Form 3160-4
(February 2005)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD-ARTESIA

FORM APPROVED
OMB NO 1004-0137
Expires. March 31, 2007

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5 Lease Serial No: NMNM 013074

1a Type of Well: ☑ Oil Well ☐ Gas Well ☐ Dry ☐ Other
b Type of Completion: ☑ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff Resvr ,
Other

6. If Indian, Allottee or Tribe Name

7 Unit or CA Agreement Name and No

2. Name of Operator: CHESAPEAKE OPERATING, INC. ATTN: LINDA GOOD

8. Lease Name and Well No.: MOSAIC 34 FEDERAL 1H

3 Address: P O BOX 18496, OKLAHOMA CITY, OK 73154-0496

3a Phone No. *(include area code)*: 405-767-4275

9 AFI Well No: 30-015-35118

4 Location of Well *(Report location clearly and in accordance with Federal requirements)**

At surface: 330' FSL & 2310' FWL, SESW

At top prod interval reported below: 330' FSL & 330' FWL

At total depth: 330' FSL & 330' FWL

AUG 14 2007
OCD-ARTESIA

10 Field and Pool or Exploratory

11 Sec , T , R , M , on Block and Survey or Area: 34-24S-28E

12 County or Parish: EDDY COUNTY

13. State: NM

14 Date Spudded	15. Date T D Reached	16 Date Completed	17. Elevations (DF, RKB, RT, GL)*
04/02/2007	05/03/2007	05/30/2007 ☐ D & A ☑ Ready to Prod.	3000' GL / 3017' DF / 3018' KB

18. Total Depth	19. Plug Back T.D.:	20 Depth Bridge Plug Set
MD 6610' TVD	MD 6569' TVD	MD TVD

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)
MAI-MFE, MPD-MDN

22 Was well cored? ☑ No ☐ Yes (Submit analysis)
Was DST run? ☑ No ☐ Yes (Submit report)
Directional Survey? ☐ No ☑ Yes (Submit copy)

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 Sks & Type of Cement	Slurry Vol (BBL)	Cement Top*	Amount Pulled
13 3/8"	17 1/2"	48#	0	645'		550 Class C		SURFACE	
8 5/8"	11"	32#	0	2590'		605 Class C		SURFACE	
5 1/2"	7 7/8"	17#	0	6610'		650 Class C		2100' Calc	

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 7/8"								

25 Producing Intervals / 26 Perforation Record

Formation	Top	Bottom	Perforated Interval	Size	No Holes	Perf Status
A) Cherry Canyon Delaware	5050'	6560'	5050' - 6560'		21	Open
B)						
C)						
D)						

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

Depth Interval	Amount and Type of Material
5050' - 6050'	Acid w/5000 gal 15% NeFe + 30 ball sealers, frac w/118,149 gal Silver Stim LT Basic (13), 226,000# Prem White 16/30

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
6/3/2007	6/18/200	24	→	204	140	212			PUMPING

Choke Size	Tbg Press. Flwg SI	Csg Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status
	700		→	204	140	212		PRODUCING

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 page 2)

ACCEPTED FOR RECORD
AUG 10 2007
JERRY FANT
PETROLEUM GEOLOGIST

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 *(Solid, 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
	0'	450'	RED BEDS	PERMIAN RED BEDS	450'
	450'	1800'	SALT/ANHYDRITE	CASTILE LAMAR	1800' 2588'
	1800'	2588'	LIMESTONE	DELAWARE	2633'
	2588'	2633'		BELL CANYON	3470'
	2633'	3470'	SAND/SILT/SHALE	CHERRY CANYON	5036'
	3470'	5036'	SAND/SILT/SHALE	BRUSHY CANYON	6263'
	5036' 6263'	6263' 6400'	SAND/SILT/SHALE LIMESTONE	BONE SPRING	6400'

32 Additional remarks (include plugging procedure).

33 Indicate which items have been attached by placing a check in the appropriate boxes

☑ Electrical/Mechanical Logs (1 full set req'd) ☐ Geologic Report ☐ DST Report ☑ Directional Survey

☐ Sundry Notice for plugging and cement verification ☐ Core Analysis ☐ Other

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

Name *(please print)* LINDA GOOD Title FEDERAL REGULATORY ANALYST

Signature Linda Good Date 07/23/2007

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

(Continued on page 3)

FORSTER DRILLING CORPORATION

2425 Fountain View Dr., Suite 305
Houston, Texas 77057
Phone 713-266-8005
Fax 713-266-8024

OPERATOR: CHESAPEAKE OPERATING
WELL/LEASE: MOSAIC 34 FED. 1
COUNTY: EDDY

STATE OF NEW MEXICO
DEVIATION REPORT

145	1 ½
328	¾
645	2 ¾
800	2
1048	1 ¼
1300	1
1548	1
1801	1
2052	3
2242	2 ¾
2336	2
2545	1
2833	1 ¼
3398	1 ½
3614	0.75
4025	½
4408	¼
4816	1
5191	1
5607	½
5920	¾
4418	18.5/298.9
4574	25.7/294.2
4607	35.5/281.9
4954	61.3/269.6
4986	63.8/269
5017	66.6/268.8
5049	69.9/268.6
5191	87.8/269.3
5232	87.7/268.8
5270	90.2/2682
5301	90.4/267.4
5881	92 1/5
5976	90
6038	90.50
6070	90.5
6123	89.2/269.3
6314	92.1/269.9
6409	91.9/269.5
6502	91.3/269.5

BY: 

STATE OF TEXAS
COUNTY OF ECTOR

The forgoing instrument was acknowledged before me on July 12, 2007 by Cullen Hudnall on behalf of Forster Drilling Corporation.

Notary Public for Ector County, Texas
My Commission Expires: 9/27/09

2425 Fountain View Dr. Suite 305 · Houston, Texas 77057
Phone 713-266-8005 · Fax 713-266-8024

End of Well Recap

FOR

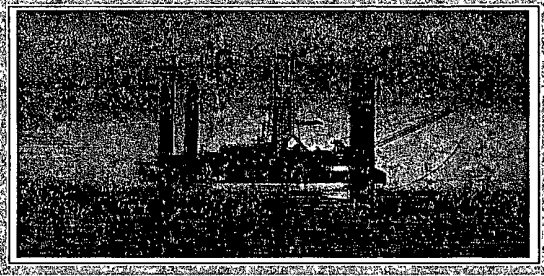
Chesapeake Operating
Mosiac 34 Federal #1H
Eddy County, New Mexico

Proposal No. 415071234

Presented By:

Dominic Herrald
Account Manager

Jeremy Burnett
Well Planner



QUANTUM DRILLING MOTORS

Proposed Well & Planning Report

Chesapeake Operating

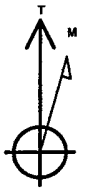
Project: Eddy County (NM27E)
Site: Sec 34-T24S-R28E
Well: Mosaic 34 Federal #1
Wellbore: Wellbore #1
Design: Plan 04-27-07
Plan Version:

QUANTUM DRILLING MOTORS & DIRECTIONAL SERVICES

WELL DETAILS: Mosaic 34 Federal #1

Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	424679.70	579669.80	32° 10' 2.278 N	104° 4' 33.101 W	



Azimuths to True North
Magnetic North: 8.34°

Magnetic Field
Strength: 49015.6snT
Dip Angle: 60.16°
Date: 2007/03/21
Model: BGGM2006

PLAN DETAILS

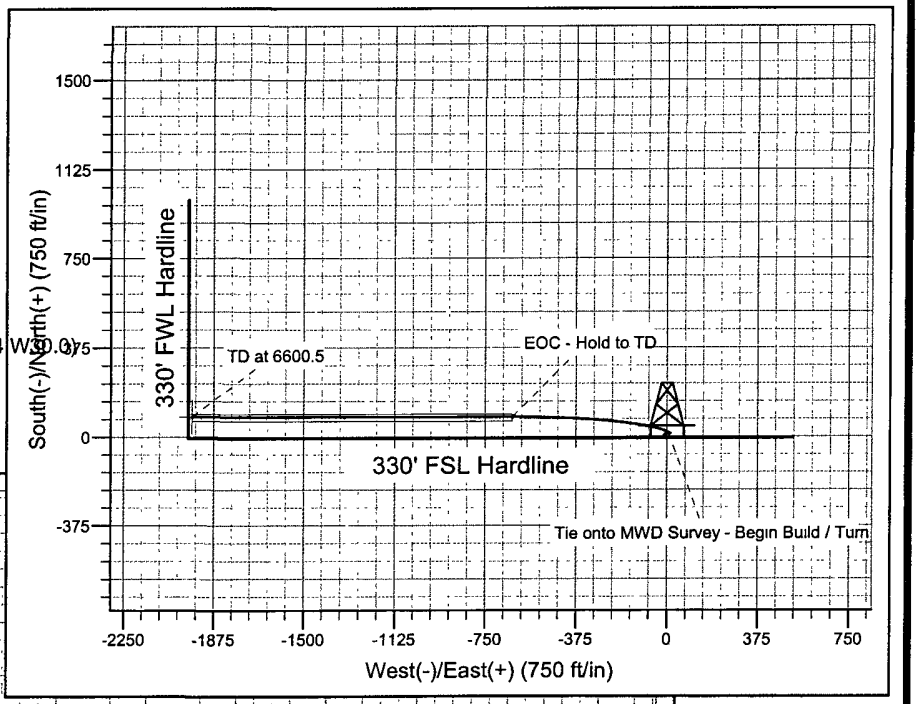
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	4387.0	14.50	300.10	4385.7	18.3	4.5	0.00	0.00	-3.8	
2	5274.1	91.08	270.00	4888.0	84.8	-639.2	8.86	-30.77	642.2	
3	6600.5	91.08	270.00	4863.0	84.8	-1965.3	0.00	0.00	1967.1	

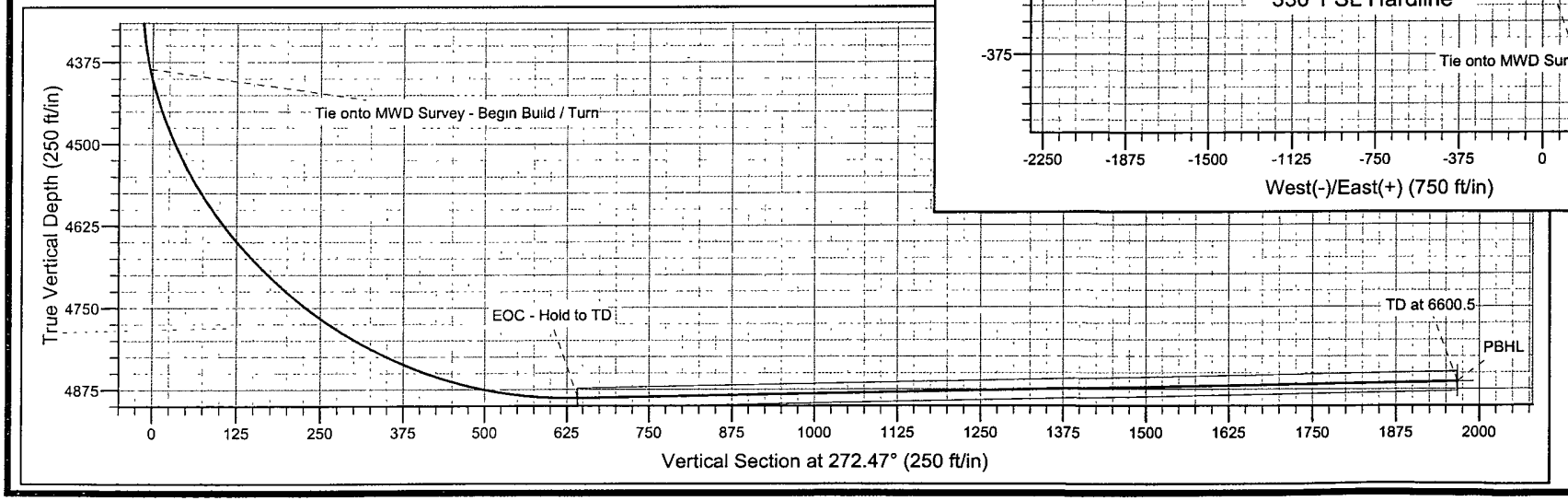
ANNOTATIONS

TVD	MD	Annotation
4385.7	4387.0	Tie onto MWD Survey - Begin Build / Turn
4888.0	5274.1	EOC - Hold to TD
4863.0	6600.5	TD at 6600.5

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Drilling Corridor	4863.0	84.8	-1965.3	424759.80	577704.30	Rectangle (Sides: L1326.4 W30.0)
PBHL	4863.0	84.8	-1965.3	424759.80	577704.30	Point





Chesapeake Operating

Eddy County (NM27E)
Sec 34-T24S-R28E
Mosaic 34 Federal #1
Wellbore #1

Plan: Plan 04-27-07

Standard Planning Report

08 May, 2007

Quantum
Planning Report

Database:	EDM 2003.16 Single User Db	**Local Co-ordinate Reference:**	Well Mosaic 34 Federal #1
Company:	Chesapeake Operating	**TVD Reference:**	WELL @ 0.0ft (Original Well Elev)
Project:	Eddy County (NM27E)	**MD Reference:**	WELL @ 0.0ft (Original Well Elev)
Site:	Sec 34-T24S-R28E	**North Reference:**	True
Well:	Mosaic 34 Federal #1	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 04-27-07		

Project Eddy County (NM27E)

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 Sec 34-T24S-R28E

Site Position:		**Northing:**	424,679.70 ft	**Latitude:**	32° 10' 2.278 N
From:	Map	**Easting:**	579,669.80 ft	**Longitude:**	104° 4' 33.101 W
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.14 °

Well Mosaic 34 Federal #1

Well Position	**+N/-S**	0.0 ft	**Northing:**	424,679.70 ft	**Latitude:**	32° 10' 2.278 N
	+E/-W	0.0 ft	**Easting:**	579,669.80 ft	**Longitude:**	104° 4' 33.101 W
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	0.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2006	2007/03/21	8.34	60.16	49,016

Design Plan 04-27-07

Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	4,387.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	272.47

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
4,387.0	14.50	300.10	4,385.7	18.3	4.5	0.00	0.00	0.00	0.00	
5,274.1	91.08	270.00	4,888.0	84.8	-639.2	8.86	8.63	-3.39	-30.77	
6,600.5	91 08	270.00	4,863.0	84.8	-1,965.3	0.00	0.00	0.00	0.00	

Quantum
Planning Report

Database:	EDM 2003.16 Single User Db	Local Coordinate Reference:	Well Mosaic 34 Federal #1
Company:	Chesapeake Operating	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Project:	Eddy County (NM27E)	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Sec 34-T24S-R28E	North Reference:	True
Well:	Mosaic 34 Federal #1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 04-27-07		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,387.0	14.50	300.10	4,385.7	18.3	4.5	-3.8	0.00	0.00	0.00
Tie onto MWD Survey - Begin Build / Turn									
4,400.0	15.50	297.90	4,398.2	19.9	1.6	-0.7	8.86	7.69	-16.96
4,500.0	23.65	287.29	4,492.4	32.2	-29.4	30.8	8.86	8.15	-10.60
4,600.0	32.16	281.99	4,580.7	43.7	-74.7	76.5	8.86	8.51	-5.30
4,700.0	40.80	278.74	4,661.0	54.2	-133.1	135.3	8.86	8.65	-3.25
4,800.0	49.51	276.47	4,731.5	63.5	-203.3	205.9	8.86	8.71	-2.27
4,900.0	58.25	274.72	4,790.4	71.3	-283.7	286.5	8.86	8.74	-1.75
5,000.0	67.02	273.28	4,836.3	77.4	-372.2	375.2	8.86	8.76	-1.44
5,100.0	75.79	272.01	4,868.2	81.8	-466.7	469.8	8.86	8.77	-1.27
5,200.0	84.57	270.84	4,885.2	84.2	-565.2	568.3	8.86	8.78	-1.17
5,274.1	91.08	270.00	4,888.0	84.8	-639.2	642.2	8.86	8.78	-1.14
EOC - Hold to TD									
5,300.0	91.08	270.00	4,887.5	84.8	-665.1	668.1	0.00	0.00	0.00
5,400.0	91.08	270.00	4,885.6	84.8	-765.0	768.0	0.00	0.00	0.00
5,500.0	91.08	270.00	4,883.7	84.8	-865.0	867.9	0.00	0.00	0.00
5,600.0	91.08	270.00	4,881.9	84.8	-965.0	967.8	0.00	0.00	0.00
5,700.0	91.08	270.00	4,880.0	84.8	-1,065.0	1,067.6	0.00	0.00	0.00
5,800.0	91.08	270.00	4,878.1	84.8	-1,165.0	1,167.5	0.00	0.00	0.00
5,900.0	91.08	270.00	4,876.2	84.8	-1,264.9	1,267.4	0.00	0.00	0.00
6,000.0	91.08	270.00	4,874.3	84.8	-1,364.9	1,367.3	0.00	0.00	0.00
6,100.0	91.08	270.00	4,872.4	84.8	-1,464.9	1,467.2	0.00	0.00	0.00
6,200.0	91.08	270.00	4,870.5	84.8	-1,564.9	1,567.1	0.00	0.00	0.00
6,300.0	91.08	270.00	4,868.7	84.8	-1,664.9	1,667.0	0.00	0.00	0.00
6,400.0	91.08	270.00	4,866.8	84.8	-1,764.9	1,766.9	0.00	0.00	0.00
6,500.0	91.08	270.00	4,864.9	84.8	-1,864.8	1,866.8	0.00	0.00	0.00
6,600.0	91.08	270.00	4,863.0	84.8	-1,964.8	1,966.7	0.00	0.00	0.00
6,600.5	91.08	270.00	4,863.0	84.8	-1,965.3	1,967.1	0.00	0.00	0.00
TD at 6600.5									

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL - plan hits target - Point	0.00	0.00	4,863.0	84.8	-1,965.3	424,759.80	577,704.30	32° 10' 3.117 N	104° 4' 55.966 W
Drilling Corridor - plan hits target - Rectangle (sides W1,326.4 H30.0 D15.0)	-1.08	270.00	4,863.0	84.8	-1,965.3	424,759.80	577,704.30	32° 10' 3.117 N	104° 4' 55.966 W

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
4,387.0	4,385.7	18.3	4.5	Tie onto MWD Survey.- Begin Build / Turn
5,274.1	4,888.0	84.8	-639.2	EOC - Hold to TD
6,600.5	4,863.0	84.8	-1,965.3	TD at 6600.5

Overlay Well & Survey Report

Chesapeake Operating

Project Eddy County (NM27E)
Site Sec 34-T24S-R28E
Well Mosaic 34 Federal #1
Wellbore Wellbore #1
Design Plan 04-27-07
Plan Version

QUANTUM DRILLING MOTORS & DIRECTIONAL SERVICES

WELL DETAILS: Mosaic 34 Federal #1

Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0 0	0.0	424679.70	579669.80	32° 10' 2 278 N	104° 4' 33.101 W	

Azimuths to True North
Magnetic North 8 34°

Magnetic Field
Strength 49015 6snT
Dip Angle 60 16°
Date 2007/03/21
Model BGGM2006

PLAN DETAILS

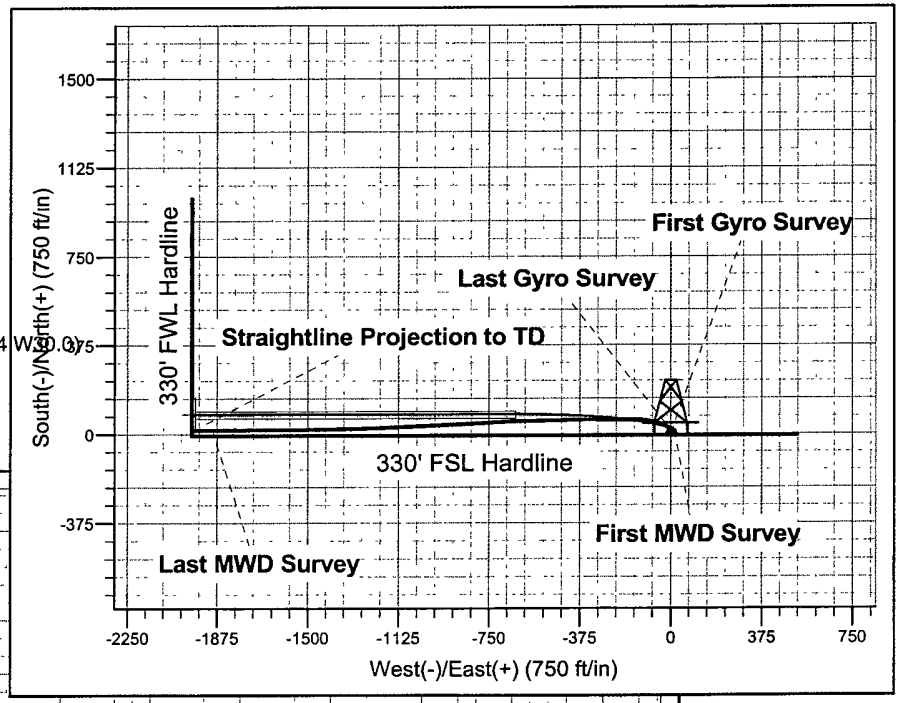
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	4387 0	14 50	300 10	4385 7	18 3	4 5	0 00	0 00	-3.8	
2	5274.1	91 08	270 00	4888.0	84 8	-639 2	8 86	-30.77	642.2	
3	6600 5	91.08	270 00	4863.0	84 8	-1965.3	0.00	0.00	1967.1	

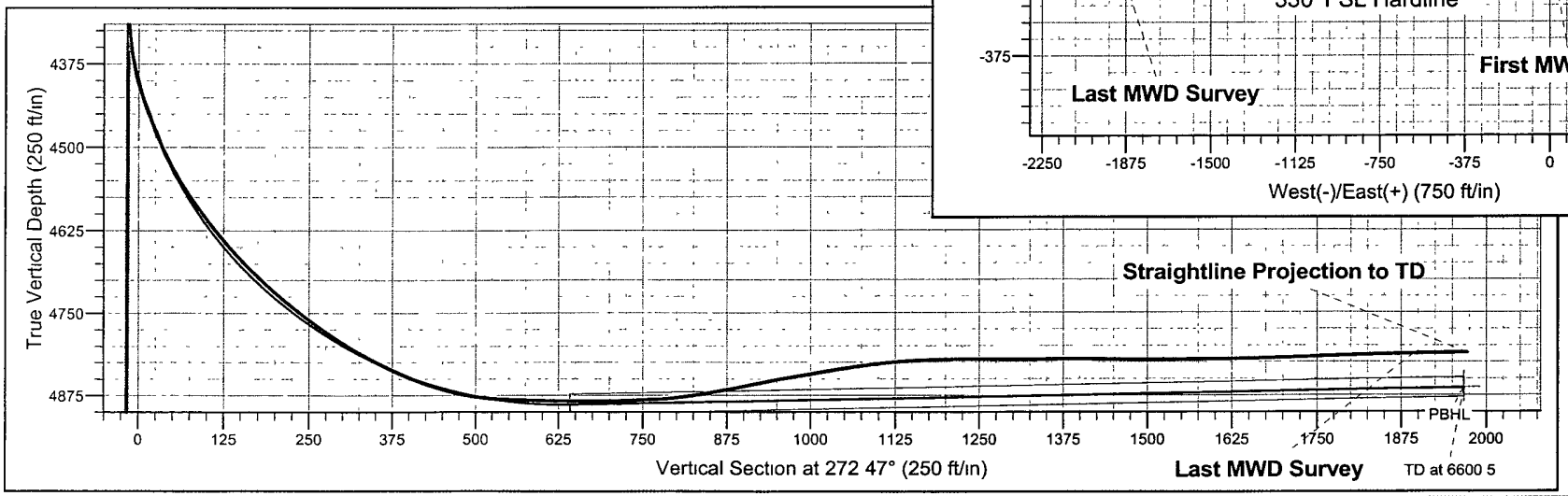
ANNOTATIONS

TVD	MD	Annotation
4385 7	4387 0	Tie onto MWD Survey - Begin Build / Turn
4888 0	5274 1	EOC - Hold to TD
4863 0	6600 5	TD at 6600 5

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Drilling Corridor	4863.0	84.8	-1965.3	424759.80	577704.30	Rectangle (Sides: L1326.4 W30.0)
PBHL	4863 0	84 8	-1965 3	424759.80	577704.30	Point





Gyro Survey Report

First Gyro Survey: 200'

Last Gyro Survey: 6363'

Chesapeake Operating

Eddy County (NM27E)
Sec 34-T24S-R28E
Mosaic 34 Federal #1
Wellbore #1

Survey: GYRO

Standard Survey Report

08 May, 2007

Quantum
Survey Report

Company:	Chesapeake Operating	Local Co-ordinate Reference:	Well Mosaic 34 Federal #1
Project:	Eddy County (NM27E)	TVD Reference:	WELL @ 0 0ft (Original Well Elev)
Site:	Sec 34-T24S-R28E	MD Reference:	WELL @ 0 0ft (Original Well Elev)
Well:	Mosaic 34 Federal #1	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 2003 16 Single User Db

Project Eddy County (NM27E)

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 Sec 34-T24S-R28E

Site Position:		**Northing:**	424,679 70 ft	**Latitude:**	32° 10' 2 278 N
From:	Map	**Easting:**	579,669 80 ft	**Longitude:**	104° 4' 33 101 W
Position Uncertainty:	0 0 ft	**Slot Radius:**	"	**Grid Convergence:**	0 14 °

Well Mosaic 34 Federal #1

Well Position	**+N/-S**	0.0 ft	**Northing:**	424,679 70 ft	**Latitude:**	32° 10' 2 278 N
	+E/-W	0 0 ft	**Easting:**	579,669 80 ft	**Longitude:**	104° 4' 33 101 W
Position Uncertainty		0 0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	0 0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2006	2007/03/21	8 34	60.16	49,016

Design Wellbore #1

Audit Notes:

Version:	1 0	**Phase:**	ACTUAL	**Tie On Depth:**	0 0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0 0	0 0	0.0	269 85

Survey Program Date 2007/05/08

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
200 0	4,200 0	GYRO (Wellbore #1)	MWD	MWD - Standard
4,230 0	6,610 0	Surveys (Wellbore #1)	MWD	MWD - Standard

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0 0	0 00	0 00	0 0	0 0	0 0	0 0	0 00	0 00	0 00
200 0	1 00	292 64	200 0	0 7	-1 6	1 6	0 50	0 50	0 00
First Gyro Survey									
400 0	1 25	288 56	400 0	2 0	-5 3	5 3	0 13	0 12	-2 04
600 0	1 25	270 48	599 9	2 8	-9 5	9 5	0 20	0 00	-9 04
800 0	0 25	289 40	799 9	2 9	-12 1	12 1	0 51	-0 50	9 46
1,000 0	0 50	19 32	999 9	3 9	-12 3	12 2	0 28	0 12	44 96
1,200 0	0 75	26 24	1,199 9	5 9	-11 4	11 4	0 13	0 12	3 46
1,400 0	0 50	27 16	1,399 9	7 8	-10 4	10 4	0 13	-0 12	0 46
1,600 0	0 50	53 09	1,599 9	9 1	-9 3	9 3	0 11	0 00	12 96
1,800 0	0 75	25 61	1,799.8	10 8	-8 1	8 0	0 19	0 12	-13 74
2,000 0	0 75	71 54	1,999 8	12 4	-6 2	6 2	0 29	0 00	22 96

Quantum

Survey Report

Company:	Chesapeake Operating	Local Co-ordinate Reference:	Well Mosaic 34 Federal #1
Project:	Eddy County (NM27E)	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Sec 34-T24S-R28E	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Well:	Mosaic 34 Federal #1	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 2003.16 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,200 0	1 50	95 47	2,199 8	12 6	-2 4	2 4	0 43	0 37	11 96
2,400 0	1 25	97 39	2,399.7	12 1	2 4	-2 4	0 13	-0 12	0 96
2,600 0	0 50	97.30	2,599 7	11 7	5 4	-5 4	0 38	-0 37	-0 04
2,800 0	1 00	82 15	2,799 7	11 8	8 0	-8 0	0 27	0 25	-7 57
3,000 0	0 50	65 07	2,999.7	12 4	10 5	-10 5	0 27	-0 25	-8 54
3,200 0	0 25	62.99	3,199 7	13 0	11 7	-11 7	0.13	-0.12	-1 04
3,400 0	0 25	67 91	3,399 7	13 3	12 5	-12 5	0 01	0 00	2 46
3,600 0	0 25	162 83	3,599 7	13.1	13 0	-13 1	0 18	0 00	47 46
3,800 0	0 25	46 75	3,799.7	13 0	13.5	-13 5	0 21	0 00	-58 04
4,000 0	0 25	112 68	3,999 7	13 1	14.2	-14.2	0.14	0 00	32 96
4,200 0	0 25	141 60	4,199.7	12 6	14 9	-14 9	0.06	0 00	14 46
4,400 0	0 25	111 44	4,399 7	12.1	15 5	-15 6	0 07	0 00	-15 08
4,600 0	0.25	189 36	4,599 7	11 5	15 9	-15 9	0 16	0 00	38 96
4,800 0	0 25	129 28	4,799 6	10 8	16.1	-16.2	0.13	0 00	-30 04
5,000 0	0 50	147 21	4,999 6	9 8	17 0	-17 0	0.14	0 12	8 96
5,200 0	0 00	0 00	5,199 6	9 0	17 4	-17 4	0.25	-0 25	0 00
5,400.0	0 25	190 58	5,399 6	8 6	17 3	-17 4	0.12	0 12	0 00
5,600.0	0 25	238 42	5,599 6	8 0	16 9	-16 9	0.10	0 00	23 92
5,800 0	0 50	218 34	5,799 6	7 0	16.0	-16 0	0.14	0 12	-10 04
6,000 0	1 00	201 18	5,999 6	4 7	14 8	-14 8	0 27	0 25	-8 58
6,200 0	1 00	201 03	6,199 6	1.5	13 6	-13 6	0.00	0 00	-0.07
6,363 0	1 00	238.64	6,362 6	-0 6	11 8	-11.8	0.40	0 00	23 07
Last Gyro Survey									

Targets

Target Name hit/miss target Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL	0 00	0 00	4,863 0	84 8	-1,965 3	424,759 80	577,704 30	32° 10' 3 117 N	104° 4' 55 966 W
- survey misses by 1983 0ft at 4854 9ft MD (4854 6 TVD, 10 6 N, 16 3 E)									
- Point									
Drilling Corridor	-1 08	270 00	4,863 0	84 8	-1,965 3	424,759 80	577,704 30	32° 10' 3 117 N	104° 4' 55 966 W
- survey misses by 1983.0ft at 4854.9ft MD (4854 6 TVD, 10 6 N, 16 3 E)									
- Rectangle (sides W1,326 4 H30 0 D15 0)									

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
200 0	200 0	0 7	-1 6	First Gyro Survey
6,363 0	6,362 6	-0 6	11 8	Last Gyro Survey

Checked By. _____ Approved By: _____ Date: _____

QUANTUM
DRILLING MOTORS

Survey Report

Tie Onto Gyro: 4200'

First MWD Survey: 4230'

Last MWD Survey: 6533'

Projection TD: 6610'

Chesapeake Operating

Eddy County (NM27E)
Sec 34-T24S-R28E
Mosaic 34 Federal #1
Wellbore #1

Survey: Surveys

Standard Survey Report

08 May, 2007

Quantum
Survey Report

Company:	Chesapeake Operating	**Local Co-ordinate Reference:**	Well Mosaic 34 Federal #1
Project:	Eddy County (NM27E)	**TVD Reference:**	WELL @ 0 0ft (Original Well Elev)
Site:	Sec 34 T24S-R28E	**MD Reference:**	WELL @ 0 0ft (Original Well Elev)
Well:	Mosaic 34 Federal #1	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 2003 16 Single User Db

Project Eddy County (NM27E)

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 Sec 34 T24S-R28E

Site Position:		**Northing:**	424,679 70 ft	**Latitude:**	32° 10' 2 278 N
From:	Map	**Easting:**	579,669 80 ft	**Longitude:**	104° 4' 33 101 W
Position Uncertainty:	0 0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.14 °

Well Mosaic 34 Federal #1

Well Position	**+N/-S**	0 0 ft	**Northing:**	424,679 70 ft	**Latitude:**	32° 10' 2.278 N
	+E/-W	0.0 ft	**Easting:**	579,669 80 ft	**Longitude:**	104° 4' 33 101 W
Position Uncertainty		0 0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	0 0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2006	2007/03/21	8 34	60 16	49,016

Design Wellbore #1

Audit Notes:

Version:	1 0	**Phase:**	ACTUAL	**Tie On Depth:**	0 0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0 0	0 0	0 0	269 85

Survey Program Date 2007/05/08

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
200 0	4,200 0	GYRO (Wellbore #1)	MWD	MWD - Standard
4,230 0	6,610 0	Surveys (Wellbore #1)	MWD	MWD - Standard

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,200 0	0 25	141 60	4,199 7	12 6	14 9	-14 9	0 00	0 00	0 00
Tie onto Gyro									
4,230 0	0 30	139 30	4,229 7	12 5	15 0	-15 0	0 17	0 17	-7 67
First MWD Survey									
4,261 0	0 30	121 30	4,260 7	12 4	15 1	-15 1	0 30	0 00	-58 06
4,292 0	0 60	320 70	4,291 7	12 5	15 0	-15 1	2 87	0 97	-518 06
4,324 0	4 90	294 60	4,323 6	13 2	13 7	-13 7	13 65	13 44	-81 56
4,356 0	9 60	300 20	4,355 3	15 1	10 1	-10 2	14 84	14 69	17 50
4,387 0	14 50	300 10	4,385 7	18 3	4 5	-4 6	15 81	15 81	-0 32
4,418 0	18 50	298 90	4,415 4	22 6	-3 1	3 1	12 95	12 90	-3 87
4,450 0	22 10	299 20	4,445 4	28 0	-12 8	12 7	11 25	11 25	0 94
4,481 0	23 50	298 40	4,474 0	33 8	-23 3	23 3	4 63	4 52	-2 58

Quantum

Survey Report

Company:	Chesapeake Operating	Local Co-ordinate Reference:	Well Mosaic 34 Federal #1
Project:	Eddy County (NM27E)	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Sec 34-T24S-R28E	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Well:	Mosaic 34 Federal #1	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 2003.16 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,512 0	25 70	294 20	4,502.1	39 5	-34 9	34 8	9 06	7 10	-13 55
4,544 0	28 80	289 60	4,530 6	44 9	-48 5	48 4	11.71	9 69	-14 37
4,575 0	32 40	284 50	4,557 3	49 5	-63 6	63 5	14 31	11 61	-16 45
4,606 0	35 50	281 90	4,583 0	53 5	-80 4	80 3	11 04	10 00	-8 39
4,638 0	37 10	278 70	4,608 8	56 8	-99 1	98.9	7 75	5 00	-10 00
4,670 0	39 00	275 40	4,634 0	59 3	-118 7	118 5	8 70	5 94	-10 31
4,702 0	40 80	271 10	4,658 5	60 4	-139 1	139 0	10 29	5 62	-13 44
4,733 0	43 60	269 60	4,681 5	60 5	-160 0	159.8	9 60	9 03	-4 84
4,765 0	46.50	269 30	4,704 1	60 3	-182 6	182.4	9 09	9 06	-0 94
4,797 0	48 80	269 90	4,725.7	60 1	-206 2	206.1	7 32	7.19	1 87
4,829 0	51 20	270 40	4,746 2	60.2	-230 8	230.6	7 59	7.50	1 56
4,860 0	53 10	271 00	4,765 2	60.5	-255 2	255 1	6.32	6.13	1 94
4,892 0	55 60	270 70	4,783 9	60 9	-281 2	281 1	7.85	7 81	-0 94
4,924 0	58 30	270 20	4,801 3	61 1	-308 0	307 9	8.54	8.44	-1.56
4,955 0	61 30	269 60	4,816 9	61 0	-334 8	334 7	9 82	9 68	-1.94
4,987 0	63 80	269 00	4,831 7	60 7	-363 2	363 1	7 99	7 81	-1 87
5,018 0	66 60	268 80	4,844.7	60 2	-391 4	391 2	9.05	9 03	-0 65
5,050 0	69 90	268 60	4,856.5	59 5	-421.1	420 9	10 33	10 31	-0 62
5,082 0	74 20	268.50	4,866.4	58 7	-451 5	451.3	13 44	13 44	-0 31
5,113 0	79 00	268.00	4,873.6	57 8	-481 6	481 5	15 56	15.48	-1 61
5,145 0	84 10	268 70	4,878 3	56 9	-513 3	513.1	16 08	15 94	2 19
5,176 0	87 80	269 30	4,880 5	56 3	-544 2	544 0	12.09	11.94	1 94
5,208 0	88 30	269 20	4,881 6	55 9	-576 2	576 0	1 59	1 56	-0 31
5,239 0	87 70	268 80	4,882.6	55 4	-607 1	607 0	2 33	-1 94	-1 29
5,270 0	90 20	268 20	4,883 2	54 6	-638 1	638 0	8 29	8 06	-1 94
5,301 0	90 40	267 40	4,883 1	53 4	-669 1	668 9	2 66	0 65	-2 58
5,332 0	91 30	266 70	4,882 6	51 8	-700 0	699 9	3 68	2 90	-2 26
5,365 0	90 90	266 10	4,882 0	49 7	-733 0	732 8	2 18	-1 21	-1 82
5,396 0	93 10	266 30	4,880 9	47 7	-763 9	763 8	7 13	7 10	0 65
5,428 0	96 70	267 40	4,878 1	45 9	-795 7	795 6	11 76	11 25	3 44
5,460 0	98 60	267 20	4,873 9	44 4	-827 4	827 3	5 97	5 94	-0 62
5,491 0	100 80	268 00	4,868 7	43 1	-857 9	857 8	7 54	7 10	2 58
5,523 0	101 10	267 40	4,862 6	41 9	-889 3	889 2	2 07	0 94	-1 87
5,554 0	101 20	267 50	4,856 6	40 5	-919 7	919 6	0 45	0 32	0 32
5,586 0	100.80	267 20	4,850 5	39 1	-951 1	951 0	1 55	-1 25	-0 94
5,617 0	99 30	266 80	4,845 1	37 5	-981 6	981 5	5 00	-4 84	-1 29
5,649 0	99 30	266 80	4,839 9	35 7	-1,013 1	1,013 0	0 00	0 00	0 00
5,681 0	99 10	267 30	4,834 8	34 1	-1,044 6	1,044 5	1 66	-0 62	1 56
5,713 0	98 10	267 30	4,830 0	32 6	-1,076 2	1,076 1	3 12	-3 12	0 00
5,744 0	96 40	266 90	4,826 1	31 0	-1,106 9	1,106 9	5 63	-5 48	-1 29
5,776 0	94 40	267 40	4,823 1	29 5	-1,138 8	1,138 7	6 44	-6 25	1 56
5,807 0	92 20	268 10	4,821 3	28 2	-1,169 7	1,169 6	7 45	-7 10	2 26
5,837 0	90 10	268 40	4,820 7	27 3	-1,199 7	1,199 6	7 07	-7 00	1 00
5,871 0	90 00	268 30	4,820 7	26 3	-1,233 6	1,233 6	0 42	-0 29	-0 29
5,902 0	90 10	268 20	4,820 6	25 4	-1,264 6	1,264 6	0 46	0 32	-0 32
5,933 0	90 20	268 10	4,820 6	24 4	-1,295 6	1,295 6	0 46	0 32	-0 32
5,965 0	90 50	268 00	4,820 4	23 3	-1,327 6	1,327 5	0 99	0 94	-0 31
5,997 0	90 50	268 40	4,820 1	22 3	-1,359 6	1,359 5	1 25	0 00	1 25
6,028 0	90 20	268 90	4,819 9	21 6	-1,390 6	1,390 5	1 88	-0 97	1 61
6,060 0	89 10	269 40	4,820 1	21 1	-1,422 6	1,422 5	3 78	-3 44	1 56
6,092 0	88 90	269 10	4,820 6	20 7	-1,454 6	1,454 5	1 13	-0 62	-0 94
6,123 0	89 20	269 30	4,821 2	20 2	-1,485 6	1,485 5	1 16	0 97	0 65
6,155 0	90 70	270 00	4,821 2	20 1	-1,517 6	1,517 5	5 17	4 69	2 19
6,187 0	90 60	269 90	4,820 8	20 0	-1,549 5	1,549 5	0 44	-0 31	-0 31
6,219 0	90 50	269 80	4,820 5	19 9	-1,581 5	1,581 5	0 44	-0 31	-0 31

Quantum
Survey Report

Company:	Chesapeake Operating	Local Co-ordinate Reference:	Well Mosaic 34 Federal #1
Project:	Eddy County (NM27E)	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Sec 34-T24S-R28E	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Well:	Mosaic 34 Federal #1	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 2003.16 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,250 0	90 40	269 90	4,820 3	19 9	-1,612.5	1,612 5	0 46	-0 32	0 32
6,282 0	90 70	269 70	4,820 0	19 7	-1,644 5	1,644.5	1.13	0 94	-0 62
6,314 0	92 10	269 90	4,819 2	19 6	-1,676 5	1,676 5	4 42	4 37	0 62
6,345 0	92 20	269 80	4,818 0	19 6	-1,707 5	1,707 5	0.46	0 32	-0 32
6,377 0	92 10	269 60	4,816 8	19 4	-1,739.5	1,739 4	0 70	-0 31	-0 62
6,409 0	91.90	269 50	4,815 7	19 1	-1,771 5	1,771 4	0.70	-0 62	-0 31
6,440 0	92 00	269 60	4,814 6	18 9	-1,802 5	1,802 4	0 46	0 32	0 32
6,472.0	92 10	269 50	4,813 5	18.6	-1,834 4	1,834 4	0 44	0.31	-0.31
6,502 0	91 30	269 50	4,812 6	18 4	-1,864.4	1,864 4	2 67	-2 67	0.00
6,533.0	91 10	269 20	4,812 0	18.0	-1,895 4	1,895 4	1 16	-0.65	-0 97
Last MWD Survey									
6,610 0	91.10	269 20	4,810 5	17 0	-1,972 4	1,972 3	0 00	0 00	0 00
Straightline Projection to TD									

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL	0 00	0 00	4,863 0	84.8	-1,965 3	424,759 80	577,704 30	32° 10' 3 117 N	104° 4' 55 966 W
- survey misses by 85 6ft at 6601 0ft MD (4810 7 TVD, 17 1 N, -1963 3 E)									
- Point									
Drilling Corridor	-1 08	270 00	4,863.0	84 8	-1,965 3	424,759 80	577,704 30	32° 10' 3 117 N	104° 4' 55 966 W
- survey misses by 85.6ft at 6601 0ft MD (4810 7 TVD, 17 1 N, -1963 3 E)									
- Rectangle (sides W1,326 4 H30 0 D15 0)									

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
4,200 0	4,199 7	12 6	14 9	Tie onto Gyro
4,230 0	4,229 7	12 5	15 0	First MWD Survey
6,533 0	4,812 0	18 0	-1,895 4	Last MWD Survey
6,610 0	4,810 5	17 0	-1,972 4	Straightline Projection to TD

Checked By: _____ Approved By. _____ Date: _____

Quantum
Survey Report

Company:	Chesapeake Operating	**Local Co-ordinate Reference:**	Well Mosaic 34 Federal #1
Project:	Eddy County (NM27E)	**TVD Reference:**	WELL @ 0.0ft (Original Well Elev)
Site:	Sec 34-T24S-R28E	**MD Reference:**	WELL @ 0.0ft (Original Well Elev)
Well:	Mosaic 34 Federal #1	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 2003.16 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,250.0	90.40	269.90	4,820.3	19.9	-1,612.5	1,612.5	0.46	-0.32	0.32
6,282.0	90.70	269.70	4,820.0	19.7	-1,644.5	1,644.5	1.13	0.94	-0.62
6,314.0	92.10	269.90	4,819.2	19.6	-1,676.5	1,676.5	4.42	4.37	0.62
6,345.0	92.20	269.80	4,818.0	19.6	-1,707.5	1,707.5	0.46	0.32	-0.32
6,377.0	92.10	269.60	4,816.8	19.4	-1,739.5	1,739.4	0.70	-0.31	-0.62
6,409.0	91.90	269.50	4,815.7	19.1	-1,771.5	1,771.4	0.70	-0.62	-0.31
6,440.0	92.00	269.60	4,814.6	18.9	-1,802.5	1,802.4	0.46	0.32	0.32
6,472.0	92.10	269.50	4,813.5	18.6	-1,834.4	1,834.4	0.44	0.31	-0.31
6,502.0	91.30	269.50	4,812.6	18.4	-1,864.4	1,864.4	2.67	-2.67	0.00
6,533.0	91.10	269.20	4,812.0	18.0	-1,895.4	1,895.4	1.16	-0.65	-0.97
Last MWD Survey									
6,610.0	91.10	269.20	4,810.5	17.0	-1,972.4	1,972.3	0.00	0.00	0.00
Straightline Projection to TD									

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL	0.00	0.00	4,863.0	84.8	-1,965.3	424,759.80	577,704.30	32° 10' 3.117 N	104° 4' 55.966 W
- survey misses by 85.6ft at 6601.0ft MD (4810.7 TVD, 17.1 N, -1963.3 E)									
- Point									
Drilling Corridor	-1.08	270.00	4,863.0	84.8	-1,965.3	424,759.80	577,704.30	32° 10' 3.117 N	104° 4' 55.966 W
- survey misses by 85.6ft at 6601.0ft MD (4810.7 TVD, 17.1 N, -1963.3 E)									
- Rectangle (sides W1,326.4 H30 0 D15.0)									

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
4,200.0	4,199.7	12.6	14.9	Tie onto Gyro
4,230.0	4,229.7	12.5	15.0	First MWD Survey
6,533.0	4,812.0	18.0	-1,895.4	Last MWD Survey
6,610.0	4,810.5	17.0	-1,972.4	Straightline Projection to TD

Checked By: _____ Approved By: _____ Date: _____

To the best of my knowledge the surveys listed above, from 4230.00' MD to 6610.00' MD are accurate and true surveys.

Bridget Jacobs
Quantum Drilling Motors

Signature: Bridget Jacobs Date: 5-21-07