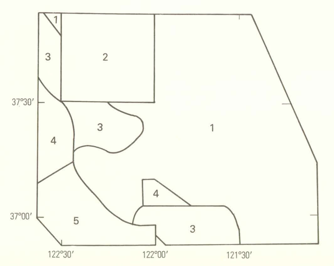
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

GEOPHYSICAL INVESTIGATIONS
MAP GP–932 (SHEET 1 OF 3)

EXPLANATION

Contours showing total intensity magnetic field of the earth in gammas relative to a datum. Hachured to indicate closed areas of lower magnetic field intensity; dashed where data are incomplete. Dashed straight line segments indicate location of flight path. Datum and flight specifications are summarized in references to index map



INDEX MAP SHOWING AREA COVERED BY AEROMAGNETIC SURVEYS

Index to Data Sources

1. U.S. Geological Survey, 1974, Aeromagnetic map of parts of the San Jose, Santa Cruz, and San Francisco 1° by 2° quadrangles, California: U.S. Geological Survey Open-File Report 74–79, scale 1:125,000. (Specifications: Flight direction, northeast-southwest; Flight spacing, 1.6 km (1 mi); Flight elevation, 915 m (3,000 ft) above sea level; Magnetic field datum, Updated IGRF 1965 (1,000 gammas added to all residual values), Survey date, 1973; Contour interval, 20 and 100 gammas.)
2. U.S. Geological Survey, 1971, Aeromagnetic map of the southern part of the San Francisco Bay region, California: U.S. Geological Survey Open-File Report, scale 1:125,000. (Specifications: Flight direction, east-west; Flight spacing, 1.6 km (1 mi); Flight elevation 305 m (1,000 ft) above ground; Magnetic field datum, arbitrary; Survey dates, 1950 and 1951; Contour interval, 50 and 100 gammas.)
3. Unpublished data, 1954, Gulf Oil Company (Specifications: Flight direction, northeast-southwest; Flight spacing, 1.6 km (1 mi); Flight elevation 917 m (3,000 ft) above sea level; Magnetic field datum, arbitrary; Survey date, 1954; Contour interval, 10 and 50 gammas.)
4. U.S. Naval Oceanographic Office data, shown in (a) Zietz, Isidore, and Kirby, J. R., 1968, Magnetic map from 112° W longitude to the coast of California: U.S. Geological Survey Miscellaneous Investigations Series Map I–532–A, scale 1:1,000,000 and (b) Zietz, Isidore, Bateman, P. C., Case, J. E., Crittenden, M. D., Jr., Griscom, Andrew, King, E. R., Roberts, R. J., and Lorentzen, G. R., 1969, Aeromagnetic investigation of crustal structure for a strip across the western United States: Geological Society of America Bulletin, v. 80, no. 9 p.1703–1714. (Specifications: Flight direction, east northeast-west southwest; Flight spacing, 8 km (5 mi); Flight elevation, 1,834 m (6,000 ft) above sea level; Magnetic field datum, arbitrary; Survey date, 1966; Contour interval, 20 gammas.)
5. McCulloch, D. S., and Chapman, R. H., 1977, Maps showing residual magnetic intensity along the California coast, lat 37°30′ N., U.S. Geological Survey Open-File Report 77–79, scale 1:125,000. (Specifications: Flight direction, northeast-southwest; Flight spacing, 1.6 km (1 mi); Flight elevation 305 m (2,000 ft) above sea level; Magnetic field datum, 50,500.60 gammas—a regional field of 5.39 gammas/km (8.62 gammas/mi) north and 2.62 gammas/km (4.19 gammas/mi) east was removed using an updated IGRF 1975; Contour interval, 10 gammas.)

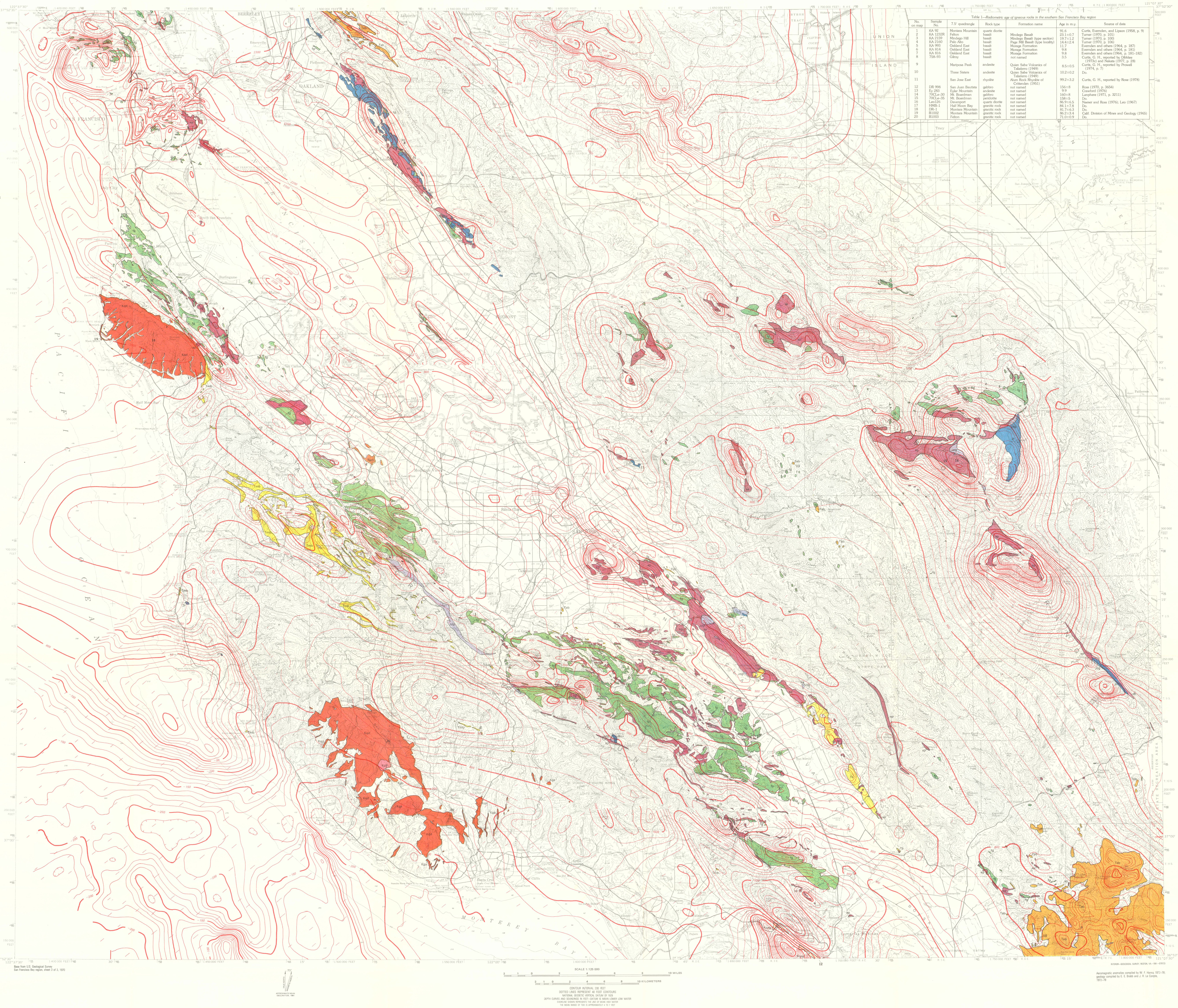


Table 1—*Radiometric age of igneous rocks in the southern San Francisco Bay region*

No. on map	Sample No.	7.5′ quadrangle	Rock type	Formation name	Age in m.y.	Source of data
1	KA 92	Montara Mountain	quartz diorite		91.6	Curtis, Evernden, and Lipson (1958, p. 9)
2	KA 1232R	Felton	basalt	Mindego Basalt	23.1±0.7	Turner (1970, p. 101)
3	KA 2159	Mindego Hill	basalt	Mindego Basalt (type section)	19.7±1.2	Turner (1970, p. 100)
4	KA 2160	Palo Alto	basalt	Page Mill Basalt (type locality)	14.4±2.4	Turner (1970, p. 106)
5	KA 993	Oakland East	basalt	Moraga Formation	11.7	Evernden and others (1964, p. 187)
6	KA 814	Oakland East	basalt	Moraga Formation	9.8	Evernden and others (1964, p. 181)
7	KA 816	Oakland East	basalt	Moraga Formation	9.8	Evernden and others (1964, p. 181–182)
8	758–93	Gilroy	basalt	not named	3.5	Curtis, G. H., reported by Dibblee (1973c) and Nakata (1977, p. 28)
9		Mariposa Peak	andesite	Quien Sabe Volcanics of Taliaferro (1949)	8.5±0.5	Curtis, G. H., reported by Prowell (1974, p. 7)
10		Three Sisters	andesite	Quien Sabe Volcanics of Taliaferro (1949)	10.2±0.2	Do.
11		San Jose East	rhyolite	Alum Rock Rhyolite of Crittenden (1951)	99.2±3.2	Curtis, G. H., reported by Rose (1978)
12	DR 998	San Juan Bautista	gabbro	not named	156±8	Ross (1970, p. 3654)
13	Ey 283	Eylar Mountain	andesite	not named	9.9	Crawford (1976)
14	70CLe–30	Mt. Boardman	gabbro	not named	160±8	Lanphere (1971, p. 3211)
15	70CLe–35	Mt. Boardman	peridotite	not named	158±5	Do.
16	Leo126	Davenport	quartz diorite	not named	86.9±6.5	Naeser and Ross (1976); Leo (1967)
17	HMB–1	Half Moon Bay	granitic rock	not named	84.1±7.8	Do.
18	DR–1	Montara Mountain	granitic rock	not named	81.7±6.3	Do.
19	B1002	Montara Mountain	granitic rock	not named	86.2±3.4	Calif. Division of Mines and Geology (1965)
20	B1003	Felton	granitic rock	not named	71.0±0.9	Do.

CORRELATION OF MAP UNITS

Tb — Pliocene(?); Tab — Miocene; Tpm, Tmb — Miocene and (or) Oligocene — TERTIARY

CRYSTALLINE ROCKS IN SALINIAN BLOCK: Kgo, Kga, Kqd, Kqag, Kgb — CRETACEOUS

OPHIOLITE UNDERLYING GREAT VALLEY SEQUENCE: Jr, Jdg, Jb — JURASSIC

fg — CRETACEOUS AND JURASSIC

sp — JURASSIC

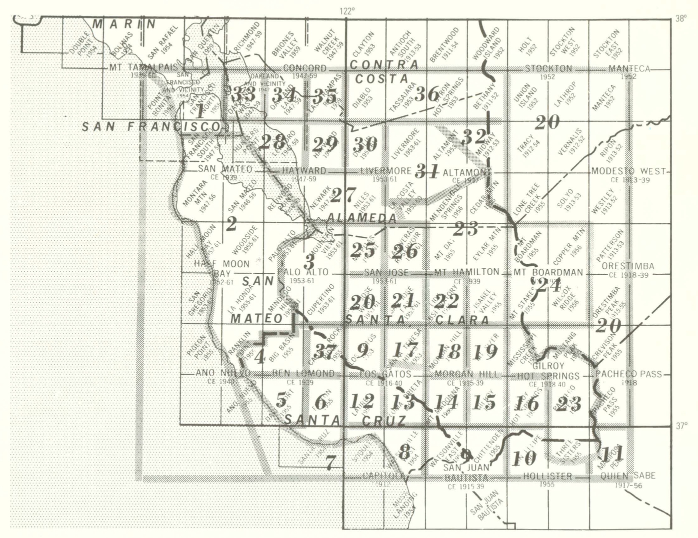
n — QUATERNARY TO PALEOZOIC

DESCRIPTION OF MAP UNITS

- Tb — BASALT—Includes some andesite and sedimentary rocks. Probably Pliocene (5–1.5 m.y.)
- Tab — ANDESITE AND BASALT—Minor rhyolite and dacite. Late(?) Miocene (10.5–5 m.y.)
- Tpm — PAGE MILL BASALT
- Tmb — MINDEGO BASALT AND SIMILAR VOLCANIC ROCKS—Includes some sedimentary rocks
- Kgo — GRANODIORITE ORTHOGNEISS
- Kga — GRANODIORITE,GRANITE, AND ADAMELLITE
- Kqd — QUARTZ DIORITE—Includes small areas of noncrystalline rocks
- Kqag — QUARTZ GABBRO AND ANORTHOSITIC GABBRO
- Kgb — GABBRO
- Jr — RHYOLITE AND KERATOPHYRE
- Jdg — DIABASE AND GABBRO
- Jb — BASALT
- fg — FRANCISCAN ASSEMBLAGE—Greenstone. Probably includes some rocks from ophiolite underlying Great Valley sequence and small areas of sedimentary rocks and serpentinite
- sp — SERPENTINITE—Includes some dunite, peridotite, pyroxenite, and other ultramafic rocks
- n — NONCRYSTALLINE ROCKS AND SEDIMENTARY DEPOSITS

Contact

4 Sample locality—Number refers to table 1



INDEX MAP FOR SOURCES OF COMPILATION DATA SHOWING COUNTIES AND QUADRANGLES

Sources of compilation data

1. Blake and others (1974).
2. Brabb and Pampeyan (1972).
3. Dibblee (1966); some fault data from Sorg and McLaughlin (1975) and Sarna and others (1975).
4. Brabb (1970); some fault data from Sorg and McLaughlin (1975), and Sarna and others (1975).
5. Clark (1970), Leo (1967).
6. Clark (1966), Leo (1967), Ross and Brabb (1973).
7. Green and others (1973).
8. Dupre′(1975), Clark and Rietman (1973), Ross (1970), Allen (1946).
9. Dibblee and Brabb (1978), some fault data from Sarna and others (1975).
10. Dibblee (1975a).
11. Dibblee (1975b); some data from Prowell (1974). See also Leith (1949).
12. Dibblee, Brabb, and Clark (1978); some fault data from Sarna and others (1975).
13. Mostly from unpublished mapping by T. W. Dibblee, Jr., and E. E. Brabb (1975–78); some data from McLaughlin and others (1971), Rogers and Williams (1974), and Sarna and others (1975).
14. Dibblee (1973d).
15. Dibblee (1973e), Nakata (1977).
16. Dibblee (1973f) and Cotton (1972).
17. Bailey and Everhart (1964).
18. Dibblee (1973b), Nakata (1977).
19. Dibblee (1973c) and Cotton (1972).
20. Rogers (1966).
21. Dibblee (1972b).
22. Dibblee (1972c) and Cotton 1972).
23. Cotton (1972); some data from Crawford (1976).
24. Maddock (1964).
25. Dibblee (1972a) and Herd (1977a).
26. Dibblee (1973a) and Cotton (1972).
27. Herd (1977a), Brabb, E. E., unpublished data (1978), Hall (1958), Herd (1978b).
28. Herd (1978a), Radbruch and Case (1967).
29. Robinson (1956), Herd (1978a), Wagner (1978).
30. Wagner (1978), Hall (1958), and Herd (1978b).
31. Herd (1977b).
32. Unpublished mapping by H. R. Sonneman and J. R. Switzer (1961–62); Huey (1948).
33. Radbruch (1957) and Herd (1978a).
34. Radbruch (1969) and Herd (1978a).
35. Wagner (1978) and unpublished mapping by H. R. Sonneman and J. R. Switzer (1961–62).
36. Brabb, Sonneman, and Switzer (1971).
37. Brabb and Dibblee (1979).

Map showing aeromagnetic anomalies and igneous rocks
By
William F. Hanna, Earl E. Brabb, and James R. Le Compte

MAPS SHOWING AEROMAGNETIC ANOMALIES, FAULTS, EARTHQUAKE EPICENTERS, AND IGNEOUS ROCKS IN THE SOUTHERN SAN FRANCISCO BAY REGION, CALIFORNIA

By
Earl E. Brabb and William F. Hanna

1981