Analysis and classification of regional encrinites: The stratigraphy, composition, and detailed sedimentology of regional encrinites within the Joana and Lodgepole Ls. in the western U.S.

William T. Phelps

University of California Riverside

Department of Earth Sciences

Riverside, California

phelps@citrus.ucr.edu

Regional encrinites typically form in shelf settings of shallow to moderate depth (Ausich, 1997). The bioclastic composition, large areal extent and thick nature of these deposits make them excellent candidates for hydrocarbon reservoirs. In fact, descriptions of some reservoir facies suggest regional encrinites are important components of reservoirs in the Williston Basin and North Slope regions of North America (Eby and Kirkby, 1991; Martindale and Boreen, 1997), the Bechar Basin in Algeria (Madi et al., 2000), and the North Caspian Basin (Cook et al., 1995). However, the regional encrinites within these fields have not been recognized as encrinites, because the concept of regional encrinites is a recent addition to the sedimentologic literature, and encrinites remain a poorly understood lithofacies.

Although there are many examples of regional encrinites from around the world, the physical and biological processes governing their formation are poorly understood. In addition, there is no classification scheme that describes the variation in the internal characteristics of regional encrinites. Thus this research will conduct extensive field studies and laboratory analyses designed to create a better understanding of the mechanisms of formation of regional encrinites and to finalize a sedimentologically based classification of the rock fabrics within these distinctive units. Research performed within the last year has raised additional questions concerning the lateral homogeneity of regional encrinites, which may not represent simultaneous deposition as previously thought. Encrinite homogeneity will be tested using carbon and oxygen isotope analysis to determine if there were distinct periods of encrinite formation.