112°5'0"W 395000 400000 112°0'0"W 405000

29°0'0"N 3210000 3205000 3200000 28°55'0"N 3195000

Sacrificio fault zone

Punta Chueca fault

Tordillo fault

Valle del Eco

Eco fault

Bahia Kino fault (east branch)

Bahia Kino fault (west branch)

El Camino fault

Guadalupe fault

Punta Blanca fault

Infernillo fault

Puerto Rico fault

Kino Syncline

Aeropuerto fault

Bahía Kunkaak

Sea of Cortez

Punta Blanca

Punta Ignacio

Bahía Kino

Playa San Bartolo

A

A'

PC-00-06

PC-98-15

PC

BK-02-08

BK-08-32

KI-04-08

KI-03-03

S2K-31

S1G-5

S3G-744

KI-03-07

GS

LL

EG

BK

Punta Chueca Santa Rosita Bahia Kunkaak Bahia Kino Punta San Miguel Kino Nuevo Kino Viejo Isla Alcatraz Plate 1

Limits of Field Mapping

Limits of Quickbird Satellite Imagery

US MEX STUDY AREA North American Plate Pacific Plate

0 1 2 KM

N W E S

Datum: WGS84
Projection:UTM Zone12N
Contour Interval 100m
Scale 1:24,000

Lithologic Map Units

- Qb — Quaternary beach sand deposits
- Qcbl — Quaternary beach cobble deposits
- Qpl — Quaternary playa deposits
- Qal — Quaternary alluvial deposits
- Qoa — Quaternary older alluvial deposits
- Qls — Quaternary landslide deposits
- Qm — Quaternary marine deposits on Isla Alcatraz
- Ttck — Tuff of Cerro Kino (<6.39 Ma) 16-cm white to light gray, laminated (lower 8-cm) and reworked (upper 8-cm) crystal lithic air-fall tuff qtz and alkali-felds phenocrysts, red-pink rhyolite lithics, Tsf? lithics
- Tcun — undifferentiated non-marine conglomerate
- Tcu — Latest Miocene upper conglomerate (<6.39 Ma)
- Ttmc — Tuffs of Mesa Cuadrada (6.39 ±0.02 Ma [Ar-Ar])
- Tsl — Late Miocene cross bedded sandstone, 15m-thick
- Tcl — Late Miocene lower conglomerate (>6.39 Ma)
- Ttct — Tuff of Cerro Tordillo (6.53 ±0.18 Ma [Ar-Ar]) 2-m yellowish-white cystal lithic air-fall tuff qtz, amph, and felds phenocrysts, burgundy rhyolite lithics
- Trve — Rhyolite of Valle del Eco
- Trhe — Rhyolite of Hast Eucla
- Tthe — Tuff of Hast Eucla
- Tbpc — Basalt of Punta Chueca (11.47 ±0.05 Ma [Ar-Ar])
- Tpc — Tuff of Punta Chueca
- Ttsf / Ttsf3 / Ttsf2 / Ttsf1 — Tuff of San Felipe (12.50 ± 0.08 Ma [Ar-Ar])
  [Tsf cooling unit 3] - (1) 2-m basal surge deposit, (2) 15-cm vitrophyre, (3) densely-welded, pumice-rich, burgundy ash-flow tuff, with strong eutaxitic foliation
  [Tsf cooling unit 2] - (1) basal vitrophyre containing abundant segregation pipess, (2) 8-m slightly-welded, yellow tuff
  [Tsf cooling unit 1] - (1) 1-7-m basal air-fall tuff, (2) 0.5-8-m vitrophyre, (3) densely-welded spherulitic ash-flow tuff, (4) densely-welded, pumice-rich ash-flow tuff w/ strong eutaxitic foliation
- Trpc — Rhyolite of Punta Chueca
- Tvs — cobble conglomerate and interbedded epiclastic & volcanoclastic deposits
- mid-Miocene Arc Volcanic Rocks (internal contacts shown)
  Tba - basaltic andesite
  Tbp - pyroclastic breccia (17.8 ± 0.8 Ma [K-Ar]) (with local 2-m interbedded basalt flow (Tbbp))
  Tah - andesite with distinctive amphibole phenocrysts up to 1-cm
  Tab - andesite flows
  Taun - undifferentiated andesite (21.0 ± 0.8 Ma [K-Ar]) (marker beds and internal contacts occ. shown)
- Tcb — interbedded maroon sandstones and conglomerates w/ angular to subrounded andesite & basement clasts, locally well-stratified
- Kfd — felsic dikes, up to 15-m thick
- Tat — Tordillo Andesite (62.5 ± 1.5 Ma [K-Ar])
- Kgr — Rancho Nuevo Granite (74.0 ± 0.7 Ma [U/Pb])
- Kmd — mafic dikes, up to 35-m thick (85.1 ± 1.7 Ma [K-Ar])
- Kt — Kino Granodiorite (Tonalite) (84.1 ± 1.0 Ma [U-Pb])
- Pzig — Paleozoic meta-igneous rocks
- Pzms — Paleozoic meta-sedimentary rocks
- Pzcb — Paleozoic meta-carbonate rocks

Structures (dips shown)

- inclined bedding
- approximate inclined bedding
- inclined cross bedding
- overturned bedding
- inclined contact
- inclined eutaxitic foliation
- foliation w/ pumice lineation
- vertical eutaxitic foliation
- overturned eutaxitic foliation
- segregation pipe
- inclined joint
- inclined fault
- vertical fault
- inclined fault with striae; rake of slickenlines

Contacts

- contact certain
- contact approximate
- contact queried
- contact concealed
- fault certain
- fault approximate
- fault queried
- fault concealed
- felsic dike
- mafic dike
- marker bed

Paleomagnetic drill site, site name shown

Published geochronologic sampling location, sample # shown

Isla Alcatraz

405000 406000 3158000 3157000

Qm Qal Tbp Qcbl

10 76 77 53 77 42 69 128

PLATE 1 - Geologic Map of Coastal Sonora, Mexico, between Bahia Kino and Punta Chueca
Mapping by Scott Bennett (2007-2009)