

RECENT AND ANCIENT BEACH AND BAR DEPOSITS

R. C. OHNOUTKA¹

ABSTRACT

Over the years, a great amount of thought and a large number of papers have dealt with finding stratigraphic traps. Various schemes and systems have been devised. The broad purpose of this paper is to present a unified picture of one of these methods—the environmental method.

The approach of the method is to study recent beach and bar deposits along the Gulf Coast from the Rio Grande River to Mobile Bay. These deposits present an interesting regional depositional history, when considering the basis for the method—the Doctrine of Uniformitarianism. This doctrine simply says that we can go out today, see sediments being deposited, and know that sedimentary rocks have always formed in the same ways.

Generally, there is no hesitation in applying the doctrine. However, direct comparisons of the recent to the past can be dangerous if the conditions at the present are not well understood. The physical and chemical processes responsible for sedimentation change very little, but unlike the processes themselves, the conditions prevailing upon the earth's surface are variable. An excellent example is the Rio Grande River which no longer is building its delta seaward simply because very little sediment is being supplied to the basin of deposition. On the other hand, the opposite is true in the Mississippi River Delta area. The Mississippi River is supplying an abundance of sediment to the basin of deposition.

Balanced against the sediment supply that rivers bring to a basin of deposition is the amount of energy (waves, longshore currents, and tidal currents) available to do work in sorting and transporting it. Furthermore, the balance between supply of sediment and available energy in certain environments can easily be upset by relatively minor changes in one or the other. Changes in balance result in situations which are of sedimentational and stratigraphic interest to us in terms of transgression and regression.

Utilizing the Gulf Coast as a model, it can be noted that it is possible for transgression and regression to occur simultaneously in nearby areas. Since the two do occur simultaneously, it is clear that transgression cannot be related simply to rise in sea level, nor regression to fall.

Considering these important environmental factors observed in the recent, a comparison, though not direct, can be made to regressive and transgressive beach and bar deposits in the ancient sequence of rocks in central Utah and southwestern Colorado.

¹ Pan American Petroleum Corporation, Jackson, Mississippi.