

IR10

## Exploration of regions with stratigraphic trap potential using seismic inversion and spectral decomposition techniques

S.M. SeyedAli\* (DANA Geophysics), I. Maghfouri Moghadam (Lorestan University) & M. Jalali (Shahid Beheshti University)

### SUMMARY

---

Exploration of new hydrocarbon prospects is a significant challenge in petroleum industry. Conventional methods of seismic data interpretation provide the necessary tools for identification of main structures such as anticlines and faults which are capable of hydrocarbon reservation. Locating these prospects makes it necessary to come with knowledge of lithology and existing fluid phase in the reservoir. The problem is more robust when stratigraphic traps come in the area of interest. In such cases utilization of quantitative seismic methods is inevitable. This paper focuses on exploration of stratigraphic hydrocarbon traps among the proved structural reservoirs. The applied methodology in this study consists of combination of inversion and spectral decomposition of seismic data. For this purpose forty two seismic lines which belong to different oilfields at mountainous areas of Zagros Folded Belt has been structurally interpreted in the study area (within the area of 4275 km<sup>2</sup>). The interpretation of all the lines will lead in to a three dimensional structural model of study area in the time domain. Having the structural model, it is possible to build an initial model of elastic properties by means of petrophysical well logs data. This model will be used in inversion algorithm to obtain acoustic impedances model. The obtained results from the inversion process illuminate the gradual lithology changes between the structures. Due to the overlapping among the acoustic impedance values in geological formations lithology, spectral decomposition of seismic data has revealed the existing ambiguity in lithology determination of interest zones. This is done by preparation of different iso-frequency sections from seismic data to determine the high absorption energy formations such as anhydrites which lack the chance of hydrocarbon reservation. Finally distribution of sand relative to anhydrite, obtained from inversion and spectral decomposition methods, which was in good agreement with sedimentological and stratigraphic results suggests probable stratigraphic traps between proved structural fields.