

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well ☒ Oil Well ☐ Gas Well ☐ Dry ☐ Other		5. Lease Serial No. NMNM17222	
b. Type of Completion ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr. Other _____		6. If Indian, Allottee or Tribe Name	
2. Name of Operator CHESAPEAKE OPERATING, INC. E-Mail: linda.good@chk.com		7. Unit or CA Agreement Name and No	
3. Address P.O. BOX 18496 OKLAHOMA CITY, OK 73154-0496		8. Lease Name and Well No. MOSAIC 34 FEDERAL 2H	
3a. Phone No. (include area code) Ph: 405-767-4275		9. API Well No. 30-015-35831	
4. Location of Well (Report location clearly and in accordance with Federal requirements)* At surface SESE 371FSL 365FEL At top prod interval reported below SWSE 340FSL 2284FEL At total depth SWSE 340FSL 2284FEL		10. Field and Pool, or Exploratory UND WILLOW LAKE	
14. Date Spudded 12/09/2007		11. Sec., T., R., M., or Block and Survey or Area Sec 34 T24S R28E Mer NMP	
15. Date T.D. Reached 01/01/2008		12. County or Parish EDDY	
16. Date Completed ☐ D & A ☒ Ready to Prod. 01/24/2008		13. State NM	
17. Elevations (DF, KB, RT, GL)* 2987 GL			
18. Total Depth MD 6650 TVD 4895		19. Plug Back T.D.: MD 6597 TVD 4842	
20. Depth Bridge Plug Set: MD TVD			
21. Type Electric & Other Mechanical Logs Run (Submit copy of each) NO OPEN HOLE LOGS		22. Was well cored? ☒ No ☐ Yes (Submit analysis) Was DST run? ☒ No ☐ Yes (Submit analysis) Directional Survey? ☐ No ☒ Yes (Submit analysis)	

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sk. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17.500	13.375 H-40	48.0		650		545		0	
12.250	9.625 K-55	36.0		2600		930		0	
8.500	5.500 N-80	17.0		6650		1100		2100	

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
2.875	4475							

25. Producing Intervals

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) CHERRY CANYON	5325	6526	5325 TO 6526		28	OPEN
B)						
C)						
D)						

26. Perforation Record

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
5325 TO 6526	ACID W/5000 GAL 15% NEFE + 50 BALL SEALERS
5325 TO 6526	FRAC W/13,300 GAL LINEAR GEL & 95,000 GAL B FRAC 25 X-LINK GEL W/155,150# 16/30 WHITE SAND, TAILING

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr API	Gas Gravity	Production Method
01/29/2008	02/10/2008	24	→	183.0	97.0	259.0			ELECTRIC PUMPING UNIT
Choke Size	Tbg Press Flwg SI	Csg Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas Oil Ratio	Well Status	
			→	183	97	259			

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr API	Gas Gravity	Production Method
			→						
Choke Size	Tbg Press Flwg SI	Csg Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas Oil Ratio	Well Status	
			→						

(See Instructions and spaces for additional data on reverse side)

ELECTRONIC SUBMISSION #58576 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED **

BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICEACCEPTED FOR RECORD
FEB 24 2008

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr API	Gas Gravity	Production Method
			→						
Choke Size	Tbg Press Flwg SI	Csg Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas Oil Ratio	Well Status	
			→						

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr API	Gas Gravity	Production Method
			→						
Choke Size	Tbg Press Flwg SI	Csg Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas Oil Ratio	Well Status	
			→						

29 Disposition of Gas (Sold, used for fuel, vented, etc.)
SOLD

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top
					Meas. Depth
				PERMIAN RED BEDS	0
				CASTILE	2590
				LAMAR LIME/BELL CANYON	2639
				CHERRY CANYON	3593

32. Additional remarks (include plugging procedure):
NO OPEN HOLE LOGS.

(CHK PN 615928)

33. Circle enclosed attachments:

- | | | | |
|---|--------------------|---------------|-----------------------|
| 1. Electrical/Mechanical Logs (1 full set req'd.) | 2. Geologic Report | 3. DST Report | 4. Directional Survey |
| 5. Sundry Notice for plugging and cement verification | 6. Core Analysis | 7. Other. | |

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions):

Electronic Submission #58576 Verified by the BLM Well Information System.
For CHESAPEAKE OPERATING, INC., sent to the Carlsbad

Name (please print) LINDA GOOD

Title REGULATORY COMPLIANCE SPECIALI

Signature (Electronic Submission)

Date 02/12/2008

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL **



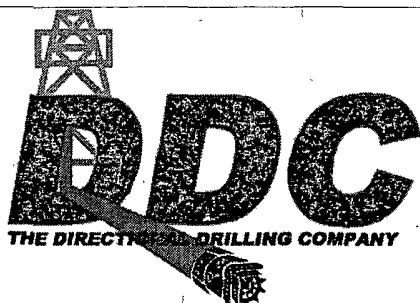
Job Number: MI-07527
 Company: Chesapeake Operating, Inc.
 Lease/Well: Mosaic 34 Federal #2
 Location: Eddy County
 Rig Name: Patterson #142
 RKB: 3005'
 G.L. or M.S.L.: 2987'

State/Country: New Mexico
 Declination: 8.20311
 Grid: -0.13
 File name: Z:\2007\Q070640\Q070641\Q070641.SVY
 Date/Time: 03-Jan-08 / 18:27
 Curve Name: As-Drilled Surveys Lateral A Sidetrack

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 270.00
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	Dogleg Severity Deg/100	N-S FT	E-W FT	CLOSURE Distance FT	Direction Deg	Grid X FT	Grid Y FT
5409.00	87.70	270.20	4924.98	680.73	.00	6.35	-680.73	680.76	270.53	-680.73	424740.05
5437.00	87.70	272.80	4926.10	708.70	9.28	7.08	-708.70	708.73	270.57	-708.70	424740.78
5469.00	89.80	274.00	4926.80	740.63	7.56	8.98	-740.63	740.68	270.69	-740.63	424742.68
5501.00	92.70	275.00	4926.10	772.52	9.59	11.49	-772.52	772.60	270.85	-772.52	424745.19
5532.00	94.20	275.10	4924.24	803.34	4.85	14.21	-803.34	803.47	271.01	-803.34	424747.91
5564.00	93.40	274.30	4922.12	835.16	3.53	16.83	-835.16	835.33	271.15	-835.16	424750.53
5596.00	92.30	273.30	4920.53	867.05	4.64	18.95	-867.05	867.26	271.25	-867.05	424752.65
5628.00	92.40	272.20	4919.21	898.99	3.45	20.48	-898.99	899.22	271.31	-898.99	424754.18
5660.00	91.60	270.20	4918.10	930.96	6.73	21.15	-930.96	931.20	271.30	-930.96	424754.85
5691.00	90.90	269.00	4917.42	961.95	4.48	20.93	-961.95	962.18	271.25	-961.95	424754.63
5723.00	91.40	268.10	4916.78	993.93	3.22	20.12	-993.93	994.14	271.16	-993.93	424753.82
5755.00	92.10	267.90	4915.80	1025.90	2.27	19.01	-1025.90	1026.08	271.06	-1025.90	424752.71
5818.00	93.20	267.50	4912.89	1088.78	1.86	16.48	-1088.78	1088.91	270.87	-1088.78	424750.18
5850.00	93.40	266.90	4911.05	1120.69	1.97	14.92	-1120.69	1120.79	270.76	-1120.69	424748.62

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	Dogleg Severity Deg/100	N-S FT	E-W FT	C L O S U R E		Grid X FT	Grid Y FT
								Distance FT	Direction Deg		
5882.00	93.80	266.80	4909.04	1152.58	1.29	13.17	-1152.58	1152.65	270.65	-1152.58	424746.87
5913.00	94.00	266.80	4906.93	1183.46	.65	11.44	-1183.46	1183.51	270.55	-1183.46	424745.14
5945.00	91.30	267.50	4905.45	1215.38	8.72	9.85	-1215.38	1215.42	270.46	-1215.38	424743.55
5977.00	90.10	267.50	4905.06	1247.35	3.75	8.46	-1247.35	1247.38	270.39	-1247.35	424742.16
6009.00	90.30	267.40	4904.95	1279.32	.70	7.03	-1279.32	1279.33	270.31	-1279.32	424740.73
6040.00	90.90	267.50	4904.62	1310.28	1.96	5.65	-1310.28	1310.30	270.25	-1310.28	424739.35
6072.00	91.10	267.70	4904.06	1342.25	.88	4.31	-1342.25	1342.26	270.18	-1342.25	424738.01
6104.00	89.60	268.10	4903.87	1374.23	4.85	3.14	-1374.23	1374.23	270.13	-1374.23	424736.84
6136.00	89.30	268.00	4904.18	1406.21	.99	2.05	-1406.21	1406.21	270.08	-1406.21	424735.75
6168.00	89.60	267.50	4904.48	1438.18	1.82	.80	-1438.18	1438.18	270.03	-1438.18	424734.50
6200.00	90.70	267.40	4904.40	1470.15	3.45	-.63	-1470.15	1470.15	269.98	-1470.15	424733.07
6232.00	91.30	267.30	4903.84	1502.11	1.90	-2.11	-1502.11	1502.11	269.92	-1502.11	424731.59
6264.00	91.30	267.40	4903.11	1534.07	.31	-3.59	-1534.07	1534.07	269.87	-1534.07	424730.11
6296.00	89.90	267.30	4902.78	1566.03	4.39	-5.07	-1566.03	1566.04	269.81	-1566.03	424728.63
6334.00	90.20	261.60	4902.75	1603.84	15.02	-8.74	-1603.84	1603.86	269.69	-1603.84	424724.96
6366.00	90.40	261.50	4902.58	1635.49	.70	-13.44	-1635.49	1635.54	269.53	-1635.49	424720.26
6398.00	90.20	262.20	4902.41	1667.16	2.28	-17.98	-1667.16	1667.26	269.38	-1667.16	424715.72
6430.00	89.30	264.60	4902.55	1698.95	8.01	-21.66	-1698.95	1699.09	269.27	-1698.95	424712.04
6462.00	89.60	267.10	4902.86	1730.86	7.87	-23.97	-1730.86	1731.03	269.21	-1730.86	424709.73
6494.00	90.50	267.60	4902.83	1762.83	3.22	-25.45	-1762.83	1763.01	269.17	-1762.83	424708.25
6526.00	92.10	268.10	4902.10	1794.79	5.24	-26.65	-1794.79	1794.99	269.15	-1794.79	424707.05
6558.00	93.00	268.10	4900.68	1826.75	2.81	-27.71	-1826.75	1826.96	269.13	-1826.75	424705.99
6590.00	93.70	268.10	4898.81	1858.67	2.19	-28.77	-1858.67	1858.90	269.11	-1858.67	424704.93
6603.00	94.00	268.10	4897.94	1871.64	2.31	-29.20	-1871.64	1871.86	269.11	-1871.64	424704.50
TD											
6650.00	94.00	268.10	4894.66	1918.50	.00	-30.75	-1918.50	1918.74	269.08	-1918.50	424702.95



Job Number: MI-07527
 Company: Chesapeake Operating, Inc.
 Lease/Well: Mosaic 34 Federal #2
 Location: Eddy County
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WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 270.00
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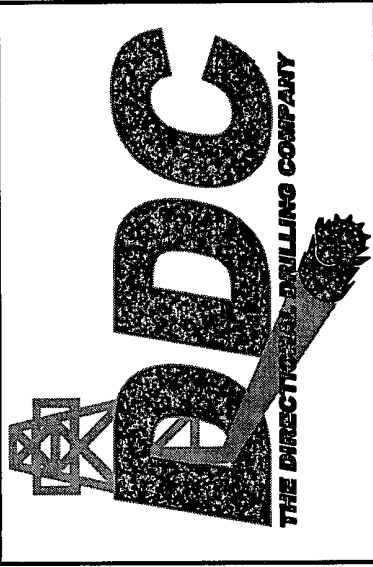
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	Dogleg Severity Deg/100	N-S FT	E-W FT	CLOSURE		Grid X FT	Grid Y FT
								Distance FT	Direction Deg		
Tie-In to Gyro Survey											
4400.00	.50	184.83	4399.31	-28.14	.00	20.46	28.14	34.79	53.98	28.14	424754.16
4425.00	2.80	270.30	4424.30	-27.52	11.22	20.35	27.52	34.23	53.51	27.52	424754.05
4457.00	6.60	279.70	4456.19	-24.92	12.08	20.67	24.92	32.38	50.33	24.92	424754.37
4489.00	10.30	280.70	4487.83	-20.30	11.57	21.51	20.30	29.58	43.34	20.30	424755.21
4520.00	14.00	280.40	4518.13	-13.89	11.94	22.70	13.89	26.61	31.45	13.89	424756.40
4552.00	18.00	278.40	4548.89	-5.18	12.62	24.12	5.18	24.67	12.13	5.18	424757.82
4584.00	21.10	277.40	4579.04	5.42	9.74	25.59	-5.42	26.16	348.04	-5.42	424759.29
4616.00	23.90	276.00	4608.60	17.58	8.91	27.01	-17.58	32.23	326.93	-17.58	424760.71
4647.00	26.50	273.10	4636.65	30.74	9.28	28.04	-30.74	41.60	312.37	-30.74	424761.74
4679.00	28.80	270.20	4664.99	45.58	8.33	28.45	-45.58	53.73	301.97	-45.58	424762.15
4711.00	31.20	265.40	4692.71	61.55	10.60	27.81	-61.55	67.54	294.32	-61.55	424761.51
4743.00	34.50	262.10	4719.59	78.80	11.73	25.90	-78.80	82.94	288.20	-78.80	424759.60

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	Dogleg Severity Deg/100	N-S FT	E-W FT	C L O S U R E		Grid X FT	Grid Y FT
4774.00	39.30	261.50	4744.37	97.21	15.53	23.24	-97.21	99.95	283.45	-97.21	424756.94
4806.00	44.20	261.90	4768.24	118.29	15.34	20.17	-118.29	120.00	279.68	-118.29	424753.87
4838.00	47.80	263.40	4790.47	141.12	11.74	17.24	-141.12	142.17	276.96	-141.12	424750.94
4870.00	51.30	266.60	4811.23	165.37	13.32	15.13	-165.37	166.06	275.23	-165.37	424748.83
4901.00	54.10	267.80	4830.01	189.99	9.54	13.93	-189.99	190.50	274.19	-189.99	424747.63
4933.00	58.30	267.70	4847.81	216.56	13.13	12.89	-216.56	216.94	273.41	-216.56	424746.59
4965.00	63.60	266.90	4863.34	244.49	16.71	11.57	-244.49	244.77	272.71	-244.49	424745.27
4997.00	68.70	266.30	4876.28	273.70	16.03	9.83	-273.70	273.87	272.06	-273.70	424743.53
5028.00	73.80	267.00	4886.24	302.99	16.59	8.12	-302.99	303.10	271.53	-302.99	424741.82
5060.00	76.40	268.20	4894.47	333.89	8.90	6.82	-333.89	333.96	271.17	-333.89	424740.52
5092.00	77.70	269.70	4901.64	365.07	6.11	6.25	-365.07	365.12	270.98	-365.07	424739.95
5123.00	80.30	270.30	4907.55	395.49	8.60	6.25	-395.49	395.54	270.91	-395.49	424739.95
5155.00	83.80	270.30	4911.98	427.18	10.94	6.42	-427.18	427.23	270.86	-427.18	424740.12
5186.00	88.60	270.20	4914.03	458.10	15.49	6.55	-458.10	458.15	270.82	-458.10	424740.25
5218.00	89.60	270.40	4914.53	490.10	3.19	6.72	-490.10	490.14	270.79	-490.10	424740.42
5250.00	89.60	270.10	4914.76	522.10	.94	6.86	-522.10	522.14	270.75	-522.10	424740.56
5282.00	86.10	269.10	4915.96	554.07	11.37	6.64	-554.07	554.11	270.69	-554.07	424740.34
5313.00	85.60	268.60	4918.20	584.98	2.28	6.02	-584.98	585.01	270.59	-584.98	424739.72
5345.00	85.40	271.00	4920.71	616.88	7.50	5.91	-616.88	616.91	270.55	-616.88	424739.61
5377.00	85.80	270.20	4923.17	648.78	2.79	6.24	-648.78	648.81	270.55	-648.78	424739.94
5409.00	87.70	270.20	4924.98	680.73	5.94	6.35	-680.73	680.76	270.53	-680.73	424740.05
5441.00	90.40	270.20	4925.51	712.72	8.44	6.46	-712.72	712.75	270.52	-712.72	424740.16
5472.00	92.00	270.60	4924.86	743.71	5.32	6.68	-743.71	743.74	270.51	-743.71	424740.38
5504.00	92.20	270.40	4923.69	775.69	.88	6.96	-775.69	775.72	270.51	-775.69	424740.66
5536.00	92.30	270.80	4922.43	807.66	1.29	7.29	-807.66	807.70	270.52	-807.66	424740.99
5568.00	92.30	270.50	4921.15	839.64	.94	7.66	-839.64	839.67	270.52	-839.64	424741.36
5599.00	92.30	270.20	4919.91	870.61	.97	7.85	-870.61	870.65	270.52	-870.61	424741.55
5631.00	92.80	269.90	4918.48	902.58	1.82	7.87	-902.58	902.61	270.50	-902.58	424741.57
5663.00	93.30	270.20	4916.78	934.53	1.82	7.90	-934.53	934.57	270.48	-934.53	424741.60
5694.00	93.80	270.10	4914.86	965.47	1.64	7.98	-965.47	965.51	270.47	-965.47	424741.68
5725.00	93.80	269.50	4912.81	996.41	1.93	7.87	-996.41	996.44	270.45	-996.41	424741.57
5806.00	93.80	269.50	4907.44	1077.22	.00	7.17	-1077.22	1077.25	270.38	-1077.22	424740.87

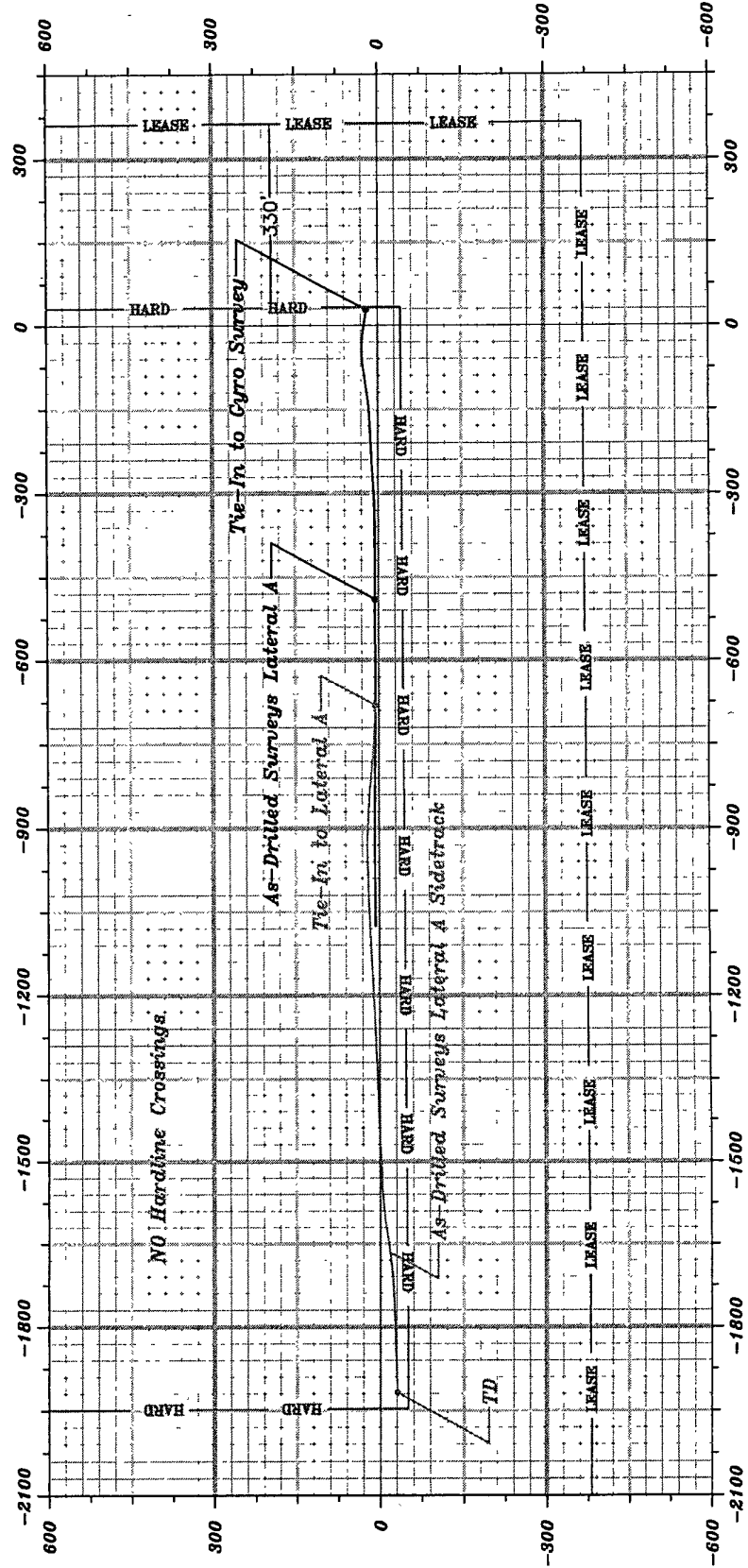


Chesapeake
ENERGY

Mosaic 34 Federal #2
Eddy County, New Mexico
MI-07527



PLAN VIEW
SCALE: 1 inch = 300'

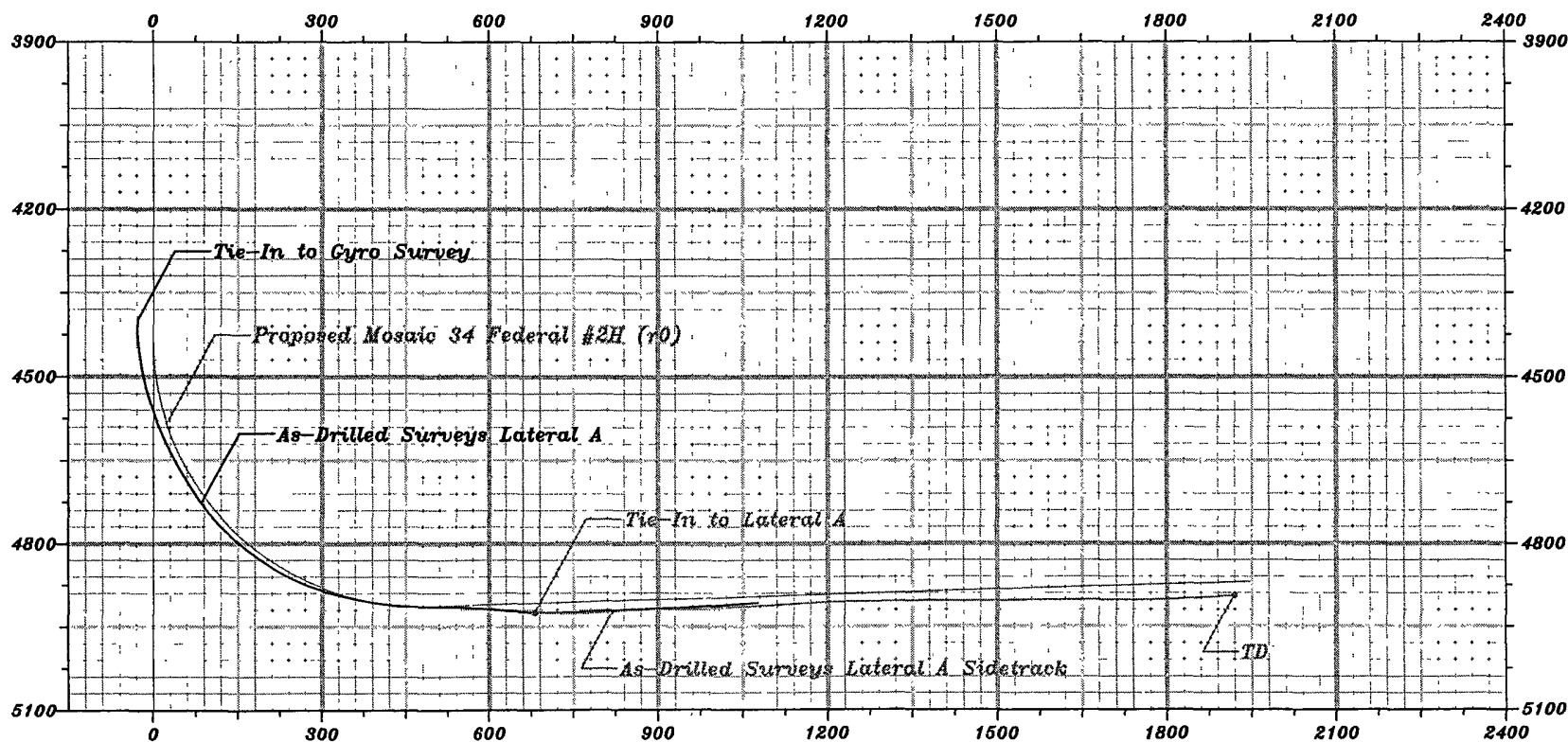




Mosaic 34 Federal #2
Eddy County, New Mexico
MI-07527



VERTICAL SECTION
SCALE: 1 inch = 300'
VERTICAL SECTION PLANE= 270.00





Directional Services

Job Number: 0711175052227

Company: Chesapeake Operating, Inc.

Lease/Well: Mosaic 34 Federal, Well #2H

Location: Eddy County, New Mexico

Rig Name: Patterson #142

RKB: 22'

G.L. or M.S.L.: GL

State/Country: New Mexico/USA

Declination: 8.07°

Grid: East To Grid

File name: F:\SURVEY\2007SU~1\CHESAP~1\MOSAIC2H.SVY

Date/Time: 21-Dec-07 / 09:53

Curve Name: Surface - 4400' M.D.

WINSERVE SURVEY CALCULATIONS

Minimum Curvature Method

Vertical Section Plane 270.00

Vertical Section Referenced to offset from Wellhead: EW =.00 Ft , NS=.00 Ft

Rectangular Coordinates Referenced to Wellhead

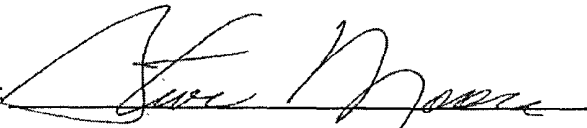
Measured	Incl	Drift	TRUE	N-S	E-W	Vertical	CLOSURE	CLOSURE	Dogleg
Depth	Angle	Direction	Vertical	FT	FT	Section	Distance	Direction	Severity
FT	Deg	Deg	Depth			FT	FT	Deg	Deg/100
0	0	0	0	0	0	0	0	0	0
200	0.25	319.55	200	0.33	-0.28	0.28	0.44	319.55	0.12
400	0.5	257.54	400	0.48	-1.42	1.42	1.5	288.55	0.22
600	1.5	47.53	599.98	2.06	-0.34	0.34	2.08	350.62	0.97
800	0.75	72.53	799.94	4.22	2.84	-2.84	5.08	33.97	0.44
1000	0.75	46.52	999.92	5.51	5.04	-5.04	7.47	42.44	0.17
1200	0.5	321.52	1199.91	7.09	5.45	-5.45	8.94	37.51	0.43
1400	1	10.5	1399.9	9.49	5.22	-5.22	10.83	28.81	0.39
1600	1.5	18.47	1599.85	13.69	6.37	-6.37	15.1	24.94	0.26
1800	1.25	42.46	1799.79	17.78	8.67	-8.67	19.78	25.99	0.31
2000	3.25	61.43	1999.63	22.1	15.12	-15.12	26.78	34.38	1.05
2200	2	46.44	2199.42	27.22	22.63	-22.63	35.4	39.74	0.71
2400	1	110.46	2399.36	29.02	26.79	-26.79	39.5	42.72	0.9
2600	0.25	113.45	2599.35	28.23	28.83	-28.83	40.35	45.6	0.38
2800	0.25	198.44	2799.34	27.64	29.09	-29.09	40.13	46.46	0.17
3000	0.75	156.47	2999.34	26.03	29.48	-29.48	39.33	48.55	0.29
3200	0.25	270.51	3199.33	24.83	29.56	-29.56	38.61	49.97	0.44
3400	0.25	318.56	3399.33	25.17	28.84	-28.84	38.27	48.89	0.1
3600	0.5	199.6	3599.33	24.67	28.26	-28.26	37.51	48.88	0.33
3800	0.5	160.65	3799.32	23.03	28.25	-28.25	36.45	50.82	0.17
4000	0.25	351.69	3999.32	22.63	28.48	-28.48	36.38	51.52	0.37
4200	0.5	186.74	4199.32	22.2	28.31	-28.31	35.98	51.9	0.37
4400	0.5	184.83	4399.31	20.46	28.14	-28.14	34.79	53.97	0.01

OPERATOR MOSAIC 34 FED. 2H
WELL/LEASE CHESAPEAKE OPERATING
COUNTY EDDY

142-0058

STATE OF NEW MEXICO
DEVIATION REPORT

268	0.75
650	1.25
677	1.50
711	0.60
797	1.90
920	1.40
983	0.40
1,047	1.50
1,110	0.80
1,187	0.80
1,238	0.80
1,301	1.60
1,365	1.10
1,397	1.10
1,428	1.50
1,524	2.60
1,556	0.80
1,620	2.40
1,683	1.70
1,747	1.80
1,810	2.00
2,000	3.40
2,095	3.50
2,216	2.40
2,284	0.90
2,316	1.50
2,411	0.30
2,380	0.30
2,538	0.70
2,822	1.00
3,088	1.00
3,341	0.25
3,595	0.25
3,849	0.75
4,071	1.00
4,400	1.00

BY: 

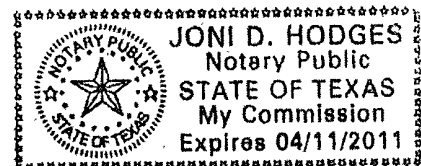
STATE OF TEXAS

COUNTY OF MIDLAND

The foregoing instrument was acknowledged before me on
Moore on behalf of Patterson-UTI Drilling Company LLC.


Notary Public for Midland County, Texas
My Commission Expires: 4/11/11

January 14, 2008 , by Steve





Directional Services

Job Number: 0711175052227

Company: Chesapeake Operating, Inc.

Lease/Well: Mosaic 34 Federal, Well #2H

Location: Eddy County, New Mexico

Rig Name: Patterson #142

RKB: 22'

G.L. or M.S.L.: GL

State/Country: New Mexico/USA

Declination: 8.07°

Grid: East To Grid

File name: F:\SURVEY\2007SU~1\CHESAP~1\MOSAIC2H.SVY

Date/Time: 21-Dec-07 / 09:53

Curve Name: Surface - 4400' M.D.

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 270.00
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

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	.25	319.55	200.00	.33	-.28	.28	.44	319.55	.12
400.00	.50	257.54	400.00	.48	-1.42	1.42	1.50	288.55	.22
600.00	1.50	47.53	599.98	2.06	-.34	.34	2.08	350.62	.97
800.00	.75	72.53	799.94	4.22	2.84	-2.84	5.08	33.97	.44
1000.00	.75	46.52	999.92	5.51	5.04	-5.04	7.47	42.44	.17
1200.00	.50	321.52	1199.91	7.09	5.45	-5.45	8.94	37.51	.43
1400.00	1.00	10.50	1399.90	9.49	5.22	-5.22	10.83	28.81	.39
1600.00	1.50	18.47	1599.85	13.69	6.37	-6.37	15.10	24.94	.26
1800.00	1.25	42.46	1799.79	17.78	8.67	-8.67	19.78	25.99	.31

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
2000.00	3.25	61.43	1999.63	22.10	15.12	-15.12	26.78	34.38	1.05
2200.00	2.00	46.44	2199.42	27.22	22.63	-22.63	35.40	39.74	.71
2400.00	1.00	110.46	2399.36	29.02	26.79	-26.79	39.50	42.72	.90
2600.00	.25	113.45	2599.35	28.23	28.83	-28.83	40.35	45.60	.38
2800.00	.25	198.44	2799.34	27.64	29.09	-29.09	40.13	46.46	.17
3000.00	.75	156.47	2999.34	26.03	29.48	-29.48	39.33	48.55	.29
3200.00	.25	270.51	3199.33	24.83	29.56	-29.56	38.61	49.97	.44
3400.00	.25	318.56	3399.33	25.17	28.84	-28.84	38.27	48.89	.10
3600.00	.50	199.60	3599.33	24.67	28.26	-28.26	37.51	48.88	.33
3800.00	.50	160.65	3799.32	23.03	28.25	-28.25	36.45	50.82	.17
4000.00	.25	351.69	3999.32	22.63	28.48	-28.48	36.38	51.52	.37
4200.00	.50	186.74	4199.32	22.20	28.31	-28.31	35.98	51.90	.37
Last Survey Depth Recorded									
4400.00	.50	184.83	4399.31	20.46	28.14	-28.14	34.79	53.97	.01