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Assessment the Subbottom Sedimentary Situation for Khor Abdullah, NW Arabian Gulf Using Sedimentary Coring Analysis and Sub-Bottom Profile Technique

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Abstract

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The Coring Analysis and Sub-Bottom Profile technique are effective tools for assessing the sedimentary development of the bottoms, in this study these methods were used to assess the Sub bottom Sedimentary Situation for Khor Abdullah, NW Arabian Gulf. Two marine core sediments were studied at a depth of 40 m. Detailed grain-size analysis was carried out on 86 samples from cores. In addition, many sedimentary structures were diagnosed, such as load structures, wavy bedding, interfingered, peat layers, sole marks, and others. The environments and the transgression and regression of the sea were detected and interpreted on the basis of these analyzes, which were also attributed to the presence of the fauna in some beds. The integration of the SBP and sedimentary analysis results revealed the presence of many sedimentary facies (silt, sandy silt, silty sand, sand, muddy sand and mud). The sedimentary situations and reflection configurations include, SB1: Parallel reflection -Tidal sediments; SB2: Wavy reflection- Shallow transgression; SB3 and SB4: Oblique and Hummocky reflection regression), which indicate the different depositional environments as a result of changes in environmental factors, climatic conditions and the sedimentation energy. The study revealed there is a beds of peat at depth 12-18 m under the bottom, which is refer to lagoon or marsh environments where fresh and brackish water with high TOC%, the source of peat deposits belongs to one or a many of ancient river courses buried under the bottom and which is detected by the SBP section.

Keywords: Khor Abdullah, Sedimentary structures, Sedimentary coring analysis, Marine transgression and regression and Sub-Bottom Profiler technique.

1. Introduction

Many geological, environmental and economic studies have been conducted in the NW Arabian Gulf (AG) region due to its economic importance, as it is considered the primary trade waterway for Iraq. On the other hand, Khor Abdullah (that is located in NW the AG) is considered as a common maritime borders' corridor with Kuwaiti site, so there are political problems dividing the maritime borders. Many tidal flat sediments of Khor-Abdullah coast near an Al-Faw Grand Port (FGP) in southern Basrah city, these sediments have low to medium bearing capacity, which can be handled by strengthening with classic means like piles (Muttashar et al., 2010). Al-Sheikhly et al., 2017 also studied the paleoenvironment of southern Mesopotamia, where nine paleoenvironmental maps were drawn age intervals for ages between 22000 and 1000 B.P. explained the distribution of ancient river courses and

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