

DEPOSITIONAL ENVIRONMENTS OF THE MISSISSIPPIAN REDWALL LIMESTONE IN NORTHEASTERN ARIZONA

W. Norman Kent and Richard R. Rawson

ABSTRACT

Facies analysis of the Redwall Limestone suggests two major transgressive sequences in northeastern Arizona. The first major transgression of the sea spread slowly from the west and was followed by a rapid regression. The second major transgression consisted of three rapid transgressions in northeastern Arizona separated by relatively slow partial regressions caused by prograding sedimentation. Facies geometry of the first transgression best fits the Shaw-Irwin model of epeiric deposition with well-developed transgressive and regressive facies whereas the second transgression best fits Coogan's asymmetrical model of epeiric deposition with poorly developed transgressive facies. Textural analysis of the Redwall Limestone to determine facies relations and depositional environments included differentiation of the carbonate grain types into the following textural rock types: dolomite, stromatolitic wackestone, pisolitic wackestone, calcispheric packstone, pelletal packstone, oolitic packstone and grainstone, foraminiferal grainstone, crinoidal grainstone and packstone. These textural rock types may be grouped into four depositional facies: Facies I, crinoidal packstone--open marine; Facies II, crinoidal and foraminiferal grainstone--open "intratidal"; Facies III, oolitic grainstone and packstone, and pelletal packstone--protected "intratidal"; Facies IV, algal (calcispheres, Stromatolites, pisolites) packstone and wackestones and dolomite--supratidal.