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Broadband, Experience, “Grey Zone” and Expectation

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SUMMARY

Since 2009, Total has acquired many broadband datasets around the world using all or most of the available techniques. We have also noted that the “broadband seismic processing” of conventional (and broadband) acquisitions has evolved considerably and most of our conventional datasets are now processed or reprocessed with “deghosting” techniques to try to achieve a “broadband” spectrum.

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The benefits of broadband, whatever the technique, are not straightforwardly proven because the comparison of “conventional” vs. “broadband” is not always fair (differences in processing, acquisition etc.); however our experience shows that, in most cases, it positively impacts data interpretation.

The first part of this presentation will show the results of some case studies in several environments (deep water, shallow water, multi/wide azimuth). The results are of various levels of quality, from very good to poor.

The second part is dedicated to the “grey zone” of broadband processing and its impact, i.e. even if the final migration has a broader frequency spectrum at a glance, fine scale analysis or AVO/inversion studies are still impacted by several approximated processing phases like: designature (phase & amplitude), Q compensation, low frequency noise attenuation etc.

By detailing a few examples, it will be demonstrated that significant room for improvement still exists before it can be said that robust “broadband” workflows have been developed.

To close the loop, we will briefly show that the road ahead is full of promise, but that uncertainties still exist in the design of our future projects, especially when it comes to reliably adapting our objectives to the environment, e.g.:

- 4D: Broadband over Broadband & Broadband over Conventional
- 3D: Broadband acquisition or Broadband processing of conventional dataset