

EXPLANATION

Magnetic contours—showing residual total-intensity magnetic field of the Earth in nanoteslas (1 nanotesla = 1 gamma) at 1,000 ft above the ground. Datum is arbitrary. Tick marks indicate magnetic lows. Contour intervals are 40 and 200 nanoteslas.

Flight path—showing location of flight lines.

Survey boundary.

DISCUSSION

As part of an effort to help geologically characterize a possible high-level nuclear waste repository at Yucca Mountain, a merged aeromagnetic map of the Nevada Test Site (NTS) and vicinity was prepared from eight separate aeromagnetic surveys (table 1). Each data set was compiled and merged by Kucks and Hildenbrand (1987) as part of a statewide aeromagnetic map of Nevada (Hildenbrand and Kucks, 1988). During processing each data set was gridded at a 1-km interval, and a geomatic reference field was removed. Prior to merging, each grid was either spread or downward continued to 1,000 ft above the ground and datum shifts were applied, where necessary, to achieve an overall constant datum.

The resulting map yields an integrated picture of the total magnetic field that is useful for identifying areas of further interest and for qualitative interpretation. However, quantitative interpretation should be made using the original data, because anomaly locations and relative amplitudes may have been altered slightly during computer processing. The final merged map was compared with the individual published maps to ensure that the location of major anomalies and magnetic trends were preserved. The average difference in anomaly positions for major anomalies is about 0.4 km, which is reasonable for a 1-km grid spacing.

In 1986, K.S. Kirchoff-Stein discovered periodic gaps in the available digital data for the Lathrop Wells survey (area 5) that resulted in a 25% data loss compared to the data used in the published map (U.S. Geological Survey, 1979). In addition, both the digital data and the published map are mislocated by about 300 m to the west. Because of the 1-km grid spacing, neither of these effects causes noticeable departures in magnetic anomaly shape or position for the merged aeromagnetic map.

This map is being released in the interest of making data available for qualitative interpretation and planning purposes. Additional maps are needed, including a mosaic aeromagnetic map of the original surveys as well as an updated merged aeromagnetic map. These maps would utilize data from surveys that were flown more recently, at a lower level, or with more closely spaced flight lines than the present compilation. Together, such maps would allow integrated interpretations over a large area that encompasses the NTS and vicinity.

SOURCES OF AEROMAGNETIC DATA

Survey areas are separated by solid lines on the aeromagnetic map and each survey has been given an index number (fig. 1, table 1). Areas that were flown together but published separately have the same index number followed by an alphabetic suffix and are separated by dotted lines (fig. 1). Surveys 1a-d and 2a-c were digitized by the U.S. Geological Survey (Sweeney and others, 1979) and other surveys were originally available in digital form or were digitized by the U.S. Geological Survey (R.P. Kucks and T.G. Hildenbrand, written commun., 1988).

1963b, Aeromagnetic map of the Tipipah Spring quadrangle and parts of the Popo Lake and Wheeler Peak quadrangles, Nye County, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-441, scale 1:82,500.

1963c, Aeromagnetic map of the Tipipah Spring quadrangle and parts of the Popo Lake and Wheeler Peak quadrangles, Nye County, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-442, scale 1:82,500.

1963d, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1964, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1965, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1966, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1967, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1968, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1969, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1970, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1971, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1972, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1973, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1974, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1975, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1976, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1977, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1978, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1979, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

1980, Aeromagnetic map of the Wheeler Peak quadrangle and parts of the Cimarron Mine quadrangle, Nye and Lincoln Counties, Nevada; U.S. Geological Survey Geophysical Investigations Map GP-613, scale 1:82,500.

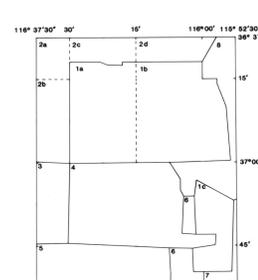
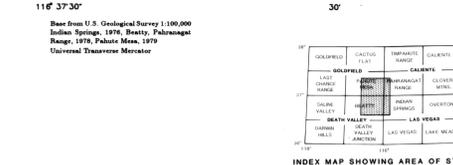


FIGURE 1.—Index map showing approximate survey boundaries.

TABLE 1.—Aeromagnetic survey specifications
[AG, altitude above ground; B, bearing; elevation, DV, Death Valley Gird, Goldfield, Nev.; M, Magnetic NUTRE, National Uranium Resource Evaluation program]

Area	Name	Year	Flown	Flight elevation (ft)	Flight spacing (m)	Flight direction	Scale	Reference
1a	Timber Mtn	1960/61	8,000 B	1/2	E-W	1:82,500	Boynton and others (1963a)	
b	Tipipah Spg	1960/61	8,000 B	1/2	E-W	1:82,500	Boynton and others (1963b)	
c	Clear Spg	1961	8,000 B	1/2	E-W	1:82,500	Boynton and Vargo (1965)	
2a	Black Mtn	1963	8,000 B	1	E-W	1:82,500	Phillips and White (1966a)	
b	Sarcobatus Flat	1963	8,000 B	1/2	E-W	1:82,500	Phillips and White (1966b)	
c	Silent Cyn	1963	8,000 B	1	E-W	1:82,500	Phillips and White (1966c)	
d	Wheelerbarrow Pk	1963	8,000 B	1	E-W	1:82,500	Phillips and White (1966d)	
e	Gold Mtn DV	1967	8,000 B	1	E-W	1:82,500	U.S. Geological Survey (1971)	
f	Timber Mtn area	1977	400 AG	1/4	E-W	1:82,500	U.S. Geological Survey (1979)	
g	Lathrop Wells area	1979	400 AG	1/4	E-W	1:82,500	U.S. Geological Survey (1979)	
h	DV-NUTRE	1979	400 AG	1	N-S	1:800,000	Geodata International, Inc. (1979a)	
i	Las Vegas-NUTRE	1979	400 AG	3	E-W	1:800,000	Geodata International, Inc. (1979b)	
j	Climax Stock	1980	7,000 B in S, 8,000 B in N	1	E-W	1:250,000	Bath and others (1980)	



Partly funded by the U.S. Department of Energy-Yucca Mountain Project. Interagency agreement DE-AD06-78ET4402

PRELIMINARY AEROMAGNETIC MAP OF THE NEVADA TEST SITE AND VICINITY, NEVADA

By
K. S. Kirchoff-Stein, D. A. Ponce, and B. A. Chuchel
1989

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards. Any use of trade names or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.