GEOLOGIC REPORT
For
Application for Compulsory Pooling

Trilogy Operating, Inc.
"Sapphire" No. 2
1900' FEL & 990' FNL
Section 24, Unit "B", T-19-S, R-38-E
Lea County, New Mexico

INTRODUCTION

The Sapphire Lease (NE/4 Section 24) is part of the Emerald Prospect, located in eastern Lea County, New Mexico one mile east of the Nadine (Drinkard-Abo) Field. The field has produced more than 608,000 BO and 3,260,000 MCFG from 22 wells since its discovery in 1950. Other pay zones in the Nadine Field include the Seven Rivers, Blinebry (Upper Clearfork), and Tubb. In most cases the Drinkard and Abo intervals have been commingled, so it is impossible to determine how much each zone has produced in individual wells. Structural position seems to be more critical to the Drinkard than to the Abo. In the Nadine Field the average cumulative production on a per well basis has been 30,000 BO and 163,000 MCFG. New acid stimulation and hydraulic fracturing techniques may allow increased drainage areas per well, thereby increasing the ultimate recoverable reserves on a per well basis.

Trilogy Operating, Inc. has drilled seven wells on the Emerald Prospect in Sections 24 and 25 since the Emerald No.1 well (Unit "J") was drilled in April, 2000. Most of the wells are currently producing from commingled Drinkard and Abo pay zones. One well is awaiting completion. The wells have produced a total of 65,574 BO, 488,245 MCFG, and 45,256 BW. Total daily production from the six producing wells is 90 BOPD and 1,408 MCFGPD with 58 BWPD.

Each well holds only 40 acres. In order to preserve leasehold, Trilogy proposes to drill the Sapphire No. 2 in Unit "B" of Section 24 as an offset location to the No. 1 Sapphire well to a depth sufficient to test the Drinkard and Abo Formations.

STRUCTURE

Based on interpretation of seismic data, the Emerald Prospect is believed to be part of a large low-relief structural platform, which is associated with the Hobbs Field structural complex. The platform contains the Nadine (Drinkard-Abo) Field and a few key wells in the East Nadine Drinkard and Abo Fields. (See Structural Cross Section A-A', previously submitted with the Application for Compulsory Pooling for the Ruby No. 1 well). The prospect is considered an extension of the Nadine Field. The structural interpretation for the prospect incorporates well control for the Yates, Tubb, Glorieta and Abo horizons with the seismic data. A well drilled at the proposed location for the

Sapphire No. 2 is expected to encounter the Abo at a subsea elevation that is 56 feet low to the Sapphire No. 1 well.

RESERVOIR DEVELOPMENT and RISK FACTORS

All of the carbonate reservoir-forming sediments of the Tubb, Blinebry, Drinkard, and Abo were deposited on a shallow water platform overlying a buried structural platform. Subtidal pelletal packstones and intertidal mudstones are the typical commercial reservoir facies where they have been dolomitized. Many exposure surfaces are evident on logs, indicating that deposition was frequently interrupted by periods of low sea level. Alternating periods of deposition and exposure have resulted in the development of a heterogeneous reservoir composed of many individual cycles within a vertical interval of only a few hundred feet. This is evident within all the producing reservoirs. In the Drinkard Reservoir, impermeable layers, composed of either dense limestone or anhydritic limestone, often separate porosity zones. These layers may act as barriers to vertical fluid migration, suggesting that each porosity zone could have its own oil-water contact. Several of these cycles have been correlated in the three Emerald wells. They have been arbitrarily been named zones "A" through "F", from the bottom of the Drinkard to the top, as shown on Structural Cross Section B-B'(previously submitted with Application for Compulsory Pooling for the Ruby No. 1 well).

Drinkard-Abo - In the Nadine Field production has been established throughout the entire Abo section wherever dolomite porosity is encountered. Production occurs over an interval that is approximately 600 feet in overall thickness. Down structure from the field the lower porosity intervals in the Abo appear to be wet and only the upper half of the reservoir is considered productive. The No. 2 Emerald well encountered better porosity and permeability in the Abo than either the No. 1 or No. 3 wells. However, the Ruby No. 2 well and the Topaz No. 1 well encountered an Abo section that contained very little reservoir quality rock. In those wells the Abo is non-commercial. Abo porosity development is less continuous, and less predictable than porosity trends in the Drinkard. Log analysis is also less reliable for the Abo Reservoir than for the Drinkard. The Sapphire No. 2 well is expected to be 56 feet structurally low to the Sapphire No. 1 well which is productive from only the upper portion of the Abo.

Within the Drinkard reservoir the "A" zone (bottom zone) is a subtidal pelletal packstone facies. Having much better porosity and permeability than the overlying zones, the "A" zone produces most of the oil (and water) in the field. The overlying porosity zones, "B" through "F" appear to be developed in an intertidal dolomite facies and are gas-prone. Of the seven wells drilled by Trilogy, only the No. 1 Emerald produces from the entire "A" zone. The "A" zone is wet in all the other wells except for the Ruby No. 2 well, where the upper half of the zone is productive. All of these wells are slightly low to the No. 1 Emerald well. Based on log analysis, mudlog shows and core data, the oil-water contact in the "A" zone is believed to be at an elevation of approximately -3518.

The Emerald No. 2 well is completed in shallower zones "B" and "C". The Emerald No. 3 well is the lowest of the Emerald wells and is completed in zones "C" and

"D". Zone "D" is better developed in the Emerald No. 3 and Sapphire No. 1 wells than in any other wells in the area. If not for the fortuitous development of zone "D", the Emerald No. 3 well would probably have been a marginally commercial well. Although it is not yet proven, it appears that the "D" zone develops basinward to the northeast. So, by moving down dip, there is the likelihood that the "D" zone will be commercial even though zone "A" will be entirely wet. The Sapphire No. 2 well is expected to be wet in zones "A" and "B" and productive in zones "C" and "D".

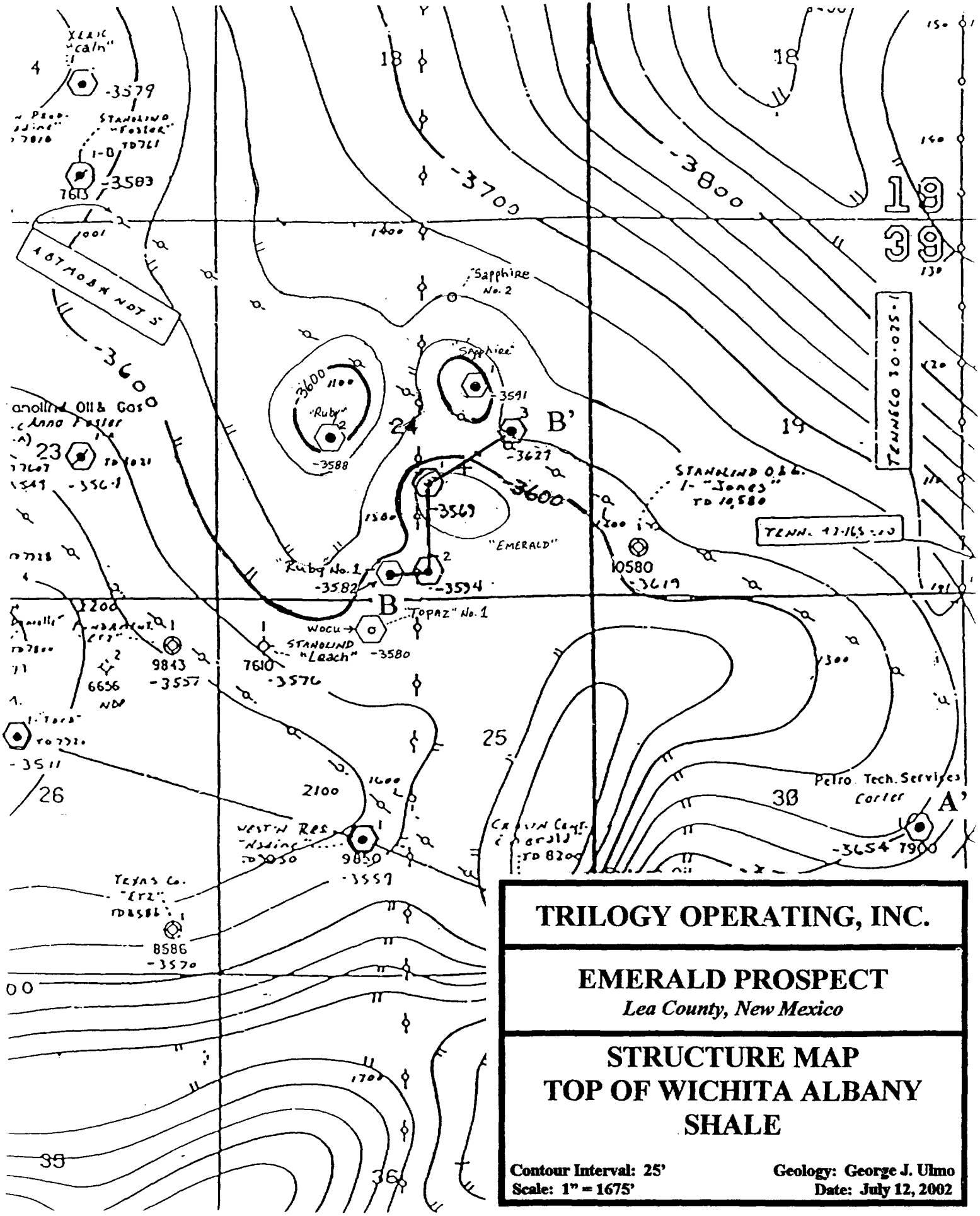
Secondary Objectives - The Tubb and Blinebry are secondary objectives for the prospect. In the Nadine Field Cross Timbers Operating Co. has identified pay behind pipe in dolomites within the Tubb Formation. Their net pay map of the Tubb shows 8 to 15 feet of net porosity in most of their wells. No pay has been identified in the Tubb in any of the wells drilled by Trilogy. A possible pay zone was encountered in the middle Blinebry of the No. 3 Emerald well. However, log calculations suggest that the zone will produce with a very high water cut, so it is not considered a known pay interval at this time. Hydrocarbon shows have been encountered in scattered intervals within the upper Drinkard, but those zones have not yet been proven productive.

The San Andres is a prolific producer in the nearby Hobbs Field. Two and one-half mile northwest of the prospect, seven of the San Andres wells in section 15 produced more than 150,000 BO. Several of them produced in excess of 400,000 BO. However, none of the wells drilled by Trilogy have encountered any significant porosity or shows in the shows in the San Andres, so it is not considered a secondary objective.

SUMMARY

In order to preserve the "Sapphire" leasehold in the NE ¼ of Section 24, Trilogy Operating, Inc. proposes to drill the Sapphire No. 2 well at the proposed location to a depth sufficient to test the Drinkard and Abo Formations.

George J. Ulmo
Consulting Geologist



TRILOGY OPERATING, INC.

EMERALD PROSPECT

Lea County, New Mexico

STRUCTURE MAP TOP OF WICHITA ALBANY SHALE

Contour Interval: 25'
Scale: 1" = 1675'

Geology: George J. Ulmo
Date: July 12, 2002