INTRODUCTION

Central Utah, in the area shown in Figure 1, is a region of extremely complex geology. Although it has been the focus of detailed studies for many years, there is still widespread controversy as to the structural geometry and tectonic history of the area. This is primarily the result of limited surface exposures in critical areas, the superposition of several orogenic events in a narrow belt, and, until recently, a lack of substantial subsurface data. In the last decade, increased interest by the petroleum industry in central Utah has resulted in a significant increase in the number of drillholes and seismic lines across the region. Although many seismic lines are still proprietary, and cannot be published here, a general description of subsurface structures observed on seismic lines, constrained by drill-hole and surface data, is one of the primary objectives of this paper. It is the belief of this writer that, in the area under consideration, geologic interpretations based on surface exposures alone are highly suspect and equivocal, to say the least. Incorporation of available subsurface data leads to a reasonable regional tectonic synthesis that can only be guessed at otherwise.

GEologic SETTING

The area under study (Figs. 1, 2) was described by Spieker (1949) as the transition zone between the Colorado Plateau to the east and the Great Basin (or Basin and Range, in present terminology) to the west. This division is reflected by the present topography, with generally flat-lying, relatively thin sedimentary rocks to the east on the stable craton, and a disrupted terrain of linear mountain ranges separated by Quaternary sediment-filled valleys to the west. These mountain ranges contain thick sequences of Upper Precambrian to Triassic sedimentary rocks that were deposited in the Cordilleran miogeosyncline (or miogeocline). The greatest thicknesses are encountered in western Utah and eastern Nevada, with coeval shelf deposits in eastern Utah being markedly thinner and containing numerous hiatuses (Armstrong, 1968a, 1968b; Burchfiel and Hickcox, 1972; Stewart and Poole, 1974; Bissell, 1974). Significant exceptions to this simple depositional pattern occurred sporadically throughout