

**Stratigraphic Section A - A', T. 42 N. - R. 18 E. to  
T. 41 N. - R. 30 E., Navajo and Apache Counties, Arizona**

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This is the first in what is planned to be a series of regional, electric-log cross sections in Arizona. An effort was made to use logs of similar types, but this was not always possible. One well (Texaco 1-Navajo AG) is represented by a composite Gamma-Ray Sonic and Spontaneous Potential-Induction electric log. The Hancock 1 Dinne Federal well is represented by a Gamma-Ray Neutron log.

The selected wells were not always the deepest in a township, but were chosen because of the quality of their logs. All available well-file information was used, including scout tops, sample-log tops, and rare paleontologic picks. Correlations, however, are based on log characteristics and may not coincide with previous picks.

All tests and shows in the Pennsylvanian portion of the section are reported to be below the top of the Ismay Zone. The widely reported Desert Creek, Akah, and Barker Creek Zones are not correlated on this section because the author believes these zones to be discontinuous. Instead, two widespread shale markers have been correlated. The Desert Creek and Akah Zones are often reported between the Ismay Zone and the upper shale marker, whereas the Barker Creek Zone is picked between the shale markers. The section does not show Mississippian subdivisions because the wide range of log responses suggests a three-dimensional facies relationship that is not fully understood.

The location of the Texaco-Skelly-Sinclair 1-Navajo well is unclear. A plat filed with the drilling application was made on a protraction diagram, which included a row of partial sections in T. 42 N., R. 18 E. The well was then described as being in sec. 34, T. 42 N., R. 18 E. This well was completed in 1953. The Bureau of Land Management (BLM), however, created a new protraction diagram that did not include T. 42 N. The Texaco survey lists the metes and bounds location of the well as 3,300 feet south of the Utah/Arizona State line and 4,036 feet west of the eastern boundary of the Navajo "A" lease line. This survey shows MP #204, which is on the State line, as being 1,026.42 feet east of the lease boundary. This makes the location of the well 3,300 feet south of the State line and 5,062 feet west of MP #204. The electric log for the well carries this location. The modern BLM protraction diagram places the well in SE 1/4 sec. 3, T. 41 N., R. 18 E.

The American Stratigraphic Company sample-log tops for the Devonian Elbert and Aneth(?) Formations are at 4,148 and 4,367 feet, respectively, and the Cambrian is picked at 4,423(?) feet. The Petroleum Information scout card lists only undifferentiated Devonian rocks at 4,060 feet. Correlations made in this cross section show the Elbert Formation at 4,148 feet, an unnamed marker at 4,305 feet, and the McCracken Zone at 4,500 feet in the Texaco-Skelly-Sinclair well. The Aneth Formation and Cambrian strata were not penetrated. These correlations are tenuous; the nearest well is about 15 miles away. The picks are based on electric-log character only. It is interesting that the sample log records sand beds in the interval between 4,423 and 4,490 feet. If that is correct, the sand may represent the McCracken Zone. Because the sample log was made 13 years after the well was drilled, the integrity of the samples is unknown. Additional work and additional wells are needed in this region.

Two small structural sections are included in the report to show the magnitude of the Monument Uplift. Vertical difference of about 3,000 feet is shown on the section. At the surface, this differential uplift is represented by the Comb Ridge Monocline. No fault is mapped at the surface, but the author believes that one is present at depth. This inferred fault is drawn on the section as a steep normal fault, but evidence in the well shows that it could be a reverse or thrust fault. The author has speculated that it could represent an eastern expression of Laramide compression. The surface fold (Comb Ridge Monocline) would then be the early surface expression of deformation; motion would have ceased before faulting reached the surface.