



ARCO Permian

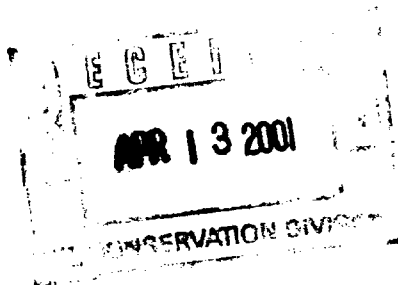
600 North Marienfeld
Midland, TX 79701-4373
P.O. Box 1610
Midland, TX 79702-1610
Telephone 915-688-5570
Facsimile 915-688-5956
Email ecasbee@mail.arco.com

Elizabeth A. Casbeer
Regulatory/Compliance Analyst

110641890

NSL

5/3/01



April 12, 2001

New Mexico Oil Conservation Division
ATTN: Mike Stogner
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: Unorthodox Location
Hilltop Federal Well No. 2
Little Box Canyon (Morrow) Pool
Unit L Section 1, T-21-S, R-21-E
Eddy Co., NM

Mr. Stogner:

As previously discussed by phone with Roger Elliott and myself, ARCO Permian, as operator requests approval of the unorthodox location. Our plans are to drill at a location 660' FWL and 2130' FSL of Section 1, T21S, R21E, Eddy County, New Mexico, as a 8,600 feet Morrow test. Enclosed are our attachments and supporting documentations for this unorthodox application.

At the earliest possible date, please send us our written approval order and fax a copy to 915/688-5956, granting us our unorthodox and drill site location.

We have a rig in the area (2 miles to the North) that is currently drilling and we want to move this rig down to Section 1 within the next month and a half.

Thank you for your cooperation and prompt response to our request. If you have any questions, please contact me at 915/688-5570. Please send your approval to proceed to my attention at the address listed above.

Yours very truly,

Elizabeth A. Casbeer
Regulatory Compliance Analyst

Attachments

xc: Lee Scarborough - WL4-241A
Gary Smallwood - WL4243
Mike Brock - EUN
Central Files - Records Management Room 0.320/Houston
R/C Files

ARCO Permian
Unorthodox Location
Hilltop Federal Well No. 2
Little Box Canyon (Morrow) Pool
660' FWL & 2130' FSL (L)
Section 1, T-21S, R-21E
319.88 Acres
Eddy County, New Mexico

Attachments:

Form 3160 (APD Application)

Form C-102

Topographic map

Waivers

Land Plat – Showing Offset Working Interest Owners

Geological Data (Explanation & Maps)

Form 2100-9
(July 1992)SUBMIT IN TRIPLICATE
(Other instructions on
reverse side)FORM APPROVED
OMB NO. 1004-0136
Expires: February 28, 1995UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. TYPE OF WORK

DRILL ☒DEEPEN ☐

b. TYPE OF WELL

OIL
WELL ☐GAS
WELL ☒

OTHER

SINGLE
ZONE ☒MULTIPLE
ZONE ☒

2. NAME OF OPERATOR

ARCO Permian

3. ADDRESS AND TELEPHONE NO.

P.O. Box 1610, Midland, TX 79702

915-688-5570

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements *)

At surface

2130' FSL & 660' FWL

At proposed prod. zone

SAME

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*

35 MILES NW OF CARLSBAD

15. DISTANCE FROM PROPOSED*

LOCATION TO NEAREST

PROPERTY OR LEASE LINE, FT.

(Also to nearest drg. unit line, if any) 660'

18. DISTANCE FROM PROPOSED LOCATION*

TO NEAREST WELL, DRILLING, COMPLETED,

OR APPLIED FOR, ON THIS LEASE, FT.

1825'

16. NO. OF ACRES IN LEASE

320

19. PROPOSED DEPTH

8600'

17. NO. OF ACRES ASSIGNED
TO THIS WELL

320

20. ROTARY OR CABLE TOOLS

ROTARY

21. ELEVATIONS (Show whether DF, RT, GR, etc.)

4489' GR

22. APPROX. DATE WORK WILL START*

5/1/01

23.

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
12-1/4	8-5/8 J-55	32#	1400'	960
7-7/8	5-1/2 J-55	17#	8600'	539

SUBJECT WELL IS PLANNED AS A 8600' STRAIGHT HOLE.

3,000 PSI HOPE WILL BE USED FROM 1400' TO TD.

PLANS ARE TO HERR AND TEST THE MORROW.

ATTACHMENTS ARE AS FOLLOWS:

1. CERTIFIED LOCATION PLAT
2. DRILLING PLAN WITH ATTACHMENTS
3. SURFACE USE PLAN WITH ATTACHMENTS

Non Standard Location

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM. If proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED

Elizabeth H. Carver

TITLE REGULATORY COMPLIANCE ANALYST

DATE 3/9/01

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

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

CONDITIONS OF APPROVAL, IF ANY:

APPROVED BY

TITLE

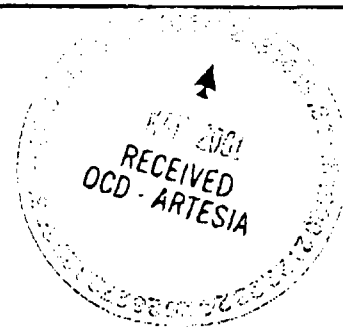
DATE

*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes 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.

RECEIVED TIME MAR. 13. 10:57AM

PRINT TIME MAR. 13. 10:59AM



DISTRICT I
P.O. Box 1999, Hobbs, NM 88241-1999

DISTRICT II
P.O. Drawer 80, Artesia, NM 88211-0710

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

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

OIL CONSERVATION DIVISION

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

Form C-102

Revised February 10, 1994

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code 80240	Pool Name Little Box Canyon (Ciso + Morrow)
Property Code	Property Name HILLTOP FEDERAL	Well Number 2
GRID No. 000990	Operator Name ARCO PERMIAN	Elevation 4489'

Surface Location

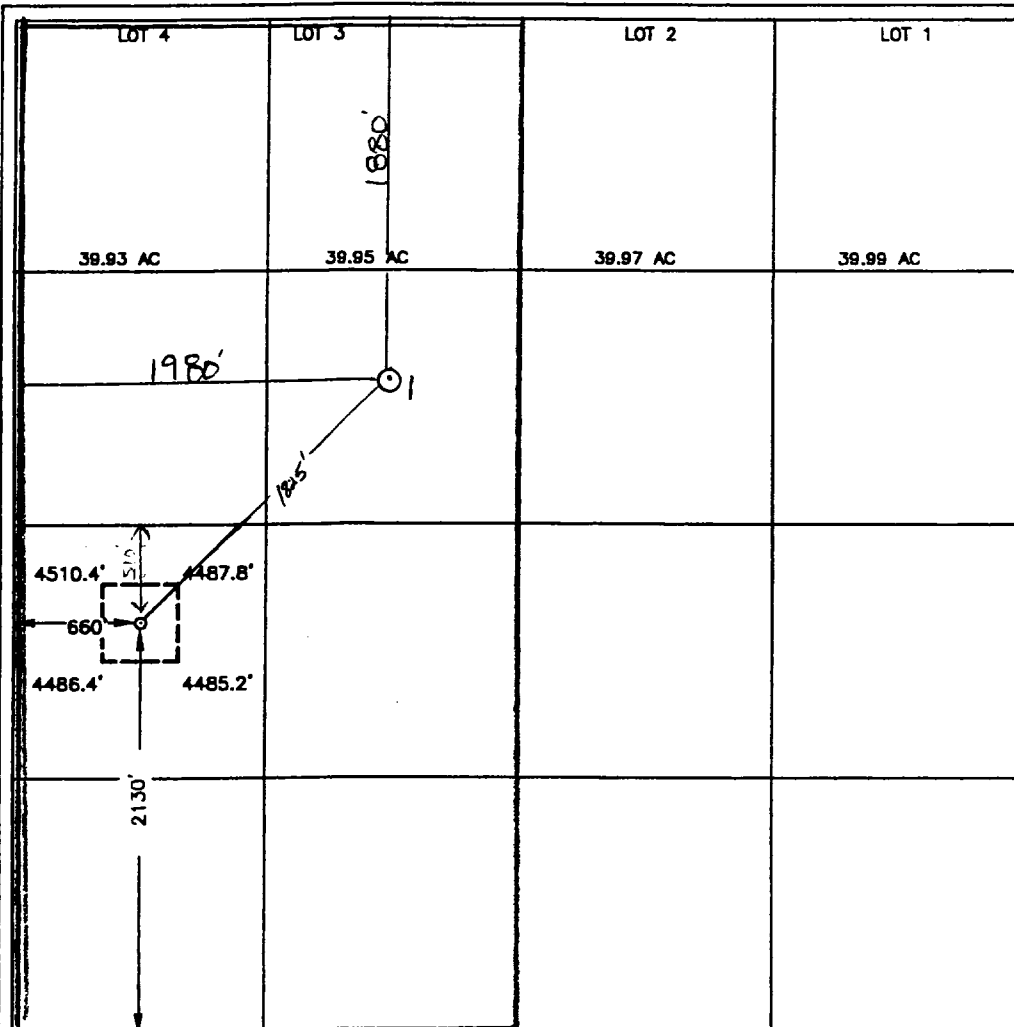
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	1	21-S	21-E		2130	SOUTH	660	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

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

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

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

Elizabeth A. Casbeer
Signature
Elizabeth A. CASBEER
Printed Name
Regulatory Compliance Analyst
Title
3/1/01
Date

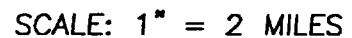
SURVEYOR CERTIFICATION

I hereby certify that the well location shown
on this plat was plotted from field notes of
actual surveys made by me or under my
supervision, and that the same is true and
correct to the best of my belief.

FEBRUARY 15, 2001

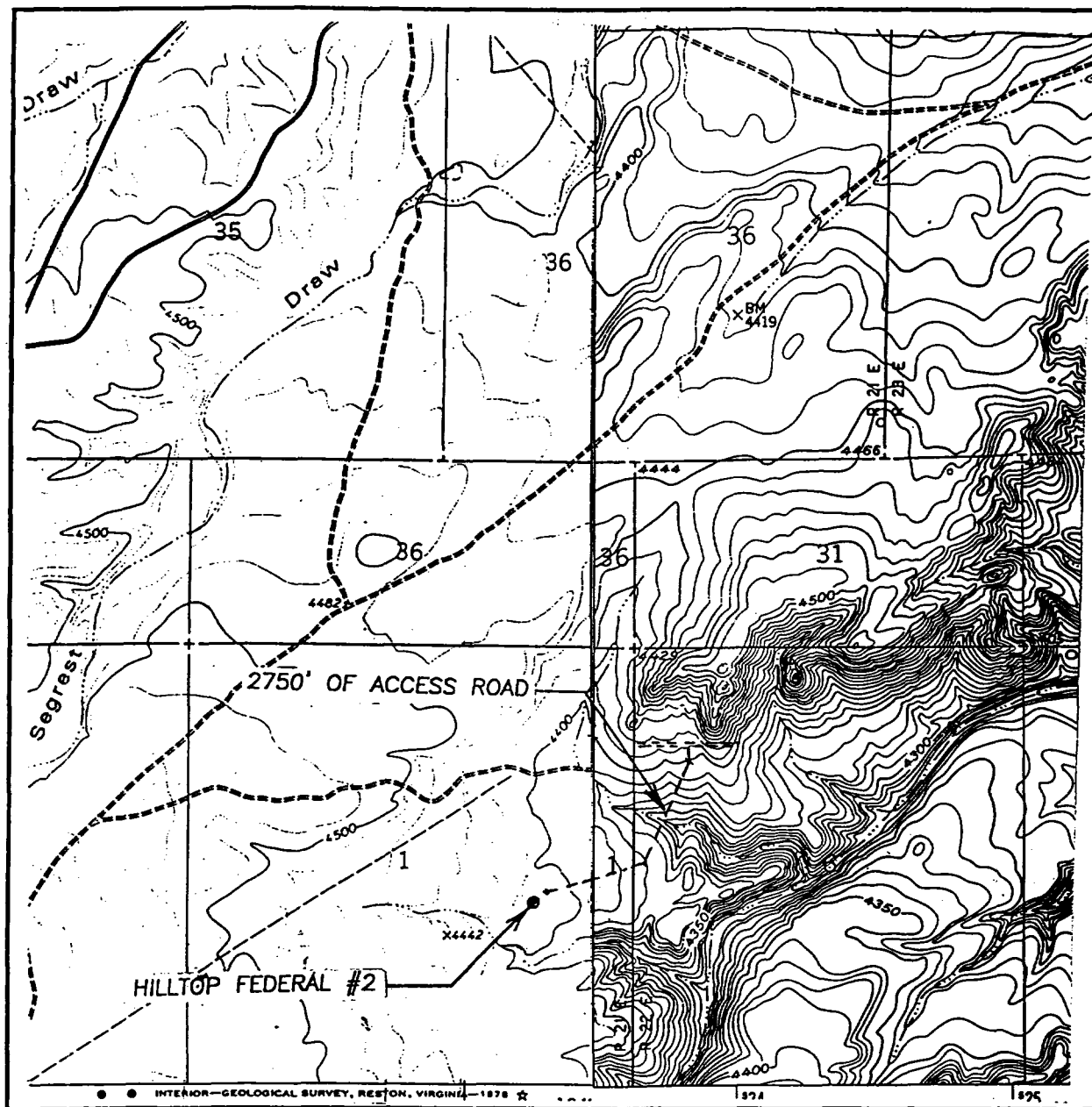
Date Surveyed
Signature & Seal of
Professional Surveyor
Ronald J. Kidson
Professional Surveyor
01-11-0188

Certificate No. RONALD J. KIDSON 3239
GARY KIDSON 12641



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

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL: 10' & 20'

SEC. 1 TWP. 21-S RGE. 21-E

STRYCHNINE DRAW, N.M. 10'
BOX CANYON RANCH, N.M. 20'

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 2130' FSL & 660' FWL

ELEVATION 4489'

OPERATOR ARCO PERMIAN

LEASE HILLTOP FEDERAL

U.S.G.S. TOPOGRAPHIC MAP
STRYCHNINE DRAW, N.M. AND
BOX CANYON RANCH, N.M.

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

**THE ROGER T. AND HOLLY L. ELLIOTT FLP
HOLLYHOCK CORP., THE GENERAL PARTNER**

Roger T. Elliott
Certified Professional Landman

4105 Baybrook Drive
Midland, Texas 79707
(915) 694-0069 - Home
(915) 687-5969 - Office
(915) 687-1817 -Fax

March 13, 2001

WORKING INTEREST OWNERS
AND/OR OPERATING RIGHTS OWNERS

**FAXED AND HARD COPY TO
FOLLOW**

RE: Hilltop Federal #2 Well
Township 21 South, Range 21 East, NMPM
Section 1: 2310' FSL & 660' FWL (W/2)
Eddy County, New Mexico

Dear Owner:

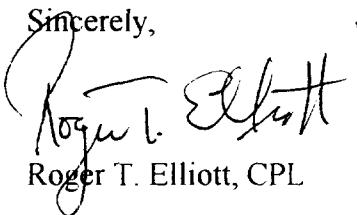
Please be advised that BP Permian Business Unit (BP) is prepared to drill the Hilltop Federal #2 Well at a non-standard location of 2310' FSL & 660' FWL in Section 1, T21S, R21E, Eddy County, New Mexico. It is BP intention to utilize the west half (W/2) as the proration unit for the well.

BP, as operator, will provide all owners with drilling data for the Hilltop Federal #2 Well.

Enclosed is a letter to the NMOCD granting a waiver to BP for the aforementioned location. Please execute the waiver and fax a copy to (915) 687-1817 and return an executed (hard copy) copy to the undersigned. Please return the executed waiver as soon as possible.

Should you have any questions, please feel free to call me.

Sincerely,



Roger T. Elliott, CPL

**THE ROGER T. AND HOLLY L. ELLIOTT FLP,
HOLLYHOCK CORP., THE GENERAL PARTNER**

Roger T. Elliott
Certified Professional Landman

4105 Baybrook Drive
Midland, Texas 79707
(915) 694-0069 - Home
(915) 687-5969 - Office
(915) 687-1817 -Fax

APR 3 2001

March 13, 2001

New Mexico Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Attention: Mr. Michael Stogner

RE: Unorthodox Location
Section 1: W/2, T21S, R21E
Eddy County, New Mexico

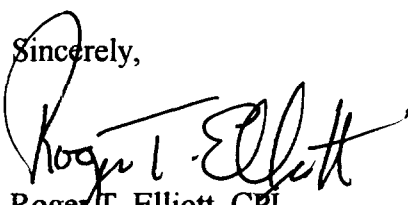
NSL-4584

Dear Mr. Stogner:

Yates Petroleum Corporation and its affiliates are offsetting owners of leasehold or operating rights to the east half (E/2) of Section 2, T21S, R21E, Eddy County, New Mexico.

This letter is to advised that Yates Petroleum Corporation and the parties listed below have no objection to the granting of a permit to drill at a location 2310' FSL & 660' FWL to test the Morrow formation. Although the footage location for the well is 2310' FSL & 660' FWL of Section 1, the actual footage location may vary within the NW/4SW/4 of Section 1 due to topographic and archaeological reasons. Yates Petroleum Corporation and its affiliates hereby waive objection and notice of administrative approval for such application.

Sincerely,


Roger T. Elliott, CPL

SERVICE LIST

Mark D. Wilson
Rio Pecos Corporation
4501 Green Tree Blvd.
Midland, Texas 79707

TARA-JON Corp.
Partnership Management, Inc.
6003 Meadowview Lane
Midland, Texas 79707

James Woodard
3613 Imperial
Midland, Texas 79707

Yates Petroleum Corporation
Yates Drilling Company
MYCO Industries, Inc.
Abo Petroleum Corporation
105 South Fourth Street
Artesia, New Mexico 88210

Don McClung
4110 E. 37th Street
Odessa, Texas 79762

Hollyhock Corp.
4105 Baybrook Drive
Midland, Texas 79707

Cannon Exploration Co.
3608 SCR 1184
Midland, Texas 79706

Nearburg Exploration Company, L.L.C.
3300 North A Street, Bldg. 2, Suite 120
Midland, Texas 79705

KLM Petroleum Corp.
1305 Terra Court
Midland, Texas 79705

Dillard, Fisher & Heasley Partnership
405 West Wall, Suite 1510
Midland, Texas 79701


Ken Macho
1720 Cross Point Road
McKinney, Texas 75070

March 13, 2001

Page 2

AGREED TO AND ACCEPTED this 23 day of March, 2001.

Yates Petroleum Corporation
Yates Drilling Company
MYCO Industries, Inc.
Abo Petroleum Corporation

By: 

RP

Title: Atty-in-Fact

AGREED TO AND ACCEPTED this ____ day of March, 2001.

Dillard, Fisher & Heasley Partnership

By: _____

Title: _____

AGREED TO AND ACCEPTED this ____ day of March, 2001.

KLM Petroleum Corp.

By: _____

Title: _____

AGREED TO AND ACCEPTED this ____ day of March, 2001.

James Woodard

By: _____

Title: _____

March 13, 2001

Page 2

AGREED TO AND ACCEPTED this 23 day of March, 2001.

Yates Petroleum Corporation
Yates Drilling Company
MYCO Industries, Inc.
Abo Petroleum Corporation

By: 

Title: Atty-in-Fact

AGREED TO AND ACCEPTED this ____ day of March, 2001.

Dillard, Fisher & Heasley Partnership

By: _____

Title: _____

AGREED TO AND ACCEPTED this ____ day of March, 2001.

KLM Petroleum Corp.

By: _____

Title: _____

AGREED TO AND ACCEPTED this ____ day of March, 2001.

James Woodard

By: _____

Title: _____

March 13, 2001

Page 3

AGREED TO AND ACCEPTED this _____ day of March, 2001.

Don McClung

By: _____

Title: _____

AGREED TO AND ACCEPTED this _____ day of March, 2001.

Ken Macho

By: _____

Title: _____

AGREED TO AND ACCEPTED this 13TH day of March, 2001.

Mark D. Wilson

Rio Pecos Corporation

By: Mark D. Wilson

Title: PRESIDENT (RPC) & INDIVIDUALLY

AGREED TO AND ACCEPTED this _____ day of March, 2001.

Hollyhock Corp.

By: _____

Title: _____

FROM : ELLIOTT-LINT

FAX NO. : 9156871817

Mar. 13 2001 03:28PM P4

March 13, 2001

Page 3

AGREED TO AND ACCEPTED this 13th day of March, 2001.

Don McClung

By: Don P. McClungTitle: INDIVIDUAL

AGREED TO AND ACCEPTED this ____ day of March, 2001.

Ken Macho

By: _____

Title: _____

AGREED TO AND ACCEPTED this ____ day of March, 2001.

Mark D. Wilson
Rio Pecos Corporation

By: _____

Title: _____

AGREED TO AND ACCEPTED this ____ day of March, 2001.

Hollyhock Corp.

By: _____

Title: _____

FROM : ELLIOTT-LINT

FAX NO. : 9156871817

Mar. 13 2001 03:32PM P4

March 13, 2001

Page 3

AGREED TO AND ACCEPTED this _____ day of March, 2001.

Don McClung

By: _____

Title: _____

AGREED TO AND ACCEPTED this 13th day of March, 2001.

Ken Macho

By: Ken Macho

Title: Independent

AGREED TO AND ACCEPTED this _____ day of March, 2001.

Mark D. Wilson
Rio Pecos Corporation

By: _____

Title: _____

AGREED TO AND ACCEPTED this _____ day of March, 2001.

Hollyhock Corp.

By: _____

Title: _____

March 13, 2001

Page 4

AGREED TO AND ACCEPTED this 13th day of March, 2001.

TARA-JON Corp.

By: Heather K. Echols

Title: President

AGREED TO AND ACCEPTED this _____ day of March, 2001.

Cannon Exploration Co.

By: _____

Title: _____

AGREED TO AND ACCEPTED this _____ day of March, 2001.

Nearburg Exploration Company, L.L.C.

By: _____

Title: _____

AGREED TO AND ACCEPTED this 13th day of March, 2001.

Partnership Management, Inc.

By: Pat T. T. T.

Title: President

FROM : ELLIOTT-LINT

FAX NO. : 9156871817

Mar. 13 2001 03:48PM P4

March 13, 2001

Page 4

AGREED TO AND ACCEPTED this _____ day of March, 2001.

TARA-JON Corp.

By: _____

Title: _____

AGREED TO AND ACCEPTED this _____ day of March, 2001.

Cannon Exploration Co.

By: Todd M. WilsonTitle: PRESIDENTAGREED TO AND ACCEPTED this 14th day of March, 2001.

Nearburg Exploration Company, L.L.C.

By: _____

Title: _____

AGREED TO AND ACCEPTED this _____ day of March, 2001.

Partnership Management, Inc.

By: _____

Title: _____

March 13, 2001
Page 4

AGREED TO AND ACCEPTED this ____ day of March, 2001.

TARA-JON Corp.

By: _____

Title: _____

AGREED TO AND ACCEPTED this ____ day of March, 2001.

Cannon Exploration Co.

By: _____

Title: _____

AGREED TO AND ACCEPTED this 15 day of March, 2001.

Nearburg Exploration Company, L.L.C.

By: [Signature]

Title: Land Manager

AGREED TO AND ACCEPTED this ____ day of March, 2001.

Partnership Management, Inc.

By: _____

Title: _____

March 13, 2001
Page 2

AGREED TO AND ACCEPTED this 23 day of March, 2001.

Yates Petroleum Corporation
Yates Drilling Company
MYCO Industries, Inc.
Abo Petroleum Corporation

By: 

AB

Title: Atty-in-Fact

AGREED TO AND ACCEPTED this ____ day of March, 2001.

Dillard, Fisher & Hensley Partnership

By: _____

Title: _____

AGREED TO AND ACCEPTED this ____ day of March, 2001.

KLM Petroleum Corp.

By: _____

Title: _____

AGREED TO AND ACCEPTED this ____ day of March, 2001.

James Woodard

By: _____

Title: _____

March 13, 2001

Page 2

AGREED TO AND ACCEPTED this _____ day of March, 2001.

Yates Petroleum Corporation
Yates Drilling Company
MYCO Industries, Inc.
Abo Petroleum Corporation

By: _____

Title: _____

AGREED TO AND ACCEPTED this _____ day of March, 2001.

Dillard, Fisher & Heasley Partnership

By: _____

Title: _____

AGREED TO AND ACCEPTED this _____ day of March, 2001.

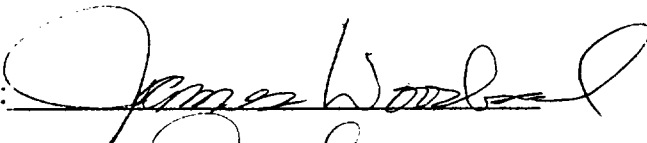
KLM Petroleum Corp.

By: _____

Title: _____

AGREED TO AND ACCEPTED this 13 day of March, 2001.

James Woodard

By: 

Title: 

March 13, 2001

Page 2

AGREED TO AND ACCEPTED this _____ day of March, 2001.

Yates Petroleum Corporation
Yates Drilling Company
MYCO Industries, Inc.
Abo Petroleum Corporation

By: _____

Title: _____

AGREED TO AND ACCEPTED this 14th day of March, 2001.

Dillard, Fisher & Heasley Partnership

By: Neil Fisher

Title: PARTNER

AGREED TO AND ACCEPTED this _____ day of March, 2001.

KLM Petroleum Corp.

By: _____

Title: _____

AGREED TO AND ACCEPTED this _____ day of March, 2001.

James Woodard

By: _____

Title: _____

March 13, 2001

Page 2

AGREED TO AND ACCEPTED this ____ day of March, 2001.

Yates Petroleum Corporation
Yates Drilling Company
MYCO Industries, Inc.
Abo Petroleum Corporation

By: _____

Title: _____

AGREED TO AND ACCEPTED this ____ day of March, 2001.

Dillard, Fisher & Heasley Partnership

By: _____

Title: _____

AGREED TO AND ACCEPTED this 14th day of March, 2001.

KLM Petroleum Corp.

By: Russ Mathis Pg 2 of 2Title: President

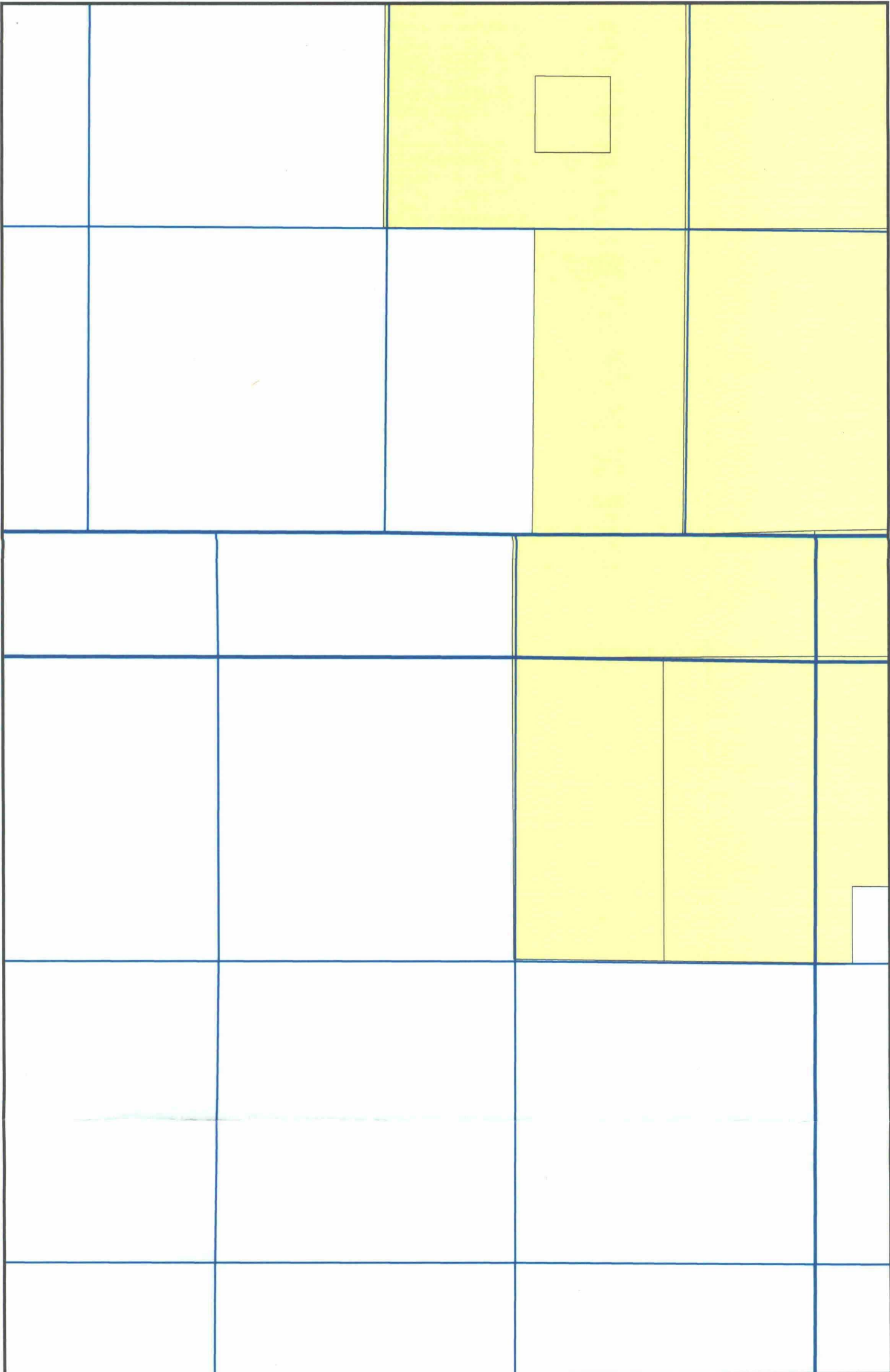
AGREED TO AND ACCEPTED this ____ day of March, 2001.

James Woodard

By: _____

Title: _____





	Counties
	Texas Blocks
	Texas Sections
	Texas Sections - Tobin CD
	CO & NM Townships
	CO & NM Sections
	Leases



Mid-Continent Business Unit	
Hilltop Federal #2 Well West Half, Section 1, T21S, R21E, Eddy County, NM	
Scale: 1:24000	Projection: State Plane - 1927 New Mexico, East
Date: 03/26/2001	Author: LMS

INTRODUCTION

This geologic report relates to a proposed Morrow well to be drilled 2130 feet from the south line and 660 feet from the west line of Section 1-T21S-R21E, Eddy County, New Mexico by ARCO PERMIAN. The west half of Section 1 will be the spacing unit for this well. Location is shown on Exhibits 1 and 2.

Our preferred location was 2310' FSL and 660' FWL on federal acreage, but this location was rejected by the BLM after we had secured the consent of all offset owners. There is no obvious topographic reason for this rejection, so it may have been for archaeological reasons.

The new location 2130 feet from the south line is only slightly unorthodox being 510 feet from the E-W half-section line, rather than 660 feet. Offset owners have also approved this drill site.

GEOLOGY

In essence, this Morrow prospect consists of a major NW-trending, lower Morrow distributary channel sandstone draped across a NNW-trending well-defined faulted anticline of late Pennsylvanian or early Wolfcamp age. Many major Morrow sand gas traps in Eddy County are similar to this faulted structure. In the immediate area, in the same distributary channel, is a similar accumulation in Section 7-21S-22E. This field had approximately 10 billion CFG of gas reserves from three channel sand wells. We estimate that our structure would produce around 20 billion CFG.

STRUCTURE

This structure is shown on Exhibit 1 and is a NNW-trending asymmetric anticline; steeper on its west flank where a dipmeter survey in the Yates well in Section 35, T20 $\frac{1}{2}$ S, R21E found 17° dips toward the southwest, on the up-side of the NNW-trending boundary fault. Closure is in excess of 150 feet. A significant Cisco limestone/gas accumulation has been recently established in the north 1/3 of this structure by wells in the E/2 Sec. 34, and the W/2 of Section 35 of T20S, R21E.

The north half of this structure is rather well-controlled by 5 wells; the less well controlled south half of the structure is likely to be similar in configuration to the north half. The four wells in Section 12, T21S-R21E help define the SE limits of the structure.

In the same distributary channel, in the west portion of Section 7 and the north portion Section 18, both in T21S-R22E, are three productive wells where the sand is 44, 56 and 58 feet thick. The structural trap is caused by a closure on the up-side of a NNW-trending fault on the west side of the structure. The fault has 100'-200' of throw. Maximum pay thickness in the channel sand is 56' in the well in the SE/4 SW/4 Section 7. Ultimate recovery will be nearly 10 billion CFG. The gas-water contact is shown in Section 18 on Exhibit 1 where it was established by the first well drilled.

MORROW DISTRIBUTARY CHANNEL SANDSTONE

Six wells have encountered this leveed distributary channel sandstone over a distance of nearly three miles from the NE/4 of Section 12-T21S-R21E, through the west half of Sec. 7-21S-22E, and on through two wells in Section 17-21S-22E. The most probable trend of the channel is northwest from the NE quarter of Section 12 (see Exhibits 1 and 2).

The trend of the channel out of the NE/4 Sec. 12-21S-21E is best established by isopaching the interval in the Lower Morrow containing the sand. (See Exhibit 2).

Exhibit 3 is a density-neutron well log showing the sand in the NE/4 Section 12-21S-21E. The channel sand is 51 feet thick in this well, and it is overlain in this well by the L. Morrow "Pink Oolitic Ls" which is a reliable marker over a multi-township area, and is the basis for the Lower Morrow structure map comprising Exhibit 1.

Exhibit 2 is an isopach of the interval from the top of the Lower Morrow "Pink Oolitic Ls" to the base of the Morrow, or the unconformity at the top of the Mississippian Chester series. Various Chester units occur at the erosional base of the Morrow in this area.

The most prominent feature on this total Lower Morrow isopach is the deeply incised alluvial valley trend where the Lower Morrow is generally in excess of 170 feet thick. This obviously is a very early Morrow trend.

In the SW/4 of Section 7-21S-22E, this early Lower Morrow trend is overlain by the NW-trending Upper Lower Morrow distributary channel, our objective. Thus, there are two (2) entirely different trends in the Lower Morrow.

The Upper Lower Morrow distributary channel in Section 17-21S-R22E is distinctly separate and north of the early Morrow alluvial valley in Section 20 of 21S-22E, likewise the late Lower Morrow channel sandstone in the well in the NE/4 of Section 12, T21S-R21E is distinctly separate from the deep early Morrow valley in the

west part of Section 7, T21S-R22E which trends NNE.

These two entirely different trending systems in the Lower Morrow have created vast confusion by overlying each other in the west half of Section 7 and the NE/4 of Section 18.

Based principally on the Lower Morrow Isopach (Exhibit 2), I believe that ~~that~~ the existing evidence points to a NW-trend for the late Lower Morrow distributary channel from the NE/4 of Section 12, T21S-R21E.

The Lower Morrow isopach shows thickening northward in Section 12 to greater than 55 feet. The distributary channel sandstone is present and 51 feet thick in the well in the NE/4, Sec. 12, T21S-R21E. Here the total Lower Morrow is 73 feet thick. Channel sands in this area can appear when the Upper Lower Morrow is as little as 64 feet thick. We are approaching the 64 to 70 foot thickness in the north part of Section 12, and the south margin of the sand must be near by as shown. The flanks of the sand body are nearly vertical.

The two Morrow wells in Section 1, T21S-R21E each have 42 feet of Lower Morrow, whereas the well in Section 35, T20 $\frac{1}{2}$ S-R21E has 114 feet. Contours from 40 feet to 70 feet should lie just south of the western well in Section 1.

The well in Section 35, T20 $\frac{1}{2}$ S, R21E shows 114 feet of Lower Morrow. This much Morrow is present only in wells $\frac{1}{2}$ miles to the east. Southeastward, the well in the NE/4 of Sec. 12-T21S-R21E has only 73 feet of Lower Morrow (Including the 51-foot channel sandstone).

A northwest trend appears to be most likely as shown on Exhibit 2.

GAS-WATER CONTACT

On Exhibit 1, an oval area of Upper Lower Morrow sandstone ranging from 14 to 18 feet in thickness is mapped in Sections 12 and 13, T21S-R21E. This sand is at the same stratigraphic level as the topmost part of the 51-foot thick distributary channel sandstone in the well in the NE/4 of Sec. 12-21S-21E.

This oval area of sand deposition is interpreted as a crevasse-splay sand resulting from a flood-related breakout from the main NW-trending distributary channel sandstone (See Exhibit 1).

Of the four wells in the crevasse splay sand, three are gas-bearing, and the fourth in the SW/4 NW/4 Section 12-21S-22E is water-bearing. Thus, a gas-water contact separates the water-bearing well from the three gas wells in the splay as shown on Exhibit 1. Porosity in the crevasse-splay sand appears to be in porosity and permeability continuity with the NW trending main distributary channel sandstone to which it is related, making it probable that the two sandbodies have a common gas-water contact as shown on Exhibit 1.

The area of possible gas production would extend for about two miles from the gas-water contact to the NW-trending fault on the west side of the structure. Since the smaller trap in this channel sandstone in Sections 7 and 18, T21S-R22E has about 10 billion CFG, then our prospect area could have conservatively at least 20 billion CFG reserves.

SUMMARY

Using the data available, a NW-trending distributary channel sandstone is mapped in the prospect area. This channel appears to be 1500 feet to 2000 feet wide.


However, the channel could be as little as 1000 feet to 1500 feet wide at the drill site.

In picking our initial location, 2310' FSL and 660' FWL of Section 1, we aimed for the center of the channel in case it is narrower than shown.

As usual, the BLM changed our location, without reference to the geology, to 2130' FSL and 660' FWL. We will reluctantly concur with this drill site which has been approved by owners of offset and other near-by acreage.

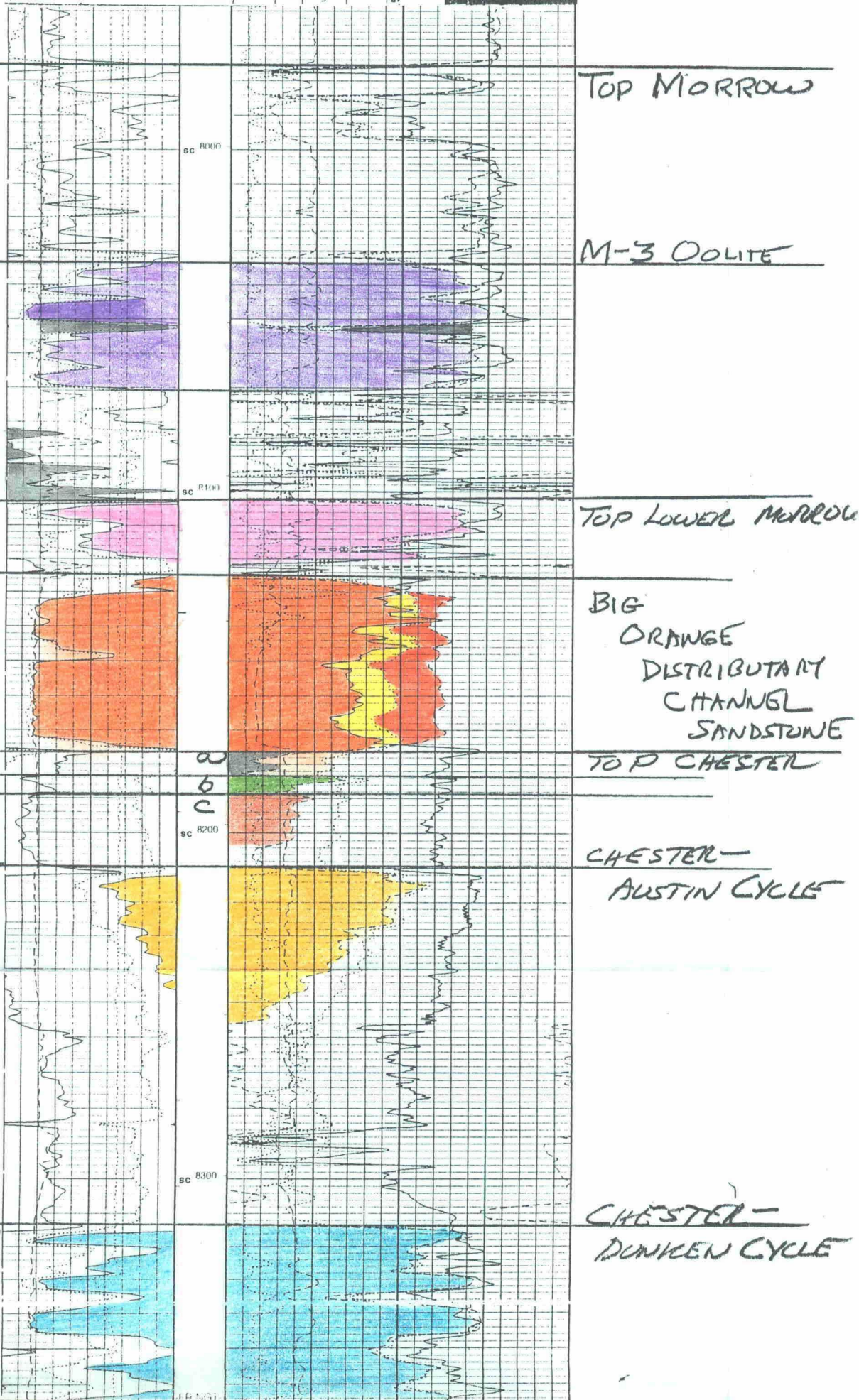
This geologic report is presented in support of the location above for the use of all parties concerned.

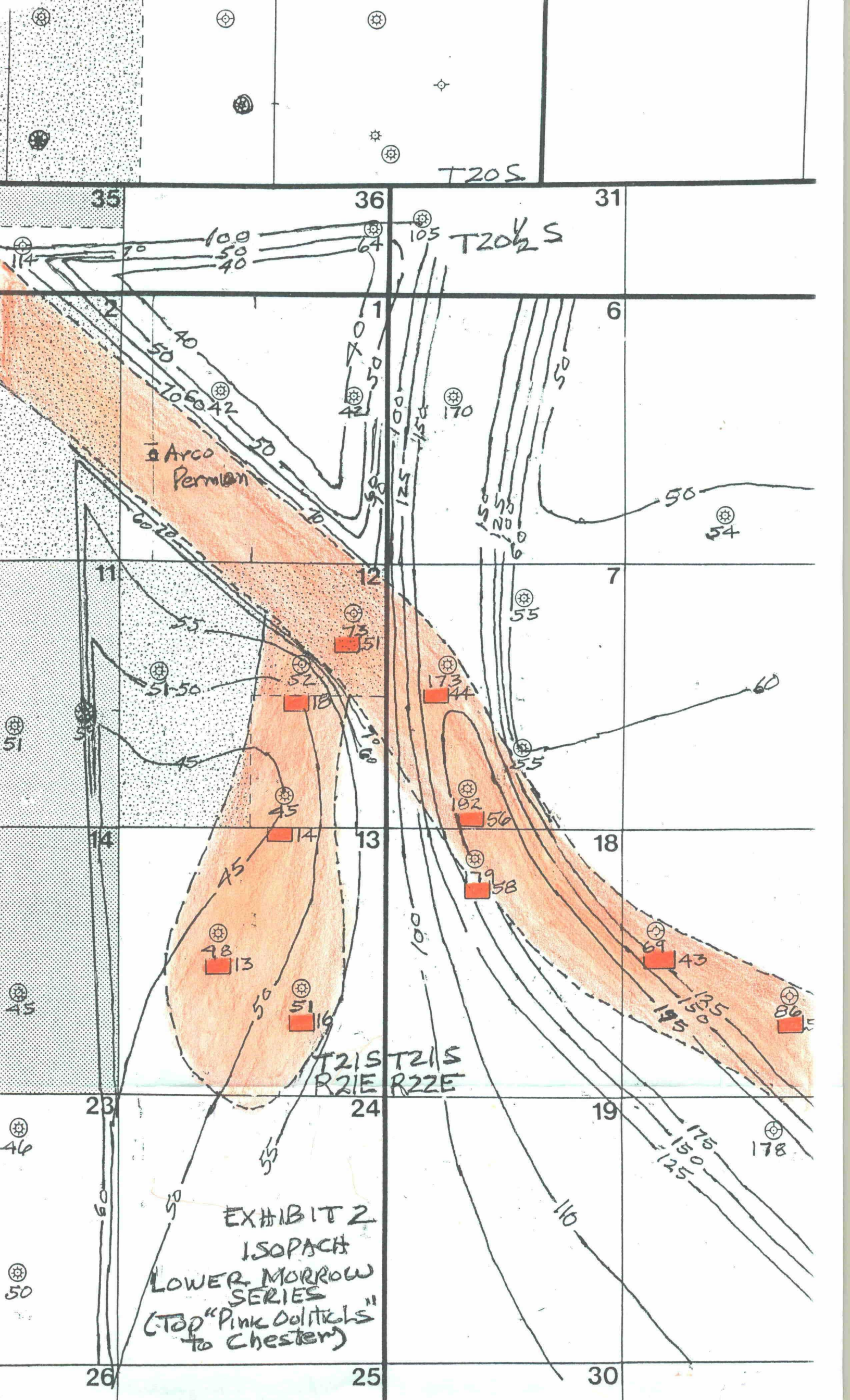
PREPARED BY MARK D. WILSON
INDEPENDENT GEOLOGIST

A handwritten signature in cursive script, reading "Mark D. Wilson", is written over a horizontal line.

4501 Green Tree Blvd.
Midland, Texas 79707

(915-697-2206

[illegible]



LARGE FORMAT
EXHIBIT HAS
BEEN REMOVED
AND IS LOCATED
IN THE NEXT FILE

County Eddy Pool Little Box Canyon-Morrow Gas

TOWNSHIP 20 South Range 21 East NMPM

A 6x6 grid with numbers 1 through 36. The numbers are arranged in a boustrophedon pattern, starting from the top right (1) and ending at the bottom left (36). A 2x2 box is drawn around the numbers 25, 26, 35, and 36. The numbers are: Row 1: 6, 5, 4, 3, 2, 1; Row 2: 7, 8, 9, 10, 11, 12; Row 3: 18, 17, 16, 15, 14, 13; Row 4: 19, 20, 21, 22, 23, 24; Row 5: 30, 29, 28, 27, 26, 25; Row 6: 31, 32, 33, 34, 35, 36. A 2x2 box is drawn around the numbers 25, 26, 35, and 36.

Ext: 5/2 Sec. 36 (R-11097, 12-10-98) Ext: 5/2 Sec. 36 (R-11172, 5-5-99)

EX. 9/2 Sec 25 (R-11384, 5-25-00)

County Eddy Pool Little Box Canyon-Morrow Gas

TOWNSHIP 20¹/₂ South Range 21 East NMPM

	6	5	4	3	2	1
7	8	9	10	11	12	
18	17	16	15	14	13	
*	19	20	21	22	23	24
30	29	28	27	26	25	
31	32	33	34	35	36	

Ext. $\frac{E}{2}$ Sec. 36 (K-11097, 12-10-98)

POOL Little Box Canyon-Morrow Gas

RANGE 21 East

NT/DM

A 6x6 grid with numbers 1 through 36. The numbers are arranged in a boustrophedon pattern, starting from the top right (1) and moving left, then down to the next row and moving right, and so on. A path of 12 squares is highlighted with a thick black border, starting at square 1 and ending at square 13. The path follows the right edge of the grid, turns left at square 12, and then turns left again at square 13. The highlighted squares are: 1, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22.

Ext: E/2 Sec 13 (R-5361, 3-1-77) Ext: W/2 Sec 13 (R-5456, 7-1-77)

Ext: 3/2 Sec 12 (R-5729, 6-1-78) Ext: 1/2 Sec. 1, 1/2 Sec. 12 (R-10182, 9-6-44)

County Eddy Pool Little Box Canyon - Morrow Gas

TOWNSHIP 21 South

Range 22 East

NMPM

6	5	4	3	2	1	
7	8	9	10	11	12	
18	17	16	15	14	13	
19	20	21	22	23	24	
30	29	28	27	26	25	
31	32	33	34	35	36	

Description: $\frac{5}{2}$ Sec 7 (R-5131, 1-1-76) Ext: $\frac{1}{2}$ Sec 18 (R-5361, 3-1-77)
 EXT: $\frac{6}{2}$ sec 18 (R-6994, 5-28-82) Ext: $\frac{1}{2}$ Sec. 7 (R-8179, 3-14-86)

CMD :
OG5SECT

ONGARD
INQUIRE LAND BY SECTION

05/02/01 08:48:12
OGOMES -TPJ2
PAGE NO: 1

Sec : 01 Twp : 21S Rng : 21E Section Type : NORMAL

4 39.93 Federal owned	3 39.95 Federal owned	2 39.97 Federal owned	1 39.99 Federal owned
E 40.00 Federal owned	F 40.00 Federal owned A	G 40.00 Federal owned	H 40.00 Federal owned A

PF01 HELP
PF07 BKWD

PF02
PF08 FWD

PF03 EXIT
PF09 PRINT

PF04 GoTo
PF10 SDIV

PF05
PF11

PF06
PF12

1
39.93
39.95
79.88
8
159.88

CMD :
OG5SECT

ONGARD
INQUIRE LAND BY SECTION

05/02/01 08:48:18
OGOMES -TPJ2
PAGE NO: 2

Sec : 01 Twp : 21S Rng : 21E Section Type : NORMAL

L 40.00	K 40.00	J 40.00	I 40.00
Federal owned	Federal owned	Federal owned	Federal owned
M 40.00	N 40.00	O 40.00	P 40.00
Federal owned	Federal owned	Federal owned	Federal owned

PF01 HELP PF02 PF03 EXIT PF04 GoTo PF05 PF06

PF07 BKWD PF08 FWD PF09 PRINT PF10 SDIV PF11 PF12

CMD : ONGARD 05/02/01 08:48:39
OG6IWCM INQUIRE WELL COMPLETIONS OGOMES -TPJ2

API Well No : 30 15 27865 Eff Date : 02-01-1999 WC Status : A
Pool Idn : 79122 INDIAN LOAFER DRAW;UPPER PENN (GAS)
OGRID Idn : 990 ARCO PERMIAN
Prop Idn : 24384 NASSER FEDERAL

Well No : 001
GL Elevation: 4420

	U/L	Sec	Township	Range	North/South	East/West	Prop/Act (P/A)
	---	---	-----	-----	-----	-----	-----
B.H. Locn : H	1	21S	21E	FTG 1980 F N	FTG 660 F E	P	

Lot Identifier:

Dedicated Acre: 319.96

Lease Type : F

Type of consolidation (Comm, Unit, Forced Pooling - C/U/F/O) :

M0025: Enter PF keys to scroll

PF01 HELP	PF02	PF03 EXIT	PF04 GoTo	PF05	PF06
PF07	PF08	PF09	PF10 NEXT-WC	PF11 HISTORY	PF12 NXTREC

CMD :
OG6IWCM

ONGARD
INQUIRE WELL COMPLETIONS

05/02/01 08:48:52
OGOMES -TPJ2

API Well No : 30 15 27865 Eff Date : 02-01-1999 WC Status : A
Pool Idn : 80240 LITTLE BOX CANYON;MORROW (GAS)
OGRID Idn : 990 ARCO PERMIAN
Prop Idn : 24384 NASSER FEDERAL

Well No : 001
GL Elevation: 4420

	U/L	Sec	Township	Range	North/South	East/West	Prop/Act (P/A)
B.H. Locn	: H	1	21S	21E	FTG 1980 F N	FTG 660 F E	P

Lot Identifier:
Dedicated Acre: 319.96
Lease Type : F
Type of consolidation (Comm, Unit, Forced Pooling - C/U/F/O) :

PF01 HELP	PF02	PF03 EXIT	PF04 GoTo	PF05	PF06
PF07	PF08	PF09	PF10 NEXT-WC	PF11 HISTORY	PF12 NXTREC

CMD : ONGARD 05/02/01 10:09:25
 OG6IPRD INQUIRE PRODUCTION BY POOL/WELL OGOMES -TPJ2
 Page No: 1

OGRID Identifier : 990 ARCO PERMIAN
 Pool Identifier : 79122 INDIAN LOAFER DRAW;UPPER PENN (GAS)
 API Well No : 30 15 27865 Report Period - From : 01 2000 To : 04 2001

API Well No	Property Name	Prod. Days		Production Volumes			Well
		MM/YY	Prod	Gas	Oil	Water	
30 15 27865	NASSER FEDERAL	01 00	31	28088	28		F
30 15 27865	NASSER FEDERAL	02 00	29	29740	82		F
30 15 27865	NASSER FEDERAL	03 00	31	30944	18		F
30 15 27865	NASSER FEDERAL	04 00	30	29122	8		F
30 15 27865	NASSER FEDERAL	05 00	31	28088	17		F
30 15 27865	NASSER FEDERAL	06 00	30	28090	6		F
30 15 27865	NASSER FEDERAL	07 00	31	29613	13		F

Reporting Period Total (Gas, Oil) :

M0025: Enter PF keys to scroll

PF01 HELP PF02 PF03 EXIT PF04 GoTo PF05 PF06 CONFIRM
 PF07 BKWD PF08 FWD PF09 PF10 NXTPOOL PF11 NXTOGD PF12

CMD :
OG6IPRD

ONGARD
INQUIRE PRODUCTION BY POOL/WELL

05/02/01 10:09:31
OGOMES -TPJ2
Page No: 2

OGRID Identifier : 990 ARCO PERMIAN

Pool Identifier : 79122 INDIAN LOAFER DRAW;UPPER PENN (GAS)

API Well No : 30 15 27865 Report Period - From : 01 2000 To : 04 2001

API Well No			Property Name	Prodn. MM/YY	Days Prod	Production Volumes		Well
						Gas	Oil	Water Stat
30	15	27865	NASSER FEDERAL	08 00	28	25453	15	F
30	15	27865	NASSER FEDERAL	09 00	30	26959	22	F
30	15	27865	NASSER FEDERAL	11 00	30	21017	73	F
30	15	27865	NASSER FEDERAL	12 00	31			F

Reporting Period Total (Gas, Oil) :

277114282

E0049: User may continue scrolling.

PF01 HELPPF02PF03 EXITPF04 GoToPF05PF06 CONFIRM

PF07 BKWDPF08 FWDPF09PF10 NXTPOOLPF11 NXTOGDPF12