CASE STUDY: Fluorescence "The Gold Standard" - *A Failure Story*

Our contact at Hess Oil has asked us the simple question if we could tell the different in The Bakken and Three Forks crude oil formations. "Our response was absolutely." They replied with, "we have heard that before from several others, but no one has been able to produce results reflecting such, as they are stacked formations and when drilled through, the crude oil comes up comingled." Our response was for them to "give us the core samples taken when the well was drilled." So our contact obtained for us 30 core samples from The Bakken and Three Forks formations in North Dakota and asked us to analyze them utilizing our new technology and then report back to them our findings.

We did so and then we scheduled a presentation to about 30 geologists at the headquarters of Hess Oil in downtown Houston. Our meeting was scheduled for 1 hour. The 1 hour turned into 2.5 hours, as they were intrigued by our findings. The short version to the story and answer to the direct question was simple, "yes, after performing our method, The Bakken and Three Forks crude oil had spectral curve differences for the identification or fingerprinting of them."

But a more interesting part to the story was that prior to the presentation, our contact took us into the basement where they had the sidewall cores and the fluorescence data beneath it. It's widely known, that the "gold standard" in the industry is the use of fluorescence or the use of a uv-black light to illuminated rock for determination of petroleum hydrocarbon presence. In review of the fluorescence data we were shown on the cores that we had analyzed, the data reflected significantly different findings. The fluorescence data reflected fluorescence away from both the source rocks of both The Bakken and Three Forks formations. Due to the lack of fluorescence in these source rocks and the glowing like Christmas trees in the Upper and Lower portions of the formations, it was these areas that would be the focus of the drilling and extraction efforts. During our observation, we mentioned to our contact that our presentation would be reflecting different findings than that of the fluorescence data we were looking at.

We went on to give our presentation then came the point of discussion about what we had seen in the fluorescence data and how it compared to our findings. Our findings not only reflected that the highest concentrations of hydrocarbon presence was in the sources rocks, but that in addition to, that there was 5x higher concentration of the hydrocarbon in them! We actually had to dilute the results by 5x just to bring the results into the same range to be able to compare them to the results found in the Upper and Lower portions of the formations. This didn't sit well with those in the room and was a lengthy topic of discussion. One gentlemen in the room made mention that there was perhaps something in the rock that masked or covered the ability of the sources rocks to fluorescence, but no conclusion was made at the time.

We completed the presentation we had prepared, which came as a surprise to the audience that we had done our analysis on the (30) 2" inch plug core samples in 4 days and put our findings into a presentation and made this presentation to them a week from picking up the core samples from them. They were shocked to learn that we had done all this work in a matter of a week.

After the presentation, we went back to our laboratory and within 45 minutes, my Grandfather our Founder and Inventor; John D. Hanby had uncovered the answer to the question of the lack of fluorescence in The Bakken and Three Forks formation source rocks; there was graphite in these source rocks that in deed masked the ability of them to fluoresce.

In the current economic environment of depressed oil prices, new methods should be considered to be able to produce more efficiently and economically. It's $1/7^{th}$ the cost of drilling a new well, to analyze old core samples from well drilled prior to today's technology, to find what was missed when the wells were drilled years ago. The new method and tool is here to do this; Hanby Chemical Reaction Spectrophotometry (CRS).