isopachous submarine cement and packstones with a finely crystalline rhombic calcite matrix. This general porosity distribution is modified by basinward tilting so that the most favorable traps lie in updip positions where grainstones intertongue with and are sealed by muddy lagoonal facies, (i.e., in a more landward position behind the bank proper).

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Using a Microcomputer for Entry of Geologic Core Descriptions

Sohio realized the need for computer manipulation of lithologic data from a large number of cored wells. The specific goals were (1) comparing lithologic observations with foot-by-foot log measurements, and (2) rapid generation of lithologic maps. These goals required the creation of a consistent core description data base. Traditional geologic core descriptions, where many feet of rock are often summarized in a written paragraph, were found unsuitable for incorporation into a data base. Core description data sheets were also found unsatisfactory because of the time and cost required to locate and correct errors inherent in these forms.

With the Sohio Digital Entry of Core Description (SODECD), there is immediate data entry into a microcomputer, thereby providing excellent quality control. An assistant types the data into the microcomputer as the geologist describes the core. Features of the software include: (1) prompts for each data category, (2) cursor will skip past prompts not relevant, (3) allows movement forward and backward through prompts, (4) displays menus of valid responses, (5) completes quality control checks and displays error messages when invalid data is entered, (6) saves each foot of core description on diskette, and (7) allows the core description data to be transferred to the main computer and incorporated into the data base.

Compared to using core description data sheets, SODECD was found a more rapid and less expensive method of creating a core description data base. This data base is more accurate and consistent because the following problems are eliminated: (1) invalid data entries, (2) data entered in wrong column, (3) omission of significant data categories, (4) null versus zero ambiguity, (5) geologic inconsistencies, and (6) keypunching cost and errors.

The incorporation of core descriptions into a data base allows a variety of computer analysis, such as rapid production of lithologic maps, plots of lithologic data along with log measurements, and computer-produced stratigraphic columns.

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Wagwater Trough, Jamaica: Model for Aulacogen Transgressive Sedimentation

The Wagwater Trough, Jamaica, tectonically and sedimentologically represents a failed rift arm of the Cayman Trough, a Tertiary extensional plate boundary zone between the North American and Caribbean plates. Integration of regional geologic-geophysical data with the geometrical relationships of the northern Wagwater Belt sediments and volcanics demonstrates that the trough has proceeded through the four major stages of development for failed rift arms outlined by Burke in 1977. Initial basement swelling, rifting, rupture (sedimentation/subsidence), and later convergent deformation stages were correlated to the Tertiary depositional and deformational history within the Wagwater Trough. The transgressive depositional package tectonically recorded these events and can be divided into 4 lithogenetic units: (1) upper Paleocene-lower Eocene Wagwater alluvial fan conglomerates, (2) lower Eocene Nutfield pillow basalts, (3) lower Eocene Richmond fan delta/submarine fan conglomerates to mudstones, and (4) middle Eocene Font Hill deep marine limestones.

The thermal doming and swelling stages occurred during the late Cretaceous-early Paleocene as evidenced by concordant ages of granodiorites (65 m.y.B.P.) in the Cayman and Wagwater Troughs and by the Paleocene unconformity at the base of the Wagwater Formation. This stage resulted in the eventual formation of an active triple junction within the Cayman Trough by late Paleocene.

Initial rifting and deposition are recorded by the basal Wagwater Formation. The graded, boulder-cobble conglomeratic litharenites with granodiorite clasts were deposited in an alluvial fan environment adjacent to the fault scarps bounding the recently created Wagwater Trough. The volcanic activity associated with the triple junction is represented by the Nutfield spilitic pillow basalts, extruded in deep marine waters following the deposition of the terrestrial Wagwater Formation. These events together with the following indicate rapid deposition, subsidence, and ocean encroachment into the Wagwater Trough.

Active rifting ensued between the North American and Caribbean plates along the east-west-trending Cayman Trough. This rupture stage is characterized by thick transgressive sedimentation and differential subsidence as the nonmarine Wagwater Formation grades into the marine Richmond Formation. This depositional transition is further manifested by both slope and shelf facies of litharenites within the Richmond. The slope facies consists of thick boulder conglomerates fining up into turbidite sequences and volcanic slide conglomerates overlying the Nutfield flows. The shelf facies include: (1) a pebble-cobble conglomeratic fan delta complex, (2) several sandstone feeder channel deposits radiating north from the fan delta to the shelf break, and (3) progradational mudstones and siltstones. The interfingering of the Richmond and Wagwater lithogenetic units along a major east-west contact zone in the northern end of the belt is in direct contrast to the abrupt yet conformable slope facies contact between the two formations. These events indicate a much slower subsidence on the shelf in contrast to the rapid subsidence on the slope. By middle Eocene, clastic input was shut off, subsidence and marine transgression ensued, and a deep marine biomicrite, the Font Hill Limestone, capped the Richmond Formation within the Wagwater Trough.

The final stage of aulacogen development began during middle Miocene associated with a change from north-south rifting to left lateral motion along the Cayman Trough. As a consequence of this change in plate motion, the Wagwater Trough was uplifted and wrenched by left lateral transcompression. Today, fluvial sedimentation along the Wagwater River, the largest in Jamaica, progresses down the ancient axis of the Wagwater Trough.

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Laramide Foreland Thrust Faulting in Southwestern Montana

Two major schools of thought exist on the nature of Rocky Mountain foreland (Laramide) deformation: (1) advocates of the classical "fold-thrust" model of R. R. Berg, including variations and plate-tectonics settings by J. K. Sales, J. D. Lowell, A. W. Bally, and others; and (2) advocates of the classic upthrust or drape-fold model of J. J. Prucha and others, with recent vigorous support based on field and model studies by D. W. Stearns and his students. The first school concentrates on lateral-