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THE WEST CROCKER FORMATION (EARLY OLIGOCENE TO MIDDLE MIOCENE) IN KOTA KINABALU AREA, SABAH: FACIES, SEDIMENTARY PROCESSES AND DEPOSITIONAL SETTING

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ABSTRACT

The West Crocker Formation in Kota Kinabalu area in Sabah is one of the best exposed examples of deepwater sedimentary sequence in Malaysia. This paper describes and documents the detailed facies characteristics and sedimentology of outcrops, and proposes a depositional framework for the West Crocker Formation in the Kota Kinabalu

area. Based on lithology, sedimentary structures, geometry, trace fossil assemblages, and paleocurrent data, the sediments are grouped into seven major facies. These are; i) facies A - thick, massive, and structureless sandstone; ii) facies B - thick, and massive sandstone with the presence of post-depositional dewatering structures; iii) facies C - graded sandstone and occasional complete Bouma Sequence; iv) facies D - thin-bedded fine-grained sandstone and siltstone and graded into base-absent Bouma sequences; v) facies E - sandstone and shale interbedding, and frequently marked with lenticular bedding; vi) facies F - slump beds, and vii) facies G - shale. Four deepwater architectural elements had been identified based on the study of vertical successions of facies. These are: i) slopes are made up of turbidite facies F, G, and E; ii) channels are represented by

coarse- and medium-grained massive sandstone with predominantly facies A and B; iii) depositional lobes are formed by medium grained sheet sands, made up of facies C and D, and showing a coarsening- and thickening- upward sequences; iv) heterolithic levee-interchannel facies association, predominantly shale with thin, fine-grained sandstone, and siltstone, made up of turbidite facies D, E, F, and G, and showing a coarsening- and thickening- upward succession. This study has shown that the West Crocker Formation, which previously has been referred to as "turbidites", is not composed of solely turbidity current deposits, but includes debris flow, slumps and other submarine mass-transport deposits.