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New Permian Aliyak and Kariz Now formations, Alborz Basin, NE Iran: Correlation with the Zagros Mountains and Oman

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Abstract

Two new Permian-aged formations 'Kariz Now Formation' and 'Aliyak Formation' are proposed for a 65-150m-thick succession in the Kariz Now area, with the type section for both (79.5m thick) located 9km northeast of Aliyak village ca. 100km southeast of Mashhad city, northeastern Iran. The lower Kariz Now Formation is composed of siliciclastics. The age of this Formation is poorly constrained but its correlation with the Shah Zeid Formation in the Central Alborz suggests a possible Asselian-Hermagorian age for the Kariz Now Formation, which implies a hiatus of Yakhtashian-mid Midian (Artinskian-mid Capitanian) age between the siliciclastics of the Kariz Now Formation and carbonates of the disconformably overlying Aliyak Formation. There is also the possibility of a potential correlation of this Formation with the Kungurian Faraghan Formation in the Zagros area. The succeeding Aliyak Formation is mostly composed of carbonate rocks capped by a thin basaltic lava flow. The Aliyak Formation is unconformably overlain by dolostones that are correlated with the Middle Triassic Sotori Formation. Samples were collected from the Kariz Now and Aliyak formations, but fossils were only recovered from the Aliyak Formation. These include calcareous algae, small foraminiferans, fusulinids, crinoid stems and brachiopods. The recovered fusulinid assemblage from the Aliyak Formation is consistent with that of the upper Capitanian *Monodioxodina kattaensis*-*Codonofusiella erki* and *Afghanella schencki*-*Sumatrana brevis* zones of the Zagros Mountains and with the upper part of the Ruteh Fm in the Alborz Mountains. Although not radiometrically dated, the basaltic lava flow most probably corresponds to similar basaltic lava flows occurring in the uppermost part of the Ruteh Formation in Central Alborz. Thus, the Permian in the studied region developed in a basin that extended westward as far as the Central Alborz. A late Capitanian age for the Aliyak Formation implies it correlates with the Capitanian KS5 in Al Jabal Al-Akhdar in Oman, with Aliyak Unit 5 potentially representing the Permian maximum flooding surface MFS P25. © 2014 John Wiley & Sons, Ltd.

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Keywords

Biostratigraphy, Depositional environment, Fusulinids, Iran, Lithostratigraphy, Microfacies, Northeastern Alborz, Palaeogeography, Taxonomy