

## **PQC: Application to a Mega-Merge in Saudi Arabia**

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### **ABSTRACT**

Targeting low-relief structures and stratigraphic traps with closures in the order of tens of milliseconds in time-processed volumes, requires an accurate near-surface solution to avoid generating artifacts. Interpreting large-scale structures and reservoirs requires continuity in the near-surface solution of nearby blocks. Unfortunately, state-of-the-art methods for near-surface analysis typically demand a lot of end-user interaction to provide robust data for near-surface processing. The surface-consistent refraction processing method, named pQC, offers automatic QC (quality control) of first arrival times. This provides us with high-resolution near-surface velocity models and surface-consistent residual refraction time corrections at a fraction of the time needed by currently used methods. In this paper, we describe the results of the application of pQC over a mega-merge, where pQC proved to be the best approach after careful analysis and benchmarking against well-established technologies used in the industry. The pQC method has shown notable advantages in the treatment of various acquisition geometries and variable noise in the data, providing stable results that are consistent with the underlying geology. It is also applicable to huge seismic datasets such as high channel count or point source/point receiver acquisitions, resulting in a dramatic reduction of the total processing time. The calculation and application of surface-consistent refraction residual statics allows to solve for an intermediate range of statics corrections to bridge the gap between long wavelength statics from dynamic velocity analysis and shorth wavelength statics based on surface-consistent analysis of reflection data.