RECEIVED
MAR 02 2020
EMNRD-OCD ARTESIA

Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM0003677

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☐ Oil Well ☑ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☐ Single Zone ☑ Multiple Zone

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

8. Lease Name and Well No.
LEATHERNECK 3029 FED COM
223H 326053

2. Name of Operator
MATADOR PRODUCTION COMPANY

9. API Well No.
30-015-46815

3a. Address
5400 LBJ Freeway, Suite 1500 Dallas TX 75240

3b. Phone No. *(include area code)*
(972)371-5200

10. Field and Pool, or Exploratory
BURTON FLAT; WOLFCAMP, EAST

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface LOT 3 / 1435 FSL / 250 FWL / LAT 32.5412053 / LONG -104.12183
At proposed prod. zone NESE / 2310 FSL / 60 FEL / LAT 32.5435063 / LONG -104.0888025

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 30 / T20S / R29E / NMP

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

12. County or Parish
EDDY

13. State
NM

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

16. No of acres in lease
2150.97

17. Spacing Unit dedicated to this well
317.32

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

19. Proposed Depth
9506 feet / 19679 feet

20. BLM/BIA Bond No. in file
FED: NMB001079

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3235 feet

22. Approximate date work will start*
09/01/2019

23. Estimated duration
65 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

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 requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Brian Wood / Ph: (505)466-8120	07/16/2019
Title: President		
Approved by *(Signature)*: (Electronic Submission)	Name *(Printed/Typed)*: Cody Layton / Ph: (575)234-5959	Date: 02/27/2020
Title: Assistant Field Manager Lands & Minerals	Office: CARLSBAD	

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.

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.

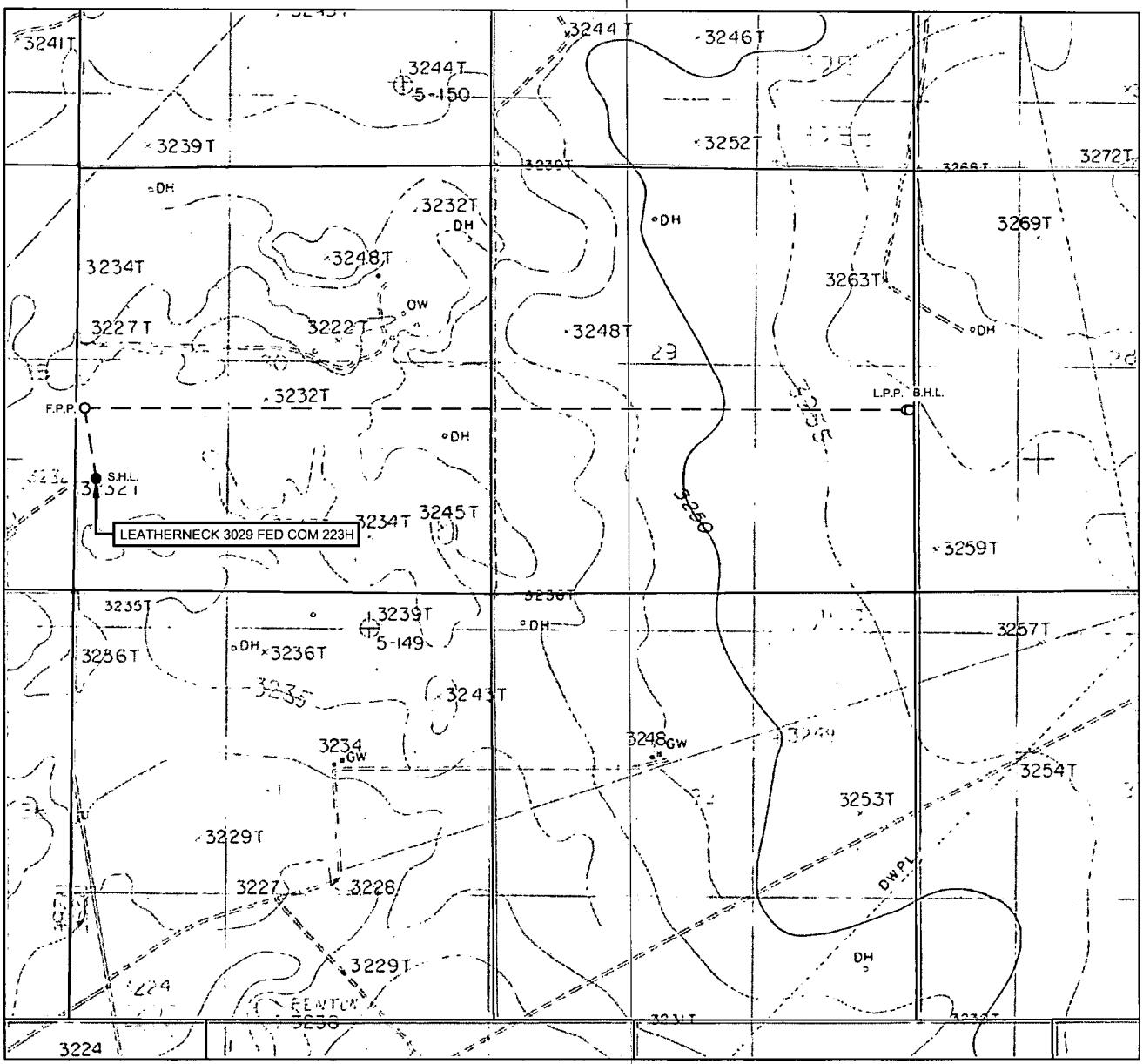
APPROVED WITH CONDITIONS
Approval Date: 02/27/2020

NSL
Gas well 330' take pts,
RJS 3-10-20

(Continued on page 2)

*(Instructions on page 2)

LOCATION & ELEVATION VERIFICATION MAP



Matador PRODUCTION COMPANY

LEASE NAME & WELL NO.: LEATHERNECK 3029 FED COM 223H

SECTION 30 TWP 20-S RGE 29-E SURVEY N.M.P.M.
COUNTY EDDY STATE NM ELEVATION 3235'
DESCRIPTION 1435' FSL & 250' FWL

LATITUDE N 32.5412053 LONGITUDE W 104.1218300

SCALE: 1" = 2000'
0' 1000' 2000'

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY MATADOR PRODUCTION COMPANY. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.

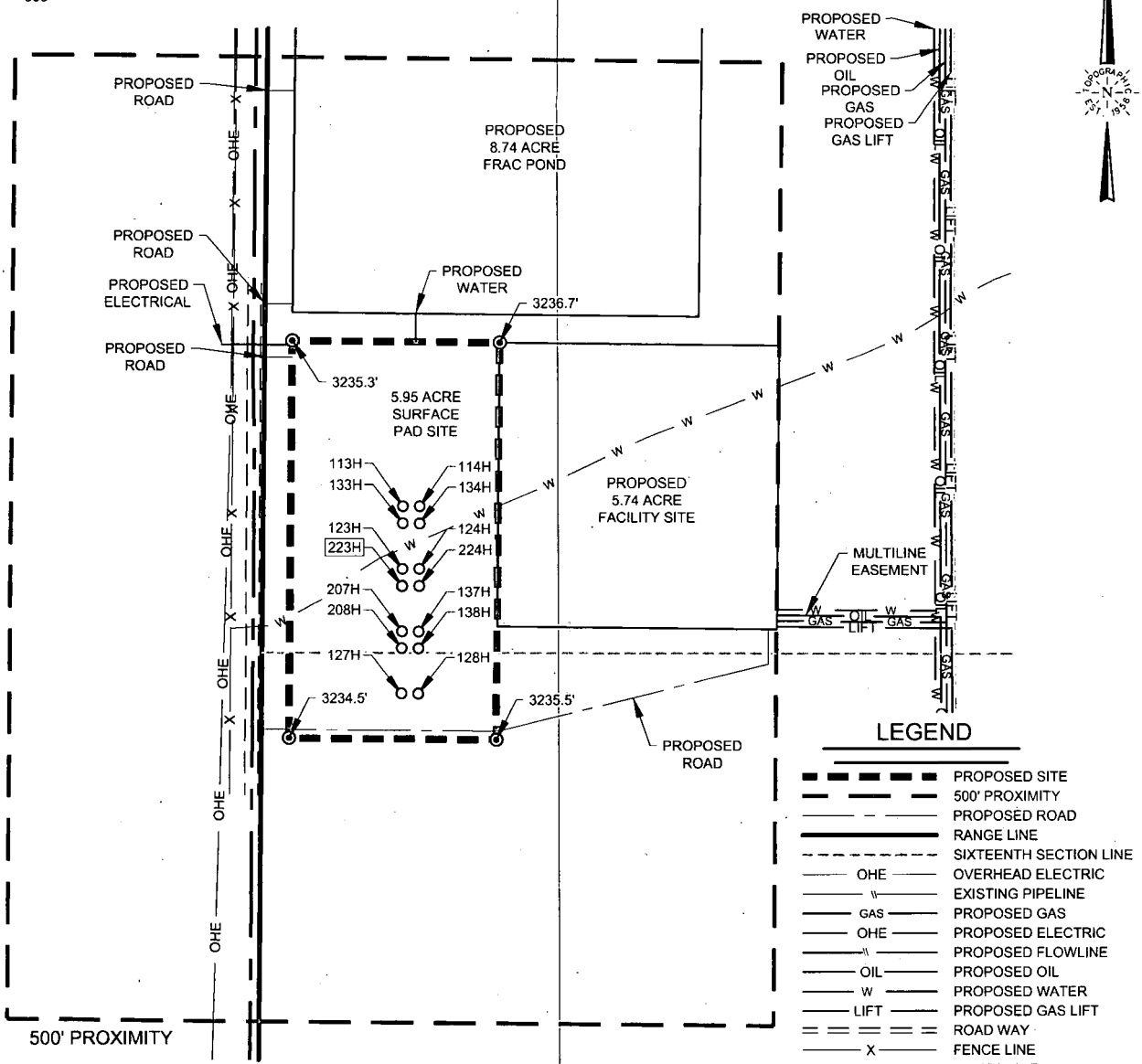
TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

S:\SURVEY\MATADOR_RESOURCES\LEATHERNECK_30-20S-29E\FINAL_PRODUCTS\LO_LEATHERNECK_3029_FED_COM_223H_REV5.DWG 5/7/2019 4:44:25 PM bgregory

SCALE: 1" = 300'

0' 150' 300'

SECTION 30, TOWNSHIP 20-S, RANGE 29.-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



LEGEND

- PROPOSED SITE
- 500' PROXIMITY
- PROPOSED ROAD
- RANGE LINE
- SIXTEENTH SECTION LINE
- OHE — OVERHEAD ELECTRIC
- EXISTING PIPELINE
- GAS — PROPOSED GAS
- OHE — PROPOSED ELECTRIC
- PROPOSED FLOWLINE
- OIL — PROPOSED OIL
- W — PROPOSED WATER
- LIFT — PROPOSED GAS LIFT
- ROAD WAY
- X — FENCE LINE
- W — WATER LINE
- IRON ROD SET

ANGEL M. BAEZA
NEW MEXICO
25116
PROFESSIONAL SURVEYOR

Matador PRODUCTION COMPANY

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY

1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

Angel M. Baeza, License No. 25116
MAY 7, 2019

LEATHERNECK 3029 FED COM 223H PROXIMITY MAP	
DATE: 05/11/18	
FILE: LO_LEATHERNECK_3029_FED_COM_223H_REV5	
DRAWN BY: EAH	
SHEET: 7 OF 7	

REVISION:	
IMU	02/19/2019
MML	03/21/2019
JDR	04/02/2019
MML	05/01/2019

NOTES:
1. ORIGINAL DOCUMENT SIZE: 8.5" X 11"
2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.
3. CERTIFICATION IS MADE ONLY TO THE LOCATION OF THIS EASEMENT, IN RELATION TO THE EVIDENCE FOUND DURING A FIELD SURVEY, MADE ON THE GROUND, UNDER MY SUPERVISION, AND USING DOCUMENTATION PROVIDED BY MATADOR PRODUCTION COMPANY. ONLY UTILITIES/EASEMENTS THAT WERE VISIBLE ON THE DATE OF THIS SURVEY, WITHIN/ADJOINING THIS EASEMENT, HAVE BEEN LOCATED AS SHOWN HEREON OF WHICH I HAVE KNOWLEDGE. THIS CERTIFICATION IS LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE, AND MADE FOR THIS TRANSACTION ONLY.
4. ADJOINER INFORMATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.

S:\SURVEY\MATADOR_RESOURCES\LEATHERNECK_30-20S-29E\FINAL_PRODUCTS\LO_LEATHERNECK_3029_FED_COM_223H_REV5.DWG 5/7/2019 4:44:29 PM bgregory

Matador Production Company

Leatherneck Fed Com Slot 3/4:
Well Vicinity & Lease Map

Sections 29 & 30, T.20S, R.29E
Eddy County, New Mexico

- Proposed Lateral
- Matador Lease Line
- BLM Surface
- State Surface

1:20,350

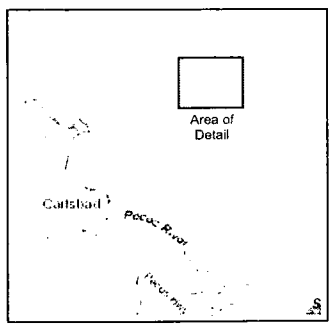
0 0.125 0.25 0.5
Miles

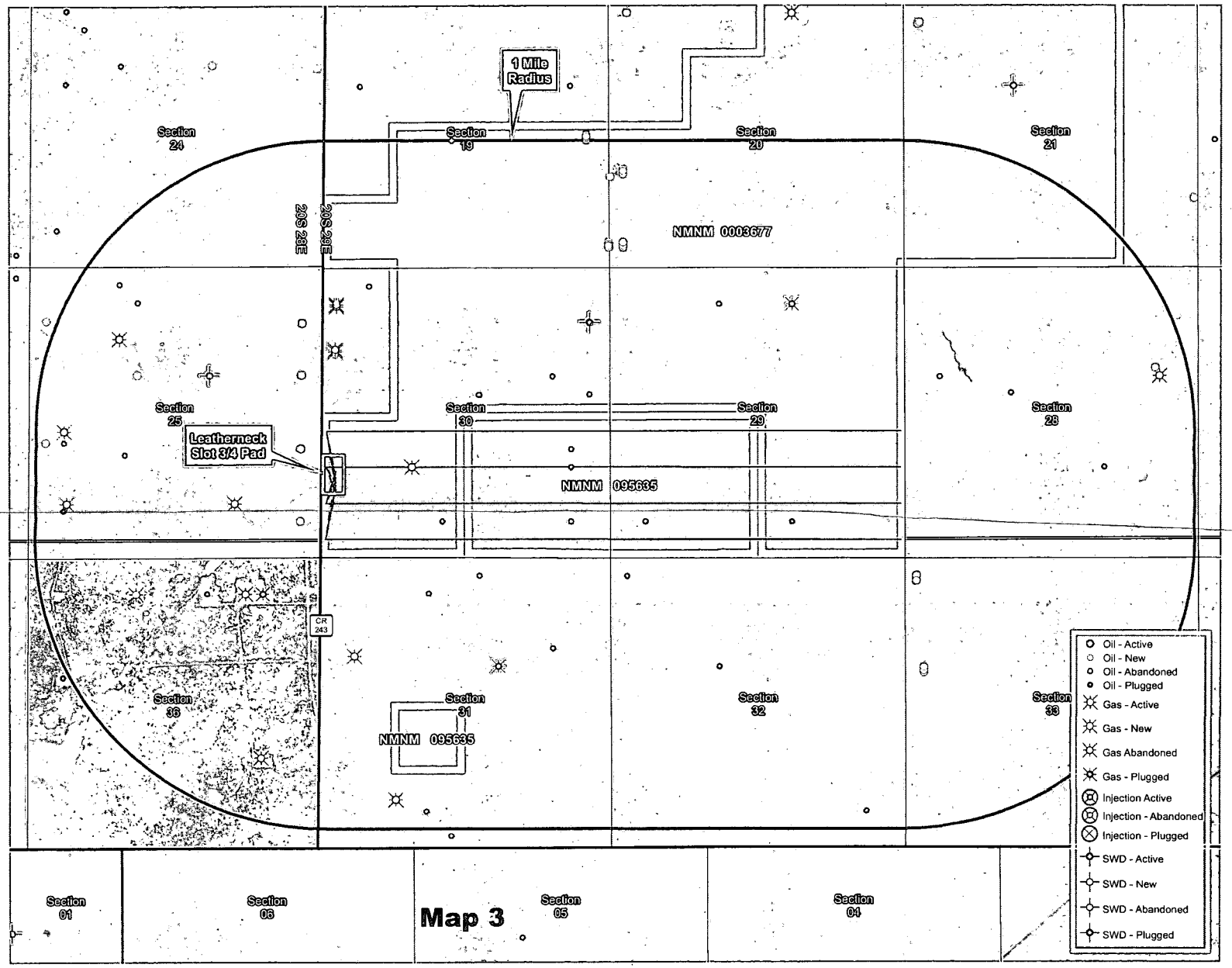
N

NAD 1983 New Mexico State Plane East
FIPS 3001 Feet

PERMITS WEST

Prepared by Permits West, Inc., June 26, 2019
for Matador Production Company





AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report

02/27/2020

APD ID: 10400043752

Submission Date: 07/16/2019

Highlighted data reflects the most recent changes

Show Final Text

Operator Name: MATADOR PRODUCTION COMPANY

Well Name: LEATHERNECK 3029 FED COM

Well Number: 223H

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
499431	RUSTLER	3235	165	165	ANHYDRITE	NONE	N
499430	TOP SALT	2971	265	265	SALT	NONE	N
499432	BASE OF SALT	2445	791	791	SALT	NONE	N
499427	YATES	2371	865	865	OTHER : Cave/Karst	NONE	N
499428	SEVEN RIVERS	1921	1315	1315	OTHER : Cave/Karst	NONE	N
499433	CAPITAN REEF	1846	1390	1390	OTHER : Capitan Aquifer	NONE	N
499429	CHERRY CANYON	251	2985	2985	SANDSTONE	NATURAL GAS, OIL	N
499434	BRUSHY CANYON	-709	3945	3945	SANDSTONE	NATURAL GAS, OIL	N
499435	BONE SPRING LIME	-2389	5625	5625	LIMESTONE	NATURAL GAS, OIL	N
499436	BONE SPRING 1ST	-3507	6743	6743	SANDSTONE	NATURAL GAS, OIL	Y
499437	BONE SPRING 2ND	-3769	7005	7005	OTHER : Carbonate	NATURAL GAS, OIL	N
499438	BONE SPRING 2ND	-4246	7482	7482	SANDSTONE	NATURAL GAS, OIL	N
499425	BONE SPRING 3RD	-4633	7869	7869	OTHER : Carbonate	NATURAL GAS, OIL	N
499426	BONE SPRING 3RD	-5494	8729	8729	SANDSTONE	NATURAL GAS, OIL	N
499424	WOLFCAMP	-5897	9132	9176		NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Operator Name: MATADOR PRODUCTION COMPANY

Well Name: LEATHERNECK 3029 FED COM **Well Number:** 223H

Pressure Rating (PSI): 5M **Rating Depth:** 12000

Equipment: A 12,000' 5000-psi BOP stack consisting of 3 rams with 2 pipe rams, 1 blind ram, and one annular preventer will be utilized below intermediate 1 casing to TD. See attachments for BOP and choke manifold diagrams. An accumulator complying with Onshore Order #2 requirements for the pressure rating of the BOP stack will be present. A rotating head will also be installed as needed.

Requesting Variance? YES

Variance request: Matador requests a variance to have the option of running a multi-bowl wellhead assembly. The BOPs will not be tested again unless any flanges are separated or if the time between the setting of the intermediate casing and reaching within 500' from the top of the Wolfcamp formation exceeds 30 days per the CFO Drilling COAs. Matador requests a variance to drill this well using a co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. If the specific hose is not available, then one of equal or higher rating will be used. Matador requests a variance to have the option of batch drilling this well with other wells on the same pad. In the event that this well is batch drilled, the wellbore will be secured with a blind flange of like pressure. When the rig returns to this well and BOPs are installed, the operator will perform a full BOP test. Matador requests a variance for the use of a diverter along with a 2000-psi annular to be installed after running 20" casing. Matador requests the option to cut off 20" SOW wellhead and run 13-3/8" SOW multi-bowl wellhead system once 1st intermediate string is run and cemented.

Testing Procedure: BOP will be inspected and operated as required in Onshore Order #2. Kelly cock and sub equipped with a full opening valve sized to fit the drill pipe and collars will be available on the rig floor in the open position. A third party company will test the BOPs. After setting intermediate casing, a minimum 5M BOPE system will be installed. Test pressures will be 250 psi low and 5000 psi high with the annular preventer being tested to 250 psi low and 2500 psi high before drilling below intermediate shoe. In the event that the rig drills multiple wells on the pad and any seal subject to test pressures are broken, a full BOP test will be performed when the rig returns and the 5M BOPE system is re-installed.

Choke Diagram Attachment:

LN_223H_5M_Choke_20190716120158.pdf

BOP Diagram Attachment:

LN_223H_5M_BOP_20190716120208.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	26	20.0	NEW	API	N	0	400	0	400	3235		400	J-55	94	BUTT	1.125	1.125	DRY	1.8	DRY	1.8
2	INTERMEDIATE	17.5	13.375	NEW	API	N	0	1200	0	1200	3235		1200	J-55	54.5	BUTT	1.125	1.125	DRY	1.8	DRY	1.8
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	3100	0	3100	3235		3100	J-55	40	BUTT	1.125	1.125	DRY	1.8	DRY	1.8
4	PRODUCTION	8.75	5.5	NEW	API	N	0	19679	0	9506	3235		19679	P-110	20	OTHER - DWC/C-IS HT Plus	1.125	1.125	DRY	1.8	DRY	1.8

Operator Name: MATADOR PRODUCTION COMPANY

Well Name: LEATHERNECK 3029 FED COM **Well Number:** 223H

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

LN_223H_casing_design_assumptions_4string_WC_20190716120256.pdf

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

LN_223H_casing_design_assumptions_4string_WC_20190716120314.pdf

Casing ID: 3 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

LN_223H_casing_design_assumptions_4string_WC_20190716120354.pdf

Operator Name: MATADOR PRODUCTION COMPANY

Well Name: LEATHERNECK 3029 FED COM **Well Number:** 223H

Casing Attachments

Casing ID: 4 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

LN_223H_casing_design_assumptions_4string_WC_20190716120436.pdf

LN_Slot34_Casing_Spec_5.5in_20190716120445.PDF

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu-Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	400	0	0	0	0	0	None	None
SURFACE	Tail		0	400	1060	1.35	14.8	1424	100	Class C	5% NaCl + LCM
INTERMEDIATE	Lead	1500	0	1200	640	1.78	13.5	1132	50	Class C	5% NaCl + LCM
INTERMEDIATE	Tail		900	1200	260	1.35	14.8	347	50	Class C	5% NaCl + LCM
INTERMEDIATE	Lead	1500	0	3100	700	1.78	13.5	1254	50	Class C	Bentonite + 1% CaCL2 + 8% NaCl + LCM
INTERMEDIATE	Tail		2480	3100	240	1.35	14.8	325	50	Class C	5% NaCl + LCM
PRODUCTION	Lead		1340	19679	970	2.22	11.5	2156	25	Class H	Fluid Loss + Dispersant + Retarder + LCM
PRODUCTION	Tail		8473	19679	2630	1.35	13.2	3549	25	Class H	Fluid Loss + Dispersant + Retarder + LCM

Operator Name: MATADOR PRODUCTION COMPANY

Well Name: LEATHERNECK 3029 FED COM **Well Number:** 223H

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: All necessary mud products for weight addition and fluid loss control will be on location at all times. Mud program subject to change due to hole conditions.

Describe the mud monitoring system utilized: An electronic Pason mud monitoring system complying with Onshore Order #2 will be used.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	400	SPUD MUD	8.4	8.8							
1200	3100	OTHER : Fresh water	8.4	8.6							
3100	19679	OTHER : Cut brine/OBM	8.6	9.4							
400	1200	OTHER : Brine water	9.5	10.2							

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

A 2-person mud logging program will be used from Kick-off point to TD. No electric logs are planned at this time. GR will be collected through the MWD tools from Intermediate casing to TD. CBL with CCL will be run as far as gravity will let it fall to top of curve.

List of open and cased hole logs run in the well:

CBL,GR

Coring operation description for the well:

No core or drill stem test is planned.

Operator Name: MATADOR PRODUCTION COMPANY

Well Name: LEATHERNECK 3029 FED COM **Well Number:** 223H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4647 **Anticipated Surface Pressure:** 2555.67

Anticipated Bottom Hole Temperature(F): 170

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

LN_Slot34_H2S_Plan_wMaps_20190716114220.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

LN_223H_horizontal_plan_20190716120650.pdf

Other proposed operations facets description:

Co-flex hose is 7K certified

Other proposed operations facets attachment:

LN_Slot34_full_wellhead_3string_20190716114020.pdf
LN_223H_CoFlex_Certs_20190716120731.pdf
LN_223H_20in_20.75_3M_SOW_20190716120745.pdf
LN_223H_Anti_Collision_report_20190716120754.PDF
LN_223H_Drill_Plan_Revised_20191219093215.pdf

Other Variance attachment:

LN_223H_DVT_Tool_Variance_Request_20190716120812.pdf

HYDROGEN SULFIDE CONTINGENCY PLAN
Drilling, Testing, & Completion

MRC ENERGY CO.

Reviewers

---------- Operations Manager
---------- Operations Supt.
---------- Staff RES
---------- Field Supt.
Blake Hermes---Engineering

H2S Contingency Plan # 0165 **Revision# 0**

This H2S Contingency Plan is subject to updating

Effective date: July 8, 2015

TABLE OF CONTENTS

INTRODUCTION

The H2S equipment will be rigged up 2 days prior to reaching a potential H2S containing zone. Drilling into any potential H2S zone shall not commence until the on-site MRC Drilling Supervisor has confirmed this plan in place.

The onsite Drilling Foreman will give Total Safety one week (7 days) notice to prepare for rig up of H2S equipment)

To be effective, the plan requires the cooperation and effort of each person participating in the drilling of an H_2S well. Each person must know his/her responsibilities and all emergency and safety procedures. He/she should thoroughly understand and be able to use with accuracy, all safety equipment while performing his/her normal duties, if the circumstance should arise. He/she should therefore familiarize himself/herself with the location of all safety equipment and check to see that it is properly stored, easily accessible at all times, and routinely maintained.

It is the intention of MRC ENERGY CO. and the Drilling Contractor to make every effort to provide adequate safeguards against harm to persons on the rig and in the immediate vicinity from the effects of hydrogen sulfide, which may be released into the atmosphere under emergency conditions. However, the initiative rests with the individual in utilizing the safeguards provided. The ideas and suggestions of the individuals involved in the drilling of this well are highly welcomed and act as a fundamental tool for providing the safest working conditions possible.

The drilling representative is required to enforce these procedures. They are set up for your safety and the safety of all others.

II. PURPOSE

It is MRC Energy Co.'s intent to provide a safe working place, not only for its employees, but also for other contractors who are aiding in the drilling of this well. The safety of the general public is of utmost concern. All precautions will be taken to keep a safe working environment and protect the public.

There is a possibility of encountering toxic hydrogen sulfide gas. Safety procedures must be adhered to in order to protect all personnel connected with the operations as well as people living within the area.

The MRC Energy Co. representative will enforce all aspects of the H2S Contingency Plan. This job will become easier by a careful study of the following pages and training and informing all personnel that will be working on the well, their duties and responsibilities.

A. OPERATING PROCEDURES

DEFINITIONS:

For purpose of this plan, on-site personnel shall be referred to as "In Scope Personnel" or "Out of Scope Personnel", per the following definitions:

In Scope Personnel – Personnel who will be working or otherwise present in potential H2S release areas, including the rig floor, cellar, pits, and shaker areas.

Out of Scope Personnel – Personnel who will not be working or Otherwise present in potential H2S areas. Such personnel include rig Site visitor, delivery and camp services personnel.

GENERAL:

Before this H_2S contingency plan becomes operational, all regularly assigned In Scope Personnel (primarily the MRC, drilling contractor, and certain service personnel,) shall be thoroughly trained in the use of breathing equipment, emergency procedures, and responsibilities. Total Safety Technician or a designee assigned by the MRC Drilling Foreman shall keep a list of all personnel who have been through the on-site H_2S training program at the drill site.

All In Scope Personnel shall be given H2S training and the steps to be taken during H2S conditions under which the well may be drilled. General information will be explained about toxic gases, as well as the physiological effects of H_2S and the various classified operating conditions. In addition, the reader will be informed his/her general responsibility concerning safety equipment and emergency procedures.

The Total Safety H_2S Safety Technician or MRC on-site RSE Technician shall make available the H2S Contingency Plan for all personnel to review.

Without exception, all personnel that arrive on location must proceed directly to and sign-in with the on-site MRC RSE Technician. In Scope Personnel will be required to complete an on-site H2S training and respirator fit testing before starting work, or produce evidence that they have received equivalent training. Out of Scope Personnel will be required to complete a site H2S awareness and general safety briefing. This briefing will consist of a H2S hazard overview, alarm review and required response to alarms.

B. PROCEDURES TO BE INITIATED PRIOR TO H2S CONTINGENCY PLAN COMPLIANCE:

A list of emergency phone numbers and contacts will be on location and posted at the following locations:

1. MRC ENERGY CO.'S Representative's Office
2. Drilling Contractor's, Toolpusher Office
3. Living Quarters Area

All safety equipment and H_2S related hardware must be set up as required by MRC Energy Co. with regard to location of briefing areas, breathing equipment, etc. All safety equipment must be inspected periodically (at least weekly) with particular attention to resuscitators and breathing equipment.

In Scope Personnel working in the well site area will be assigned breathing apparatus. Operator and drilling contractor personnel required to work in the following areas will be provided with Self Contained Breathing Apparatus:

1. Rig Floor
2. Mud Pits
3. Derrick
4. Shale Shaker
5. Cellar

The Total Safety H_2S Safety Technician will be responsible for rigging up all H_2S continuous monitoring-type detectors. The Total Safety Technician will monitor and bump test the detector units periodically (at least at least once a week to test alarm function during drilling conditions. In the event H_2S is detected, or when drilling in a zone confirmed to contain H_2S, the units shall be bump tested at least once every 24 hours. A bump test/calibration log will be kept on location. All results will be reported to the MRC on-site Drilling Foreman.

All Total Safety H2S equipment will be maintained and inspected by a Total Safety Technician on at least a Weekly basis.

C. DRILLING BELOW CONTINGENCY PLAN DEPTH

H2S response drills will be held at least once per week if possible or as often as necessary to acquaint the crews and service company personnel of their responsibilities and the proper procedures to shut-in a well. Initial drills will be performed until crews demonstrate competency donning and working under mask. After the MRC Energy Co.'s representative is satisfied with initial blowout drill procedures, a drill will be conducted weekly with each crew, as necessary. The H2S Safety Technician or designee will conduct safety talks and maintain the safety equipment, consult and carry out the instructions of the drilling supervisor. All personnel allowed in the well work area during drilling or testing operations will be instructed in the use of breathing equipment until supervisory personnel are satisfied that they are capable of using it.

After familiarization, each person must perform a drill with breathing equipment. The drill should include getting the breathing equipment, donning the breathing apparatus, and performing expected duties for a short period. A record shall be kept of all personnel drilled and the date of the drill. H2S training records will be kept on location for all personnel.

Rig crews and service company personnel shall be made aware of the location of spare air bottles, resuscitation equipment, portable fire extinguishers, H_2S monitors and detectors. Knowledge of the location of the H_2S monitors and detectors are vital in determining as our gas location and the severity of the emergency conditions.

After any device has initially detected H2S, all areas of poor ventilation shall be inspected periodically by means of a portable H_2S detector instrument. The buddy system will be utilized. (When an alarm sounds, personnel will don an SCBA, shut the well in, and proceed to SBA for roll call. The H2S Technician or designee will mask up, with a buddy and will verify source of H2S and report back to the on-site MRC Foreman.)

D. PROCEDURES PROGRAM

1. Drill Site

   a. The drilling rig will be located to allow prevailing winds to blow across the reserve pit.

   b. A Safe Briefing Area will be provided with a breathing air cascade trailer and or 30-minute SCBA's at the Primary Area. Personnel will assemble at the most up-wind station under alarm conditions, or when so ordered by the MRC Energy Co. representative, the Contractor representative, or

the Total Safety H_2S Safety Technician. Windsocks or streamers will be anchored to various strategic places on a pole about 10 feet high, so it is in easy view from the rig floor at all times.

c. Warning signs will be posted on the perimeters. "No Smoking" signs will be posted by MRC Energy Co.as well.

d. One multi-channel automatic H_2S monitor will be provided by Total Safety and the detector heads will be at the shale shaker, bell nipple, mud pits, rig floor, and quarter's area. The monitor will be located inside HSE or Company man trailer. Should the alarm be shut off to silence the sirens, the blinker light must continue to warn of H_2S presence. The Total Safety H2S Safety Technician or designee will continuously monitor the detectors and will reactivate the alarm if H_2S concentrations increase to a dangerous level.

e. A method of escape will be open at all times.

f. If available, land line telephone service will be provided or cell phones provided. (Primary communications provided)

g. A rig communication system will be provided, as needed.

h. A gas trap, choke manifold, and degasser will be installed.

i. A kill line, securely anchored and of ample strength, will be laid to the well-head from a safe location. This line is to be used only in an emergency.

General

a. The MRC Energy Co. representative and/or the Contractor's Toolpusher will be available at all times. The drilling supervisor, while on duty, will have complete charge of the rig and location operations and will take whatever action is deemed necessary to insure personnel safety, to protect the well, and to prevent damage.

b. A Mud Engineer will be on location at all times when drilling takes place at the depth H_2S may be expected. The mud engineer will be able to verify the presence or absence of H2S.

III. CONDITIONS AND EMERGENCY PROCEDURES

A. DEFINITION OF OPERATIONAL "CONDITIONS"

CONDITION I **"POSSIBLE DANGER"**

Warning Flags: Green

Alarms: No Alarm. Less than 10 ppm

Characterized By: Drilling operations in zones that may contain hydrogen sulfide. This condition remains in effect unless H_2S is detected and it becomes necessary to go to Condition II.

General Action:

a. Be alert for a condition change

b. Check all safety equipment for availability and proper functioning.

c. Perform all drills for familiarization and proficiency.

CONDITION II **"MODERATE DANGER"**

Warning Flags: Yellow

Alarms: Actuates at 10 ppm. Continuous flashing light.

Characterized By: Drilling operations in zones containing hydrogen sulfide. This condition will remain in effect until adding chemicals to the mud system neutralizes the hydrogen sulfide or it becomes necessary to go to Condition III.

General Action:

a. Be alert for a condition change

b. WHEN DRILLING AHEAD - Driller and designated crewmember will don 30 min SCBA, shut-in the well and immediately proceed to the Safe Briefing Area.

WHEN TRIPPING – Driller and two designated crewmembers will don 30 min SCBA, shut in the well and immediately proceed to the Safe Briefing Area. The Derrickman will

		don a 5-minute escape pack, descend to the rig floor, don a 30-min SCBA (if necessary) and immediately proceed to the Safe Briefing Area.
	c.	All In Scope Personnel will proceed directly to the appropriate Safe Briefing Area.
	d.	Remain in safe briefing area, take roll call and wait for instructions
	e.	Contact the Total H2S Technician if not on location.
	f.	Personnel shall ensure that their breathing apparatus is properly fitted and operational before entering an H_2S contaminated area to provide assistance to anyone who may be injured or overcome by toxic gases.
	g.	All Out of Scope Personnel will report to the appropriate Safe Briefing Area.

CONDITION III "EXTREME DANGER"

Warning Flags		Red
Alarms		Actuate at 15 ppm. Continuous Sirens and Flashing Lights
Characterized by:		Critical well operations which pose an immediate threat of H_2S exposure to on-site personnel and a potential threat to the public.
General Action:	a.	WHEN DRILLING AHEAD - Driller and designated crewmember will don 30 min SCBA, shut-in the well and immediately proceed to the Safe Briefing Area.
		WHEN TRIPPING – Driller and two designated crewmembers will don 30

min SCBA, shut in the well and immediately proceed to the Safe Briefing Area. The Derrickman will don a 5-minute escape pack, descend to the rig floor, don a 30-min SCBA (if necessary) and immediately proceed to the Safe Briefing Area.

b. All In Scope Personnel should don SCBA if nearby and immediately proceed to Safe Briefing Area. If SCBA in not nearby at time of alarm, DO NOT GO TOWARDS RIG AREA, but proceed directly to the Safe Briefing Area

c. All out of Scope Personnel shall evacuate the location.

d. Remain in the Safe Briefing Area, take roll call and wait for instructions.

e. Contact the Total H2S Technician if not on location.

f. Personnel shall ensure that their breathing apparatus is properly fitted and operational before entering an H_2S contaminated area to provide assistance to anyone who may be injured or overcome by toxic gases. Use the buddy system.

g. Remain in safe briefing area, take roll call and wait for instructions.

h. A cascade breathing air systems shall be mobilized and utilized to conduct any additional on rig work required to correct the H2S release condition.

i. If well is ignited do not assume area is safe. SO2 is hazardous and not all H2S will burn.

H_2S EMERGENCY PROCEDURES; IN SCOPE PERSONNEL

A. Day To Day Drilling Operations

1. Upon discovering a release of H_2S gas in the ambient air by warning alarms or in any other way **Do Not Panic**.

2. Hold your breath donning the nearest Self Contained Breathing Apparatus and rapidly move up or across-wind away from the areas where H_2S sensing devices are in place, to the closest available safe briefing area. Continue to use breathing apparatus until it has been determined that the exposure of H_2S gas in the ambient air no longer exists. **Do Not Panic**!

3. Utilize the "Buddy System", i.e.; select and pair up each person participating in the drilling of an H_2S well prior to an emergency situation.

4. Help anyone who is overcome or affected by the H_2S gas by taking him/her up-wind out of the contaminated area. (This should be done utilizing an SCBA and with a buddy.)

5. Take necessary steps to confirm the release of the H_2S gas into the ambient air.

    - When an H2S alarm activates, two designated personnel using the buddy system, while wearing their self contained breathing apparatus, will determine by the read-out on the fixed monitor which sensing device has detected the release of the H_2S gas.

    - They will utilize the hand-held sniffer type device at the particular sensing point disclosed on the fixed monitor to corroborate the fact that H_2S gas has actually been released. This will rule out the possibility of a false alarm. This will be done with a buddy and under mask after reporting to the Safe Briefing Area for roll call and instructions by on-site MRC Foreman.

6. Refer to the Emergency Phone Numbers and call emergency personnel.

7. Take the necessary steps to suppress the release of H_2S gas into the ambient air. Comply with the MRC Energy Co. Representative to physically suppress the release of H_2S gas at the actual release point.

8. Check all of MRC Energy Co.'s monitoring devices and increase gas-monitoring activities with the portable hand-operated H_2S and gas detector units.

Do Not Panic!

The MRC Energy Co. representative will assess the situation and with assistance of the Contractor's Representative and Total Safety's H_2S Safety Technician or on site designee, will assign duties to each person to bring the situation under control.

B. RESPONSIBILITIES OF WELL-SITE PERSONNEL

In the event of a release of potentially hazardous amounts of H_2S, all personnel will immediately don their protective breathing apparatus, the well will be shut in and personnel will proceed upwind to the nearest designated safe briefing area for roll call and instructions by MRC Foreman. Consideration will be given to evacuating Out of Scope Personnel, as situation warrants.

1. MRC ENERGY CO.'S Well-site Representatives

a. If MRC Energy Co.'s well-site representative is incapacitated or not on location, this responsibility will fall to the Toolpusher/Driller.

b. Immediately upon assessing the situation, set this plan into Action by initiating the proper procedures to contain the gas and notify the appropriate people and agencies.

c. Ensure that the alarm area indicated by the fixed H_2S Monitor is checked and verified with a portable H_2S detector. (Safety Technician if on location or MRC assigned designee with a buddy utilizing SCBA's)

d. Consult Pusher/driller of remedial actions as needed.

e. Ensure that non-essential personnel proceed to the safe briefing area.

f. Ensure location entrance barricades are positioned. Keep the number of persons on location to a minimum during hazardous operations.

g. Consult each contractor, Service Company and all others allowed to enter the site, that H2S gas may be encountered and the potential hazards that may exist.

h. Authorize the evacuation of local residents if H_2S threatens Their safety.

i. Non essential personnel should be evacuated from location if Situation warrants.

2. Toolpusher

a. Toolpusher/Driller will assume responsibilities of MRC Energy Co.'s well-site representative if that person is incapacitated or not on location.

b. Ensure that the alarm area indicated by the fixed H_2S monitor is checked and verified with a portable H_2S gas detector. (Alarm area indicated by the monitor will be Checked by the H2S Technician and a buddy, under mask.) This will be done after checking in and roll call at the Upwind Safe Briefing Area.

c. Confer with MRC Energy Co.'s well-site representative or superintendent and direct remedial action to suppress the H_2S and control the well.

d. Ensure that personnel at the safe briefing area are instructed on emergency actions required.

e. Ensure that personnel at the drill floor area are instructed on emergency actions required.

f. Ensure that all personnel observe the appropriate safety and emergency procedures.

g. Ensure that all persons are accounted for and provided emergency assistance as necessary.

3. Mud Engineer

a. Run a sulfide check on the flowline mud.

b. Take steps to determine the source of the H_2S and suppress it. Lime and H_2S scavenger shall be added to the mud as necessary.

4. Total H_2S Safety Technician, if on location, or MRC Designee

a. H2S Safety Technician or designee don nearest SCBA and report to Safe Briefing Area for roll call, take a buddy masked up and check monitor and verify with a portable H_2S detector the alarm area indicated by the fixed H_2S monitor. Advise the Toolpusher/Driller and MRC Energy Co.'s well-site representative of findings. Record all findings.

b. If H_2S is flared, check for sulfur dioxide (SO_2) near the flare as necessary. Take hourly readings at different perimeters, log readings and record on location.

c. Ensure that personnel at the safe briefing area are instructed on emergency actions required.

d. Ensure that the appropriate warning flags are displayed.

e. Ensure that all personnel are in S.C.B.A. as necessary.

f. Ensure that all persons are accounted for and provide emergency assistance as necessary.

g. Be prepared to evacuate rig if order is issued.

5. General Personnel & Visitors

a. All In Scope Personnel, if not specifically designated to shut the well in or control the well, shall proceed to the (upwind) safe briefing area. All Out of Scope Personnel shall immediately proceed to the appropriate (upwind) safe briefing area or evacuate the site as conditions warrant.

b. During any emergency, use the "buddy" system to prevent anyone from entering or being left in a gas area alone, even wearing breathing apparatus.

c. Provide assistance to anyone who may be injured or overcome by toxic gases. Personnel shall ensure that their breathing apparatus is properly fitted and operational before entering a potentially H_2S contaminated area.

d. Remain in safe briefing area and wait for instructions.

C. INSTRUCTIONS FOR IGNITING THE WELL

1. The Toolpusher/Driller will confer with MRC Energy Co.'s well-site representative who will secure the approval of the "Texas Wells Delivery Manager, prior to igniting the well, if at all possible.

   The Toolpusher/Driller will be responsible for igniting the well in the event of severe well control problems. This decision should be made only as a last resort in situations where it is clear that:

   a. Human life and property are endangered, or

   b. There is no hope of controlling the well under current conditions.

2. Once the decision has been made, the following procedures should be followed:

   a. Two people wearing self-contained breathing apparatus will be needed for the actual lighting of the well. They must first establish the flammable perimeter by using an explosimeter. This should be established at 30% to 40% of the lower flammable limits.

   b. After the flammable perimeter has been established and everyone removed from the area, the ignition team should select a site upwind of the well from which to ignite the well. This site should offer the maximum protection and have a clear path for retreat from the area.

c. The ignition team should have safety belts and lifeline attached and manned before attempting ignition. If the leak is not ignited on the first attempt, move in 20 to 30 feet and fire again. Continue to monitor with the explosimeter and NEVER fire from an area with over 75% of the Lower Explosive Limit (LEL). If having trouble igniting the well, try firing 40 degrees to 90 degrees on either side of the well.

d. If ignition is not possible due to the makeup of the gas, the toxic perimeter must be established and evacuation continued until the well is contained.

e. All personnel must act only as directed by the person in charge of the operations.

NOTE: After the well is ignited, burning hydrogen sulfide (H_2S) will convert to sulfur dioxide (SO_2), which is also a highly toxic gas.

DO NOT ASSUME THE AREA IS SAFE AFTER THE WELL IS IGNITED

D. CORING PROCEDURES

Only essential personnel shall be on the rig floor. Ten (10) stands prior to retrieving core barrel; all personnel on drill floor and in derrick shall confirm self-Contained breathing apparatus available and ready for use.

A Total H2S Technician will don a SCBA with a buddy assigned from the rig crew, and continuously monitor for H2S at each connection. Any levels detected will require operations to be shut down and all involved personnel to don SCBAs. Precautions will remain in place until barrel is laid down.

All involved personnel will don SCBAs when removing the inner barrel from the outer barrel. SCBAs can be removed once the absence of H2S in confirmed by the Total H2S Technician.

Cores will be appropriately marked and sealed for transportation.

Normal Operations

1. Responsibilities of well-site personnel

a. Well-site Representative

1. Notify H_2S Technician of expected date to reach Contingency Plan implementation depth (Two (2) days prior to reaching suspected H_2S bearing zone) or prior to starting well work.

2. Ensure H_2S Safety Technician completes rig-up procedures prior to reaching Contingency Plan effective depth.

3. Restrict the number of personnel at the drilling rig or well site to a minimum while drilling, starting well work, testing or coring.

4. Ensure weekly H_2S drills/training are performed, if possible.

B. Toolpusher

1. Ensure that necessary H_2S safety equipment is provided on the rig, and that it is properly inspected and maintained.

2. Ensure that all personnel that work in the well area, are thoroughly trained in the use of H_2S safety equipment and periodic drills are held to maintain an adequate level of proficiency.

C. In Scope Personnel

1. Remain clean-shaven. Beards and long sideburns do not allow a proper facepiece seal.

2. Receive H_2S safety training on location, or confirm prior training by certification that is one year within date.

3. Familiarize yourself with the rig's Contingency Plan.

4. Inspect and practice putting on your breathing apparatus.

5. Know the location of the "safe briefing areas".

6. Keep yourself "wind conscious". Be prepared to quickly move upwind and away in the event of any emergency involving release of H_2S.

D. Total Safety H_2S Safety Technician or MRC Designee

1. Conduct training as necessary to ensure all personnel working in well area are familiar with the contingency procedures and the operation of emergency equipment.

2. Check all H_2S safety equipment to ensure that it is ready for emergency use:

   - Check pressure weekly for each shift on breathing apparatus (both 30-minute and hip-packs) to make sure they are charged to full volume.
   - Check pressure on cascade air bottles, if on location, to see that they are capable of recharging breathing apparatus.
   - Check oxygen resuscitator, if on location, to ensure that it is charged to full volume.
   - Check H_2S detectors weekly for each shift (fixed and portable), and explosimeter, to ensure they are working properly.

3. Provide a weekly report to MRC Energy Co.'s well-site representative documenting:

   - Calibrations performed on H_2S detectors.
   - Proper location and working order of H_2S safety equipment.
   - Attendance of all personnel, trained or retrained, and their company.
   - Weekly drills, if held and a list of personnel participating and summary of actions.

OUT OF SCOPE PERSONNEL

MRC Energy Co. policy will not require Out of Scope Personnel to be clean shaven, have processed medical questionnaires, fit testing, or have certified H2S Training.

SAFETY EQUIPMENT

All respirators will be designed, selected, used and maintained in conformance with ANSI Z88.2, American National Standard for respiratory protection.

Personal protective equipment must be provided and used. Those who are expected to use respiratory equipment in case of an emergency will be carefully instructed in the proper use and told why the equipment is being used. Careful attention will be given to the minute details in order to avoid possible misuse of the equipment during periods of extreme stress.

Self-contained breathing apparatus provides complete respiratory and eye protection in any concentration of toxic gases and under any condition of oxygen deficiency. The wearer is independent of the surrounding atmosphere because he/she is breathing with a system admitting no outside air. It consists of a full face mask, breathing tube, pressure demand regulator, air supply cylinder, and harness. Pure breathing air from the supply cylinder flows to the mask automatically through the pressure demand regulator which reduces the pressure to a breathing level. Upon inhalation, air flows into the mask at a rate precisely regulated to the user's demand. Upon exhalation, the flow to the mask stops and the exhaled breath passes through a valve in the face piece to the surrounding atmosphere. The apparatus includes an alarm & gauge which warns the wearer to leave the contaminated area for a new cylinder of air or cylinder refill.

The derrickman is provided with a full face piece unit attached to a 5– minute escape cylinder. He will also have his own self-contained 30-minute unit breathing apparatus located on the drilling floor. He will use the 5-minute unit to exit the derrick to the floor, donning the 30-minute unit located on the floor, if needed.

All respiratory protective equipment, when not in use, should be stored in a clean, cool, dry place, and out of direct sunlight to retard the deterioration of rubber parts. After each use, the mask assembly will be scrubbed with soap and water, rinsed thoroughly, and dried. Air cylinders can be recharged to a full condition from a cascade system.

Personnel in each crew will be trained in the proper techniques of bottle filling.

The primary piece of equipment to be utilized, should anyone be overcome by hydrogen sulfide, is the oxygen resuscitator, if on location.

When asphyxiation occurs, the victim must be moved to fresh air and immediately given artificial respiration. In order to assure readiness, the bottles of oxygen will be checked at regular intervals and an extra tank kept on hand.

Hand-operated pump-type detectors incorporating detector tubes will give more accurate readings of hydrogen sulfide. The pump-type draws air to be tested through the detector tube containing lead acetate-silica gel granules. Presence of hydrogen sulfide in the air sample is shown by the development of a dark brown stain on the granules, which is the

scale reading of the concentration of hydrogen sulfide. By changing the type of detector tube used, this detector may also be used for sulfur dioxide (SO_2) detection when hydrogen sulfide (H_2S) is being burned in the flare area.

Provisions must be made for the storage of all safety equipment as is evident from the foregoing discussion. All equipment must be stored in an available location so that anyone engaged in normal work situations is no more than "one breath away' from a mask.

V – TOXICITY OF VARIOUS GASES

Common Name	Chemical Formula	Specific Gravity[1]	PEL (OSHA)[2]	STEL[3]	Lethal ppm[4]
Hydrogen Cyanide	HCN	0.94	10	150	300
Hydrogen Sulfide	H_2S	1.18	20	Peak- 50ppm	600
Note: The ACGIH(7) recommends a TWA(6) value of 10ppm as the TLV(5) for H2S and an STEL of 15ppm.					
Sulfur Dioxide	SO_2	2.21	2	5 ppm	1000
Chlorine	CL_2	2.45	1		
Carbon Monoxide	CO	0.97	35	200/1 Hour	1000
Carbon Dioxide	CO_2	1.52	5000	5%	10%
Methane	CH_4	0.55	90000		

[1] **Air = 1.0**

[2] **Permissible -** Concentration at which is believed that all workers may repeatedly be exposed, day after day, without adverse effect.

[3] **STEL -** Short Term Exposure Limit. A 15-minute time weighted average.

[4] **Lethal -** Concentration that will cause death with short-term exposure.

TLV – Threshold Limit Value; a concentration recommended by the American Conference of Governmental Industrial Hygienists (ACGIH)

TWA – Time Weighted Average; the average concentration of contaminant one can be exposed to over a given eight-hour period.

ACGIH – (American Conference of Governmental Industrial Hygienists) is an organization comprised of Occupational Health Professionals believed by many to be the top experts in the field of Industrial Hygiene. They are recognized as an expert rexource by OSHA. The ACGIH releases a bi-annual publication "Threshold Limit Values and Biological Indices" that many safety professionals consider to be the authoritative document on airborne contaminants.
Reference: API RP-49, September 1974 - Reissued August 1978

VI. PROPERTIES OF GASES

A. CARBON DIOXIDE

1. Carbon Dioxide (CO_2) is usually considered inert and is commonly used to extinguish fires. It is 1.52 times heavier than air and will concentrate in low areas of still air. Humans cannot breathe air containing more than 10% CO_2 without losing conscience or becoming disorientation in a few minutes. Continued exposure to CO_2 after being affected will cause convulsions, coma, and respiratory failure.

2. The threshold limit of CO_2 is 5000 ppm. Short-term exposure to 50,000 ppm (5%) is reasonable. This gas is colorless, odorless, and can be tolerated in relatively high concentrations.

B. HYDROGEN SULFIDE

1. Hydrogen Sulfide (H_2S) is a colorless, transparent, flammable gas. It is heavier than air and, hence, may accumulate in low places.

2. Although the slightest presence of H_2S in the air is normally detectable by its characteristic "rotten egg" odor, it is dangerous to rely on the odor as a means of detecting excessive concentrations because the sense of smell is rapidly lost, allowing lethal concentrations to be accumulated without warning. The following table indicates the poisonous nature of H_2S.

CONCENTRATION			EFFECTS
% H_2S	PPM	GR/100 SCF[1]	
0.001	10	.65	Safe for 8 hours without respirator. Obvious and unpleasant odor.
0.0015	15	0.975	Safe for 15 minutes of exposure without respirator.
0.01	100	6.48	Kills smell in 3-15 minutes; may sting eyes and throat.
0.02	200	12.96	Kills smell quickly; stings eyes and throat.
0.05	500	32.96	Dizziness; breathing ceases in a few minutes; need prompt artificial respiration.
0.07	700	45.92	Rapid Unconsciousness; death will result if not rescued promptly.
0.1	1000	64.80	Instant unconsciousness, followed by death within minutes.

[1] Grains per 100 Cubic Feet

VII. Treatment Procedures for Hydrogen Sulfide Poisoning

A. Remove the victim to fresh air.

B. If breathing has ceased or is labored, begin resuscitation immediately.
Note: This is the quickest and preferred method of clearing victim's lungs of contaminated air; however, under disaster conditions, it may not be practical to move the victim to fresh air. In such instances, where those rendering first aid must continue to wear masks, a resuscitator should be used.

C. Apply resuscitator to help purge H_2S from the blood stream.

D. Keep the victim at rest and prevent chilling.

E. Get victim under physician's care as soon as possible.

C. SULPHUR DIOXIDE

1. Sulfur Dioxide (SO_2) is a colorless, non-flammable, transparent gas.

2. SO_2 is produced during the burning of H_2S. Although SO_2 is heavier than air, it can be picked up by a breeze and carried downwind at elevated temperatures. Since SO_2 is extremely irritating to the eyes and mucous membranes of the upper respiratory tract, it has exceptionally good warning powers in this respect. The following table indicates the toxic nature of SO_2:

CONCENTRATION		EFFECTS
% SO_2	PPM	
0.0005	3 to 5	Pungent odor, normally a person can detect SO_2 in this range.
0.0012	12	Throat irritation, coughing, constriction of the chest, tearing and smarting of eyes.
0.015	150	So irritating that it can only be endured for a few minutes.
.05	500	Causes a sense of suffocation, event with the first breath.

VIII. BREATHING AIR EQUIPMENT DRILLS FOR ON & OFF DUTY PERSONNEL

An H_2S Drill and Training Session must be given once a week to ALL on-duty personnel with off duty personnel. On-duty and Off-duty personnel will reverse roles on alternate drills.
An H2S drill and training session must be given once a week to all off-duty personnel in coincidence with on-duty personnel reversing roles on alternate drills.

The purpose of this drill is to instruct the crews in the operation and use of breathing air and H_2S related emergency equipment and to allow the personnel to become acquainted with using the equipment under working conditions. The crews should be trained to put on the breathing air equipment within one minute when required or requested to do so.

The following procedure should be used for weekly drills. The MRC supervisor must be satisfied that the crews are proficient with the equipment.

1. All personnel should be informed that a drill will be held.

2. The Total H2S Safety Technician or a designee assigned by the MRC Drilling Foreman should initiate the drill by signaling as he/she would if H2S was detected.

3. Personnel should don their breathing apparatus.

4. Once the breathing air equipment is on, the H2S Technician should check all personnel to insure proper operation.

A training and information session will be conducted after each drill to answer any H_2S related questions and to cover any gaps identified from one of the following topics:

- Condition II, and III alerts and steps to be taken by all personnel.
- The importance of wind direction when dealing with H_2S.
- Proper use and storage of all types of breathing equipment.
- Proper use and storage of oxygen resuscitators.
- Proper use and storage of H_2S detectors (Mini Checks or equivalent).
- The "buddy system" and the procedure for rescuing a person overcome by H_2S.
- Responsibilities and duties.
- Location of H_2S safety equipment.
- Other parts of the "H_2S Contingency Plan" that should be reviewed.

NOTE: A record of attendance must be kept for weekly drills and training sessions.

IX. HYDROGEN SULFIDE TRAINING CURRICULUM

(FOR EMPLOYERS, VISITORS, AND CONTRACTORS)

EACH PERSON WILL BE INFORMED ON THE RESTRICTIONS OF HAVING BEARDS AND CONTACT LENS. THEY WILL ALSO BE INFORMED OF THE AVAILABILITY OF SPECTACLE KITS.

AFTER THE H2S EQUIPMENT IS RIGGED UP, ALL IN SCOPE PERSONNEL WILL BE H2S TRAINED AND PUT THROUGH A DRILL. ANY DEFICIENCIES WILL BE CORRECTED.

Training Completion cards are good for one year and will indicate date of completion or expiration. Personnel previously trained on another facility and visiting, must attend a "supplemental briefing" on H2S equipment and procedures before beginning duty. Visitors who remain on the location more than 24 hours must receive full H2S training given all crew members. A "supplemental briefing" will include but not be limited to: Location of respirators, familiarization with safe briefing areas, alarms with instruction on responsibilities in the event of a release and hazards of H2S and (SO2, if applicable). A training and drill log will be kept.

Topics for full H2S training shall include the following equipment if on location, but not be limited to the following:

1. **Brief Introduction on H2S**
   - A. Slide or Computer presentation (If Available)
   - B. H2S material will be distributed
   - C. Re-emphasize the properties, toxicity, and hazards of H2S
   - D. Source of SO2 (if applicable)

2. **H2S Detection**
   - A. Description of H2S sensors
   - B. Description of warning system (how it works & it's location)
   - C. Actual location of H2S sensors
   - D. Instruction on use of pump type detector (Gastec)
   - E. Use of card detectors, ampoules, or dosimeters
   - F. Use of combustible gas detector
   - G. Other personnel detectors used
   - H. Alarm conditions I & II,
   - I. SO2 alarms (if applicable)

3. **H2S Protection**
   - A. Types of breathing apparatus provided (30-minute SCBA & 5-minute SCBA (with voice diaphragms for communication if supplied)
   - B. Principle of how breathing apparatus works
   - C. Demonstration on how to use breathing apparatus
   - D. Location of breathing apparatus

4. **Cascade System**
   - A. Description of cascade system
   - B. How system works
   - C. Cascade location of rig with reference to briefing areas
   - D. How to use cascade system (with 5-minute hose work line units & refill, if supplied)
   - E. Importance of wind direction and actual location of Windsocks
   - F. Purpose of compressor/function (if one is on site)

5. **H2S Rescue and First Aid**
   - A. Importance of wind direction
   - B. Safe briefing area
   - C. Buddy system
   - D. H2S symptoms
   - E. Methods of rescue

6. **Hands on Training**
   - A. Donning/familiarization of SCBA 30-minue unit
   - B. Donning/familiarization of SKADA 5- MIN. Packs
   - C. Familiarization of cascades
   - D. Use of O2 resuscitator
   - E. Alarm conditions - upwind briefing areas, etc...
   - F. Duties and responsibilities of all personnel
   - G. Procedures for evacuation
   - H. Search and Rescue teams

7. **Certification**
   - A. Testing on material covered

TOTAL SAFETY US INC., FIT TEST

X. EMPLOYEE INFORMATION

Employee Name: _____ Date: _____

Date of Employee Medical Evaluation: _____

Medical Status (circle): Unrestricted Limitations on Use Use Not Authorized

RESPIRATOR INFORMATIOIN

Respirator Type (Dustmask, SCBA, etc):_____

Brand:_____

Size: (circle): XS S M L XL

FIT TEST INFORMATION

Type of Fit Test Performed:

Quantitative

Porta Count	Fit Factor:_____
Fittester 3000	Fit Factor:_____

Qualitative

Irritant Smoke	Passed / Failed
Isoamyl Acetate (Banana Oil)	Passed / Failed
Saccharin	Passed / Failed
Bitrex	Passed / Failed

I hereby certify that this fittest was conducted in accordance with the OSHA Fit Testing Protocols found in Appendix A of 1910.134.

Fit Tester Name (Print):_____

Signature:_____ Date:_____

XI. H_2S SAFETY SERVICES

HYDROGEN SULFIDE SAFETY PACKAGE – Contained on location in Total Safety H2S Equipment Trailer, unless otherwise noted:

RESPIRATORY SAFETY SYSTEMS

QTY	DESCRIPTION
12	30-Minute Pressure Demand SCBA (4-Primary Safe Briefing Area, 4-Secondary Safe Briefing Area, 4-floor with one of these for derrick man)
9	Hose Line 5-minute Work Unit w/Escape Cylinder (1 in derrick, 6 on drill floor, 1 in mud pit wt area, 1 in shaker area)

The following shall be part of the package if requested by the MRC Foremen (at least one trailer with cascade system is required to be located in the MRC Magnolia asset for use as needed)

1	Breathing air cascade of 10 bottles w/regulator
2	Refill lines to refill 30-minute units on location
1	6-Man manifold that can be rigged up to work area on floor, if needed
6	25 foot hose lines
2	50 foot hose lines
100	Feet of hose line to rig cascade up to 12 man manifold on floor
12	30-minute Self Contained Breathing apparatus

DETECTION AND ALARM SAFETY SYSTEM

1	H2S Fixed Monitor w/8Channels (Loc determined at rig up) suggested. (Mud pit area, shaker area, bell nipple area, floor/driller area, & outside quarters)
5	H2S Sensors
3	Explosion Proof Alarms (Light and Siren) (1 on floor, 1 in work area, 1 in trailer area where quarters are located)
2	Personal H2S monitors
1	Portable Tri-Gas Hand Held Meter (O2, LEL, H2S)
1	Sensidyne/Gastech Manual Pump Type Detector
8	Boxes H2S Tubes Various Ranges
2	Boxes SO2 Tubes Various Ranges
1	Calibration Gas
1	Set Paper Work for Records: Training, Cal, Inspection, other

ADDITIONAL SAFETY RELATED EQUIPMENT

QTY	DESCRIPTION
2	Windsocks with Pole and Bracket
1	Set Well Condition Sign w/Green, Yellow, Red Flags
1	Primary Safe Briefing Area Sign
1	Secondary Safe Briefing Area Sign
6	Operating Condition Signs for Work Areas & Living Quarters

TRAILER WITH BREATHING AIR CASCADE WILL ALSO INCLUDE THE FOLLOWING:

This equipment will be part of the H2S equipment stored in the trailer, when on location

1	First aid kit
1	Fire Blanket
1	Eye wash station
2	Safety Harness w/150' safety line

XII. EMERGENCY PHONE NUMBERS (Updated March 18, 2009)

EMERGENCY PHONE NUMBERS

MRC Energy Co. Emergency Phone #
MRC Energy Co. Permian Operations Phone----------
MRC Energy Co. Production
113 Daw Rd
Mansfield LA 71052

Title	Names		Phone	Cell
Operations Manager				
Operation Supt.				
Operations Supervisor				
Operations Supervisor				
Office Supervisor				
HSE				
Scheduler Planner				

Hydrogen Sulfide Safety Consultants

Total Safety W. Bender Blvd. Hobbs, NM	575-392-2973		After Hours 24 Hour Call Center Through Office Number
Tommy Throckmorton Operations Manager	575-392-2973		940-268-9614
Rodney Jourdan Sales Contact	575-392-2973		432-349-3928

MRC Energy Co. MEDICAL RESPONSE PLAN AND IT'S MEDICAL PROTOCOLS WILL BE FOLLOWED

MEDICAL COORDINATOR # ----------

Emergency Numbers & Directions

Hospitals (911)

Artesia General Hospital 702 N. 13th St. Artesia, NM 88210	**Main Phone Number**	**575-748-3333**
Nor-Lea General Hospital 1600 N. Main Ave. Lovington, NM 88260	**Main Phone Number**	**575-396-6611**
Lea Regional Medical Center 5419 N. Lovington Hwy Hobbs, NM 88240	**Main Phone Number**	**575-492-5260**
Carlsbad General Hospital 2430 W. Pierce St. Carlsbad, NM	**Main Phone Number**	**575-887-4100**
Lovelace Regional Hospital 117 E. 19th St Roswell, NM 88201	**Main Phone Number**	**575-627-7000**
Winkler Co. Memorial Hospital 821 Jeffee Dr. Kermit, Texas 79745	**Main Phone Number**	**432-586-8299**
Reeves County Hospital 2323 Texas St. Pecos, Texas 79772	**Main Phone Number**	**432-447-3551**

State Police (911)

Texas DPS Loving co. 225 N.Pecos Mentone, Texas 79754	Office Number		432-377-2411
Texas DPS Winkler Co. 100 E Winkler Kermit, Texas 79745	Office Number		432-586-3465
Texas DPS Pecos Co. 148 N I-20 Frontage RD Pecos, Texas 79772	Office Number		432-447-3532
New Mexico State Police 3300 W. Main St Artesia, NM	Office Number		575-748-9718
New Mexico State Police 304 N. Canyon St Carlsbad, NM 88220	Office Number		575-885-3137
New Mexico State Police 5100 Jack Gomez Blvd. Hobbs, NM 88240	Office Number		575-392-5588

Local Law Enforcement (911) (Sheriff)

Reeves Co. Sheriff 500 N. Oak ST Pecos, Texas 79722	Office Number		432-445-4901
Winkler Co. Sheriff 1300 Bellaire St. Kermit, Texas 79745	Office Number		432-586-3461
Loving Co. Sheriff Courthouse Mentone, Texas	Office Number		432-377-2411
Lea Co. Sheriff 1417 S. Commercial St. Lovington, NM 88260	Office Number		
Eddy Co. Sheriff 305 N 7th St. Artesia, NM 88210	Office Number		575-766-9888
Eddy Co. Sheriff 305 N 7th St. Carlsbad, NM 88220	Office Number		575-746-9888

Federal & State Agencies

OSHA Lubbock Area Office 1205 Texas Av. Room 806 Lubbock, Texas 79401	**Main Number**		**806-472-7681 EXT 7685**
New Mexico Environment Department 400 N Pennsylvania Roswell, NM 88201	**Joe Fresquez**		**575-623-3935**
Texas Railroad Commission Midland, Texas	**Main Number**		**844-773-0305**
BLM Carlsbad, NM Field Office 620 E. Green ST Carlsbad, NM 88220	**Main Number**		**575-234-5972**
BLM Hobbs Field Station 414 W. Taylor Rd. Hobbs, NM 88240	**Main Number**		**575-393-3612**
BLM Roswell District Office 2909 W. Second St. Roswell, NM 88201	**Main Number**		**575-627-0272**
TECQ Texas Commission on Environmental Quality	**Main Number**		**800-832-8224**
New Mexico OCD			
U.S. Environmental Protection Agency Region 6 Texas/New Mexico	**Main Number**		**214-655-2222**
National Response Center Toxic Chemicals & Oil Spills	**Main Number**		**800-424-8802**

Rig Company

XIII. EVACUATION OF THE GENERAL PUBLIC

The procedure to be used in alerting nearby persons in the event of any occurrence that could pose a threat to life or property will be arranged and completed with public officials in detail, prior to drilling into the hydrogen sulfide formations.

In the event of an actual emergency, the following steps will be immediately taken:

1. The MRC Energy Co.'s representative will dispatch sufficient personnel to immediately warn each resident and transients down-wind within radius of exposure from the well site. Then warn all residence in the radius of exposure. Additional evacuation zones may be necessary as the situation warrants.

2. The MRC Energy Co.'s representative will immediately notify proper authorities, including the Sheriff's Office, Highway Patrol, and any other public officials as described above and will enlist their assistance in warning residents and transients in the calculated radius of exposure.

3. The MRC Energy Co.'s representative will dispatch sufficient personnel to divert traffic in the vicinity away from the potentially dangerous area. A guard to the entrance of the well site will be posted to monitor essential and non essential traffic.

4. General:

   A. The area included within the radius of exposure is considered to be the zone of maximum potential hazard from a hydrogen sulfide gas escape. Immediate evacuation of public areas, in accordance with the provisions of this contingency plan, is imperative. When it is determined that conditions exist which create an additional area (beyond the initial zone of maximum potential hazard) vulnerable to possible hazard, public areas in the additional hazardous area will be evacuated in accordance with the contingency plan.

   B. In the event of a disaster, after the public areas have been evacuated and traffic stopped, it is expected that local civil authorities will have arrived and within a few hours will have assumed direction of and control of the public, including all public areas. MRC Energy Co. will cooperate with these authorities to the fullest extent and will exert every effort by careful advice to such authorities to prevent panic or rumors.

   C. MRC Energy Co. will dispatch appropriate management personnel at the disaster site as soon as possible. The company's personnel

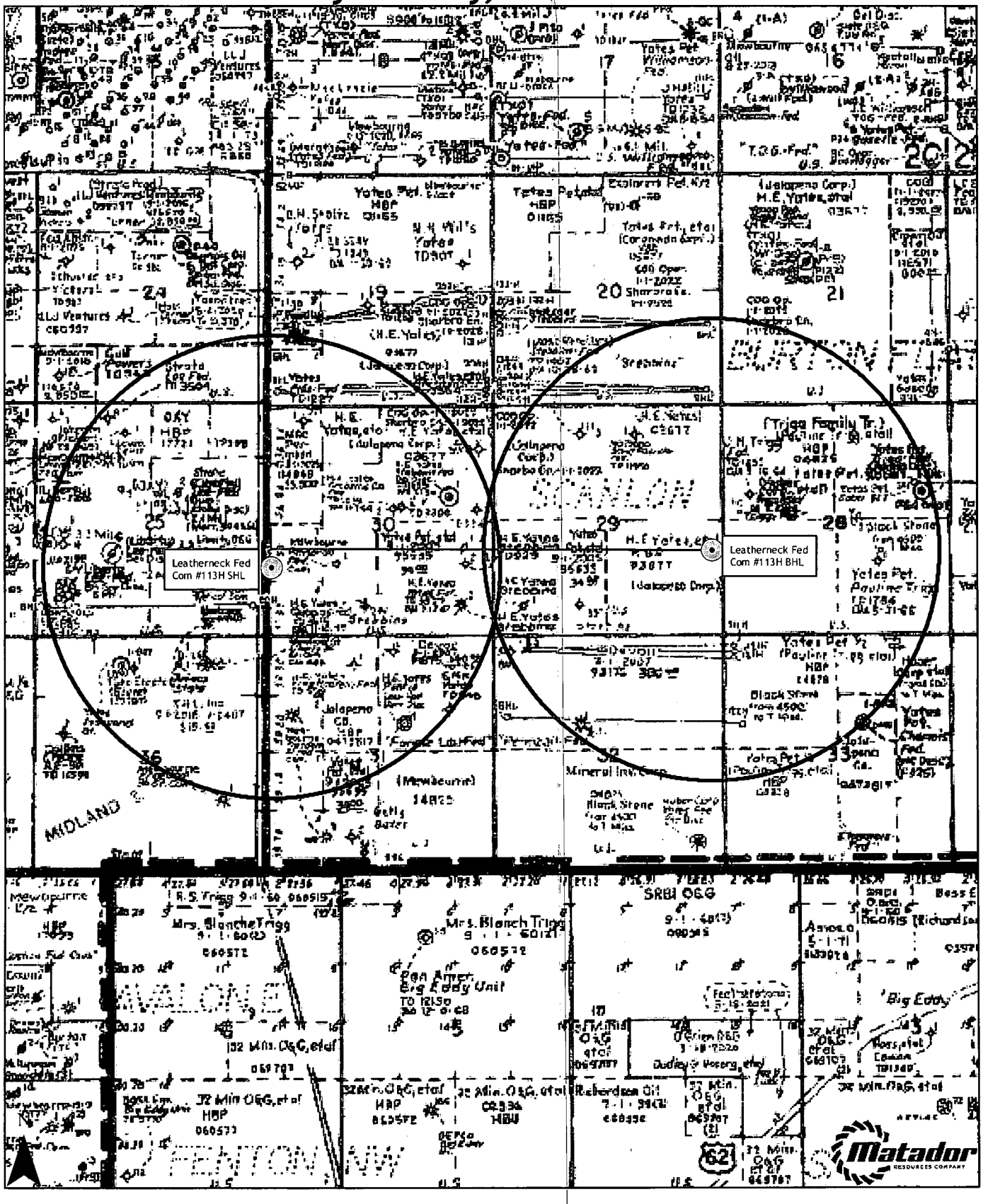
will cooperate with and provide such information to civil authorities as they might require.

D. One of the products of the combustion of hydrogen sulfide is sulfur dioxide (SO_2). Under certain conditions this gas may be equally as dangerous as H_2S. A pump type detector device, which determines the percent of SO_2 in air through concentrations in ppm, will be available. Although normal air movement is sufficient to dissipate this material to safe levels, the SO_2 detector should be utilized to check concentrations in the proximity of the well once every hour, or as necessary and the situation warrants. Also, if any low areas are suspected of having high concentrations, personnel should be made aware of these areas, and steps should be taken to determine whether or not these low areas are hazardous.

Exhibit E-6: H2S Contingency Plan Emergency Contacts
Matador Resources Company

Company Office			
Matador Resources Company	(972)-371-5200		
Key Personnel			
Name	**Title**	**Office**	**Mobile**
Billy Goodwin	Vice President Drilling	972-371-5210	817-522-2928
Gary Martin	Drilling Superintendent		601-669-1774
Dee Smith	Drilling Superintendent	972-371-5447	972-822-1010
Blake Hermes	Drilling Engineer	972-371-5485	713-876-8558
	Construction Superintendent		
	Construction Superintendent		
Artesia			
Ambulance		911	
State Police		575-746-2703	
City Police		575-746-2703	
Sheriff's Office		575-746-9888	
Fire Department		575-746-2701	
Local Emergency Planning Committee		575-746-2122	
New Mexico Oil Conservation Division		575-748-1283	
Carlsbad			
Ambulance		911	
State Police		575-885-3137	
City Police		575-885-2111	
Sheriff's Office		575-887-7551	
Fire Department		575-887-3798	
Local Emergency Planning Committee		575-887-6544	
New Mexico Oil Conservation Division		575-887-6544	
Santa Fe			
New Mexico Emergency Response Comission (Santa Fe)		505-476-9600	
New Mexico Emergency Response Comission (Santa Fe) 24 hrs		505-827-9126	
New Mexico State Emergency Operations Center		505-476-9635	
National			
National Emegency Response Center (Washington, D.C.)		800-424-8802	
Medical			
Flight for Life- 4000 24th St.; Lubbock, TX		806-743-9911	
Aerocare- R3, Box 49F; Lubbock, TX		806-747-8923	
Med Flight Air Amb- 2301 Yale Blvd S.E., D3; Albuquerque, NM		505-842-4433	
SB Air Med Service- 2505 Clark Carr Loop S.E.; Albuquerque, NM		505-842-4949	
Other			
Boots & Coots IWC		800-256-9688	or 281-931-8884
Cudd Pressure Control		432-699-0139	or 432-563-3356
Haliburton		575-746-2757	
B.J. Services		575-746-3569	

Eddy County, New Mexico



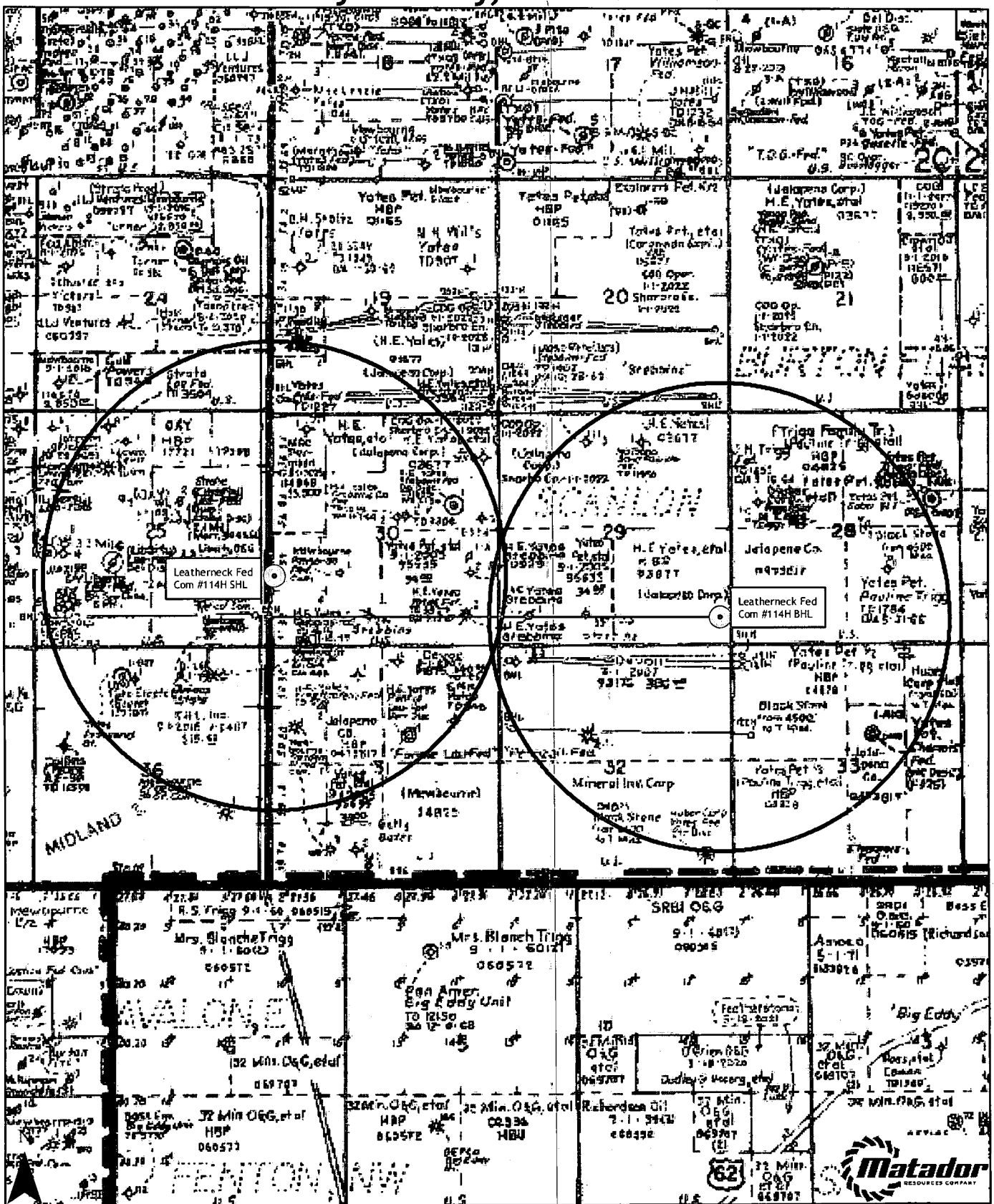
1 inch = 3,000 feet

Feet
0 7501,500 3,000

Map Prepared by: agreen
Date: April 18, 2019
filename: OneMileRadius_Plat
Sources: IHS Energy; Midland Map Company; Environmental Systems Research Institute [ESRI];

Map 3-1

Eddy County, New Mexico



1 inch = 3,000 feet

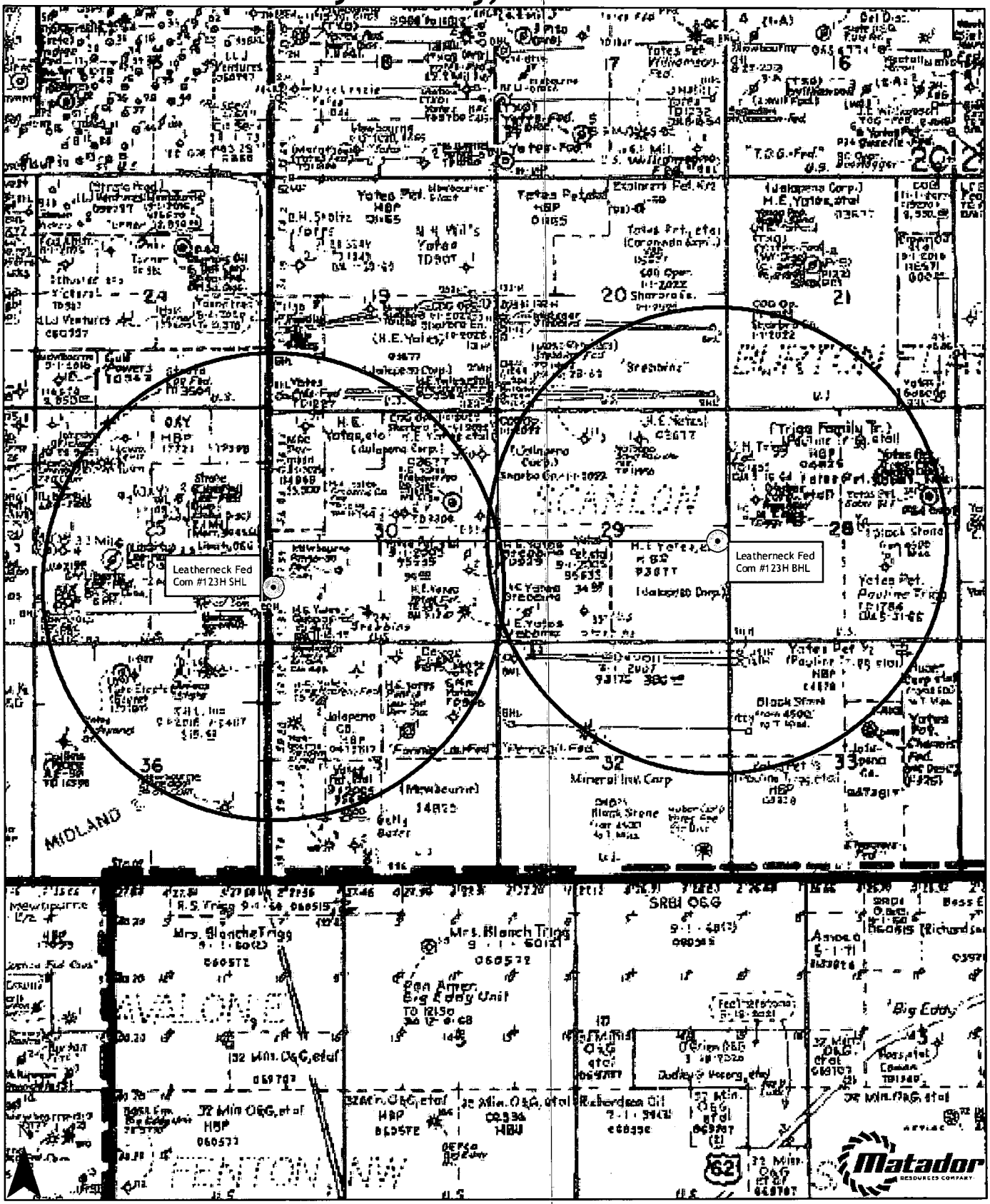
Feet

0 7501,500 3,000

Map Prepared by: agreen
Date: April 18, 2019
filename: OneMileRadius_Plat
Sources: IHS Energy; Midland Map Company; Environmental Systems Research Institute [ESRI];

Map 3-2

Eddy County, New Mexico



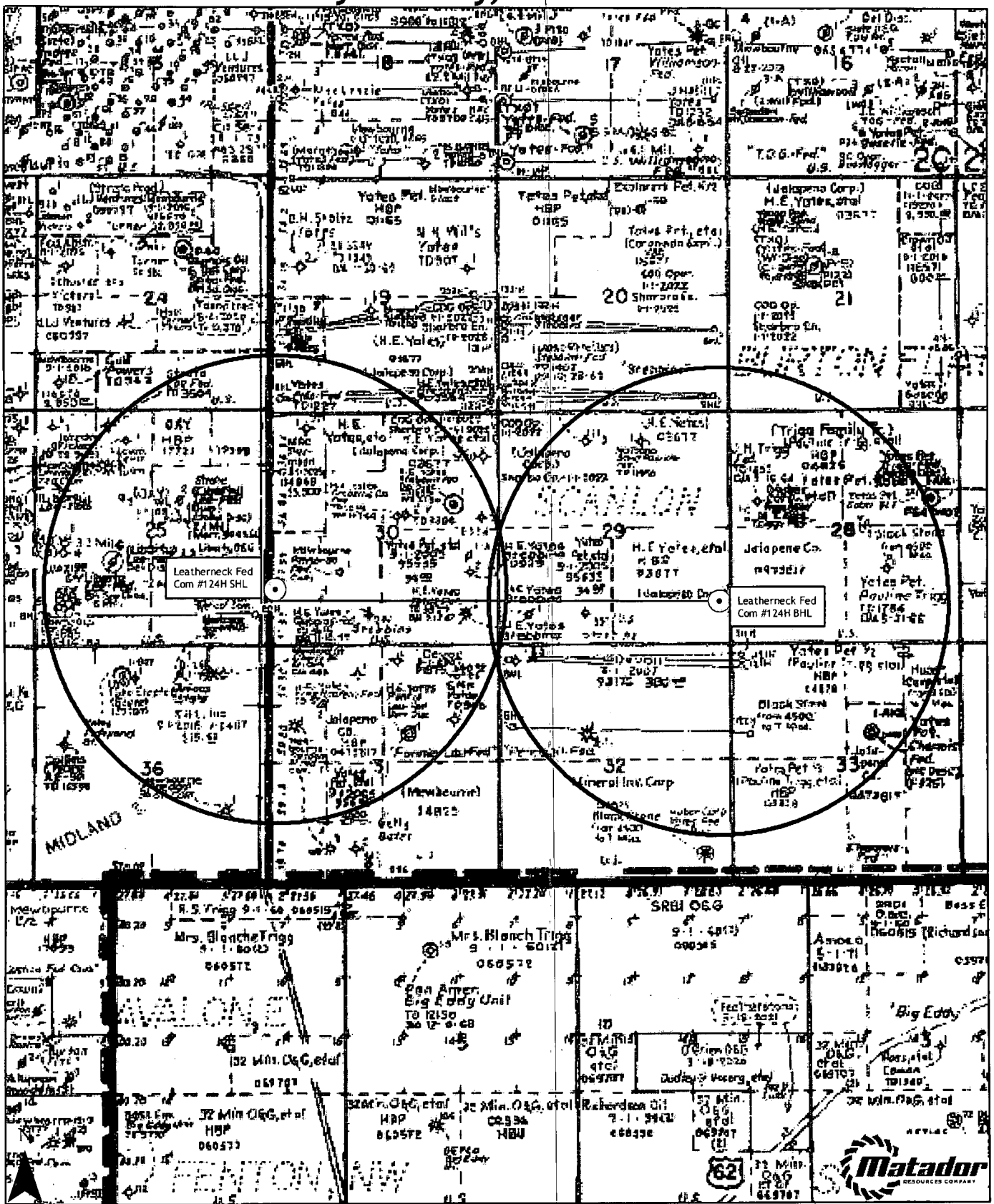
1 inch = 3,000 feet

Feet
0 7501,500 3,000

Map Prepared by: agreen
Date: April 18, 2019
filename: OneMileRadius_Plat
Sources: IHS Energy; Midland Map Company; Environmental Systems Research Institute [ESRI];

Map 3-3

Eddy County, New Mexico



1 inch = 3,000 feet

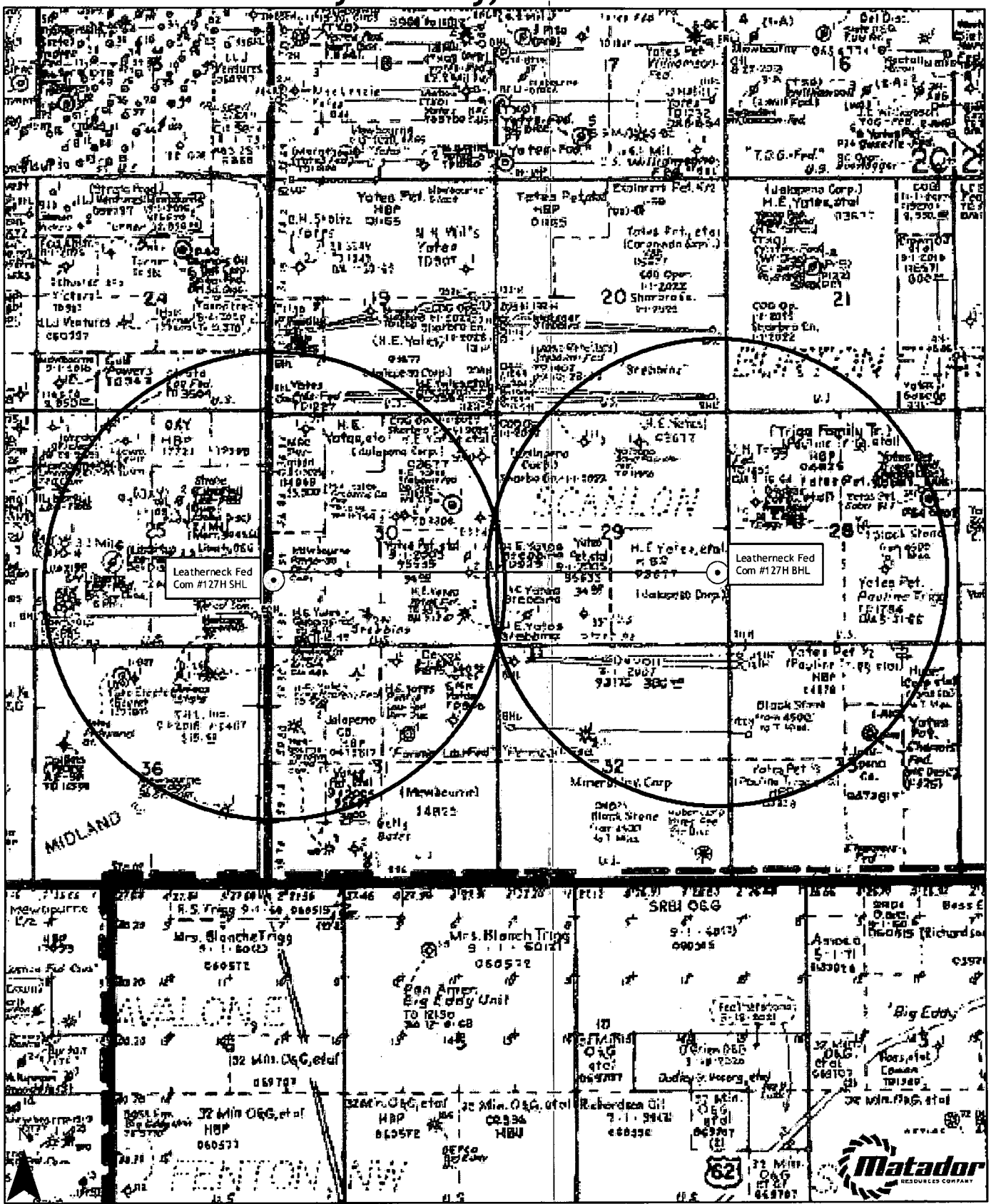
Feet

0 7501,500 3,000

Map Prepared by: agreen
Date: April 18, 2019
filename: OneMileRadius_Plat
Sources: IHS Energy; Midland Map Company; Environmental Systems Research Institute [ESRI];

Map 3-4

Eddy County, New Mexico



1 inch = 3,000 feet

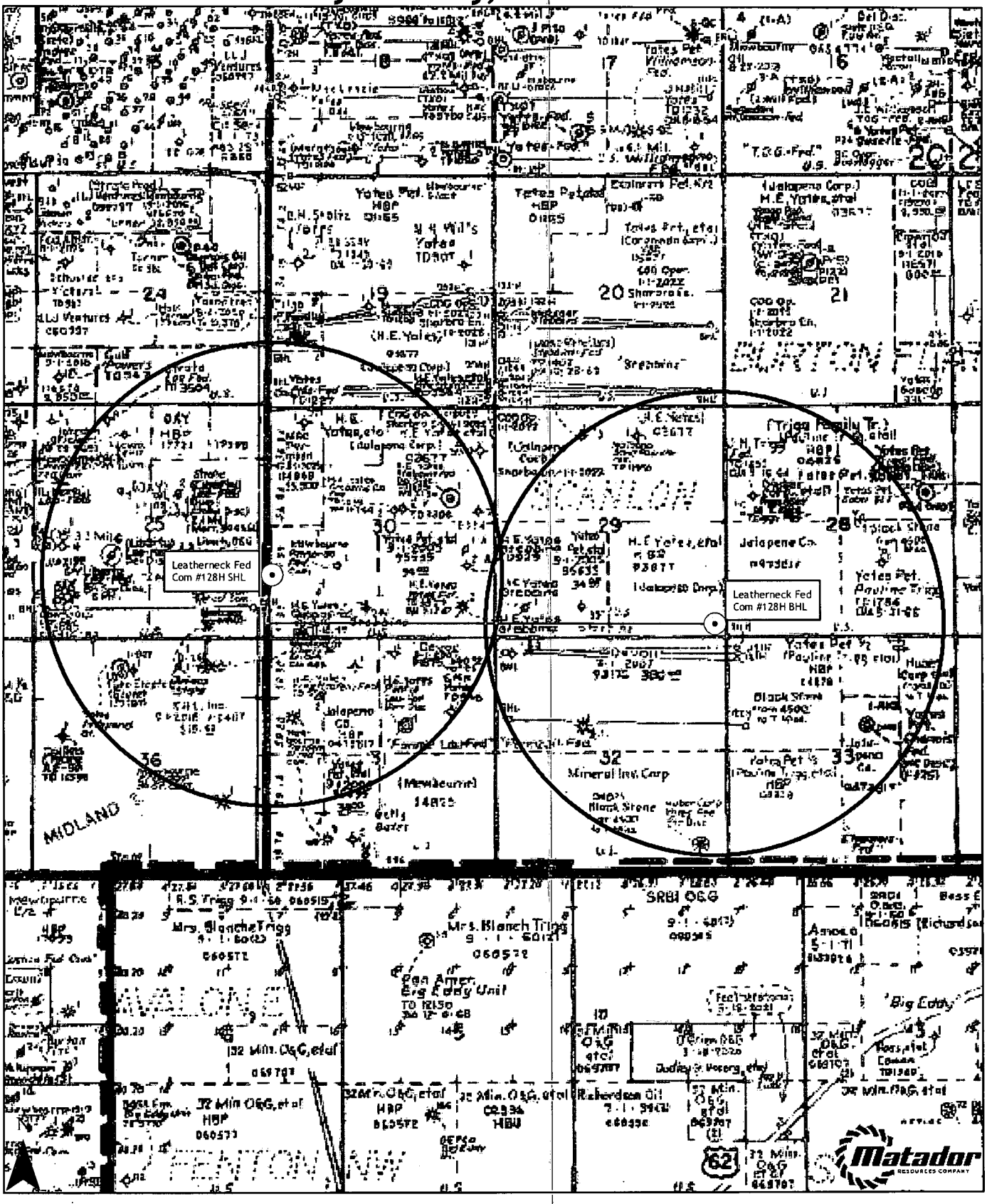
Feet

0 7501,500 3,000

Map Prepared by: agreen
Date: April 18, 2019
filename: OneMileRadius_Plat
Sources: IHS Energy; Midland Map Company; Environmental Systems Research Institute [ESRI];

Map 3-5

Eddy County, New Mexico



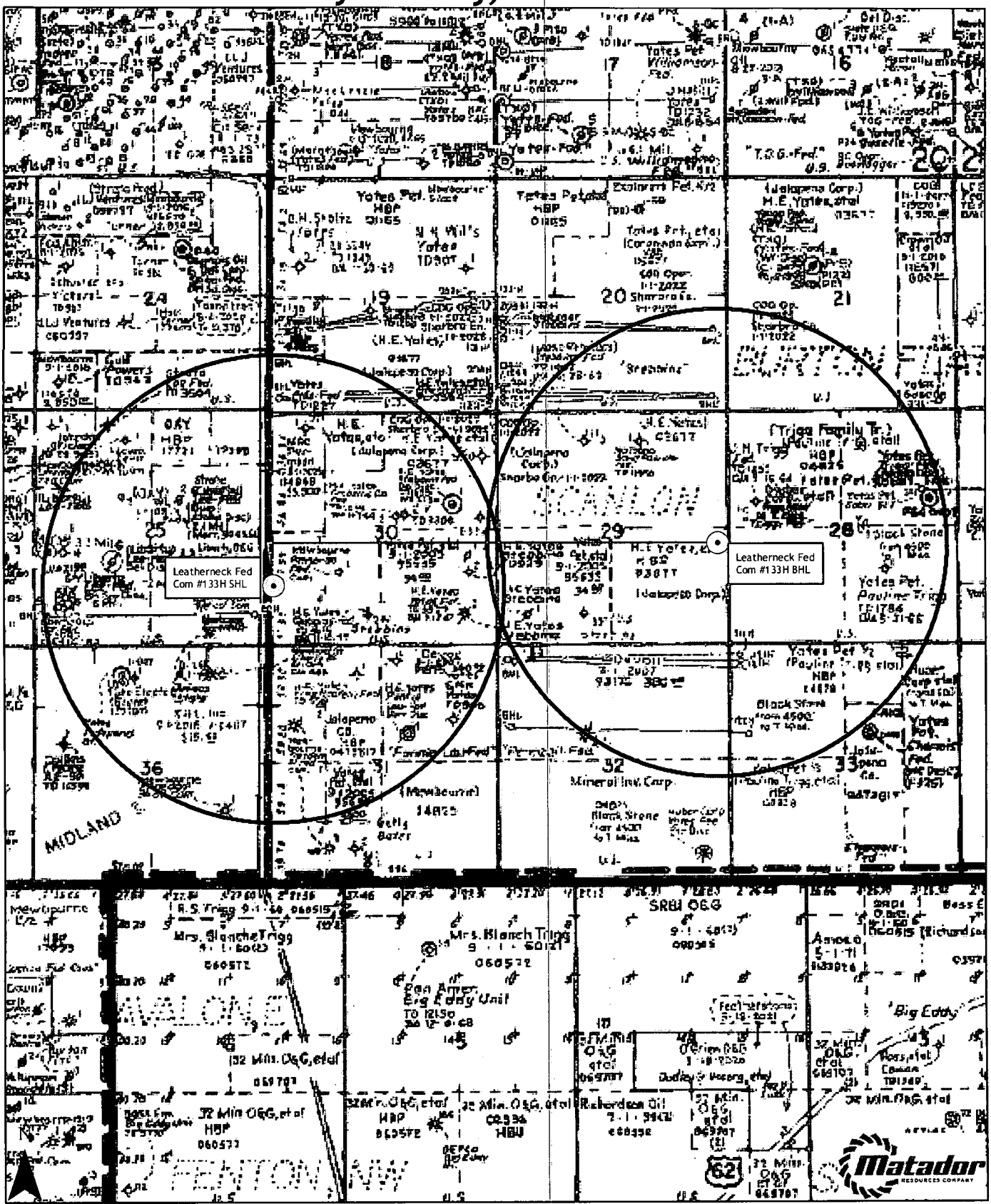
1 inch = 3,000 feet

Feet
0 7501,500 3,000

Map Prepared by: agreen
Date: April 18, 2019
filename: OneMileRadius_Plat
Sources: IHS Energy; Midland Map Company; Environmental Systems Research Institute (ESRI);

Map 3-6

Eddy County, New Mexico



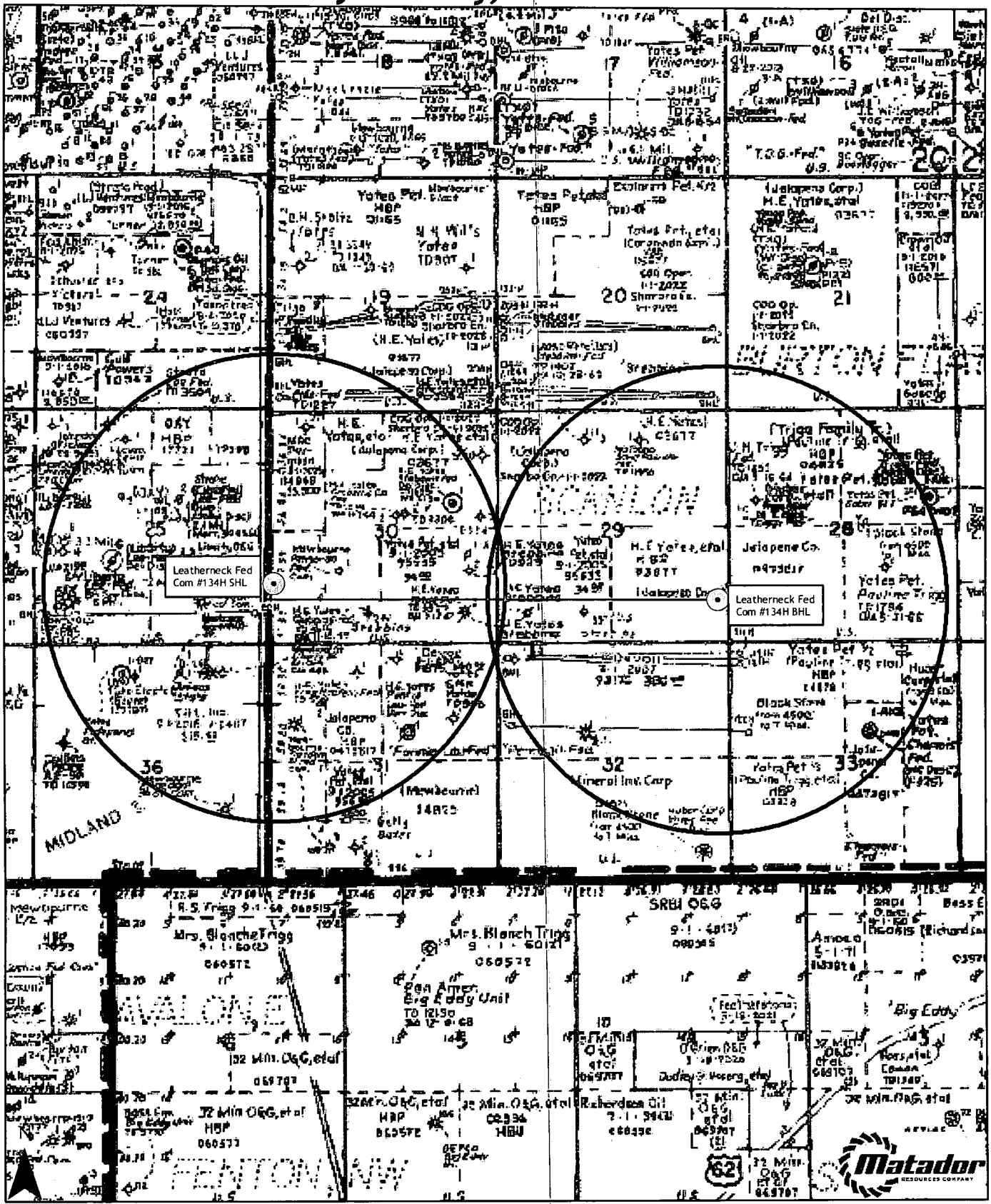
1 inch = 3,000 feet

Feet
0 7501,500 3,000

Map Prepared by: agreen
Date: April 18, 2019
filename: OneMileRadius_Plat
Sources: IHS Energy; Midland Map Company; Environmental Systems Research Institute [ESRI];

Map 3-7

Eddy County, New Mexico



1 inch = 3,000 feet

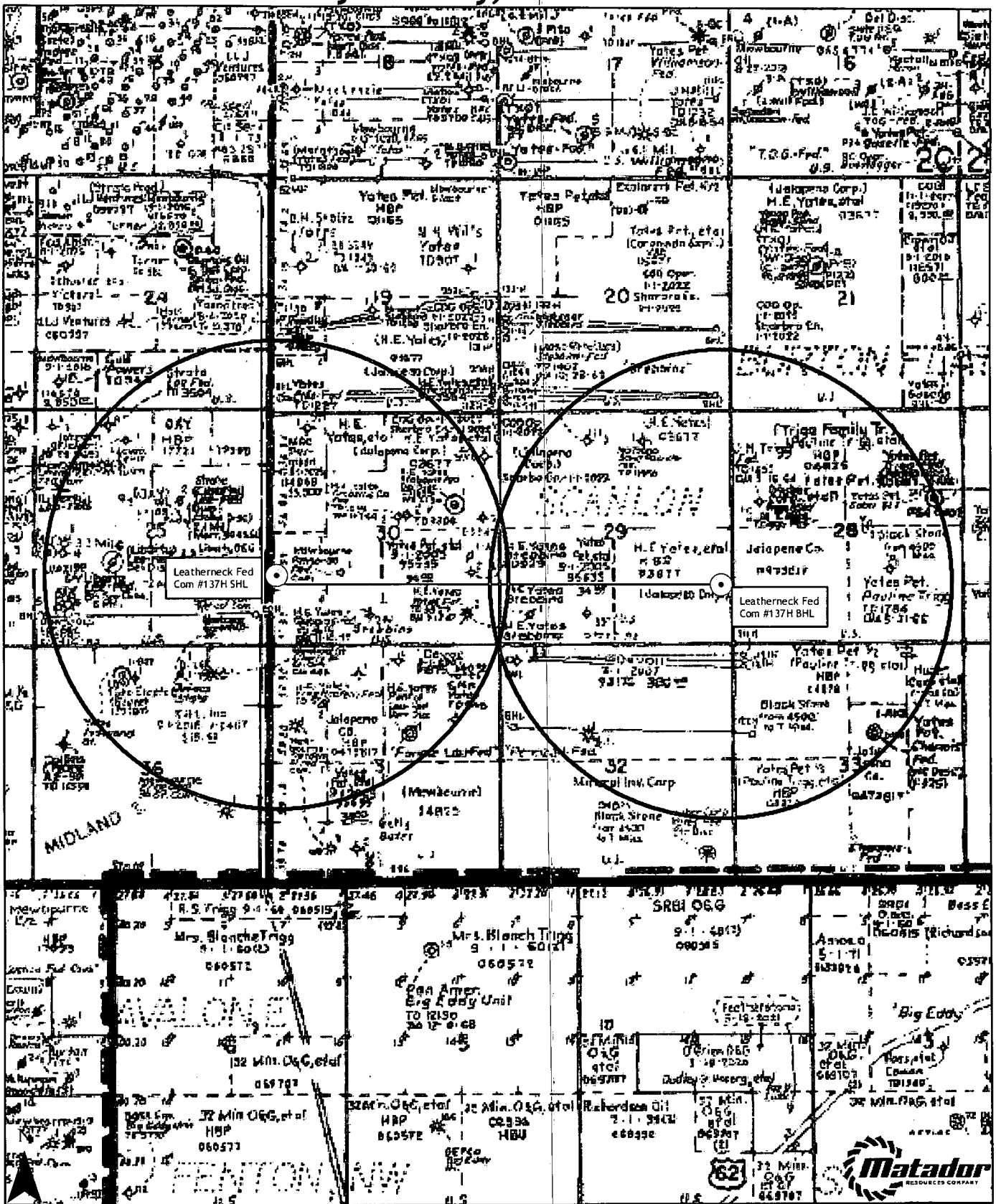
Feet

0 7501,500 3,000

Map Prepared by: agreen
Date: April 18, 2019
filename: OneMileRadius_Plat
Sources: IHS Energy; Midland Map Company; Environmental Systems Research Institute [ESRI];

Map 3-8

Eddy County, New Mexico



1 inch = 3,000 feet

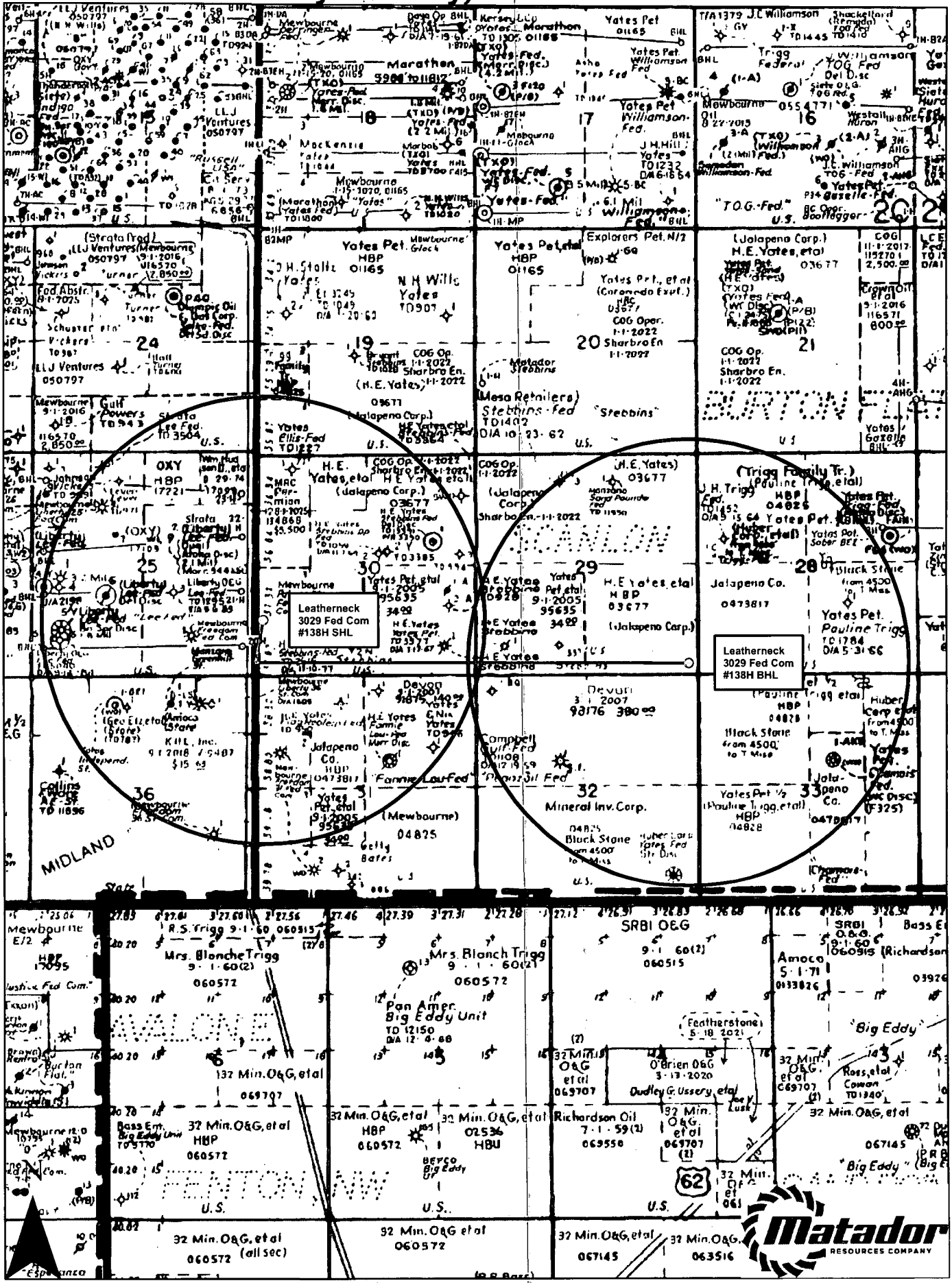
Feet

0 7501,500 3,000

Map Prepared by: agreen
Date: April 18, 2019
filename: OneMileRadius_Plat
Sources: IHS Energy; Midland Map Company; Environmental Systems Research Institute [ESRI];

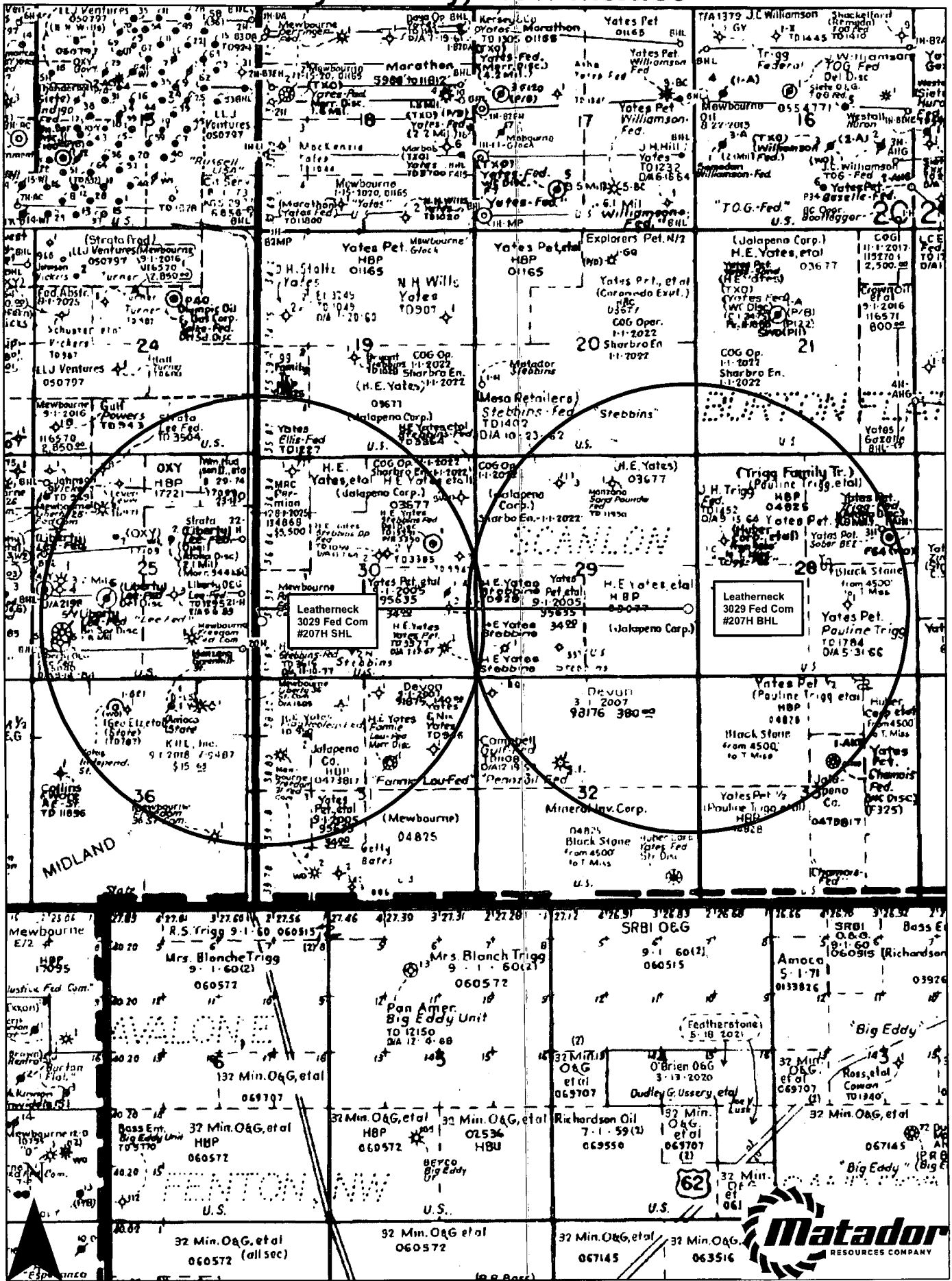
Map 3-9

Eddy County, New Mexico



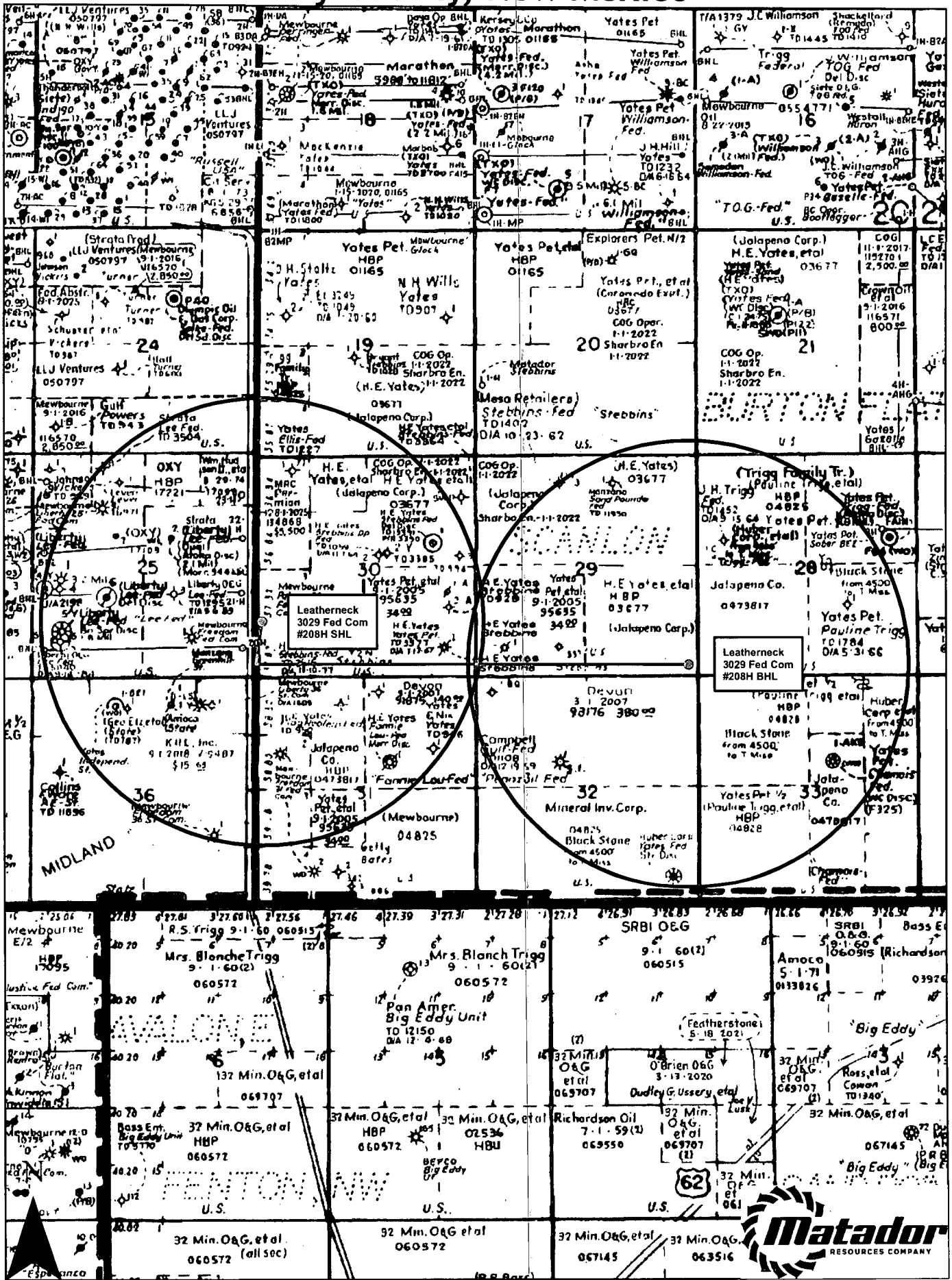
Map 3-10

Eddy County, New Mexico



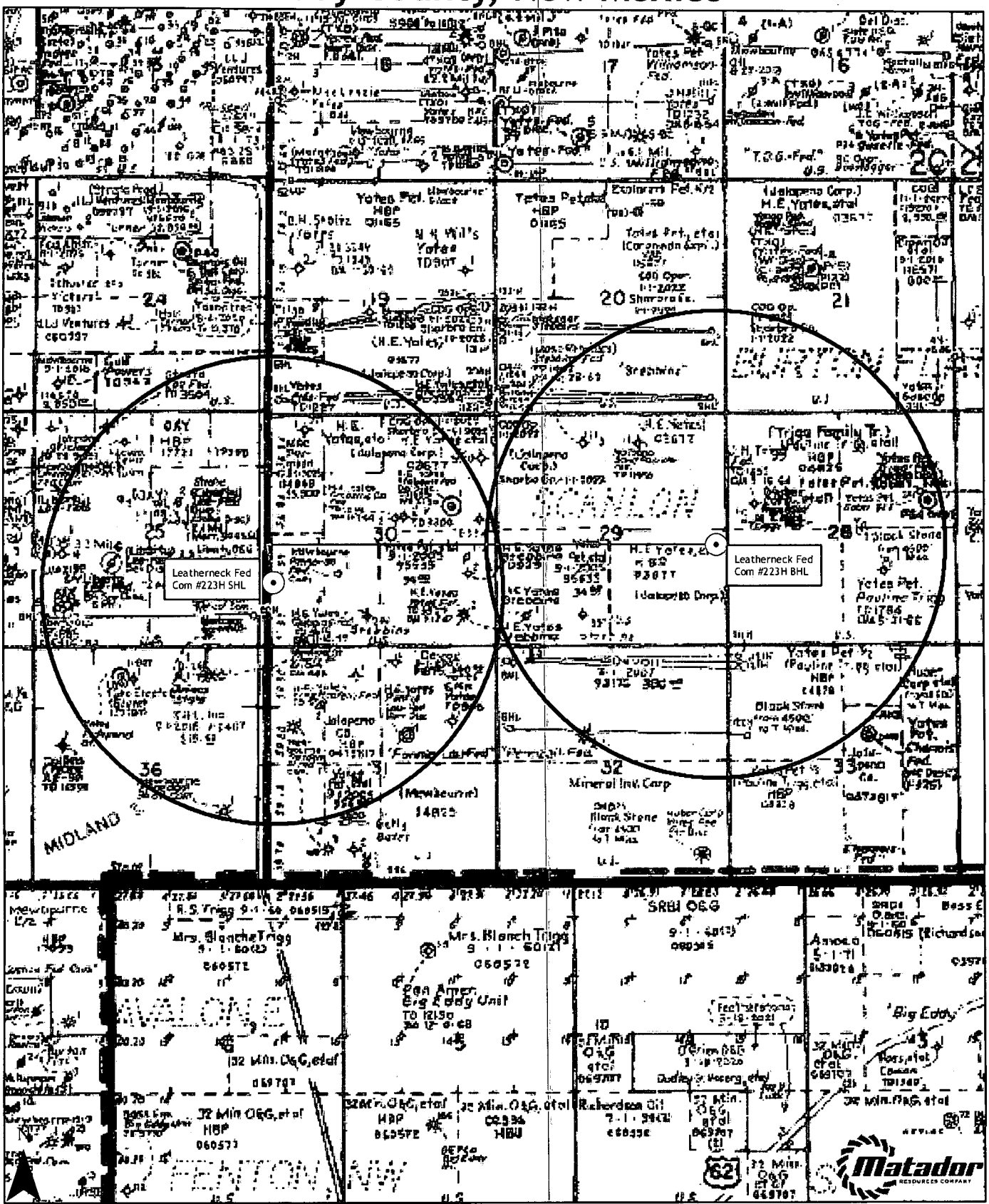
Map 3-11

Eddy County, New Mexico



Map 3-12

Eddy County, New Mexico



1 inch = 3,000 feet

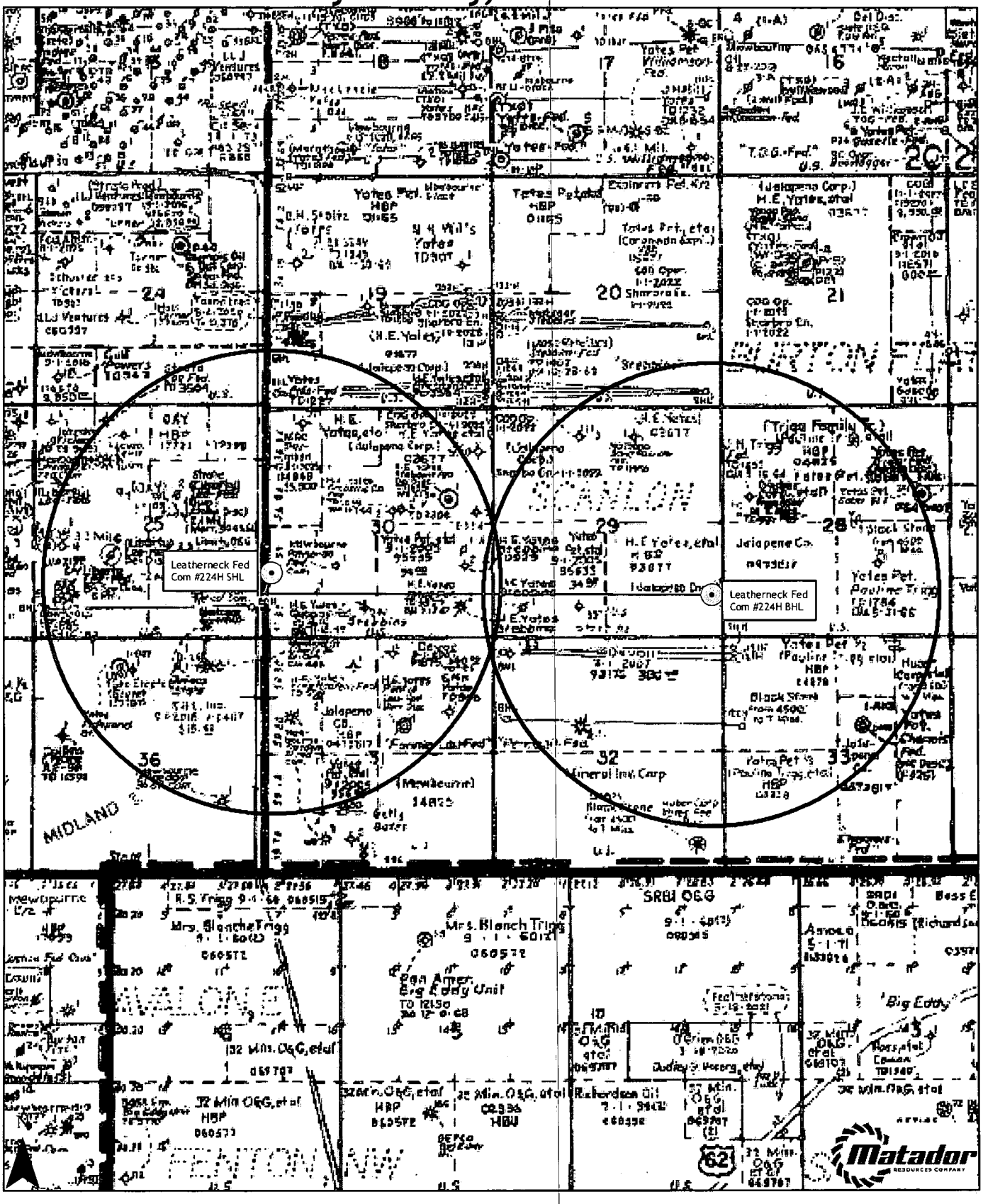
Feet

0 7501,500 3,000

Map Prepared by: agreen
Date: April 18, 2019
filename: OneMileRadius_Plat
Sources: IHS Energy; Midland Map Company; Environmental Systems Research Institute [ESRI];

Map 3-13

Eddy County, New Mexico



1 inch = 3,000 feet

Feet
0 7501,500 3,000

Map Prepared by: agreen
Date: April 18, 2019
filename: OneMileRadius_Plat
Sources: IHS Energy; Midland Map Company; Environmental Systems Research Institute [ESRI];

Map 3-14

Matador Resources
Eddy County, NM (NAD27)
Leatherneck Fed
#223H
Prelim B
Patt 809

RKB Elevation: 3235 + 28.5 = KB @ 3263.50usft (Patt 809)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	560625.00	565332.00	32.541088	-104.121327	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00
3	1810.00	6.20	315.00	1809.40	11.85	-11.85	2.00	-11.86
4	2310.00	6.20	315.00	2306.47	50.03	-50.03	0.00	-50.08
5	2670.72	6.17	348.98	2665.21	82.83	-67.51	1.00	-67.59
6	8531.72	6.17	348.98	8492.30	700.73	-187.83	0.00	-188.44
7	8840.01	0.00	0.00	8800.00	717.00	-191.00	2.00	-191.63
8	8973.05	0.00	0.00	8933.04	717.00	-191.00	0.00	-191.63
9	9873.05	90.00	79.70	9506.00	819.45	372.72	10.00	372.01
10	10390.40	90.00	90.05	9506.00	865.61	887.30	2.00	886.55
11	19679.10	90.00	90.05	9506.00	858.00	10176.00	0.00	10175.25

Targets

Name	TVD	+N/-S	+E/-W	Northing	Easting
FPP (Leatherneck #223H)	0.00	867.00	-141.00	561492.00	565191.00
BHL (Leatherneck #223H)	9506.00	858.00	10176.00	561483.00	575508.00
LPP (Leatherneck #223H)	9506.00	858.00	10136.00	561483.00	575468.00

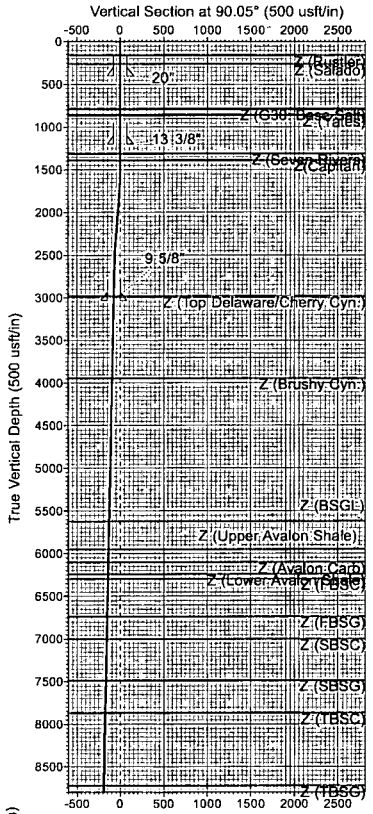
Azimuths to Grid North
True North: -0.11°
Magnetic North: 7.10°

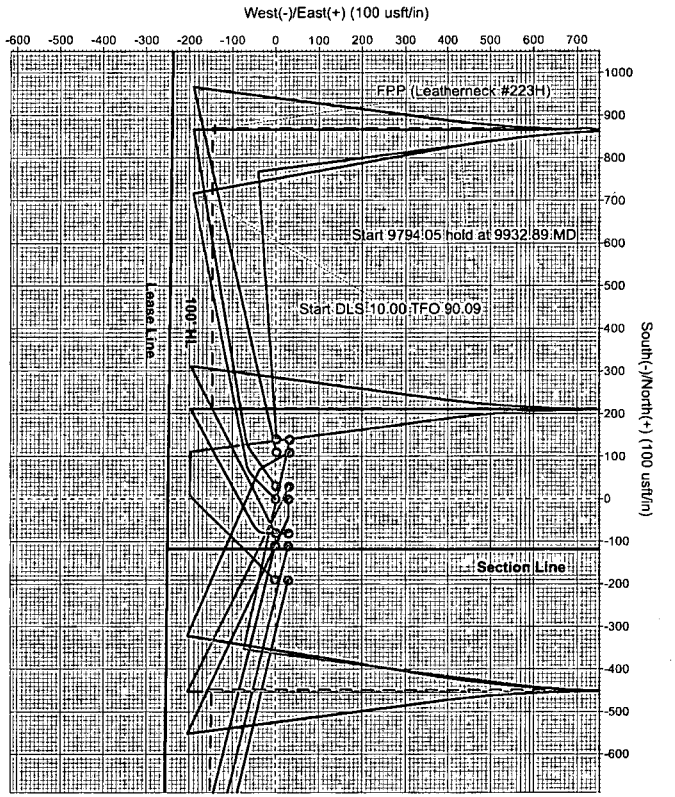
Magnetic Field
Strength: 47990.5snT
Dip Angle: 60.30°
Date: 4/4/2019
Model: HDGM

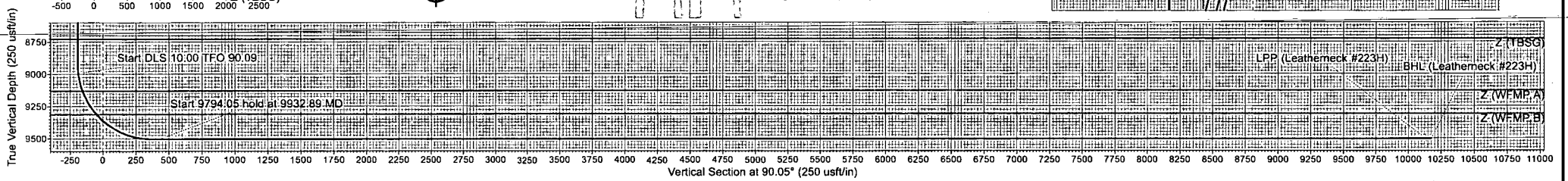
US State Plane 1927 (Exact solution)
NAD 1927 (NADCON CONUS)
Clarke 1866
New Mexico East 3001
Mean Sea Level

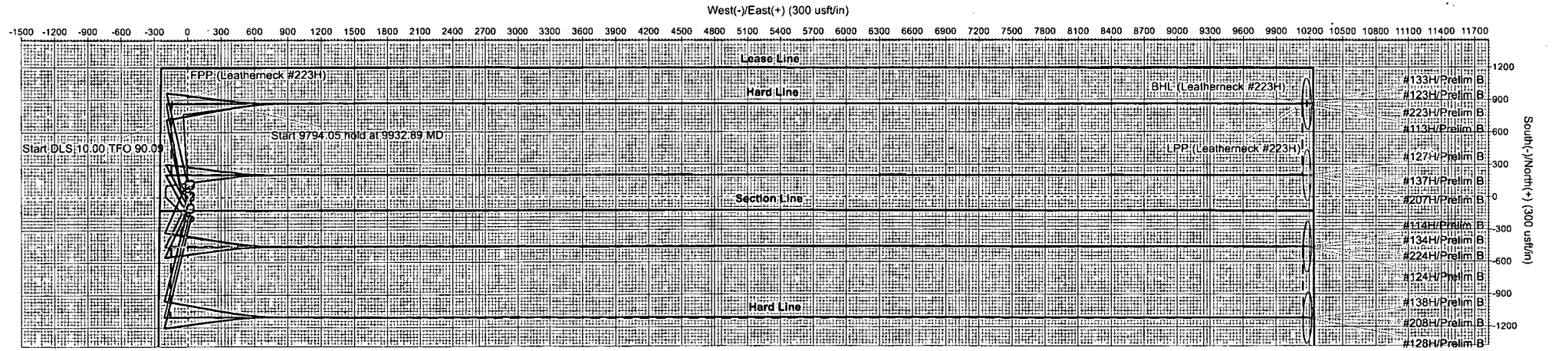
Azimuth Corrections

Total Magnetic Corr. (M to G): 7.10°









Matador Resources

Eddy County, NM (NAD27)
Leatherneck Fed
#223H

OH

Plan: Prelim B

Standard Planning Report

03 June, 2019

Database:	WellPlanner1	**Local Co-ordinate Reference:**	Well #223H
Company:	Matador Resources	**TVD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Project:	Eddy County, NM (NAD27)	**MD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Site:	Leatherneck Fed	**North Reference:**	Grid
Well:	#223H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim B		

Project	Eddy County, NM (NAD27)		
Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Leatherneck Fed				
Site Position:		**Northing:**	560,625.00 usft	**Latitude:**	32.541088
From:	Map	**Easting:**	565,332.00 usft	**Longitude:**	-104.121327
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.11 °

Well	#223H					
Well Position	**+N/-S**	0.00 usft	**Northing:**	560,625.00 usft	**Latitude:**	32.541088
	+E/-W	0.00 usft	**Easting:**	565,332.00 usft	**Longitude:**	-104.121327
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,235.00 usft

Wellbore	OH				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	HDGM	4/4/2019	7.22	60.30	47,990.50

Design	Prelim B				
Audit Notes:					
Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.00	0.00	0.00	90.05	

Plan Survey Tool Program **Date** 5/31/2019

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	19,679.10	Prelim B (OH)	MWD+HDGM	
				OWSG MWD + HRGM	

Pro Directional
Planning Report

Database:	WellPlanner1	**Local Co-ordinate Reference:**	Well #223H
Company:	Matador Resources	**TVD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Project:	Eddy County, NM (NAD27)	**MD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Site:	Leatherneck Fed	**North Reference:**	Grid
Well:	#223H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim B		

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,810.00	6.20	315.00	1,809.40	11.85	-11.85	2.00	2.00	0.00	315.00	
2,310.00	6.20	315.00	2,306.47	50.03	-50.03	0.00	0.00	0.00	0.00	
2,670.72	6.17	348.98	2,665.21	82.83	-67.51	1.00	-0.01	9.42	107.42	
8,531.72	6.17	348.98	8,492.30	700.73	-187.83	0.00	0.00	0.00	0.00	
8,840.01	0.00	0.00	8,800.00	717.00	-191.00	2.00	-2.00	0.00	180.00	
8,973.05	0.00	0.00	8,933.04	717.00	-191.00	0.00	0.00	0.00	0.00	
9,873.05	90.00	79.70	9,506.00	819.45	372.72	10.00	10.00	0.00	79.70	
10,390.40	90.00	90.05	9,506.00	865.61	887.30	2.00	0.00	2.00	90.00	
19,679.10	90.00	90.05	9,506.00	858.00	10,176.00	0.00	0.00	0.00	0.00	BHL (Leatherneck #

Database:	WellPlanner1	**Local Co-ordinate Reference:**	Well #223H
Company:	Matador Resources	**TVD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Project:	Eddy County, NM (NAD27)	**MD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Site:	Leatherneck Fed	**North Reference:**	Grid
Well:	#223H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim B		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
162.50	0.00	0.00	162.50	0.00	0.00	0.00	0.00	0.00	0.00
Z (Rustler)									
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
262.50	0.00	0.00	262.50	0.00	0.00	0.00	0.00	0.00	0.00
Z (Salado)									
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
399.00	0.00	0.00	399.00	0.00	0.00	0.00	0.00	0.00	0.00
20"									
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
788.50	0.00	0.00	788.50	0.00	0.00	0.00	0.00	0.00	0.00
Z (G30: Base Salt)									
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
862.50	0.00	0.00	862.50	0.00	0.00	0.00	0.00	0.00	0.00
Z (Yates)									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,199.00	0.00	0.00	1,199.00	0.00	0.00	0.00	0.00	0.00	0.00
13 3/8"									
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,312.50	0.00	0.00	1,312.50	0.00	0.00	0.00	0.00	0.00	0.00
Z (Seven Rivers)									
1,387.50	0.00	0.00	1,387.50	0.00	0.00	0.00	0.00	0.00	0.00
Z(Capitan)									
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	2.00	315.00	1,599.98	1.23	-1.23	-1.24	2.00	2.00	0.00
1,700.00	4.00	315.00	1,699.84	4.93	-4.93	-4.94	2.00	2.00	0.00
1,800.00	6.00	315.00	1,799.45	11.10	-11.10	-11.11	2.00	2.00	0.00
1,810.00	6.20	315.00	1,809.40	11.85	-11.85	-11.86	2.00	2.00	0.00
1,900.00	6.20	315.00	1,898.87	18.72	-18.72	-18.74	0.00	0.00	0.00
2,000.00	6.20	315.00	1,998.28	26.36	-26.36	-26.38	0.00	0.00	0.00
2,100.00	6.20	315.00	2,097.70	33.99	-33.99	-34.02	0.00	0.00	0.00
2,200.00	6.20	315.00	2,197.11	41.63	-41.63	-41.67	0.00	0.00	0.00
2,300.00	6.20	315.00	2,296.53	49.27	-49.27	-49.31	0.00	0.00	0.00
2,310.00	6.20	315.00	2,306.47	50.03	-50.03	-50.08	0.00	0.00	0.00
2,400.00	5.99	323.25	2,395.96	57.23	-56.28	-56.33	1.00	-0.23	9.17
2,500.00	5.91	332.88	2,495.43	66.00	-61.75	-61.81	1.00	-0.08	9.62
2,600.00	6.00	342.48	2,594.89	75.58	-65.67	-65.74	1.00	0.09	9.60
2,670.72	6.17	348.98	2,665.21	82.83	-67.51	-67.59	1.00	0.23	9.19
2,700.00	6.17	348.98	2,694.32	85.92	-68.12	-68.19	0.00	0.00	0.00
2,800.00	6.17	348.98	2,793.74	96.46	-70.17	-70.25	0.00	0.00	0.00
2,900.00	6.17	348.98	2,893.16	107.00	-72.22	-72.31	0.00	0.00	0.00
2,989.86	6.17	348.98	2,982.50	116.48	-74.07	-74.17	0.00	0.00	0.00
Z (Top Delaware/Cherry Cyn.)									
3,000.00	6.17	348.98	2,992.59	117.55	-74.27	-74.38	0.00	0.00	0.00
3,040.65	6.17	348.98	3,033.00	121.83	-75.11	-75.21	0.00	0.00	0.00

Pro Directional

Planning Report

Database:	WellPlanner1	**Local Co-ordinate Reference:**	Well #223H
Company:	Matador Resources	**TVD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Project:	Eddy County, NM (NAD27)	**MD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Site:	Leatherneck Fed	**North Reference:**	Grid
Well:	#223H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim B		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9 5/8"									
3,100.00	6.17	348.98	3,092.01	128.09	-76.33	-76.44	0.00	0.00	0.00
3,200.00	6.17	348.98	3,191.43	138.63	-78.38	-78.50	0.00	0.00	0.00
3,300.00	6.17	348.98	3,290.85	149.17	-80.43	-80.56	0.00	0.00	0.00
3,400.00	6.17	348.98	3,390.27	159.72	-82.49	-82.62	0.00	0.00	0.00
3,500.00	6.17	348.98	3,489.69	170.26	-84.54	-84.69	0.00	0.00	0.00
3,600.00	6.17	348.98	3,589.12	180.80	-86.59	-86.75	0.00	0.00	0.00
3,700.00	6.17	348.98	3,688.54	191.34	-88.64	-88.81	0.00	0.00	0.00
3,800.00	6.17	348.98	3,787.96	201.89	-90.70	-90.87	0.00	0.00	0.00
3,900.00	6.17	348.98	3,887.38	212.43	-92.75	-92.93	0.00	0.00	0.00
3,955.44	6.17	348.98	3,942.50	218.27	-93.89	-94.08	0.00	0.00	0.00
Z (Brushy Cyn.)									
4,000.00	6.17	348.98	3,986.80	222.97	-94.80	-95.00	0.00	0.00	0.00
4,100.00	6.17	348.98	4,086.22	233.51	-96.86	-97.06	0.00	0.00	0.00
4,200.00	6.17	348.98	4,185.64	244.06	-98.91	-99.12	0.00	0.00	0.00
4,300.00	6.17	348.98	4,285.07	254.60	-100.96	-101.18	0.00	0.00	0.00
4,400.00	6.17	348.98	4,384.49	265.14	-103.01	-103.25	0.00	0.00	0.00
4,500.00	6.17	348.98	4,483.91	275.68	-105.07	-105.31	0.00	0.00	0.00
4,600.00	6.17	348.98	4,583.33	286.23	-107.12	-107.37	0.00	0.00	0.00
4,700.00	6.17	348.98	4,682.75	296.77	-109.17	-109.43	0.00	0.00	0.00
4,800.00	6.17	348.98	4,782.17	307.31	-111.23	-111.49	0.00	0.00	0.00
4,900.00	6.17	348.98	4,881.60	317.86	-113.28	-113.56	0.00	0.00	0.00
5,000.00	6.17	348.98	4,981.02	328.40	-115.33	-115.62	0.00	0.00	0.00
5,100.00	6.17	348.98	5,080.44	338.94	-117.38	-117.68	0.00	0.00	0.00
5,200.00	6.17	348.98	5,179.86	349.48	-119.44	-119.74	0.00	0.00	0.00
5,300.00	6.17	348.98	5,279.28	360.03	-121.49	-121.80	0.00	0.00	0.00
5,400.00	6.17	348.98	5,378.70	370.57	-123.54	-123.87	0.00	0.00	0.00
5,500.00	6.17	348.98	5,478.12	381.11	-125.60	-125.93	0.00	0.00	0.00
5,600.00	6.17	348.98	5,577.55	391.65	-127.65	-127.99	0.00	0.00	0.00
5,645.22	6.17	348.98	5,622.50	396.42	-128.58	-128.92	0.00	0.00	0.00
Z (BSGL)									
5,700.00	6.17	348.98	5,676.97	402.20	-129.70	-130.05	0.00	0.00	0.00
5,800.00	6.17	348.98	5,776.39	412.74	-131.75	-132.11	0.00	0.00	0.00
5,900.00	6.17	348.98	5,875.81	423.28	-133.81	-134.18	0.00	0.00	0.00
5,977.14	6.17	348.98	5,952.50	431.41	-135.39	-135.77	0.00	0.00	0.00
Z (Upper Avalon Shale)									
6,000.00	6.17	348.98	5,975.23	433.82	-135.86	-136.24	0.00	0.00	0.00
6,100.00	6.17	348.98	6,074.65	444.37	-137.91	-138.30	0.00	0.00	0.00
6,128.01	6.17	348.98	6,102.50	447.32	-138.49	-138.88	0.00	0.00	0.00
Z (Avalon Carb)									
6,200.00	6.17	348.98	6,174.08	454.91	-139.97	-140.36	0.00	0.00	0.00
6,268.82	6.17	348.98	6,242.50	462.17	-141.38	-141.78	0.00	0.00	0.00
Z (Lower Avalon Shale)									
6,300.00	6.17	348.98	6,273.50	465.45	-142.02	-142.42	0.00	0.00	0.00
6,324.14	6.17	348.98	6,297.50	468.00	-142.51	-142.92	0.00	0.00	0.00
Z (FBSC)									
6,400.00	6.17	348.98	6,372.92	475.99	-144.07	-144.49	0.00	0.00	0.00
6,500.00	6.17	348.98	6,472.34	486.54	-146.12	-146.55	0.00	0.00	0.00
6,600.00	6.17	348.98	6,571.76	497.08	-148.18	-148.61	0.00	0.00	0.00
6,700.00	6.17	348.98	6,671.18	507.62	-150.23	-150.67	0.00	0.00	0.00
6,766.70	6.17	348.98	6,737.50	514.65	-151.60	-152.05	0.00	0.00	0.00
Z (FBSG)									
6,800.00	6.17	348.98	6,770.60	518.17	-152.28	-152.73	0.00	0.00	0.00

Database:	WellPlanner1	**Local Co-ordinate Reference:**	Well #223H
Company:	Matador Resources	**TVD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Project:	Eddy County, NM (NAD27)	**MD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Site:	Leatherneck Fed	**North Reference:**	Grid
Well:	#223H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim B		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,900.00	6.17	348.98	6,870.03	528.71	-154.34	-154.80	0.00	0.00	0.00
7,000.00	6.17	348.98	6,969.45	539.25	-156.39	-156.86	0.00	0.00	0.00
7,033.25	6.17	348.98	7,002.50	542.76	-157.07	-157.54	0.00	0.00	0.00
Z (SBSC)									
7,100.00	6.17	348.98	7,068.87	549.79	-158.44	-158.92	0.00	0.00	0.00
7,200.00	6.17	348.98	7,168.29	560.34	-160.49	-160.98	0.00	0.00	0.00
7,300.00	6.17	348.98	7,267.71	570.88	-162.55	-163.05	0.00	0.00	0.00
7,400.00	6.17	348.98	7,367.13	581.42	-164.60	-165.11	0.00	0.00	0.00
7,500.00	6.17	348.98	7,466.55	591.96	-166.65	-167.17	0.00	0.00	0.00
7,516.04	6.17	348.98	7,482.50	593.65	-166.98	-167.50	0.00	0.00	0.00
Z (SBSG)									
7,600.00	6.17	348.98	7,565.98	602.51	-168.71	-169.23	0.00	0.00	0.00
7,700.00	6.17	348.98	7,665.40	613.05	-170.76	-171.29	0.00	0.00	0.00
7,800.00	6.17	348.98	7,764.82	623.59	-172.81	-173.36	0.00	0.00	0.00
7,900.00	6.17	348.98	7,864.24	634.13	-174.86	-175.42	0.00	0.00	0.00
7,903.28	6.17	348.98	7,867.50	634.48	-174.93	-175.49	0.00	0.00	0.00
Z (TBSC)									
8,000.00	6.17	348.98	7,963.66	644.68	-176.92	-177.48	0.00	0.00	0.00
8,100.00	6.17	348.98	8,063.08	655.22	-178.97	-179.54	0.00	0.00	0.00
8,200.00	6.17	348.98	8,162.51	665.76	-181.02	-181.60	0.00	0.00	0.00
8,300.00	6.17	348.98	8,261.93	676.30	-183.08	-183.67	0.00	0.00	0.00
8,400.00	6.17	348.98	8,361.35	686.85	-185.13	-185.73	0.00	0.00	0.00
8,500.00	6.17	348.98	8,460.77	697.39	-187.18	-187.79	0.00	0.00	0.00
8,531.72	6.17	348.98	8,492.30	700.73	-187.83	-188.44	0.00	0.00	0.00
8,600.00	4.80	348.98	8,560.27	707.14	-189.08	-189.70	2.00	-2.00	0.00
8,700.00	2.80	348.98	8,660.05	713.64	-190.35	-190.97	2.00	-2.00	0.00
8,767.50	1.45	348.98	8,727.50	716.10	-190.82	-191.45	2.00	-2.00	0.00
Z (TBSG)									
8,800.00	0.80	348.98	8,759.99	716.73	-190.95	-191.57	2.00	-2.00	0.00
8,840.01	0.00	0.00	8,800.00	717.00	-191.00	-191.63	2.00	-2.00	0.00
8,900.00	0.00	0.00	8,859.99	717.00	-191.00	-191.63	0.00	0.00	0.00
8,973.05	0.00	0.00	8,933.04	717.00	-191.00	-191.63	0.00	0.00	0.00
9,000.00	2.70	79.70	8,959.98	717.11	-190.38	-191.00	10.00	10.00	0.00
9,032.89	5.98	79.70	8,992.77	717.56	-187.93	-188.55	10.00	10.00	0.00
Start DLS 10.00 TFO 90.09									
9,050.00	7.70	79.70	9,009.76	717.92	-185.92	-186.55	10.00	10.00	0.00
9,100.00	12.70	79.70	9,058.96	719.50	-177.22	-177.85	10.00	10.00	0.00
9,150.00	17.70	79.70	9,107.19	721.85	-164.33	-164.96	10.00	10.00	0.00
9,176.77	20.37	79.70	9,132.50	723.41	-155.74	-156.37	10.00	10.00	0.00
Z (WFMP A)									
9,200.00	22.70	79.70	9,154.10	724.93	-147.35	-147.98	10.00	10.00	0.00
9,250.00	27.70	79.70	9,199.33	728.74	-126.42	-127.05	10.00	10.00	0.00
9,300.00	32.70	79.70	9,242.53	733.23	-101.68	-102.32	10.00	10.00	0.00
9,350.00	37.70	79.70	9,283.38	738.38	-73.34	-73.98	10.00	10.00	0.00
9,387.79	41.47	79.70	9,312.50	742.69	-49.65	-50.30	10.00	10.00	0.00
Z (WFMP B)									
9,400.00	42.70	79.70	9,321.56	744.15	-41.60	-42.25	10.00	10.00	0.00
9,450.00	47.70	79.70	9,356.79	750.49	-6.70	-7.36	10.00	10.00	0.00
9,500.00	52.70	79.70	9,388.78	757.36	31.08	30.42	10.00	10.00	0.00
9,550.00	57.70	79.70	9,417.31	764.70	71.46	70.79	10.00	10.00	0.00
9,600.00	62.70	79.70	9,442.16	772.45	114.13	113.46	10.00	10.00	0.00
9,650.00	67.70	79.70	9,463.13	780.56	158.77	158.09	10.00	10.00	0.00
9,700.00	72.70	79.70	9,480.06	788.97	205.04	204.35	10.00	10.00	0.00

Database:	WellPlanner1	**Local Co-ordinate Reference:**	Well #223H
Company:	Matador Resources	**TVD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Project:	Eddy County, NM (NAD27)	**MD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Site:	Leatherneck Fed	**North Reference:**	Grid
Well:	#223H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim B		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,750.00	77.70	79.70	9,492.84	797.61	252.59	251.89	10.00	10.00	0.00
9,800.00	82.70	79.70	9,501.35	806.42	301.05	300.34	10.00	10.00	0.00
9,850.00	87.70	79.70	9,505.53	815.33	350.05	349.34	10.00	10.00	0.00
9,873.05	90.00	79.70	9,506.00	819.45	372.72	372.01	10.00	10.00	0.00
9,900.00	90.00	80.24	9,506.00	824.14	399.26	398.54	2.00	0.00	2.00
9,932.89	90.00	80.90	9,506.00	829.53	431.71	430.99	2.00	0.00	2.00
Start 9794.05 hold at 9932.89 MD									
10,000.00	90.00	82.24	9,506.00	839.37	498.09	497.36	2.00	0.00	2.00
10,100.00	90.00	84.24	9,506.00	851.14	597.39	596.65	2.00	0.00	2.00
10,200.00	90.00	86.24	9,506.00	859.44	697.04	696.29	2.00	0.00	2.00
10,300.00	90.00	88.24	9,506.00	864.26	796.92	796.17	2.00	0.00	2.00
10,390.40	90.00	90.05	9,506.00	865.61	887.30	886.55	2.00	0.00	2.00
10,400.00	90.00	90.05	9,506.00	865.60	896.91	896.15	0.00	0.00	0.00
10,500.00	90.00	90.05	9,506.00	865.52	996.91	996.15	0.00	0.00	0.00
10,600.00	90.00	90.05	9,506.00	865.44	1,096.91	1,096.15	0.00	0.00	0.00
10,700.00	90.00	90.05	9,506.00	865.36	1,196.91	1,196.15	0.00	0.00	0.00
10,800.00	90.00	90.05	9,506.00	865.28	1,296.91	1,296.15	0.00	0.00	0.00
10,900.00	90.00	90.05	9,506.00	865.19	1,396.91	1,396.15	0.00	0.00	0.00
11,000.00	90.00	90.05	9,506.00	865.11	1,496.91	1,496.15	0.00	0.00	0.00
11,100.00	90.00	90.05	9,506.00	865.03	1,596.91	1,596.15	0.00	0.00	0.00
11,200.00	90.00	90.05	9,506.00	864.95	1,696.91	1,696.15	0.00	0.00	0.00
11,300.00	90.00	90.05	9,506.00	864.87	1,796.91	1,796.15	0.00	0.00	0.00
11,400.00	90.00	90.05	9,506.00	864.78	1,896.91	1,896.15	0.00	0.00	0.00
11,500.00	90.00	90.05	9,506.00	864.70	1,996.91	1,996.15	0.00	0.00	0.00
11,600.00	90.00	90.05	9,506.00	864.62	2,096.91	2,096.15	0.00	0.00	0.00
11,700.00	90.00	90.05	9,506.00	864.54	2,196.91	2,196.15	0.00	0.00	0.00
11,800.00	90.00	90.05	9,506.00	864.46	2,296.91	2,296.15	0.00	0.00	0.00
11,900.00	90.00	90.05	9,506.00	864.37	2,396.91	2,396.15	0.00	0.00	0.00
12,000.00	90.00	90.05	9,506.00	864.29	2,496.91	2,496.15	0.00	0.00	0.00
12,100.00	90.00	90.05	9,506.00	864.21	2,596.91	2,596.15	0.00	0.00	0.00
12,200.00	90.00	90.05	9,506.00	864.13	2,696.91	2,696.15	0.00	0.00	0.00
12,300.00	90.00	90.05	9,506.00	864.05	2,796.91	2,796.15	0.00	0.00	0.00
12,400.00	90.00	90.05	9,506.00	863.96	2,896.91	2,896.15	0.00	0.00	0.00
12,500.00	90.00	90.05	9,506.00	863.88	2,996.91	2,996.15	0.00	0.00	0.00
12,600.00	90.00	90.05	9,506.00	863.80	3,096.91	3,096.15	0.00	0.00	0.00
12,700.00	90.00	90.05	9,506.00	863.72	3,196.91	3,196.15	0.00	0.00	0.00
12,800.00	90.00	90.05	9,506.00	863.64	3,296.91	3,296.15	0.00	0.00	0.00
12,900.00	90.00	90.05	9,506.00	863.55	3,396.91	3,396.15	0.00	0.00	0.00
13,000.00	90.00	90.05	9,506.00	863.47	3,496.91	3,496.15	0.00	0.00	0.00
13,100.00	90.00	90.05	9,506.00	863.39	3,596.91	3,596.15	0.00	0.00	0.00
13,200.00	90.00	90.05	9,506.00	863.31	3,696.91	3,696.15	0.00	0.00	0.00
13,300.00	90.00	90.05	9,506.00	863.23	3,796.91	3,796.15	0.00	0.00	0.00
13,400.00	90.00	90.05	9,506.00	863.15	3,896.91	3,896.15	0.00	0.00	0.00
13,500.00	90.00	90.05	9,506.00	863.06	3,996.91	3,996.15	0.00	0.00	0.00
13,600.00	90.00	90.05	9,506.00	862.98	4,096.91	4,096.15	0.00	0.00	0.00
13,700.00	90.00	90.05	9,506.00	862.90	4,196.91	4,196.15	0.00	0.00	0.00
13,800.00	90.00	90.05	9,506.00	862.82	4,296.91	4,296.15	0.00	0.00	0.00
13,900.00	90.00	90.05	9,506.00	862.74	4,396.91	4,396.15	0.00	0.00	0.00
14,000.00	90.00	90.05	9,506.00	862.65	4,496.91	4,496.15	0.00	0.00	0.00
14,100.00	90.00	90.05	9,506.00	862.57	4,596.91	4,596.15	0.00	0.00	0.00
14,200.00	90.00	90.05	9,506.00	862.49	4,696.91	4,696.15	0.00	0.00	0.00
14,300.00	90.00	90.05	9,506.00	862.41	4,796.91	4,796.15	0.00	0.00	0.00
14,400.00	90.00	90.05	9,506.00	862.33	4,896.91	4,896.15	0.00	0.00	0.00
14,500.00	90.00	90.05	9,506.00	862.24	4,996.91	4,996.15	0.00	0.00	0.00

Database:	WellPlanner1	**Local Co-ordinate Reference:**	Well #223H
Company:	Matador Resources	**TVD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Project:	Eddy County, NM (NAD27)	**MD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Site:	Leatherneck Fed	**North Reference:**	Grid
Well:	#223H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim B		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,600.00	90.00	90.05	9,506.00	862.16	5,096.91	5,096.15	0.00	0.00	0.00
14,700.00	90.00	90.05	9,506.00	862.08	5,196.91	5,196.15	0.00	0.00	0.00
14,800.00	90.00	90.05	9,506.00	862.00	5,296.91	5,296.15	0.00	0.00	0.00
14,900.00	90.00	90.05	9,506.00	861.92	5,396.91	5,396.15	0.00	0.00	0.00
15,000.00	90.00	90.05	9,506.00	861.83	5,496.91	5,496.15	0.00	0.00	0.00
15,100.00	90.00	90.05	9,506.00	861.75	5,596.91	5,596.15	0.00	0.00	0.00
15,200.00	90.00	90.05	9,506.00	861.67	5,696.91	5,696.15	0.00	0.00	0.00
15,300.00	90.00	90.05	9,506.00	861.59	5,796.91	5,796.15	0.00	0.00	0.00
15,400.00	90.00	90.05	9,506.00	861.51	5,896.91	5,896.15	0.00	0.00	0.00
15,500.00	90.00	90.05	9,506.00	861.42	5,996.91	5,996.15	0.00	0.00	0.00
15,600.00	90.00	90.05	9,506.00	861.34	6,096.91	6,096.15	0.00	0.00	0.00
15,700.00	90.00	90.05	9,506.00	861.26	6,196.91	6,196.15	0.00	0.00	0.00
15,800.00	90.00	90.05	9,506.00	861.18	6,296.91	6,296.15	0.00	0.00	0.00
15,900.00	90.00	90.05	9,506.00	861.10	6,396.91	6,396.15	0.00	0.00	0.00
16,000.00	90.00	90.05	9,506.00	861.01	6,496.91	6,496.15	0.00	0.00	0.00
16,100.00	90.00	90.05	9,506.00	860.93	6,596.91	6,596.15	0.00	0.00	0.00
16,200.00	90.00	90.05	9,506.00	860.85	6,696.91	6,696.15	0.00	0.00	0.00
16,300.00	90.00	90.05	9,506.00	860.77	6,796.91	6,796.15	0.00	0.00	0.00
16,400.00	90.00	90.05	9,506.00	860.69	6,896.91	6,896.15	0.00	0.00	0.00
16,500.00	90.00	90.05	9,506.00	860.60	6,996.91	6,996.15	0.00	0.00	0.00
16,600.00	90.00	90.05	9,506.00	860.52	7,096.91	7,096.15	0.00	0.00	0.00
16,700.00	90.00	90.05	9,506.00	860.44	7,196.91	7,196.15	0.00	0.00	0.00
16,800.00	90.00	90.05	9,506.00	860.36	7,296.91	7,296.15	0.00	0.00	0.00
16,900.00	90.00	90.05	9,506.00	860.28	7,396.90	7,396.15	0.00	0.00	0.00
17,000.00	90.00	90.05	9,506.00	860.20	7,496.90	7,496.15	0.00	0.00	0.00
17,100.00	90.00	90.05	9,506.00	860.11	7,596.90	7,596.15	0.00	0.00	0.00
17,200.00	90.00	90.05	9,506.00	860.03	7,696.90	7,696.15	0.00	0.00	0.00
17,300.00	90.00	90.05	9,506.00	859.95	7,796.90	7,796.15	0.00	0.00	0.00
17,400.00	90.00	90.05	9,506.00	859.87	7,896.90	7,896.15	0.00	0.00	0.00
17,500.00	90.00	90.05	9,506.00	859.79	7,996.90	7,996.15	0.00	0.00	0.00
17,600.00	90.00	90.05	9,506.00	859.70	8,096.90	8,096.15	0.00	0.00	0.00
17,700.00	90.00	90.05	9,506.00	859.62	8,196.90	8,196.15	0.00	0.00	0.00
17,800.00	90.00	90.05	9,506.00	859.54	8,296.90	8,296.15	0.00	0.00	0.00
17,900.00	90.00	90.05	9,506.00	859.46	8,396.90	8,396.15	0.00	0.00	0.00
18,000.00	90.00	90.05	9,506.00	859.38	8,496.90	8,496.15	0.00	0.00	0.00
18,100.00	90.00	90.05	9,506.00	859.29	8,596.90	8,596.15	0.00	0.00	0.00
18,200.00	90.00	90.05	9,506.00	859.21	8,696.90	8,696.15	0.00	0.00	0.00
18,300.00	90.00	90.05	9,506.00	859.13	8,796.90	8,796.15	0.00	0.00	0.00
18,400.00	90.00	90.05	9,506.00	859.05	8,896.90	8,896.15	0.00	0.00	0.00
18,500.00	90.00	90.05	9,506.00	858.97	8,996.90	8,996.15	0.00	0.00	0.00
18,600.00	90.00	90.05	9,506.00	858.88	9,096.90	9,096.15	0.00	0.00	0.00
18,700.00	90.00	90.05	9,506.00	858.80	9,196.90	9,196.15	0.00	0.00	0.00
18,800.00	90.00	90.05	9,506.00	858.72	9,296.90	9,296.15	0.00	0.00	0.00
18,900.00	90.00	90.05	9,506.00	858.64	9,396.90	9,396.15	0.00	0.00	0.00
19,000.00	90.00	90.05	9,506.00	858.56	9,496.90	9,496.15	0.00	0.00	0.00
19,100.00	90.00	90.05	9,506.00	858.47	9,596.90	9,596.15	0.00	0.00	0.00
19,200.00	90.00	90.05	9,506.00	858.39	9,696.90	9,696.15	0.00	0.00	0.00
19,300.00	90.00	90.05	9,506.00	858.31	9,796.90	9,796.15	0.00	0.00	0.00
19,400.00	90.00	90.05	9,506.00	858.23	9,896.90	9,896.15	0.00	0.00	0.00
19,500.00	90.00	90.05	9,506.00	858.15	9,996.90	9,996.15	0.00	0.00	0.00
19,600.00	90.00	90.05	9,506.00	858.06	10,096.90	10,096.15	0.00	0.00	0.00
19,679.10	90.00	90.05	9,506.00	858.00	10,176.00	10,175.25	0.00	0.00	0.00

Database:	WellPlanner1	**Local Co-ordinate Reference:**	Well #223H
Company:	Matador Resources	**TVD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Project:	Eddy County, NM (NAD27)	**MD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Site:	Leatherneck Fed	**North Reference:**	Grid
Well:	#223H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim B		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FPP (Leatherneck #2 - plan misses target center by 878.39usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Point	0.00	0.00	0.00	867.00	-141.00	561,492.00	565,191.00	32.543472	-104.121779
BHL (Leatherneck #2 - plan hits target center - Point	0.00	0.00	9,506.00	858.00	10,176.00	561,483.00	575,508.00	32.543386	-104.088299
LPP (Leatherneck #2 - plan misses target center by 39.10usft at 19600.00usft MD (9506.00 TVD, 858.06 N, 10096.90 E) - Point	0.00	0.00	9,506.00	858.00	10,136.00	561,483.00	575,468.00	32.543387	-104.088429

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
399.00	399.00	20"	20	26
1,199.00	1,199.00	13 3/8"	13-3/8	17-1/2
3,040.65	3,033.00	9 5/8"	9-5/8	12-1/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
162.50	162.50	Z (Rustler)			
262.50	262.50	Z (Salado)			
788.50	788.50	Z (G30: Base Salt)			
862.50	862.50	Z (Yates)			
1,312.50	1,312.50	Z (Seven Rivers)			
1,387.50	1,387.50	Z(Capitan)			
2,989.86	2,982.50	Z (Top Delaware/Cherry Cyn.)			
3,955.44	3,942.50	Z (Brushy Cyn.)			
5,645.22	5,622.50	Z (BSGL)			
5,977.14	5,952.50	Z (Upper Avalon Shale)			
6,128.01	6,102.50	Z (Avalon Carb)			
6,268.82	6,242.50	Z (Lower Avalon Shale)			
6,324.14	6,297.50	Z (FBSC)			
6,766.70	6,737.50	Z (FBSG)			
7,033.25	7,002.50	Z (SBSC)			
7,516.04	7,482.50	Z (SBSG)			
7,903.28	7,867.50	Z (TBSC)			
8,767.50	8,727.50	Z (TBSG)			
9,176.77	9,132.50	Z (WFMP A)			
9,387.79	9,312.50	Z (WFMP B)			

Database:	WellPlanner1	**Local Co-ordinate Reference:**	Well #223H
Company:	Matador Resources	**TVD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Project:	Eddy County, NM (NAD27)	**MD Reference:**	3235 + 28.5 = KB @ 3263.50usft (Patt 809)
Site:	Leatherneck Fed	**North Reference:**	Grid
Well:	#223H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim B		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
9,032.89	8,992.77	717.56	-187.93	Start DLS 10.00 TFO 90.09
9,932.89	9,506.00	829.53	431.71	Start 9794.05 hold at 9932.89 MD
19,726.95				TD at 19726.95

Matador requests a variance for a 2M annular to be installed after running 20" casing.

A 12,000' 5000-psi BOP stack consisting of 3 rams with 2 pipe rams, 1 blind ram, and one annular preventer will be utilized below intermediate 1 casing to TD. See attachments for BOP and choke manifold diagrams.

An accumulator complying with Onshore Order #2 requirements for the pressure rating of the BOP stack will be present. A rotating head will also be installed as needed.

Testing Procedure
BOP will be inspected and operated as required in Onshore Order #2. Kelly cock and sub equipped with a full opening valve sized to fit the drill pipe and collars will be available on the rig floor in the open position.

A third party company will test the BOPs.

After setting intermediate casing, a minimum 5M BOPE system will be installed. Test pressures will be 250 psi low and 5000 psi high with the annular preventer being tested to 250 psi low and 2500 psi high before drilling below intermediate shoe. In the event that the rig drills multiple wells on the pad and any seal subject to test pressures are broken, a full BOP test will be performed when the rig returns and the 5M BOPE system is re-installed.

Variance Request
Matador requests a variance to have the option of running a multi-bowl wellhead assembly. The BOPs will not be tested again unless any flanges are separated or if the time between the setting of the intermediate casing and reaching within 500' from the top of the Wolfcamp formation exceeds 30 days per the CFO Drilling COAs.

Matador requests a variance to drill this well using a co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. If the specific hose is not available, then one of equal or higher rating will be used.

Matador requests a variance to have the option of batch drilling this well with other wells on the same pad. In the event that this well is batch drilled, the wellbore will be secured with a blind flange of like pressure. When the rig returns to this well and BOPs are installed, the operator will perform a full BOP test.

Matador requests a variance for the use of a diverter along with a 2000-psi annular to be installed after running 20" casing.
Matador requests the option to cut off 20" SOW wellhead and run 13-3/8" SOW multi-bowl wellhead system once 1st intermediate string is run and cemented.

4. Casing & Cement

All casing will be API and new. See attached casing assumption worksheet.

String	Hole Size (in)	Set MD (ft)	Set TVD (ft)	Casing Size (in)	Wt. (lb/ft)	Grade	Joint	Collapse	Burst	Tension
Surface	26	0 - 400	0 - 400	20	94	J-55	BUTT	1.125	1.125	1.8
Intermediate 1	17.5	0 - 1200	0 - 1200	13.375	54.5	J-55	BUTT	1.125	1.125	1.8
Intermediate 2	12.25	0 - 3100	0 - 3100	9.625	40	J-55	BUTT	1.125	1.125	1.8
Production	8.75	0 - 19679	0 - 9506	5.5	20	P-110	DWC/C-IS HT Plus	1.125	1.125	1.8

- All casing strings will be tested in accordance with Onshore Order #2 - III.B.1.h
- Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed

String	Type	Sacks	Yield	Cu. Ft.	Weight	Percent Excess	Top of Cement	Class	Blend
Surface	Tail	1060	1.35	1424	14.8	100%	0	C	5% NaCl + LCM
Intermediate 1	Lead	640	1.78	1132	13.5	50%	0	C	5% NaCl + LCM
	Tail	260	1.35	347	14.8	50%	900	C	5% NaCl + LCM
Intermediate 2	Lead	700	1.78	1254	13.5	50%	0	C	Bentonite + 1% CaCL2 + 8% NaCl + LCM
	Tail	240	1.35	325	14.8	50%	2480	C	5% NaCl + LCM
Production	Lead	970	2.22	2154	11.5	25%	1340	H	Fluid Loss + Dispersant + Retarder + LCM
	Tail	2630	1.35	3550	13.2	25%	8467	H	Fluid Loss + Dispersant + Retarder + LCM

Matador requests the option to run a DV tool with annular packer as contingency in the intermediate 1 or 2 section on 13-3/8" or 9-5/8" casing if lost circulation is encountered. If losses occur, the DV tool with packer will be placed at least 100' above the loss zone to give the option to pump cement as either a single stage or two stage.

Example:
Assuming DV tool is set at 1500' MD but if the setting depth changes, cement volumes will be adjusted proportionately.

Stage 1:

Type	Sacks	Yield	Weight	Percent	Top of	Class	Blend
Lead	695	1.78	13.5	100	0	C	Bentonite + 2% CaCL2 + 3% NaCl + LCM
Tail	288	1.35	14.8	100	1200	C	5% NaCl + LCM

Stage 2:

Type	Sacks	Yield	Weight	Percent	Top of	Class	Blend
Lead	350	1.78	13.5	10	0	C	Bentonite + 2% CaCL2 + 3% NaCl + LCM

5. Mud Program

An electronic Pason mud monitoring system complying with Onshore Order #2 will be used. All necessary mud products (barite, bentonite, LCM) for weight addition and fluid loss control will be on location at all times. Mud program is subject to change due to hole conditions.

Hole Section	Hole Size (in)	Mud Type	Interval MD (ft)	Density (lb/gal)	Viscosity	Fluid Loss
Surface	26	Spud Mud	0 - 400	8.4 - 8.8	28-30	NC
Intermediate 1	17.5	Brine Water	400 - 1200	9.5 - 10.2	28-32	NC
Intermediate 2	12.25	Fresh Water	1200 - 3100	8.4 - 8.6	28-30	NC
Production	8.75	Cut Brine/OBM	3100 - 19679	8.6 - 9.4	28-30	NC

6. Cores, Test, & Logs

No core or drill stem test is planned.

A 2-person mud logging program will be used from Kick-off point to TD.

No electric logs are planned at this time. GR will be collected through the MWD tools from Intermediate casing to TD. CBL with CCL will be run as far as gravity will let it fall to top of curve.

7. Down Hole Conditions

No abnormal pressure or temperature is expected. Bottom Hole pressure is 4647 psi. Maximum anticipated surface pressure is 2555 psi. Expected bottom hole temperature is 170 F.

In accordance with Onshore Order 6, Matador does not anticipate that there will be enough H2S from the surface to the Bone Spring formations to meet the BLM's minimum requirements for the submission of a "H2S Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have a H2S safety package on all wells, attached is a "H2S Drilling Operations Plan." Adequate flare lines will be installed off the mud/gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of the equipment being used.

DVT Tool Variance Request

Matador requests the option to run a DV tool with annular packer as contingency in the intermediate 2 section on 9-5/8" casing if lost circulation is encountered. If losses occur the DV tool with packer will be placed at least 100' above the loss zone to give the option to pump cement as either a single stage or two stage.

Example:

Assuming DV tool is set at 1500' MD but if the setting depth changes, cement volumes will be adjusted proportionately.

Stage 1:

Type	Sacks	Yield	Weight	Percent	Top of	Class	Blend
Lead	695	1.78	13.5	100	0	C	Bentonite + 2% CaCL2 + 3% NaCl + LCM
Tail	288	1.35	14.8	100	1200	C	5% NaCl + LCM

Stage 2:

Type	Sacks	Yield	Weight	Percent	Top of	Class	Blend
Lead	350	1.78	13.5	10	0	C	Bentonite + 2% CaCL2 + 3% NaCl + LCM

APD ID: 10400043752 **Submission Date:** 07/16/2019

Operator Name: MATADOR PRODUCTION COMPANY

Well Name: LEATHERNECK 3029 FED COM **Well Number:** 223H

Well Type: CONVENTIONAL GAS WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

LN_Slot34_water_source_exist_road_MAP1_20190716114616.pdf

Existing Road Purpose: ACCESS **Row(s) Exist?** NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

LN_Slot34_new_rd_MAP2_20190716114629.pdf

New road type: RESOURCE

Length: 1032.77 Feet **Width (ft.):** 30

Max slope (%): 1 **Max grade (%):** 1

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: Road will be crowned and dtiched; maintenance will include pulling ditches, preserving the crown, and cleaning culverts.

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Operator Name: MATADOR PRODUCTION COMPANY

Well Name: LEATHERNECK 3029 FED COM **Well Number:** 223H

Turnout? N

Access surfacing type: OTHER

Access topsoil source: ONSITE

Access surfacing type description: Caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description:

Onsite topsoil removal process: Grading

Access other construction information:

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: Crowned and ditched; no crossings necessary

Road Drainage Control Structures (DCS) description: Crowned and ditched

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

LN_Slot34_1mi_well_map_MAP3_20190716114650.pdf

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: A 500' x 500' tank battery will be built directly East of the well pad. A 125.51' power line will connect the well pad and the production facility to existing power lines on the West side Magnum Road.
Production Facilities map:

LN_Slot34_prod_fac_layout_FIG1_20190716114705.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Operator Name: MATADOR PRODUCTION COMPANY

Well Name: LEATHERNECK 3029 FED COM **Well Number:** 223H

Water source type: GW WELL

Water source use type: SURFACE CASING

STIMULATION

INTERMEDIATE/PRODUCTION CASING

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: PRIVATE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 20000 **Source volume (acre-feet):** 2.577862

Source volume (gal): 840000

Water source and transportation map:

LN_Slot34_water_source_exist_road_MAP1_20190716114720.pdf

Water source comments: Water will be trucked from two water wells (C 03570 and C 03607) on private land in 24-21s-27e.

New water well? NO

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: Top 6" of soil and brush will be stockpiled east of the pad. Pipe racks will be to the north. A closed loop drilling system will be used. Caliche will be hauled from an existing Constructors, Inc. pits on private land in NWNE 34-21s-27e and S2 13-22s-26e.
Construction Materials source location attachment:

LN_Slot34_construction_methods_FIG1_20190716114740.pdf

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drill cuttings, mud, salts, and other chemicals; trash; chemical toilets

Amount of waste: 1000 barrels

Waste disposal frequency : Daily

Safe containment description: Drill cuttings, mud, salts, and other chemicals will be stored in steel mud tanks on pad; trash will be placed portable trash cage; human waste will be disposed of in chemical toilets.
Safe containmant attachment:

Waste disposal type: OTHER **Disposal location ownership:** OTHER

Disposal type description: Public/Private

Disposal location description: Steel tanks will be hauled to CRI's state approved (NM-01-0006) disposal site at Halfway, NM; portable trash cage will be hauled to Eddy County landfill; chemical toilets will be hauled to Carlsbad wastewater treatment plant.

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location Steel tanks on pad

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

LN_Slot34_well_site_layout_FIG1_20190716114800.pdf

Comments: See attachments for depictions of the well pad, trash cage, and access onto the location, parking, living facilities, and rig orientation.

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:** LEATHERNECK 3029 SLOT

Multiple Well Pad Number: 3/4

Recontouring attachment:

LN_Slot34_recontour_FIG2_20190716114822.pdf

Drainage/Erosion control construction: Crowned and ditched

Drainage/Erosion control reclamation: Harrowed on the contour

Operator Name: MATADOR PRODUCTION COMPANY

Well Name: LEATHERNECK 3029 FED COM **Well Number:** 223H

Well pad proposed disturbance (acres): 3.65
Road proposed disturbance (acres): 0.71
Powerline proposed disturbance (acres): 0.04
Pipeline proposed disturbance (acres): 0
Other proposed disturbance (acres): 5.74
Total proposed disturbance: 10.14

Well pad interim reclamation (acres): 0.69
Road interim reclamation (acres): 0
Powerline interim reclamation (acres): 0
Pipeline interim reclamation (acres): 0
Other interim reclamation (acres): 0
Total interim reclamation: 0.69

Well pad long term disturbance (acres): 2.96
Road long term disturbance (acres): 0.71
Powerline long term disturbance (acres): 0.04
Pipeline long term disturbance (acres): 0
Other long term disturbance (acres): 5.74
Total long term disturbance: 9.45

Disturbance Comments:

Reconstruction method: Interim reclamation will shrink the well pad by 0.69 acres by removing caliche and reclaiming the west side (50' x 600'), leaving 5.26 acres for 14 wells and truck turn around. Soil and brush will be evenly spread over disturbed areas. Disturbed areas will be contoured to match pre-construction grades.
Topsoil redistribution: Enough stockpiled topsoil will be retained to cover the remainder of the pad when the wells are plugged. Once the last well is plugged, then the remainder of the pad and new road will be similarly reclaimed.
Soil treatment: None

Existing Vegetation at the well pad:

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used?

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project?

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed Summary	
Seed Type	**Pounds/Acre**

Total pounds/Acre:

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: **Last Name:**

Phone: **Email:**

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: To BLM standards

Weed treatment plan attachment:

Monitoring plan description: To BLM standards

Monitoring plan attachment:

Success standards: To BLM satisfaction

Pit closure description: No pit

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

Operator Name: MATADOR PRODUCTION COMPANY

Well Name: LEATHERNECK 3029 FED COM **Well Number:** 223H

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: OTHER

Describe: POWERLINE

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Operator Name: MATADOR PRODUCTION COMPANY

Well Name: LEATHERNECK 3029 FED COM **Well Number:** 223H

Disturbance type: OTHER

Describe: PRODUCTION FACILITIES PAD

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**