

ABSTRACT

Method and Apparatus for Pre-Stack Deghosting of Seismic Data

A method for deghosting seismic data collected with a seismic system, the seismic data being related to a subsurface of a body of water. The method includes receiving the seismic data recorded by detectors distributed along a variable-depth profile; calculating migrated (d_1) and mirror-migrated (d_2) gathers based on the seismic data, wherein the migrated and mirror-migrated gathers depend on a feature characterizing a configuration of the seismic system; applying a joint deconvolution model to the migrated and mirror-migrated gathers (d_1 , d_2) to calculate a single deghosted gather (dg); and generating a final image of the subsurface based on the single deghosted gather (dg). The feature is not present in a gather after a step of stacking that is performed prior to generating the final image.

Fig. 3