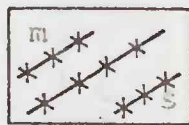


GEOLOGIC EXPLANATION

Qes	Qf	Qk	Qu
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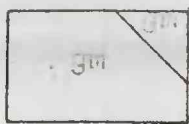
Qu, unconsolidated deposits; gravel, sand, and silt, mainly along wadis; Qe, eolian sand, mostly mobile; Qf, alluvial fan deposits; Qk, khabra deposits composed of silt, clay, and muddy sand in undrained or poorly drained basins



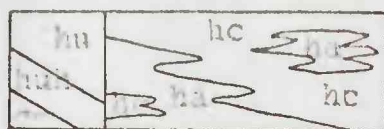
Dikes; s, silicic; m, mafic



Dike-like sheets: f, false dikes; dark-colored, tabular bodies of mafic composition with porphyroblastic texture; represent remnants of relict layers of rocks of Haliban formation which have been intruded mega-lit-par-lit fashion and strongly metamorphosed in marginal parts of older granitic plutons



gm, granitic rocks, undivided: gray, pinkish white, pink, and red, generally medium-grained biotite granitic rocks with few to abundant subangular to round, dark-colored inclusions; only marginal parts of granitic masses are porphyritic and contain significant amounts of hornblende; gmi, injection zones along portions of marginal parts of some granitic bodies, composed of granite sills and strongly metamorphosed, dike-like sheets of relic layered rocks of Haliban formation



Haliban formation

Note: Diagrammatic representation of Haliban formation only; contacts between units making up formation not shown; letter symbols for parts of formation indicate predominate rock types only at localities where shown.

hu, Haliban formation, undivided; interlayered, medium to dark-colored metasedimentary and metavolcanic rocks; includes metamorphosed, wacke-type shale, sandstone, and conglomerate, marble, schistose marble, calcareous schist, calc-silicate rocks, metavolcanic pyroclastic and flow rocks; latter comprise mainly meta-andesitic flows and agglomerates, silicic varieties minor. ha, predominantly andesitic metavolcanic rocks; hc, predominantly clastic metasedimentary rocks, including marble, may be equivalent, in part, to Murdama formation; huh, higher grade metavolcanic and metasedimentary rocks of Haliban formation, undivided, present mainly as isolated outliers and thin veneers over and in belts along margins of older granitic bodies

- ?-----  
Geologic contact  
Dashed where approximately located,  
dashed where doubtfully located
- +-----  
Trace or trend line  
Showing dip; crossed line, marble bed
- Boundary line  
Showing approximate limit of meta-  
morphic segregation quartz zones
- Fault  
Showing relative horizontal movement
- Fault or lineament  
From aerial photographs
- +-----  
Probable anticline
- +-----  
Anticline  
Showing crestline and direction of plunge
- +-----  
Syncline  
Showing crestline and direction of plunge
- +-----  
Minor anticline  
Showing direction of plunge
- +-----  
Minor syncline  
Showing direction of plunge
- +-----  
Vertical bedding
- +-----  
Bedding  
Showing direction of dip
- +-----  
18665  
Showing field station and sample number

- Mineral Deposits  
No symbols listed below represent specific quantitative or semiquantitative results. Element symbols in circles and squares with any other symbols indicate, respectively; unvaluated amounts of single metals, (Cu), or several metals (ME), as determined by laboratory analyses, mainly by emission spectrometric, wet chemical, and assay methods; and single metals, [Cu], or several metals, [ME], in primary or secondary minerals identified by megascopic examination.
- AM X EL KHOM AU  
Ancient mine or prospect  
Showing name and commodity exploited; plain symbol represents workings only, symbol with square indicates ruins
- o-o-o-o Vein  
Open circle, unmetallized or non-metallic; iron-stained or contains sparse iron sulfide or oxide minerals; solid circle, metallized as determined by megascopic examination or laboratory analyses
- X  
Isolated mineral occurrence  
Mainly quartz veins containing primary or secondary metalliferous minerals
- o  
Pegmatitic quartz body  
Contains sparse to abundant pink feldspar
- △  
Silicified breccia vein  
Barren or slightly iron-stained; strikes northwestward
- Metamorphic segregation quartz swarms  
Contain minor to abundant carbonate minerals and sparse metallic and silicate minerals
- o  
Unvaluated mineral occurrence  
Mainly isolated, barren quartz masses
- 18671 18675dt  
Sample of residual and wash material  
Collected to emphasize heavy fraction; d, dump material from ancient workings; t, tailings
- 18648  
Sample of sediment from wadi  
Collected to emphasize heavy fraction

- Symbols of Elements
- Ag-silver
  - Au-gold
  - Cu-copper
  - Mg-magnesium
  - Mo-molybdenum
  - Ni-nickel
  - Pb-lead
  - Zn-zinc