43°00' 43°30'

19°00'

DUTHUR AS SALAM (19/43C)

KHAYBAR (18/42B)

MARKAS (18/43B)

WADI TARIB (18/43C)

18°30'

A A'

43°00' 43°30'

Aerial photography 1955 and controlled mosaic 1959
Aero Service Corporation, Philadelphia Penn., USA

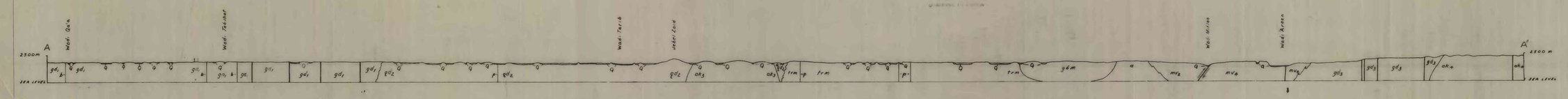
Mapped in 1976 and 1977
by George C. Simmons

SCALE 1 : 100 000

2 0 2 4 6 8 10 KILOMETERS

2 0 2 4 6 8 10 MILES

TRUE NORTH



CORRELATION OF MAP UNITS

INTRUSIVE ROCKS | SEDIMENTS, SEDIMENTARY ROCKS, VOLCANIC ROCKS, AND METAMORPHIC ROCKS

QUATERNARY
TERTIARY
PRECAMBRIAN

DESCRIPTION OF MAP UNITS

INTRUSIVE ROCKS

BASALT DIKE

PEGMATITE DIKES — Mostly composed of potassium feldspar and quartz, includes some felsite and granite dikes

QUARTZ VEINS — Veins and few pods of massive quartz

ALASKITE AND GRANITE — Coarse grained, non-foliated, graphic orthoclase and quartz, plagioclase, and accessory biotite, hornblende, and chlorite

GRANITE — Coarse grained, non-foliated, potassium feldspar, quartz, plagioclase, and biotite (5 to 7%)

ALASKITE — Coarse grained, non-foliated quartz microcline, plagioclase, muscovite and accessory biotite and garnet

GRANITE AND GRANODIORITE — Coarse grained, non-foliated quartz, potassium feldspar, plagioclase, and biotite (5 to 12%)

GRANODIORITE PORPHYRY — Orthoclase and plagioclase phenocrysts in coarse grained matrix of quartz orthoclase, plagioclase, and biotite (5%)

GABBRO AND PYROXENITE — Medium- to coarse grained, non-foliated pyroxene, plagioclase, and minor accessory minerals, intruded by amphibolite schist and gneiss and intruded by dikes and sills of granite and alaskite, gbn

GRANODIORITE — Coarse to medium grained, non-foliated to weakly foliated potassium feldspar, plagioclase, and quartz in nearly equal amounts with biotite (12%)

GRANITE — Medium- to coarse grained, non-foliated to weakly foliated quartz, microcline, plagioclase, and biotite (5%)

ALASKITE, GRANITE, AND TRONDJEMITE — Medium grained, weakly foliated quartz, potassium feldspar, plagioclase, and accessory muscovite, biotite, and garnet

GRANODIORITE — Medium to fine grained, weakly foliated quartz, plagioclase, potassium feldspar, and biotite (12%), contains foliation inclusions of foliated amphibolite

TRONDJEMITE — Medium grained, weakly foliated, plagioclase, quartz, and biotite, locally grades into alaskite, granodiorite, and granite together, quartz diorite (gd1), trn

GRANODIORITE GNEISS — Medium grained, weakly foliated, plagioclase, quartz, biotite, and orthoclase (partial), abundant inclusions of foliated amphibolite, gam. Similar to gam, but intruded by many small bodies of quartz diorite and dikes and sills of granite and alaskite, gdn

QUARTZ DIORITE — Coarse grained, weakly foliated, plagioclase, quartz, biotite, and accessory hornblende, chlorite, epidote, and opaque minerals. Contains abundant inclusions of foliated amphibolite, and intruded by small bodies of trondjemite, pegmatite and aplite, and alaskite and granite, gdn

GRANODIORITE — Medium grained, weakly foliated to massive, quartz, plagioclase, biotite (10%), and trace of muscovite

ALASKITE — Medium grained, weakly foliated, plagioclase, quartz, potassium feldspar, and biotite (trace to 2%), and muscovite (trace)

QUARTZ DIORITE — Medium- to coarse grained, plagioclase, partly chloritized hornblende, and accessory calcite and epidote

GRANODIORITE — Coarse grained, plagioclase, quartz, potassium feldspar, and partly chloritized hornblende and biotite

DIORITE AND GABBRO — Medium grained, plagioclase and amphibole with some pyroxene, numerous inclusions of foliated amphibolite and small intrusive bodies of granodiorite

DIORITE AND QUARTZ DIORITE — Medium grained, non-foliated, plagioclase, hornblende, chlorite, and accessory biotite and garnet (?), quartz (0-15%)

GRANODIORITE GNEISS — Medium grained, foliated, plagioclase, potassium feldspar, hornblende, and biotite (15%), and accessory calcite and epidote, grades into quartz diorite and granite

GRANODIORITE GNEISS — Medium grained, foliated quartz, plagioclase, microcline, biotite, hornblende, and traces of garnet, grades into quartz monzonite and quartz diorite, contains inclusions of foliated amphibolite

ALLUVIUM

AMPHIBOLITE SCHIST AND GNEISS — Intruded by sills and dikes of gabbro, gb, intruded by small plugs of gabbro by resente, and diorite and sills and dikes of trondjemite and granodiorite gneiss, gb. Intruded by sills and dikes of trondjemite, alaskite, granite, and granodiorite, and by few plugs and sills of gabbro, gb.

METAVOLCANIC AND METASEDIMENTARY ROCKS — Interlayered quartzite, diorite, tuffite, and quartz tuffite, few basalt flows, marble, minor conglomerate, graywacke, and quartzite. Schists altered from ironrich and calcareous rocks, intruded and intruded by small bodies of diorite, gabbro, quartz diorite, alaskite, granodiorite, mzm. Most have metamorphosed to greenschist facies

METAVOLCANIC ROCKS — Interlayered basalt flows and massive to poorly bedded dacite, tuff, and quartz tuffite, metamorphosed to greenschist facies

METAVOLCANIC ROCKS — Basalt flows and breccia intruded by small irregular bodies of diorite, metamorphosed to greenschist facies

METAVOLCANIC ROCKS — Basalt flows and breccia and minor graywacke intruded by small irregular bodies of gabbro, metamorphosed to green schist facies

CONTACT

FAULT
Showing upthrown side, U, and downthrown side, D

Vertical

Showing dip (below) and bearing and plunge of downthrown block (above)

ANTICLINE — showing crestline

STRIKE AND DIP OF BEDS

STRIKE AND DIP OF FOLIATION
Inclined
Vertical

ALTERATION

ANCIENT GOLD MINE OR PROSPECT

Colored geologic map can be viewed in USGS Mission library.

RECONNAISSANCE GEOLOGY OF THE MADHA QUADRANGLE, SHEET 18/43 A, KINGDOM OF SAUDI ARABIA

by
George C. Simmons

1979