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Correlation between Modified Slope Mass Rating (M-SMR) system with lithofacies of the Crocker Formation in Kota Kinabalu, Sabah, Malaysia

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The aim of this paper is to correlate the Modified Slope Mass Rating (M-SMR) classes with the lithofacies of Crocker Formation in the Kota Kinabalu, Sabah area. The rock cut slopes in CPSB Stone Quarry (slope B1 and B3) and Lakang Point (slope LP) in Tamparuli, Tuaran Hospital (slope TH) in Tuaran and Telipok-Sulaman by-pass (slope TS1 east, TS1 west, TS2 east and TS2 west of Telipok) in Telipok were selected for this study. The 'Lithological unit thickness' approach, MRQD method, weighted average of discontinuity set spacing, weighted average of discontinuity condition, normal condition of water flow and discontinuity orientation factor (DOF) method were used to evaluate the unconfined compressive strength, RQD, discontinuity spacing, discontinuity condition, water flow and discontinuity orientation parameters for Modified Slope Mass Rating (M-SMR) system, respectively. The lithological logging mapping and petrographical study were applied in order to determine the facies association for the Crocker Formation. Slope TS1 east, TS2 west and LP representing class II ('low risk' slope), slope B3 and B4 class III ('moderate risk' slope), slope B1, TS1 west and TS2 east class IV ('high risk' slope) and slope TH class VI ('extremely risky' slope) in the study area. The facies types in the study area consist of very thick-bedded sandstone unit (facies B), thick to medium-bedded sandstone unit (facies C), thin-bedded sandstone unit (facies D), thin-bedded siltstone and/or sandstone unit (facies E) and thick-bedded shale unit (facies F).   In the study area, the facies unit formed the associations namely channel (slope LP, TS1 east and TS2 west), channel-lobe (Slope B1, B3 and TS2 east), lobe prograding (slope TS1 west) and basin plain (slope TH). The results of analyses shows that the channel facies is represented class II, channel-lobe facies class III and IV, migrating lobe facies class IV and basin plain facies class VI of M-SMR system.