

This aeromagnetic map covers the southern portion of San Francisco Bay, the Santa Clara Valley and surrounding mountains, part of which has been modeled in three-dimensions (Jachens and others, 2003). The magnetic anomaly map has been compiled from existing digital data. Data were obtained from six aeromagnetic surveys that were flown at different altitudes, spacings and orientations. The International Geomagnetic Reference Field (IGRF) was used to correct for secular variation and to reduce the data to a common surface, 305 m (1000 ft) above terrain. Portions of each survey were subsampled above the specified flight height listed in the table. The surveys were then merged together using a commercial software package called Oasis Montaj. The gray lines on the map indicate the extent of each survey. The program used these regions of overlap to determine the best fit between surveys. Black dots show probable edges of magnetic bodies defined by the maximum horizontal gradient determined using a computer program by Pridmore (1995).

Crystalline rocks generally contain sufficient magnetic minerals to cause variations in the Earth's magnetic field that can be mapped by aeromagnetic surveys. Sedimentary rocks are generally weakly magnetized and consequently have a small effect on the magnetic field; thus a magnetic anomaly map can be used to "see through" the sedimentary rock cover and gain survey information on lithologic contrast and structural trends related to the underlying crystalline basement (see Nedonco, 1971; and Carter, 1997). The aeromagnetic map is a valuable tool for geologists and geophysicists that is used to help determine fault position. Some faults, which are highly magnetic, is often found along fault lines. On this map areas of low magnetic anomalies are shown in blues and green while high are shown in reds and magentas.

Faults are from Brabb and others, 1998a, 1998b, Grayner and others 1996, Lambaertner, 1992 and Westworth and others 1998.

Note: Digital data sets are being made available on the Internet at: <http://pubsweb.cr.usgs.gov/ofr2003/ofr03360/>. This and other recent USGS publications in the Western Region may be found at: <http://geoplatform.wr.usgs.gov/>.

TABLE 1. Surveys used for this compilation

No.	Name	Date of survey	Flight line spacing	Flight line direction	Flight line elevation above ground (ft)	Reference
1140	San Jose	1989, 1990	1/4 mi	NE-SW	500	Abrams and others, 1991a
1141	Palo Alto	1990	1/4 mi	NE-SW	800	Abrams and others, 1991b
4151	Livermore	1991	1/3 mi	NE-SW	1000	USGS, 1992
4167	San Francisco Bay '95	1995	1/3 mi	N43E	490-820	USGS, 1996
4231	San Gregorio-Hollister	1999	1/3 mi	N66E	500-800	USGS, 2001
4299	Santa Clara Valley	2002	1/3 mi	N73E	800	Unpublished

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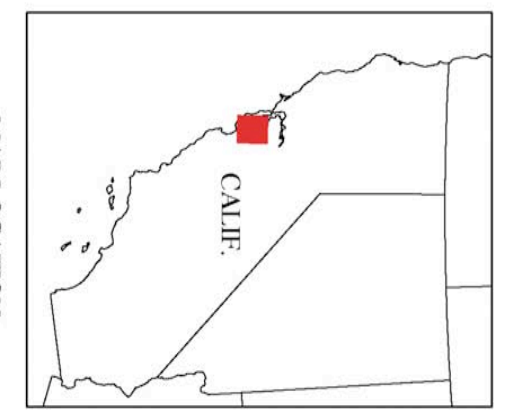
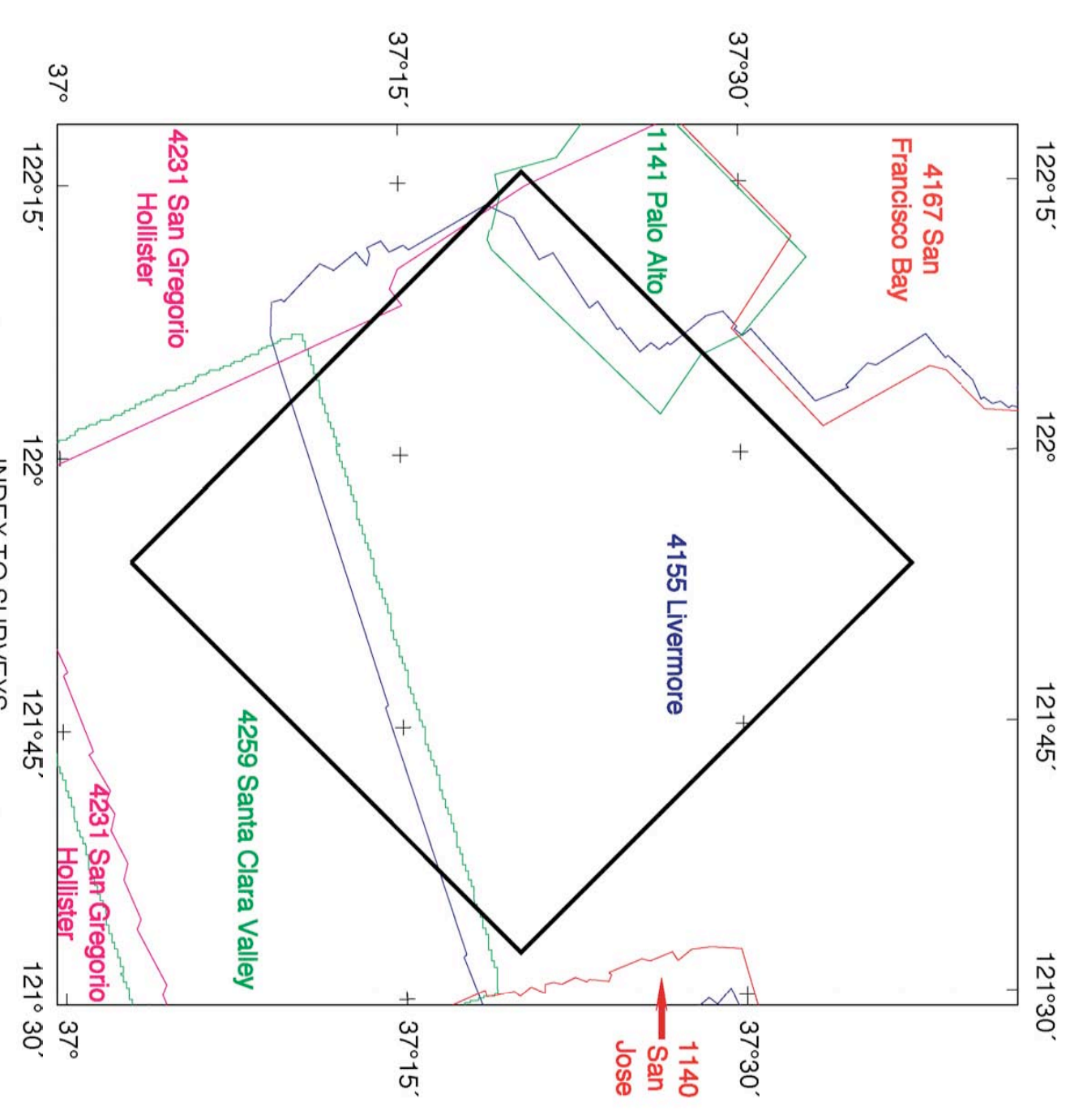
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SHADED RELIEF AEROMAGNETIC MAP OF THE SANTA CLARA VALLEY AND VICINITY, CALIFORNIA

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