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Memo to: The Climate Club - C759

From: Walt Roberts

Provocation No.148

Tom Gold and Deep Earth Methane

Some ten years ago, my astronomer friend, Tommy Gold of Cornell University, advanced a new theory for the natural gas reserves of the planet. In his view the oil and gas we drill in the Arabian Peninsula and elsewhere are not fossil fuels left from ages past, but rather that they come from non-biological sources connected with the origin of the planet itself. Most experts disagree, thinking that oil was formed when dense forest vegetation and animal remains were overlaid millions of years ago and then gradually converted to petroleum by decay and compression down through the geologic ages.

Not Tom Gold! He argues, sometimes with vehemence, that methane gas was present deep in the interior of the Earth from its formation, and that the gas bubbles outwards slowly, occasionally being trapped in gas "domes" of overlying rock, from which we extract it by drilling into the domes. Sometimes, Gold surmises, it forms oil, tars and other petroleum products by chemical reactions deep within the Earth's mantle in the high temperature zones that feed volcanos. To his way of thinking there are enormous new supplies waiting to be tapped deeper down into the Earth. In his view we do not face diminishing gas and oil reserves anytime in the foreseeable future. We have simply tapped the superficial supplies.

My son Alan, a petrochemist, is one of Gold's many critics. He believes that methane trapped in high temperatures for the long eons Gold postulates will oxidize to inert carbon dioxide, a nearly worthless gas compared to methane. And there are myriads of other arguments against Gold's hypothesis constantly advanced by Gold's skeptics, who far outnumber his supporters.

Being both articulate and persistent, Gold nonetheless convinced the Swedish government and the US Gas Research Institute to invest over \$20 million in a deep drilling venture 150 miles northwest of Stockholm. The drilling has now reached 20,000 of its target of 25,000 foot depth. Suddenly it has broken through the granite bedrock into a porous layer that immediately swallowed up 1000 barrels of drill fluid.

This is a triumph for Gold and the drill team. Gold predicted the deep porous layers, and most geological experts disagreed. The finding has astounded the opponents, who now say that this scientific result alone is worth the cost of the project.

Moreover, small amounts of methane are coming from the drill hole at this great depth--another support for Gold's position. Needless to say, Tom is elated! In a phone interview he stated "I feel that there's no longer any debate that gas is coming up in the area, that gas has ruptured the rock from below."

If Tom Gold is right not only about the porosity, but also about huge amounts of deep-lying methane, the implications are enormous. It will negate previous orthodoxy that the fossil fuels are biogenic and of limited future volume, soon to be exhausted. It means that natural gas and other petroleum resources may exist in colossal reserves, waiting for deep drilling technology to release them.

Few scientists are willing to go that far in their optimism. The deep wells may not have large amounts of gas and oil, and even if they do, the cost of the technological measures needed to reach them may prove prohibitive. But for the moment Tommy Gold is riding high and happy!

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