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Micropaleontological investigations and sequence stratigraphy of the drilled strata of Qutb-Abad Well #1, Southwestern Iran

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The Qutb–Abad well # 1 locates at southwestern Iran in the Zagros Basin. The total thickness of drilled sequence in the Qutb-Abad well # 1 is 7500 ft.(2285.9m.). A total of 1808 thin-sections were prepared from the cutting samples of this well and investigated in order to differentiate the drilled rock units and to determine their age relationships. The age relationships of the drilled rock units have been determined based on the planktonic and benthic foraminifera. The electrical log data (Gamma and Sonic) were used to separate the rock units which were barren and their age relationships were identified based on the stratigraphical position.

In this study, based on the paleontological and lithological data, the drilled sequence is divided in descending stratigraphic order into the Jahrum, Sachun, Tarbur, Gurpi, Ilam, Sarvak, Kazhdumi, Dariyan, Gadvan and Fahliyan formations, ranging from late Eocene to Early Cretaceous age. The aim of this study was to identify the well known biozones of the Zagros basin within the drilled sequence of the Qutb-Abad well # 1 and to make a better correlation with the adjacent wells and also to separate the different sequence boundaries. The paleontological researches, allowed to distinguish a total of 16 biozones throughout the drilled rock units of this well. Based on the established biozones, there are two major hiata within the drilled sequence of the Qutb-Abad well #1.The first hiatus occurs between the Sachun and Tarbur formations and encompasses the uppermost Maastrichtian strata, seeing that the *Elphidiella multiscissurata* subzone and also the *Abathomphalus mayaroensis* local occurrence are not present. The second hiatus appears between the Sarvak and Ilam formations, which include strata of Turonian and Coniacian age, as the *Helvetoglobotruncana helvetica- Clavihedbergella-Hedbergella* and also the *Marginotruncana schneegansi-Marginotruncana sigali* assemblage zones are absent within the drilled strata.

The sequential interpretation suggests a total of 4 large scale (type 1) and also 16 medium scale (types 2 and 3) sequence boundaries and maximum flooding surfaces within the drilled formations. Based on the paleontological and sedimentological data, the depositional environments vary from the pelagic/ hemipelagic facies to the ramp systems that consist of outer ramp to inner ramp/platform and also supratidal environments.