stratigraphic trap in the Tomahawk field. The P-2 zone is approximately 100 ft (30 m) thick, with the main field pay developed in the upper 50 ft (15 m). This interval is a sucrosic, vugular dolomite in which two predolomitization facies can be recognized, an upper oolitic limestone facies and an underlying crinoidal, argillaceous limestone facies. A dolomite bed near the base of the P-2 zone has 4 to 15 ft (1 to 5 m) of porosity over most of the field and is productive in several local areas. Productive porosity in the P-2 zone ranges from 4 to 10% and the thickness of net pay ranges from 10 to 45 ft (3 to 14 m). Good permeability is dependent upon fractures. Several locally successful techniques for fracture detection are used.

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Magnetotelluric Petroleum Exploration—Technology Update and Case Histories

The use of magnetotelluric soundings for the estimation of subsurface electrical conductivity structures and properties has been increasing during the past several years. Greater interpretational capabilities and improved techniques for achieving higher data quality, coupled with the experience gained, have made the method a practical and effective exploration tool. Magnetotelluric exploration has been applied to a large variety of structural and stratigraphic problems and has proven effective and capable of yielding information even in areas which give poor or uninterpretable seismic results.

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Uranium in Challis Volcanic Field, Idaho

Recorded uranium production and known resources in the Challis Volcanics and the Challis-related epizonal silicic plutons of Eocene age are small, but the potential resource is moderately high. Former production was from arkosic conglomerates and sandstones at the base of the Challis Volcanics in Stanley basin and from a scheelite deposit on the contact of the Summit Creek stock. Uranium mineralization also occurs in water-laid rhyodacite pumice-rich tuffs, in the Twin Springs pluton, in the Beaverhead stock, and in shear zones in the Castro granite.

The Challis Volcanics are potash-rich, calc-alkaline rocks and, in general, are not known to be enriched in uranium. However, numerous highly differentiated silicic intrusions that acted, in part, as feeders to the closing phases of Challis volcanism are rich in uranium and thorium. These intrusions range from rhyolite, rhyodacite to granite, and from plugs, domes, dikes, stocks, to batholiths.

Exploration in the Challis field should be concentrated in areas of silicic tuffs and breccias or in arkosic beds that occupy depressions in pre-Challis basement or volcanic-tectonic subsidences. Few such structures are known because detailed mapping of the field is incomplete; one exception is a trap-door graben that contains the uranium-rich arkoses of Stanley basin. Mineralized indicators of uranium are hematite staining, disseminated pyrite, and opaline silica alteration. Radioactive anomalies in present-day valleys can result from the fixation of uranium in organic-rich bogs or from accumulations of coarse detritus from granitic plutons.

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Brachiopod Biostratigraphy of Hueco Group (Wolfcamp), Franklin Mountains, Texas and New Mexico

The Franklin Mountains are located in the extreme western tip of Texas and extend northward into south-central New Mexico, approximately 23 mi (37 km) from El Paso which is built around the southern end of the range.

The outcrops of Permian strata in the Franklin Mountains consist of small outliers on the western edge which are separated from the main range. The Permian is represented by the Hueco Group (Wolfcampian) which is divided into three formations, in ascending order: the Hueco Canyon, Cerro Alto, and Alacran Mountain Formations.

The 1,350-ft (411.5 m) thick Hueco Canyon Formation contains 22 genera and 23 species of brachiopods. These are *Orthotichia* sp., *Accosarina* sp., *Acritosia silicica* Cooper & Grant, *Rhipidomella hessensis* R. E. King, *Derbyia* sp., *Chonetinella* sp., *Kozlowskia capaci* (d'Orbigny), *Reticulatia huecoensis* (R. E. King), *Dasyaria undulata* Cooper & Grant, *Dasyaria wolfcampensis* (R. E. King), *Cancrinella parva* Cooper & Grant, *Linoproductus cora* (d'Orbigny), *Pontisia franklinensis* Cooper & Grant, *Stenocisma* sp., *Hustedia huecoensis* R. E. King, *Rhynchopora* sp., *Crurithyris tumbilis* Cooper & Grant, *Cleiothyridina rectimarginata* Cooper & Grant, *Composita cracens* Cooper & Grant, *Beecheria bovidens* (Morton), *Chondronia obesa* Cooper & Grant, *Dielasma* sp. 1, and Dielasma sp. 2.

The 350 to 425-ft (106.7 to 129.5 m) thick Cerro Alto Formation contains 8 genera and 9 species of brachiopods. These are *Derbyia* sp., *Chonetinella* sp., *Squamaria moorei* Muir-Wood & Cooper, *Cancrinella altissimia* R. H. King, *Linoproductus cora* (d'Orbigny), *Pontisia franklinensis* Cooper & Grant, *Crurithyris quadalupensis* (Girty), *Composita cracens* Copper & Grant, and *Composita mexicana* (Hall).

The 315 to 739-ft (96 to 225.2 m) thick Alacran Mountain Formation contains 24 genera and 27 species of brachiopods. These are *Crania modesta* White & St. John, *Meekela* sp., *Enteletes* sp., *Derbyia* sp., *Pseudoleptodus* sp., *Micraphelia* sp., *Costellarina costellata* (Muir-Wood & Cooper), *Hystriculina convexa* Cooper & Grant, *Kutorginella* sp., *Nudauris* sp., *Kozlowskia capaci* (d'Orbigny), *Dasysaria undulata* Cooper & Grant, *Dasysaria wolfcampensis* (R. E. King), *Linoproductus* sp., *Pontisia franklinensis* Cooper & Grant, *Stenocisma hueconians* (Girty), *Hustedia hessensis* R. E. King, *Hustedia huecoensis* R. E. King, *Crurithyris* sp., *Neophricadothyris* sp., *Composita cracens* Cooper & Grant, *Composita mexicana* (Hall), *Reticulariina heuconiana* Cooper & Grant, *Gypospirifer nelsoni* Cooper & Grant, *Beecheria bovidens* (Morton), *Chondronia obesa* Cooper & Grant, *Dielasma* sp.

Other faunal taxons present in the Hueco Group of the Franklin Mountains include Foraminifera, Fusulinida, Porifera, Coelenterata, Bryozoa, Polyplacophora, Gastropoda, Cephalopoda, Bivalvia, Scaphopoda, Crustacea, Trilobita, Annelida, Crinoidea, Echinoidea, Conodonta, and Vertebrata.

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Petrology and Geochemistry of Peralkaline Volcanics of Sierra Campana, Chihuahua, Mexico

Peralkaline welded tuffs (and flows?) make up the steep walls of the lower Campana Canyon and the east-facing scarp of the Sierra Campana, approximately 100 km north of Ciudad Chihuahua. The sequence includes crystal-poor, highly contorted welded tuffs and the distinctly peralkaline Campana tuff that forms the steep columnar-jointed cliff atop