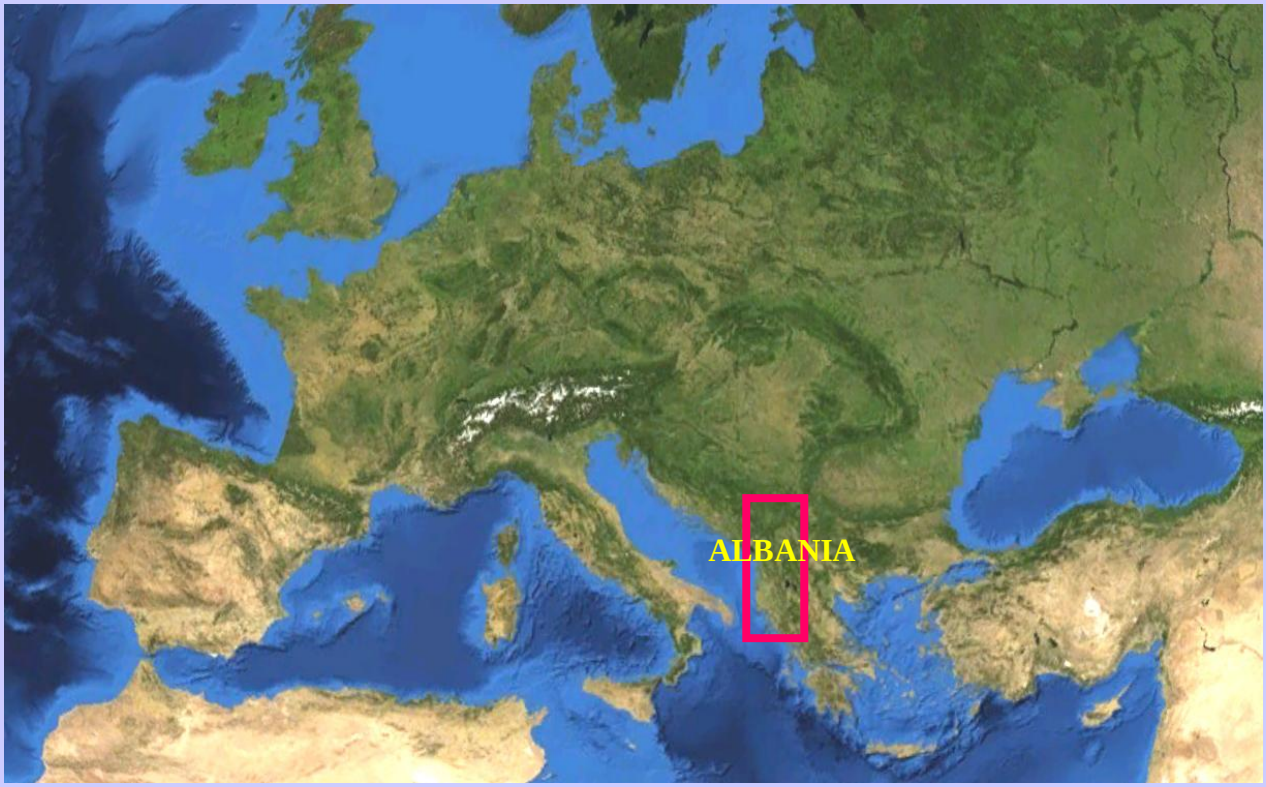


PETROLEUM EXPLORATION AND PRODUCTION OPPORTUNITIES IN ALBANIA

ALBANIA

CONTENTS:

I. COUNTRY OVERVIEW

I.1 GEOGRAPHY

Albania is situated in the Southeast of Europe, on the eastern shore of the Adriatic Sea, with Montenegro and Kosovo to the north, Macedonia to the east, and Greece to the south, whereas in the West it is bordered by the Adriatic and Ionian Sea. Albania is composed of two major regions: a mountainous highland region (north, east, and south) constituting 70% of the land area, and a western coastal lowland region that contains nearly all of the country's agricultural land and is the most densely populated part of Albania.

Albania has a very favorable geographic location as well as suitable climate. It is connected with all the countries via land, sea and air routes. The two main ports are situated in Durres and Vlore, whereas the civil airport of Albania is Mather Teresa, about 25 km from the capital Tirana.

The country is characterized by Mediterranean climate consisting of hot and dry summer, with long days of sunshine, mild winter and abundant rainfall. The average annual precipitation is 1,300 mm.

I.2 HISTORY

As part of Illyria in ancient times and later of the Roman Empire, Albania was ruled by the Byzantine Empire from 535 to 1204. After the death of the national hero, Scanderbeg, the resistance of Albanian leaders failed to halt the advance of the Ottomans and the country remained under Ottoman rule for more than four centuries, until it proclaimed its independence on November 28, 1912. From end of 1944 to 1990 Albania has suffered a communist regime. From 1991 a democratic regime has been established in Albania.

I.3 INFRASTRUCTURE

Transportation:

Railways:	total: 447 km
Ports and harbors:	Saranda, Vlora, Durrësi, Shëngjini.
Airports:	Mother Teresa, Rinas (close to Tirana) and Kukësi

I.4 GOVERNMENT AND POLITICAL SYSTEM

Albania is a Parliamentary Democracy. The Parliament of 140 seats is elected every four years through general elections. According to the Constitution, the Parliament (known as the Assembly of Albania) elects the President for a five-year term.

The President appoints the Prime Minister, the highest executive body in Albania. Ministers are nominated by a presidential decree based on the Prime Minister's recommendation. The Parliament gives the final approval on the composition of the Government.

The country is divided into 36 districts grouped into 12 prefectures. The Prefects are appointed by the Council of Ministers. Local elections are held every four years. City mayors are directly elected by voters.

The judicial system consists of the Constitutional Court, the Supreme Court, Appeal Courts and District Courts.

I.5 GENERAL INFORMATION

Population: about 3 million;

Surface: 28,780 km^2. Almost 70% of the area is mountainous, whereas the rest consists of hilly and flat lands. The mountains are situated in the eastern part with the highest peak 2750m (Korabi) above sea level and the flat land**s** are situated along the coast in the west.

Capital: Tirana is the Capital of Albania, since 1920. Its recent population is nearly 700.000. At the same time, Tirana is the main administrative and commercial centre of the country.

Borders: There are 720 km of land boundaries: Kosovo 100 km, Montenegro 187, Macedonia 151 and Greece 282 km. There is a coast line of 362 km.

Currency: The official currency is the Lek, easily convertible in other currencies. During the last years it has been quite stable at a rate about 1 USD = 100 Leks and 1 EUR = 140 Leks.

II. GENERAL GEOLOGICAL STRUCTURAL SETTING OF ALBANIA (Albanides)

Based on the age of the outcropped deposits the geological history of the Albanides is included in Pre Alpine and in Alpine cycles.

The relative movements of the Adriatico-Apulian sub plate, in between, the Euro-Asiatic and African plates during the period of time from Mesozoic to Tertiary, mainly controlled tectonic evolution of the Albanides.

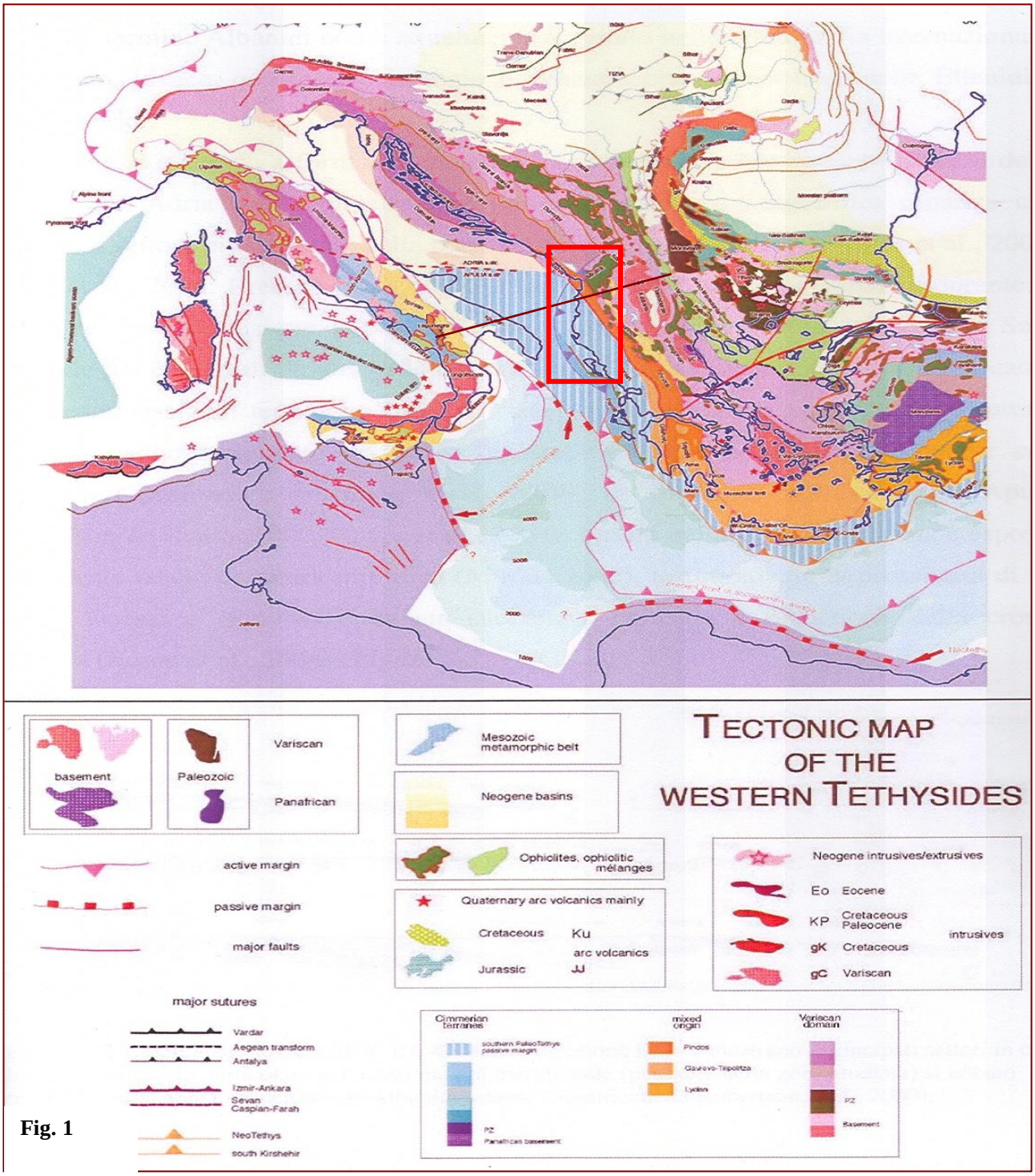


Fig. 1

During the Jurassic and most of the Cretaceous the Adriatic-Apulia sub-plate moved in the east and northeast directions, relative to Euro-Asia plate. At this time it was mainly affected by the extensional tectonics, thus forming a series of parallel ridges and furrows. Owing to the different depositional environments, these alterations of horst and graben structures formed a series of tectonic zones with alternating deep and shallow marine lithofacies. As result of a further Adriatic-Apulia sub plate movement towards SE during the Late Cretaceous, the tectonic style changed from **extensional** to **compression.**

During the Neogene, the northwards movement of the African Plate enhanced compression, leading to a large scale folding and thrusting in the SW direction in Albania and NW of Greece. The southern branch of the Mediterranean Alpine thrust belt, which comprises a continuous mountain range from Dinarides in the North, in former Yugoslavia, to the Albanides, in Albania, and the Hellenides in North West of Greece.

The relations between *Apennines, Dinarides, Helenides and Albanides* are clearly shown in Fig. 1 & 2.

Based on magmatism spread lithology and tectonisation degree, the Albanides are divided in two main units: **Internal Albanides** and **External Albanides**.

The Internal Albanides are characterized by a developed magmatism and by the intensive tectonics which has led to the overthrusts and tectonic napes.

The Internal Albanides are further subdivided from East to West in the following zones: Korabi, Mirdita (main ophiolite bearing zone), Albanian Alps and Gashi (Fig. 4).

The above mentioned compression tectonics, with overthrusting toward SW, formed two post orogenic sedimentary basins: Burreli Basin in the north and Korca Basin in the south-eastern part of Albania. These deposits overlie transgressively on Mirdita zone and partially on Krasta-Cukali zone.

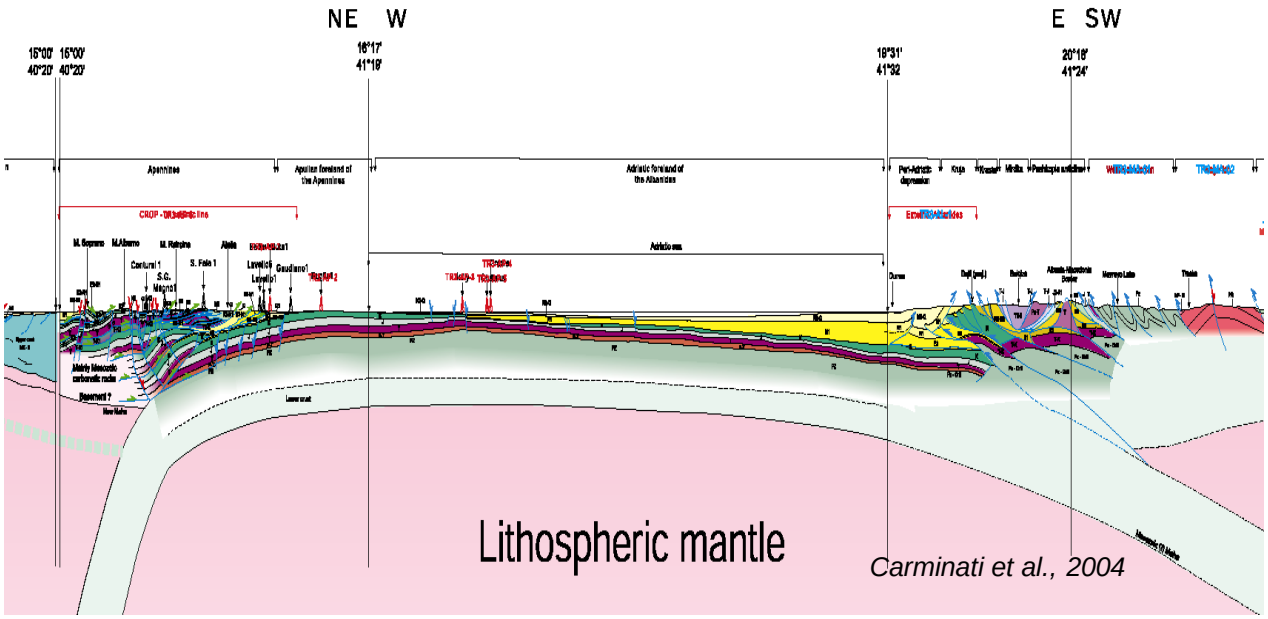


Figure 2 Relation between Apennines and Albanides

Even though, **the External Albanides** are characterized by the lack of magmatism and by more regular structural models, compared with Internal Albanides, they are highly affected by a considerable thrusting of the tectonic zones and/or structural belts westwards.

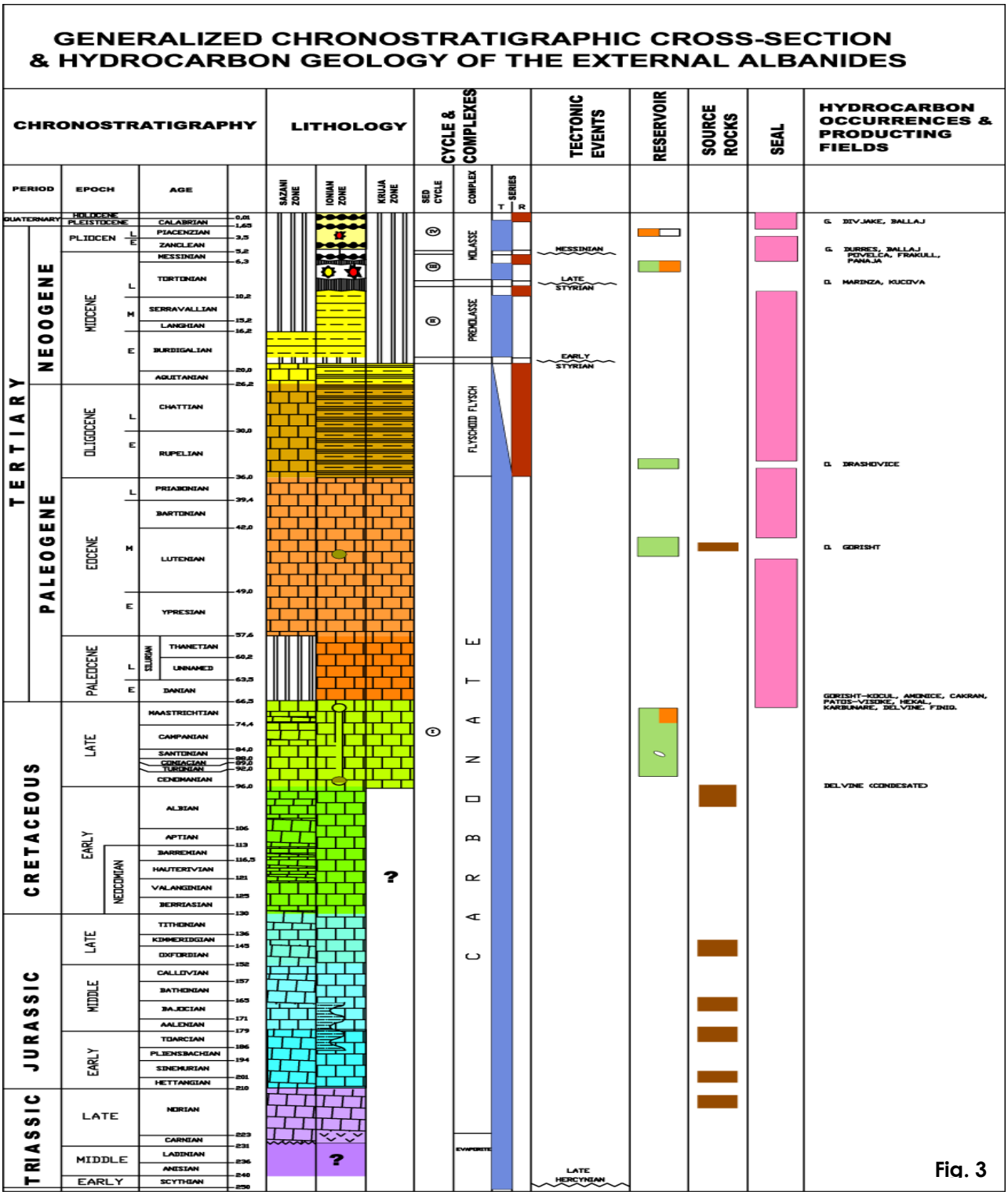
From east to west, the External Albanides comprise the Krasta-Cukali zone, the Kruja platformic zone and, further to the west the Ionian trough and Sazani platformic zone.
Northward the overlying Peri-Adriatic Depression masks the Ionian and partly Kruja tectonic zones. Westwards offshore, the Peri-Adriatic Depression is unified with the South Adriatic Basin, which overlay the Preapulian (Sazani zone) and Apulia Platform (Fig.2).

II.1 Tectono-stratigraphy

Based on the age of the outcropped deposits, the geological history of the Albanides is included in the pre-Alpine cycle (Ordovician- Devonian-Carboniferous-Permian) and in the Alpine cycle (Triassic-Quaternary). These two cycles are separated by the tectogenesis of the Variscane Cycle (at the end of Paleozoic) which is noticed in Korabi, Gashi and Mirdita zones ("Albanian Alps").

II.1.a Pre-Alpine cycles (Ordovician-Permian)

During the Ordovician-Permian, the Korabi zone represented a marine area with generally pelagic conditions of the basin in which clays, siltstones, and rarely radiolaritic cherts and limestones with tentaculite were deposited.



As a result of a slight tectogenesis in the Devonian, there were noticeable eustatic movements of sea level which led to shallows, deepening and a volcanic activity of effusive nature.

After a relative deepening at the end of the Devonian and during the Carboniferous, the more eastern tectonic zones underwent uplifting movements and erosion. In their submerged sectors due to block tectonics, the pelagic (Carboniferous-Permian) clayey siliceous carbonatic sedimentation

continued and quartzose sandstones, conglomerates and biointraclastic limestones were sometimes encountered.
At the end of the Permian, the tectonic zones of Korabi, Gashi, Mirdita and Albanian Alps underwent folding, tectonising and emerging as a result of Variscan tectogenesis.

II.1.b Alpine cycle (Triassic-Quaternary)

This cycle start with transgressive placement of sandstones and conglomerates of "Luma" suite (top of Permian-Verphenian) on the oldest deposits.

The "Luma" suite deposits were formed by the intensive inflows of the clastic matter in the basin. Along with them, in the deeper sectors continued the action of the turbidity currents and the formation of intercalations of sandstones and conglomerates with radiolaritic and intraclastic limestones.

The presence of evaporates in the Ionian zone and Dibra unit (Korabi zone) indicates shallow sea lagoonal conditions with high salinity.

After sedimentation of the terigenous and evaporitic Permian-Verphenian series during Verphenian and Anisinian times, sedimentation in open and shallow sea conditions of the terrigenous-carbonatic deposits continued in the eastern zones.

At the and of Anisinian, with the Triassic split of Pangea, the rifting of the Apulian and Pannonian Plate began and the Vardar Ocean was formed as part of the Tethys Ocean. This process was associated with vigorous volcanic and subvolcanic activity.

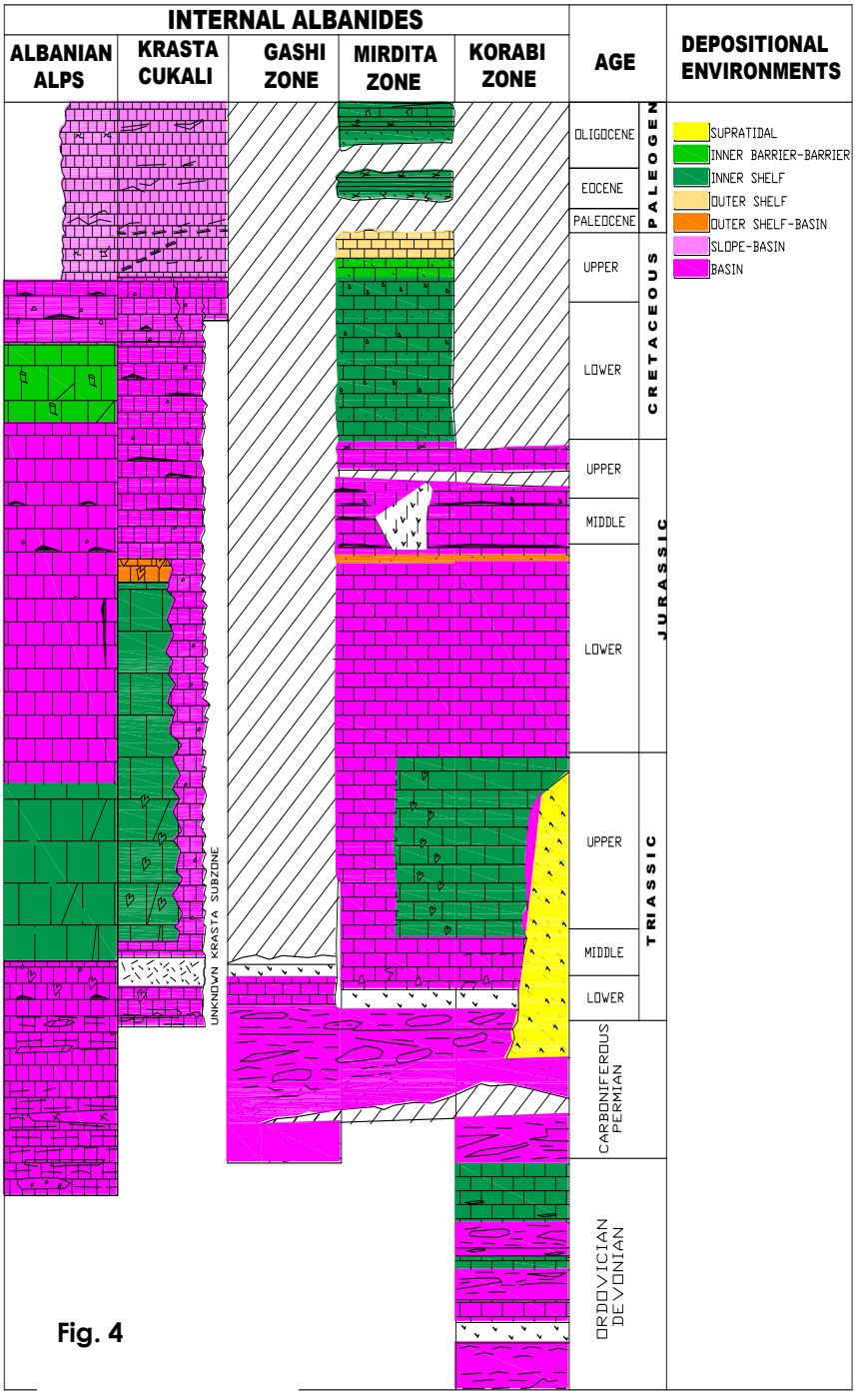


Fig. 4

The general deepening of the basin at the end of the Anisinian was followed by its differentiation, which is reflected in pelagic and neritic sedimentation during the Ladinian. During this time, the Korabi and Krasta-Cukali zones are individualized as troughs with pelagic sedimentations of biomicritic limestones and cherts with radiolarian and pelagic bivalve animals, whereas the Mirdita and Albanian Alps zones are presented as shoals with biomicritic and biospotites sediments and reef and pre-reef carbonates, where algae and corals flourished.

In the upper Triassic, Ladinian sedimentation conditions are preserved. In Mirdita and Albanian Alps zones (after erosion) strong beds of megalodont and algae limestones were formed.

In the Ionian and Sazani zones, these deposits (Upper Triassic) are represented by dolomites and dolomitic limestones of neritic facies. In the Ionian zone, the evaporitic formation was formed under the dolomites. At the beginning of the Lower Jurassic (Lias), in the Ionian zone differentiations are noticed at the bottom of the basin which are associated with the formation of two different carbonatic facies: 1- Pelagic facies "Delvina" represented by crystalline limestone with cherty lenses and 2- Neritic facies "Cika" represented by algal limestones and dolomites.

At the base of Liassic deposits, a noticeable horizon of bituminous shales is encountered.

At the beginning of the Lower Jurassic (Lias), in Ionian zone differentiations are noticed at the bottom of the basin, which are associated with the formation of two different carbonatic facies: Pelagic facies "Delvina" represented by crystalline limestone with cherty lens, and neritic facies "Cika" represented by algal limestones and dolomites.

In Toarican, the differentiation of the basin bottom of the Ionian Trough becomes more evident, having an islands archipelago view. In the central part of the Ionian zone, the lithofacies of marly schists with possidonia is formed, whereas on both lateral sides the lithofacies of limestones and dolomitic limestones with Ammonites, known as "Ammonitico Rosso", are formed. It is relatively shallower than the "Possidonia" facies.

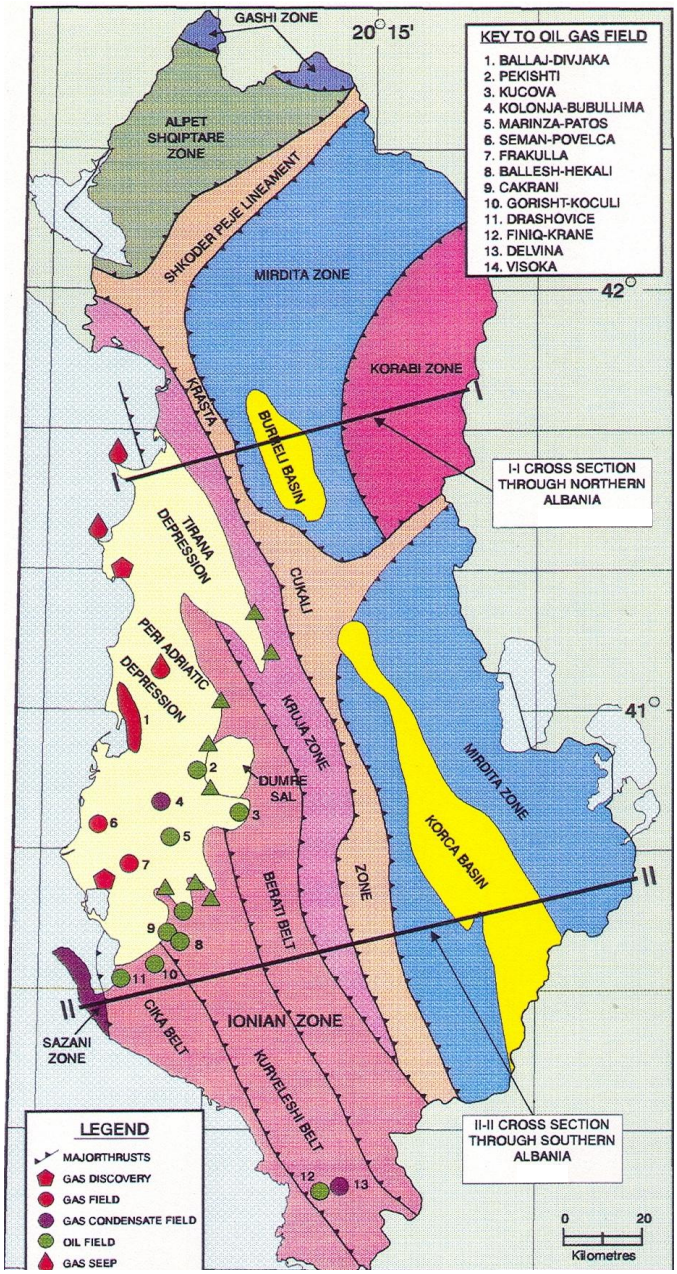


Fig. 5 Tectonic units and oil fields in Albania

Middle Jurassic in the Ionian zone is represented by the lower cherty package which consists of limestones with numerous cherts followed by micritic and biomicritic limestone deposition rich in cherts.

During the Upper Jurassic the deepening of the Ionian Trough continues and is associated with a marked increase of siliceous matter (the upper cherty package) which is encountered in the entire Ionian zone.

In the Tithonian-Berriassian, the sea depth reaches the maximum values, covering the Liassic-Neritic deposits. These deposits are overlain unconformably on micritic-biomicritic limestones rich in tintinide. In the Sazani zone the Jurassic depositis are represented by dolomites and dolomitic limestones. During and after Late Lias, in the more eastern zones, along with the regional deepening which brought about the complex and differentiated warping of the Korabi, Mirdita, Gashi and Krasta-Cukali zones, the oceanic opening intensifies and ophiolite formation stars.

In Krasta-Cukali zone, during the Jurassic, flag-like siliceous with pelagic bivalves were formed. In the Albanian Alps zone, Jurassic is represented by biomicritic limestones with involutina Liassica, crinoidal clasts and pelagic bivalves followed upwards by flag-like micritic, biomicritic limestones and cherty lenses.

In Korabi and Mirdita zones, the deposits of the Lower Jurassic are represented by clayey limestones with siliceous interlayers. In the upper part of the section, the ammonite level of Toarcian is encountered. Ophiolites with plutogenic and volcanogenic facies were formed in abyssal conditions during the Middle and Upper Jurassic. They are encountered in Mirdita zone.

A very condensed of carbonatic-siliceous sediments was deposited on both sides of the newly formed oceanic ridge, which moved laterally in opposite directions.

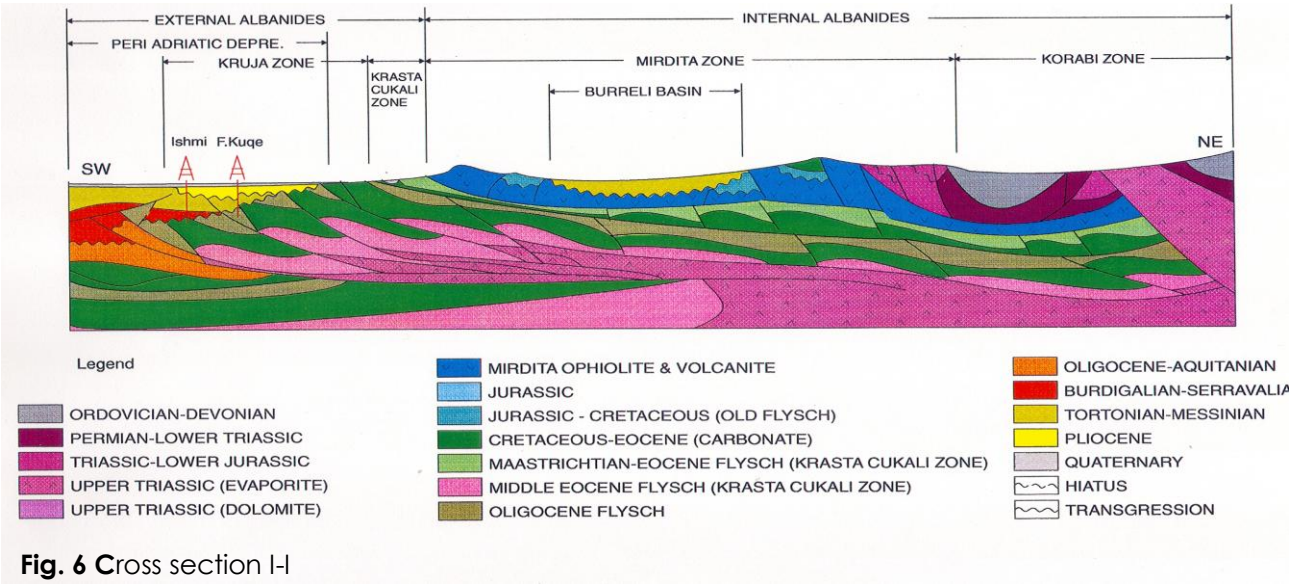


Fig. 6 Cross section I-I

The opening of the Southern Atlantic in the Lower Cretaceous forced the African Plate to move eastward and, in Albanides time, northward to the European Plate. This even marks the end of the expanding stage of the Vardar Ocean and marks the beginning of its subduction and compression. This intensive subduction consumed the oceanic crust of the Vardar Ocean although some fragments of this oceanic crust were overlapped the Apulian plate margin.

The tectogenesis of Jurassic-Cretaceous age of the main tectonic phases in the Albanides was associated with acidic and mesoacidic magmatism and caused the folding and thrusting of the Korabi, Gash and Mirdita zones westward. This phase is reflected in the formations of the old flysch of Upper Jurassic-Lower Cretaceous age in the Mirdita and Korabi zones and in the Krasta subzone.

In the Korabi and Mirdita zones, the Lower Cretaceous is of a flyschoidal nature and is represented by marly-sandy-silty intercalations with conglomerates and volcanogenic-sedimentary rocks. The Upper Cretaceous is represented by biomicritic limestones and biointraclasts of neritic facies as well as micritic, biomicritic limestones and biointraclasts of the pelagic facies (Mirdita zone).
In the Albanian Alps zone, the Cretaceous deposits are represented by medium to thick bedded limestones rich in rudists, gastropods and algae, which are covered by micritic and marly limestones with siliceous lenses.

In Krasta-Cukali zone, the Cretaceous is represented by clastic limestones and interclasts (Kosore Suite) on which lies the new flysch of Maastrichtian-Eocene hiatus on the limestone.

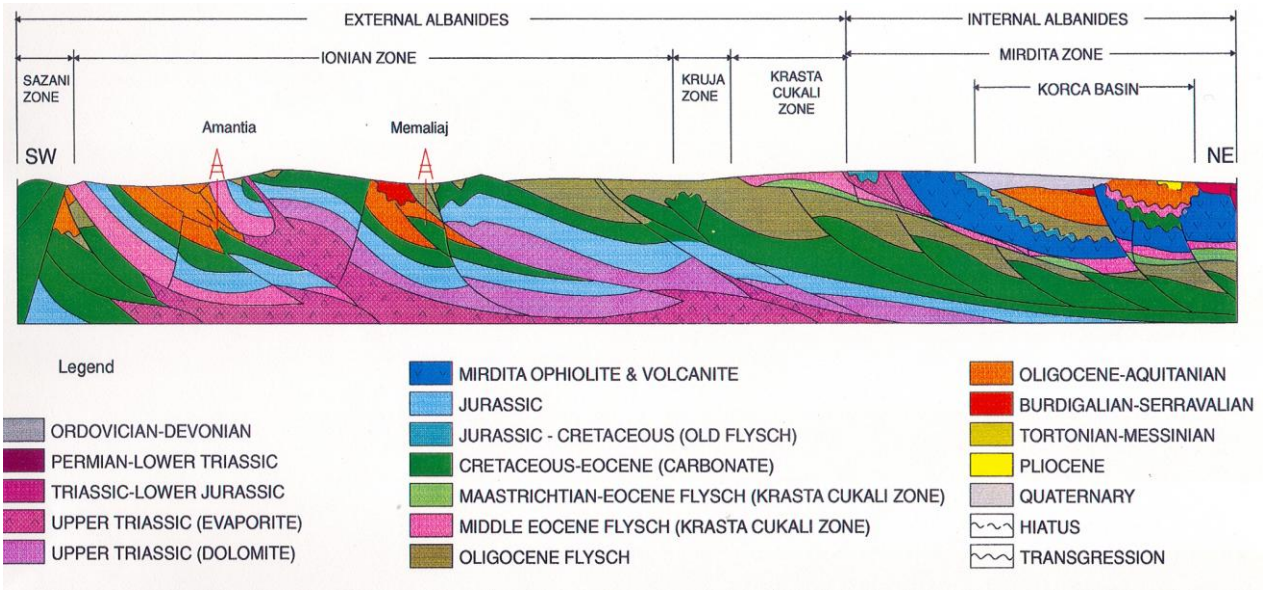


Fig. 7 Cross section II-II

In the Kruja and Sazani zones, the Cretaceous deposits are of neritic and are represented by dolomites, dolomitic limestones with rudists, gastropods and forams.

In the Ionian zone, the Cretaceous is of pelagic facies and is represented by porcellaneous, clayey limestones and bituminous clays (Lower Cretaceous) on which lie phosphatic-biomicritic limestones and intercalations of organogenic-clastic and pelitomorphic limestones (Upper Cretaceous). The increase of the clayey matter etc. show that the inversion and the regressive series of deposits had begun. At this period a reverse movement is noticed in the External Albanides. As the Ionian trough was undergoing a relative lifting, the adjacent zones of Kruja and Sazani were undergoing a relative deepening.

At the end of the Cretaceous (Maastrichtian), the laramik tectogenesis began, which has folded, tectonised and transformed the Cretaceous carbonatic formations and Jurassic-Cretaceous flyshoidal ones of Mirdita and Krasta-Cukali zones into erosional zones. As a result of this, during the Maastrichtian-Paleocene-Eocene, in the Krasa-Cukali and Albanian Alps zones, the terrigeneous flyschoidal formation of pelagic facies was formed. It is represented by clayey-sandy-marly intercalations and turbiditc limestones, slumps and olistolyths of different rocks. In the Korca basin, during this time, the sediments of hemipelagic facies were formed. They are represented by conglomeratic-siltstone and clayey intercalations. In the Kruja and Sazani, to a lesser extent in the Ionian zone, the laramik tectogenesis effect is reflected with the hiatus of the Palaeocene-Eocene deposits on the oldest ones. During the Palaeocene in the Kruja zone, and the Eocene in the Sazani zone, the detrital limestones (biointroclasts) of the neritic facies rich in miliolids and textularids were formed.

During the Paleocene-Eocene, in the Ionian zone, the pelagic conditions of the Upper Cretaceous paleogeography are still preserved, reflected by the formation of micritic limestone and detrital limestone intercalations.

At the end of the upper Eocene, the Krasta-Cukali zone is tectonised and emerges, whereas in the Kruja and Ionian zones the sedimentation of flysch formation begins. In the Lower Oligocene, the Kruja zone regions fill with flysch deposits reaching a thickness of 3000-4000m and intensively submerge, becoming in this way the "subduction front". In the Kruja and Ionian zones, the Oligocene-Aquitanian deposits are represented by intercalations of flysch-flyschoidal-sandstone-silts with underwater slumping horizons and organogenic-clastic limestones which became thicker and coarser eastward and upward (in the younger levels). In the Sazani zone, the Oligocene is represented by biomicritic limestones of neritic facies. The Chatian-Aquitanian is represented by massive carbonatic clays which lie with hiatus on the Upper Cretaceous limestone. The structural

development of the special tectonic units in the External Albanides during the Oligocene-Aquitanian is intensified and associated with noticeable reductions of the deposit thickness of up to 10 times, both at the centers of synclinals (represented by flyschoides) and at the tops of anticlines (represented by clays).

At the beginning of the Middle Oligocene, the Mirdita zone was impacted by vertical graben tectonics creating the Korca basin, which starts to be flooded by the sea on the south-eastern sectors. During the Oligocene and Aquitanian, in the Korca basin the molassic formation was formed. It is represented by intercalations of sandstones, conglomerates and clays. The presence of coals indicates littoral lagoonal conditions.

Along with the transgression expansion up to the Langhian, which is reflected by the appearance of marls in the Burdigalian and the increase of clayey matter etc, the basin has suffered the vertical tectonic oscillations which are obvious in the hiatus position of the Aquitanian and Burdigalian deposits.

As a result of the continuous development and migration to the west of the tectogeneses, the Kruja Zone folds and emerges at the end of the Lower Oligocene. The eastern part of the Ionian zone (Berati belt) floods and emerges at the end of the Upper Oligocene, whereas the coastal line continues its regression westward.

From the Oligocene to the Aquitanian, the sea regression is intensified and at the end of the Aquitanian the western sectors of the Ionian zone are tectonised and emerged, and the tops of the anticlinal structures are eroded. The sedimentation continues without interruption in synclines.

During the Burdigalian, the sea suffers transgression and in pelagic conditions marls are deposited, intercalating with marly-clays, sandstones and lithothamnion limestones

Deposits of these sediments, together with those of the Langhian and Seravallian, which formation in some places is represented by a two stage construction, mask the underlying carbonatic structures.

The formation of pre-molasses was associated with a marked tectonic development reflected by the formation of new tectonic incidents, the intensification of thrusting degree and the creation of backthrust tectonic incidents on the eastern flanks of the structures. This structural-tectonic development becomes more evident in the tectogeneses phase of the beginning of the Tortonian, which finally emerges in the central and western sectors of the Ionian zone (Kurveleshi and Chika belts) and in the Korca Depression as well.

The Peri-Adriatic Depression molasses of Tortonian-Messinian-Pliocene consist of a considerable number of sandy-clayey mega-sequences (going upwards). In some cases these mega-sequences become more complete and begin with conglomerates and clastic limestones with lithothamnion, and end with clays, coals or gypsum. From south-east to north-west, the thickness of the molasses increases, reaching 5000 m. The clayey matter content also increases. As a result of sedimentation conditions changing in the Messinian, the clayey-sandy lithofacies was formed in the eastern of Peri-Adriatic Depression and the clayey-gypsum lithofacies in the western part.

The Tortonian transgression created the Burrel basin, in which conglomerates, sandstones, siltstones, clays and coal beds were formed. Before and after the formation of Pliocene deposits represented by clays, sandstones and conglomerates, two tectogenesis phases are recognized which, together with the pre- Tortonian one, give the final shape to the structural elements.

During the molassic cycles, the structures and structural chains of the Ionian, Kruja and Sazani zones have increased the thrusting and backthrusting degree as a result of a powerful tectonic development. This phenomenon often led to the formation of tectonic blocks (within the carbonatic section) of imbrication in nature (as a result of the collision of the limestones of the adjacent structures), and to the partial and complete masking of the expected anticlinal structures from the evaporates and the adjacent eastern structures.

By the time the Peri-Adriatic Depression molasses deposits were formed and folded, the adjacent carbonatic structures of the Ionian and Sazani zones, as a result of the intensive submerging of southern Adriatic basin, were "absorbed" towards the north-west and were rotated anti-clockwise, increasing their tectonic complication degree. One of the consequences of this process is the formation of backthrust tectonic incidents, encountered in the eastern and southern edge of the Peri-Adriatic Depression.

III. PETROLEUM GEOLOGY

III.1 SOURCE ROCKS

The geochemical studies have proved the existence of some source rock levels beginning from Silurian to Paleogen (Table 1).

In the Sazani zone a source horizon is encountered in the well Sazani-1 which is related to the bituminous, dolomitic schists of the Upper Triassic with a thickness of 10m. Maceral components show that the organic matter of this horizon is of type II/III, able to generate gaseous hydrocarbons or fat gas**.** The Vitrinite Reflectance values (Ro=0.87%) show that this organic matter is matured (Fig. 7).

In the Ionian zone, there is evidence of some source rock levels which are related to clayey-marly-dolomitic-bituminous schists of the Upper Triassic-Cretaceous.

Source rocks of the Upper Triassic-Lower Jurassic prove to have Total Organic Carbon (TOC) values of 4.96%-29.16%. Based on the values of Hydrogen Index HI=617-778 mg CH/gr and the maceral components, the results show that the organic matter is of type I, able to generate liquid hydrocarbons. The Vitrinite Reflectance (Ro=0.65-0.7%) shows that the organic matter is matured.

TOC is 0.17-15.66 % for the source rock of the Jurassic. The maceral components of the organic matter show that it belongs to the type I-III, able to generate liquid and gaseous hydrocarbons. The Vitrinite Reflectance values Ro>0.5 show that the organic matter is matured.

TABLE 1. Source Rocks in Albanides

NO	Zones	Age	Lithology	Sample Location	TOC (%)	HI MgrHc/gr	Tmax	Kerogen Type	VR/E
1	**Sazani**	Upper Trias.	Dolom/ Shale	Well	0.16-1.72	162	424	II/III	0.87
1	**Ionian**	Upper Trias.	Shale/Clay/limes	Outcrop	0.02-38.5	617	416	I	0.54-0.88
2		Low. Jurassic	Dolomite Shale	Outcrop	0.0.1-52	450	434	I/II	0.55-0.75
3		Toarcian	Possidonia Shale	Outcrop	0.09-3.7	588	432	I/II	0.5-0.6
4		Mid. Jurassic	Clay	Well	2	505	424	II	0.57
5			Shale	Outcrop	0.04-9.4	508	432	I	0.52
6		Upp. Jurassic	Shale	Outcrop	0.03-5.9	520	430	I	0.45-0.57
7		Low.Cret.	Shale	Outc/ Well	0.02-27	521-700	413	I/II	0.45-0.54
1	**Kruja**	Upper Creta.	Dolomite/shale	Outcrop	0.18-4.2	540	427	I/II	0.3-0.403
1	**IO,KR,SA PAD**	Aquitan/ Burdigal	Clastic	Outc/ Well	0.19-1.72	71	434	III	0.4-0.5
2		Tortonian-Pliocene	Clastic	Well	0.05-1.62	34.8	431.5	III	0.330-0.28
1	**Krast-Cukali**	Triassic Jurassic	Shale	Outcrop	7.48	85.27	463	III	0.64
2		Cretaceous-Paleogene	Shale	Outcrop	0.5	16.28	455	III	0.52
1	**Korabi**	Silurian	Black Shale	Outcrop	2.48	0	548		2.747

The source rock of Cretaceous with TOC=0.34-26.1 %, HI=272-666 mgHc/gr belong to the type I/II, able to generate liquid hydrocarbons. The Vitrinite Reflectance values Ro=0.42-0.53 % show that the organic matter is in the maturing stage or is matured.

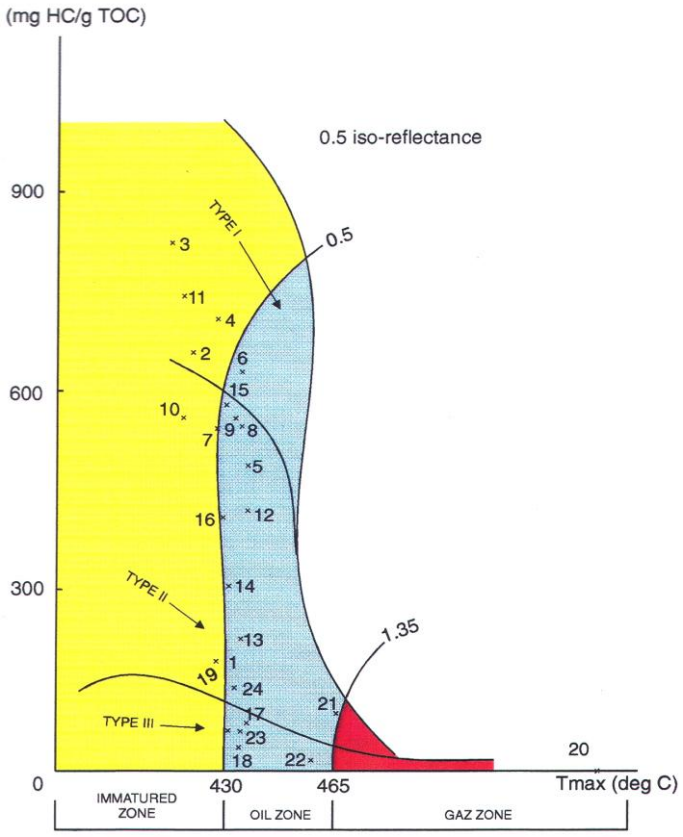


Fig. 8 Type and Maturity of Organic Mater

In the Kruja zone, the source horizon is proved to be related to Upper Cretaceous deposits. The analyses performed for this source rock horizon show that TOC ranges from 0.664 % to 1.05 %. The Hydrogen Index values (HI) as well as the maceral components show that the organic matter belongs to the type I/II, able to generate liquid hydrocarbons. The Vitrinite Reflectance Ro=0.338 % to 0.403 % shows that the organic matter is just starting maturation. The numerous oil seeps encountered on the surface in the Kruja zone prove the existence of source rock which has generated liquid hydrocarbons.

The flysch and flyschoidal deposits of the Kruja and the Ionian zones, based on the maceral components (where the oxidized and wooden components predominate) as well as on the average value of HI=71 mgHc/gr show that their organic matter is able to generate gaseous hydrocarbons.

The Vitrinite Reflectance value Ro=0.335 % show that the organic matter ranges from the unmatured stage to the transitory stage. *Table 1*

The geochemical indexes of the organic matter for the Tortonian deposits in Peri-Adriatic depression such as: HI=34.8 mgHc/g, Vitrinite Reflectance Ro=0.330 % as well as the predomination of the oxidized and wooden composition, show that the organic matter of this deposits is able to generate gas of the biogenic and mixed origin. In some cases, in the organic matter of these deposits, a higher content of Liptinites of continental origin is noticed, which is able to generate unsaturated liquid hydrocarbons (condensate).

In the geochemical indexes of Pliocene in the Peri-Adriatic Depression, changes are noticed compared the Tortonian ones. The changes consist of an increase of the "Oxidized" composition and of the decrease of the Liptinite composition. The organic matter of Pliocene deposits is able to generate dry methane gas of biogenic origin.

In the Krasta-Cukali zone, two source rock horizons are proved. The first horizon is related to the bituminous schists of Triassic-Jurassic (TOC=7.48 %) while the second one is related to the bituminous schist of Cretaceous-Paleocene (TOC=0.5 %). The values of Hydrogen Indexes HI=85.2-16.28 mg Hc/gr as well as the maceral composition for both horizons, show that the organic matter is of type III, able to generate gaseous hydrocarbons. The Vitrinite Reflectance Ro=0.64-0.52 % shows that the organic matter has reached the maturing stage.

In the Internal Albanides only one source rock horizon is proved so far, which is related to black shale within Silurian deposits in Korabi zone. The geochemical indexes of these source rock horizons with TOC=2.48 %, Ro-2.47 % and predomination of Micrinit in the maceral composition of the organic matter, show that the organic matter of this source rock has generated all its potential of prone to gaseous hydrocarbons.
The methane gas seeps, bitumen seeps and very rarely oil seep encountered in the Internal Albanides (Blocks 8, 7, & 1) prove the existence of source rocks which have generated gaseous and liquid hydrocarbons.

The geochemical analyses performed for the Korça Depression for the Paleocene-Lower Miocene indicated TOC=0.86 % for Paleogene deposits and TOC=0.56 % for the Lower Miocene deposits. The main component of the organic matter, Liptinite, shows it to be type II, able to generate fat gas, whereas the Vitrinite Reflectance values Ro=0.412-0.453 % show that the organic matter is at the entrance of the oil window (fig. 8)
Based on the submerged history of the basin it can be said that the older source rock of Mesozoic have entered the window during the Early Miocene (Ro=0.5 %). In the External Albanides, where oil fields are discovered, results show that primary massive migration has taken place during the Middle Miocene (heavy oils), while the generation and massive migration of light oils and condensate has taken place during and after the Pliocene.

III.2 RESERVOIRS

Fig.9 Core sample from Porcellanous limestone (Gorishti Oil field)

Oil and Gas reservoirs have been proved in both the deeper marine carbonates of the Ionian zone and in the clastic section of Peri-Adriatic Depression.

The limestone reservoir in Albania range in age from Cretaceous to Eocene, it is virtually clay-free, massive and represented by micritic and clastic limestone. The main type of reservoir consists of fractured carbonates (Fig. 9), going deeper from the Eocene-Paleocene to Cretaceous is noted that the reservoir storage capacity is largely improved, because of increasing of the secondary porosity, which consists of fracture, and vuggy porosities. Based on some well cores analysis of Cakran oil field, the matrix porosity results to be mainly 2,5 % going up to a peak 6 % for a couple of samples.

Also, from the well core measurements in the Paleocene reservoirs belonging to the Ionian zone (Kurveleshi belt), the fracture porosity resulted to be at a range between 2.4-2.5 %.

The Upper Cretaceous reservoir in Kruja zone, consisting of dolomites and dolomitic limestones, has not been penetrated by any well, thus they are described based on outcrops. Considering the fact those reservoirs in Kruja belonging to neritic platformic facies, good to excellent reservoir properties are expected to be found there.

From the well cores of the Upper Triassic-Lower Jurassic reservoirs in Sazani zone, the effective porosity consisting of intercrystalline, fracture, and vuggy porosities range from 2-10.5 %. In the Lower Cretaceous reservoirs (Sazani zone) the fracture and intercrystalline porosity ranges from 2.6-7.9 %, whereas for the Paleocene–Eocene reservoirs fracture porosity varies from 0.9-1.3 %.

The matrix porosity and vuggy porosity of the Upper Cretaceous reservoirs as measured In A4-1x well cores are respectively 4.3 -10 % and 6-7 %. In the Upper Cretaceous (Apulia Platform) reservoirs consisting of dolomites

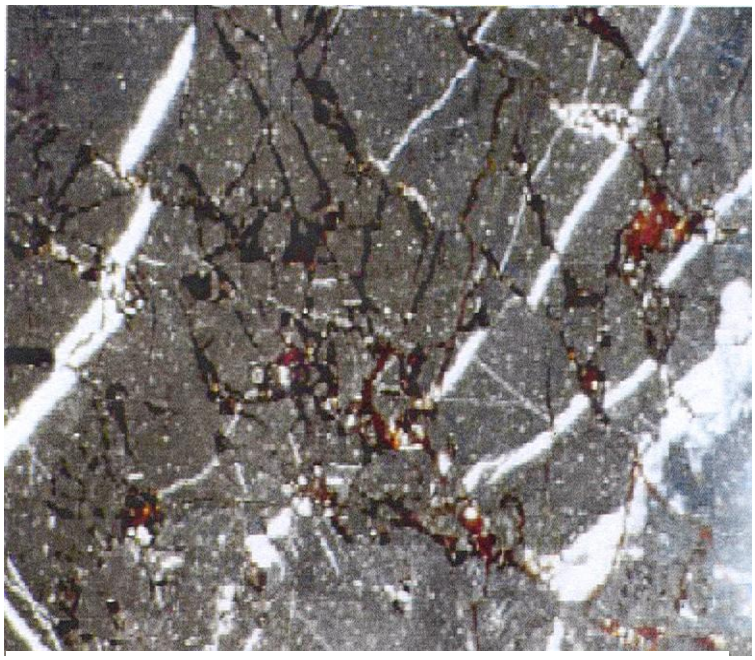


Fig. 9/1 Fractured limestone reservoir

limestone of A5-1x well (Block JONI-5) the total porosity is 13.6 %
Reservoir in some oil fields in the central part of Albania is related to Miocene deltaic sandstones with porosities ranging between 10-30 % and permeability's 200-2000md, such as in Marinza, Patos and Kucova fields. Reservoir in the gas fields of Peri-Adriatik Depression is related with molasses sandstones of Late Miocene (Tortonian-Messinian) or with turbitide sandstones of Pliocene, with porosities ranging between 12-37 %.

III.3 SEALS

Flysch and flyschoidal deposits of Oligocene-Miocene have been proved to be excellent seal in the existing oil fields in the Ionian zone.

Considerable clayey thickness of Tortonian-Pliocene has been proved as well to be a good seal for the gas and oil fields in Peri-Adriatic Depression.

The following can also predicted as good seals:

- Clayey-marl shale of Toarcian, cherty packages of Jurassic and clayey shale of Lower Cretaceous within carbonate formation in the Ionian zone.
- The Old flysch of Jurassic-Cretaceous in Mirdita and Krasta zones and the Young flysch of Mastrichtian-Eocene in Krasta-Cukali and Albanian Alps zones.

III.4 TRAP FORMATION

The main trap formation mechanism in Albania is linked to the compression tectonic regime of Alpine Orogeny, and the resulting overthrusting. This mechanism is valid not only for the carbonate reservoir fields in Albania such as Visoka, Ballshi-Hekali, and Cakran-Mollaj (Fig. 10), Gorisht-Kocul,

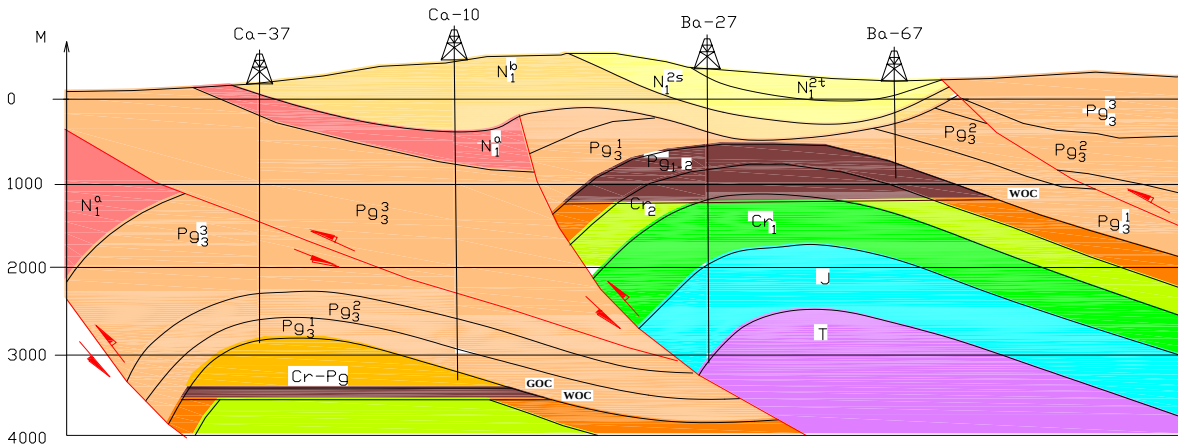


Fig. 10 Cakrani and Ballshi fields (limestones)

Delvina, Finiq-Krane, and Shpiragu Discovery recently made (2001), but as well as for the most traps concerning the clastic sandstone reservoirs proved in Albania such as Patosi-Marinza, Kucova etc. The main folding phases responsible for trap forming in Albania are related to the geological times as follow:

- The Late Eocene/Early Oligocene
- The Burdigalian
- The Tortonian
- The Pliocene to recent

In the Dumrea region, around the salt dome, traps are also partly linked to the diapirism of Triassic evaporates, forming among others, some salt dome flank traps and traps sealed by evaporates such as those proved in Pekisht-Murriz.

IV. HYDROCARBON POTENTIAL IN ALBANIA

IV.1 A BRIEF HISTORY OF EXPLORATION

Oil exploration in Albania began in 1918 as a result of the interest shown by foreign companies from Italy, France, and Britani. At the very beginning steps the oil exploration was based on the oil seeps encountered in the eastern and south-eastern edge of Peri-Adriatic Depression, near the

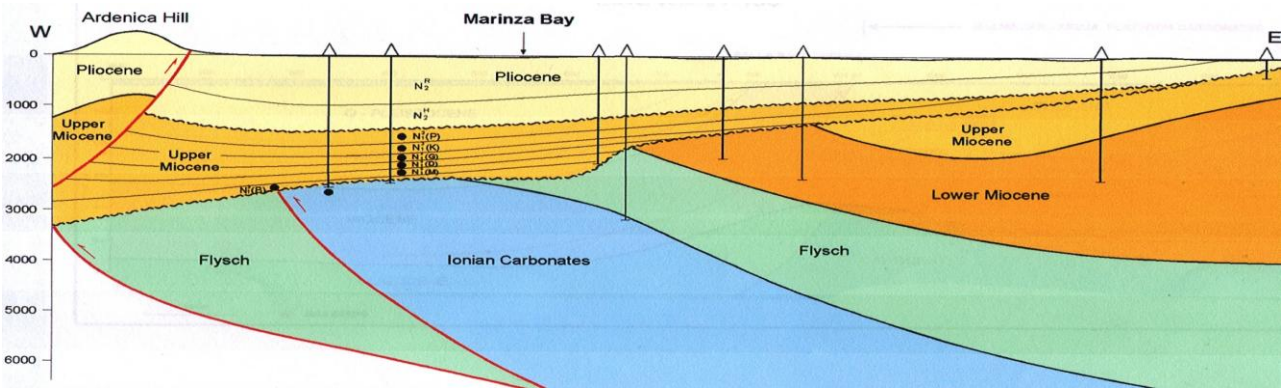


Fig. 11 Geological Cross Section – Marinza Oil Fishore Albania

transgression contact of molassic deposits with the oldest ones in Kucova and Patosi and in the western part of Jonian zone. Consequently, some oil bearing fields were discovered, such as: Drashovica (1918), Patosi-Verbasi (1926), Kuçova (1928), Patos-Marinza (1957), (Fig.11), etc.

The oil pools in these oil fields are formed in sandstone reservoirs belonging to Oligocene flysch, Tortonian and Messinian age and produce generally under dissolved gas drive.

After 1960, along with the expansion of the existing oil fields in the terrigenous section, oil and gas-bearing rock of the Cretaceous-Paleogene carbonate section were also tested and, in 1963, the first oil-bearing field of Visoka was discovered in the carbonate section. The discovery was followed by other oil-bearing field discoveries also in the carbonate section such as: Gorisht-Kuculi, Cakrani, Amonica, Delvina, etc.

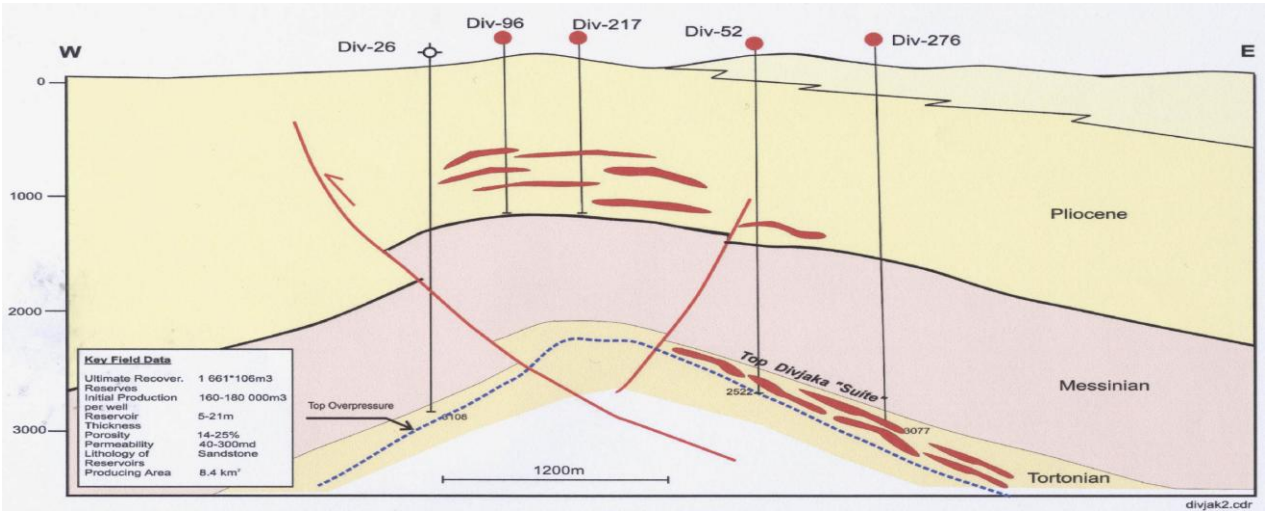


Fig. 12 Divjaka gasfield (sandstones)

As far as fluid phase content in the formation is concerned, the oil pools in the carbonate section are represented by oil accumulations with dissolved gas and oil accumulations with gas or gas condensate cap with bottom water, gas cap and dissolved gas drive.

Gas exploration in Albania began in 1955 and was concentrated on the Neogenic structures of Peri-Adriatic Depression. The first gas-bearing field was discovered in 1963 in the Divjaka structure (Fig. 12), which was followed by the discovery of other gas-bearing fields such as: Frakulla, Ballaj-

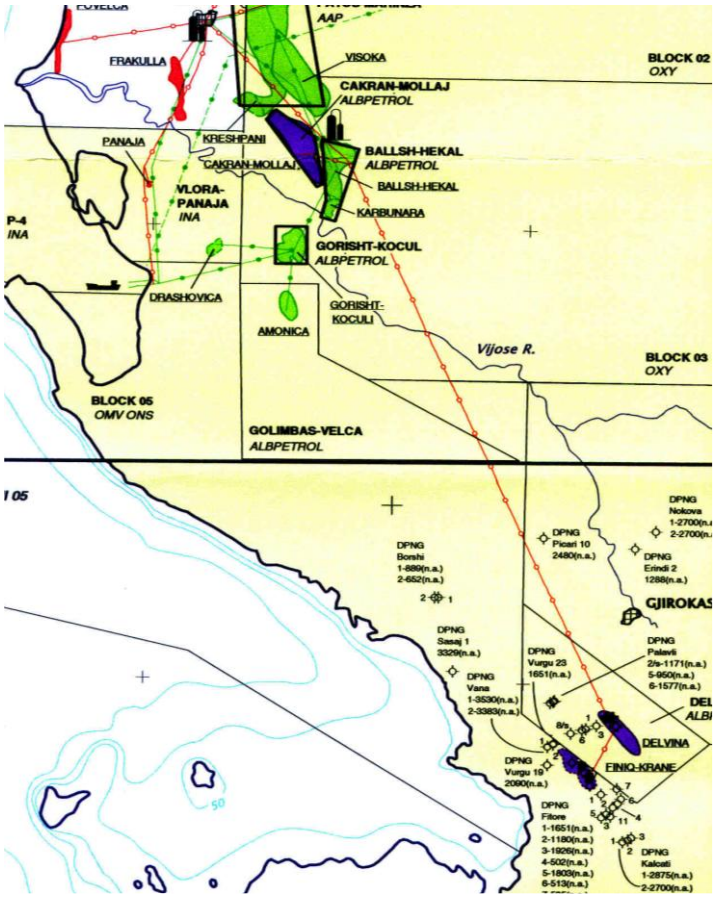
Kryevidhi, Panaja, Trevllazer, Durresi, Povelça, etc. The gas pools in all of the above-mentioned fields are related to the sandstone reservoirs of Serravalian-Tortonian to Pliocene inclusive.

TABLE II. Oil and Gas fields in Albanide

Field	Year of Discovery	Type of Reservoir	Reservoir Depth (m)	O/G Gravity (API)	Sulphur Content (%)
Drashovica	1918	Oligoc.flysch	100-200	Oil<10°	?
Patos	1927	Mess-clastics	Surf. To 1200	Oil (12-24°API)	2.5-6
Kucova	1928	Mess-clastics	Surf. To 1500	Oil (13-16°API)	4
Marinza	1957	Mess-clastics	1200-1800	Oil (12-35°API)	4-6
Visoka	1963	Cret/Eoc.Carb	800-1000	Oil (5-16°API)	5-6
Gorisht–Kocul	1965	Cret/Eoc.Carb	1000-2500	Oil (17°API)	6
Ballsh-Hekal	1966	Cret/Eoc.Carb	1000-3000	Oil (12-24°API)	5.7-8.4
Cakrran-Mollaj	1977	Cret/Eoc.Carb	3000-4500	Oil (14-37°API) Cond, 52 °API	0.9
Finiq-Krane	1973	Cret/Eoc.Carb	800-2000	Oil (<10°API)	3.7-4.3
Delvina	1989	Cret/Eoc.Carb	2800-3400	Oil (31°API) Cond, 53 °API	0.7
Divjaka	1963	Tort/clastics	2400-3000	Gas &Condens	Na
Ballaj-Kryevidh	1983	Plioc/clastics	300-1700	Gas	Na
Frakulla	1965	Mess/clastics	300-2500	Gas	Na
Povelca	1987	Mess/clastics	1800-3500	Gas & condens	Na
Panaja	1988	Mess/clastics	2500	Gas	Na
Ad-4 (offshore)	1994	Mess/clastics	2500-3100	Biogenic Gas & Cond, 54.3 °API	Na
Sqepuri	2001	Cret/Eoc.Carb	4950	Oil (37°API)	2, 3

The oil and gas-bearing fields discovered up to now are in the External Albanides, particularly in the Ionian tectonic zone and in the Peri-Adriatic Depression. Numerous and thorough works and studies made in this region indicate the exploration potential in this region both in depth and extent.

A summary of the Exploration History in Albania is represented in the table II, while the oil and gas fileds location map is presented on Figure.



Some works and studies of a general character indicate that exploration also exists even in the other tectonic zones of the External Albanides and Internal Albanides. Limited financial means have hindered explorations and investments in these areas and, in particular, in the Internal Albanides, to test their potential.

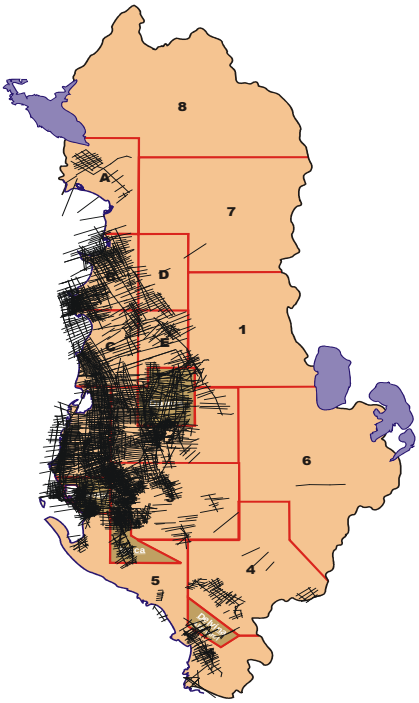
The Albanian Government is interested in co-operation with foreign companies for the exploration and development of hydrocarbons in all Albanian territory.

From 1991 to the present, contracts have been signed and the following foreign companies have been involved in petroleum operation for oil and gas exploration:

Offshore:
Deminex, OMV, Agip, Edison Gas, Occidental Petroleum, Chevron, BHP Petroleum, Svenska Petroleum Exploration, Premier Consolidated Oilfields, Lundin Petroleum, Capricorn Albania, San Leon

Energy, Beach Petroleum and Emanuelle Adriatic Energy.

Onshore:
Shell, Occidental Petroleum, OMV, Ina Naftaplin, Coparex, Lundin Petroleum, Premier Consolidated Oilfields, Enterprise, Clyde Expro PLC, MOL, Hellenic Petroleum, Anschutz, IPC, Petromanas Albania GmbH and Albanides Energy.



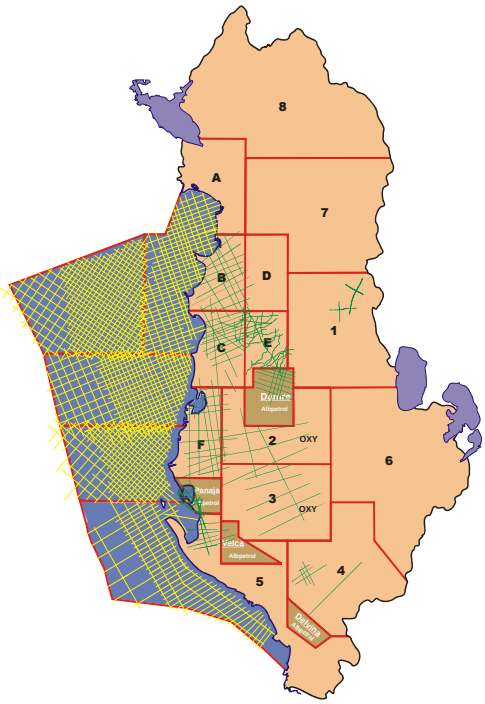
IV.2 AVAILABLE DATA

IV.2.a- 2D seismic acquired by the National Oil Company, Albpetrol, from 1970 to 1993.

Total amount: **18680 km**

- Analog lines **12,080 km**, up to 4.5 sec;
- Digital lines **6,590 km**, 6 to 8 sec;

Albpetrol reprocessed lines 7400 km



IV.2.b- 2D seismic acquired by foreign companies from 1992 to 2006

Offshore:

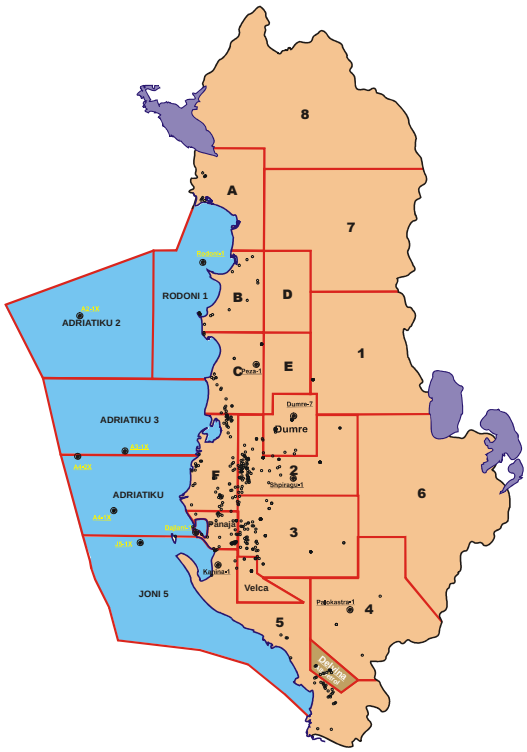
- 2D seismic 11124 km
- 3D seismic 400 km^2

Onshore:

- 2D seismic 2217 km

IV.2.c Exploratory wells drilled by Albpetrol

484 Wells onshore Albania



IV.2.d Exploratory wells drilled by foreign companies (after 1992)

Offshore Wells
- 1 well in Rodoni 1 block;
- 1 well in Adriatiku-2 block;
- 1 well in Adriatiku-3 block;
- 2 wells in Adriatiku-4 block;
- 1 well in Joni-5 block;

Onshore Wells
- 1 well in block "A" – Juban-1;

- 1 well in block "C" – Peza 1;
- 2 wells in block F – No. 5300 and No. 5350;
- 1 well in Dumre Block – Dumre 7;
- 1 well in block 2 – Shpirag 1;
- 1 deviated well in block 2 – Shpirag ST;
- 1 well in block 2 – Shpiragu 2;
- 1 well in block 3 – Molishti 1;
- 1 well in block 4 – Palokastra;
- 1 well in block 5 – Kanina 1;
- 17 wells in total

During the press release of November 4, 2013, Petromanas Energy Inc. and Royal Dutch Shell Plc. announced positive test results from Shpirag-2 well, so confirming OXY discovery almost 10 years ago in this structure (Shpirag-1). The results of the test proved that Shpirag-2 well flowed at rates of 1500 to 2200 barrels per day oil equivalent (boe). The oil is a light one (35 to 37 degree API) and the hydrogen sulphide content (5000 ppm) was lower than expected level.
This discovery did materialize huge efforts done by companies that have been operating for years in Albania and at the same time opened a real perspective for further explorations.

All the data (seismic and drilling) available at AKBN archive are in the following formats and media:

Seismic Field data: 9 track magnetic tape, in SEGY, SEGB, SEGD format, 8mm, 3480, 3590, DLT cartridge Observer logs etc.
Processed data: hard copy (in paper), in film, on Tape 9 track, 8mm cartridge, 3480 and 3590, SEGY format
Well data: hard copy, digital (9 track magnetic tape and CD last format)

IV.3 FURTHER POTENTIAL

Based on the geological studies, old seismic acquired by Albpetrol and those acquired in the recent years by the foreign companies it appears that Albania, in spite of the existing oil and gas fields, still has a very good potential and is very promising area for further exploration in both onshore and offshore.

IV.3.a ONSHORE

Thrusting westwards in the Albanides and especially in the External Albanides are associated with the masking of the separate anticline structures or anticline chains, which have potential for new oil and gas discoveries.

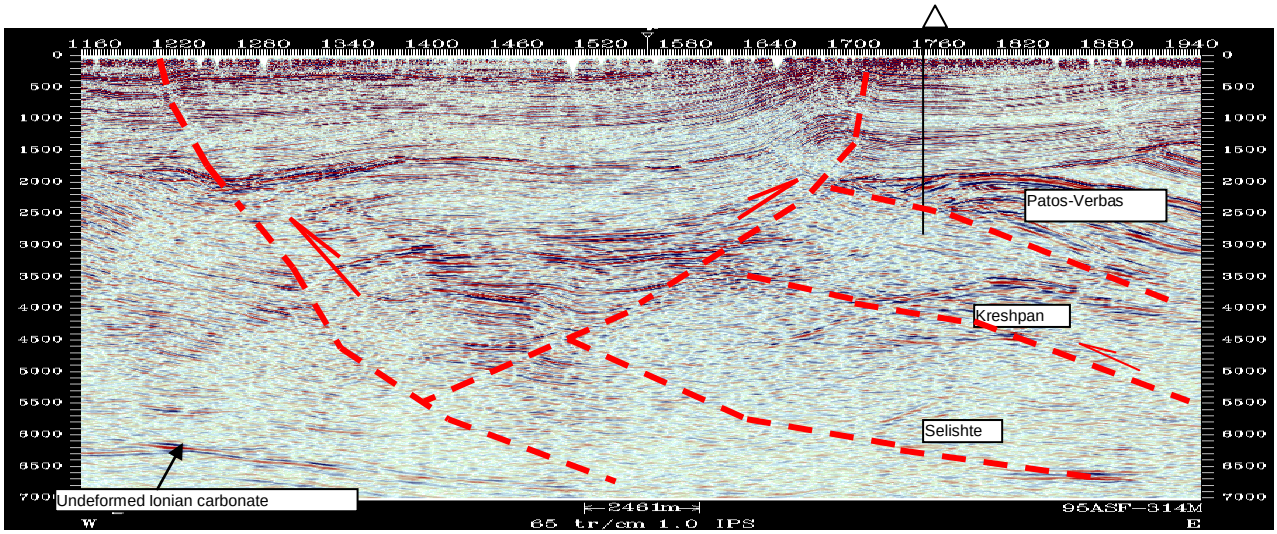


Figure 15 Onshore Seismic line (above Marinza oil field)

Still there is enough room for further exploration for identifying the new possible sub thrust structures in onshore areas. Seismic lines above illustrate this model.

The possible structures linked to Triassic salt diapirism must be taken into consideration for further exploration in the onshore areas, close to the region where salt diapirism is present.

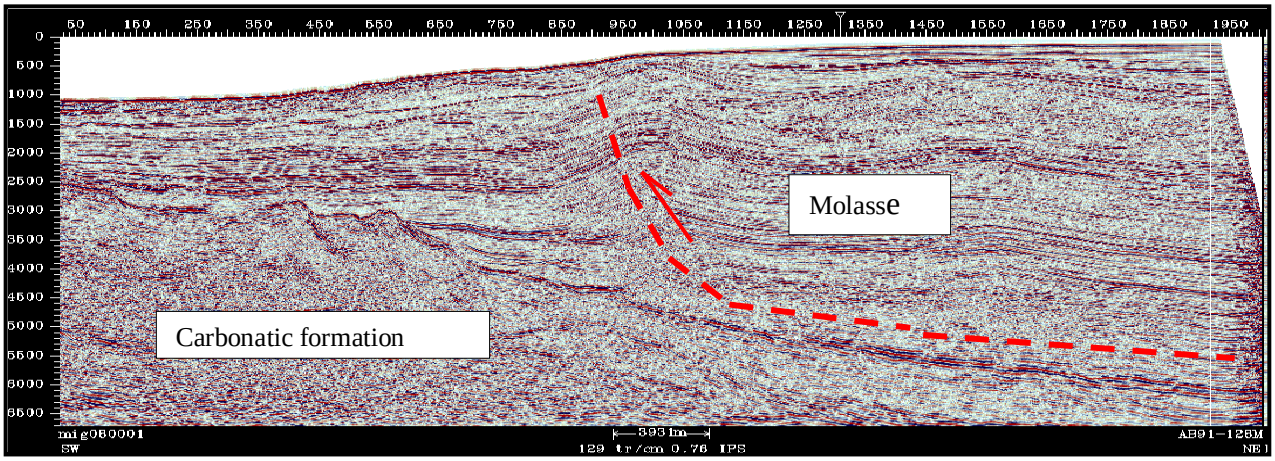
Gas Potential discoveries could be found under the existing oil discoveries in the deeper levels, but the seismic information is not enough, to draw the prospects. New reprocessing and acquisition of some more seismic lines are necessary for this target.

IV.3.b OFFSHORE

Oil Potential in the offshore area is related to the Possible Ionian carbonate structures and morphological highs of Apulia platform.

In the appropriate conditions and places in the offshore there are possibilities for finding of the new and potential oil accumulations both in the clastic section (charged by the underlying limestones) as it was the case in A4-1x well, and/or in the platform carbonate reservoirs. See the following line.

Gas Potential is related to the Miocene–Pliocene folded structures, as identified in the offshore to be valid based on old seismic (1991) and confirmed by the new seismic recently acquired. Taking into consideration the fact that, the dimensions of the prognosed structures in offshore are considerably larger than their analog structures of the existing gas fields in onshore, big reserves of biogenic and/or termogenic gas is expected to be found in the area.



Fiaure 16 Offshore Seismic line

V. TERMS AND CONDITIONS FOR APPLICATION UNDER P.S.C.

The Ministry Energy and Industry through the National Agency of Natural Resources (AKBN) has declared free onshore and offshore areas open for petroleum operation and invites applications for Production Sharing Agreements.

In accordance with the "Petroleum Law", No. 7746, date 28.07.1993, which authorizes the Ministry to enter into a Petroleum Agreement with foreign and local companies, in order to invest for petroleum exploration and production in territory of Albania, the Ministry Energy and Industry offers free areas for exploration.

V.1 SPECIFIC TERMS AND CONDITIONS

1. Form of Agreement

Petroleum agreements will be in the form of Production Sharing Contracts signed between the Ministry of Energy and Industry, represented by the National Agency of Natural Resources (AKBN), and the Contractor. The most important items of PSA are given in the

"Petroleum Law", No. 7746, date 28.07.1993, and other documents issued by Council of Ministers and Ministry of Energy and Industry.

2. Terms of the Agreement

2.A Duration of Exploration Period

The duration of the exploration period is up to 5 years and can be extended up to 7 years in conformity with the "Petroleum Law". The exploration period is divided in three phases, with work obligations and financial commitments for each of them. The contractor can't follow the subsequent phase without completion of work obligations and financial commitments. The duration of each phase of Exploration Period is subject to negotiations.

2.B Duration of the Development and Production Period

In case of a commercial discovery, the period for development and production of the area shall be twenty-five years and can be further extended as provided for in the "Petroleum Law".

2.D Minimum Work Obligations and Financial Commitments

These obligations will be defined by the Contractor in its application to AKBN and are subject to negotiations before entering the agreement.

2.F Training and Administration Funds.

The amount will be specified by the Contractor in its application and is subject to negotiations.

2.G Cost Recovery and Petroleum Sharing

The terms for cost recovery and petroleum sharing will be specified by the contractor in its application, subject to negotiations with AKBN before the signing of the Agreement.

2.H The Contractor shall have the right to receive and retain abroad the proceeds from its export sales to the extent that they are not required to meet on a current basis its local currency costs in Albania. The Contractor shall have the right to convert foreign currency into local currency at the generally applicable rate of exchange for commercial transactions.

2.I Bonus

Under the Petroleum Sharing Contract the Bonus is payable in various stages, including the signature bonus. The production bonus and the signature bonus per square kilometer are subject to negotiations.

V.2. APPLICATION PROCEDURE

1. There is no deadline for the submission of applications. Discussions will commence directly thereafter with all companies that submitted offers provided that the Area is still available.

2. Address for Delivery

National Agency of Natural Resources, Blloku Vasil Shanto, ish Instituti Minierave, Tirana, Albania

3. Method of Delivery:

3.A By sealed envelope delivered by registered mail, or by hand.

3.B The envelope must be clearly marked:

Petroleum Exploration Project

CONFIDENTIAL

3.C There is no application fee.

4. Presentation of applications shall be in accordance with the provisions of Item III below, taking into account the specific terms and conditions specified in the "Petroleum Law", No. 7746, date 28.07.1993, and the Decree of the President No. 782, date 22.02.1994.

5. Any information or clarification for the submission of an application may be obtained from:

National Agency of Natural Resources, Blloku Vasil Shanto, ish Instituti Minierave, Tirana, Albania.

Att. Dael Dervishi
Executive Director

6. After having examined the application received, AKBN will invite for negotiation the applicant in due time. It is the intention of AKBN that once contracts are negotiated and agreed upon by both parties, they will be entered into as soon as possible.

V.3. FORM OF PRESENTATION OF APPLICATIONS

1. An application will be presented in a sealed envelope.

2. An applicant may present applications for more than one Area, but each application will be made in a separate envelope.

3. A company or a group of companies may apply for a contract

4. An application shall contain the following:

4.1 The contract area to which the application applies.

4.2 In respect of each applicant:

4.2.A The name of the applicant in full.

4.2.B The nature of its business.

4.2.C The place of incorporation.

4.2.D The countries in which the applicant or applicants operate.

4.2.E Evidence of the registration of the company, financial standing and technical qualifications of the applicant, including the most recent audited accounts, and those for the previous three years, of the applicant and of any corporate body having control of such applicant

4.3. The main terms proposed by the applicant in respect of the major aspects of the model Production Sharing Agreement i.e.

4.3.A Duration of exploration periods.

4.3.B Minimum exploration work obligations and financial commitments.

4.3.C Training.

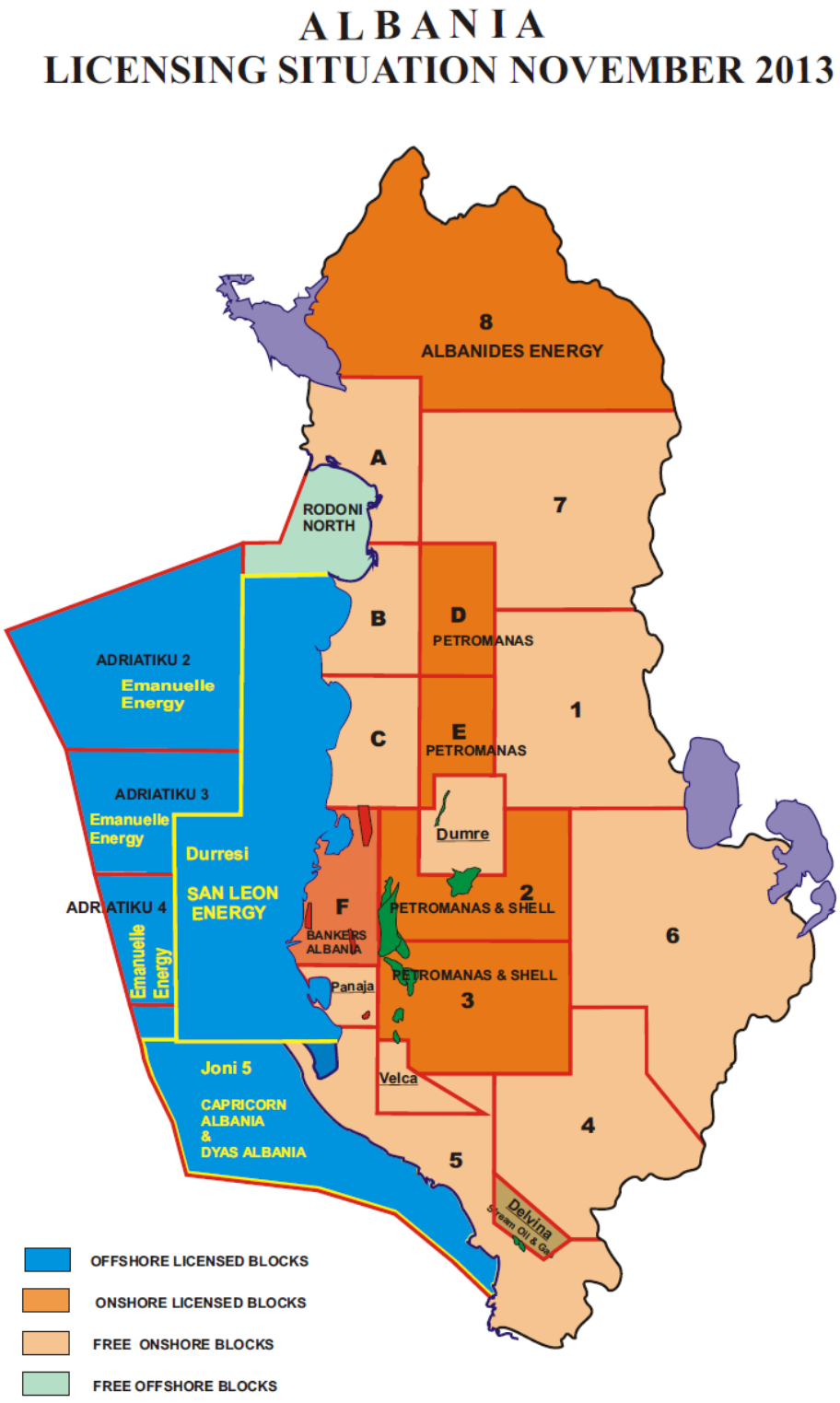
4.3.D Cost recovery and the net profit oil for Contractor.

4.4. Each application may contain the applicant's technical evaluation of the area and an explanation of the adequacy of the proposed minimum work commitment in support of the Contractor's exploration concepts for the area.

V.4 OPEN BLOCKS

The open areas for bidding are all the areas where at the time of application there are no contracts signed or no negotiations carried out on exclusive basis.

The licensing situation on November 2013 is shown in the following map:



VI. SUMMARY OF THE ALBANIAN LEGAL FRAMEWORK FOR PETROLEUM EXPLORATION AND PRODUCTION

Petroleum Exploration, Development and Production in Albania is governed by the "Petroleum Law (Exploration and Production)", No. 7746, July 28, 1993, amended by Law No. 7853, July 29, 1994, the Law No. 7811, April 12, 1994, "On Approval of the Decree No. 782", February 22,1994, "On the Fiscal System in the Hydrocarbons Sector (Exploration and Production)", and the Law No. 9975, July 28,2008, "On the National Taxes".

The legislative framework guaranties considerable incentives to attract international oil companies and thus stimulate oil exploration in the country, and gives enough flexibility to the contractors for negotiating acceptable contracts.

All petroleum deposits existing in their natural condition in strata lying within the jurisdiction of Albania are the exclusive property of the Albanian State

"The Petroleum Law (Exploration and Production)" expressly permits the Ministry Energy and Industry to enter into a Petroleum Agreement, under which an oil company may be granted exclusive rights to explore for and produce oil and gas.

The Government's objective is to negotiate terms with the oil industry, which are fair and balanced, bearing in mind the usual risk associated with exploration and the State's legitimate right for revenues as owner of natural resources. At the same time based on the fiscal law the Albanian Government pursue to encourage the development of small and marginal discoveries.

A. Terms and Conditions of Production Sharing Agreements

A.1 According to "Petroleum Law", "Petroleum Operations" means all or any of the operations related to the exploration for development, extraction, production, separation and treatment, storage and transportation and sale or disposal of petroleum up to the point of export, or to the agreed delivery point in Albania or the point of entry into a refinery and includes natural gas processing operations but does not include petroleum refining operations.

A.2 Hydrocarbons existing in their natural state are the property of the Albanian State. The Government represented by the NATIONAL AGENCY OF NATURAL RESOURCES (Decision No. 445 dated 03.09.2006) authorizes the performance of petroleum operations by the National Oil Company (ALBPETROL) in its exclusive areas, or a Contractor in remainder of the territory of Albania.

The NATIONAL AGENCY OF NATURAL RESOURCES is authorized to make available to interested oil companies the existing geological and geophysical data on the free areas in order to give oil companies the opportunity to evaluate the data before submitting applications.

A.3 The contract type is the Production Sharing Contract (PSC) between NATIONAL AGENCY OF NATURAL RESOURCES, acting on behalf of the Albanian Government, and the Contractor.

According to the "Petroleum Law", "Production Sharing Agreement" means a Petroleum Agreement which provides for the recovery of Contract Costs from Petroleum produced in the Contract Area or from a proportionate part thereof, and for the division between the State and the Contractor of the balance of petroleum remaining after the recovery of Contract Costs in accordance with a scale or formula specified in the Petroleum Agreement.

A.4 The Production Sharing Agreement includes provisions such as:

A.4.1 The performance of a minimum work program, backed by a performance guarantee.

A.4.2 The presentation of an annual work program and budget.

A.4.3 Preference given to local employment and supplies during petroleum operations, where these are competitive in terms of quality, availability and cost.

A.4.4 The opportunity for local service companies to bid and preference given to them when the offer is comparable or better than other third parties.

A.4.5 Indemnify the State or the Ministry against all claims made by third parties in respect of injury, loss or damage resulting from the conduct of any operation carried out by the Contractor or by any subcontractor.

A.4.6 "The Petroleum Law" deals with access to private land after giving the occupier and the owner a minimum time notice. However, the Contractor must pay fair, just and equitable compensation with regard to any disturbance or damage caused during the conduct of petroleum operations.

A.4.7 The P.S.C. provides for the establishment of a training and administration fund, which is used for the training of NATIONAL AGENCY OF NATURAL RESOURCES employees, and for administrative purposes.

A.4.8 The Contractor shall conduct petroleum operations in a safe and proper manner in accordance with generally accepted international petroleum industry practice and shall cause as less damage as is reasonably practicable to the general environment including (inter alias) the surface, air, seas, lakes, rivers, marine life, animal life, plant life, crops, other natural resources and property, and shall forthwith repair any damage caused to the extent reparable, and shall pay reasonable compensation for all damage which is beyond repair.

B. Technical Clauses

B.1 Under the petroleum agreement the Contractor is authorized to conduct petroleum operations during an Initial Exploration period, which can be extended twice.

It is preferred that the Exploration Period includes a drilling commitment by the Contractor.

B.2 If the Contractor declares a commercial discovery during the exploration period, it has the right to extend for a development/production period of twenty-five years, which can be prolonged according to the "Petroleum Law".

B.3 During the exploration period, the Contractor is subject to minimum work programs and expenditure obligations. In the case of either the Initial Exploration period or the additional Exploration period expiring and the Contractor not having fulfilled its obligations for the said period, the Contractor must pay to the Government the monetary equivalent in respect of the work not carried out. All monetary obligations are expressed in US Dollars.

B.4 Before the end of each Contract year, the Contractor must submit and present to NATIONAL AGENCY OF NATURAL RESOURCES the exploration program and budget for the next Contract year. NATIONAL AGENCY OF NATURAL RESOURCES may suggest modifications to the said work program and budget and the Contractor shall implement them when found in accordance with good international petroleum industry practice.

B.5 In the event of a discovery, the Contractor shall notify NATIONAL AGENCY OF NATURAL RESOURCES and evaluation of this discovery will be carried out pursuant to an approved appraisal work program. After appraisal, the Contractor will declare to NATIONAL AGENCY OF NATURAL RESOURCES the commercial implications of the discovery.

B.6 If the Contractor considers the discovery commercial, the area in respect of that commercial discovery is set apart from the Contract area as a Development Area. The Contractor prepares then a development plan, which is submitted for approval by NATIONAL AGENCY OF NATURAL RESOURCES.

B.7 For the exploitation of discovered marginal fields, or fields that have become marginal due to their exploitation, pursuant to Decree No. 782, of February 22,1994 "On the Fiscal System in the Petroleum Sector", the Council of Ministers may issue special decisions to alleviate the fiscal system in order to render possible the exploitation of the marginal fields.

B.8 In the case of an oil discovery together with the flow of associated gas, the Contract considers the utilization of such gas. (Provisions concerning the flare and use of such gas either in petroleum operations or in the local economy are open for negotiations).

B.9 Contractor has the right to develop and produce the natural gas discovered in the Contract Area. Preferably such gas will be utilized in the internal market or exported.

In case of a commercial Natural Gas discovery, NATIONAL AGENCY OF NATURAL RESOURCES and the Contractor will negotiate additional terms in the P.S.C, which will endeavor to ensure that the proportion of economic returns for both parties is similar to that for an oil discovery.

NATIONAL AGENCY OF NATURAL RESOURCES may process and utilize the natural gas with no compensation to the Contractor where the Contractor considers that either the natural gas is not required for use in petroleum operations, or there is no possibility of exporting it, or its utilization is not economical.

B.10 Unitization
According to the "Petroleum Law", if a petroleum reservoir is located partly in the Contract Area and partly in an other Contract Area and where it appears to the Ministry that gains in efficiency may be achieved through the joint development and operation of that reservoir, the Ministry shall have the right to order the Contractors to develop and operate the reservoir jointly under an agreement entered into by them for that purpose.

If at any time during the which a Petroleum Agreement is in force the petroleum bearing strata in the Contact Area, forming part of a single Commercial Discovery, overlap an area over which the Government of Albania has jurisdiction and in respect of which no contact or license has been entered into or is in force, the NATIONAL AGENCY OF NATURAL RESOURCES and Contractor shall enter into an agreement to enlarge the Contact Area accordingly and to provide for the proper development of the Commercial Discovery.

C. Cost Oil and Profit Oil Sharing

C.1 Exploration expenditures and capital expenditures are recoverable only in the case of a commercial discovery but not before the start-up of production.

C.2 Operating expenditures are recoverable during the year in which they are incurred.

C.3 Reasonable and necessary administrative expenditures of the Contractor are recoverable.

C.4 A negotiable set of a sliding scale of daily production for the part of oil referred to as "profit oil" can be used to share the profit. Based on that model, the oil from which costs are recovered is referred to as "Cost Oil". The remaining part of production, which is referred to as "Profit Oil" is shared between NATIONAL AGENCY OF NATURAL RESOURCES and the Contractor according to the sliding scale (bbl/day);
Or
An "R" factor model can be also used to Profit Share. The "R" factor is defined as the ratio between the cumulative revenues of Contractor reduced by cumulative tax assessed on Contractor and the cumulative costs and expenses incurred in Petroleum Operations. Based on different negotiated "R"-factor values, after the Cost Oil is recovered, the remaining part of production, which in this case is referred to as "Excess Cost Oil", is shared between NATIONAL AGENCY OF NATURAL RESOURCES and the Contractor.

C.5 The Contractor is subject to tax on profit, according to the Law No. 7811, April 12,1994, "On approval of Decree No. 782, February 22,1994, "On the fiscal system in the hydrocarbons sector (Exploration-Production)", and the Royalty according to the Law No. 9975, July 28,2008, "On the National Taxes".

The tax is at the rate of 50% of the realized profit and the Royalty is 10% of sales revenues.

C.6 In compliance with the above mentioned Law, The NATIONAL AGENCY OF NATURAL RESOURCES takes the Government's tax and/or its share of profit oil in cash.

C.7 The Contractor shall have the right to receive and retain abroad the proceeds from its export sales to the extent not required to meet on a current basis its local currency costs in Albania. The Contractor shall have the right to convert foreign currency into local currency at the generally applicable rate of exchange for commercial transactions.

D. Miscellaneous

D.1 The Contractor and its sub-contractors are allowed to import into Albania all equipment and materials required for use in petroleum operations provided that NATIONAL AGENCY OF NATURAL RESOURCES has certified that equipment and materials are to be used solely in petroleum operations.

By both, Law No. 7811, April 12,1994, and Presidential Decree No. 1510, June 28,1996, the Contractor and his sub-contractors are exempted from the customs and VAT duties and obligations either for the imported goods and services or services provided by the local market.

D.2 The Contractor may export the share of production to which he is entitled.

D.3 The Contractor may assign all or part of its interest under the contract to any affiliate or third party, which assignation is subject to a guarantee for the performance of Contractor's obligations to be submitted by the assignee, as well as subject to the consent of the NATIONAL AGENCY OF NATURAL RESOURCES.

D.4 The petroleum agreement and petroleum operations are governed by the laws of ALBANIA and the generally accepted practices of International Oil Industry.

D.5 Arbitration shall be in accordance with the UNCITRAL arbitration rules, preferably under Swiss Law.

D.6 All international oil industry investments are fully protected (as are all foreign investors) pursuant to Law No. 7764, November 22,1993, "On Foreign Investments"