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 85-668
PLATE 1

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

Geology mapped in October and December, 1977; September and December, 1978; March, 1979; and October 1983.

TRUE NORTH

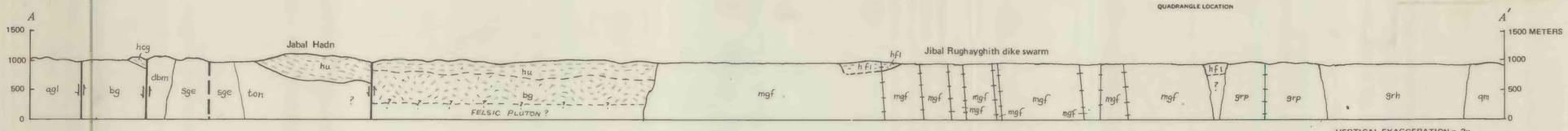
SCALE 1 : 100 000

2 0 2 4 6 8 10 KILOMETERS

2 0 2 4 6 8 10 MILES

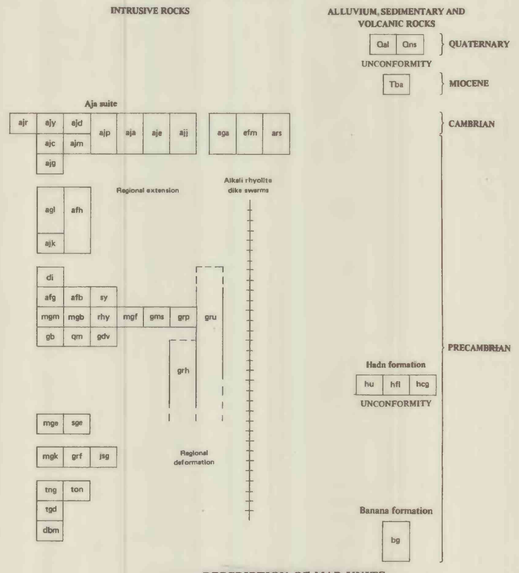
DATUM IS MEAN SEA LEVEL

QUADRANGLE LOCATION



VERTICAL EXAGGERATION = 2x
QUATERNARY DEPOSITS OMITTED

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

CENOZOIC ALLUVIUM AND INTRUSIVE ROCKS

- **Qal** — ALLUVIUM--Deposits of unconsolidated wadi and pediment silt, sand, and gravel
- **Qns** — EOLIAN SAND--Wind-blown sands of the southern margin of the Great Nafud sand sea
- **Tba** — OLIVINE BASALT--Alkali olivine basalt, occurs in volcanic necks and plugs

PRECAMBRIAN INTRUSIVE ROCKS

- **ajr** — PORPHYRITIC RHYOLITE--Brick-red porphyritic rhyolite with 5 to 40 percent quartz and alkali-feldspar phenocrysts
- **ajy** — RED GRANOPHYRE--Small granophyric intrusions in or near the Aja intrusive complex
- **ajd** — ALKALI MICROGRAPHIC GRANITE--Aegerine-arfvedsonite micrographic granite porphyry with phenocrysts of alkali feldspar and quartz, occurs as a dike in the core granophyre
- **ajm** — MARMA GRANITE--Leucocratic miarolitic porphyritic medium-grained biotite alkali-feldspar granite
- **ajc** — PINK CORE GRANOPHYRE--Leucocratic miarolitic biotite to arfvedsonite granophyre porphyry with phenocrysts of quartz and alkali feldspar
- **ajg** — PENDANT GRANOPHYRE--Pale-red micrographic granophyre porphyry
- **ajp** — PORPHYRITIC ALKALI GRANITE--Porphyritic medium-grained aegirine-augite katophorite alkali granite with phenocrysts of alkali feldspar
- **aja** — AEGIRINE ALKALI GRANITE--Medium- to coarse-grained equigranular aegirine ± arfvedsonite perthite alkali feldspar granite
- **aje** — ARFVEDSONITE-AEGIRINE ALKALI GRANITE--Medium- to coarse-grained equigranular arfvedsonite-aegirine perthite alkali feldspar granite
- **ajj** — ALKALI-FELDSPAR GRANOPHYRE AND ALKALI GRANTE--Zoned granite with core of hornblende-biotite alkali-feldspar granophyre and rim zone of aegirine-arfvedsonite alkali feldspar granite
- **aga** — ALKALI APOGRANITE
- **ars** — SARRAH ALKALI RHYOLITE--Arfvedsonite alkali rhyolite (comendite) porphyry to fine-grained alkali microgranite
- **afm** — MUSCOVITE-BIOTITE ALKALI-FELDSPAR GRANITE
- **efm** — DIKES--Peralkaline (comendite) rhyolite and metaluminous rhyolite porphyry with minor diabase
- **agl** — AL RUMAYG ALKALI-FELDSPAR GRANITE--Medium-grained clinopyroxene-amphibole (hornblende?) perthite alkali-feldspar granite
- **afh** — HORNBLENDE ALKALI-FELDSPAR GRANITE--Medium-grained equigranular hornblende ± biotite perthite alkali-feldspar granite
- **ajk** — KIFANTAH ALKALI-FELDSPAR GRANITE--Medium- to coarse-grained equigranular hornblende or katophorite ± biotite ± aegirine perthite alkali feldspar granite
- **di** — BIOTITE-HORNBLENDE QUARTZ DIORITE
- **afg** — PERTHITE GRANITE AND QUARTZ SYENITE--Coarse-grained leucocratic biotite-hornblende ± ferrohedenburgite perthitic alkali-feldspar granite, syenogranite, and quartz syenite
- **afb** — BIOTITE ALKALI-FELDSPAR GRANITE--Medium-grained equigranular leucocratic biotite perthite alkali-feldspar granite, occurs as a roof pendant in Aja complex rim
- **sy** — BIOTITE SYENOGRANITE AND QUARTZ SYENITE
- **mgm** — SUNAYNAH GRANITE--Medium- to coarse-grained leucocratic biotite monzogranite, syenogranite and granodiorite
- **mgb** — BIOTITE MONZOGRANITE--Altered medium-grained biotite monzogranite, occurs in two roof pendants in Aja complex core
- **rhy** — HYPABYSSAL RHYOLITE--Rhyolite porphyry, occurs as sheets within the Jufayfah granite
- **mgf** — JUFAYFAH GRANITE--Medium-grained equigranular leucocratic biotite ± hornblende syenogranite to monzogranite
- **gms** — SHUQAYQ MICROGRANITE--Fine-grained biotite monzogranite to plagioclase porphyritic granophyre
- **grp** — GRANITE PORPHYRY--Medium-grained seriate to porphyritic biotite ± hornblende syenogranite to granodiorite
- **gb** — GABBRO--Medium-grained olivine-clinopyroxene gabbro
- **gru** — UNDIFFERENTIATED GRANITOID--Presumed to be chiefly granite and granodiorite
- **qm** — BIOTITE QUARTZ MONZONITE--Medium- to coarse-grained biotite ± hornblende quartz monzonite and monzogranite
- **gdv** — GRANODIORITE MEGABRECCIA--Megabreccia of blocks of Hadn formation in a matrix of granodiorite to monzogranite
- **grh** — HA'IL GRANITE--Cataclastic fine- to medium-grained biotite granodiorite to monzogranite
- **mge** — 'ISHSH MONZOGRANITE--Medium-grained biotite-hornblende monzogranite
- **sge** — SYENOGRANITE--Medium- to coarse-grained leucocratic equigranular perthite biotite syenogranite
- **mgk** — JARKUK MICROGRANITE--Cataclastic fine-grained porphyritic hornblende-biotite syenogranite to alkali-feldspar granite, with phenocrysts of alkali feldspar and quartz
- **grf** — FOLIATED GRANITOID--Cataclastic foliated medium-grained leucocratic biotite ± hornblende syenogranite, monzogranite, and granodiorite
- **jsg** — JADID SYENOGRANITE--Cataclastic and lineated fine-grained leucocratic biotite syenogranite
- **tng** — PENDANT TONALITE--Medium-grained biotite ± hornblende tonalite, with minor granite
- **ton** — TONALITE--Medium-grained biotite-hornblende tonalite with euhedral plagioclase
- **tgd** — MAWQAQ COMPLEX--Deformed, metamorphosed, and foliated biotite ± hornblende granodiorite, monzogranite, tonalite, and quartz diorite
- **dbm** — METADIABASE--Medium-grained clinopyroxene-hornblende metadiabase

PRECAMBRIAN VOLCANIC AND SEDIMENTARY ROCKS

- **hu, hfl, hcg** — HADN FORMATION--Undivided, red weathering massive rhyolite welded tuff, arkosic siltstone, sandstone and conglomerate, and minor basaltic andesite flow rocks (hu); brick-red porphyritic welded tuff (ignimbrite) (hfl); conglomerate (hcg)
- **bg** — BANANA FORMATION--Very fine grained quench textured to subophitic basalt, metamorphosed in the greenschist facies

SYMBOLS

- CONTACT--Dashed where inferred, dip indicated
- FAULT--Dashed where inferred
- ANTICLINE--Showing trace of axial plane and direction of plunge
- SYNCLINE--Showing trace of axial plane and direction of plunge
- TREND LINES--Showing trend of layering
- STRIKE AND DIP OF BEDS--Inclined, showing inclination
- STRIKE AND DIP OF FOLIATION--Inclined, showing inclination
- LOCALITY DESCRIBED IN TEXT
- AREA UNDER CONSTRUCTION--With name of associated village if known
- PAVED HIGHWAY--Dashed where under construction
- DIRT TRACK
- ELEVATION--In meters (obtained by uncontrolled helicopter altimetry)
- MODS LOCALITY--Showing MODS number and commodity (Fl, fluorite, and W, tungsten)

RECONNAISSANCE GEOLOGIC MAP OF THE AL QASAR QUADRANGLE, SHEET 27/41 C, KINGDOM OF SAUDI ARABIA

by
Douglas B. Stoeser and James E. Elliott
1985

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