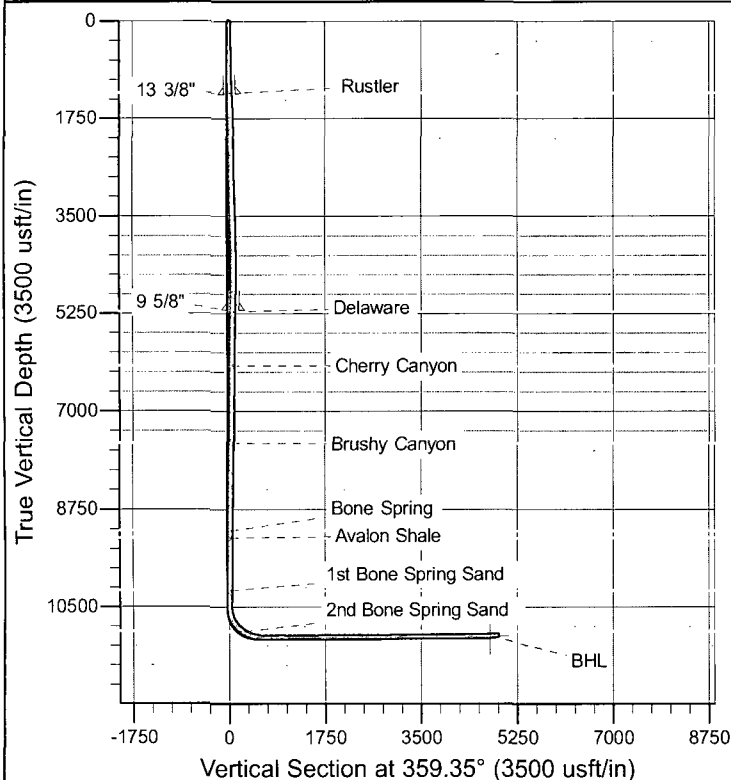
Checked By: _____	Approved By: _____	Date: _____
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Project: MOGI 9 State Com 11H
 Site: MOGI 9 State Com 11H
 Well: MOGI 9 State Com 11H
 Wellbore: MOGI 9 State Com 11H
 Design: MOGI 9 State Com 11H


MURCHISON OIL & GAS, INC.



True North: -0.41°
 Magnetic North: 6.77°
 Magnetic Field
 Strength: 48282.2snT
 Dip Angle: 60.10°
 Date: 15/10/2014
 Model: IGRF2010

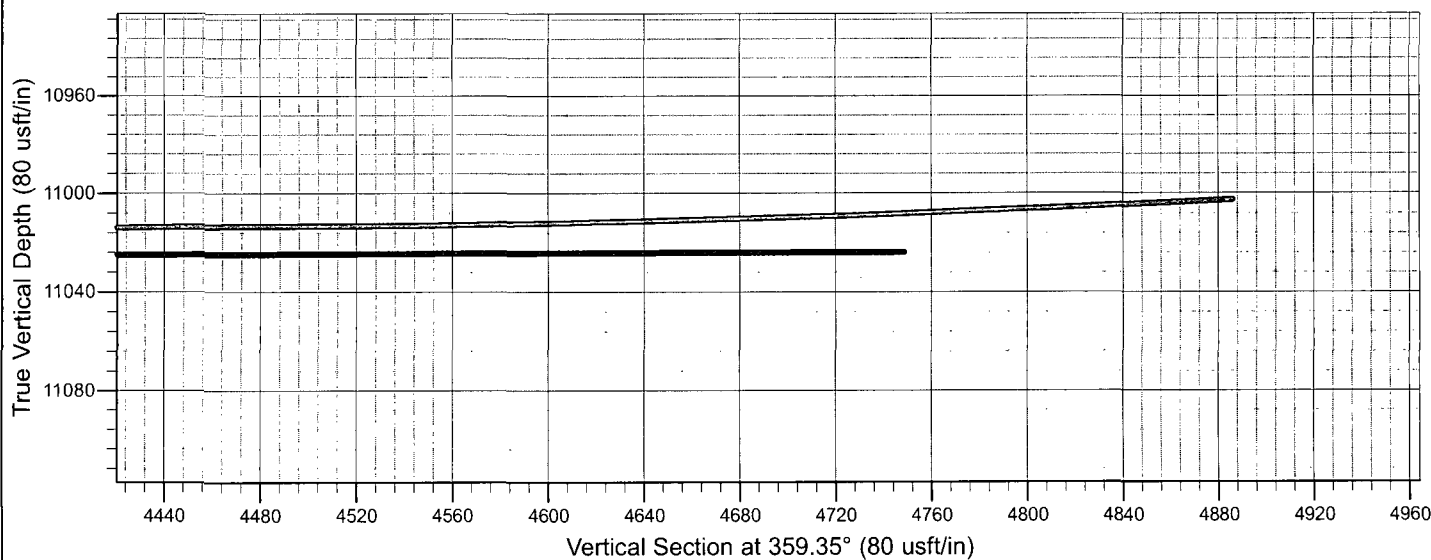


WELL DETAILS: MOGI 9 State Com #11H

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	446584.58	777431.91	32° 13' 31.553 N	103° 34' 11.442 W

ANNOTATIONS

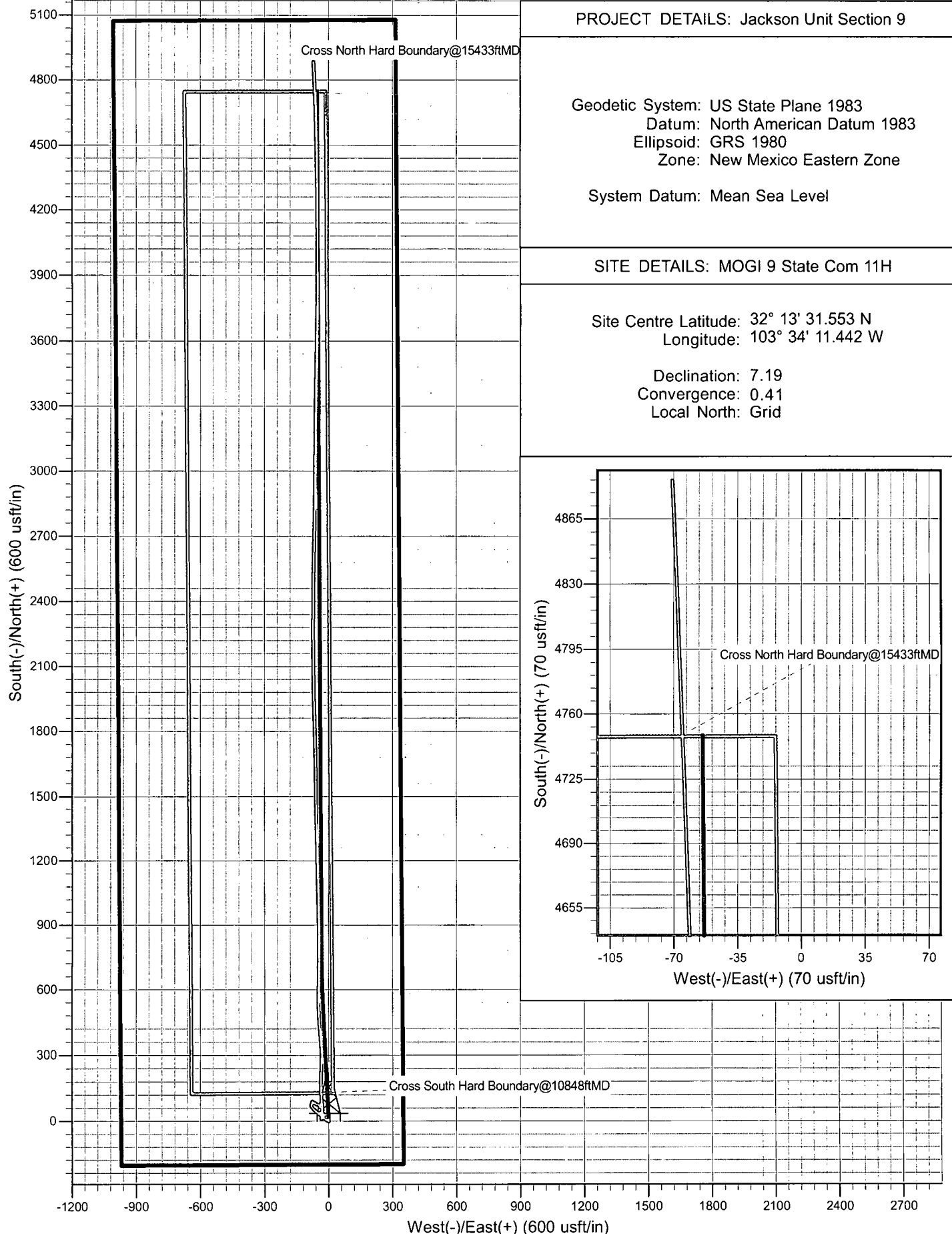
TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
10814.0	10848.0	41.17	356.71	130.4	-35.2	130.8	375.5	Cross South Hard Boundary@10848ftMD
11008.2	15533.0	92.07	357.91	4748.7	-65.1	4749.2	4994.9	Cross North Hard Boundary@15433ftMD



Project: Jackson Unit Section 9
Site: MOGI 9 State Com 11H
Well: MOGI 9 State Com 11H
Wellbore: MOGI 9 State Com 11H
Design: MOGI 9 State Com 11H



True North: -0.41°
Magnetic North: 6.77°
Magnetic Field
Strength: 48282.2snT
Dip Angle: 60.10°
Date: 15/10/2014
Model: IGRF2010



PROJECT DETAILS: Jackson Unit Section 9

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

SITE DETAILS: MOGI 9 State Com 11H

Site Centre Latitude: 32° 13' 31.553 N
Longitude: 103° 34' 11.442 W

Declination: 7.19
Convergence: 0.41
Local North: Grid

