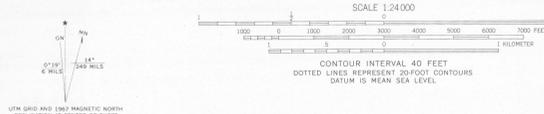




Base from U.S. Geological Survey
Strawberry, 1967; Pine, 1973;
Hackberry Mtn., 1967; and Buckhorn
Mtn., 1965



AEROMAGNETIC MAP OF THE FOSSIL SPRINGS ROADLESS AREA, YAVAPAI, GILA, AND COCONINO COUNTIES, ARIZONA

By
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1984

STUDIES RELATED TO WILDERNESS

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines to survey certain areas to determine their mineral resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of an aeromagnetic survey of the Fossil Springs Roadless Area (03046), in the Coconino National Forest, Yavapai, Gila, and Coconino Counties, Arizona. The Fossil Springs Roadless Area was classified as a further planning area during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979.

INTRODUCTION

The aeromagnetic map of the Fossil Springs Roadless Area was compiled from data collected in 1980 by Airmag Surveys, Inc., for the U.S. Geological Survey. Total magnetic intensity measurements were made along east-west flight lines about 0.5 mi apart and flown at an average altitude of 1,000 ft above the ground surface. A regional magnetic field (the International Geomagnetic Reference Field, 1975, updated to months flown) was removed from the data and a constant of 50,000 gammas was added to the adjusted total field intensity values.

The roadless area includes the upper part of Fossil Creek and its northeastern tributaries in Sandrock Canyon and Calf Pen Canyon. The extremely rugged canyon of Fossil Creek is in several places more than 1,500 ft deep. Elevation of the canyon floor ranges from 4,600 ft near the mouth of Calf Pen Canyon to 3,500 ft at the southwest end of the area. Peaks and ridges on the uplands bordering the canyon range in elevation from 6,300 ft west of Fossil Springs to 6,300 ft in the northeastern part of the area. Maximum topographic relief along these uplands is less than 200 ft.

The Fossil Springs Roadless Area is underlain by more than 3,000 ft of Paleozoic rocks consisting mostly of sandstone, shale, dolomite, and limestone. In the northeastern part of the area, the magnetic pattern suggests that part of the zone continues northward and may be an extension of the Cash Tank fault in the West Clear Creek Roadless Area (Ulrich and Bielski, 1983). Another northward-trending fault occurs near the mouth of Tin Can Draw in the canyon of Fossil Creek. Magnetic gradients indicate that this fault continues northward into the volcanic rocks along the northeast side of the draw.

A zone of weak to moderate magnetic intensity is expressed by the volcanic rocks that lie on the upland along the upper parts of Horse Tank Wash and Calf Pen Canyon on the northeast margin of the area. The variations in total magnetic intensity of the area are related to magnetic contrasts in the volcanic rocks and to magnetic contrasts between the basalts and sedimentary rocks and deposits. There do not seem to be any magnetic lows that represent zones of alteration in which metallic mineral deposits may occur along fault zones. None of the anomalies have sufficient amplitude to represent a large deposit of magnetite lying at shallow depths in the area.

REFERENCES CITED

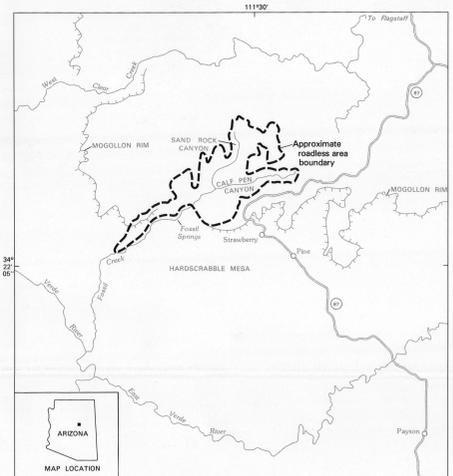
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MAGNETIC FEATURES

In the western part of the area, a zone of low magnetic intensity lies along the southeast wall of the canyon of Fossil Creek. This zone is a counterpart of prominent magnetic highs that are associated with a thick sequence of volcanic rocks underlying Deadman and Hackscrabble mesas to the south. The low intensity is caused mainly by edge effects of the basalt flows exposed in the canyon wall. Extreme minimums in the zone lie adjacent to steep north slopes in the basalt. Magnetic gradients

Geology generalized from Weir and Beard (1984). Aeromagnetic survey flown and compiled by Airmag Surveys, Inc., 1980

- EXPLANATION**
- Tv VOLCANIC ROCKS (TERTIARY)--Mostly basaltic lavas, pyroclastic deposits, scoria, cinders, and other vent material
 - CzPss SEDIMENTARY ROCKS AND DEPOSITS (CENOZOIC AND PALEOZOIC)--Includes colluvium, landslide deposits, dolomite, limestone, sandstone, and shale
 - CONTACT--Approximately located
 - - - - - FAULT--Dashed where inferred; queried where doubtful. Bar and ball on downthrown side
 - - - - - INFERRED POSITION OF BURIED ANCESTRAL MOGOLLON RIM
 - MAGNETIC CONTOURS--Showing residual total intensity of earth's magnetic field in gammas. Hachured to indicate closed areas of lower magnetic intensity. Contour interval 20 gammas. Flight line direction indicated by long dashes; flight line spacing, 0.5 mi (0.8 km); flight altitude, 1,000 ft (300 m) terrain clearance. A constant value of 50,000 gammas is added to data. The regional field removed is IGRF 1975 updated to the month flown
 - - - - - APPROXIMATE BOUNDARY OF ROADLESS AREA



INDEX MAP SHOWING LOCATION OF THE FOSSIL SPRINGS ROADLESS AREA (03046), YAVAPAI, GILA, AND COCONINO COUNTIES, ARIZONA