Mineralogical content of Productive Series shales of Western Portion of South Caspian (Example, Bulla – Daniz area)

Elshan Abdulayev, Yagut Muslimova*

Shales play an important role in the Productive Series (PS) sedimentary pile of the South Caspian Basin (SCB). They dominate around 70-80% of the total stratigraphic section.

Shales bear a huge significance in solving a number of geological tasks including formation correlation, stratigraphy, paleogeography studies and etc. Furthermore, clay minerals bear important signatures of depositional environments in which they were deposited and consequently transformed to their present-day occurrence.

The upper part of the PS (V horizon) is represented mainly by argillaceous rocks interbedded with sandstones and siltstones. The current study revealed that the heavy components present in the above described formation is dominated by limonite (67%) followed by magnetite-ilmenite minerals (14.5%). Leucoxen and pyrite are present in minor quantities (3.5% and 1.5%, respectively). The content of stable minerals such as zircon, tourmaline, garnet, glauconite, titanite, etc) is in the order of 3.5%. Non-ferrous unstable components are present in sufficient quantities: mica-3.8%, aughite-diopside-3.0%, epidote-ziosite-1.0% and some glaconite and horn-blendes are present only in minor quantities (0,5% and .

Grain-size analysis of shales shows that lower part of the Upper PS (below V horizon) is comparatively poorly documented, they are considerably enriched with silt fraction and sand material are present only in minor quantities. Association of clay minerals in the Upper PS differ from that of Lower PS-the main rock-forming minerals in the composition of light fraction are rock fragments (67.5%) prevailing over quartz (21.0%); while within the heavy fraction pyrite is present in significant quantities (97%). All stable and nonferrous minerals are totally absent.

Thus, difference in sediment types which is characteristic for lower and upper part of the Upper PS indicates diverse source areas and delivery of terrigenous material during the times of sediment deposition. Hence, in the early phase of the deposition of upper PS sediments, the whole area of modern Baku Archipelago was subsided and the remote northern province served as a source of sediment supply, in the later stages the source area was transferred close to the Caucasus.