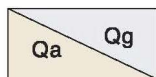


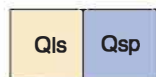
SAN LUIS OBISPO MAP (DF-129)

LEGEND



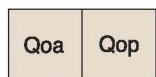
SURFICIAL SEDIMENTS

Qg Alluvial gravel and sand of stream channels
Qa Alluvial gravel and sand of valley areas



LANDSLIDES

Qls Landslide rubble
Qsp Landslide of serpentinite rubble

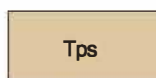


OLDER SURFICIAL SEDIMENTS

Terraces of dissected gravel and sand

Qoa Older alluvium
Qop Alluvial fans of dacite porphyry debris

— UNCONFORMITY —



PISMO FORMATION

Marine clastic, lithified; age, Pliocene

Tps Sandstone, tan, fine-grained, exposed only in SW area



MONTEREY SHALE

Marine biogenic, lithified; age, Miocene

Tm Upper part siliceous shale, white-weathered, thin-bedded, platy, porcelanous, locally cherty; age, late Miocene (Mohnian Stage)

Tml Lower part (Pt. Sal Formation of Hall & Corbato, 1967, Hall, 1973), shale, thin-bedded, platy siliceous to soft, fissile, phosphatic, cream-white weathered, contains thin, hard layers and concretions of yellowish-gray dolomite; age, middle Miocene (Luisian-Relizian Stage)

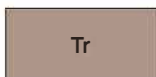


OBISPO FORMATION

Extrusive volcanic rocks; age, late to early Miocene (Relizian, upper Saucesian)

Tot Tuffaceous rocks, minor basalt

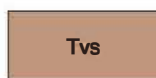
Tob Basalt & diabase



RINCON SHALE

marine clastic; age, early Miocene, (Saucesian-Zemorrian Stages)

Tr Clay shale/claystone, gray, crumbly, massive



VAQUEROS FORMATION

Tvs Sandstone, light brown, arkosic; age, early Miocene (Saucesian? Stage)



TERRESTRIAL SEDIMENTS

Terrestrial, clastic, lithified; age, early Miocene-Oligocene

Tsc (Sespe formation of Hall and Corbato, 1967) Sandstone, claystone & conglomerate, red to gray & tan, in NE area

Holocene

Pleistocene

QUATERNARY

Pliocene

Miocene

TERTIARY

Oligocene

— UNCONFORMITY —



VOLCANIC INTRUSIVE ROCKS

Silicic intrusive rocks; age, early Miocene-Oligocene (23.5 MA-Hall and Prior, 1973)

Tvd Dacite or quartz latite porphyry

Tvr Rhyolite



ATASCADERO FORMATION

(of Fairbanks, 1904) Marine clastic, lithified; age, late Cretaceous

Kas Hard tan sandstone, minor micaceous clay shale, much shattered (at NE corner)



TORO FORMATION

(of Fairbanks, 1904), Marine clastic, lithified; age, early Cretaceous-latest Jurassic

Ktsh Marine dark gray, arkosic, micaceous clay shale, minor thin, dark brown sandstones

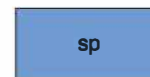
— UNCONFORMITY —



COAST RANGE OPHIOLITE COMPLEX

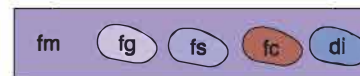
och Chert (metatuff?), light gray, massive

ob Basalt-diabase, black, fine-grained



SERPENTINE

Blue-green slicked, gray, slickensided, metamorphosed from peridotite, may be part of Coast Range Ophiolite Complex



FRANCISCAN ASSEMBLAGE

Pervasively sheared, slightly metamorphosed marine Sedimentary and mafic volcanic rocks

fm melange of claystone, graywacke, & blocks of other Franciscan rocks

fg Greenstone (after basalt)

fs Mostly greywacke sandstone, gray, fine-grained, hard but much fractured

fc Varicolored chert

di Diabase

Oligoc

late

CRETACEOUS

MESOZOIC

JURASSIC and CRETACEOUS

MESOZOIC

CE

Legend for northwest end of map

Qya **Younger alluvium (Holocene)**—Sand, gravel, and silt along modern stream channels and valley floors

Qoa **Older alluvium (Holocene and (or) Pleistocene)**—Gravel, sand, and silt, generally perched in terraces above modern stream deposits

Qls **Landslide deposits (Holocene and (or) Pleistocene)**—Poorly consolidated rock and mud debris that displays characteristic hummocky surface expression. Not all landslide deposits are shown

Qtn **Nonmarine sandstone, siltstone, and conglomerate (Pleistocene and (or) Pliocene)**—Weakly consolidated, poorly sorted and weakly stratified sandstone, siltstone, and conglomerate; partly correlative with the Paso Robles Formation as mapped by Hart (1976). Unit contains clasts derived from Miocene and older rocks. Maximum thickness approximately 20 m

Tsm **Santa Margarita Formation (Miocene)**—Marine. Sandstone, siltstone, diatomite, and minor conglomerate; unconformity at base. Contains provincial late Miocene "Margaritan"-stage mollusks and echinoids (Corey, 1954; Addicott, 1972); scattered remains of *Ostrea titan* particularly abundant. Contains late Miocene diatoms (table 1, loc. 13). Maximum thickness about 185 m

Tm **Monterey Formation (Miocene)**—Marine. Shale, siltstone, and mudstone; well-bedded and commonly laminated, diatomaceous, porcelaneous, and cherty shale interbedded with calcareous and dolomitic mudstone, siltstone, and shale; phosphatic beds in lower part of section. Contains foraminifers that range in age from probably late Mohnian to possibly Saucian (table 1, locs. 5, 6, 10, 12, 14–16); contains zone-CN4 nannofossils (table 1, loc. 9). Maximum exposed thickness about 1,875 m

Volcanic rocks (Miocene)—Consist of:

Tvt **Vitric tuff**—Light-gray, locally welded vitric tuff that contains sparse plagioclase crystals. Exposed thickness about 20 m

Tvf **Lava flows**—Dark-gray, porphyritic pyroxene (augite) basalt or basaltic andesite and grayish-brown, fine-grained plagioclase porphyritic dacite(?). Yields plagioclase potassium-argon age of 17.0 ± 0.5 Ma (sec. 2, T. 31 S., R. 13 E.). Approximate thickness as much as 25 m

Tcl **Silty claystone and mudstone (Miocene)**—Described by Vedder and others (1986) as marine. Massive to indistinctly bedded silty claystone and mudstone; lithologically resembles the Rincon Mudstone of Santa Barbara region. May intertongue with rocks mapped herein as "Tv?". Exposed thickness as much as 65 m

Tmd **Mudstone (Miocene)**—Described by Vedder and others (1986) as marine(?). Contains angular and subangular detritus derived from the Franciscan assemblage. Some blocks as large as 2 m in diameter. Exposed thickness as much as 30 m

Tv **Vaqueros Formation (Miocene)**—Marine. Massive, light-gray, calcareous, quartzofeldspathic sandstone. Locally contains provincial early Miocene bivalves identified as *Vertipecten* cf. *V. perrini* (Arnold) and *Amussiopecten* cf. *A. vanulecki* (Arnold) (table 1, loc. 11). Exposed thickness as much as 190 m

Tsc **Sandstone and conglomerate (Miocene and (or) Oligocene)**—Marine and nonmarine. Marine facies consist of well-bedded, light-brown, arkosic sandstone that tends to mimic composition of the Upper Cretaceous rocks (units Ku, Ka); organized, clast-supported, pebble and cobble conglomerate composed chiefly of well-rounded volcanic clasts that are probably reworked from the Upper Cretaceous rocks, as well as clasts composed of presumed Upper Cretaceous sandstone and siltstone. Glauconitic lithic sandstone locally interfingers with arkosic sandstone and conglomerate facies. Rare mollusks consist of *Mytilus arnoldi* (Clark) and a balanid barnacle that is probably representative of *Balanus concavus* Group (table 1, loc. 8). Nonmarine facies composed of massive, disorganized, matrix-supported pebble, cobble, and boulder conglomerate that contains volcanic and quartzite clasts, which are probably derived from Upper Cretaceous conglomerate beds, as well as clasts of Upper Cretaceous biotite-rich sandstone. Stratigraphic relations and absence of Tertiary volcanic clasts suggest that unit is older than volcanic units Tvf and Tvt. Exposed thickness as much as 220 m

Ku **Sandstone, conglomerate, and minor mudstone, undivided (Upper Cretaceous)**—Marine. Biotitic quartzofeldspathic sandstone, conglomerate, and minor mudstone; submarine-fan deposits mapped by Vedder and others (1986) east of Rinconada fault. In adjoining quadrangles, unit contains sparse late Campanian and (or) early Maestrichtian mollusks and foraminifers, as well as Late Cretaceous sporomorphs. Unconformably overlies granitic basement. Maximum exposed thickness about 900 m

Ka **Atascadero Formation (Upper Cretaceous)**—Marine. Biotitic quartzofeldspathic sandstone, siltstone, mudstone, and conglomerate; submarine-fan-facies assemblage. Mollusks consist of *Pterotrignia evansana* (Meek), *Glycymeris anae* Smith, *Corbula* sp., *Ostrea* sp., *Ambocardia?* sp., *Plicatula?* sp., and *Calva?* sp. (table 1, loc. 1); probable age range of fossil assemblage is Coniacian to Campanian. Thickness complicated by faults and unconformities but probably exceeds 600 m

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Kgr **Granitic rocks (Cretaceous)**—Chiefly biotite granodiorite and quartz monzonite mapped by Hart (1976). Forms basement northeast of Sur-Nacimiento fault zone

KJs **Sandstone, mudstone, and conglomerate (Cretaceous and Jurassic)**—Marine. Dark gray sandstone, mudstone, and conglomerate that is composed mainly of rounded pebbles of chert and mafic volcanic rocks. Sparse megafossils consist of a bivalve *Buchia keyserlingi* (Lahusen) (table 1, loc. 2), and an ammonite, *Thurmannoceras cf. jenkinsi* (Anderson) (table 1, loc. 3), both of which indicate a Valanginian age. Probable Jurassic to Early Cretaceous palynomorphs consist of *Classopollis* sp., *Eucommiidites* sp., and *Cicatricosisporites* sp. (table 1, loc. 4). Cretaceous foraminifers consist of *Cribostromoides* sp. and *Glomospira* sp. (table 1, loc. 7). Lithologically similar to rocks mapped in nearby quadrangles as the Toro Formation by both Hall and Prior (1975) and Hart (1976), as well as the Jollo Formation by Hall and Corbató (1967)

KJf **Franciscan assemblage (Cretaceous and Jurassic)**—Melange; chaotic mixture of ribbon chert, graywacke, greenstone, and sparse greenschist and blueschist, all enclosed in matrix of scaly argillite. Forms basement southwest of Sur-Nacimiento fault zone. Thickness unknown

sp **Serpentinite (age unknown)**—Heavily sheared masses of serpentinite that appear to protrude through the Franciscan assemblage and, locally, through unit KJs

Contact

Fault—Dashed where inferred or approximately located; dotted where concealed; queried where uncertain. Arrows indicate direction of relative movement. U, upthrown block; D, downthrown block. A, away from observer; T, toward observer (shown in cross section only). In cross section, bracket shows width of fault zone; bracket dashed where inferred; queried where uncertain

Low-angle fault, uncertain relative movement—Dashed where inferred or approximately located; dotted where concealed. Hachures on upper plate

Fold axis—Dashed where inferred or approximately located; dotted where concealed; queried where uncertain

Anticline

Syncline

Overtured anticline

Overtured syncline

Unconformity—Shown in cross section only

Strike and dip of bedding

Inclined

Orientation measured on ground

Orientation estimated by distant sighting

Orientation estimated from aerial photographs

Vertical

Overtured

Generalized attitude of bedding—Shown in cross section only

Fossil locality—Number refers to table 1

Radiometric age locality

Landslide—Arrows show direction of downslope movement. Internal contacts distinguish individual landslides

Legend for southeast end of map