Rocks that fill both subbasins are probably as old as late Miocene or Pliocene and are gently deformed, except near the Portlock anticline and near the shelf-break uplift.

If hydrocarbon-source characteristics of rocks offshore are similar to those of rocks onshore, good hydrocarbon source rocks do not underlie the shelf. Eocene through middle Miocene rocks onshore, and upper Miocene or Pliocene rocks offshore, contain less than 0.5 wt % organic carbon, which is predominantly of herbaceous and humic orgin. The volume of total extractable hydrocarbons (C_{15+} Soxhlet extraction) from onshore Eocene through Miocene rocks ranges from 165 to 412 ppm. Offshore upper Miocene and Pliocene strata are thermally immature. Paleogene rocks, which are thermally mature, are the most likely sources for any hydrocarbons generated offshore, although indications are that they are low-quality sources.

Onshore Paleogene rocks generally have poor reservoir properties—porosities range from 1 to 10% but most are less than 5%, and permeabilities are less than 1 md. The best offshore reservoirs are probably in late Miocene and younger strata.

Structural traps for hydrocarbons include Portlock anticline, anticlines in the central-shelf uplift, and parts of Albatross Bank.

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Dipmeter Validity in Deviated Bore Holes

Usually, offshore field development wells will be drilled as highly deviated bore holes and evaluated by a series of logs including dipmeters. Dipmeters run in a deviated bore hole have often been treated with the same respect for validity of accuracy as any regular dipmeter run in a practically vertical bore hole. However, when the formations exhibit small dip magnitudes (from the horizontal) and are penetrated by rather highly deviated bore holes, accuracy of the dipmeter results should be held suspect. Recent work has indicated any small error in any one of several instrument measured parameters can result in an error in the final dipmeter results such that the formation dip magnitude will be erroneous and even the dip direction can be wrong.

Errors in relative bearing and bore-hole diameters (including caliper accuracy and pad depth of investigation) are the most susceptible to causing errors in the final computed results. This could have serious consequences in that erroneous dip vectors would be displayed as valid dip vectors. Unfortunately it is almost impossible, even for an "expert," to visibly determine that wrong dipmeter vectors have been plotted as the result of poor input data.

Several actual and theoretical dipmeter computation results will be presented wherein a controlled amount of error will be deliberately introduced to show its effect upon the computed dip vectors.

Results of these computations indicate that to give consistently good dipmeter results under most conditions encountered in highly deviated bore holes, practically all of the instrumentation must perform at accuracy levels considerably in excess of current instrument capabilities to yield results of the same quality as those obtained in nearly vertical bore holes.

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Ebb-Tidal Delta Stratification and Its Relation to Tidal Inlet Processes

Shallow, high resolution seismic reflection profiles at nine tidal inlets along the South Carolina coast have shown that ebb-tidal delta stratification is dominated by small to large-scale accretionary beds associated with channel cutting and infilling sequences. The deeper parts of the ebb-tidal delta (15 to 25 m) are comprised chiefly of shallow-landward and seaward-dipping beds (3 to 6°) and horizontal stratification. These beds represent initial sedimentation in large channel-fill sequences and original delta deposits. At intermediate depths (5 to 15 m) the stratification is dominated by large-scale (2 to 5 m in height) multidirectionally dipping accretionary beds (3 to 15°) that were formed owing to channel migration. Small channel cut and fill deposits are also prevalent at this depth. The upper delta is characterized by laterally continuous landward-dipping foresets formed by landward-migrating swash bars. Because of the depth of the ebb-tidal delta sediments (25 to 30 m) their preservation through a transgression appears likely.

The development of this stratification is caused by a southerly migration of the inlet's main ebb channel through the ebb-tidal delta sediments. Eventually, the channel becomes hydraulically inefficient and a new channel is breached through a spillover lobe to the north. The abandoned channel is then filled with sediment that is derived from seawash sand shoals which flanked the old main ebb channel and with sand that is transported seaward in the new main ebb channel. The landward transport of sand which causes an infilling of the abandoned channel and a southerly migration of the main ebb channel is the result of accretion through bedload sediment transport and landward-migrating swash bars.

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Petroleum Potential of Basin and Range Province, Western United States

Five oil fields have been discovered within the Basin and Range province of the western United States. They are Eagle Springs (1954), Trap Spring (1976), and Currant (1978) fields in Railroad Valley graben of east-central Nevada, and in the Great Salt Lake area of Utah, Rozel Point (circa 1904) and West Rozel (1978) fields. Rozel Point and Currant fields are non-commercial accumulations. Reservoirs are either fractured Oligocene ignimbrites, Eocene lake sediments, or fractured Miocene-Pliocene basalts. Accumulations occur in truncation-fault traps or in drape over faulted structure. The source of the oil is believed to be Tertiary lake deposits and/or Chainman Shale of Mississippian age.