been common throughout the region and exploration continues although tests have resulted only in noncommercial flows.

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TRONA AND HALITE RESOURCES IN WILKINS PEAK MEMBER OF GREEN RIVER FORMATION, GREEN RIVER BASIN, WYOMING

The Wilkins Peak Member of the Eocene Green River Formation is estimated to contain about 100 billion tons of trona ($Na_2CO_3 \cdot NaHCO_3 \cdot 2H_2O$) and halite (NaCl) in more than 40 beds at depths as great as 3,500 ft in a 1,300-sq-mi area in the Green River basin of Wyoming. Incomplete data on these beds indicate that trona comprises 80–85% of the total, and that individual beds range up to 40 ft in thickness and up to 900 sq mi in area. Trona, a major source of sodium carbonate, is mined at 4 localities. At least 30 billion tons of halite-free trona, possibly as much as 40 billion tons, are contained in beds that are at least 6 ft thick under an area of at least 25 sq mi. Halite is present either intermixed with trona, or interlayered with trona (in layers up to 20 ft thick), or rarely as halite beds with little or no trona. Halite is present only in the southwest part of the trona-halite area, only in 14 beds in the lower half of the Wilkins Peak Member, and only as part of, or continuation of, a trona bed.

The beds of trona and halite are evaporite deposits from a large alkaline lake that occupied the southern end of the Green River basin at the beginning of Wilkins Peak deposition, then gradually expanded northward. Beds of trona, or trona-halite, were deposited across successively larger areas until the middle of Wilkins Peak deposition, when trona deposition shifted northward and halite deposition ceased.

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ELECTRICAL ACCESSORY CURVES—NEW TOOL FOR SUBSURFACE CORRELATION

Electrical accessory curves facilitate recognition of subsurface formations from electrical logs and more accurate physical correlation of rock units. Two types of electrical accessory curves, which show the variation in percentage of thickness of sandstone (SP), and low resistivity mudstone as a function of depth, have been used to examine Laramide deformation in the Powder River basin of Wyoming during deposition of the thick (8,000 ft), nonmarine Late Cretaceous and Tertiary deposits which filled the basin.

The Laramide orogeny did not start in this part of Wyoming in late Maestrichtian, during deposition of the Lance Formation, and was only weakly active in early Paleocene time, during deposition of the Tullock Formation. Strong deformation started in middle Paleocene with subsidence along the axis of the basin and deposition of fine-grained Lebo mudstones. Other Laramide structures associated with basin deformation probably were started at this time. Strong subsidence continued into late Paleocene when coarse clastics of the Tongue River Formation first were deposited, indicating uplift and erosion of the adjacent mountains. Deformation continued through part of the Eocene, but ceased before Oligocene time.

Cross sections using electrical accessory curves illustrate their use in other thick nonmarine rock sequences and for detailed studies of subtle marine shale correlations. Electrical accessory curves are a new tool to help solve difficult subsurface rock correlation problems and they should be helpful in many other areas.

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UPPER PALEOZOIC EVAPORITES IN SVERDRUP BASIN, ARCTIC CANADA

Carboniferous and Permian evaporites and associated rocks in Arctic regions are of current interest in terms of global paleogeography and petroleum exploration. In the Canadian Arctic Archipelago, 3 upper Paleozoic evaporite formations are present in the Sverdrup basin, a regional depression overlying the Franklinian geosyncline and containing 40,000 ft (13,000 m) of lower Carboniferous to Eocene sediments. Two of these formations are: the Otto Fiord Formation (upper Carboniferous) in the axial region of the basin, and the Mt. Bayley Formation (Lower Permian), which is closer to the eastern basin margin. A third, unnamed evaporite unit of Moscovian or younger age is present along the north coast of Ellesmere Island.

The Otto Fiord Formation consists of over 1,300 ft (430 m) of interbedded anhydrite (75% by thickness) and limestone (25%) at the type section, with interbedded sandstones in other sections. The formation overlies sandstones and conglomerates of the Borup Fiord Formation (Namurian?), grades laterally into carbonates of the Nansen Formation, and is overlain by carbonates or siltstones of the Hare Fiord Formation (Moscovian at base). The Otto Fiord evaporites extend for at least 400 mi (650 km) in a broad, northeast-trending belt characterized in the south by numerous large piercement structures. Namurian and Bashkirian ammonoids discovered in these diapirs now have been found at several levels in the Otto Fiord type section.

Apart from a few cubic crystal casts, there are no positive indications of halite in surface exposures of the Otto Fiord Formation; breccia zones in anhydrite and limestone are not extensive. The Otto Fiord anhydrite beds vary in fabric from indistinctly bedded nodular mosaics, to fabrics apparently pseudomorphic after coarsely crystalline gypsum. Fabrics and bedding of the anhydrite, the biota of limestone interbeds, and the associated lithofacies indicate a marine subaqueous mechanism of deposition for these evaporites.

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POSTDEPOSITIONAL CHANGES IN DEEP-SEA SEDIMENTS

Deep penetration of marine sediments by the Deep Sea Drilling Project has permitted the study of the postdepositional physical and chemical changes which take place in deep sea sediments. Such studies have not been possible previously because of the inaccessibility of the deep-sea environment. The diagenetic changes can be viewed as functions of time, lithology, and rate of sedimentation. With the passage of time and increasing deposition of sediment, lithification proceeds gradually until the lithified analogs of facies normally found as soft surface sediments are formed. These lithified and partly lithified rocks can be compared with their unlithified equivalents and with lithified formations of possible deep-sea origin now found on the continents.