Determination of original carbonate mineralogy of Ilam Formation and recognition of boundary between Ilam and Sarvak Formations by geochemical data in the Peyon Anticline, North of Izeh

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Abstract: The Ilam Formation (Santonian-Campanian) is a unit of Bangestan Group, which is overlain on the Sarvak Formation in Tang E-Rashid area, Peyon Anticline (18.5 Km North of Izeh). Due to similar lithology, recognition of the exact boundary between Ilam and Sarvak Formations in the study area was difficult. Thus it is not possible to determine boundary between these two formations based on petrographic evidence and field observations. Recognition of original carbonate mineralogy based on petrographic studies is difficult in ancient carbonate rocks, because aragonite (A) and high - Mg calcite (HMC) transformed to low Mg calcite (LMC) during diagenesis. In this study major and minor elements and carbon and oxygen isotopes values used to determine the original carbonate mineralogy of Ilam Formation in the Peyon Anticline. Bivariet plots of minor and major elements and oxygen and carbon isotopes values indicate that original carbonate mineralogy was aragonite in Ilam Formation. Elemental and isotopic compositions of Ilam carbonates also illustrate that they were affected by non-marine diagenesis in a closed system. Major and minor element variations (such as Sr, Sr/Ca, and Sr/Na) and oxygen and carbon isotopes were used to distinguish the boundary between Ilam and Sarvak Formations in the Peyon Anticline.

Keywords: Carbonate mineralogy, Major and minor elements, Carbon and oxygen isotopes, Diagenesis, Ilam Formation.