

**Radial Flow Equation for Compressible Flow
No Flow Across Lease Line
Lea (Wolfcamp) Field**

$$Q = 39.3 \frac{hk}{u} \frac{P_m}{P_w} \frac{\Delta P}{\ln\left(\frac{r_e}{r_w}\right)}$$

$$\ln\left(\frac{r_e}{r_w}\right) = \frac{39.3}{u} \frac{hk}{P_w} \left(\frac{P_m}{Q}\right) (\Delta P)$$

Let $\left(\frac{r_e}{r_w}\right)_{\text{JORDAN}} = \left(\frac{r_e}{r_w}\right)_{\text{NEUHAUS}}$
Or No Flow at Lease Line

$$\left[39.3 \frac{hk}{u} \left(\frac{P_m}{P_w}\right) \left(\frac{\Delta P}{Q}\right) \right]_{\text{JORDAN}} = \left[39.3 \frac{hk}{u} \left(\frac{P_m}{P_w}\right) \left(\frac{\Delta P}{Q}\right) \right]_{\text{NEUHAUS}}$$

If Both Wells Have Equal Capacity

$$\left[\frac{k}{u} \right]_{\text{JORDAN}} = \left[\frac{k}{u} \right]_{\text{NEUHAUS}} \quad \& \quad \left(\frac{P_m \Delta P}{P_w} \right)_{\text{JORDAN}} = \left(\frac{P_m \Delta P}{P_w} \right)_{\text{NEUHAUS}}$$

$$\left[\frac{h}{Q} \right]_{\text{JORDAN}} = \left[\frac{h}{Q} \right]_{\text{NEUHAUS}}$$

$$Q_{\text{NEUHAUS}} = \frac{(Q_{\text{JORDAN}})(h_{\text{NEUHAUS}})}{(h_{\text{JORDAN}})}$$

$$Q_{\text{NEUHAUS}} = Q_{\text{JORDAN}} (119/62)$$

$$Q_{\text{NEUHAUS}} = 1.92 Q_{\text{JORDAN}}$$

**BEFORE THE
OIL CONSERVATION DIVISION
Santa Fe, New Mexico**

Case No. 10796 Exhibit No. 11

Submitted by: Manzano Oil Corporation

Hearing Date: August 12, 1993

Conclusion: **To prevent Flow Across
Lease Line and Protect Correlative Rights,
the Manzano Neuhaus Fed. No. 2
Would have to Produce at a
Rate Almost Twice that of the
Marathon - Jordan "B" No. 1.**