

UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

30-043-20884

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5. LEASE DESIGNATION AND SERIAL NO.

NM-7765

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME

Orquidea 4H

9. WELL NO.

4-H 1

10. FIELD AND POOL, OR WILDCAT

Rio Puerco - MANCOS

11. SEC., T., R., M., OR BLM.
AND SURVEY OR AREA

N Sec. 4-T20N-R2W

12. COUNTY OR PARISH 13. STATE

Sandoval

NM

1a. TYPE OF WORK

DRILL ☒

DEEPEN ☐

PLUG BACK ☐

b. TYPE OF WELL

OIL
WELL ☒

GAS
WELL ☐

OTHER

SINGLE
ZONE ☒

MULTIPLE
ZONE ☐

2. NAME OF OPERATOR

The Gary-Williams Company

3. ADDRESS OF OPERATOR

1775 Sherman St., Ste. 1925, Denver, CO 80203

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

At surface 330' FSL, 1650' FWL

At proposed prod. zone

* 1000' FNL, 1305' FNL, 710' FWL

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

6 miles W/SW of Cuba, NM

15. DISTANCE FROM PROPOSED*

LOCATION TO NEAREST
PROPERTY OR LEASE LINE, FT.
(Also to nearest drig. unit line, if any)

330

16. NO. OF ACRES IN LEASE

1985

17. NO. OF ACRES ASSIGNED
TO THIS WELL

320 11/29882

18. DISTANCE FROM PROPOSED LOCATION*
TO NEAREST WELL, DRILLING, COMPLETED,
OR APPLIED FOR, ON THIS LEASE, FT.

530

19. PROPOSED DEPTH

7,870 MD
4,200 TVD

20. ROTARY OR CABLE TOOLS

Rotary

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

6,870 GR

22. APPROX. DATE WORK WILL START*

June 1, 1992

23.

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17 1/2	13 3/8	48	250-300 R	to surface (350 SX)
12 1/4	9 5/8	36	3100	330-270 sacks *
* 8 1/2	5 1/2	15.5	7870	None

* - Optional open hole completion may be used if conditions are stable.

This is to be a horizontally drilled well in the Mancos Formation.

See attached Drilling Plan for details.

RECEIVED

OCT 29 1992

OIL CON. DIV
DIST. 3

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, 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

TITLE

DATE

(This space for Federal or State office use)

APPROVED AS AMENDED

APPROVAL DATE

PERMIT NO.

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

Acting AREA MANAGER

RIO PUERCO RESOURCE AREA

JUL 31 1992

NMOC

*See Instructions On Reverse Side

Submit to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised 1-1-89

OIL CONSERVATION DIVISION

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

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

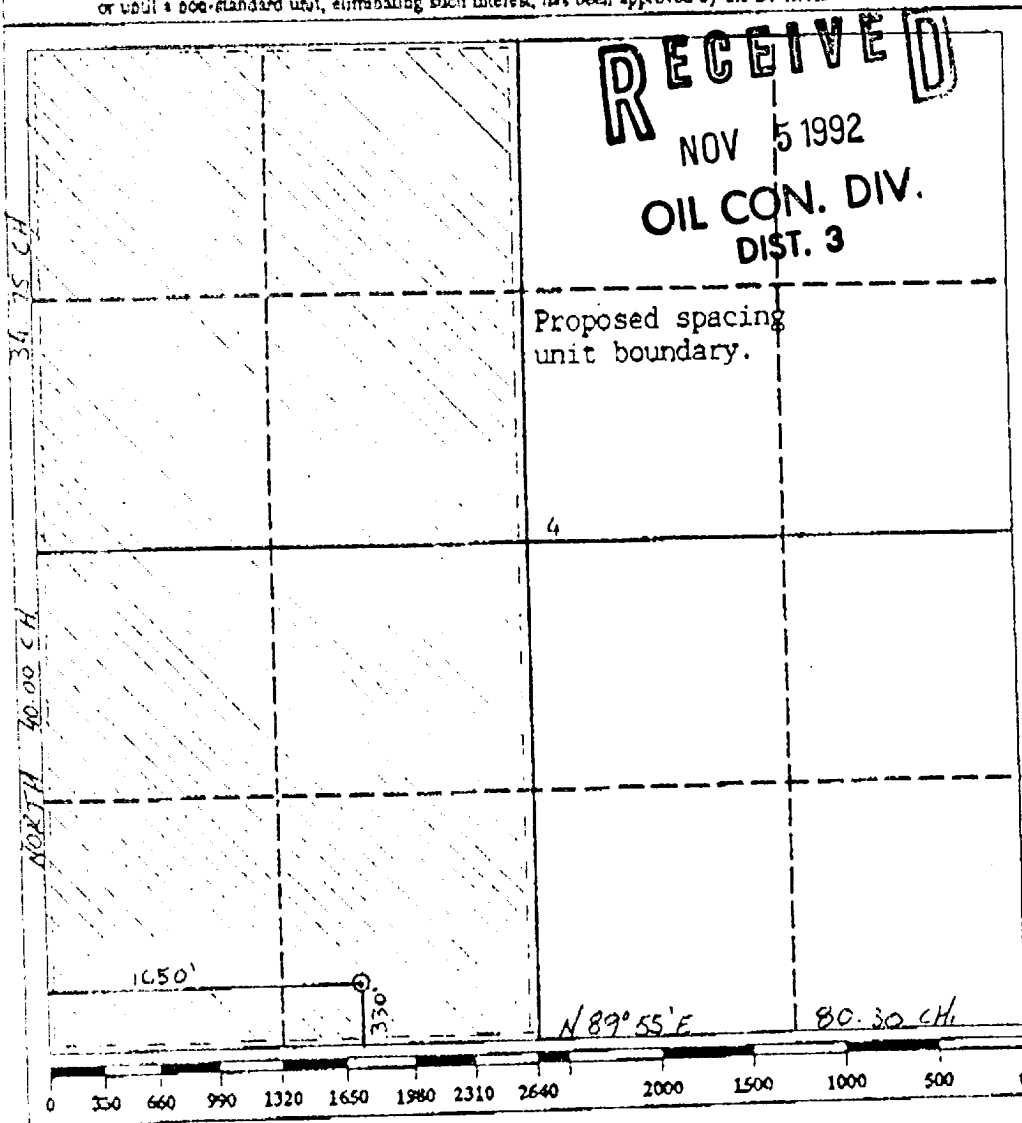
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator Gary Williams Company			Lease Orquidea 4H		Well No. 42H 1
Unit Letter N	Section 4	Township 20N	Range 2W	County Sandoval	
Actual Footage Location of Well: 330 feet from the South line and 1650' feet from the West line					
Ground level Elev. 6863'		Producing Formation Mancos		Pool Rio Puerco	
				Dedicated Acreage: 1985 298.82 Acres	

- Outline the acreage dedicated to the subject well by colored pencil or hatchure marks on the plat below.
- If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
- If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communization, unitization, force-pooling, etc?
☒ Yes ☐ No If answer is "yes" type of consolidation As per OCD R9669
If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.)
No allowable will be assigned to the well until all interests have been consolidated (by communization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



OPERATOR CERTIFICATION

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

Signature
Steven C. Fredrickson
Printed Name
Steven C. Fredrickson
Position Petroleum Engineer
HARVEY OPERATING & PRODUCTION
Company For
Samuel Gary, Jr. & Associates
Date
11/5/92

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 knowledge and belief.

Date Surveyed
10/26/91
Signature & Seal of
Professional Surveyor
CLAM E. MAHRE II
REGISTERED PROFESSIONAL SURVEYOR
#8466
Certificate No.

Drilling Plan

Attached to the Gary Williams Company
Application for Permit to Drill

Objective: Drill a well to the Mancos formation. Drill a maximum of 4600 feet directionally at an average build rate of 11.5°/100 feet within the Mancos formation in a direction of N 12.5° W. Run a preperforated 5-1/2 inch production liner to total depth.

See attached wellbore schematic for details.

Well Name: Orquidea 4-1H

Surface Location: 330 fsl, 1650 fwl, Section 4, T20N, R2W
Sandoval County, New Mexico.

Part 1: Drilling Program

Estimated Tops of Geologic Markers:

<u>Name</u>	<u>Estimated top, TVD, ft.</u>	<u>Rel. Sea level</u>
Ojo Alamo	250	+6620
Fruitland	400	+6470
Pictured Cliffs	500	+6370
Lewis	700	+6170
Cliff House	2100	+4770
Menefee	2150	+4720
Point Lookout	2800	+4070
Mancos	3050	+3820
Mancos "A"	3730	+3140
Mancos "B"	3880	+2990
Mancos "C"	4054	+2816
Mancos "D"	4170	+2700

Estimated Depths of Anticipated Water, Oil, and Gas Zones

Water: All current fresh water zones will be shallower than 250 ft. and will be isolated behind surface casing.

Oil and Gas: Oil and gas is expected from the Mancos "A", "B", "C", and "D".

The annular preventers will be functionally operated weekly. The ram preventers will be operated each trip.

All BOPE tests will be recorded in the driller's log.

Casing

The weights and grades of the casing to be run are as follows:

<u>Size OD</u>	<u>Interval</u>	<u>Weight</u>	<u>Grade</u>	<u>Thread</u>	<u>Hole Size</u>
13 3/8	0- 250300 ^A 300	48#	H-40	ST&C	17 1/2
9 5/8	0-3100	36#	J-55	ST&C	12 1/4
5 1/2	0-7870	15.5#	K-55	LT&C	8 1/2*

*Open hole completion may be used if hole conditions are stable.

The design safety factors for the above casing program are calculated as follows:

Design pressure gradient = 0.483 psi/ft (9.3 lb/gal)

Design factor collapse = 1.125

Design factor yield = 1.00

Design factor tension = 1.80

The horizontal section will be preperforated along intervals which we deem to be productive while drilling.

Cementing program

Surface Casing

The surface casing will be cemented to surface with ^{* 350 SACKS OF} premium cement containing 2% CaCl. A centralizer will be attached to the shoe joint and insert type float equipment will be used.

Intermediate Casing

The intermediate casing will be cemented with 150 sacks 50/50 Pozmix followed by ^{* 150} 120 sacks premium cement. The bottom 3 joints will be centralized, and a guide shoe and float collar will be used. The pipe will be reciprocated while displacing the cement.

Production Liner

The production liner will not be cemented.

Casing Pressure Tests

The 13 3/8 and 9 5/8 inch casing strings will be pressure tested before the shoe is drilled. The test pressure will be 1000 psi. Acceptable leakoff will be 50 psi or less in 30 minutes.

Mud Program

The mud system to be used on the Orquidea 4-1H well is:

0 - ~~250'~~^{300'} Fresh water gel
250 - 3100' LSND
3100 - 7870' Air mist (2% KCl water with polymer)

The expected mud weight from the 13 3/8 casing shoe to 3100 feet is 8.5 to 9.3 lb./gal.

A mud-gas separator will be used during mist drilling to recover oil encountered and to safely vent gas away from the well site.

Proposed Testing, Logging, and Coring Programs

No drill stem tests or cores are planned.

The logging program will consist of a gamma ray-caliper, dual induction, and compensated neutron-litho density logs from 3100' to surface. *A TEMPERATURE LOG WILL BE RUN TO LOCATE TOC BEHIND 9 5/8" CASING. A (A CBL WILL ALSO BE ACCEPTABLE)*

Expected Bottom Hole Pressures

The expected bottom hole pressure in the Mancos is 1600 psi. The expected bottom hole temperature is 150°F.

Part 2: Surface Use Plan

Existing Roads

The existing roads that will be used to access the Orquidea 4-1H location are shown on the attached Exhibit 1. The location is accessed using the existing BLM road 1101, Chijulla 28-15 lease road, and an existing two-track trail.

Existing roads will be maintained as necessary to existing or better condition.

Surface Location:
330' fsl 1650' fwl
Sec. 4, T20N-R2W
Est'd GL 6870'

13 3/8" at 300'

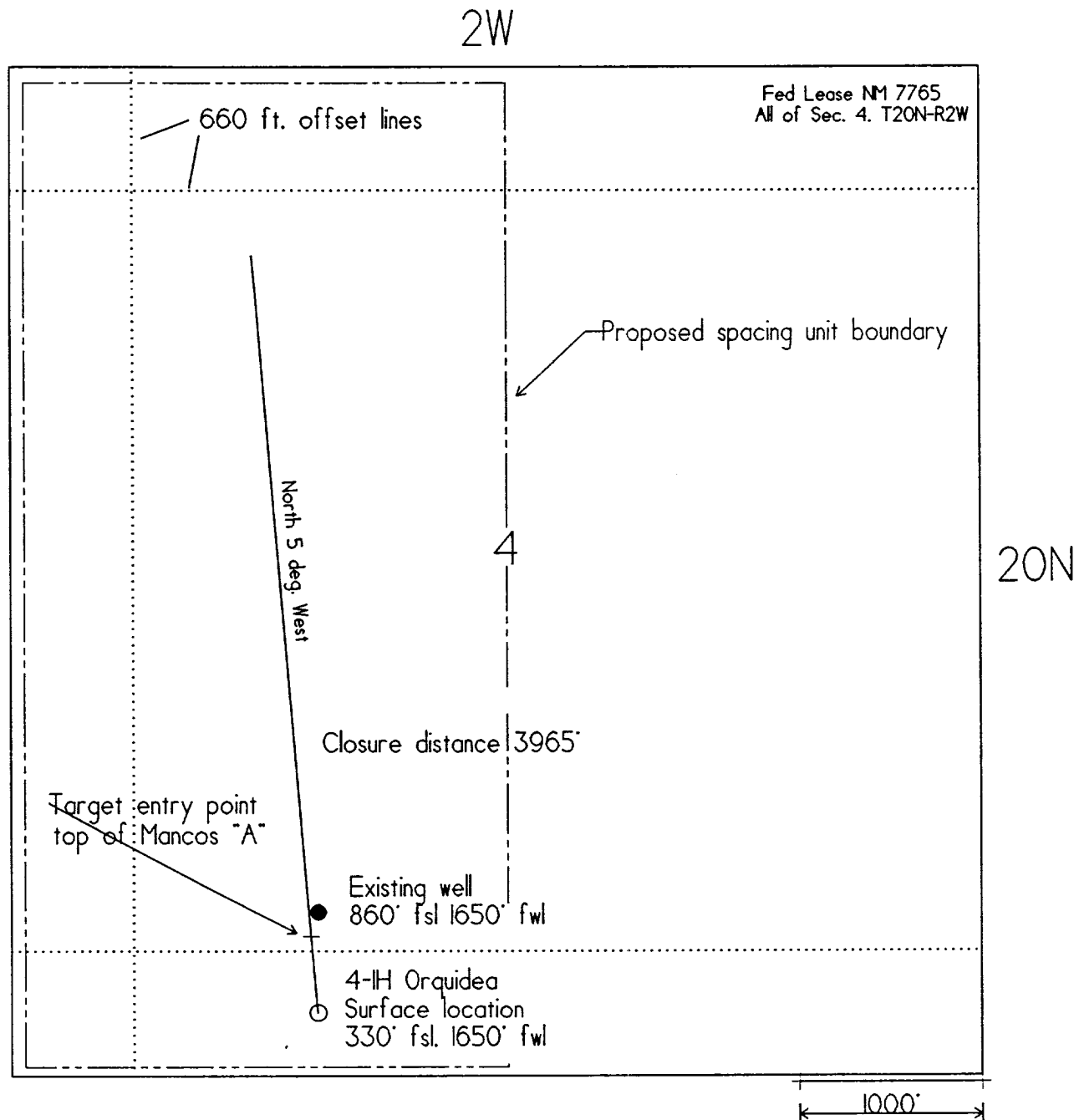
9 5/8" casing at 3450'

The Gary-Williams Company
4-11H Orquidea
Horizontal Mancos Test
Sandoval County, NM
Cross Section North 5° West

Mancos "A" 3730'
"B" 3880'
"C" 4054'
"D" 4170'

End of well
1000' fsl 1305' fwl
Measured depth 7478'
True vertical depth 4153'

500' * 3465'



The Gary-Williams Company
4-IH Orquidea
Horizontal Mancos Test
Sandoval County, NM

MESA PORTALES QUADRANGLE
 NEW MEXICO-SANDOVAL CO
 7.5 MINUTE SERIES (TOPOGRAPHIC)

4558 II SE
 4558 II SE

