

The seismic contractors continue to consolidate. Today there are 14 Land seismic companies in Canada, with further rumours of that number dropping. This is a long way from the days of fifty contractors some twenty plus years ago but it even represents a consolidation over the past decade from the days of 20 or so contractors.

However, this article follows the rebound of the speculative (or "non-exclusive") seismic companies, which are seeing a similar resurgence in value and growth, as are other sectors of the oil industry. Spec companies hit their peak 5 to 7 years ago. A number of factors worked in their favour and at one point they were probably capturing a third of the active seismic market. However, looking back a year or two from present day, this number fell back to about a 20 % market share of active seismic work. But once again today this trend is shifting back up for newer but more sustainable reasons.

There are different spec companies. Some require programs to be fully subscribed before they will shoot a program. Others run the gambit in terms of levels of participation before they will take on a program. Some are smaller privately owned companies, others are divisions of bigger seismic companies and a few are large publicly traded companies. Some are frontier shooters – the absolute first into an area shooting long 2-D regional lines. Others concentrate in the foothills shooting large 3-D's or in environmentally restricted areas. Such areas are generally very expensive to shoot and therefore multiple company participation brings the cost down and allows a number of companies to have a look.

The concept of spec is simple. A company becomes the client and ultimately owns the data yet it does not explore. Instead its purpose for existence is to sell the seismic data to as many oil companies as possible. As data sells for 25 to 35 % of the overall cost it is a good deal for oil companies. These are market driven prices though, so for example, further government restrictions in an area already shot may drive up the price of the existing data. On the other hand they may give up some exclusivity in the area and thereby allow other oil companies into an area. A spec company's risk is generally "time". The data will always sell at some time in the future so the risk is a downturn in markets or lack of landsales in an area or the government releasing the data into the public domain. (Note: We continue to argue with some jurisdictions over the release of non-exclusive data into the public domain.)

Spec was de rigueur 5 to 7 years ago. Oil companies had opened up their data libraries, which had an unintended effect of recognizing value in seismic beyond their own proprietary exploration plays. It also encouraged oil companies to adopt a new model, that of a participation model rather than shooting all seismic themselves. These companies were active with as much seismic as they could manage.

However there was no real functionality to the valuation of such assets. In the late 1990's a number of asset write-downs occurred in some of the public companies and a bit of pallor was cast over the sub sector of the industry. Negative press has a way of brushing the entire sub sector and such was the case here. As well the overall general devaluation of the asset caused the spec companies themselves some inner soul searching in deciding upon what they were going to actually

shoot or not. This contracted their portion of the active market in the years following, settling them down somewhere near the 20 % share.

The market has rebounded over the past couple of years and, as we have seen, financial companies have once again become interested in seismic companies and so too has such financial interest turned to the spec market. This market, though difficult for outsiders to get a handle on, likely has some great upside to it in the coming years.

For sake of argument we would suggest the large oil companies shoot about 60 % of the land based work, small oil companies about 20 % and spec companies the remaining 20 %. We have suggested in the past that the seismic market is relatively static in dollars spent over the past decade – give or take a couple of billion in the Canadian market spread across all aspects. However, this number has seen some growth with the cost of doing business these days and the lack of human capital to make supply and demand fully elastic. Oil companies have had to pay more to secure crews and get their work done.

In any case these are relative facts in the sense that one sector may be bigger or smaller than stated. The fact is the spec area has the greatest ability to grasp the current external factors and grow their proportion.

There are three factors working in their favour: economics to the oil companies, public and environmental sensitivities and confidentiality. I have discussed the issue of economics a number of times in this article but suffice it to say that as oil companies look at ways of cutting costs in a tight supply market, the spec model allows for that in the business of seismic.

The second factor is also becoming more prevalent in the way we do business today. We are faced with more and more regulations in which the environment is often the driving factor in how our business can operate. As well a more informed public gives meaning to the concept of "social licence". Oil Companies recognize that it may be in their best interest to have a spec company do the initial seismic work so that they may remain out of the public eye until such time as they are active in an area.

The final factor of confidentiality ties in not only the statements in the previous paragraph but also into the concept of confidentiality as defined by the various jurisdictions we work in. Alberta has very tight legislation around the confidentiality of seismic but some other jurisdictions have policies to release data into the public domain after the conclusion of certain confidentiality periods. Spec data has a confidentiality period of 10 years and 15 years in the East and North of Canada respectively. This coincides with a 5-year confidentiality period for proprietary data. We believe that spec data or

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The effects of interbed multiples...

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multiple ridden zone can take on the appearance of perspective reservoir with porosity and desired fluid fill.

Application to All reservoirs

The case study outlined a subtle problem that most likely exists in most of the seismic data that we use to identify and develop reservoirs. The problem compounds when we are exploring for and developing more low impedance "unconventional" reservoirs. Figure 3. shows a VSP section through the Jean Marie formation before and after VSP de-multiple. This highlights all possible multiple contamination and what must be overcome before using the seismic data. Great skill is required in removing these multiples while preserving the real subtle reflectivity that represents an optimum drilling location. Several methods have been tried and will be presented that attempt to remove multiples and correct for attenuation both pre and post stack. Ultimately these methodologies are interpreter driven and carry a very heavy caveat emptor.

Conclusions

Seismic data can be degraded and ridden with contamination that can lead to in-correct interpretations. Detailed analysis, investigation of potential seismic contamination as well as full

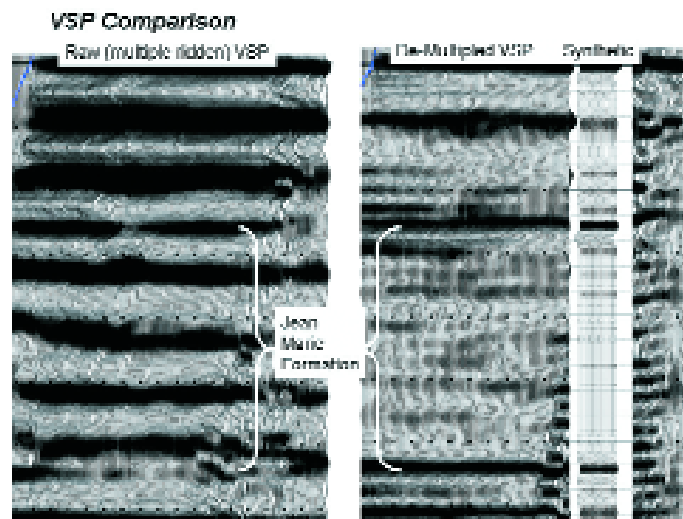


Figure 3.



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non-exclusive data, as our only asset, has protection under the Access to Information Act and as well under standard copywrite law in Canada. Oil companies trade the land bonus system used in mature areas for a work commitment system used in frontier areas. As such there is perhaps some merit in the government looking to release such work commitment data. However, we continue to strongly oppose any jurisdictions' release of our non-exclusive data. However, this issue is likely only to be finally settled when it is taken to court. The point being for this column is to say confidentiality in any form equates to some sort of advantage for those who hold it on their side.

integration of a robust and sound geologic model can mitigate some of these effects. The correction for these distortions is quite straightforward and can be carried out in most processing centers but must be understood and quantified through VSP data and models. De-multiple is critical to the preservation of the geologic information within our seismic data and must be applied in a logical and informed manner to remove the multiple without affecting the primary amplitude or phase. Attenuation can be determined from wireline logs and VSP data, or derived from the seismic data only, and again must be applied with care and quality control.

This paper has demonstrated the effects of these potential distortive processes on prospecting for conventional and unconventional reservoirs in the Western Canadian Sedimentary Basin. The understanding and proper corrections for these effects, and interpretation with them in mind can help to mitigate risk in these subtle reservoirs but the caveat must be stated: the misuse or abuse of these corrections, or the generic application of these results can and will be disastrous. **R**

Acknowledgements

We would like to thank Dominion Canada, and Anadarko Canada Corporation for permission to publish this paper. We would like to acknowledge and thank Schlumberger for help in the analysis of the VSP data, and permission to use their seismic data. We would like to thank ARCIS Corporation and PULSE Data Inc. for permission to use their data. We would also like to thank Rick Kuzminski and Rob Duthie, VSFusion for there VSP help and guidance.

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The market will play out over the next year and we believe the spec companies will see some very favourable investments and growth in their business as a whole. **R**

From the Thursday Files:

Once you say something out loud, you lose it.

– Suzy Parker