MIDWEST OIL CORPORATION

1500 WILCO BUILDING

MIDLAND, TEXAS

GENERAL OFFICES
1700 BROADWAY
DENVER 2, COLORADO

DIVISION OFFICE
1200 CONTINENTAL NATIONAL
BANK BUILDING
FORT WORTH 2, TEXAS

CUSTER MOUNTAIN UNIT

T-24S R-35E

Lea County, New Mexico

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CUSTER MOUNTAIN UNIT
Lea County, New Mexico

## INTRODUCTION

Midwest Oil Corporation is proposing the formation of a unit, herein called the Custer Mountain Unit, to be located in T-24S, R-35E, Lea County, New Mexico, for the purpose of drilling a 15,500 foot Devonian test.

The proposed unit will be comprised of 18 sections involving Federal, State of New Mexico and patented fee lands. A tentative drillsite has been selected in the south half of Section 9, T-24S, R-35E.

## GEOLOGICAL REPORT

### GEOLOGICAL AND GEOPHYSICAL ABSTRACT

The Custer Mountain Unit is located along the northeastern side of the Delaware Basin approximately 14 miles northwest of the Jal, New Mexico townsite. The Delaware Basin facies grade into the Central Basin Platform facies, approximately five miles to the northeast and the Shelf (back-reef facies) 12 miles to the northwest.

The area of interest is a seismic anomaly located along a general north-south trending pre-Pennsylvanian structural ridge line positioned between the highly productive Bell Lake Unit, Antelope Ridge Unit, and the recently completed Skelly No. 1 West Jal Unit, an indicated prolific Pennsylvanian gas producer.

Located eight miles to the west of the prospect area is the prominent multipay Bell Lake Anticline where three Devonian gas wells, two Pennsylvanian gas wells, and one Bone Spring oil well are producing from a structure similar to the one outlined by the prospect area. Structural and stratigraphic conditions associated with indicated faulting serve to provide the necessary trapping mechanisims.

The objective horizons in this area of interest will include the Cherry Canyon and Brushy Canyon members of the Delaware Mountain Group, Bone Spring, Wolfcamp, Pennsylvanian and Devonian.

Using seismic information as a determining factor the proposed unit of 18 sections has been outlined. Acreage has been included to take into consideration each of the possible trapping conditions favorable for the accumulation of oil and/or gas in the prospect area.

## GEOLOGICAL DISCUSSION

The key wells near this prospect are located in the Bell Lake Unit eight miles to the west, Antelope Ridge Unit three miles to the west and the Skelly No. 1 West Jal Unit eleven miles southeast.

The Bell Lake Unit structure is currently developed with three Devonian gas wells, two Pennsylvanian gas wells and one Bone Spring oil well. The Pennsylvanian producers have potentialed from six to 13 million cubic feet of gas per day with up to 40 barrels of distillate per million cubic feet of gas. Devonian production can be considered very good as indicated by potentials of 6.4 to 30 million cubic feet of gas per day with distillate production comparable to that of the Pennsylvanian. The Bone Spring limestone is currently producing from the upper 150 feet with additional shows noted at deeper intervals in this formation.

This well has produced in excess of 50,000 barrels of 40 deg. gravity oil. Previous testing, coring and sample shows in the Delaware Mountain Group have indicated 300 feet of possible pay that has never been production tested. Gas to surface on drillstem tests and gas shows in the drilling mud over a 220 foot section of the Delaware Mountain Group indicate the total 3500 foot interval to be one of the prime objectives for substantial oil and gas production. Crest wells in the Bell Lake Unit have established Devonian production while flank wells, barren in the Devonian, have found the Pennsylvanian and Bone Spring productive. There is essentially 1200 feet of west dip on the Devonian formation between Continental's No. 4 Bell Lake Unit and No. 5- M Bell Lake Unit, which are separated by a distance of one mile. This suggests very strongly, a down to the west fault flanking the field on the west side with production established on both sides but from two different formations. There is a definite evidence that the Bell Lake Unit has established production from reservoir conditions generated by structural closure as well as stratigraphic trapping due to lithologic changes and associated faulting, so that production may be anticipated on the flanks as well as the crest of the indicated structure.

The Antelope Ridge Unit currently has one completed well and another nearing completion depth. The discovery well, Shell No. 1 Harris Federal, has been recently completed as a Devonian gas discovery and was reported to have been potentialed at a rate of 50 million cubic feet of gas per day through a 24/64 inch choke, plus 23 barrels of distillate per million cubic feet of gas. The second well is a one and one-half mile south offset to the discovery. All of the detailed well information relative to either well has not yet been released by Shell, so it is not possible to accurately describe other possible productive formations established by these tests.

Skelly Oil Company's recent prolific Pennsylvanian discovery, the No. 1 West Jal Unit, has been potentialed for a tremendous 310 million cubic feet of gas per day on a calculated absolute open flow. This well was drilled into the Devonian formation which was found to be none productive. A safe assumption might be that this well is related to but not positioned on the crest of a Devonian structure since favorable reservoir characteristics were found to exist in this formation although hydrocarbons were not present in commercial quantity. It is, therefore, assumed that the Pennsylvanian gas production is probably stratigraphic in nature.

The Delaware Mountain group is composed largely of sands with interbedded shale and limestone units. Stratigraphic and structurally controlled reservoirs are present throughout the entire sequence. However, virtually all reservoirs below the Bell Canyon are related in some manner to structure. Carbonate porosity development and clean sand pinchouts are present on the flanks of deeper features, and carbonate and some sand reservoirs are coincident with the crests of closed structural highs. The Bone Spring and Wolfcamp are made up predominately of finely crystalline limestones and interbedded dolomites with fracture and vugular porosity. Sand lenses of fine grained, friable, slightly argillaceous quartz sand interfingered between the beds of limestone are found in the Bone Spring formation while the Wolfcamp is comprised of chiefly crystalline limestones interbedded with shales. Primary porosity development is the controlling factor for oil accumulation in these two formations. The Pennsylvanian consists of interbedded shales, limestones and sandstones. The basin facies of the Pennsylvanian are primarily carbonates with some sands, and production has been established from each of these deposits. Primary porosity and permeability development here again is the controlling factor for oil and/or gas production. The Devonian consists of finely crystalline limestone and some dolomite with fracture and vugular porosity. Structure closure and associated porosity, permeability and fracturing serve as desired reservoir conditions.

Seismic data has been used to locate and define the prospect area. Briefly, the prospect was surveyed by utilizing shallow shot patterns consisting of 36 twenty foot shot holes directed into geophone trace patterns consisting of 21 geophones per station. Control points were located one-third of a mile apart which is considered adequate for the size structure detected. Data quality ranged from very poor to good. Continuous reflection mapping was not possible due to the inconsistent data quality so that the prepared maps have been constructed from a combination of continuous reflection ties and average dip segments. It was possible to construct maps identified as the Permian and Devonian horizons and an associated isopach map from these horizons. Positive identification of reflected events was not possible due to a lack of accurate velocity information. Nevertheless it is felt that the prepared maps are reliable insofar as the establishment of a drillable structure is concerned.

## CONCLUSION

From the seismic mapping in this area a structure of significant importance has been located centering in Section 9, T-24S, R-35E. There is approximately 400 feet of controlled Devonian closure associated with a tremendous thinning effect indicated from the flanks to the apex of the structure as shown on the Yates-Devonian Isopach.

The outline of the 18 section unit has been derived from combining seismic information with the general geologic structural, stratigraphic and associated faulting conditions occuring in the known productive wells in the area. All the acreage included in the outline can be considered potentially productive. Sections 4, 5, 7, 8, 9, 16, 17, and 18 are considered as prospective from the Delaware Mountain Group down through and including the Devonian. Sections 15, 20, 21, 22, and 27 are considered prospective from the Delaware Mountain Group through and including the Pennsylvanian formations. Sections 3, 10, 14, 23, and 26 are associated with down thrown fault block which indicates some 800 feet of closure against the faults which could serve as an excellent Devonian reservoir. The Delaware Mountain Group through and including the Pennsylvanian can also be considered prospective.

No acreage outside the limits of control or considered non-prospective has been included in the proposed unit.

COST ESTIMATE

MIDWESTXOILXCORPORATION

AUTHORITYXFORXDRILLING

BUDGET STATUS:

DATE PREPARED April 23, 1963

REQUEST FOR _____ 19____

BUDGET ITEM NO. _____

L. OR R. NUMBER _____

AFE NO. _____

TO: DRILL _____ RECOMPLETE _____

LEASE Custer Mountain Unit WELL NO. 1 LOCATION 1980' FWL & 660' FSL of Section 9, T-24-S, R-34-E

COUNTY/PARISH Lea STATE New Mexico

FIELD _____ WILDCAT ☒ DEVELOPMENT ☐

MIDWEST W.I. _____ % SPACING PATTERN _____

PROJECTED DEPTH 15,500 PRODUCING FORMATION Devonian

AVAILABLE P. L. OUTLET _____ DRILLING CONTRACTOR _____

MUST COMMENCE OPERATIONS ☐ DRILLING ☐ BY August 15 19 63

| INTANGIBLE DRILLING COSTS | PRODUCING WELL COST | DRY HOLE COST |
|---|---|---|
| 1. FOOTAGE 12,000 FT. @ $ 10.50 PER FT. | $ 126,000 | $ 126,000 |
| 2. DAYWORK 100 DAYS WDP @ $ 1500 DAY | 150,000. | 150,000. |
| 10 DAYS WODP @ $ 1100 DAY | 11,000. | 11,000. |
| 3. CORING FEET AT $ PER FT. | | |
| CORE ANALYSIS $ SIDE WALL CORES $ | | |
| 4. WELL SURVEYS & TEST SERVICES: | | |
| DRILLSTEM TESTS 12 | 6,000. | 6,000. |
| ELECTRIC LOGGING | 9,500. | 9,500. |
| MICROLOGGING | | |
| RADIOACTIVITY LOGGING | | |
| MUD LOGGING | 30,000. | 30,000. |
| OTHER SURVEYS | | |
| 5. EQUIPMENT RENTALS: | | |
| TOOLS, PACKERS, ETC. $ 40,000 GEOLOGRAPH $ | 40,000. | 40,000. |
| 6. LABOR: CONTRACT $ 3,000 COMPANY $ | 3,000. | 3,000. |
| 7. FUEL $ WATER $ 10,000 | 5,000. | 5,000. |
| 8. DIGGING PITS $ FILLING PITS $ 500 | 500. | 500. |
| 9. GRADING: LOCATION $ 2,000 ROADS $ 3,000 | 5,000. | 5,000. |
| 10. TEAMING & TRUCKING | 6,000. | 5,000. |
| 11. CEMENTING: CONDUCTOR | 1,000. | 1,000. |
| SURFACE $ 1,500 INTERMEDIATE $ 10,000 | 11,500. | 11,500. |
| PRODUCTION STRING $ 1000 LINER $ 1000 | 2,000. | 2,000. |
| 12. DRILLING MUD & CHEMICALS | 200,000 | 200,000. |
| 13. ACIDIZING $ 4,000 FRACTURING $ PERF. $ 1,000 | 5,000 | |
| 14. BITS 4 - 8 3/4 @ $855 75 - 6 1/8" @ 11,710 | 12,565. | 12,565. |
| 15. SUPERVISION & OVERHEAD: | | |
| ENGINEERING | 4,000. | 3,000. |
| GEOLOGICAL | 4,000. | 4,000. |
| DISTRICT EXPENSE & OVERHEAD | 3,000. | 3,000. |
| 16. LOSS AND DAMAGES | 1,000. | 1,000. |
| 17. MISCELLANEOUS: | | |
| FLOATING EQUIPMENT | 4,000. | 3,000. |
| SCRATCHERS & CENTRALIZERS | 2,000. | 1,500. |
| WELDING | 800. | 600. |
| SWABBING | 1,000. | |
| OTHER | | |
| 18. CONTRIBUTIONS TO BE RECEIVED Shell Oil Co. | | 5,000. |
| TOTAL INTANGIBLE DRILLING COSTS | $ 643,865. | $ 629,165. |

FORM A-26--4M--1-61
PAGE 1

# MIDWEST OIL CORPORATION
# AUTHORITY FOR DRILLING



| | WELL EQUIPMENT | | PRODUCING WELL COST | DRY HOLE COST |
|---|---|---|---|---|
| 2. CASING: | | | | |
| ____ FT. OF | ____ @ $____/FT. | | | |
| 6300 FT. OF | 7" 23# N-80 XL @ $ 3.24 /FT. | | 20,412 | 20,412. |
| 2200 FT. OF | 7" 26# N-80 LT&C @ $ 3.63 /FT. | | 7,986. | 7,986. |
| 2500 FT. OF | 7" 29# N-80 LT&C @ $ 4.05 /FT. | | 10,125. | 10,125. |
| 1500 FT. OF | 7" 32# N-80 LT&C @ $ 4.47 /FT. | | 6,705 | 6,705 |
| ____ FT. OF | ____ @ $____/FT. | | | |
| ____ FT. OF | ____ @ $____/FT. | | | |
| ____ FT. OF | ____ @ $____/FT. | | | |
| ____ FT. OF | ____ @ $____/FT. | | | |
| TUBING: | | | | |
| 3500 FT. OF | 5 1/2" 17# P-110 HYDRIL FJ @ $ 3.27 /FT. | | 11,445. | |
| ____ FT. OF | ____ @ $____/FT. | | | |
| 3. RODS: | | | | |
| ____ FT. OF | ____ @ $____/FT. | | | |
| ____ FT. OF | ____ @ $____/FT. | | | |
| WELL PUMP | | | | |
| 4. PACKERS & SUBSURFACE EQUIPMENT | | | | |
| 5. WELL HEAD EQUIPMENT: | | | | |
| CASING HEAD ASSEMBLY | | | | |
| TUBING HEAD ASSEMBLY | | | | |
| MANIFOLD & FLOW CONTROL ASSEMBLY | | | | |
| 7. PUMPING UNIT | ENGINE | | | |
| 9. MISCELLANEOUS: | | | | |
| TOTAL WELL EQUIPMENT | | | $ | $ |
| | **LEASE EQUIPMENT** | | | |
| 10. TANK BATTERY: | | | | |
| WELDED: NO. ____ SIZE & TYPE | ____ @ $____ | | $ | $ |
| BOLTED: NO. ____ SIZE & TYPE | ____ @ $____ | | | |
| SEPARATOR $ | HEATER TREATER $ | | | |
| 14. FLOW LINE: | | | | |
| ____ FT. OF | ____ @ $____/FT. | | | |
| 21. MISCELLANEOUS: | | | | |
| TOTAL LEASE EQUIPMENT | | | $ | $ |
| TOTAL EQUIPMENT | | | $ | $ |
| TOTAL COST | | | $ | $ |
| MIDWEST'S ____ % INTEREST | | | $ | $ |

REMARKS:

PREPARED BY: ____

DEPARTMENTAL APPROVALS:

PROD. DEPT. ____ GEOL. DEPT. ____

LAND DEPT. ____

DATE APPROVED ____

AUTHORITY: ____

BY: ____

# MIDWEST OIL CORPORATION
# AUTHORITY FOR DRILLING



| | | | | PRODUCING WELL COST | DRY HOLE COST |
|---|---|---|---|---|---|
| **WELL EQUIPMENT** | | | | | |
| 2. CASING: | | | | | |
| 700 | FT. OF 20" 94# H-40 ST&C | @ $ 12.92 | /FT. | 9,044. | 9,044. |
| 2000 | FT. OF 13 3/8" 54.50# J-55 ST&C | @ $ 6.62 | /FT. | 13,240. | 13,240. |
| 800 | FT. OF 13 3/8" 61# J-55 ST&C | @ $ 7.36 | /FT. | 5,888. | 5,888. |
| 1000 | FT. OF 13 3/8" 68# J-55 ST&C | @ $ 8.15 | /FT. | 8,150. | 8,150. |
| 200 | FT. OF 13 3/8" 72# N-80 LT&C | @ $ 10.44 | /FT. | 2,088. | 2,088. |
| 600 | FT. OF 9 5/8" 43.5# P-110 XL | @ $ 7.56 | /FT. | 4,536. | 4,536. |
| 5900 | FT. OF 9 5/8" 43.5# N-80 XL | @ $ 6.19 | /FT. | 36,521. | 36,521. |
| 1300 | FT. OF 9 5/8" 47# N-80 XL | @ $ 6.69 | /FT. | 8,697. | 8,697. |
| 3000 | FT. OF 9 5/8" 47# P-110 XL | @ $ 8.16 | /FT. | 24,480. | 24,480. |
| 1200 | 9 5/8" 53.5 P-110 XL | | 9.29 | 11,148. | 11,148. |
| TUBING: | | | | | |
| 15,500 | FT. OF 2 3/8" EUE P-110 | @ $ 1.23 | /FT. | 19,065. | |
| | FT. OF | @ $ | /FT. | | |
| 3. RODS: | | | | | |
| | FT. OF | @ $ | /FT. | | |
| | FT. OF | @ $ | /FT. | | |
| WELL PUMP | | | | | |
| 4. PACKERS & SUBSURFACE EQUIPMENT | | | | 850. | |
| 5. WELL HEAD EQUIPMENT: | | | | | |
| CASING HEAD ASSEMBLY | | | | 4,000. | |
| TUBING HEAD ASSEMBLY | | | | 2,000. | |
| MANIFOLD & FLOW CONTROL ASSEMBLY | | | | 2,000. | |
| 7. PUMPING UNIT | ENGINE | | | | |
| 9. MISCELLANEOUS: | | | | | |
| TOTAL WELL EQUIPMENT | | | | $208,380. | $169,020. |
| **LEASE EQUIPMENT** | | | | | |
| 10. TANK BATTERY: | | | | | |
| WELDED: No. | SIZE & TYPE | @ $ | | $ | $ |
| BOLTED: No. 2 | SIZE & TYPE HI 500 | @ $ | | 3,000 | |
| SEPARATOR $ 2000 | HEATER TREATER $ | | | 2,000. | |
| 14. FLOW LINE: | | | | | |
| 1500 | FT. OF 2 3/8" J-55 EUE tbg. | @ $ .67 | /FT. | 1,005. | |
| 21. MISCELLANEOUS: | | | | | |
| TOTAL LEASE EQUIPMENT | | | | $ 6,005. | $ |
| TOTAL EQUIPMENT | | | | $214,385. | $ |
| TOTAL COST | | | | $858,250. | $ 798,185. |
| MIDWEST'S | % INTEREST | | | $ | $ |

REMARKS:

This estimate covers a minimum charge and does not allow for contingencies. Approximately 25% should be allowed above this estimate for contingencies.

PREPARED BY: _____ DATE APPROVED _____

DEPARTMENTAL APPROVALS: AUTHORITY: _____

PROD. DEPT. _____ GEOL. DEPT. _____ BY: _____

LAND DEPT. _____

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

JUN 18 1963

Hervey, Dow & Hinkle
Hinkle Building
Roswell, New Mexico

Attention: Mr. Clarence E. Hinkle

Gentlemen:

Your application of May 7 filed with the Regional Oil and Gas Supervisor, Roswell, New Mexico, in behalf of Midwest Oil Corporation, requests the designation of 11,525.95 acres, more or less, in Lea County, New Mexico, as logically subject to exploration and development under the unitization provisions of the Mineral Leasing Act, as amended.

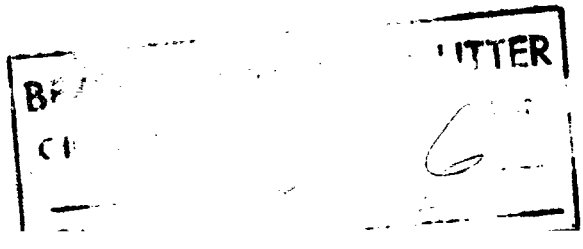
Pursuant to the unit plan of regulations of December 22, 1950, 30 CFR 226.3 (1961 reprint) the land requested as outlined on your plat marked "Custer Mountain Unit, Lea County, New Mexico", is hereby designated as a logical unit area. Our review of the area indicates the total acreage as 11,523.68 acres. Your acreage figure of 11,525.95 should be rechecked and corrected if appropriate.

The unit agreement submitted for the area designated should provide for the drilling of the initial unit well to test the Devonian or to a depth of 15,500 feet. The 1961 reprint of the standard form of unit agreement should be used, as proposed by your application, with only the following modifications:

1. The Fair Employment section of the 1961 reprint should be replaced with the following new section:

"Nondiscrimination: In connection with the performance of work under this agreement, the operator agrees to comply with all of the provisions of section 301 (1) to (7) inclusive, of Executive Order 10925 26 F.R. 1977 which are hereby incorporated by reference in this agreement."

2. Modify item 6(b), beginning on line 5, page 7, of the 1961 reprint to read:



(b) the selection shall have been filed with the Supervisor. If no successor unit operator is selected and qualified as herein provided, the Director at his election may declare this unit terminated.

3. Add the usual language required by the Commissioner of Public Lands, State of New Mexico.

In the absence of any type of land requiring special provisions or of any objections not now apparent, a duly executed agreement identical with said form as modified will be approved if submitted in approvable status within a reasonable period of time. However, the right is reserved to deny approval of any executed agreement, which in our opinion, does not have full commitment of sufficient lands to afford effective control of unit operations.

When the executed agreement is transmitted to the Supervisor for approval include the latest status of all acreage. In preparation of Exhibits A and B follow closely the format of the sample exhibits attached to the 1961 reprint of the standard form.

Inasmuch as this area contains State of New Mexico Lands, please contact the Commissioner of Public Lands at Santa Fe, New Mexico, in connection with this letter before soliciting joinders.

Sincerely yours,

Acting Director