

SOME STRUCTURAL FEATURES OF THE PERIADRIATIC DEPRESSION IN ALBANIA

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ABSTRACT

According to the geological mapping, in the western part of the PAD (Periadriatic Depression), the Mio-pliocene anticlinal folds do not outcrop with all their elements (flanks, periclinal), whereas the synclinal folds are buried under Quaternary deposits. There are also anticlinal structures which are buried under Quaternary deposits.

The contribution of seismic exploration is paramount not only to the morphology of anticlinal folds that outcrop partially, but also to the synclinal and anticlinal folds buried under Quaternary deposits such as the Semani anticlinal fold, Myzeqeja and Karavasta synclines etc.

The disjunctive tectonic is especially unobservable by the surface geology; thus all the Mio-pliocene anticlines are complicated in their up-down flanks with faults of "overthrust" type.

In some anticlines, "flower" structures of the faults are formed such as in Ardenica, Divjaka, etc. As regards seismic exploration, there have also been observed some transversal tectonics, among which, that of Lushnja is the most important.

The above mentioned data obtained by the seismic lines are proved by many drilled wells on oil and gas exploration in PAD.

INTRODUCTION

The authors of this paper are also co-authors in the project "Neotectonic Map of Albania in 1:200.000 scale" sponsored by the Science and Technology Committee of Albania.

In the framework of this project, the authors have obtained geological data from numerous seismic lines performed in PAD by the Seismic Expeditions of the Seismic-Gravimetric Enterprise, Fier in the recent decades.

According to the works performed it results that the unobservable geological data by the geological mapping, are evidenced in the seismic lines.

Thus the entire morphology of Mio-pliocene anticlinal and synclinal folds, a part of which has been buried under Quaternary deposits, as well as the tectonic faults have become evident by the seismic lines.

There have been observed tectonic faults of the overthrust type which complicate the flanks of anticlinal folds; in some of these structures, faults of "flower" type have also been formed.

The transversal tectonic may be encountered in the seismic lines as well.

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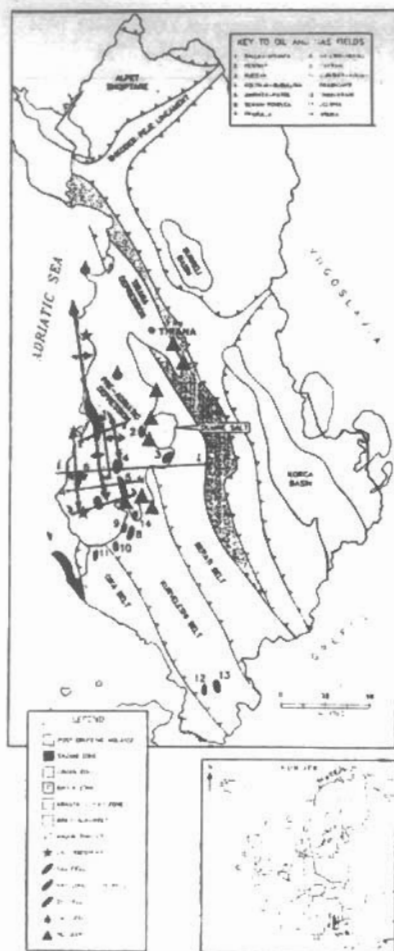


Fig. 1

Lushnja-Elbasani is important in the region of the study (Aliaj Sh., 1982).

In the eastern border of the Depression, in the Dumrea Zone, the active evaporite diapir outcrops; in its flanks it deforms not only flysch deposits, but also molassic ones up to Pliocene.

The PAD has as a general tendency, its plunge during the neotectonic stage and only at the beginning of Quaternary it comes out of the sub-water.

The compressive regime occurs in the Depression at present (Aliaj Sh., 1987).

THE CONTRIBUTION OF SEISMIC EXPLORATION TO THE GEOLOGICAL STRUCTURE STUDY OF PERIADRIATIC DEPRESSION

The geological structures of the Depression in general and that of its western part in particular, which is treated in this paper, is already well known, relying on the seismic exploration performed on it, by means of numerous cross and longitudinal seismic lines.

According to the geological mapping of the western part of the Depression, the top of anticlinal structures of the belt Krapsi-Ardenica-Divjaka-Durresi

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GEOLOGICAL SETTING

The region in the study includes the western part of PAD which constitutes the coastal part of Albania from Vlorë to Ulqini and it is located over the Outer Zones.

The molassic formation that constructs this Depression is made up by Middle Miocene up to Pliocene deposits. The PAD is situated in its Eastern and Southern borders, over the folded structures of the Ionian and Kruja Zones.

Quaternary deposits, as a rule, are placed in unconformity over Mio-pliocene folded deposits, with an almost horizontal extension. The western part of PAD is constructed by anticlines and synclines of structural belt form with northern and north western extension, which from west to east are as follows:

- Povelca-Semani anticline
- Karavasta syncline.
- Krapsi-Ardenica-Divjaka-Durresi anticlinal belt.
- Myzeqeja syncline
- Lushnja-Kavaja anticline.

In the coastal part as well as in the Adriatic shelf, Mio-pliocene anticlinal and synclinal are entirely buried under Quaternary deposits.

In general, the top of anticlinal structures is constructed by Pliocene deposits.

The Periadriatic Depression is permeated by longitudinal faults of overthrust type which complicate the anticlinal structure flanks.

In the Depression there also occur transversal dislocations, among which that of

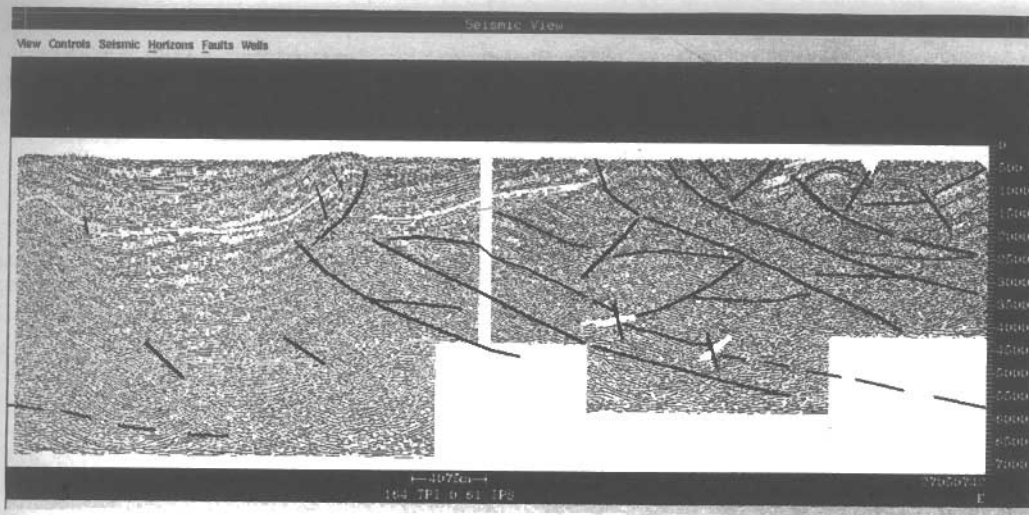


Fig. 2

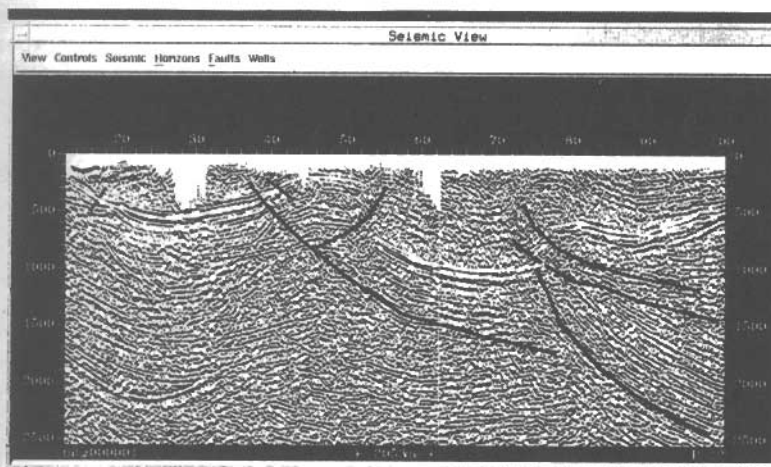


Fig. 3

not only the folded form, but also the disjunctive tectonic have been observed in the cross seismic lines.

Thus, in fig. 3, in its center, there is presented the anticlinal structure of Prakulla situated over a "flower" structure of faults, among which the western overthrust is primary.

The fault has an eastern dip $50^\circ - 60^\circ$.

Two synclines develop from West to East and Krapsi anticline becomes evident in the East of the section.

It is observed that even its western flank is complicated with some faults of overthrust type with a smooth eastern dip which detach only the lower part of Pliocene. "Flower" fault system is observed in the whole structural belt Krapsi-Ardenica-Divjaka-Durresi.

Thus in Ardenica (fig. 2) the primary fault is that which complicates the

become evident only partially, as well as any fault which outcrops (the western flank of Krapsi etc).

Seismic exploration has revealed not only the complete morphology of Mio-pliocene structures, but also the disjunctive tectonic which complicates them.

As it is seen,

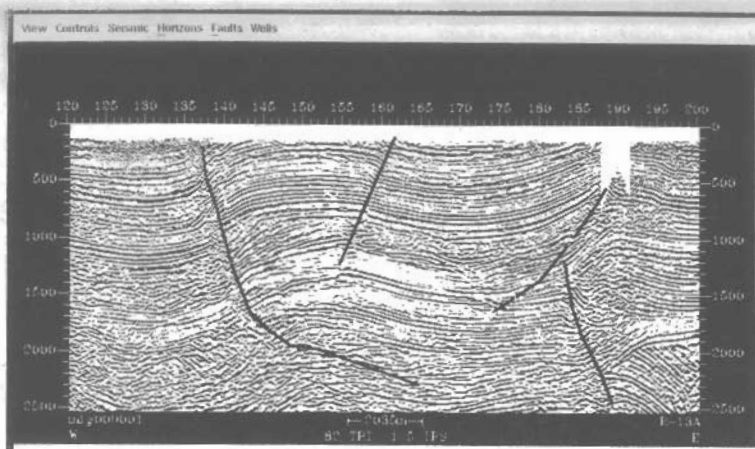


Fig. 4

its of Pliocene base and a little bit above it, forming "flower" type faults. From the other side, according to seismic exploration in Divjaka structure (fig. 5) as the primary fault of the overthrust type is that which complicates the western flank of the structure (with an eastern dip 50 - 60) Divjaka structure is complicated even by secondary faults (constituents of "flower" system).

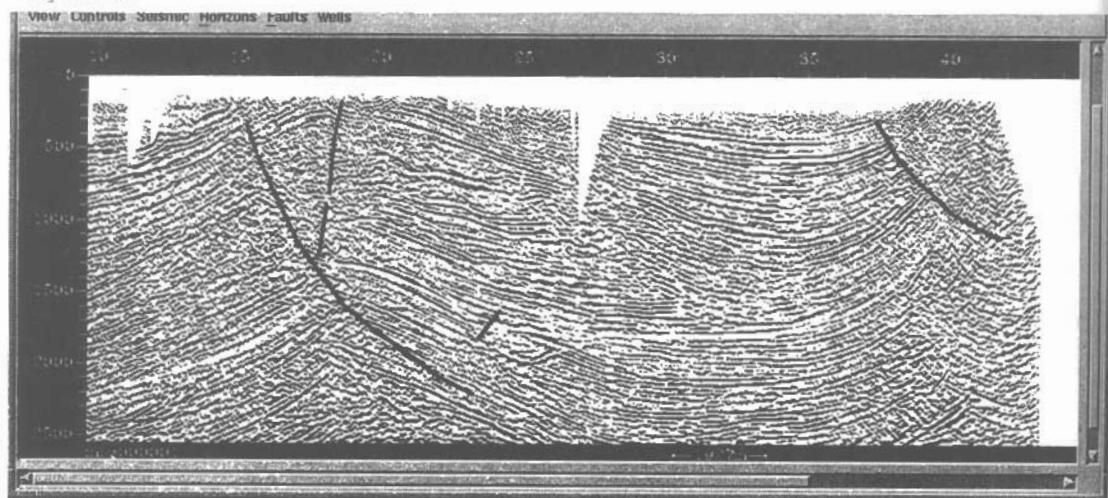


Fig. 5

In the East of Ardenica structure, in the seismic sections, there is clearly observed the discordant location of Miocene molasse over the buried structures complicated by faults of the Ionian Zone.

A correct relation of seismic exploration with well data has made it possible even the time dating of fault formation.

In the seismic sections, even the synclines which do not outcrop are clearly evident, such as Myzequja and Karavasta synclines. It also results that the synclines are wider than the anticlines in the Depression.

Undoubtedly, the neotectonic of the region in study cannot be regarded apart

eastern flank of the overthrust type structure with a western dip $60^{\circ} - 70^{\circ}$, which intersects the whole Pliocene thickness.

In the western flank of this structure, there are observed some faults of small amplitude, with an eastern dip, which intersect only the depos-

from the structural construction of the sub-depth and early tectonic.

The faults treated above are new in general (Pliocene and post-Pliocene) whereas some others are re-activations of old faults or their consequences. The seismic data contributing considerably to the geological-tectonic structure of the sub-depth, provide another more developed tectonic for the older deposits.

So for e.g. under the neogene syncline of Myzeqeja, the carbonate structure of Patosi-Verbasi departs in the west, by means of an overthrust fault westward, with a very considerable amplitude which develops up to Upper Miocene level (fig 2).

From what we displayed above, we may say as conclusion that in the neotectonic and tectonic studies of the zones covered by Quaternary deposits or shelf waters, the seismic exploration helps considerably in the evidencing of the faults, their sorts, amplitude magnitude as well as the age of their formation.

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