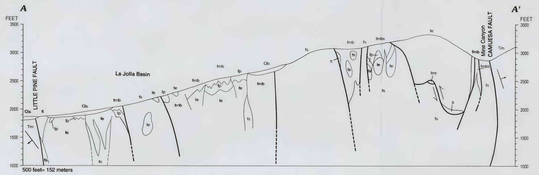
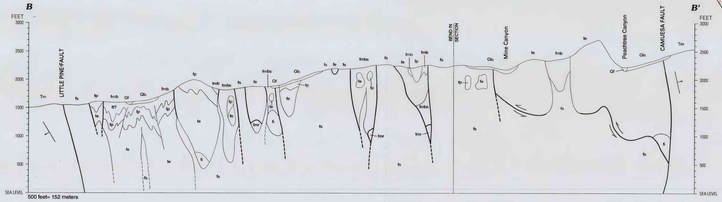
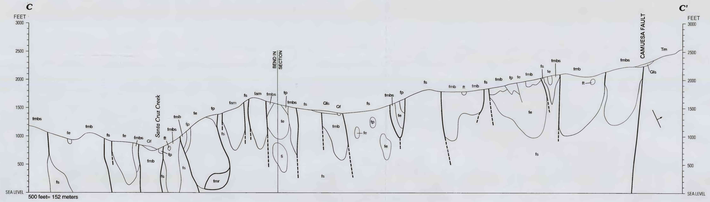
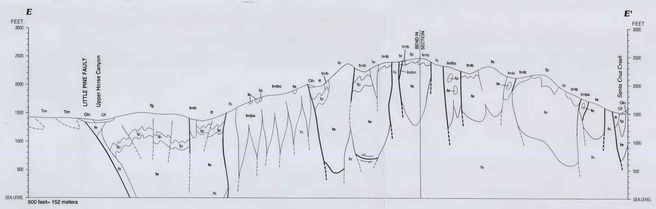
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

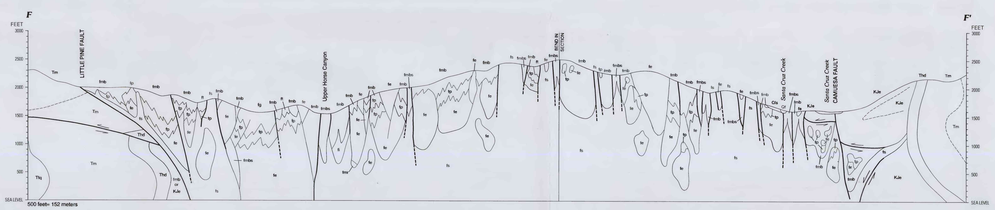
BULLETIN 1995-W
PLATE 1

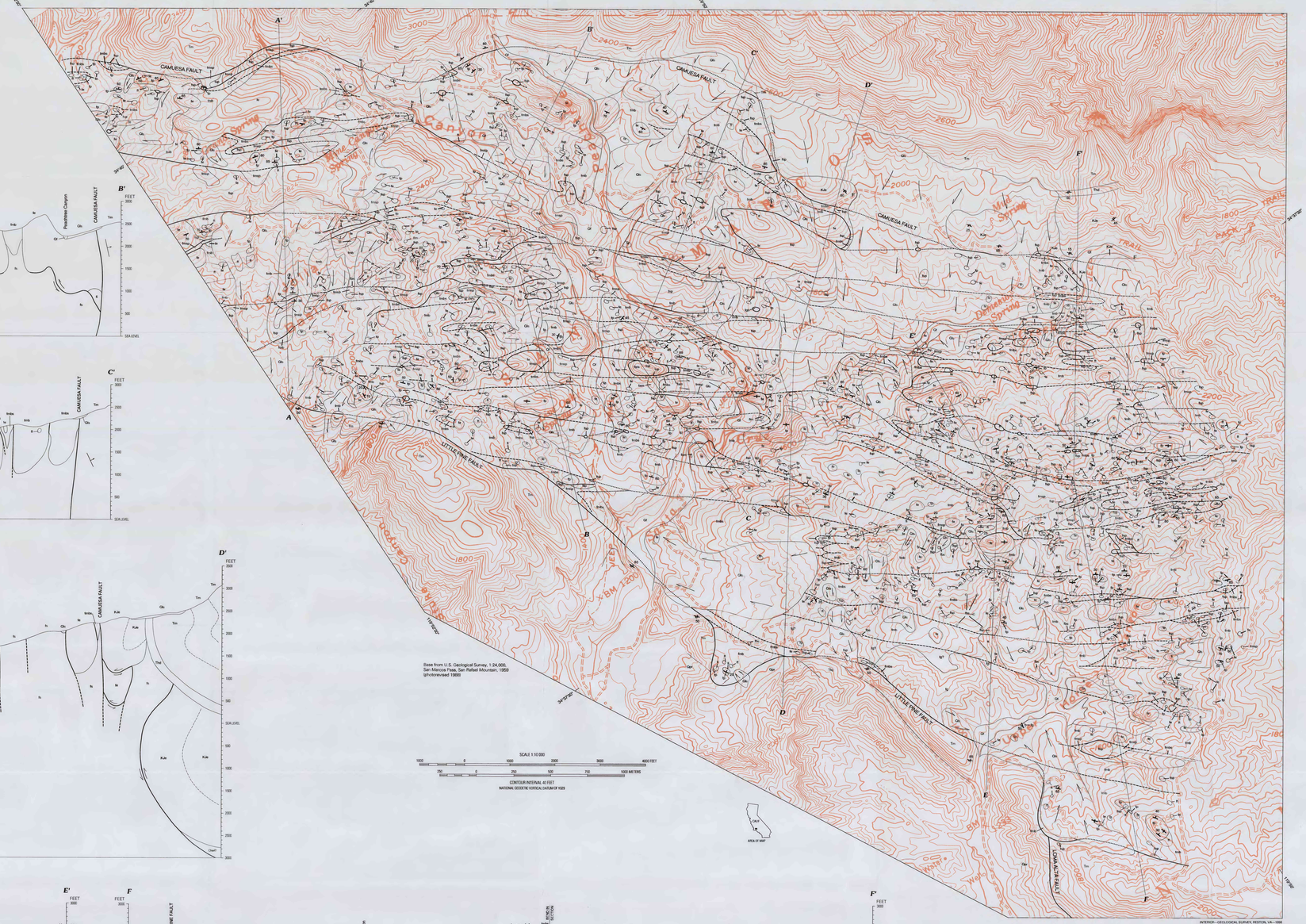




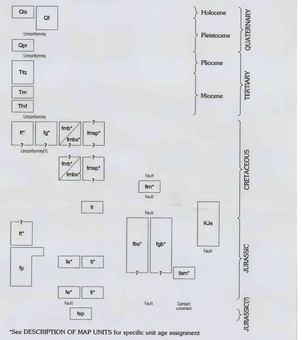








CORRELATION OF MAP UNITS



*See DESCRIPTION OF MAP UNITS for specific unit age assignment

DESCRIPTION OF MAP UNITS

Qls **Landslide deposits (Holocene)**

Qf **Fluvial deposits (Holocene and Pleistocene)**

Qpr **Paso Robles Formation (Pleistocene)**—Clay, sand, and gravel

Tfq **Tequepis Formation of Dibblee (1987a, b) (Pliocene and Miocene)**—Sandstone

Tm **Monterey Formation (Miocene)**—Shale and sandstone

Thd **Hurricane Deck Formation of Thomas and others (1988) (Miocene)**—Sandstone

KJe **Espada Formation of Dibblee (1966) (Cretaceous and Jurassic)**—Sandstone, shale, and minor conglomerate. Cretaceous age is from Schussler (1981). Jurassic age is from *Buchia* (mollusk, W.P. Elder, written commun., 1992)

Franciscan Complex (Cretaceous and Jurassic)—Divided into:

Exposed mappable blocks—Consist of:

fs **Unmetamorphosed terrigenous rocks**—Massive sandstone, thin-bedded sandstone, interbedded sandstone and shale, shale, and conglomerate blocks. Locally includes fragments of oceanic crust and matrix (fmb) too small to map. Ages are late Tithonian to Early Cretaceous(?) and Late Cretaceous (Campanian?). Late Cretaceous age is from microfossils (J.C. Clark, in Dibblee, 1991). Jurassic age is from *Buchia* (mollusk, W.P. Elder, written commun., 1992)

fg **Coherent massive graywacke**—Graywacke and minor shale. Fragments of oceanic crust and matrix are absent. Age is Late Cretaceous(?)

fp **Pelagic rocks**—Mostly red and aquamarine chert with minor shale and limestone. Age is Pliensbachian to early Tithonian. Basal chert overlying basalt (fe) is Pliensbachian and Kimmeridgian (Pessagno, 1977, Hopson and others, 1981)

fe **Extrusive igneous rocks**—Pillowed or massive basaltic greenstone. Ages are 195(?) Ma and 155(?) Ma, inferred from ages of basal chert overlying greenstone

fi **Intrusive igneous rocks**—Dikes and sills consisting of gabbro, diorite, albitite, and epidosite. Plutonic and (or) intrusive rocks consisting of cumulus gabbro and noncumulus gabbro, diorite, and plagiogranite. Ages are 195(?) Ma, 155(?) Ma, and 100(?) Ma. 195(?) Ma and 155(?) Ma ages are inferred from ages of basal chert overlying greenstone (fe) that is assumed coeval with unit fi. 100(?) Ma age is inferred by correlation with dabase of Schussler (1981)

fbm **Low-grade metagraywacke**—Contains minor pumpellyite and (or) glaucophane. Metamorphic age is 92–88(?) Ma at 3–5 kb. Age is inferred by correlation with metagraywacke of Suppe and Armstrong (1972, K/Ar method)

fbs **Blueschist**—Glaucophane schist. Metamorphic age is 162–135(?) Ma at 5–6 kb. Age is inferred by correlation with blueschist of Mattinson (1986, U/Pb method)

fgb **Greenschist-facies(?) rock**—Metamorphic age is 162–135(?) Ma. Unit is inferred to be coeval with blueschist (fbs)

fam **Epidote-garnet amphibolite**—Metamorphic age is 163–158(?) Ma at 4–8 kb. Age is inferred by correlation with amphibolite of Ross and Sharp (1986, 1988, Ar/Ar method)

fmv **Crustal metamorphic rock**—Shown in cross section only. Consists of units fm, fbs, fgb, and (or) fam

fsp **Serpentinized mantle peridotite**—Peridotite narrowly separated by serpentinite matrix (fmsp)

fa **Serpentinized mantle peridotite**—Shown in cross section only. Consists of units fsp and (or) fmsp

Locally exposed matrix, unmappable blocks, and covered area—Consist of:

fmb **Matrix and (or) blocks**—Consists of unmetamorphosed mudstone, terrigenous rocks (fs), pelagic rocks (fp), extrusive igneous rocks (fe), and intrusive igneous rocks (fi). Age of mudstone is Late Cretaceous (J.C. Clark, in Dibblee, 1991). Includes:

fmba **Serpentinite-associated rocks**—Pods of serpentinized peridotite (fsp) and intercalated, narrow bands and thin stringers of serpentinite matrix (fmsp)

fmsp **Serpentinite matrix**—Fine-grained serpentinite that typically envelops blocky, serpentinized peridotite (fsp)

Depositional contact or minor fault or fracture—Solid where exposed; dashed where inferred

Major fault or fracture—Solid where exposed; dashed where inferred; dotted where concealed by alluvium

Strike and dip of stratified rocks or of layering in extrusive rocks. May be generalized or approximate for Franciscan Complex exposures

60 **Inclined**

35 **Overturned**

Vertical

Bedding—Shown in cross sections only. Arrow indicates direction of younger age beds

Landslide—Arrow shows direction of movement

F **Fossil locality**—*Buchia* (mollusk; W.P. Elder, written commun., 1992)

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GEOLOGIC MAP AND CROSS SECTIONS OF THE FRANCISCAN COMPLEX, SAN RAFAEL MOUNTAINS MÉLANGE, SANTA CRUZ CREEK, CALIFORNIA

Wahl, A. D., 1998, Cenozoic deformation of the Franciscan Complex, eastern Santa Maria basin, California: U. S. Geological Survey Bulletin 1995-W