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## Examining the floating forest hypothesis: a geological perspective

I read with interest Timothy Clarey's article on the floating forest hypothesis.<sup>1</sup> I found myself in agreement with some of his conclusions but partly for reasons outside those aspects addressed by the paper. May I briefly explain and ask for comment?

One of the prime links I see in the paper is to explore the possible relationship of the forests to the coal deposits in the 'Carboniferous' and its paucity elsewhere, e.g. 'Cambrian'. We are conditioned to think of coal as a fossil fuel. Because its feedstock is organic matter, including wood and peat followed by a thermodynamic metamorphic process called 'coalification', it is biogenic.<sup>2</sup> This quoted uniformitarian process requires huge volumes of feedstock and long periods of time. Even then there are gaps in explaining the rich variety of 'macerals' (the individual combustible contents similar to minerals) in coal. Creationists have focussed on the volume and time issues. Floating forests offer an explanation for large

amounts of precursor material that could have existed before the Flood. Also, they have shown that some aspect of 'coalification' proceed rapidly so that we end up with a model that explains coal in geographically related multiple layers.

While secular/uniformitarian literature in general believes that coal is biogenic, some have challenged this and that challenge introduces a new level of enquiry for creationists. The late Professor Thomas Gold pointed out 10 reasons why coal could not be biogenic, and suggested that it was abiogenic and had arrived from Earth's depths by an out-gassing molecular fusion process.<sup>3</sup> He was challenged on several fronts, including the incompleteness of his model, but we might ask which scientific model is ever fully complete, including the biogenic coalification model? Second, he was not a trained geologist. He had worked on radar in WW2, and then with Sirs Fred Hoyle and Herman Bondi on cosmology at the time when the steady state model of the universe reigned supreme. This suggests an *ad hominem* attitude to his views on the origin of coal.

In addition to his 10 objections, we encounter at least another 15 implicit objections to the biogenic origin for coal from a wide range of specific journals and books, although no alternative abiogenic models are even suggested. The objections are: the complexity of the vitrinites (which are key macerals since, for example, they form 90% of Turkish coals<sup>4</sup>), inconsistent rank correlation, mineral-ash content, tonstein layers, variability of sulphur content, coal balls, appeal to Gaia, dinosaur footprints in mines, low pre-Cambrian plant availability, lateral persistence of seams, flat-topped seams, general shortage of carbon, seat earths, radio-carbon in coal, divergence and reconnection of split seams, washouts and roof roll-overs. Within this short comment we

cannot go into technical details, but, as a minimum, surely they prompt a fundamental reconsideration?

Some creationists attempt to explain geological features of the Flood by searching for ways of speeding up the timescales implied by uniformitarians. Thus they essentially retain the geological column, plate tectonics, reaction kinetics assumptions and everything else as has been done by many authors who have contributed to the floating forest-to-coal model. The other route is to anchor each aspect of our models directly on the biblical information and build from there, only embracing uniformitarian ideas when all the evidence points that way. The contrast between the two has been explored by Froede and Akridge<sup>5</sup> and the subsequent discussion.<sup>6,7</sup> But truth is not either/or. It is one or the other.

There is a close parallel between the origin of coal and that of crude oil. During my 30 years in the upstream oil industry I was all too conscious that the origin of oil was not clear-cut. While the majority of professionals accepted a biogenic option, as they did for coal, typically 30% accepted Gold's other idea, namely that oil is

abiogenic. Major industry conferences failed to settle the issue.<sup>8</sup>

I wrote a paper<sup>9</sup> that showed the major problems with both options, and offered a new model. It borrows ideas from Gold, but avoids the problems he encountered with entrained fossils and his vague 'upwelling' process because these are dealt with within an active Flood environment. The thermodynamic issues of a short timescale and the vexatious question of oil migration disappear. The model I offered also avoids one of the key problems with the 'biogenic' model that no biogenic feedstock is known to replicate the full range of known compositions of crude oil, particularly in the lower numbered alkanes and the waxes. (This has a close analogy with the problem of explaining the wide range of macerals in the 'biogenic' coal model.) Secularists have challenged my model, not on the physics and geology but only because it uses biblical Flood timescales. De facto, what is the alternative for creationists?

Gold's and the other 15 objections to coal being biogenic provide us with the initiative to seek the origin

of coal without using woody material as a feedstock. While the ideas of floating forests (and perhaps log mats) have suggested explanations for the amount of carbon in the right place at the right time, the coalification thermodynamics and the sedimentary issues point to the need to look for a radical alternative, as was needed for oil. There are many pointers to coal being a precipitate discharged onto the surface of the earth from the fountains of the great deep during the Flood. The starting evidence is that some of the quite common vitrinites are known to be soluble.<sup>10</sup> It explains the sedimentary aspects of coal and fossil content replicating those of sandstone or limestone, which are not contentious for creationists.

Just as the oil industry formally accepts that a significant fraction of its scientists consider that oil might be abiogenic, are we neglecting the possibility that coal is abiogenic? We are not denigrating the effort creationists have put in developing biogenic models via floating forests and log mats, but, as in all aspects of science, it is only by making a wide search for explanations that we arrive at plausible models.

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### » Timothy Clarey replies

The intent of my article was not to stir discussion on the biogenic or abiogenic origin of coal, or oil, for that matter. It was to point out some geological shortcomings of the floating forest hypothesis.<sup>1</sup> However, as the author of the comment asked for input, I will provide a brief contribution on this debate.

I personally believe the biogenic origin of coal is the most reasonable explanation of the scientific data available. We find many examples of plants associated with coal whether it is Carboniferous coal or otherwise. If coal were merely a “precipitate discharged onto the surface of the earth from the fountains of the great deep”, we would expect to find vast quantities of coal spread throughout the sedimentary record, including in the earliest Flood sediments or the Lower Palaeozoic rocks. The Bible clearly tells us that the fountains bursting forth were the first event in the Flood (Genesis 7:11). If the fountains provided the coal, where are the massive coal beds in the Cambrian, Ordovician, and Silurian system strata? Why do we find the vast majority of Palaeozoic coals only in the rocks of the Upper Carboniferous system (Pennsylvanian)?

Secondly, as a former employee of a major US oil company, I disagree that “a significant fraction of its oil industry scientists consider oil might be abiogenic”. The claim “typically

30% accepted Gold’s other idea, namely that oil is abiogenic” is not representative of what I witnessed in industry. This assertion is not based on any scientific survey, but is the opinion of the author of the above comment alone.

The recent American Association of Petroleum Geologists Hedberg Conference on the origin of petroleum concluded that “no single inorganic origin [for oil] has been proposed” and that “some of the inorganic mechanisms incorporated a biogenic step converting mantle-derived methane to heavier hydrocarbons, or coexisted with an organic process”.<sup>2</sup>

As other presenters at the conference pointed out from a study of oil and shale in the Williston Basin, US: “... the oil chemistry suggested the presence of three distinct oil types. Each of these oil types or families could be matched to extracts from a different stratigraphic interval—Winnipeg shale, Bakken shale, and Tyler shale—with each considered as a source interval.”<sup>3</sup>

The conference concluded that the inorganic hypothesis for oil formation did not provide a specific location where oil should be expected, adding little value in terms of oil exploration. In contrast, the conference determined that the supporters of the biogenic origin proposed a single petroleum formation mechanism, based on organic-rich source rocks. And that the “organic origin permitted an approach to exploration”.<sup>2</sup>

In addition, engineers at the US Department of Energy’s Pacific Northwest National Laboratory reported they were able to transform harvested marine algae into crude oil in less than one hour.<sup>4</sup>

If you combine the Williston Basin study, above, which chemically tied the oil produced to the source rock extracts (and numerous similar studies), with the empirical results of the US Department of Energy, it is

hard to deny an organic origin for the majority of the world’s crude oil.

As Flood geologists we shouldn’t have to be in awe at the amount of oil in the world. Global oil generation is another example of a process that could only have occurred because of the extraordinary burial conditions present during the recent great Flood. Most secular petroleum geologists deny the Flood, even though they are witness to this evidence every day as they search for oil. We can be thankful for God’s providence in creating oil, even through a catastrophic, global judgment—oil that now provides much-needed energy for our present world.

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