Form 3160-3
(August 1999)

OPER. OGRID NO. 147179
PROPERTY NO. 33187
POOL CODE 72660
EFF. DATE 12/11/03
APPLIC API NO. 30-025-36506

FORM APPROVED
OMB No. 1004-0136
Expires November 30, 2000

EC

5. Lease Serial No.
NMNM96244

6. If Indian, Allottee or Tribe Name

1a. Type of Work: ☒ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.

1b. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
LIVESTOCK FEDERAL 1

2. Name of Operator
CHESAPEAKE OPERATING INC
Contact: SHARON E. DRIES
E-Mail: sdries@chkenergy.com

9. API Well No.
30-025-36506

3a. Address
P O BOX 18496
OKLAHOMA CTIY, OK 73154

3b. Phone No. (include area code)
Ph: 405.879.7985
Fx: 405.879.9583

10. Field and Pool, or Exploratory
BOOTLEG RIDGE
~~PERMIAN~~ Morrow East

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

At surface NWSW 1600FSL 800FWL

At proposed prod. zone Unit L

Secretary's Potash

11. Sec., T., R., M., or Blk. and Survey or Area
Sec 9 T22S R33E Mer NMP
SME: BLM

14. Distance in miles and direction from nearest town or post office*
67 MILES FROM HOBBS, NM

12. County or Parish
LEA

13. State
NM

15. Distance from proposed location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
800

16. No. of Acres in Lease
2360.00

17. Spacing Unit dedicated to this well
320.00

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

19. Proposed Depth
15400 MD

20. BLM/BIA Bond No. on file

21. Elevations (Show whether DF, KB, RT, GL, etc.
3605 GL

22. Approximate date work will start
12/01/2003

23. Estimated duration

Carlsbad Controlled Water Basin

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall 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 shall 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 authorized officer.

25. Signature	Name (Printed/Typed)	Date
(Electronic Submission)	SHARON E. DRIES	11/12/2003

Title
AUTHORIZED REPRESENTATIVE

Approved by (Signature)	Name (Printed/Typed)	Date
/s/ Carsten F. Goff	/s/ Carsten F. Goff	DEC 04 2003

Title	Office
ACTING STATE DIRECTOR	NM STATE OFFICE

Application approval does not warrant or certify 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 1 YEAR

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.

Additional Operator Remarks (see next page)

DECLARED WATER BASIN
CEMENT BEHIND THE 13 3/8" CASING MUST BE CIRCULATED

Electronic Submission #24943 verified by the BLM Well Information System
For CHESAPEAKE OPERATING INC, sent to the Hobbs
Committed to AFMSS for processing by ARMANDO LOPEZ on 11/13/2003 (04AL0033AE)

DECLARED WATER BASIN
CEMENT BEHIND THE 9 5/8"
CASING MUST BE CIRCULATED

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS AND
SPECIAL STIPULATIONS
ATTACHED

** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED **

Additional Operator Remarks:

Chesapeake Operating, Inc. proposes to drill a well to 15,400 to test the Bell Canyon, Basal Brushy Canyon Sand, Bone Springs, Atoka, and Morrow formations. If productive,casing will be run and the well will be completed. If dry, the well will be plugged and abandoned as per BLM and New Mexico Oil Conservation Division requirements.

Attached please find the Surface Use Plan, Drilling Plan, and attachments as required by Onshore Order No. 1. A generic rig layout is attached as Exhibit D. A final rig layout will be submitte dprior to spud once a rig is assigned.

Please be advised that Chesapeake Operating, Inc. is considered to be the Operator of the above mentioned well. Chesapeake Operating, Inc. agrees to be responsible under the terms and conditions of the lease for the operations conducted upone the lease lands.

DISTRICT I
P.O. Box 1980, Hobbs, NM 88241-1980

DISTRICT II
P.O. Drawer DD, Artesia, NM 88211-0719

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
P.O. BOX 2088, SANTA FE, N.M. 87504-2088

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-102
Revised February 10, 1994
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code	Pool Name
30-025-36506	72660	BOOTLEG RIDGE MORROW EAST

Property Code	Property Name	Well Number
33187	LIVESTOCK FEDERAL	1

OGRID No.	Operator Name	Elevation
147179	CHESAPEAKE OPERATING, INC.	3605'

Surface Location

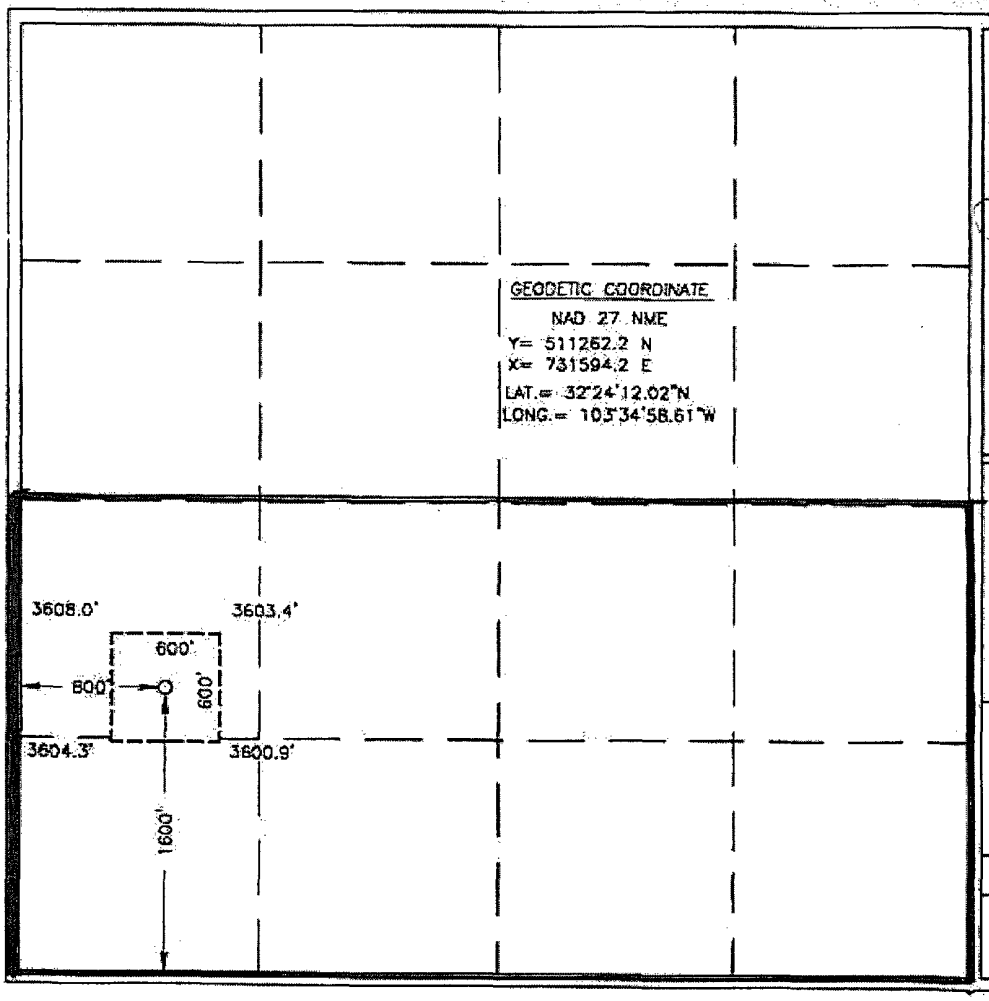
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	9	22-S	33-E		1600'	SOUTH	800'	WEST	LEA

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

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
320 LAYDOWN			

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



OPERATOR CERTIFICATION

I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.

Signature: Lynda F. Townsend

Printed Name: Lynda F. Townsend

Title: Landman

Date: 9-8-03

SURVEYOR CERTIFICATION

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 supervison, and that the same is true and correct to the best of my belief.

September 02, 2003

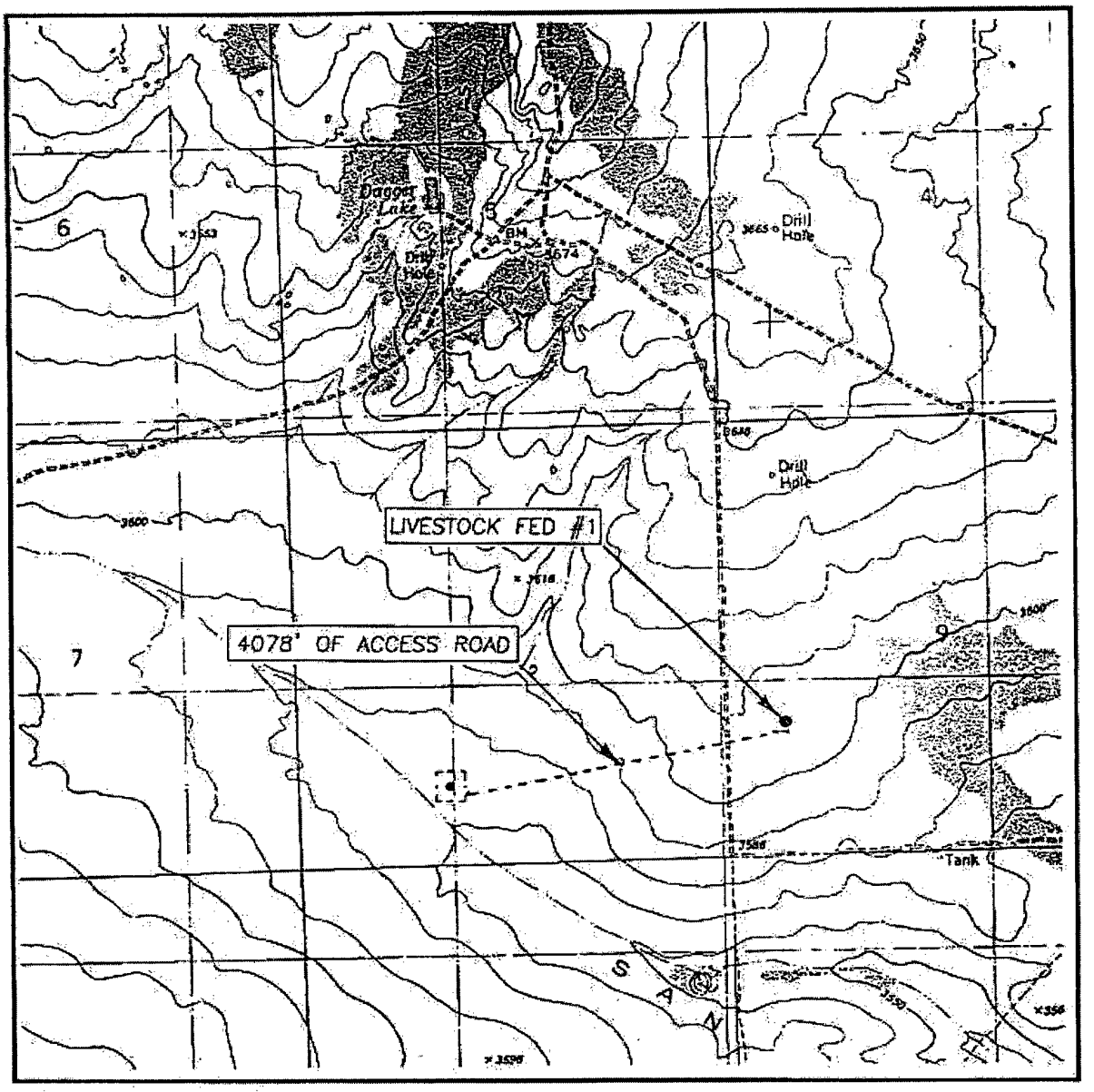
Date Surveyed: AWB

Signature & Seal of Professional Surveyor: Gary B. Edson 9/5/03

03.11.0968

Certificate No. GARY EDSON 12641

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL: 10'
GRAMA RIDGE, N.M.

SEC. 9 TWP. 22-S RGE. 33-E

SURVEY N.M.P.M.

COUNTY LEA

DESCRIPTION 1600' FSL & 800' FWL

ELEVATION 3605'

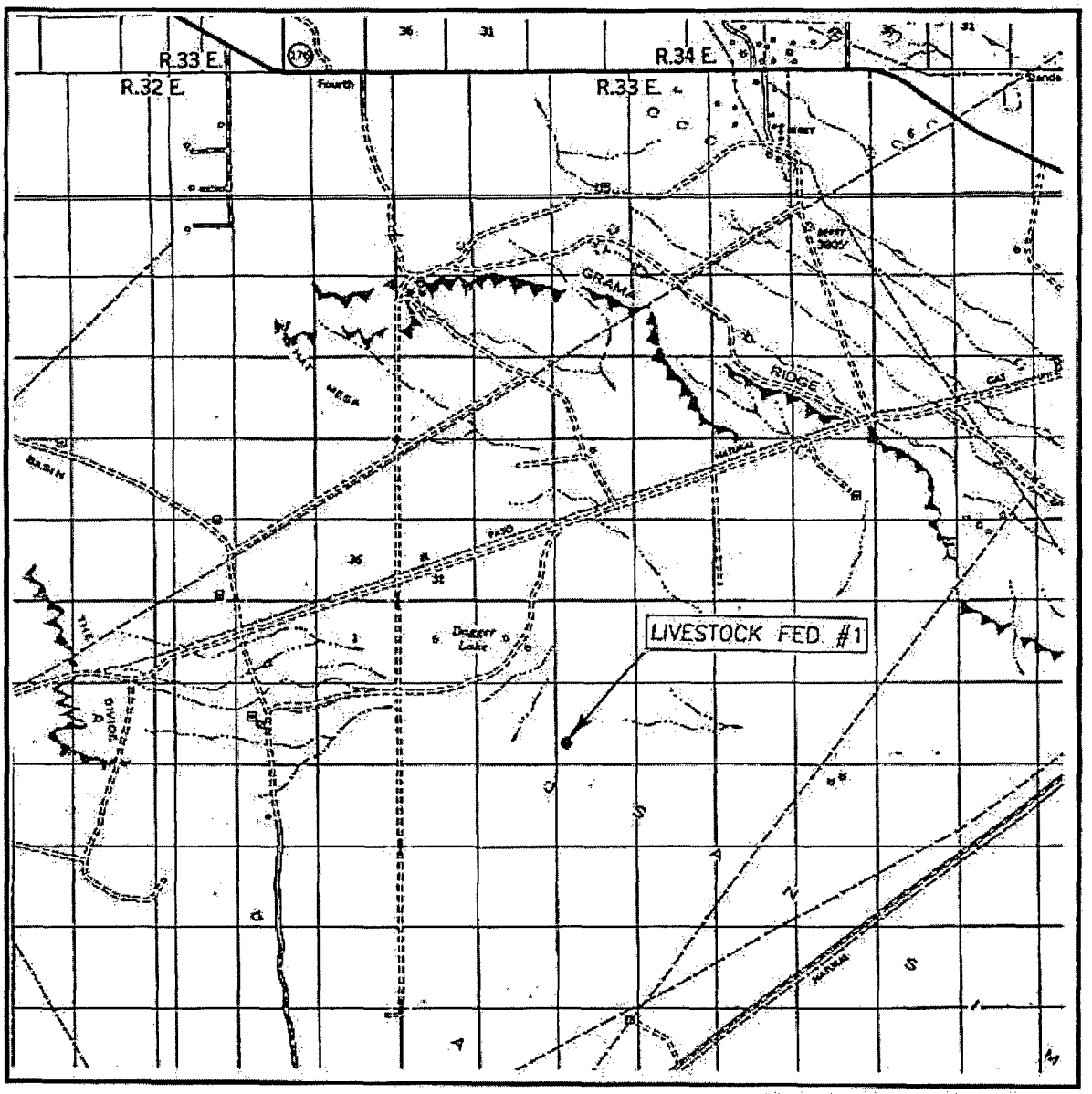
OPERATOR CHESAPEAKE OPERATING, INC.

LEASE LIVESTOCK FEDERAL

U.S.G.S. TOPOGRAPHIC MAP
GRAMA RIDGE, N.M.

JOHN WEST SURVEYING
HOBBS, NEW MEXICO
(505) 393-3117

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 9 TWP. 22-S RGE. 33-E

SURVEY N.M.P.M.

COUNTY LEA

DESCRIPTION 1600' FSL & 800' FWL

ELEVATION 3605'

OPERATOR CHESAPEAKE OPERATING, INC.

LEASE LIVESTOCK FEDERAL

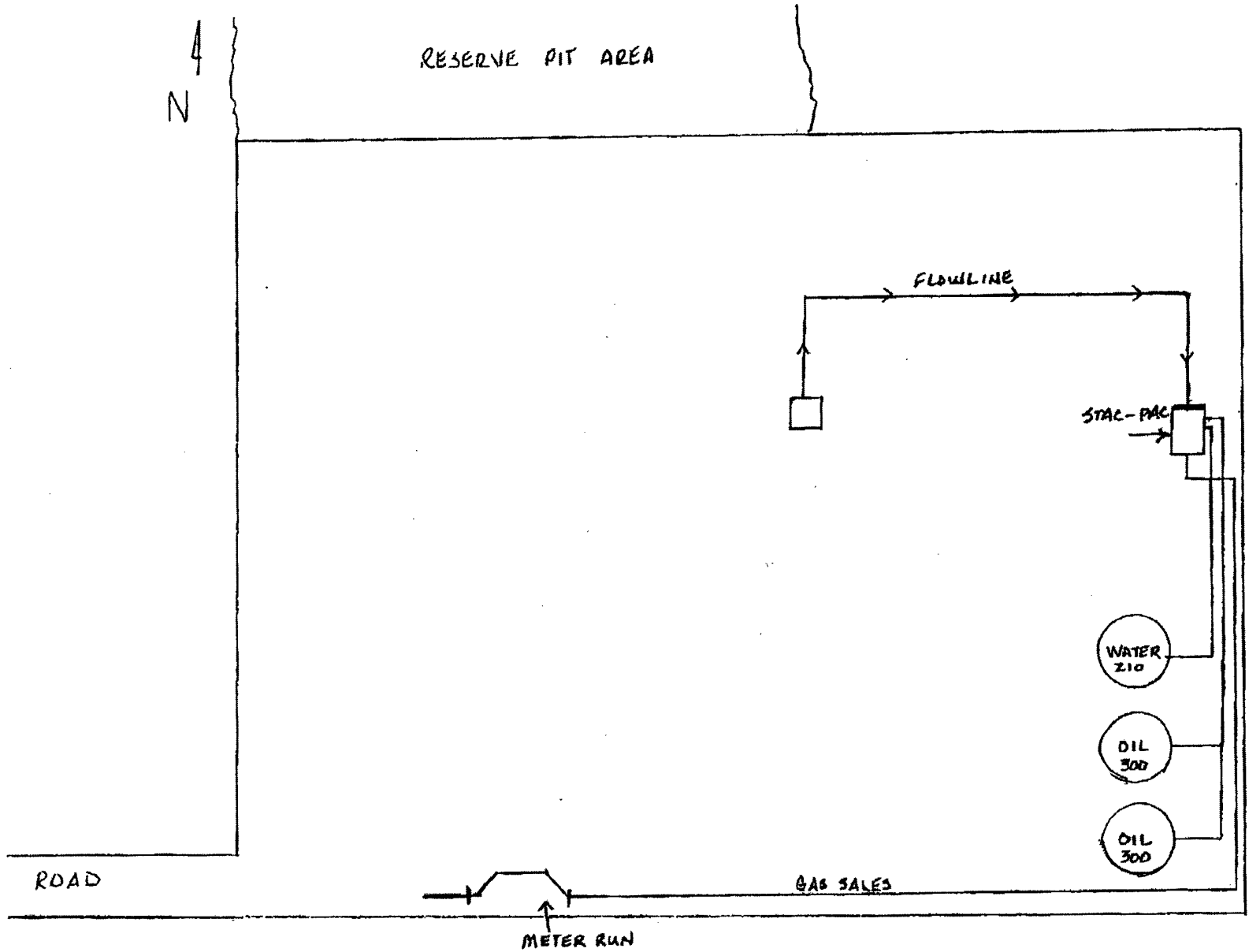
JOHN WEST SURVEYING
HOBBS, NEW MEXICO
(505) 393-3117

14. CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which presently exist; that the statements made in this surface use plan are, to the best of my knowledge, true and correct; and, that the work associated with the operations proposed will be performed by operator (including contractors and subcontractors) submitting the APD, in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

By: J. Mark Coston

Date: 11/11/03

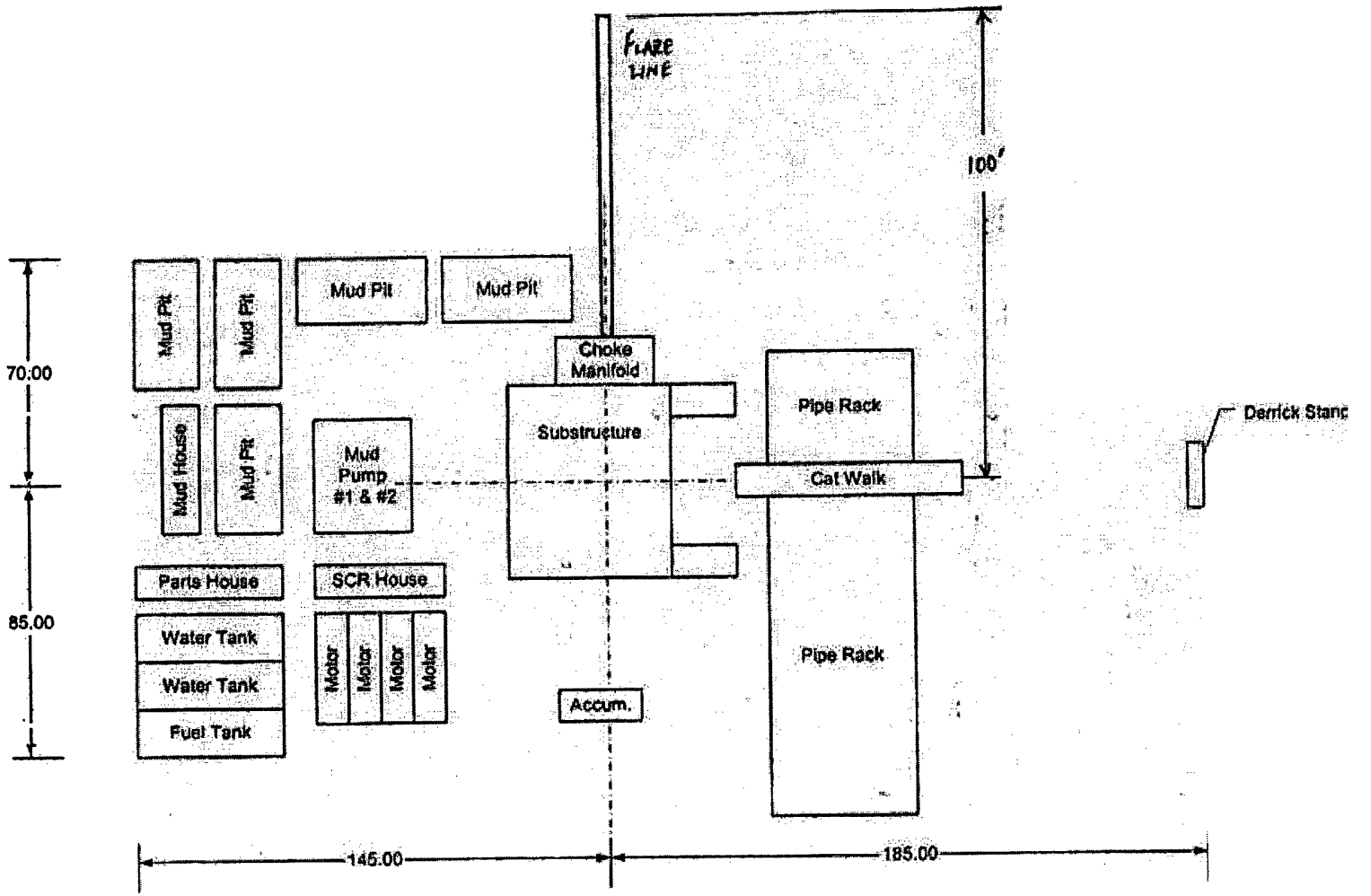


LIVESTOCK FEDERAL # 1

NOT TO SCALE

3916679

PAGE 02



Chesapeake Operating, Inc

General Rig Layout

SIZE	FSCM NO	DWG NO	REV
		Generic	

TITLE PAGE/ABSTRACT/
NEGATIVE SITE REPORT
CFO/RFO

1/03

1. BLM Report No.	2. Reviewer's Initials/Date_____ ACCEPTED ( ) REJECTED ( )	3. NMCRIS No.: 85355

4. Type of Report Negative(X) Positive ( )

5.Title of Report: Class III Archaeological Survey of a Well Pad and Access Road for Chesapeake Operating, Inc's Livestock Federal No. 1 Well Author: Stephen Smith	6. Fieldwork Date: October 2, 2003 7. Report Date: October 4, 2003
8. Consultant Name & Address: Boone Archaeological Services 2030 North Canal Carlsbad, NM 88220 Direct Charge: Danny Boone Field Personnel Name: Stephen Smith Phone: (505) 885-1352	9. Cultural Resource Permit No. 190-2920-03-E 10. Consultant Report No. BAS 09-03-28
11. Customer Name: Chesapeake Operating, Inc. Responsible Individual: Sharon E. Dries Address: P.O. Box 18496 Oklahoma City, Oklahoma 73154-7930 Phone: (405) 848-8000	12. Customer Project No.:

13.Land Status	BLM	STATE	PRIVATE	OTHER	TOTAL
a. Area Surveyed (acres)	20.43	0	0	0	20.43
b. Area of Effect (acres)	6.48	0	0	0	6.48

14. Linear: Length: 4,078 ft (access road) Width: 130 ft

15. Location: (Maps Attached if Negative Survey)

a. State: New Mexico
b. County: Lea
c. BLM Office: Carlsbad
d. Nearest City or Town: Carlsbad, NM
e. Legal Location: T 22S, R 33E, Section 8: N½SE¼SW¼, N½SW¼SE¼, N½NE¼SE¼
Section 9: S½NW¼SW¼, N½SW¼SW¼
f. Well Pad Footages: 1,600 ft FSL, 800 ft FWL
g. USGS 7.5 Map Name and Code Number: Grama Ridge, NM (1984) 32103-D5

16. Project Data:

a. Records Search: Date of BLM File Review: September 26, 2003 Name of Reviewer: Ann Boone
Date of ARMS Data Review: September 26, 2003 Name of Reviewer: Ann Boone

Findings:

Sites within 0.25 mile of the project area: Pre-field investigation for this project revealed that no previously recorded sites are plotted within 0.25 mile or 1.0 mile of the project area.

b. Description of Undertaking: Chesapeake Operating, Inc. plans to construct a well pad and access road to serve the Livestock Federal No. 1 well. On September 24, 2003, Ms. Sharon Dries of Chesapeake Operating, Inc. contacted Boone Archaeological Services requesting an archaeological survey for the proposed well pad and access road. The well pad is staked at 600 ft by 600 ft (8.26 acres). The access road begins at an existing well pad and extends 4,078 ft (12.17 acres) east before entering the southwest corner of the proposed well pad. Although a portion of the project is within a previous block survey (BLM 85-419), BLM-CFO archaeologist Tiffany Sullivan-Owens requested that the project area (portion of the access road) be surveyed again. The project also interacts with BLM previous project 93-155. A total of 20.43 acres was surveyed, all of which is on surface land administered by the BLM-CFO.

c. Environmental Setting:

Topography: Aeolian, slight slope going uphill from west to east, project begins along the drainage of the San Simon Swale

Vegetation: Mesquite, shin oak, yucca, prickly pear, sage, pencil cholla, and various grasses

Visibility: 65-75 percent due to vegetative cover

NRCS: Pyote-Maljamar-Kermit association: Gently undulating and rolling, deep, sandy soils

d. Field Methods:

Transect Interval: Four transects that are no greater than 10 meters in width

Crew Size: 1

Time in Field: 6

e. Artifacts Collected: None

17. Cultural Resource Findings: No cultural resources were encountered during this survey.

a. Identification and description: N/A

b. Evaluation of significance of Each Resource: N/A

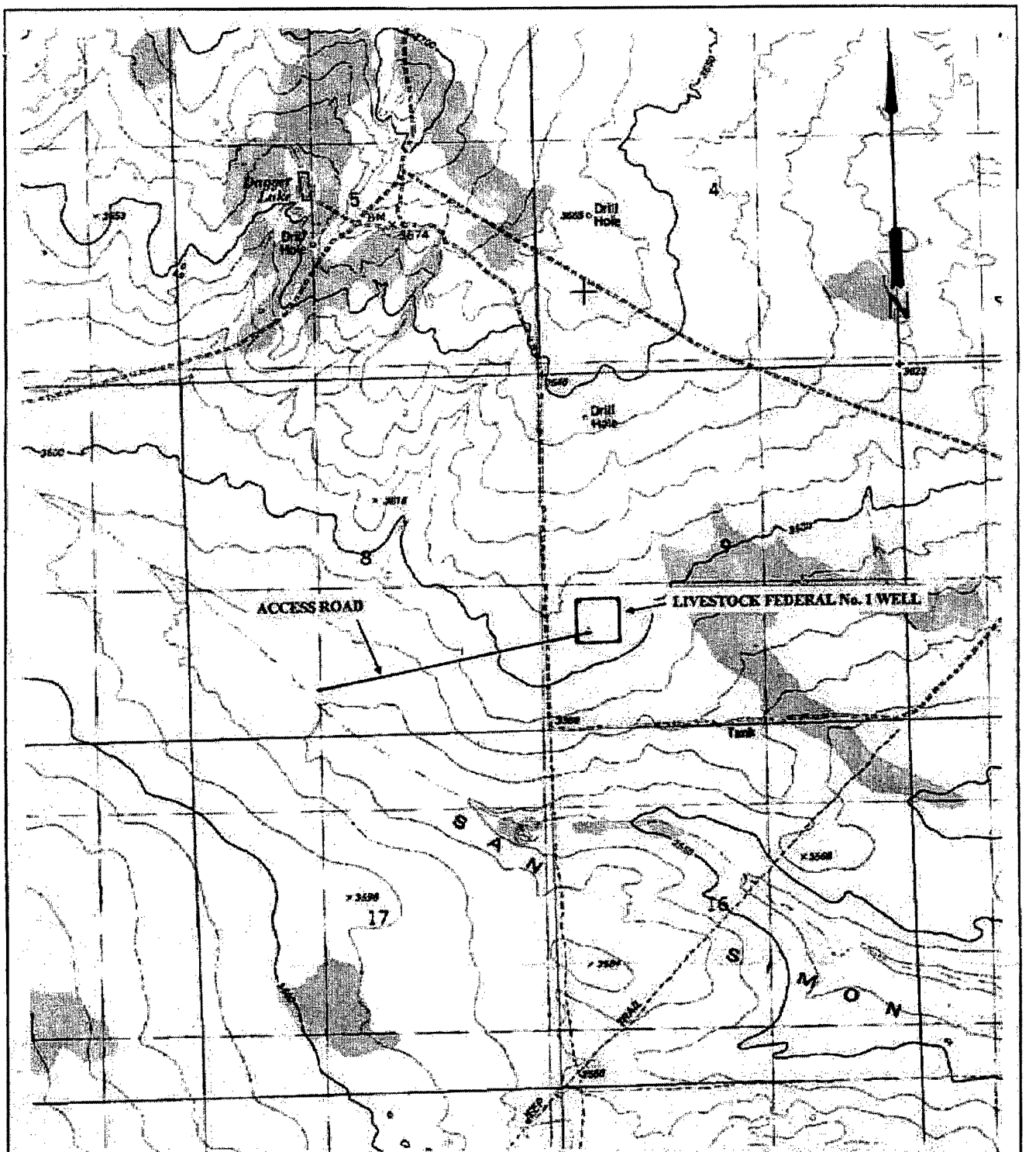
18. Management Summary (Recommendations): Because no cultural resources were encountered during this survey, Chesapeake Operating, Inc.'s proposed well pad and access road for the Livestock Federal No. 1 well is recommended as presently staked. If cultural resources are encountered during any construction related activity, construction should cease and an archaeologist with the BLM be immediately notified.

19.

I certify that the information provided above is correct and accurate and meets all appreciable BLM standards.

Responsible Archaeologist Stephen Mark 10-6-03

Signature Date



Location Map: Class III Archaeological Survey of a Well Pad and Access Road for Chesapeake Operating, Inc's Livestock Federal No. 1 Well in Sections 8 and 9, T 22S, R 33E, NMPM, Lea County, New Mexico. Map Reference USGS 7.5' Series, Grama Ridge, NM (1984) 32103-D5

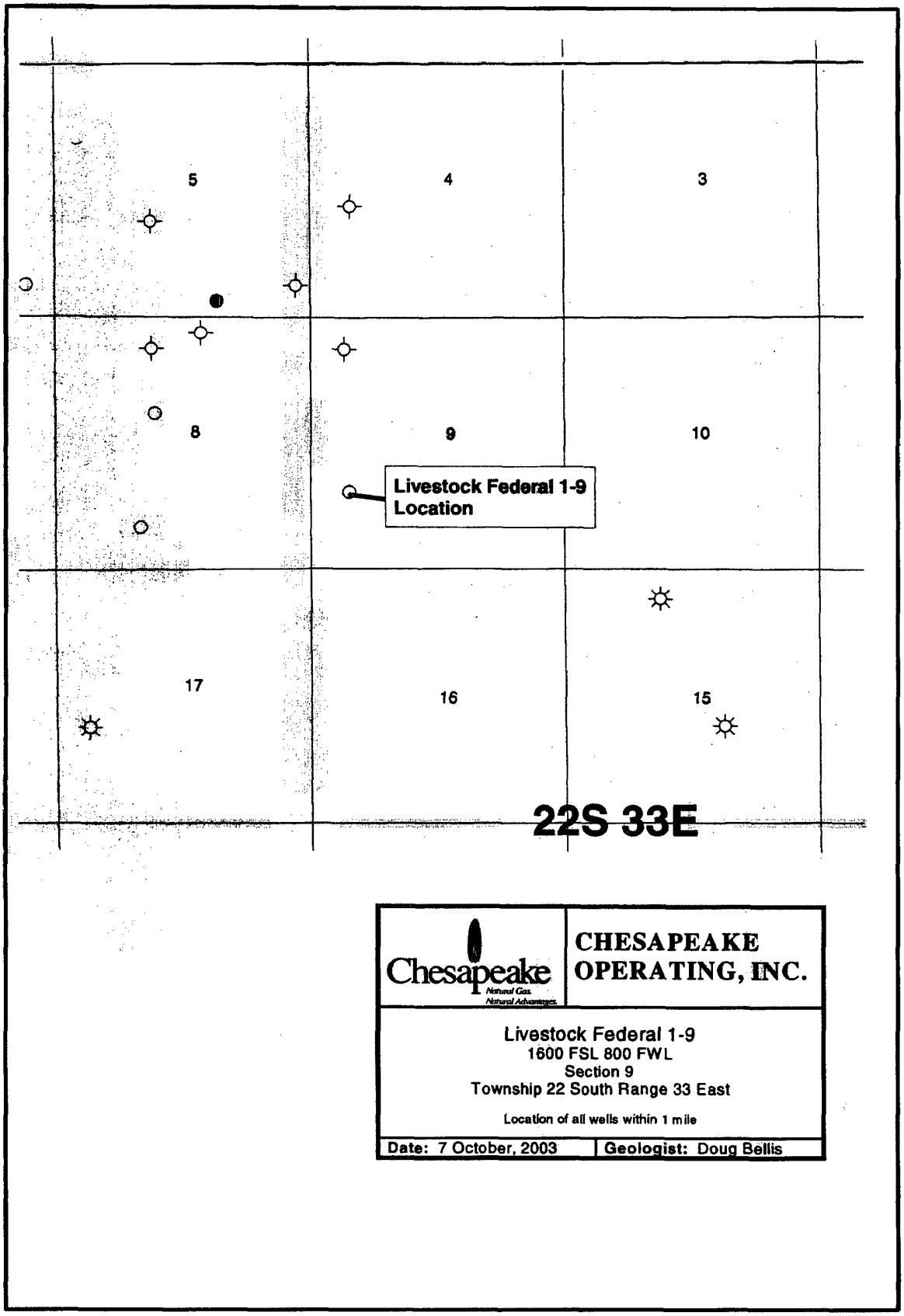
SCALE 1:24000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

RAS



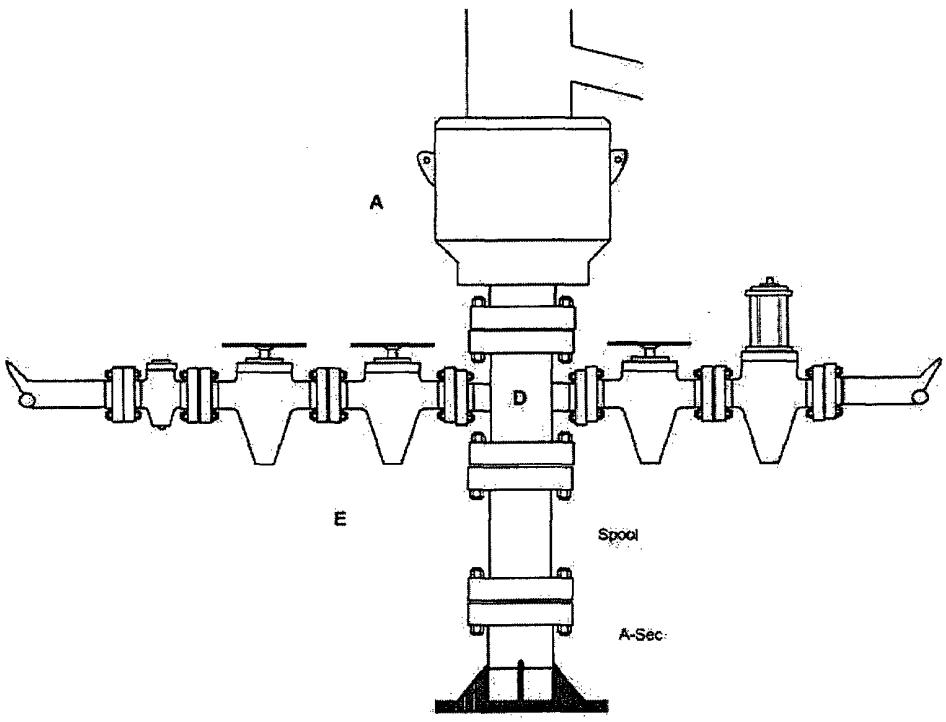
Chesapeake Natural Gas. Natural Advantages.	CHESAPEAKE OPERATING, INC.
Livestock Federal 1-9 1600 FSL 800 FWL Section 9 Township 22 South Range 33 East Location of all wells within 1 mile	
Date: 7 October, 2003	Geologist: Doug Bellis

BLOWOUT PREVENTOR SCHEMATIC

CHESAPEAKE OPERATING INC

WELL : Livestock Federal 1-9
FIELD :
RIG : Nabors 311
COUNTY : Lea STATE: New Mexico
OPERATION: Drill out below 13-5/8" Casing

	SIZE	PRESSURE	DESCRIPTION
A	13-5/8"	5,000#	Annular
D	13-5/8"	10,000#	Mud Cross
Spool		13-5/8" 3M x 13-5/8" 10M	
A-Sec		13-5/8" SOW x 13-5/8" 3M	



Kill Line

SIZE	PRESSURE	DESCRIPTION
2"	10,000#	Check Valve
2"	10,000#	Gate Valve
2"	10,000#	Gate Valve

Choke Line

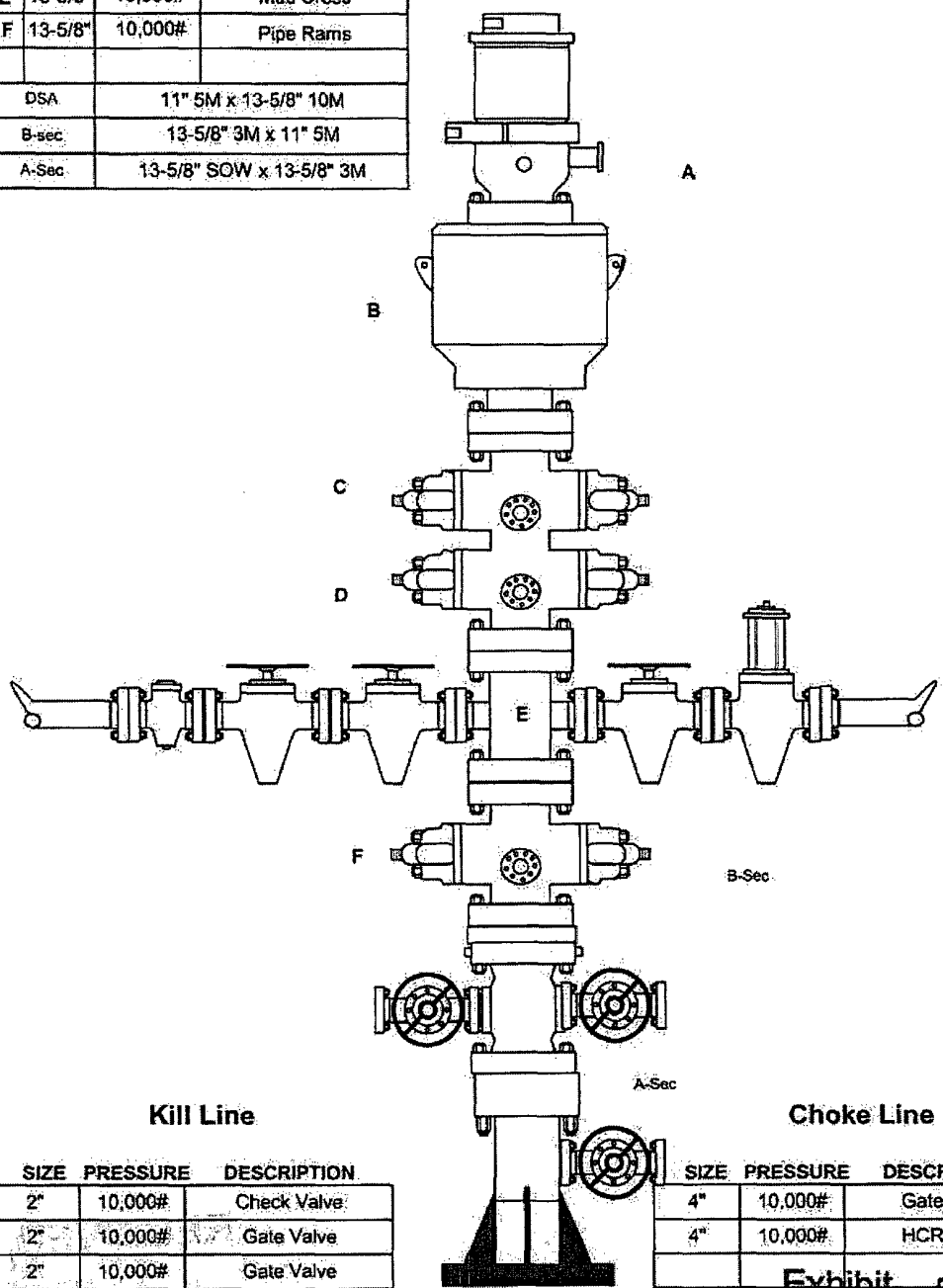
SIZE	PRESSURE	DESCRIPTION
4"	10,000#	Gate Valve
4"	10,000#	HCR Valve
	Exhibit F-1	

BLOWOUT PREVENTOR SCHEMATIC

CHESAPEAKE OPERATING INC

WELL : Livestock Federal 1-9
FIELD : Permian
RIG : Nabors 311
COUNTY : Lea **STATE:** New Mexico
OPERATION: Drill out below 9-5/8" Casing

	SIZE	PRESSURE	DESCRIPTION
A	13-5/8"	500#	Rot Head
B	13-5/8"	5,000#	Annular
C	13-5/8"	10,000#	Pipe Rams
D	13-5/8"	10,000#	Blind Rams
E	13-5/8"	10,000#	Mud Cross
F	13-5/8"	10,000#	Pipe Rams
DSA		11" 5M x 13-5/8" 10M	
B-sec		13-5/8" 3M x 11" 5M	
A-Sec		13-5/8" SOW x 13-5/8" 3M	



Kill Line

SIZE	PRESSURE	DESCRIPTION
2"	10,000#	Check Valve
2"	10,000#	Gate Valve
2"	10,000#	Gate Valve

Choke Line

SIZE	PRESSURE	DESCRIPTION
4"	10,000#	Gate Valve
4"	10,000#	HCR Valve

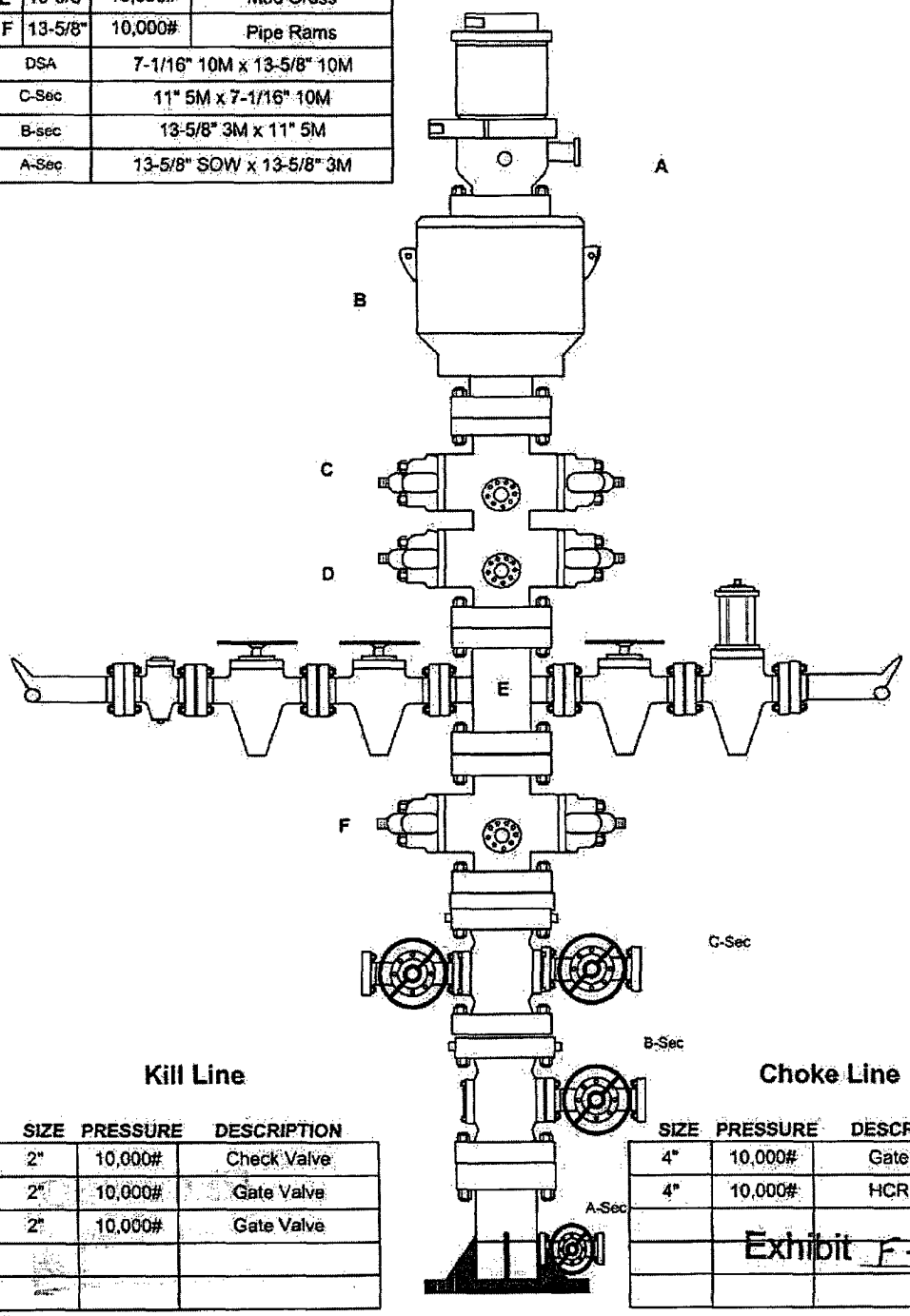
Exhibit F-2

BLOWOUT PREVENTOR SCHEMATIC

CHESAPEAKE OPERATING INC

WELL : Livestock Federal 1-9
FIELD : Permian
RIG : Nabors 311
COUNTY : Lea **STATE:** New Mexico
OPERATION: Drill out below 7" Casing

	SIZE	PRESSURE	DESCRIPTION
A	13-5/8"	500#	Rot Head
B	13-5/8"	5,000#	Annular
C	13-5/8"	10,000#	Pipe Rams
D	13-5/8"	10,000#	Blind Rams
E	13-5/8"	10,000#	Mud Cross
F	13-5/8"	10,000#	Pipe Rams
DSA		7-1/16" 10M x 13-5/8" 10M	
C-Sec		11" 5M x 7-1/16" 10M	
B-sec		13-5/8" 3M x 11" 5M	
A-Sec		13-5/8" SOW x 13-5/8" 3M	



Kill Line

SIZE	PRESSURE	DESCRIPTION
2"	10,000#	Check Valve
2"	10,000#	Gate Valve
2"	10,000#	Gate Valve

Choke Line

SIZE	PRESSURE	DESCRIPTION
4"	10,000#	Gate Valve
4"	10,000#	HCR Valve

Exhibit F-3

BLOWOUT PREVENTOR SCHEMATIC

CHESAPEAKE OPERATING INC

WELL : Livestock Federal 1-9
FIELD :Permian
RIG : Nabors 311
COUNTY : Lea STATE: NM
OPERATION: 10M Choke Manifold

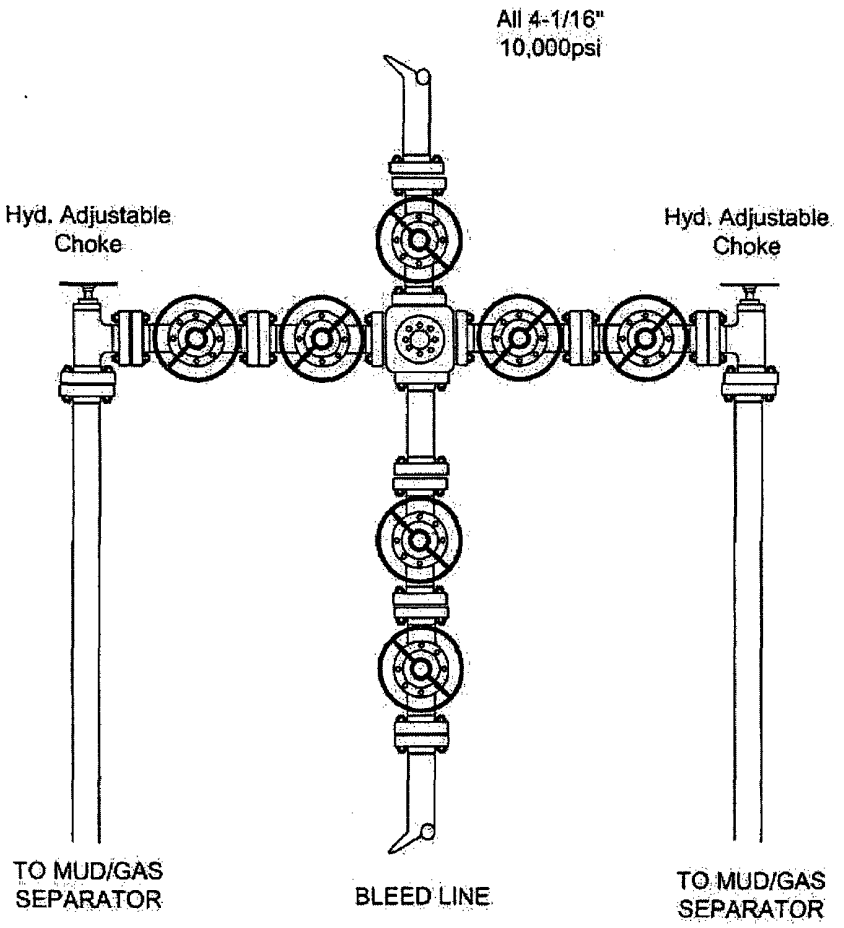


Exhibit F-4

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

1. EXISTING ROADS

   a. Driving directions to the well. From Hobbs, NM go west on Hwy 62/180 approximately 40 miles to county road 29. Turn left (south) on C 29 and go 14.2 miles to the Conoco Bootleg compress station sign on left. Turn left (east) and go 4.1 miles to "T". Turn right & go 1.0 miles to "Y" veer left and go 2 miles. Turn right and go 1.2 miles. Turn left and go .7 miles to "Y", veer left and go .8 mile to "Y". Veer left and go 1.0 miles. Turn right and go .6 miles then turn left and go 1.1 miles. Turn right & go .7 miles to location entrance. Continue east .7 miles to location. The total mileage from Hobbs will be approximately 67 miles.
   b. Location, access and vicinity plats attached hereto. See Exhibit A-1, A-2, and A-3.

2. PLANNED ACCESS ROADS

   a. A new access road 4078' in length and 14' in travel way width with a maximum disturbance area of 30' will be built coming off an existing access road in a easterly direction. See Exhibit A-2. The road will be built in accordance with guidelines set forth in the BLM Onshore Orders.
   b. Any required turnouts will be constructed using BLM guidelines.
   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.

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

4. LOCATION OF PRODUCTION FACILITIES

   Production facilities will be located on location. A pipeline company will lay a pipeline to our location. The meter run will be located on location. See Exhibit C.

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

All other 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. Sanitary wastes will be contained in a chemical porta-toliet and then hauled to an approved sanitary landfill.

8. ANCILLARY FACILITIES

None.

9. WELLSITE LAYOUT

The proposed site layout plat is attached showing rig orientation and equipment location. See Exhibit D.

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. SURFACE AND MINERAL OWNERSHIP

United States of America
Department of Interior
Bureau of Land Management

GRAZING LEASEE
Merchant Livestock Company
P.O. Box 1166
Carlsbad, NM 88220

12. ADDITIONAL INFORMATION

A Class III cultural resource inventory report was prepared by Danny Boone of Boone Archaeological Services, LLC, for the proposed location and new access road. Clearance has been recommended. See Exhibit E.

13. OPERATOR'S REPRESENTATIVES

Drilling and Completion Operations
Colley Andrews
District Manager
P.O. Box 18496
Oklahoma City, OK 73154
405-879-9230 (OFFICE)
405-850-4336 (MOBILE)
405-879-7930 (FAX)
candrews@chkenergy.com

Drilling Engineer
Rob Jones
P.O. Box 18496
Oklahoma City, OK 73154
405-848-8000 Ext. 2694 (OFFICE)
405-879-9571 (FAX)
405-650-6399 (MOBILE)
rjones@chkenergy.com

Production Operations
Mark Mabe
5014 Carlsbad Hwy
Hobbs, NM 88240
505-391-1462 (OFFICE)
505-391-6679 (FAX)
505-390-0221 (MOBILE)
mmabe@chkenergy.com

Asset Manager
Andrew McCalmont
P.O. Box 18496
Oklahoma City, OK 73154-0496
405-848-8000 Ext. 852 (OFFICE)
405-879-7930 (FAX)
amccalmont@chkenergy

Regulatory Compliance
Sharon E. Dries
Regulatory Analyst
Mailing Address: P.O. Box 18496
Oklahoma City, OK 73154
Street Address: 6100 N. Western
Oklahoma City, OK 73118
405-879-7985 (OFFICE)
405-879-9583 (FAX)
sdries@chkenergy.com

14. CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which presently exist; that the statements made in this surface use plan are, to the best of my knowledge, true and correct; and, that the work associated with the operations proposed will be performed by operator (including contractors and subcontractors) submitting the APD, in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

By: _____

Date: _____

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	Depth	Subsea
Rustler	1090	2540
Delaware	4820	-1190
Bell canyon	4980	-1350
Cherry Canyon	5780	-2150
Cherry Canyon Marker	5960	-2330
Brushy Canyon	6930	-3300
Basal Brushy Canyon Sd	8500	-4870
Bone Springs Lime	8690	-5060
Upper Bone Springs Pay	8860	-5230
First Bone Springs	9900	-6270
Second Bone Springs	10520	-6890
Third Bone Springs	11750	-8120
Wolfcamp	11990	-8360
Cisco	12810	-9180
Canyon	13260	-9630
Strawn	13400	-9770
Atoka	13620	-9990
Atoka Sand	13700	-10140
Atoka Bank	13770	-10140
Upper Morrow Marker	14335	-10705
U Morrow Red Tank Sand	14420	-10790
Morrow Clastic	14510	-10880
Middle Morrow Marker	14560	-10970
Morrow B Sand	14600	-11130

Morrow C Sand	14760	-11130
Lower Morrow	14980	-11350
Upper Lower Morrow Sand	15000	-11370
Barnett Shale	15150	-11520
Total Depth	**15400**	-11770

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	Bell Canyon	4980
Oil	Basal Brushy Canyon Sd	8500
Oil	Upper Bone Springs Pay	8860
Oil	First Bone Springs	9900
Gas	Atoka Sand	13700
Gas	U Morrow Red Tank Sd	14420
Gas	Morrow B Sand	14600
Gas	Morrow C Sand	14760
Gas	Upper Lower Morrow Sd	15000

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

3. BOP EQUIPMENT: **10,000# System**

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

I. BOP, Annular, Choke Manifold, Pressure Test - See Exhibits F-1 to F-4.

A. Equipment
1. The equipment to be tested includes all of the following that is installed on the well. See Exhibit H and I.
(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 the rated working pressure.
7. 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 as 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.

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:

System Operating Pressures	Precharge Pressure
1,500 PSI	750 PSI
2,000 PSI	1,000 PSI
3,000 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

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:

Purpose	Interval	Hole Size	Casing Size	Weight	Grade	Thread	Condition
Surface	0'-1,100'	17-1/2	13-3/8	54.5	J-55	STC	New
Intermediate	0'-4,650'	12-1/4"	9-5/8	40	J-55	LTC	New
Production	0'-12,100'	8-3/4	7	29	L-80	LTC	New
Prod Liner	11,900'-15,400'	6-1/8"	4-1/2"	13.5	P-110	LTC	New

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

c. The cementing program will be as follows:

Interval	Type	Amount	Yield	Washout	Excess
0'-1,100'	Class C	500	1.34	50%	100%
0'-4,650'	Class C 50/50 Poz	800	2.37	50%	100%
0'-12,100'	Class H	300	1.07	25%	40%
11,900'-15,400'	Class H	400	1.07	5%	10%

5. MUD PROGRAM

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

Interval	Mud Type	Mud Weight	Viscosity	Fluid Loss
0'-1,100'	Fresh Water	8.4-8.9	34-36	NC
1,100'-4,650'	Salt	9.9-10.1	32-34	NC
4650'-12,100'	Fresh Water	8.4-8.5	28-29	NC
12,100'-15,400'	Brine	9.8-12.8	36-40	10-12

A lined earthen pit will be utilized during the drilling of this well. All fluids and cuttings will be disposed of in accordance with New Mexico Oil Conversation Division rules and regulations.

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

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 GR, Density, Neutron Pe & High resolution Induction, Sonic from 4800-12,100. Then GR, Density, Neutron, Pe, Dual laterolog, Sonic 12,100 to TD.
c. Cores samples are not planned.

7. ABNORMAL PRESSURES AND HYDROGEN SULFIDE
a. The estimated bottom hole pressures is 9000 psi. No abnormal pressures or temperatures are anticipated.
b. No hydrogen sulfide gas is expected to be encountered.