

## **3D Seismic Processing and Interpretation from 2D Seismic Data: Application in Environmentally Sensitive Areas of the Neuquen Basin, Argentina**

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### **Abstract**

The proposed strategy is using old 2D seismic data to generate a 3D volume, which proved to be a useful tool not only to have a three dimensional visualization of the sub-surface, but also provides the possibility to take the generated 3D data as input of seismic attributes calculation that otherwise would not have had because the discrete 2D information. In addition to these advantages, to avoid the negative impact in the environmental sensitive areas that generates seismic acquisition is a very desirable goal in the oil industry. Nevertheless, with the proposed technique, many structural uncertainties can be geometrically solved or at least outlined, giving a real improvement in the evaluation of prospective areas or the delineation of the fields and generating new drilling strategies.

The increasing restrictions of environmental and regulatory nature for recording 3D seismic, together with urban constrains, are preventing of the possibility to have new 3D seismic information. In those regions with available previous 2D seismic data we propose a methodology which provides to the interpreters, at a very low cost, a reasonable solution to have a 3D seismic data set. The geologic complexity will be a very important condition in understanding to achieve the final quality required for the obtained 3D volume. This data could solve not only many geometric uncertainties but define major structure alignments and some stratigraphic features too. This 2D to 3D technique basically consists of a prestack migration using 24 offset planes, limiting with a structure control, and using the spatial propagation of the migration operator. The results of this data treatment showed a homogeneous and consistent distribution of each processing attributes.