OTERO-GALLUP POOL

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Skelly EXHIBIT NO. 3
CASE NO. 1040

General Geologic Description:

The oil and gas productive zone in the Otero-Gallup Pool is the Gallup formation. This formation is an interbedded shale and siltstone, highly fractured with very low permeability and porosity. Regional dip is to the North-East at 100 feet/mile. This is primarily a fracture trap with the prolific amount of shale-siltstone interface acting as flow channels to direct the oil and gas into the well bore. An extensive fracture system is apparently a major criteria for the accumulating of oil in commercial quantities.

Engineering Problems & Peculiarities of this Pool

The first major problem in developing oil and gas production in the Jicarilla area is the inadequate road system, rugged terrain and erratic dry-wash system. After extensive road building and location leveling is completed, the drilling problems encountered are water shortage for drilling muds, lost circulation in fractured zones and expensive swabbing to kick the well off after having lost mud into the productive horizon. Well flow is opposed by the rapid accumulation of paraffin in the well tubing and flow line to the storage battery. Extra storage capacity is necessitated by the remote location.

Reservoir Characteristics

Very low permeability and porosity with relatively high connate water saturation places this pool in the Mickey Mouse class,

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as oil pools go. Extensive natural fractures in the productive interval may prove to be the only route for oil and gas migration into the well bore. Additional stimulation of the productive formation by sand-oil frac is necessary to create adequate permeability for commercial production. This solution gas drive reservoir has exceptionally low average permeability .03 Millidarcys, average porosity 6.5%, residual oil saturation of 41% and total water saturation of 51.5%. Original solution gas-oil ratio of 380, original formation volume factor 1.32 with the average API gravity of the oil being 40. Original BHP 2321, approximate present BHP 1300#. Decline of 1021 pounds with the total accumulated oil production of 27,369 bbl., and accumulated gas production of 143,282 MCF indicates a decline of .037 pounds/ Bbl. Stock tank oil. Average net thickness of the productive zone is 65 feet.

Total oil in place/80 acres-577,129 bbl. Expected Recovery 10.8% = 62,330 Bbls.

Total oil in place/ft. = 111 Bbls. Expected Recovery/ acre ft. = 12 Bbls.

Total oil in place/40 acres - 288,564 Expected Recovery 10.8% = 31,165 Bbls.

Total gas in place/80 acres - 210 Million - Expected Recovery 80% 168 Million. Abandonment Pressure 200#.