

Form 3160-3
(February 2005)

SEP 07 2007
OCD-ARTESIA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a Type of work ☒ DRILL

☐ REENTER

1b Type of Well ☒ Oil Well ☐ Gas Well ☐ Other

☐ Single Zone ☐ Multiple Zone

2 Name of Operator

CHESAPEAKE OPERATING, INC.

ATTN: LINDA GOOD

3a Address P.O. BOX 18496

OKLAHOMA CITY, OK 73154-0496

3b Phone No. (include area code)

405-767-4275

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

At surface 2277' FSL & 364' FEL, NESE

At proposed prod zone 2310' FSL & 2310' FEL, NWSE

Carlsbad Controlled Water Basin

11 Sec, T R M or Blk and Survey or Area

34-24S-28E

14 Distance in miles and direction from nearest town or post office*

12 County or Parish

EDDY CO.

13 State

NM

15 Distance from proposed*
location to nearest
property or lease line, ft
(Also to nearest drg unit line, if any)

16 No of acres in lease

400

17 Spacing Unit dedicated to this well

80

18 Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft

19 Proposed Depth

5200'

20 BLM/BIA Bond No on file

NM #2634

21 Elevations (Show whether DF, KDB, RT, GL, etc)

GL 2989' est. KB 3007' est.

22 Approximate date work will start*

23 Estimated duration

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No 1, must be attached to this form

1 Well plat certified by a registered surveyor

2 A Drilling Plan

3 A Surface Use Plan (if the location is on National Forest System Lands, the
SUPO must be filed with the appropriate Forest Service Office)

4 Bond to cover the operations unless covered by an existing bond on file (see
Item 20 above)

5 Operator certification

6 Such other site specific information and/or plans as may be required by the
BLM

25 Signature

Name (Printed/Typed)

Paul Hagemeier

Date

8/1/07

Title

Vice President - Regulatory Compliance

Approved by (Signature)

Name (Printed/Typed)

STEVE CAFFEY

Date

9/5/07

Title

FOR FIELD MANAGER

Office

CARLSBAD FIELD OFFICE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to
conduct operations thereon

Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 USC Section 1001 and Title 43 USC 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

*(Instructions on page 2)

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED

OCD-ARTESIA

CONFIDENTIAL
HIGH CAVEKARST

FORM APPROVED
OMB No 1004-0137
Expires March 31, 2007

5 Lease Serial No.
NMNM 25953

6 If Indian, Allottee or Tribe Name

7 If Unit or CA Agreement, Name and No

8 Lease Name and Well No
MOAIC 34 FEDERAL 4H

9 API Well No

30-015-3602

10 Field and Pool, or Exploratory
Undes. Willow Lake

11 Sec, T R M or Blk and Survey or Area

34-24S-28E

12 County or Parish

EDDY CO.

13 State

NM

15 Distance from proposed*
location to nearest
property or lease line, ft
(Also to nearest drg unit line, if any)

16 No of acres in lease

400

17 Spacing Unit dedicated to this well

80

18 Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft

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5200'

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NM #2634

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Paul Hagemeier

Date

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*(Instructions on page 2)

DISTRICT I

625 N. FRENCH DR., HOBBS, NM 88240

State of New Mexico

Energy, Minerals and Natural Resources Department

Form C-102

Revised October 12, 2005

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

DISTRICT II

1301 W. GRAND AVENUE, ARTESIA, NM 88210

OIL CONSERVATION DIVISION

1220 SOUTH ST. FRANCIS DR.

Santa Fe, New Mexico 87505

DISTRICT III

1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV

1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number		Pool Code 64453	Pool Name Willow Lake, Delaware
Property Code 36004	Property Name MOSAIC 34 FEDERAL		Well Number 4H
OGRID No. 147179	Operator Name CHESAPEAKE OPERATING, INC.		Elevation 2991'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	34	24-S	28-E		2277	SOUTH	364	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
J	34	24-S	28-E		2310	SOUTH	2310	EAST	EDDY

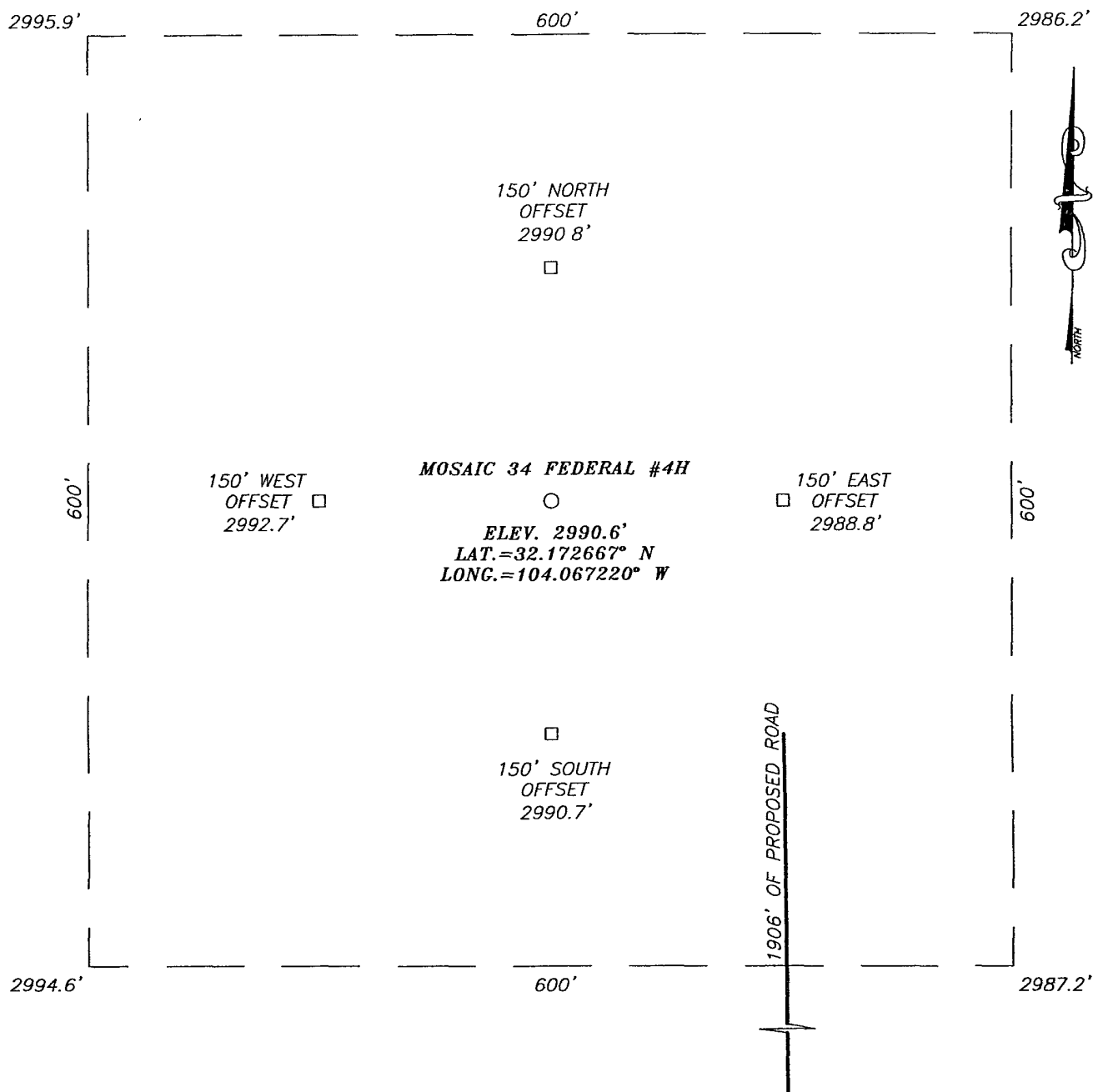
Dedicated Acres 8c	Joint or Infill	Consolidation Code	Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

<p>DETAIL</p> <p>2995.9' 2986.2'</p> <p>600'</p> <p>600'</p> <p>2994.6' 2987.2'</p>		<p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>Craig Bannum</i> 6/26/07 Signature Date</p> <p>CRAIG BANNUM Printed Name</p>	
<p>BOTTOM HOLE LOCATION</p> <p>Y=426662.8 N X=580392.6 E</p>		<p>SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>DATE SURVEYED: 6/19/07 SIGNATURE: <i>Ronald Eidson</i> PROFESSIONAL SURVEYOR: 3239</p> <p>Certificate No. 12641 RONALD EIDSON 3239</p>	
<p>GEODETIC COORDINATES</p> <p>NAD 27 NME</p> <p>SURFACE HOLE LOCATION</p> <p>Y=426638.8 N X=582338.9 E</p> <p>LAT.=32.172667° N LONG.=104.067220° W</p>		<p>SEE DETAIL</p> <p>2310'</p> <p>GRID AZ.=270°42'20" S L 364'</p> <p>DIST=1946.9'</p> <p>2277'</p>	

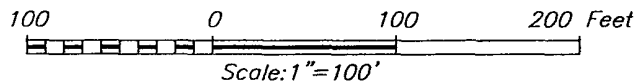
EXHIBIT A-1

SECTION 34, TOWNSHIP 24 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

FROM MALAGA NEW MEXICO, GO SOUTH ON U.S.
HWY. #285 FOR APPROX. 4.0 MILES. TURN LEFT
AND GO EAST APPROX. 1200 FEET. THIS LOCATION
IS APPROX. 2136 FEET NORTH OF ROAD.



PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

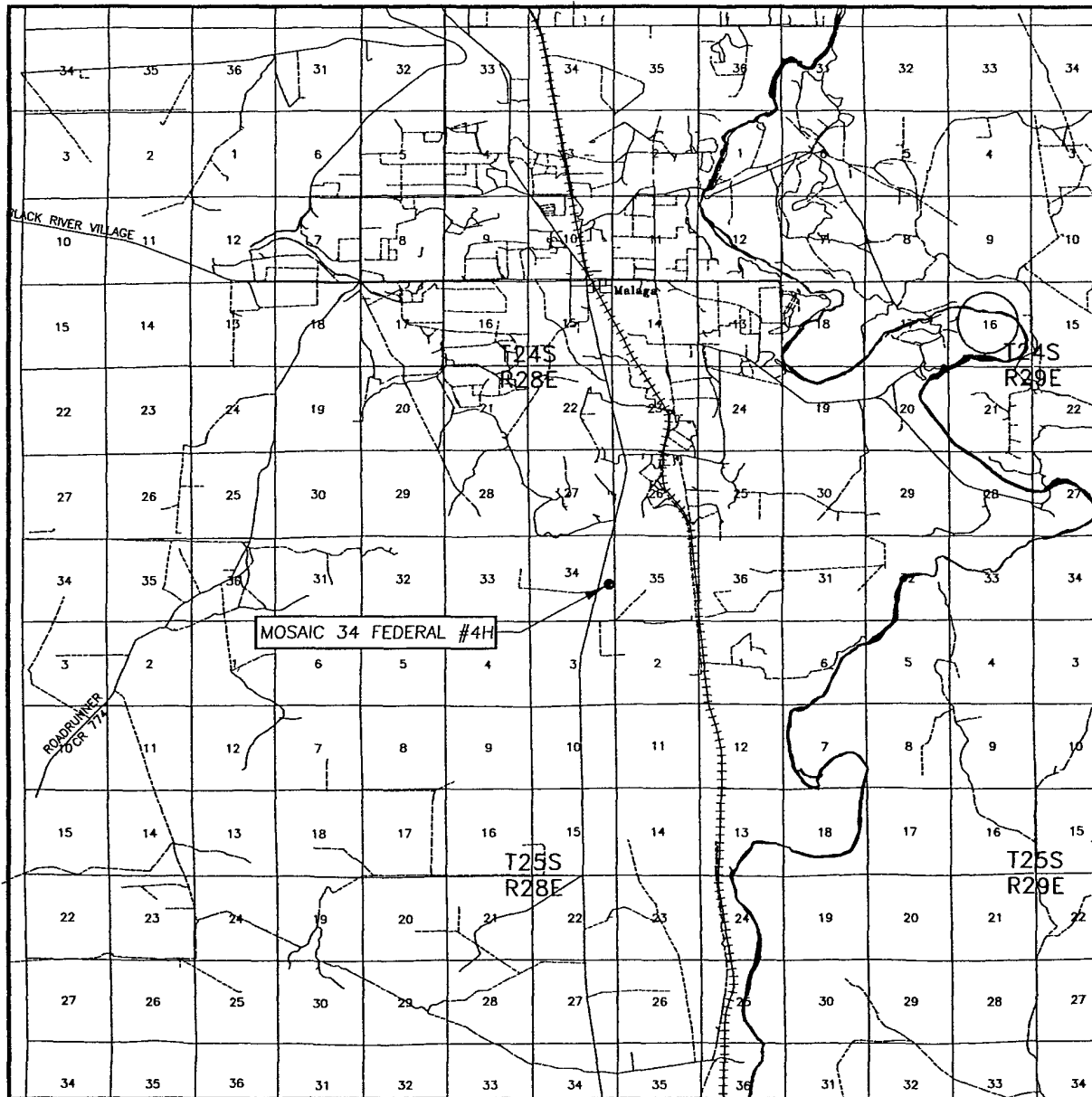
CHESAPEAKE OPERATING, INC.

MOAISAIC 34 FEDERAL #3H
LOCATED 2277 FEET FROM THE SOUTH LINE
AND 364 FEET FROM THE EAST LINE OF SECTION 34,
TOWNSHIP 24 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.

Survey Date: 6/13/07	Sheet 1 of 1 Sheets		
W.O. Number: 07.11.0737	Dr By: LA	Rev 1:N/A	
Date: 6/18/07	Disk: CD#6	07110737	Scale: 1"=100'

EXHIBIT A-2

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 34 TWP. 24-S RGE. 28-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 2277' FSL & 364' FEL

ELEVATION 2991'

OPERATOR CHESAPEAKE OPERATING, INC.

LEASE MOSAIC 34 FEDERAL

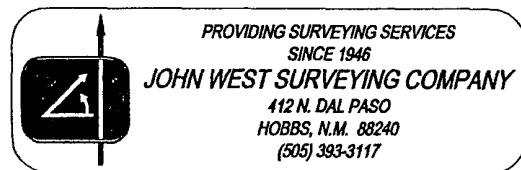
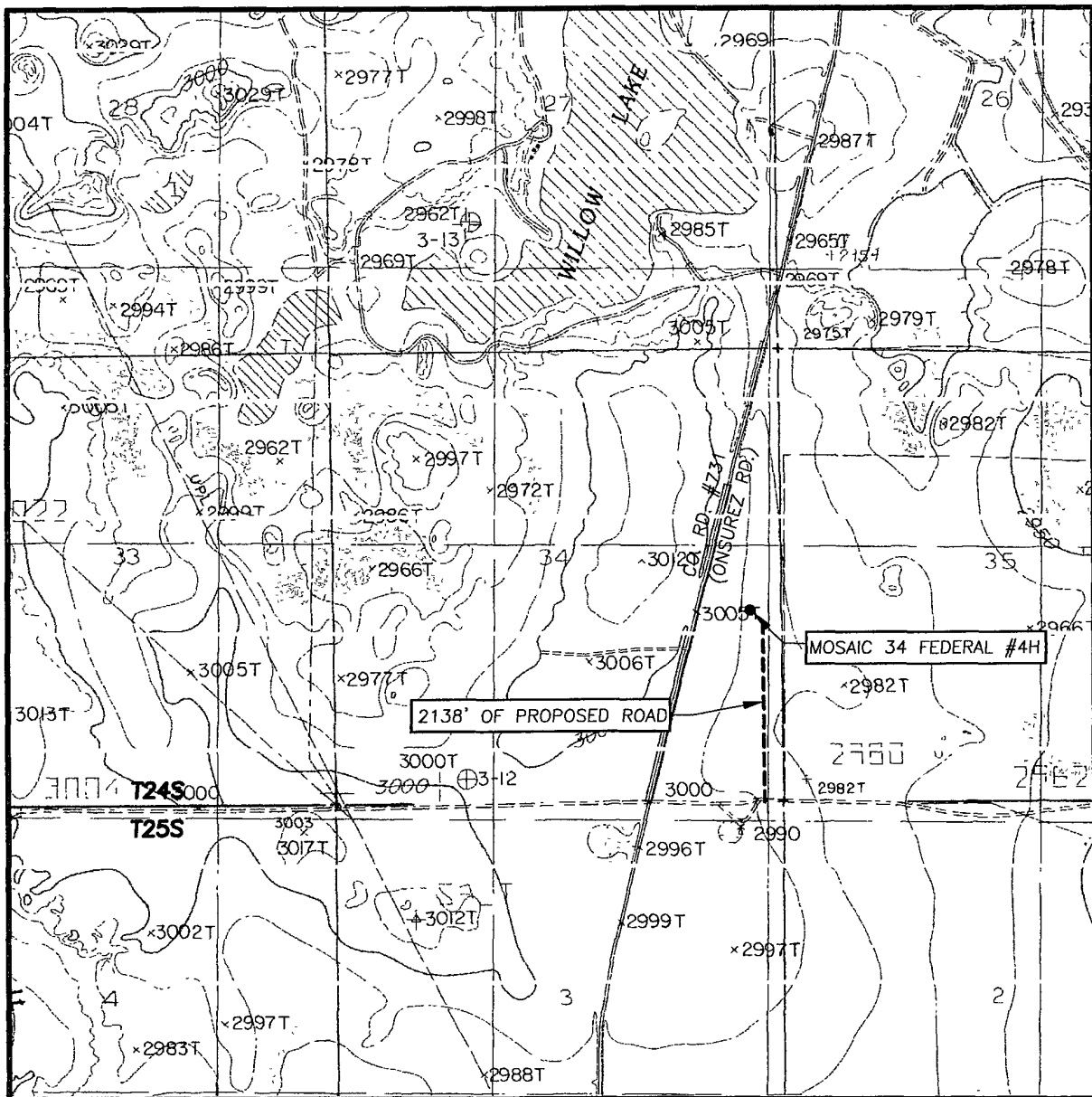


EXHIBIT A-3

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
MALAGA, N.M. - 10'

SEC. 34 TWP. 24-S RGE. 28-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 2277' FSL & 364' FEL

ELEVATION 2991'

OPERATOR CHESAPEAKE
OPERATING, INC.

LEASE MOSAIC 34 FEDERAL

U.S.G.S. TOPOGRAPHIC MAP
MALAGA, N.M.

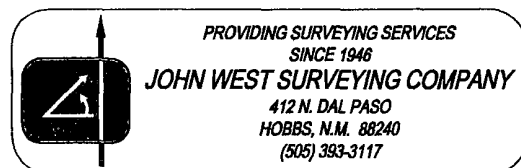


EXHIBIT A-4



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No 1004-0137
Expires March 31, 2007**SUNDRY NOTICES AND REPORTS ON WELLS**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.5 Lease Serial No
NMNM 025953

6 If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE – Other instructions on page 2

1 Type of Well

☐ Oil Well ☒ Gas Well ☐ Other2 Name of Operator
CHESAPEAKE OPERATING, INC

ATTN LINDA GOOD

3a Address
P O BOX 18496
OKLAHOMA CITY, OK 73154-04963b Phone No (include area code)
405-767-4275

4 Location of Well (Footage, Sec, T, R, M, or Survey Description)

SHL 2277' FSL 364' FEL, (NESE), BHL 2310 FSL 2310 FEL (NWSE) SECTION 34, T24S, R28E

7 If Unit of CA/Agreement, Name and/or No

8 Well Name and No
MOSAIC 34 FEDERAL 4H9 API Well No
30-015-10 Field and Pool or Exploratory Area
UNDES WILLOW LAKE11 Country or Parish, State
EDDY COUNTY, NEW MEXICO**12 CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other Additional info for APD
	<input checked="" type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13 Describe Proposed or Completed Operation Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof If the proposal is to deepen directionally or recomplate horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones Attach the Bond under which the work will be performed or provide the Bond No on file with BLM/BIA Required subsequent reports must be filed within 30 days following completion of the involved operations If the operation results in a multiple completion or recomplate in a new interval, a Form 3160-4 must be filed once testing has been completed Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection)

- 1 Target formation is part of the Delaware Group
- 2 BOP nomenclature has been corrected and re-submitted (see attachment)
- 3 The choke info requested is attached
- 4 Attached are the casing safety factors, I did not know these were required or requested in the "drilling plan" package.
- 5 The top of cement is at ground level for the surface and intermediate casing strings, and at ~2070' for the production casing (will be 500' above the actual intermediate casing shoe depth)
- 6 The mud program summary was complete for all three sections but must have not been visible in what was submitted to the BLM On what I sent, two sections were at the bottom of the page, and the third hole section was at the top of the next page I have reformatted to make the mud info more clear (in one table)
- 7 I have submitted directional plans (from Quantum) that give both section and plan views (see attachment)

Drilling Engineer
Randy Patterson

(CHK PN 616370)

14 I hereby certify that the foregoing is true and correct
Name (Printed/Typed)
LINDA GOOD

Title FEDERAL REGULATORY ANALYST

Signature

Linda Good

Date 08/24/2007

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Stephen J. Coffey

For

FIELD MANAGER

Date

9-5-07

Conditions of approval, if any, are attached Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon

Title

Office

CARLSBAD FIELD OFFICE

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

(Instructions on page 2)

BLOWOUT PREVENTOR SCHEMATIC

CHESAPEAKE OPERATING INC

WELL : Mosaic 34 Federal 4H

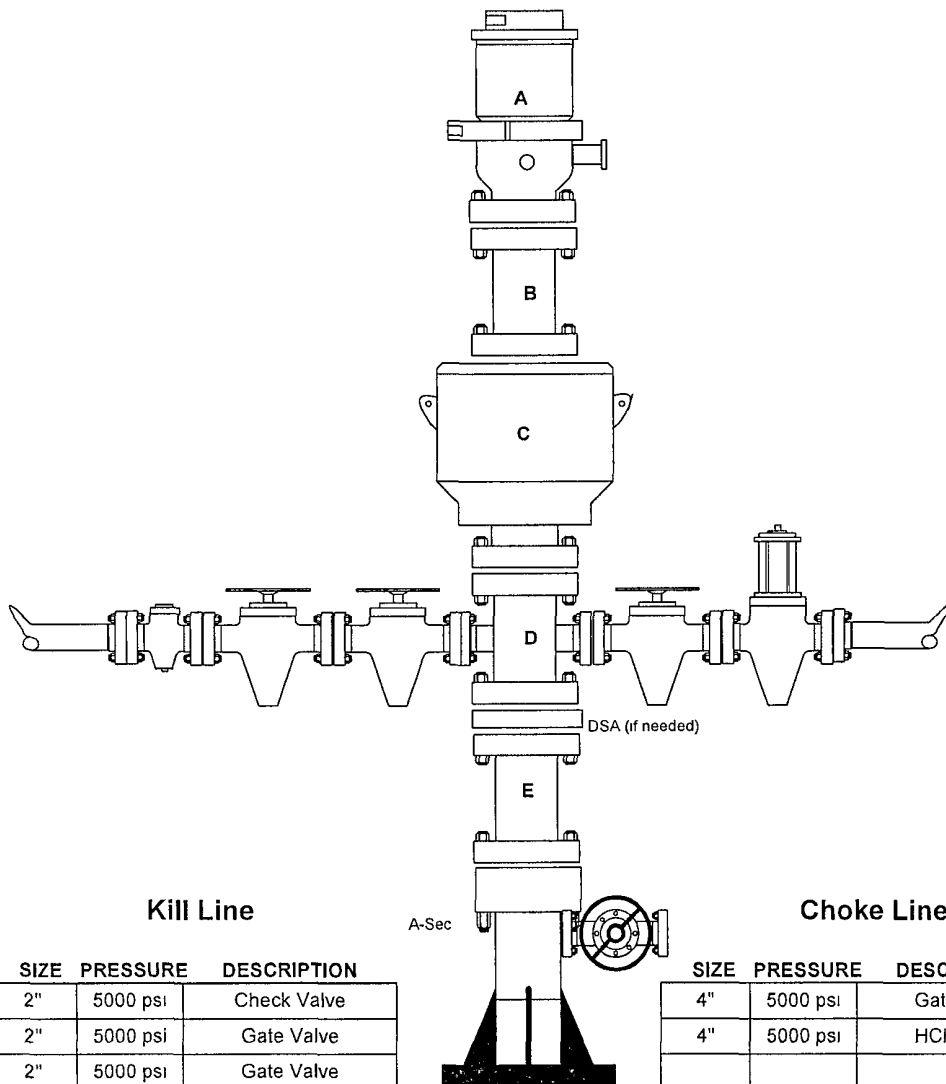
RIG : Forster 15

COUNTY : Eddy

STATE: New Mexico

OPERATION: Drill out below 13-3/8" Casing (11" hole size)

	SIZE	PRESSURE	DESCRIPTION
A	13-5/8"	500 psi	Rot Head
B	13-5/8"	2000 psi	Spacer Spool
C	13-5/8"	2000 psi	Annular
D	13-5/8"	2000 psi	Mud Cross
E	13-5/8"	2000 psi	Spacer Spool
DSA	13-5/8" 3M x 13-5/8" 2M (if needed)		
A-Sec	13-3/8" SOW x 13-5/8" 3M		



SIZE	PRESSURE	DESCRIPTION
2"	5000 psi	Check Valve
2"	5000 psi	Gate Valve
2"	5000 psi	Gate Valve

SIZE	PRESSURE	DESCRIPTION
4"	5000 psi	Gate Valve
4"	5000 psi	HCR Valve

BLOWOUT PREVENTOR SCHEMATIC

CHESAPEAKE OPERATING INC

WELL : Mosaic 34 Federal 3H

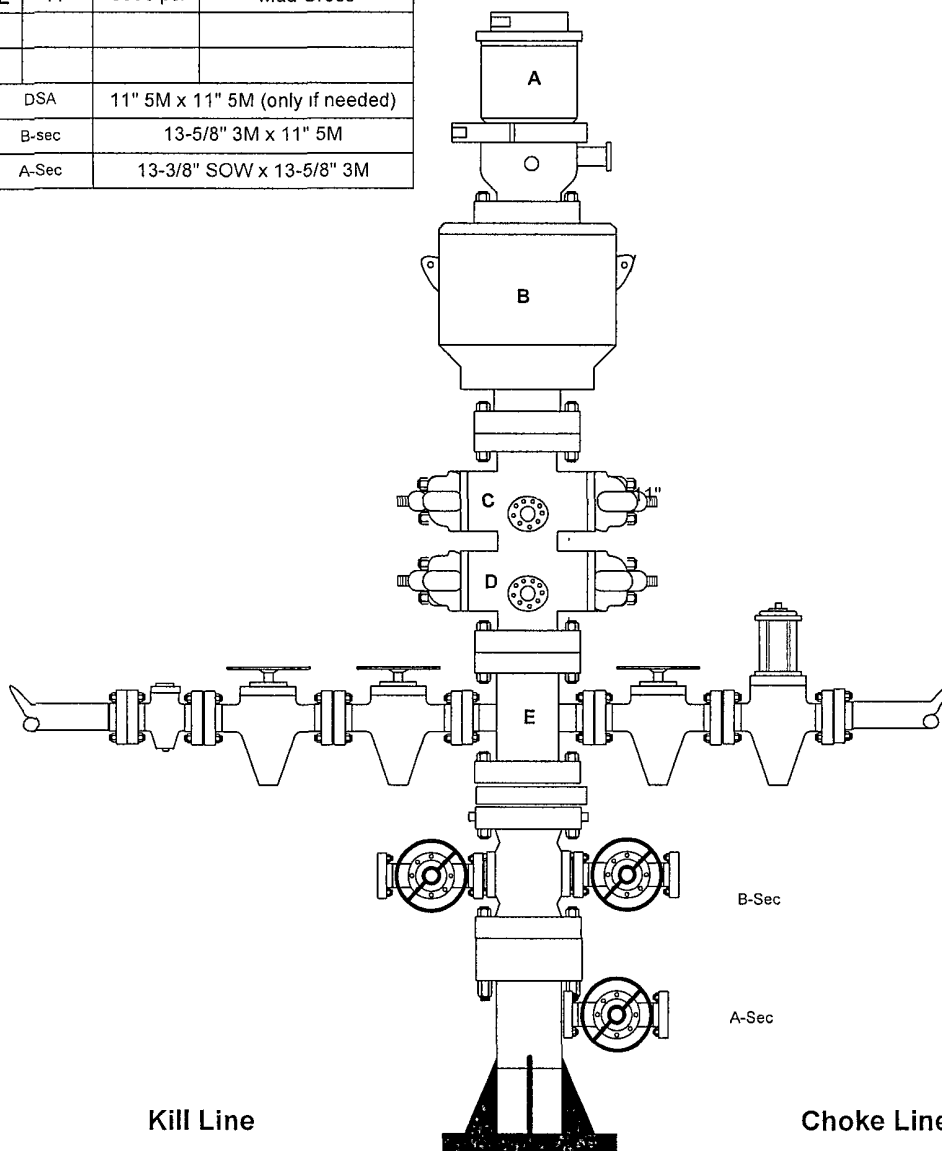
RIG : Forster 15

COUNTY : Eddy

STATE: New Mexico

OPERATION: Drill out below 8-5/8" Casing (7-7/8" hole size)

	SIZE	PRESSURE	DESCRIPTION
A	11"	500 psi	Rot Head
B	11"	5000 psi	Annular
C	11"	5000 psi	Pipe Rams
D	11"	5000 psi	Blind Rams
E	11"	5000 psi	Mud Cross
DSA	11" 5M x 11" 5M (only if needed)		
B-Sec	13-5/8" 3M x 11" 5M		
A-Sec	13-3/8" SOW x 13-5/8" 3M		



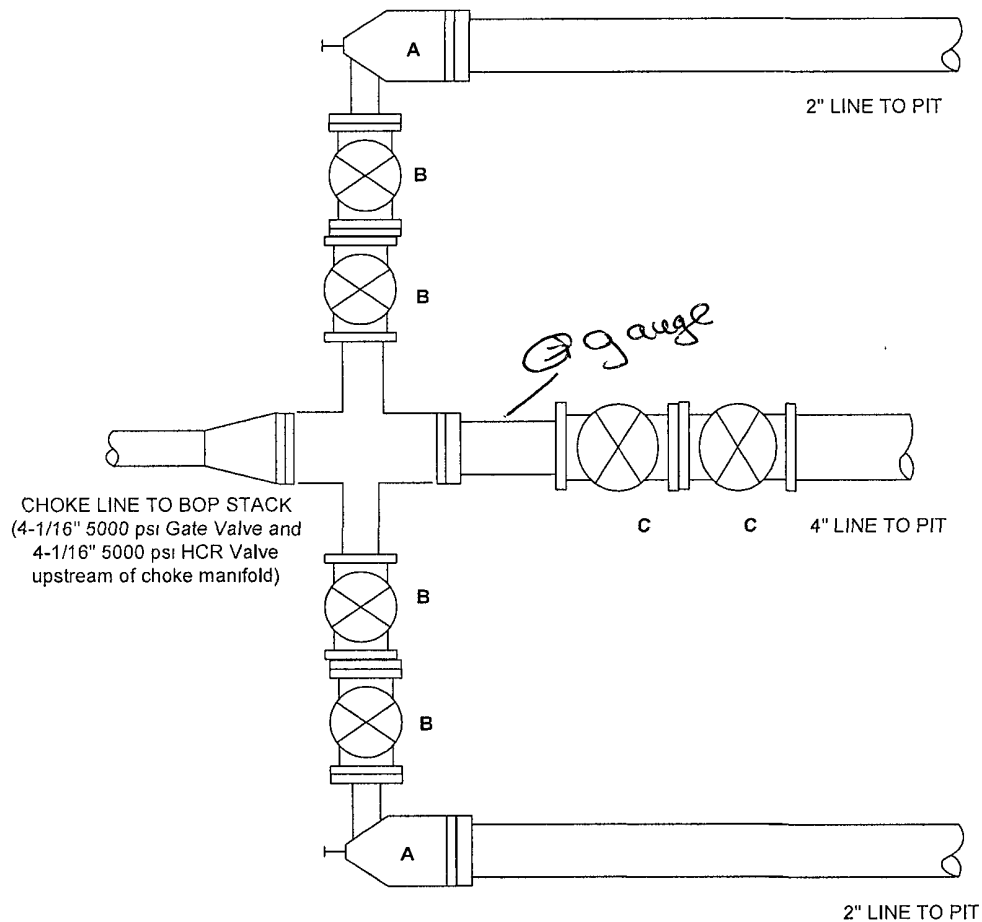
SIZE	PRESSURE	DESCRIPTION
2"	5000 psi	Check Valve
2"	5000 psi	Gate Valve
2"	5000 psi	Gate Valve

SIZE	PRESSURE	DESCRIPTION
4"	5000 psi	Gate Valve
4"	5000 psi	HCR Valve

CHOKE MANIFOLD SCHEMATIC

CHESAPEAKE OPERATING, INC.

WELL : Mosaic 34 Federal 4H
 RIG : Forster Rig 15
 COUNTY : Eddy STATE : New Mexico
 OPERATION: Drilling below/beyond 13-3/8" surface casing



	SIZE	PRESSURE	DESCRIPTION
A	2-1/16"	5000 psi	Manual Choke
B	2-1/16"	5000 psi	Gate Valve
C	4-1/16"	5000 psi	Gate Valve



Casing Program

Mosaic 34 Federal 4H

Proposed TD: 6570' MD

(4845' est. max TVD)

SHL: 2277' FSL & 3648' FEL

EOW: 2294' FSL & 2293' FEL

Section 34 - 24S - 28E

Eddy County, New Mexico

Mosaic 34 Federal 4H
17-1/2" Hole Section
0' – 650'

Casing Design:

Size	Interval	Length	Weight	Grade	Conn	Sec. Weight
13-3/8"	0' – 650'	650'	48 ppf	H-40	ST&C	31 2 Klbs

Recommended Make-up Torque: 3220 ft-lbs (Opt)
 2420 ft-lbs (Minimum)
 4030 ft-lbs (Maximum)

- Minimum collapse safety factor of 2.18 (complete evacuation; 10.0 ppg mud on backside). 100% collapse value of 740 psi.
- Minimum burst safety factor of 1.44 (Testing casing at 1200 psi). 100% burst value of 1730 psi.
- Minimum tension safety factor of 3.87 (casing full of 12.4 ppg cement without backup). 100% tension value of 322,000 lbs.

11" Hole Section
650' – 2570'

Casing Design:

Size	Interval	Length	Weight	Grade	Conn	Sec. Weight
8-5/8"	0' – 2570'	2570'	32 ppf	J-55	LT&C	82 2 Klbs

Recommended Make-up Torque: 4170 ft-lbs (Opt)
 3130 ft-lbs (Minimum)
 5210 ft-lbs (Maximum)

- Minimum collapse safety factor of 1.89 (complete evacuation; 10.0 ppg on backside). 100% collapse value of 2530 psi
- Minimum burst safety factor of 1.96 (Casing test to 2000 psi). 100% burst value of 3930 psi.
- Minimum tension safety factor of 2.54 (casing full of 12.4 ppg cement without backup). 100% tension value of 417,000 lbs.

7-7/8" Hole Section
2570' – 6570'

Casing Design:

Size	Interval	Length	Weight	Grade	Conn	Sec. Weight
5-1/2"	0' – 6570'	6570'	17 ppf	N-80	LT&C	111.7 Klbs

Recommended Make-up Torque: 3410 ft-lbs (Opt)
 2560 ft-lbs (Minimum)
 4260 ft-lbs (Maximum)

- Minimum collapse safety factor of 2.49 (complete evacuation; 10.0 ppg on backside). 100% collapse value of 6290 psi.
- Minimum burst safety factor of 1.54 (surface pressure of 5000 psi, testing or treating). 100% burst value of 7740 psi.
- Minimum tension safety factor of 2.37 (casing full of 13.5 ppg cement without backup). 100% tension value of 348,000 lbs

ONSHORE ORDER NO. 1
Chesapeake Operating, Inc.
Mosaic 34 Federal 4H
SHL: 2277' FSL & 364' FEL
BHL: 2310' FSL & 2310' FEL
of Section 34-24S-28E
Eddy County, New Mexico

CONFIDENTIAL – TIGHT HOLE
Lease Contract No. NMNM 025953

DRILLING PROGRAM

Page 1

ONSHORE OIL & GAS ORDER NO. 1
Approval of Operations on Onshore
Federal and Indian Oil and Gas Leases

All lease and/or unit operations are to be conducted in such a manner that full compliance is made with the applicable laws, regulations (CFR 43, Part 3160) and the approved Application for Permit to Drill. The operator is considered fully responsible for the actions of his subcontractors. A copy of the approved APD must be on location during construction, drilling and completion operations.

Approval of this application does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease, which would entitle the applicant to conduct operations thereon.

1. FORMATION TOPS

The estimated tops of important geologic markers are as follows:

Formation	Subsea	TV Depth
BASE OF SALT	437'	2,570'
*BELL CANYON	390'	2,617'
MANZANITA MARKER	-578'	3,585'
KOP		
**WILLOW LAKE HORIZ. TOP	-1,836'	4,843'
**WILLOW LAKE HORIZONTAL TARGET LINE	-1,853'	4,860'
** WILLOW LAKE HORIZ. BASE	-1,869'	4,876'
**Potentially productive zones		
TOTAL DEPTH	TD (MD)	5,200'

2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS

The estimated depths at which the top and bottom of the anticipated water, oil, gas or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Oil/Gas	Willow Lake Horizontal	5130' – 6570' MD

All shows of fresh water and minerals will be reported and protected.

3. BOP EQUIPMENT: ~~3000 psi System~~ *2M 15M Per Operator 8-20-07*

Chesapeake Operating, Inc.'s minimum specifications for pressure control equipment are as follows:

DRILLING PROGRAM

Page 2

I. BOP, Annular, Choke Manifold, Pressure Test - See Exhibit F-1 and F-2.

A. Equipment

1. The equipment to be tested includes all of the following that is installed on the well:
 - (a) Ram-type and annular preventers,
 - (b) Choke manifolds and valves,
 - (c) Kill lines and valves, and
 - (d) Upper and lower kelly cock valves, inside BOP's and safety valves.

B. Test Frequency

1. All tests should be performed with clear water,
 - (a) when installed,
 - (b) before drilling out each casing string,
 - (c) at any time that there is a repair requiring a pressure seal to be broken in the assembly, and
 - (d) at least once every 30 days while drilling.

C. Test Pressure

1. In some drilling operations, the pressures to be used for low and high-pressure testing of preventers and casing may be different from those given below due to governmental regulations, or approved local practices.
2. If an individual component does not test at the low pressure, **do not**, test to the high pressure and then drop back down to the low pressure.
3. All valves located downstream of a valve being tested must be placed in the open position.
4. All equipment will be tested with an initial "low pressure" test at 250 psi.
5. The subsequent "high pressure" test will be conducted at the rated working pressure of the equipment for all equipment except the annular preventer.
6. The "high pressure" test for the annular preventer will be conducted at 70% of
7. the rated working pressure.
8. A record of all pressures will be made on a pressure-recording chart.

D. Test Duration

1. In each case, the individual components should be monitored for leaks for 5 minutes, with no observable pressure decline, once the test pressure has been applied.

II. Accumulator Performance Test

A. Scope

1. The purpose of this test is to check the capabilities of the BOP control systems, and to detect deficiencies in the hydraulic oil volume and recharge time.

DRILLING PROGRAM

Page 3

B. Test Frequency

1. The accumulator is to be tested each time the BOP's are tested, or any time a major repair is performed.

C. Minimum Requirements

1. The accumulator should be of sufficient volume to supply 1.5 times the volume to close and hold all BOP equipment in sequence, **without recharging** and the **pump turned off**, and have remaining pressures of **200 PSI above the precharge pressure**.

2. Minimum precharge pressures for the various accumulator systems per **manufacturers recommended specifications** are as follows:

3.

System Operating Pressures

Precharge Pressure

1500 PSI

750 PSI

2000 PSI

1,000 PSI

3000 PSI

1,000 PSI

3. Closing times for the Hydril should be less than **20 seconds**, and for the ram-type preventers less than **10 seconds**.

4. System Recharge time should not exceed **10 minutes**.

D. Test Procedure

1. Shut accumulator pumps off and record accumulator pressure.
2. In sequence, close the annular and one set of properly sized pipe rams, and open the HCR valve.
3. Record time to close or open each element and the remaining accumulator pressure after each operation.
4. Record the remaining accumulator pressure at the end of the test sequence. Per the previous requirement, this pressure **should not be less** than the following pressures:

System Pressure

Remaining Pressure At Conclusion of
Test

1,500 PSI

950 PSI

2,000 PSI

1,200 PSI

3,000 PSI

1,200 PSI

DRILLING PROGRAM

Page 4

5. Turn the accumulator pumps on and record the recharge time. This time should not exceed **10 minutes.**

6. Open annular and ram-type preventers. Close HCR valve.

7. Place all 4-way control valves in **full open** or **full closed** position. **Do not leave in neutral position.**

4. CASING AND CEMENTING PROGRAM

a. The proposed casing program will be as follows:

<u>Purpose</u>	<u>Interval</u>	<u>Hole Size</u>	<u>Casing Size</u>	<u>Weight</u>	<u>Grade</u>	<u>Thread</u>	<u>Condition</u>
Surface	0' – 650'	17.5"	13-3/8"	48.0	H-40	ST&C	new
Intermediate	0' – 2570'	11.0"	8-5/8"	32.0	J-55	LT&C	new
Production	0' – 6570'	7.875"	5-1/2"	17.0	N-80	LT&C	new

b. Casing design subject to revision based on geologic conditions encountered.

c. The cementing program will be as follows:

<u>Interval</u>	<u>Type</u>	<u>Amount</u>	<u>Yield</u>	<u>Washout</u>	<u>Excess</u>
0' – 650'	35:65 Poz:C	350	2.10	0	100
	Class C (450' – sect TD)	200	1.34	0	100
0' – 2570'	35:65 Poz:C	500	2.10	0	125
	Class C (2200' – sect TD)	250	1.32	0	125
2000' – 6570'	50:50 Poz:C	250	2.43	30	20
	15:61:11 Poz:C:CE (4400' – sect TD)	400	1.47	30	20

5. MUD PROGRAM

a. The proposed circulating mediums to be used in drilling are as follows:

<u>Interval</u>	<u>Mud Type</u>	<u>Mud Weight</u>	<u>Viscosity</u>	<u>Fluid Loss</u>
0' – 650'	water	8.4 – 9.2	28 - 32	NC
650' – 2570'	brine	9.9 – 10.2	28 - 30	NC
2570' – 6570'	water base	8.6 – 9.3	28 - 36	8 - 12

A closed system will be utilized consisting of above ground steel tanks. All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and deposited in an approved sanitary landfill.

A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

ONSHORE ORDER NO. 1
Chesapeake Operating, Inc.
Mosaic 34 Federal 4H
SL: 2277' FSL & 364' FEL
BL: 2310' FSL & 2310' FEL
of Section 34-24S-28E

CONFIDENTIAL – TIGHT HOLE
Lease Contract No. NMNM 025953

DRILLING PROGRAM
Page 5

6. TESTING, LOGGING AND CORING

The anticipated type and amount of testing, logging and coring are as follows:

- a. Drill stem tests are not planned.
- b. The logging program will consist of Natural GR, Density-Neutron, PE & Dual Laterolog from TD to surface casing; Neutron-GR surface casing to surface.
- c. Cores samples are not planned.

7. ABNORMAL PRESSURES AND HYDROGEN SULFIDE

- 8. The estimated bottom hole pressure is 2200 psi (0.45 psi/ft @ 4900' tvd) . No abnormal pressures or temperatures are anticipated.
- 9. Hydrogen sulfide gas is not anticipated.

Chesapeake Operating

Project Eddy County (NM Local)
Site Sec 34-T24S-R28E
Well Mosaic 34 Federal #4H
Wellbore Wellbore #1
Design 07-30-07
Plan Version

Local Coordinates Only

WELL DETAILS Mosaic 34 Federal #4H

+N/-S +E/-W 2277' FSL / 364' FEL
00 00



WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W
#4H PBHL	4801 0	16 80	-1928 70

ANNOTATIONS

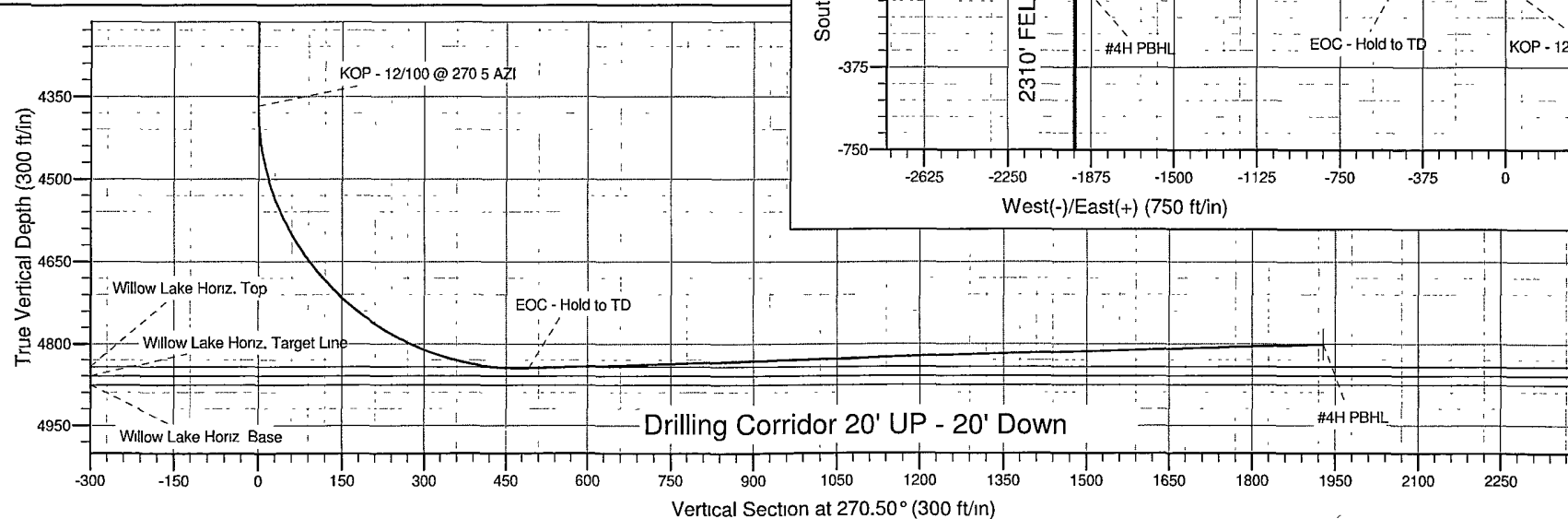
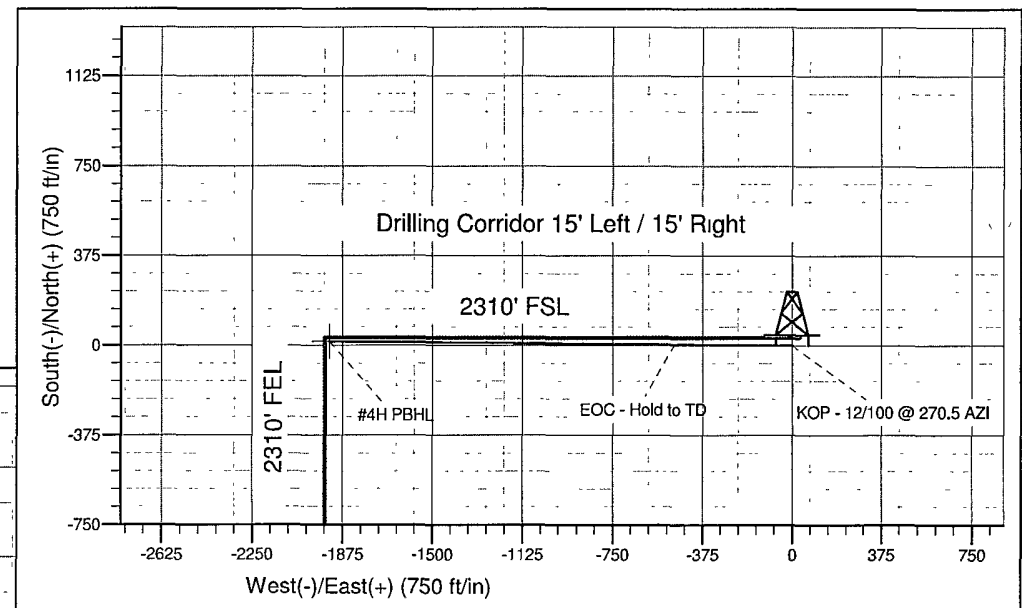
TVD	MD	Annotation
4367 7	4367 7	KOP - 12/100 @ 270 5 AZI
4844 9	5132 3	EOC - Hold to TD
4801 0	6569 7	TD at 6569 7

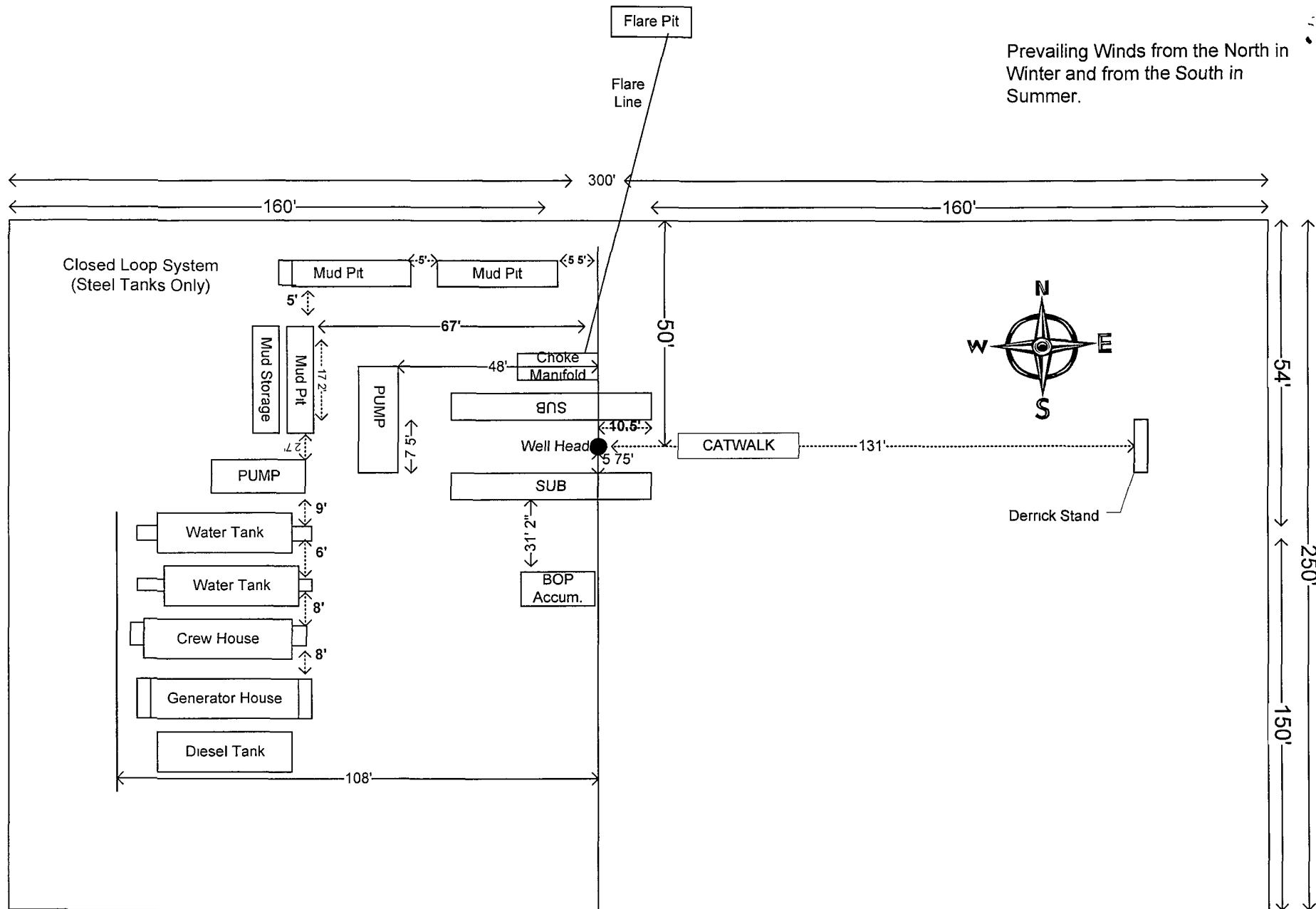
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
		Willow Lake Horiz. Base
		Willow Lake Horiz. Target Line
2570 0	2570 0	Base of Salt
2617 0	2617 0	Bell Canyon
3585 0	3585 0	Manzanita Marker
4843 0	5072 2	Willow Lake Horiz. Top

PLAN DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0 0	0 00	0 00	0 0	0 0	0 0	0 00	0 00	0 0	
2	4367 7	0 00	0 00	4367 7	0 0	0 0	0 00	0 00	0 0	
3	5132 3	91 75	270 50	4844 9	4 3	-492 0	12 00	270 50	492 1	
4	6569 7	91 75	270 50	4801 0	16 8	-1928 7	0 00	0 00	1928 8	#4H PBHL





MOSAIC 34 FEDERAL 4H

FORSTER DRILLING CORP.

RIG #15 - FOOTPRINT

ONSHORE OIL & GAS ORDER NO. 1
Approval of Operations on Onshore
Federal and Indian Oil and Gas Leases

1. EXISTING ROADS

- a. Existing county and lease roads will be used to enter proposed access road.
- b. Location, access, and vicinity plats attached hereto. See Exhibits A-1 to A-4.

2. PLANNED ACCESS ROADS

- a. A proposed access road 1906' in length and 14' in travel way width with a maximum disturbance area of 30' will be used, and in accordance with guidelines set forth in the BLM Onshore Orders. No turnouts are expected.
- b. In order to level the location, cut and fill will be required. Please see attached Well Location and Acreage Dedication Plat – Exhibits A-1 to A-4.
- c. A locking gate will be installed at the site entrance.
- d. Any fences cut will be repaired. Cattle guards will be installed, if needed.
- e. Surface disturbance and vehicular travel will be limited to the approved location and approved access route. Any additional area needed will be approved in advance.
- f. Driving directions are from Malaga New Mexico, go South on US Hwy #285 for approx. 4.0 miles. Turn left and go East approx. 1200'. This location is approx. 2136' North of road.

3. LOCATION OF EXISTING WELLS WITHIN A 1-MILE RADIUS OF THE PROPOSED LOCATION – see Exhibit B.

4. LOCATION OF PRODUCTION FACILITIES

The production facilities for the #4H will be located at the central battery of the Mosaic 34 Federal 2H well pad located at 371' FSL & 365' FEL of section 34-24S-28E Eddy Co., NM. Gas measurement will be off the pad of the #4H but on the #2H well pad. The steel 2 7/8" tubing flow line will be laid along the west side of the access road, south to the Mosaic 34 Federal 2H well pad. – See Exhibit C-1 & C-2.

5. LOCATION AND TYPE OF WATER SUPPLY

Water will be obtained from a private water source. Chesapeake Operating, Inc. will ensure all proper notifications and filings are made with the state.

6. CONSTRUCTION MATERIALS

No construction materials will be used from Section 34-24S-28E. All material (i.e. shale) will be acquired from private or commercial sources.

7. METHODS FOR HANDLING WASTE DISPOSAL

A closed system will be utilized consisting of above ground steel tanks. All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and deposited in an approved sanitary landfill.

8. ANCILLARY FACILITIES

None

9. WELLSITE LAYOUT

The proposed site layout plat is attached showing Forster Drilling Rig #15 orientation and equipment location. See Exhibit D. Also see Exhibit A for the size of the pad.

10. PLANS FOR RECLAMATION OF THE SURFACE

The location will be restored to as near as original condition as possible. Reclamation of the surface shall be done in strict compliance with the existing New Mexico Oil Conservation Division regulations.

Backfilling leveling, and contouring are planned as soon as the drilling rig and steel tanks are removed. Wastes and spoils materials will be buried immediately after drilling is completed. If production is obtained, the unused area will be restored as soon as possible. The rehabilitation will begin after the drilling rig is removed.

11. MINERAL OWNERSHIP

United States of America
Department of Interior
Bureau of Land Management

SURFACE OWNERSHIP

I.M.C. Kalium
P.O. Box 71
Carlsbad, NM

(Chesapeake Operating, Inc. has an agreement with the surface owner.)

(305) 887-2871 *SA*

12. ADDITIONAL INFORMATION

A Class III cultural resource inventory report was prepared by Boone Archaeological Services, Carlsbad, New Mexico for the proposed location. A copy of the report has been sent to the BLM office under separate cover and is also attached for reference. See Exhibit E.

Chesapeake Operating, Inc. agrees to be responsible under the terms and conditions of the lease for the operations conducted upon the lease lands.

13. OPERATOR'S REPRESENTATIVES

Drilling and Completion Operations

Jarvis Hensley
District Manager – Northern Permian
P.O. Box 18496
Oklahoma City, OK 73154
(405) 879-7863 (OFFICE)
(405) 879-9529 (FAX)
jhensley@chkenergy.com

Sr. Drilling Engineer

Randy Patterson
P.O. Box 14896
Oklahoma City, OK 73154
(405) 767-4056 (OFFICE)
(405) 767-4225 (FAX)
(405) 388-9002 (MOBILE)
rpatterson@chkenergy.com

Sr. Field Representative

Greg Coker
P.O. Box 11050
Midland, TX 79705
432-687-2992 (OFFICE)
432-687-3675 (FAX)
gcoker@chkenergy.com

Assett Manager

Jeff Finnell
P.O. Box 18496
Oklahoma City, OK 73154-0496
405-767-4347 (OFFICE)
405-879-7930 (FAX)
jfinnell@chkenergy.com

Regulatory Compliance

Linda Good
Regulatory Compliance Analyst
P.O. Box 18496
Oklahoma City, OK 73154
(405) 767-4275 (OFFICE)
(405) 879-9583 (FAX)
lgood@chkenergy.com

ONSHORE ORDER NO. 1
Chesapeake Operating, Inc.
Mosaic 34 Federal 4H
SL: 2277' FSL & 364' FEL
BL: 2310' FSL & 2310' FWL
Section 34-24S-28E
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE
Lease No. 025953

OPERATOR CERTIFICATION

PAGE 1

CERTIFICATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and, that the work associated with the operations proposed will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Executed this 1 day of August, 2007.

Name: Paul Hagemeyer

Paul Hagemeyer, Vice President - Regulatory Compliance

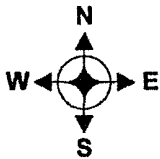
Address: P.O. Box 18496, Oklahoma City, OK 73154-0496

Telephone: 405-848-8000

Field Representative: Curtis Griffin

Telephone: 505-391-1462 Ext 6238

E-mail: cgriffin@chkenergy.com



**Chesapeake Mosaic 34 Federal # 4H
2,277's & 364'e 34-24-28 Eddy County,
New Mexico**

The Mosaic 34 Federal #4H is 6 miles south of Malaga, New Mexico. The production facilities for the #4H will be on the central battery location of the Mosaic 34 Fed. #2H well pad which locates 371's & 365'e of section 34-24-28 Eddy County, New Mexico. Gas measurement will be off the pad of the #4H but on the Mosaic 34 Fed. #2H well pad.

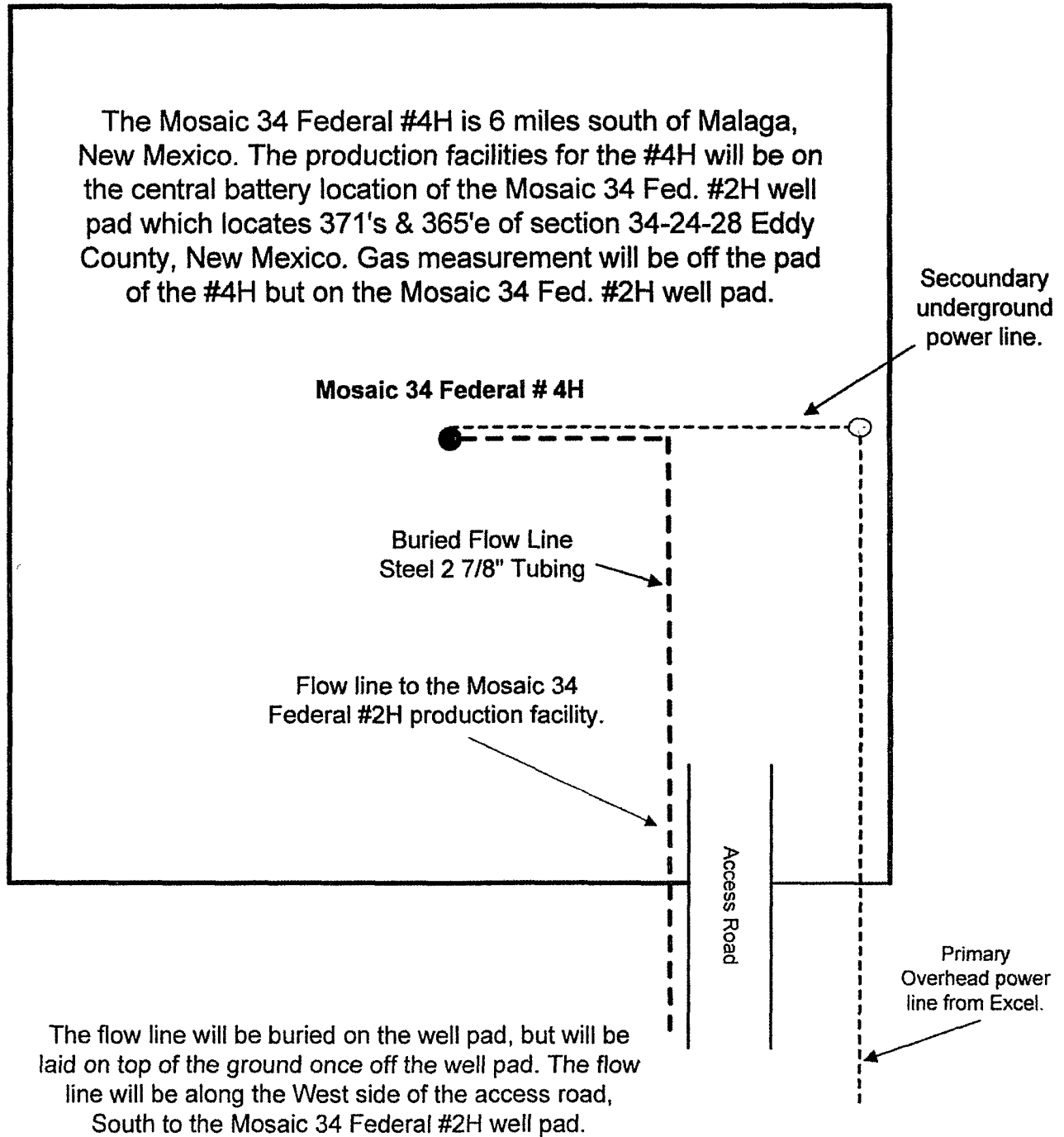
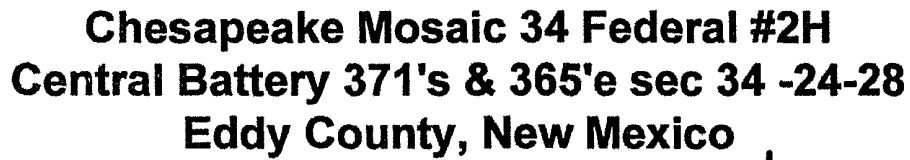


EXHIBIT 0-7



Well Name **Mosaic 34 Fed 4H (34-24S-28E)**
County **Eddy Co., NM**

Rig **Forster 15**
Survey Co

Target #1 0 00 KBTVD -1 75 Dip(- Up) 270 5 Section Plane
Target #2 0.00 KBTVD 0.00 Dip(- Up) Section Plane
Target #3 0 00 KBTVD 0 00 Dip(- Up) Section Plane

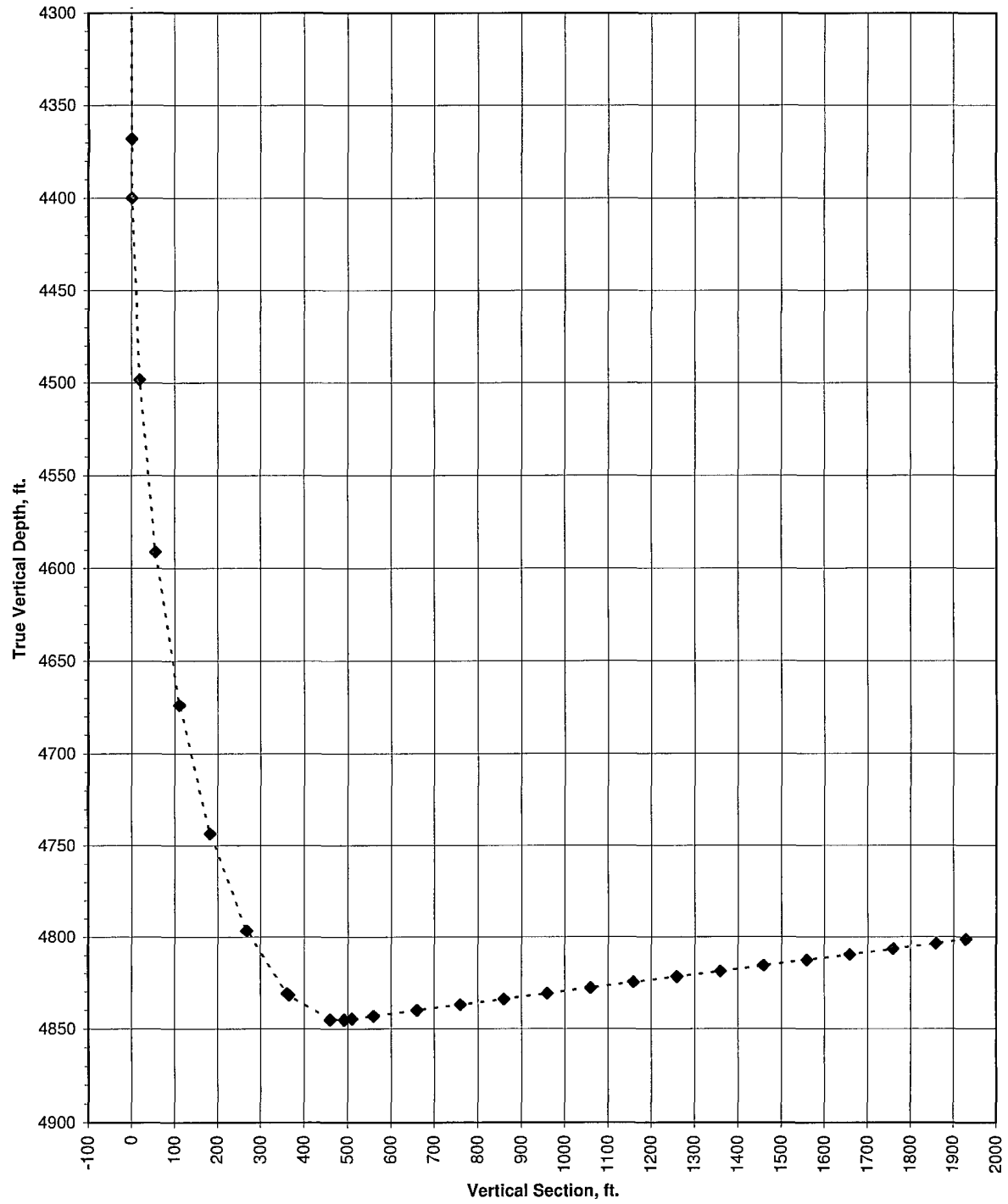
Surface Location:
2277' FSL & 364' FEL
Target Lines are:
2295' FSL & 2295' FEL (stopping points)
Hard Lines:
2310' FSL & 2310' FEL
20' Window up/down & 15' north/south

Comments	Measured Depth	Inclination	Azimuth	Course Length	TVD	North (+) South (-)	East (+) West (-)	VS	BUR	DLS	FSL	FEL
Staked Surface Location	0	0.00	0 00	0	0	0	0 0	0 0	0 0		2277.0	364.0
Est. Surface Casing Point	650	0.00	0.00	650	650	0 0	0 0	0.0	0.00	0.00	2277.0	364.0
	1,000	0 00	0.00	350	1000	0.0	0.0	0 0	0 00	0.00	2277.0	364 0
	2,000	0.00	0.00	1000	2000	0.0	0 0	0.0	0.00	0.00	2277.0	364 0
Base of salt (2590' tvd)	2,570	0.00	0.00	570	2570	0.0	0.0	0 0	0 00	0.00	2277 0	364 0
Est. Intermediate Casing Point	2,570	0 00	0.00	0	2570	0.0	0.0	0 0	0 00	0.00	2277 0	364.0
Bell Canyon est. top (2617' tvd)	2,617	0.00	0 00	47	2617	0 0	0.0	0 0	0 00	0.00	2277 0	364 0
	3,000	0 00	0 00	383	3000	0 0	0.0	0 0	0.00	0.00	2277 0	364.0
	3,500	0 00	0 00	500	3500	0 0	0 0	0.0	0 00	0.00	2277 0	364.0
Manzanita marker (3585' tvd)	3,585	0.00	0 00	85	3585	0 0	0 0	0 0	0 00	0.00	2277 0	364.0
	4,000	0 00	0 00	415	4000	0.0	0 0	0 0	0 00	0.00	2277 0	364.0
Est. max. KOP (12.0 deg /100' build rate)	4,368	0.00	0.00	368	4368	0 0	0 0	0 0	0 00	0.00	2277.0	364 0
	4,400	3 84	270.50	32	4400	0 0	-1.1	1 1	12 00	12 00	2277 0	365 1
	4,500	15.84	270 50	100	4498	0 2	-18.1	18.1	12 00	12.00	2277.2	382.1
	4,600	27.84	270.50	100	4591	0 5	-55 3	55 3	12 00	12.00	2277 5	419.3
	4,700	39 84	270 50	100	4674	1 0	-110 8	110 8	12 00	12.00	2278 0	474 8
	4,800	51.84	270 50	100	4743	1.6	-182 5	182 5	12 00	12.00	2278.6	546 5
	4,900	63 84	270 50	100	4797	2.3	-267.0	267 0	12 00	12.00	2279 3	631 0
	5,000	75.84	270.50	100	4831	3.1	-360 6	360.7	12 00	12.00	2280 1	724 6
Willow Lake Horiz. est. top (4843' tvd @0' VS)	5,004	76.32	270.50	4	4832	3.2	-364.5	364 5	12.00	12.00	2280.2	728.5
	5,100	87.84	270.50	96	4845	4.0	-459 5	459.5	12 00	12.00	2281.0	823 5
Willow Lake Horiz. target line (4860' tvd @0' VS)	5,132	91 68	270.50	32	4845	4 3	-491.4	491.5	12.00	12.00	2281.3	855.4
End of Build (1.75 degrees updip)	5,133	91.75	270 50	1	4845	4.3	-492 0	492 1	12 00	12.00	2281.3	856 0
Hold inclination until TD (stay legal)	5,150	91.75	270.50	17	4845	4.4	-509 4	509 5	-0 01	0 01	2281 4	873.4
	5,200	91.75	270 50	50	4843	4 9	-559 4	559 4	0 00	0.00	2281 9	923 4
	5,300	91 75	270.50	100	4840	5 8	-659.4	659 4	0 00	0.00	2282 8	1023 4
	5,400	91.75	270.50	100	4837	6.6	-759 3	759 3	0 00	0.00	2283.6	1123 3
	5,500	91 75	270 50	100	4834	7.5	-859 3	859 3	0 00	0.00	2284 5	1223.3
	5,600	91 75	270 50	100	4831	8 4	-959 2	959 2	0 00	0.00	2285 4	1323.2
	5,700	91.75	270.50	100	4828	9 2	-1059.2	1059 2	0.00	0.00	2286 2	1423 2
	5,800	91.75	270 50	100	4825	10 1	-1159.1	1159 2	0 00	0.00	2287 1	1523.1
	5,900	91.75	270.50	100	4822	11.0	-1259 1	1259.1	0 00	0.00	2288.0	1623 1
	6,000	91 75	270 50	100	4819	11 9	-1359 0	1359 1	0 00	0.00	2288 9	1723.0
	6,100	91 75	270 50	100	4816	12.7	-1459 0	1459 0	0 00	0.00	2289 7	1823.0
	6,200	91.75	270 50	100	4813	13.6	-1558.9	1559 0	0 00	0.00	2290 6	1922.9
	6,300	91.75	270.50	100	4810	14.5	-1658 9	1658 9	0.00	0.00	2291.5	2022 9
	6,400	91.75	270 50	100	4807	15.3	-1758 8	1758 9	0 00	0.00	2292 3	2122.8
	6,500	91 75	270.50	100	4803	16 2	-1858 8	1858 8	0 00	0.00	2293 2	2222.8
Estimated TD (with EOW coordinates)	6,570	91 75	270.50	70	4801	16.8	-1928.7	1928 8	0.00	0.00	2293 8	2292.7

EXHIBIT

6

Mosaic 34 Fed 4H
(34-24S-28E)



CHESAPEAKE OPERATING INC
DIRECTIONAL PLANNING WORKSHEET
 CALCULATED USING MINIMUM CURVATURE METHOD

Well Name: Mosaic 34 Fed 4H (34-24S-28E, Eddy Co., NM)

Prepared By: RLP

	MD	Inc	AZ	TVD	N/S	E/W	VS
KOP:	4,368	0.00	0.00	4,368	0.00	0.00	0.00
Target:	4,860 @ 0' VS						
Dip:	-1.75 (- Updip / + Downdip)						
Azimuth:	274.50						Section Plane: 274.50
Proposed VS:	1,929						

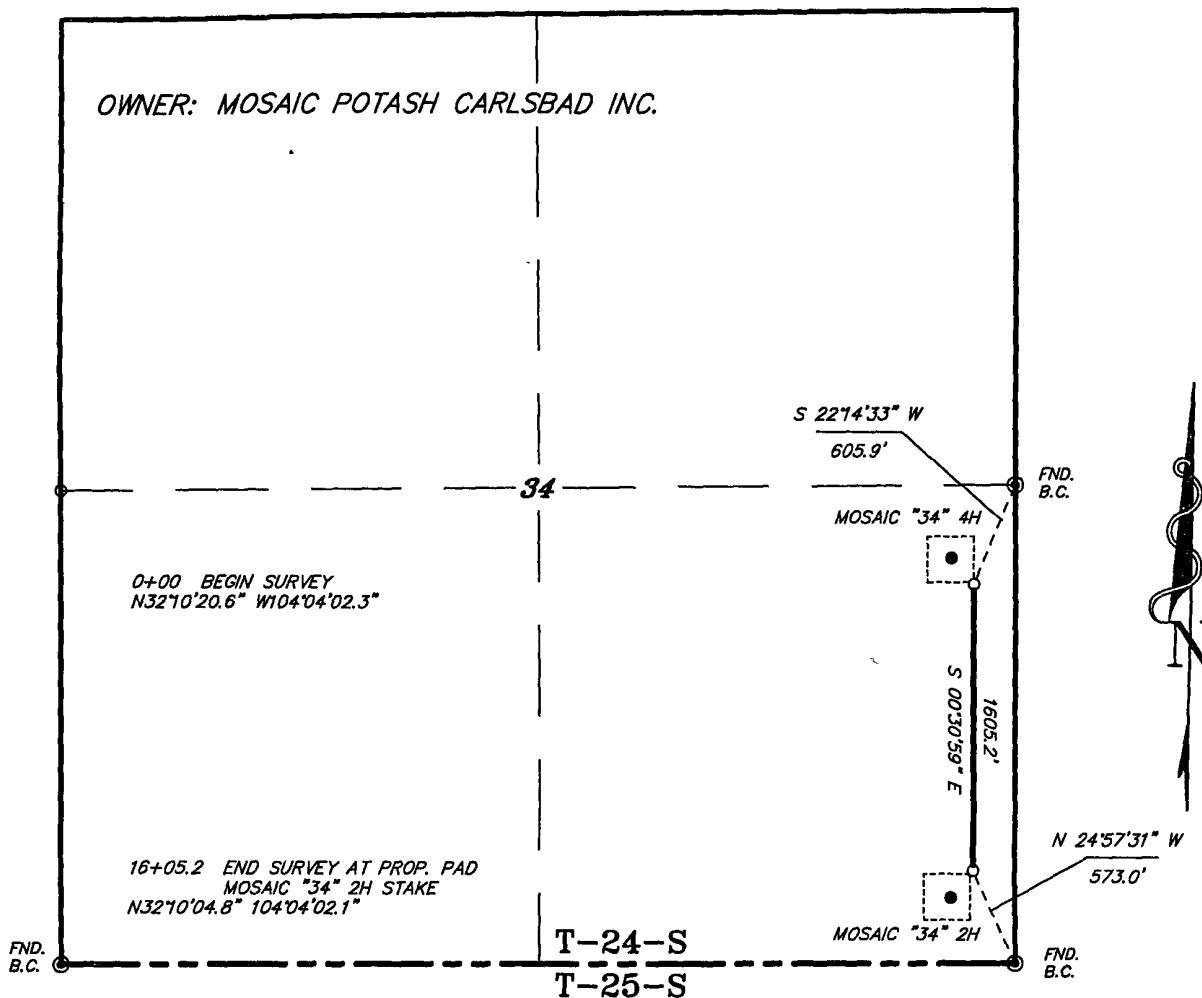
Feather: %/100' TVD (Vertical Feather Only)

	MD	Course Length	Inc	AZ	TVD	North(+) South(-)	East(+) West(-)	VS	BUR	DLS	Target Depth	Dist To Target
EOB	5,132	764	91.75	274.50	4,845	38.60	-490.45	491.97	12.00	12.00	4,845	0
EOF	5,132	0	91.75	274.50	4,845	38.60	-490.45	491.97	0.00	0.00	4,845	0
EOH	6,570	1,438	91.75	274.50	4,801	151.35	-1923.05	1929.00	0.00	0.00	4,801	0

Comments: _____

SECTION 34, TOWNSHIP 24 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.

OWNER: MOSAIC POTASH CARLSBAD INC.

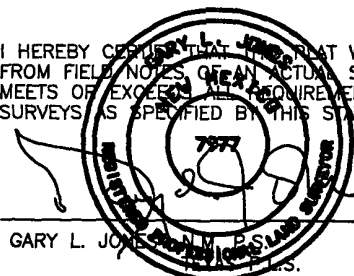


LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 34, TOWNSHIP 24 SOUTH, RANGE 28 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND RIGHT OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY.

BEGINNING AT A POINT WHICH LIES S.22°14'33"W., 605.9 FEET FROM THE EAST QUARTER CORNER OF SAID SECTION 34; THENCE S.00°30'59"E., 1605.2 FEET TO THE END OF THIS LINE WHICH LIES N.24°57'31"W., 573.0 FEET FROM THE SOUTHEAST CORNER OF SAID SECTION 34. SAID STRIP OF LAND BEING 1605.2 FEET OR 97.28 RODS IN LENGTH.

I HEREBY CERTIFY THAT THIS MAP WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.



GARY L. JONES, Surveyor, State of New Mexico

No. 7977
No. 5074

1000 0 1000 2000 FEET

CHESAPEAKE OPERATING INC.

REF: PROPOSED PIPELINE TO THE MOSAIC 34 #4H

A PIPELINE CROSSING FEE LAND IN
SECTION 34, TOWNSHIP 24 SOUTH, RANGE 28 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO.

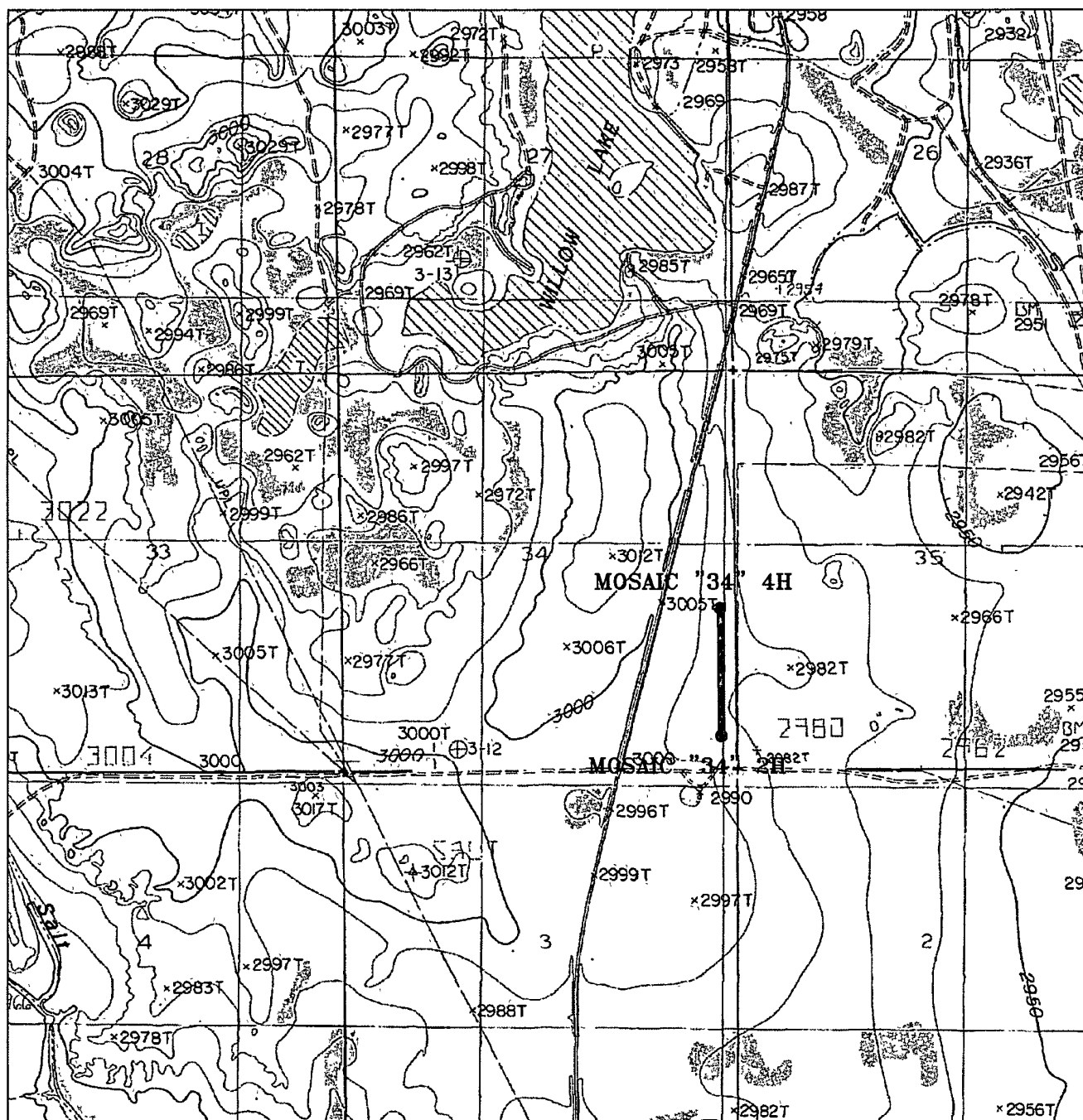
BASIN SURVEYS P.O. BOX 1786-HOBBS, NEW MEXICO

W.O. Number: 184453 Drawn By: James Presley

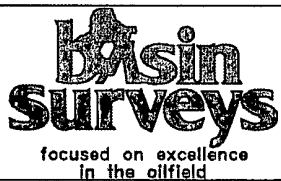
Date: 08/21/07 Disk: JLP #1 - CHE18453

Survey Date: 8/14/07

Sheet 1 of 1 Sheets



PROPOSED PIPELINE TO THE CHESAPEAKE-MOSAIC "34" 4H
 Section 34, Township 24 South, Range 28 East,
 N.M.P.M., Eddy County, New Mexico.



P.O. Box 1786
 1120 N. West County Rd.
 Hobbs, New Mexico 88241
 (505) 393-7316 - Office
 (505) 392-3074 - Fax
 basinsurveys.com

W.O. Number: 18453

Survey Date: 08/14/07

Scale: 1" = 2000'

Date: 08/21/07

CHESAPEAKE
 OPERATING
 INC.

SPECIAL DRILLING STIPULATIONS

THE FOLLOWING DATA IS REQUIRED ON THE WELL SIGN

Operator's Name Chesapeake Operating, Inc Well Name & # Mosaic 34 Fed #4H
Location 2277 F S L & 364 F E L, Sec 34, T. 24 S, R 28 E
Lease # NM-25953 County Eddy State New Mexico
Ending Hole: 2310 FSL & 2310 FEL, Section 34, T. 24 S., R. 28 E

The Special stipulations check marked below are applicable to the above described well and approval of this application to drill is conditioned upon compliance with such stipulations in addition to the General Requirements. The permittee should be familiar with the General Requirements, a copy of which is available from a Bureau of Land Management office. EACH PERMITTEE HAS THE RIGHT OF ADMINISTRATIVE APPEAL TO THESE STIPULATIONS PURSUANT TO TITLE 43 CFR 3165.3 AND 3165.4.

This permit is valid for a period of one year from the date of approval or until lease expiration or termination whichever is shorter.

I SPECIAL ENVIRONMENT REQUIREMENTS

- () Lesser Prairie Chicken (stips attached) () Flood plain (stips attached)
() San Simon Swale (stips attached) (x) Other **See attached Cave/Karst Conditions of Approval**

II ON LEASE - SURFACE REQUIREMENTS PRIOR TO DRILLING

(x) The BLM will monitor construction of this drill site. Notify the (x) Carlsbad Field Office at (505) 234-5972 () Hobbs Office (505) 393-3612, at least 3 working days prior to commencing construction.

(x) Roads and the drill pad for this well must be surfaced with 6 inches of compacted caliche upon completion of well and it is determined to be a producer.

() All topsoil and vegetation encountered during the construction of the drill site area will be stockpiled and made available for resurfacing of the disturbed area after completion of the drilling operation. Topsoil on the subject location is approximately _____ inches in depth. Approximately _____ cubic yards of topsoil material will be stockpiled for reclamation.

(x) Other **Flowline and Electric line not authorized under this permit.**

III WELL COMPLETION REQUIREMENTS

() A Communitization Agreement covering the acreage dedicated to the well must be filed for approval with the BLM. The effective date of the agreement must be prior to any sales.

(x) Surface Restoration. If the well is a producer, the cut-and-fill slopes will be reduced to a slope of 3:1 or less. All areas of the pad not necessary for production must be re-contoured to resemble the original contours of the surrounding terrain, and topsoil must be re-distributed and re-seeded with a drill equipped with a depth indicator (set at depth of 1/2 inch) with the following seed mixture, in pounds of Pure Live Seed (PLS), per acre. If broadcasting, the seeding rate must be doubled.

- | | |
|---|---|
| (x) A. Seed Mixture 1 (Loamy Sites) | () B. Seed Mixture 2 (Sandy Sites) |
| Side Oats Grama (<i>Bouteloua curtipendula</i>) 5.0 | Sand Dropseed (<i>Sporobolus cryptandrus</i>) 1.0 |
| Sand Dropseed (<i>Sporobolus cryptandrus</i>) 1.0 | Sand Lovegrass (<i>Eragrostis trichodes</i>) 1.0 |
| Plains lovegrass (<i>Eragrostis intermedia</i>) 0.5 | Plains Bristlegrass (<i>Setaria magrostachya</i>) 2.0 |
| () C. Seed Mixture 3 (Shallow Sites) | () D. Seed Mixture 4 (Gypsum Sites) |
| Side Oats Grama (<i>Bouteloua curtipendula</i>) 5.0 | Alkali Sacaton (<i>Sporobolus airoides</i>) 1.0 |
| Green Spangletop (<i>Leptochloa dubia</i>) 2.0 | Four-Wing Saltbush (<i>Atriplex canescens</i>) 5.0 |
| Plains Bristlegrass (<i>Setaria magrostachya</i>) 1.0 | |

() OTHER SEE ATTACHED SEED MIXTURE

Seeding should be done either late in the fall (September 15 - November 15, before freeze up, or early as possible the following spring to take advantage of available ground moisture.

Painting Requirement

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, shale green, Munsell Soil Color Chart Number 5Y 4/2.

() Other

CULTURAL

Whether or not an archaeological survey has been completed and notwithstanding that operations are being conducted as approved, the lessee/operator/grantee shall notify the BLM immediately if previously unidentified cultural resources are observed during surface disturbing operations. From the time of the observation, the lessee/operator/grantee shall avoid operations that will result in disturbance to these cultural resources until directed to process by BLM.

TRASH PIT STIPS

All trash, junk, and other waste material shall be contained in trash cages or bins to prevent scattering and will be removed and deposited in an approved sanitary landfill. Burial on site is not permitted.

Conditions of Approval Cave and Karst

EA#: NM-520-07-1140
Lease #: NM-17222, NM-13074, NM-25953
Chesapeake Operating, Inc.
Mosaic 34 Fed. #2H, #3H, #4H

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production.

Berming:

Any tank batteries will be constructed and bermed large enough to contain any spills that may occur.

Bermed areas will be lined with rip-stop padding to prevent tears or punctures in liners and lined with a permanent 20 mil plastic liner.

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and ground water concerns:

Rotary Drilling with Fresh Water:

Rotary drilling techniques in cave or karst areas will include the use of fresh water as a circulating medium in zones where caves or karst features are expected. Use depth to the deepest expected fresh water as listed in the geologist report.

Directional Drilling:

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone as identified in the geologic report.

Casing:

All casing will meet or exceed National Association of Corrosion Engineers specifications pertaining to the geology of the location and be run to American Petroleum Institute and BLM standards.

Lost Circulation:

ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported.

Regardless of the type of drilling machinery used, if a void (bit drops) of four feet or more and circulation losses greater than 75 percent occur simultaneously while drilling in

any cave-bearing zone, drilling operations will immediately stop and the BLM will be notified by the operator. The BLM will assess the consequences of the situation and work with operator on corrective actions to resolve the problem.

Abandonment Cementing:

Upon well abandonment the well bore will be cemented completely from 100 feet below the bottom of the cave bearing zone to the surface.

Record Keeping:

The Operator will track customary drilling activities, including the rate of penetration, pump pressure, weight on bit, bit drops, percent of mud returns, and presence or absence of cuttings returning to the surface. As part of customary record keeping, each detectable void or sudden increase in the rate of penetration not attributable to a change in the formation type should be documented and evaluated as it is encountered.

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Chesapeake Operating, Inc.
LEASE NO.:	NMNM 125953
WELL NAME & NO.:	4H – Mosaic 34 Federal
SURFACE HOLE FOOTAGE:	2277' FSL & 0364' FEL
BOTTOM HOLE FOOTAGE:	2310' FSL & 2310' FEL
LOCATION:	Section 34, T. 24 S., R 28 E., NMPM
COUNTY:	Eddy County, New Mexico

I. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 2 hours in advance for a representative to witness:

- a. Spudding well
- b. Setting and/or Cementing of all casing strings
- c. BOPE tests

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
(505) 361-2822

1. **Although no Hydrogen Sulfide has been reported in this township, it is always a potential hazard.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
3. When floor controls are required, (3M or Greater) controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

B. CASING

1. The 13-3/8 inch surface casing shall be set **a minimum of 25 feet into the Rustler Anhydrite at approximately 650** feet and cemented to the surface.

- a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.
- b. Wait on cement (WOC) time for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement).
- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
- d. If cement falls back, remedial action will be done prior to drilling out that string.

**Possible lost circulation in the Triassic redbeds and the Castile Group.
High cave/karst.**

2. The minimum required fill of cement behind the 8-5/8 inch intermediate casing is:

☒ Cement to surface. If cement does not circulate see B.1.a-d above.

This casing to be set below base of Salt at approximately 2570'.

3. The minimum required fill of cement behind the 5-1/2 inch production casing is:

☒ Cement should tie-back at least 500 feet into previous casing string. Operator shall provide method of verification.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 2000 (2M) psi.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 8-5/8" intermediate casing shoe shall be 5000 (5M) psi.
4. The appropriate BLM office shall be notified a minimum of 2 hours in advance for a representative to witness the tests.
 - a. The tests shall be done by an independent service company.
 - b. The results of the test shall be reported to the appropriate BLM office.
 - c. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
 - d. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

Engineer on call phone (after hours): Carlsbad: (505) 706-2779

WWI 082907

BLM Lease #: NM-25953
Company Reference: Chesapeake Operating
Well # & Name: Mosaic 34 Fed. #4H

STANDARD STIPULATIONS FOR PERMANENT RESOURCE ROADS
CARLSBAD FIELD OFFICE

A copy of the APD and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

The holder/grantee/permittee shall hereafter be identified as the holder in these stipulations. The Authorized Officer is the person who approves the Application for Permit to Drill (APD) and/or Right-of-Way (ROW).

GENERAL REQUIREMENTS

A. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

B. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, *et. seq.*) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized by this grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.

C. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, *et. seq.* or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, *et. seq.*) on the right-of-way (unless the release or threatened release is wholly unrelated to the right-of-way holder's activity on the right-of-way). This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

D. If, during any phase of the construction, operation, maintenance, or termination of the road, any oil or other pollutant should be discharged, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all

damages to Federal lands resulting there from the Authorized Officer may take such measures as deemed necessary to control and cleanup the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve the holder of any liability or responsibility.

E. The holder shall minimize disturbance to existing fences and other improvements on public domain surface. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times.

The holder will make a documented good-faith effort to contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence.

F. The Holder shall ensure that the entire right-of-way, including the driving surface, ditching and drainage control structures, road verges and any construction sites or zones, will be kept free of the following plant species: Malta starthistle, African rue, Scotch thistle and salt cedar. The Holder agrees to comply with the following stipulations:

1. ROAD WIDTH AND GRADE

The road will have a driving surface of 14 feet (all roads shall have a minimum driving surface of 12 feet, unless local conditions dictate a different width). The maximum grade is 10 percent unless the box below is checked. Maximum width of surface disturbance from construction will be 30 feet.

☐ Those segments of road where grade is in excess of 10% for more than 300 feet shall be designed by a professional engineer.

2. CROWNING AND DITCHING

Crowning with materials on site and ditching on one side of the road on the uphill side will be required. The road cross-section will conform to the cross section diagrams in Figure 1. If conditions dictate, ditching may be required for both sides of the road; if local conditions permit, a flat-bladed road may be considered (if these conditions exist, check the appropriate box below). The crown shall have a grade of approximately 2% (i.e., 1" crown on a 12' wide road).

☒ Ditching will be required on both sides of the roadway as shown on the attached map or as staked in the field.

☐ Flat-blading is authorized on segment(s) delineated on the attached map.

3. DRAINAGE

Drainage control shall be ensured over the entire road through the use of borrow ditches, out-sloping, in-sloping, natural rolling topography, lead-off (turnout) ditches, culverts, and/or drainage dips.

A. All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval for lead-off ditches shall be determined according to the following table, but may be amended depending upon existing soil types and centerline road slope (in %):

SPACING INTERVAL FOR TURNOUT DITCHES

Percent slope	Spacing interval
0% - 4%	400' - 150'
4% - 6%	250' - 125'
6% - 8%	200' - 100'
8% - 10%	150' - 75'

A typical lead-off ditch has a minimum depth of 1 foot below and a berm 6 inches above natural ground level. The berm will be on the down-slope side of the lead-off ditch. The ditch end will tie into vegetation whenever possible.

For this road the spacing interval for lead-off ditches shall be at

☐ 400 foot intervals.

☒ 200 foot intervals.

☐ locations staked in the field as per spacing intervals above.

☐ locations delineated on the attached map.

B. Culvert pipes shall be used for cross drains where drainage dips or low water crossings are not feasible. The minimum culvert diameter must be 18 inches. Any culvert pipe installed shall be of sufficient diameter to pass the anticipated flow of water. Culvert location and required diameter are shown on the attached map (Further details can be obtained from the Roswell District Office or the appropriate Resource Area Office).

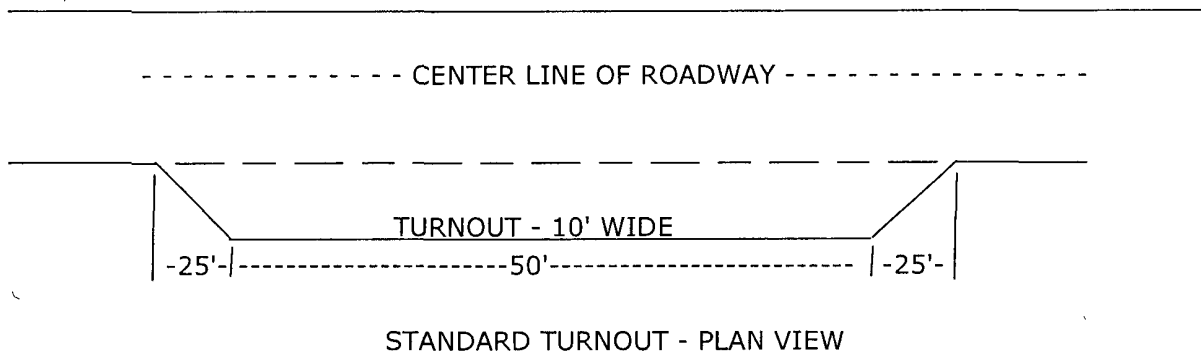
C. On road slopes exceeding 2%, drainage dips shall drain water into an adjacent lead-off ditch. Drainage dip location and spacing shall be determined by the formula:

$$\text{spacing interval} = \frac{400'}{\text{road slope in \%}} + 100'$$

Example: 4% slope: spacing interval = $\frac{400}{4} + 100 = 200$ feet

4. TURNOUTS

Unless otherwise approved by the Authorized Officer, vehicle turnouts will be required. Turnouts will be located at 2000-foot intervals, or the turnouts will be intervisible, whichever is less. Turnouts will conform to the following diagram:



5. SURFACING

Surfacing of the road or those portions identified on the attached map may, at the direction of the Authorized Officer, be required, if necessary, to maintain traffic within the right-of-way with caliche, gravel, or other surfacing material which shall be approved by the Authorized Officer. When surfacing is required, surfacing materials will be compacted to a minimum thickness of six inches with caliche material. The width of surfacing shall be no less than the driving surface. Prior to using any mineral materials from an existing or proposed Federal source, authorization must be obtained from the Authorized Officer.

A sales contract for the removal of mineral materials (caliche, sand, gravel, fill dirt, etc.) from an authorized pit, site, or on location must be obtained from the BLM prior to using any such mineral material from public lands. Contact the BLM solid minerals staff for the various options to purchase mineral material.

6. CATTLEGUARDS

Where used, all cattleguard grids and foundation designs and construction shall meet the American Association of State Highway and Transportation Officials (AASHTO) Load Rating H-20, although AASHTO U-80 rated grids shall be required where heavy loads (exceeding H-20 loading), are anticipated (See BLM standard drawings for cattleguards). Cattleguard grid length shall not be less than 8 feet and width of not less than 14 feet. A wire gate (16-foot minimum width) will be provided on one side of the cattleguard unless requested otherwise by the surface user.

7. MAINTENANCE

The holder shall maintain the road in a safe, usable condition. A maintenance program shall include, but not be limited to blading, ditching, culvert installation, culvert cleaning, drainage installation, cattleguard maintenance, and surfacing.

8. PUBLIC ACCESS

Public access along this road will not be restricted by the holder without specific written approval being granted by the Authorized Officer. Gates or cattleguards on public lands will not be locked or closed to public use unless closure is specifically determined to be necessary and is authorized in writing by the Authorized Officer.

9. CULTURAL RESOURCES

Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the authorized officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the authorized officer after consulting with the holder.

10. SPECIAL STIPULATIONS:

Arrant, Bryan, EMNRD

From: Arrant, Bryan, EMNRD
Sent: Friday, September 07, 2007 1:38 PM
To: 'cbarnard@chkenergy.com'
Subject: Mosaic 34 Federal # 3H; Mosaic 34 Federal # 4H

Hi Craig,

In regards to what we discussed earlier this week for the above noted wells, please resubmit (amended) C-102s that show the following:

- Outline the project area
- Outline the producing area
- Show the point of penetration "The point where the well bore penetrates the top of the pool from which it is intended to produce."
- Show the calculated dedicated acreage

For more information, please refer to NMOCD Rule 19.15.3.111
Our website is: <http://www.emnrd.state.nm.us/ocd>

In reviewing the directional survey plan, the Mosaic 34 Federal # 3H is non standard for an oil well completion and will need a NSL approval from Santa Fe.

Please call if you have any questions.

Bryan G. Arrant
District II Geologist
New Mexico Oil Conservation Division
1301 West Grand Ave.
Artesia, NM 88210
505-748-1283 Ext. 103

9/7/2007