EXHIBIT NO. 18

DETERMINATION OF IN SITU FORMATION PERMEABILITY
FROM LABORATORY CORE ANALYSIS DATA IN THE
FIVE LAKES CANYON TIGHT GAS AREA

The relationship needed to determine in situ permeability from core analysis data is published in a technical paper by Rex C. Thomas and Don C. Ward entitled "Effect of Overburden Pressure and Water Saturation on Gas Permeability of Tight Sandstone Cores", which is presented as Exhibit No. 17. The authors' studies involved taking routine laboratory air permeability measurements at the normal 100 psi or less external pressures. To simulate the effect of in situ conditions, these permeability measurements were then made at external pressures ranging from 500 to 6000 psi. The results of these tests were then plotted on a graph of Percent of Initial Permeability (ratio of permeability at 100 psi to a permeability at a higher pressure) vs. Pressure.

Figure 1, on page 51, of Exhibit No. 17, is one such graph which presents results of tests run on cores taken from the Pictured Cliffs formation. These cores were taken from Project Gasbuggy, located in Choza Mesa Pictured Cliffs field, T23-29N, R3-4W, Rio Arriba County, New Mexico. Cores from the Pictured Cliffs formation in the Gasbuggy area and from the Pictured Cliffs formation in the Five Lakes Canyon Tight Gas Area can be expected to have the same or very similar chacteristics.

The characteristics of core 3978, presented in Figure 1, can be used to represent the core data from the Five Lakes Canyon Tight Gas Area. The average laboratory air permeability from the Five Lakes Canyon Area was 0.47 millidarcy compared to an initial laboratory core permeability for core 3978 of 0.151 millidarcy. The confining pressure due to overburden at a depth of 2685 feet in the Five Lakes Canyon Tight Gas Area is approximately 1990 psi. Entering the graph in Figure 1 at 1990 psi results in a permeability reduction factor of 0.34 resulting from the overburden pressure on the Pictured Cliffs formation.

The water present in the reservoir also causes the in situ permeability to be less than laboratory permeability as discussed in Exhibit No. 17. The 0.34 permeability reduction factor resulting from overburden pressure was determined from cores having 100% gas saturation. Figure 5 on page 53 of Exhibit 17 indicates relative permeability changes that occurred with changes in water saturation within the sample cores. For the Five Lakes Canyon Tight Gas Area, the average core water saturation was 71%. Entering Figure 5 at 71% water saturation results in a permeability reduction factor of 0.05 for in situ water saturation.

The total permeability reduction factor used on laboratory core data to approximate reservoir conditions is obtained by multiplying the overburden reduction factor by the water saturation reduction factor. This product is 0.02 for the Pictured Cliffs formation in the Five Lakes Canyon Tight Gas Area. Therefore, the in situ permeability for this area is 2% of the 0.47 millidarcy laboratory determined permeability or 0.009 millidarcy.

The resulting 0.009 millidarcy in situ permeability obtained for the Five Lakes Canyon Tight Gas Area by this method compares favorably with in situ permeability values of 0.01 millidarcy determined for the Pictured Cliffs formation at Project Gasbuggy.