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Prof. Bruce Vogelaar
Department of Physics
Robeson Hall
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Blacksburg, VA 24061

Dear Bruce

The Kimballton Mine and the mining operations/capabilities at that mine offer extraordinary scientific opportunities in the field of seismic imaging. Fifty percent of the world's oil is found in carbonate reservoirs, therefore the correct imaging of carbonate features (fracture volumes, dolomitized zones, reef and algal mounds, etc.) is extremely important. Recently several oil companies have been forced to restate (lower) their reserve estimates and while many factors go into a reserve calculation it is obvious that getting the image right is one of them.

One can seismically image carbonate formations anywhere in the world but only at Kimballton is the mining machinery and manpower available to "mine-back" into a seismic image dramatically exposing the errors in the image. Once the errors have been found, and understood, one can correct the imaging operation both in the field and in the theory.

Today, the leading edge of our science lies at the intersection of fluid flow and seismic imaging. This is an awkward, but extremely important intersection because there is no physics that connects the two phenomena. At Kimballton one can conduct special fluid flow experiments (dyes, tracers) that highlight the permeability of a carbonate reservoir, especially its anisotropy, which can then be compared to seismic anisotropy. Again, it is only the "walk through the seismic image" that properly identifies the permeability anisotropy.

The number of seismic imaging experiments that can be conducted at Kimballton is endless but it is only during the gentle mine-back operations that "blinding innovation" will strike. I am eager to be a member of the Kimballton research team.

Sincerely

Roger

Roger Turpening
Research Professor