Hydrocarbones of Caspian sea basin

.Mohammad Reza Asnafi

Abstract:

Maikop series , in age upper-Oligocene to middle Miocene in Republic of Azerbaidjan (western Caspian sea) and Caspian part its is petroleum source rock.So,considering interpret of results gained from correlation between the Maikop series and the Miocene sediments in southern Caspian sea(Iranian side),determined these sediments as probable petroleum source rock.Recent geochemical studies by Research Center Oil Industry of Iran,reveald that Miocene sediments in southern Caspian sea(Iranian side) can generate 5-10 milliard oil barrel.Therefore,in this research,Alamdeh-Galanderud and Nudeh-Takam sections were selected and biostratigraphy studies with emphasis on bivalves and gatropods were done.In conclusion four conditions to form oil and gas are mentioned.

Keywords: Maikop series;Bivalves;Gastropods;;Source rock

1.Introduction

Alamdeh-Galanderud section is 5km far from south of Alamdeh town in sourhern Caspian sea, north of Iran,and in 51º 56´30˝E ,36º 30´30˝N.Nudeh-Takam section is 20 km far from south of Sari city in southern Caspian sea,north part of Iran,and in 53º 12´50˝E,36º 22´49˝N.In Republic of Azerbaidjan, upper-Oligcene to middle-Miocene is named Maikop Series. This name gathered from name of one town in Caucasus region.Maikop series is an important petroleum source rock .Recent geochemical studies by Research Center Oil Industry of Iran,reveald that Miocene sediments in southern Caspian sea(Iranian side) can generate 5-10 milliard barrel oil.So,in this research,Alamdeh-Galanderud and Nudeh-Takam were selected and biostratigraphy studies with emphasis on bivalves and gatropods were done.In conclusion four conditions to form oil and gas are mentioned.

2.Geology

Middle and upper Miocene sediments in two sections consist red

marls, marl, silt, sandstone, limestone and lumachellic sandstone bearing bivalvia such as Pholas scrinium, Spaniodontella pulchella . and gastropoda such as Hydrobia sp, H.grimmi, H.ulvae, H.longiscata..These facies and assemblage of mollusks define marine sedimentary environment. In through of north of Iran from Sari to Dasht-e-Moghan, Beds contain of these bivalves, named Spaniadontella(Andrusov,N,I,1896) and Pholas bed(Davies,A,M,1935).In

fact, these beds are marker beds .Of course, presence of one layer consist gypsum and marl with interbedded gypsum which from the oldest portion of mentioned sediments(Tarkhanian), determined shallow basin(Sabkha environment)(Chahida,M,R,1977) that by progressive sea and deeper basin, sand stone, Marl and clay stone sediment will be presented. Throughly, in region between the north Alborz fault and Khazar fault, sequence of Neogene sediments are overlie progressively and disconformabely on marl and calcareous in age lower Paleocene or shale and marl in age upper Cretaceous(Maestrichtian). This manner,in exploration well in basin Khazar and Gorgan shore zone is established.Upper Sarmatian sediments are absent in studied area.Because:

1.Sea transgression and non-sedimentation in studied area.

2.Lost Sarmatian sediments by erosion.(Chahida,M,R,1985)

These factors are result of late Phase Alpian Orogenic in upper Oligocene to middle Miocene ,Maikop series are presnt in Caucasus region.Lithology of this series consist of marl,red and black clay with interbedded clay and sandy limestone,Maikop series in Republic of Azerbaidjan introduced as important petroleum source rock.

4.Conclusion

Four conditions to form oil and gas in studied basin are:

1.Source rock:in this research, I attempet to arrange Miocene sediments in studied sections basis on fossils content and correlate this sediments with Maikop srey.Determined these sediments as probable petroleum source rock.So,Konkian and Karaganian sediments in studied area introduced as probable hydrocarbon source rock.

2.Reservoir rock:by operation of Alpine Orogenic Phase in upper Miocene,considered gap and anticlinal with East-West trend in southern Caspian region.Erosion fomrs continental series in age lower Pliocene with facies consist beds of red sandy marl.Properties of these sediments,introduced river sedimentary environment(or near the sea,deltaic).Continental series named Cheleken Fomation.Properties of Cheleken Formation as source rock are:

a)Cross bedding (sedimentary structure)in sandy sediments and imbrication of grains in conglomerate sediments(river sedimentary properties).

b)Lithology:conglomerate,sandstone(lost cement),claystone

3. Well intergranular porosity and fractures by tectonic actions.

4.Anticlinal closure:in Khazar basin and its shores,aerial closure is high,about 60-300km^2,and vertical closure is low,about 150-300 m.

Ideal conditions of geology viewpoint for presence oil and gas in southern Caspian sea (e.g resence of source rock , porous reservoir rock,stratigraphic and sructural trap)and various operations performed by CIS,can be considered by oil company.

References

1-ANDRUSOV , N. I.,(1896), On the geological investigations in the & miner., V.24 (in Russian).

2-CHAHIDA , M. R., (1977) , Distribution of Upper Oligocene and Lower Miocene in Central Iran and It's Faunisitc Paleogeographic Relations with the Paratethys, N.J.B.Stuttgart.

3-CHAHIDA, M. R.,(1985), Neogene of the Tethys and Paratethys, VI,II,Austrian Science Foundation,IGCP,IUGP, UNESCO, No 25.

4-DAVIES, A.M.,(1935), Tertiary Faunas, Thomas Murby & Co. 1.Fleet Lane, E. C. 4, London ,(pp. 120-140).