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UNITIZATION PROPOSAL, COTTONWOOD CANYON UNIT

Catron County, New Mexico and Apache County, Arizona

PRELIMINARY GEOLOGIC REPORT

By

George L. Scott, Jr.
Petroleum Geologist
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INTRODUCTION

This geological report is submitted on behalf of the Ridgeway Arizona Oil Corp., to recommend the formation of a unit for the equitable and efficient production of Carbon Dioxide (CO_2) gas in parts of Apache County, Arizona and Catron County, New Mexico from rocks of the Permian Yeso, Abo, and Precambrian formations.

The proposed unit area covers parts of Apache County, Arizona and Catron County, New Mexico. The elevations across the area range from 6300 feet on the northwest side of the area to 7600 feet on the east. Two principal east-west roads traverse the area: US 60 across the south and the Salt Lake Road (Arizona and New Mexico state roads) on the north. The terrain consists of rolling hills and plateaus dissected by numerous broad valleys and dry arroyos. Vegetation varies from short grasses at the lower elevations to scattered juniper and pinon trees at the higher elevations. The principal industry is livestock ranching. The proposed unit name is taken from Cottonwood Canyon, a prominent north-south trending topographic feature in Catron County near the Arizona State Line.

STRATIGRAPHY

Appendix I displays the age, nomenclature, lithology and approximate thicknesses of the surface and subsurface rocks in the unit area. The surface rocks in the more dissected areas across the north part of the unit consists of the Triassic Chinle group and the Cretacous Moreno Hill and Dakota formations. The plateaus are capped mainly by formations of Eocene, Oligocene, and Miocene ages.

In the subsurface, the Chinle formation overlies Permian aged sediments which include the San Andres, Glorieta, Yeso and Abo formations. Extensive solution brecciation occurred in the San Andres prior to deposition of the Chinle. The Glorieta formation underlies the San Andres and consists of porous and permeable sandstone. Both the San Andres and Glorieta are important aquifers containing fresh to brackish water across the entire area. The Yeso formation underlies the Glorieta. The upper part of the Yeso, above the Ft. Apache member, consists of interbedded red siltstone, sandstone, and anhydrite. The sandstones contain salty water, and as in the Glorieta, the water generally is saturated with CO_2.

The Ft. Apache member of the Yeso formation consists of anhydrite and dolomite. The dolomite is porous and permeable over most of the proposed unit area and is an important CO_2 pay. Dolomite porosities vary from 8 to 22%. Permeabilities range from .5 md to 100 md. Net pay varies from 20 to 60 feet. Depths to the Ft. Apache range from approximately 1300 feet to 2400 feet.

The Amos Wash member of the Yeso formation underlies the Ft. Apache and is also an important CO_2 pay zone. It consists of red to orange colored beds of thin shales and red, well sorted, very fine grained, porous sandstone. Well log information indicates this section to be shalier and to have lower porosity in the southeastern part of the unit. The Amos Wash contains several thin dolomite and anhydrite beds which are laterally extensive and can be correlated over the area. Porosity logs and core analysis results in the Amos Wash show the sandstone pay has porosities ranging from 12 to 24% and permeabilities of .5 to 100 md. The net pay thickness typically varies from 50 to 130 feet. Depths vary from about 1400 to 2400 feet.

The Abo formation underlies the Amos Wash member of the Yeso formation. Depths to the top of the Abo range from 1650 feet to 2650 feet. The upper part of the Abo is typically 330 feet thick and consists of red shales, siltstones and very fine grained sandstones. Over the higher part of the anticlinal structure some of these sandstone beds contain CO_2. The lower 90 to 200 feet of the Abo is termed the Riggs member. It consists of dark red to maroon colored siltstone, very fine to medium grained sandstone, and conglomerate ("granite wash") beds. Cores indicate the Riggs to be highly fractured. It is an important CO_2 pay section over the southern part of the unit area. Productive porosities vary from 8% to 14%. Matrix permeabilities are generally low, being .05 md to 5 md. The effective permeability, however, is greatly enhanced by the natural fracture system. The net pay thickness varies from well to well but may be 60 feet thick in some wells.

The Precambrian has been penetrated by most of the Ridgeway wells and consists of pink to orange colored granite in all the wells except for the #1-21 State well in Section 21-T9S-R29E of Apache County, where it is a dark gray, fractured, schist. The Precambrian has produced CO_2 on drill stem and production tests from fracture porosity over the highest part of the structure. Depths to the top of the Precambrian typically range from 2000 feet to 3200 feet.

STRUCTURE

CO_2 is trapped in a large anticlinal structure which trends northwest-southeast across parts of Apache County, Arizona and Catron County, New Mexico. This structure is displayed on Appendix II, which is a structural map contoured on the top of the Amos Wash Formation. It is based on information from CO_2 test wells on the north and northeast, and by reflection seismic data on the southeast. On the southwest, in Apache County, the anticline is bordered by a northwest-southeast trending fault. This fault zone is apparent at the surface along the Little Colorado River about five miles southwest of St. Johns and is also indicated by structural relief on the top of the Glorieta formation in water wells in Apache County. This fault appear to be a partial barrier to westward migration of CO_2.

Total closure on top of the Amos Wash formation appears to be about 800 feet, assuming the lowest closing contour to be at about +4700 feet west of Springerville and the highest probable elevation at about +5500 in the eastern half of T10N-R30E in Apache County.

Isopach mapping of various intervals indicates this large structure to have exhibited upward movement contemporaneous with deposition during Permian time. The prominent, northwest-southeast trending fault probably was also active during this time. Additional movement on the fault and the anticlinal structure occurred during Laramide and early Tertiary time.

RESERVES

Due to their close proximity and similar bottomhole pressures, the Ft. Apache and the Amos Wash members of the Yeso formation appear to be in hydraulic communication and for practical purposes, the same reservoir. At the northwest side of the anticline the gas-water contact in this interval is about +4670. In the #1-16 N. State well in Section 16, T1N-R20W, Catron County it is at about +4632 feet. Further resolution of definitive gas-water relationships and final reserve estimates for the Ft. Apache and the Amos Wash must await the completions of the five wells that have been drilled in Catron County. All of these wells in Catron County exhibited CO_2 flows while drilling.

Well completion work to date indicates that the Riggs member of the Abo formation and the Precambrian are in vertical communication through an extensive fracture system. The extent of this communication, gas-water contacts, and better reserve estimates for these rocks will be obtained from the Catron County wells now awaiting completion.

Detailed reserve estimates will be furnished in the unit geological and engineering report which will be submitted at a later date to the New Mexico Oil Conservation Division. Studies to date give estimates of 6 to 7 TCF of recoverable reserves for the entire field area. Probably one-third to one half of these reserves are in Catron County, New Mexico.

CONCLUSION

Ridgeway Arizona Oil Corp. has drilled a total of 18 exploratory wells in Apache and Catron Counties to date. This effort has been successful in delineating a major source of CO_2. The time has now arrived to begin the process of unitizing and proceed with additional exploratory drilling which will lead to planned, orderly development.

George L. Scott, Jr.
Consulting Petroleum geologist for Ridgeway Arizona Oil Corp.
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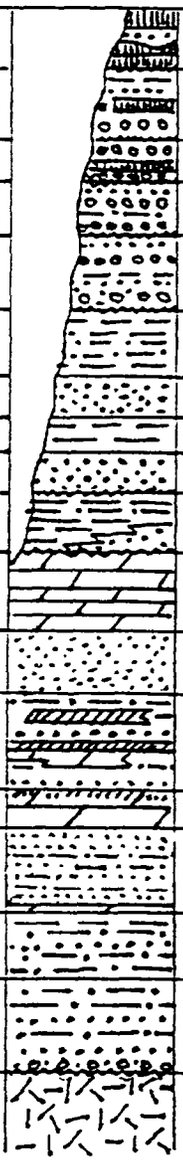
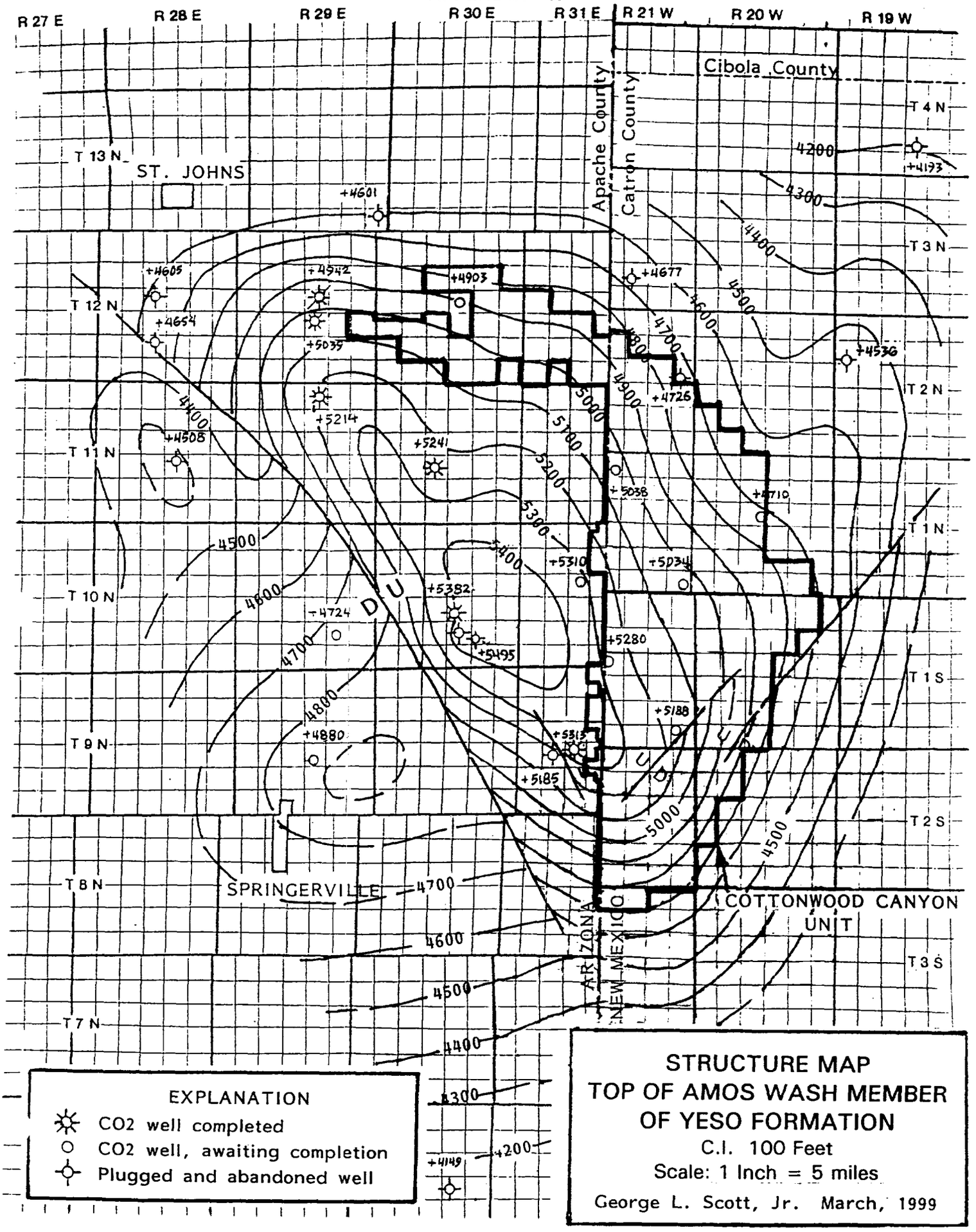
APPENDIX I

STRATIGRAPHIC NOMENCLATURE CHART

Quaternary	Basalts & Alluvium		Quaternary lava flows & valley fill.
Pleistocene Pliocene	Quemado Fm		Sandstone & nglomerate w/rinyolite & basalt clasts, 10 to 180' thick.
Miocene	Fence Lake Fm		Volcanic clastic conglomerates. Lava flows. 40 to 100' thick.
Oligocene	Spears Gp		Volcanoclastic sedimentary apron deposits. Tuffs, debris flows, etc.
Eocene	Baca Fm.		Red shales, sandstones & conglomerates. Erosional remnants on plateaus.
Upper Cretaceous	Moreno Hill Fm.		Varegated mudstone & red sandstone, carbonaceous sh & thin coal beds. 270'+ thick.
	Atargue Sandstone		Gray fine grained marine sandstone. 15'+ thick.
	Mancos Shale		Gray marine sh, 130' to 250' thick.
	Dakota Sandstone		Gray medium grained, cross laminated sandstone.
Triassic	Chinle Gp		Red, gray, green shale & siltstone with sandstone beds near base.
Permian	San Andres Fm		Gray-brown f-m crystalline. Solution collapse breccia. Lost circulation common. 250 to 350' thick.
	Glorieta Sandstone		Wh-gray-pink f-m grained well sorted sandstone. Carries fresh brackish water saturated with CO_2. 250 to 300' thick.
	Yeso Fm		Red-orange siltstone & very fine grained sandstone w/interbedded anhydrite & dolomite. Brackish to salty water saturated with CO_2. 600' thick.
	Ft. Apache Mb.		Gray-brown, vuggy dolomite. CO_2 pay. 90 to 120' thick.
	Amos Wash Mb.		Predominantly red siltstone to vf grained sandstone. Some thin dolomite beds. Porous & permeable. CO_2 pay zone. 250' thick.
	Abo Fm.		Red shales, siltstones, & vf grained sandstones. CO_2 pay over higher part of the structure. 330' thick.
	Riggs Mb.		Red siltstone, vf grained sandstone & some granite wash conglomerat near base. Low porosity & permeability but highly fractured. CO_2 pay zone. 120' thick.
Precambrian			Generally pink-orange granite. Highly fractured.

APPENDIX II



EXPLANATION

- CO2 well completed
- CO2 well, awaiting completion
- Plugged and abandoned well

STRUCTURE MAP
TOP OF AMOS WASH MEMBER
OF YESO FORMATION

C.I. 100 Feet

Scale: 1 Inch = 5 miles

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