U.S. DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY, PREPARED FOR

MINISTRY OF PETROLEUM AND MINERAL RESOURCES
DEPUTY MINISTRY FOR MINERAL RESOURCES

KINGDOM OF SAUDI ARABIA

OPEN-FILE REPORT USGS-OF-85-14

Aerial photography 1956 and controlled mosaic 1959
Aero Service Corporation, Philadelphia, Penn., U.S.A.

This report has not been edited or reviewed for conformity with U.S. Geological Survey standards and nomenclature

SCALE 1 : 100 000

2 0 2 4 6 8 10 KILOMETERS

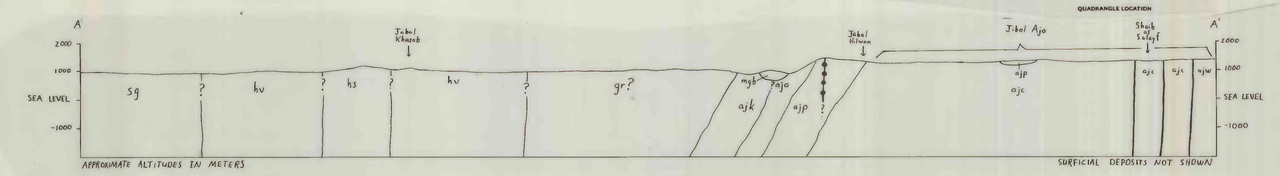
2 0 2 4 6 8 10 MILES

DATUM IS MEAN SEA LEVEL

TRUE NORTH

QUADRANGLE LOCATION

Geology mapped by D. B. Stoeser in October and December 1978 and by E. A. du Bray and D. B. Stoeser in November 1983



RECONNAISSANCE GEOLOGIC MAP OF THE AL HUFAYR QUADRANGLE, SHEET 27/41 A, KINGDOM OF SAUDI ARABIA

by
Edward A. du Bray and Douglas B. Stoeser
1985

EXPLANATION

CORRELATION OF MAP UNITS

SEDIMENTS AND SEDIMENTARY AND VOLCANIC ROCKS

Qp, Qes, Qaf, Qal, Qe	Quaternary	CENOZOIC
Tb	Tertiary	CENOZOIC
Unconformity		
OEs	Ordovician and Cambrian	PALEOZOIC
Unconformity		

INTRUSIVE ROCKS

ajr, ajc, ajw, ajl, ajk, aja, ajp	Aja suite	PRECAMBRIAN
afg, uag, qs, gr, afh		PRECAMBRIAN
gb, mgb, bhm, sg		PRECAMBRIAN
jsg		PRECAMBRIAN

METAMORPHIC ROCKS — hv, hs — PRECAMBRIAN

DESCRIPTION OF MAP UNITS

SEDIMENTS AND SEDIMENTARY AND VOLCANIC ROCKS

Qp PEDIMENT DEPOSITS--Thin accumulations of poorly sorted alluvium and gravel on pediment surfaces

Qes EOLIAN SAND--Pale-yellowish-orange uncemented sand and silt. Areally extensive deposit, forms a thick inactive, sparsely vegetated sand sheet (An Nafud and Nafud as Sayf) overlain by active active barchan dunes in some places

Qaf ALLUVIAL FAN DEPOSITS--Poorly sorted, braided distributary deposits including angular material ranging between silt and boulder size, forming aprons around topographic highs

Qal ALLUVIUM--Undifferentiated surficial deposits including active sediment in wadi channels, colluvium, and talus. Locally includes minor windblown sand and silt

Qe EVAPORITE DEPOSITS--Thin accumulations of white, salt-encrusted dense silt and fine sand in shallow, undrained depressions in playa basins

Tb ALKALI BASALT--Brownish-black, very fine grained holocrystalline alkali basalt; forms a small columnar-jointed neck. Olivine and minor augite phenocrysts in a felted matrix of plagioclase, opaque oxides, and pyroxene. Contains peridotite xenoliths as much as 10 cm long

Qes SAQ SANDSTONE--Tan- to reddish-brown well sorted quartz arenite composed of medium- to coarse-grained, subangular to subrounded grains of monocrystalline quartz cemented by carbonate, locally replaced by ferruginous material

INTRUSIVE ROCKS

Aja suite

ajr RHYOLITE--Grayish-red, fine-grained, porphyritic, allotriomorphic granular rhyolite; contains resorbed phenocrysts of quartz and potassium feldspar in a micrographic matrix. Contains trace amounts of opaque oxides, biotite, fluorite, and zircon

ajc CORE GRANOPHYRE--Pale-reddish-brown, fine- to medium-grained, allotriomorphic inequigranular granophyre; color index 2. Sericitized potassium feldspar and quartz in graphic intergrowth. Potassium feldspar and quartz form small phenocrysts in some samples. Contains minor opaque oxides and biotite and trace amounts of fluorite and zircon

ajw HORNBLENDE GRANOPHYRE--Pale-yellowish-brown, fine- to medium-grained allotriomorphic equigranular granophyre; contains 1 percent anhedral hornblende. Quartz and potassium feldspar in graphic intergrowth. Contains minor opaque oxides, fluorite, and zircon

ajl LEUCO-ALKALI GRANITE--Yellowish-gray, medium-grained hypidiomorphic inequigranular alkali granite; color index 3. Subhedral potassium feldspar crystals distinctly perthitic. Contains aegerine-augite, arfvedsonite, and minor zircon and fluorite

ajk KATAPHORITE ALKALI GRANITE--Grayish, orange-pink, medium- to coarse-grained, hypidiomorphic inequigranular alkali granite. Subhedral, Carlsbad-twinned potassium feldspar crystals strongly perthitic. Contains 6 percent subhedral kataphorite; minor opaque oxides zircon, allanite, and fluorite

aja AEGERINE-AUGITE ALKALI GRANITE--Grayish, orange-pink, medium-grained hypidiomorphic inequigranular alkali granite; color index 15. Subhedral, Carlsbad-twinned potassium feldspar grains strongly perthitic. Subhedral to euhedral aegerine-augite slightly more abundant than anhedral arfvedsonite, minor elpidite

ajp PORPHYRITIC ALKALI GRANITE--Grayish, orange-pink medium-grained, hypidiomorphic granular, alkali granite; color index 7. Contains small subhedral phenocrysts of perthitic, Carlsbad-twinned potassium feldspar. Subhedral arfvedsonite somewhat more abundant than aegerine-augite. Contains minor opaque oxides, zircon, and allanite

Other intrusive rocks

UNDIVIDED DIKES--Mostly rhyolitic

afg ALKALI-FELDSPAR GRANITE--Grayish, orange-pink, medium-grained, hypidiomorphic inequigranular alkali-feldspar granite. Subhedral, Carlsbad-twinned potassium feldspar crystals strongly perthitic. Contains 8 per cent subhedral kataphorite; minor opaque oxides, allanite, and zircon. Underlies isolated inselbergs cut by dikes north of Jibal Aja

uag UWAYRID ALKALI GRANITE--Pinkish-gray, coarse-grained, hypidiomorphic inequigranular alkali granite; color index 4. Subhedral, cloudy potassium feldspar crystals strongly perthitic. Anhedral kataphorite contains abundant intergrown aegerine-augite. Contains minor opaque oxides, zircon, and allanite. Forms a large xenolithic mass at the north end of Jibal Aja

qs QUARTZ SYENITE--Pinkish-gray, fine- to medium-grained, allotriomorphic inequigranular quartz syenite; color index 3. Subporphyritic potassium feldspar crystals are perthitic. Contains aegerine-augite, arfvedsonite, and aenigmatite; minor elpidite. Underlies small isolated inselbergs north of Jibal Aja; cut by many dikes

gr GRANITE--Yellowish-gray, fine-grained, allotriomorphic granular granite; color index 5. Contains anhedral to subhedral phenocrysts of plagioclase; potassium feldspar sericitized. Anhedral hornblende the principal mafic mineral. Contains trace amounts of biotite, sphene, apatite and opaque oxides.

afh HORNBLENDE ALKALI-FELDSPAR GRANITE--Grayish-orange pink, medium-grained, allotriomorphic equigranular alkali-feldspar granite; color index 1. Hornblende the principal mafic mineral. Contains trace amounts of biotite, opaque oxides, zircon, apatite, and fluorite

gb GABBRO--Dark-gray, medium-grained, hypidiomorphic inequigranular, uralitized hornblende gabbro; color index 45. Contains abundant opaque oxides and trace amounts of biotite and apatite. Occurs as a xenolithic block at the north end of Jibal Aja

mgb BIOTITE MONZOGRANITE--Light-gray, medium-grained, hypidiomorphic inequigranular, biotite monzogranite; color index 2. Biotite the principal mafic mineral. Contains trace amounts of hornblende, opaque oxides, sphene, zircon, apatite, and allanite. Occurs in small, isolated, xenolithic blocks throughout Jibal Aja; texturally inhomogeneous

bhm BIOTITE-HORNBLENDE MONZOGRANITE--Light gray, coarse-grained, allotriomorphic granular, compositionally inhomogeneous monzogranite; color index 6. Contains anhedral phenocrysts of perthitic potassium feldspar. Biotite-hornblende ratio is 2:1. Contains trace amounts of zircon, sphene, apatite, and opaque oxides. Hosts dike swarm northwest of Jibal Aja; weakly deformed.

sg SYENOGRANITE--Moderate orange-pink, medium-grained, allotriomorphic equigranular hornblende syenogranite; color index 5. Contains minor biotite, opaque oxides, allanite, and fluorite

jsg JADID SYENOGRANITE--Grayish, orange-pink, medium grained, cataclastically foliated and lineated hypidiomorphic inequigranular biotite syenogranite; color index 2. Contains minor hornblende, zircon, allanite, opaque oxides, and fluorite.

METAMORPHIC ROCKS

hv, hs HADN FORMATION--hv--dusky red, fine-grained, hypidiomorphic granular, porphyritic rhyolite. Contains subhedral potassium feldspar and rounded quartz phenocrysts in a very fine grained matrix composed of quartz and alkali feldspar. Trace amounts of opaque oxides and epidote. Also includes minor tuffaceous rhyolite, basalt, and porphyritic, trachytic andesite. hs, arkosic metasedimentary rocks. Includes conglomerate containing rounded metavolcanic clasts and volcanic lithic silt and sandstone

SYMBOLS

- CONTACT
- FAULT--Sense and amount of offset not documented
- FAULT--Silicified breccia zone
- 40 STRIKE AND DIP OF BEDS--Inclined, showing dip
- Al Hufayr VILLAGE
- DESERT TRACK
- PAVED ROAD