

Drilling and Geologic Prognosis

Operator: The Gary Williams Company
 Operator Address: 1775 Sherman St., Ste. 1925, Denver, CO 80203
 Well Name: 4-1 H Orquidea
 Location: 330 fsl, 1650 fwl Sec. 4, T20N - R2W
 Sandoval County, New Mexico
 To be directionally drilled to a proposed bottom hole location of:
 700 fml 710 fml Sec. 4, T20N - R2W
 Elevation: 6870 ground level (estimated)

Surface Owner: Federal
 BLM Office: Albuquerque, New Mexico

Estimated Formation Tops

| <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 |

Casing Program

| <u>Depth</u> | <u>Hole size</u> | <u>Weight</u> | <u>Grade</u> | <u>Joint</u> |
|--------------|------------------|---------------|--------------|--------------|
| 13 3/8" 250' | 17 1/2" | 48# | H-40 | ST&C |
| 9 5/8" 3100' | 12 1/4" | 36# | J-55 | ST&C |
| 5 1/2" 7870' | 8 1/2" | 15.5# | K-55 | LT&C* |

→ foam avi suit

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

Mud Program

| <u>Interval</u> | <u>Hole size</u> | <u>Mud Type</u> | <u>Weight</u> | <u>Fluid loss</u> |
|-----------------|------------------|--------------------------------------|---------------|-------------------|
| 0-250' | 17 1/2" | Spud mud | 9.0 | NC |
| 250'-3100' | 12 1/4" | LSND | 8.5-9.3 | NC |
| 3100' - 7870' | 8 1/2" | Air mist (2% KCl water with polymer) | | |

* Lower fluid loss to 10 cc's prior to logging and setting 9 5/8" casing

| | |
|---------------------------|---------------|
| EXAMINER STOGNER | |
| OIL CONSERVATION DIVISION | |
| SGA | EXHIBIT NO. 4 |
| DATE NO. _____ | |

Directional Program

Kick off point: 3254'
Average build rate: 11.5° / 100'
Radius of build: 500'
Final angle: 83°
End of curve: 3974' MD, 3750' TVD
Total depth: 7870' MD, 4225' TVD
Azimuth: 347.5° or N 12.5° W

Cementing Program

Surface casing: Cement to surface with premium cement containing 2% CaCl. Centralize shoe joint and Howco-weld. Use insert type float equipment

Intermediate casing: Cement with 150 sacks 50/50 Pozmix followed by 120 sacks premium cement. Centralize bottom 3 joints. Use guide shoe and float collar. Reciprocate while displacing cement.

Production liner: No cement.

Logging Program

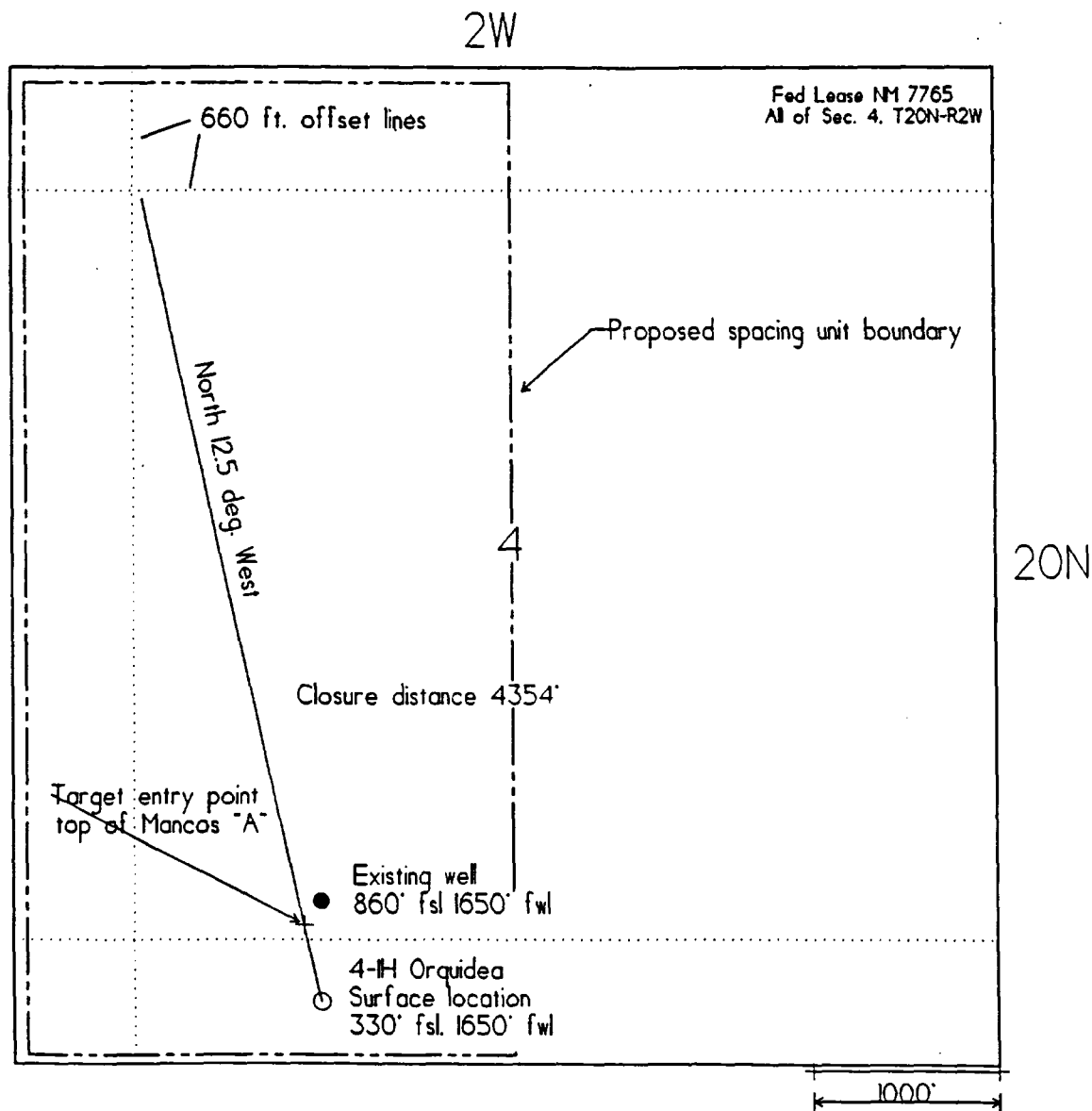
| <u>Interval</u> | <u>Log Type</u> |
|-----------------|-----------------------|
| 0'-3100' | GR, cal, DIL, CNL-FDC |

7870' - 3100' GR, cal, FDT (drill pipe conveyed)

Load horizontal portion of hole with 2% KCl water prior to logging w/FDT tool.

Completion Program

The production liner will be perforated in zones of interest. Rod pumping will be used for artificial lift.



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

Surface Location:
330' fsl 1650' fwl
Sec. 4, T20N-R2W
E8'd GL 6870'

The Gary-Williams Company
4-1H Orquidea
Horizontal Mancos Test
Sandoval County, NM
Cross Section North 12.5° West

13 3/8" at 200'

9 5/8" casing at 3150'

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

End of well
700' fsl 710' fwl
Measured depth 7870'
True vertical depth 4200'

500' * 3854'

NOTICE OF STAKING

| | | | |
|---|--|--|-----------------|
| (Not to be used in place of Application for Permit to Drill Form 3160-3) | | 6. Lease Number NM 7765 | |
| 1. Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other (Specify) | | 7. If Indian, Allottee or Tribe Name | |
| 2. Name of Operator: The Gary-Williams Company | | 8. Unit Agreement Name | |
| 3. Name of Specific Contact Person: Craig Ambler (land) or Hugh Harvey (engineering) | | 9. Farm or Lease Name Orquidea | |
| 4. Address & Phone No. of Operator or Agent 1775 Sherman Street, Suite 1925, Denver, Colorado 80202 (303) 831-4673 | | 10. Well No. 4-1 H | |
| 5. Surface Location of Well 330 fsl, 1650 fwl Attach: a) Sketch showing road entry onto pad, pad dimensions, and reserve pit. b) Topographical or other acceptable map showing location, access road, and lease boundaries. | | 11. Field or Wildcat Name Rio Puerco | |
| 12. Sec., T., R., M., or Blk and Survey or Area Sec 4 - 20N-2W, NMPM | | | |
| 15. Formation Objective(s) Mancos A, B, C,D | 16. Estimated Well Depth 7870 MD, 4200 TVD | 13. County, Parish or Borough Sandoval | 14. State NM |
| 17. Additional Information (as appropriate; shall include surface owner's name, address and, if known, telephone number) The surface ownership of this location is Federal. | | | |

18. Signed [Signature] Title ATTY-IN-FACT Date 10/25/91

Note: Upon receipt of this Notice, the Bureau of Land Management (BLM) will schedule the date of the onsite predrill inspection and notify you accordingly. The location must be staked and access road must be flagged prior to the onsite.

Operators must consider the following prior to the onsite:

- a) H₂S Potential
- b) Cultural Resources (Archeology)
- c) Federal Right-of-Way or Special Use Permit

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

