## RMS-SEPM talk October 2009

## Graphic Methods to Illustrate Stratigraphic and Sedimentologic Concepts:

Case Studies from Triassic “Red Bed Climatic Cycles” and Cretaceous Coastal Plain Fluvial and Lacustrine Systems

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Information is processed and communicated in a variety of ways. Some people emphasize verbal means. Others favor expressing concepts mathematically or graphically. In teaching, you learn that not everyone thinks the same way! It is not by accident that future engineers view things differently from budding geologists. Geoscientists tend to use graphical means to learn and communicate concepts.

As professionals we commonly work with and explain complex ideas to audiences having varied backgrounds. Therefore a variety of means of communication should be considered. Graphical methods can prove especially effective to communicate complex ideas to diverse groups. Geoscientists tend to “think graphically” and can easily relate to maps, cross sections, and diagrams. We are “hard-wired” to using pattern recognition as an interpretive tool.

In recent years, “creative xerography” has revolutionized the task of preparation of presentations. One should not underestimate the value of creating diagrams from simple sketches to explain significant features. Working as a member of a team, I think the “old fashioned” method of sitting down as a group, to discuss how a significant feature can most effectively be presented graphically. Often this communal agreement results in a much greater understanding of a process and/or concept’s significance.

All too commonly, persons worry about their lack of artistic talent. I find that if I can not express things graphically, part of my problem is my poor understanding of the feature’s significance. The process of discussing how to illustrate the concept or feature greatly clarifies my understanding and how it should be presented to others. The use of “families of figures” simplifies production of a succession of diagrams having similar formats; it is also a useful tool in organizing a presentation that has a logical progression.

Geologists understand a variety of depositional models. In school only a limited number of well known examples are stressed. Two case studies document how graphic methods can characterize lesser known depositional systems and explain their significance as hydrocarbon exploration targets. The first example is drawn from Algerian Triassic non-marine “red beds” of the Berkine Basin. The “TAGI” is a prolific oil producer that includes fluvial and lacustrine reservoirs deposited in association with arid/semiarid climatic cycles.

The second example is based on Cretaceous coastal plain fluvial and lacustrine deltaic sandstone deposits from Wyoming, Western Colorado, and Utah. These strata were deposited along the western margin of the Western Interior Seaway and in the Greater Natural Buttes Field of the Uinta Basin, Utah.

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