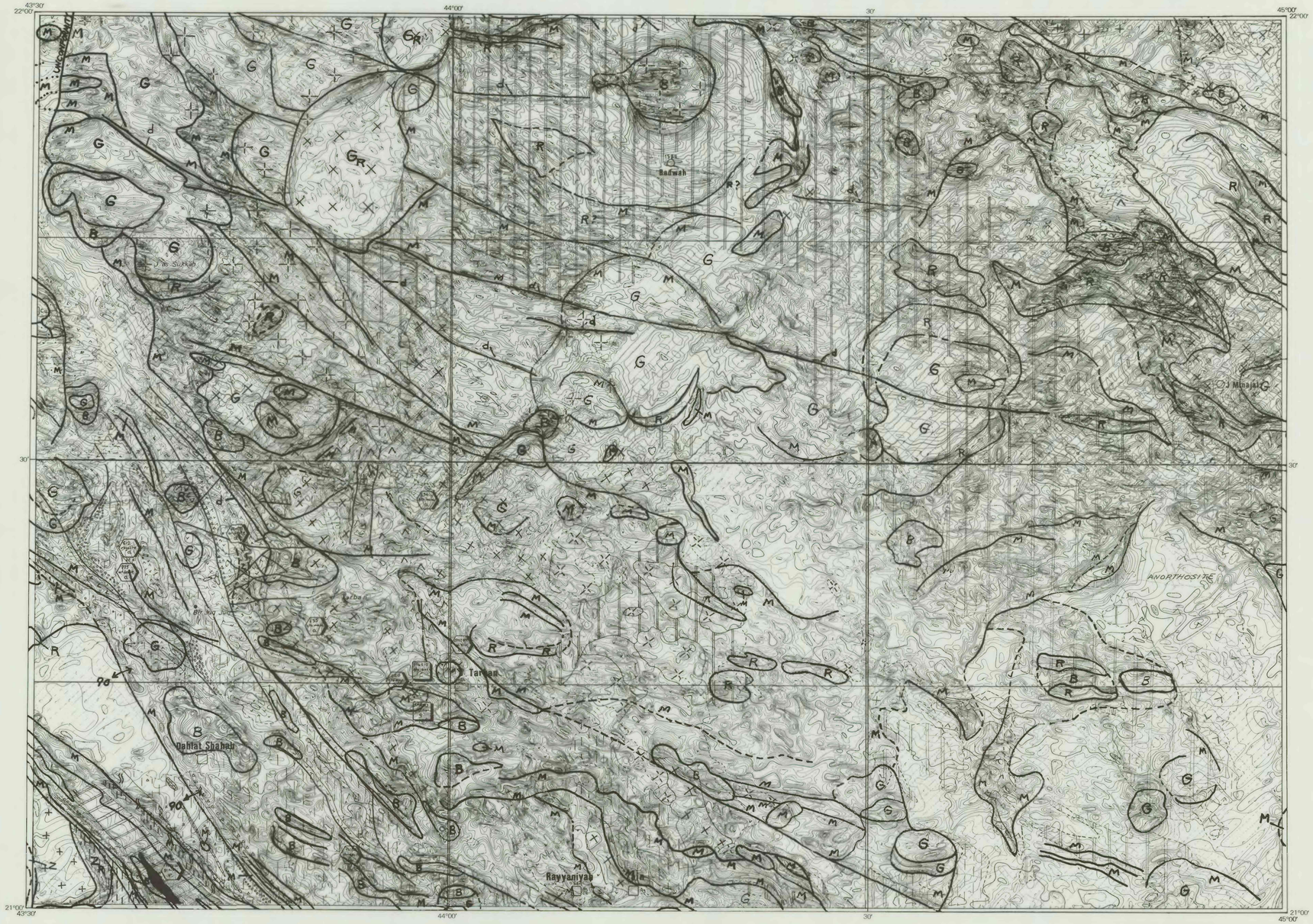
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

KINGDOM OF SAUDI ARABIA

OPEN-FILE REPORT 82-1048
PLATE 4



Original surveys supervised by B.R.G.M.
1:250,000 assembly by the Riofinex Geological Mission, 1980.
For survey details see Airborne Magnetometer and Scintillation Counter Survey Reports of 1961–1962, 1965–1966, 1966–1967.

LEGEND

CONTOUR INTERVAL	20 GAMMAS
500 GAMMA CONTOUR	
100 GAMMA CONTOUR	
20 GAMMA CONTOUR	
MAGNETIC LOW	
RADIOMETRIC CONTOUR	
FIDUCIAL POINTS	3690
FLIGHT LINES	

SCALE 1: 250,000

5 0 5 10 15 20 25 KILOMETERS

5 0 5 10 15 20 MILES

MAGNETIC INTERPRETATION OF THE JABAL KHIDA QUADRANGLE, SHEET 21G

by
Andrew Griscom
1982

Magnetic interpretation on a Universal Transverse Mercator projection. Geology is mosaicked to a UTM grid but geologic base adapted from lithologic maps prepared by the Riofinex Geological Mission are on Lambert Conformal projection.

Geologic base adapted from Kashkary (1974), Barnes and Johnson (1980), and Riofinex Geological Mission (1980). Geologic Explanation adapted from Barnes and Johnson (1980) and Riofinex Geological Mission (1980)

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature

EXPLANATION

MAGNETIC INTERPRETATION

Boundary between rock units of different magnetic properties or of differing magnetic patterns. Dashed where location is uncertain. Dotted where boundary is buried beneath nonmagnetic rocks. Code letters (described below), where present, indicate which side is the more magnetic rock unit.

M — Magnetic rock unit, lithology uncertain

R — Magnetic rock unit possessing reverse remanent magnetization

G, G_R — Magnetic rock unit probably granitic in composition. Subscript "R" where rock unit possesses reverse remanent magnetization

B — Magnetic rock unit probably mafic in composition

Z, Z_R — Zone of magnetic anomalies. Subscript "R" if more than half of the anomalies in the zone are magnetic lows that appear to be caused by rocks with reverse remanent magnetization

60 — Approximate dip of magnetic boundary as estimated by comparison with a set of calculated models

d — Linear magnetic anomaly probably caused by a dike

LAYERED ROCKS 1

Weakly to moderately metamorphosed and deformed, with volcanic and sedimentary character preserved (greenschist to lower amphibolite facies)

PREDOMINANTLY VOLCANIC ROCKS: unit includes flow rocks and volcaniclastic rocks with minor sedimentary members.

Undifferentiated metavolcanic rocks of mafic to felsic composition

Metavolcanic rocks of basaltic to andesitic composition; unit locally includes amphibolites and greenstones of extrusive and intrusive origin

Metavolcanic rocks of predominantly dacitic to rhyolitic composition

Cenozoic basalt (not differentiated from other Cover Rocks)

Agglomerate (symbol used to indicate presence of very locally derived volcanic clasts; grades into conglomerate)

UNDIFFERENTIATED VOLCANIC AND SEDIMENTARY ROCKS

Metamorphic rocks of mixed volcanic and sedimentary origin, including flow rock, agglomerate, tuffaceous rock, volcaniclastic sandstone (graywacke), conglomerate, shale, argillite, and so forth; commonly present as undifferentiated chlorite schist or greenstone (metamorphosed mafic volcanic rocks) or sericite-chlorite-feldspar-quartz schist (metamorphosed felsic volcanic rocks)

Mixed metavolcanic and metasedimentary rocks with tuffs, tuffaceous sandstone, and tuffaceous siltstone; may be present as undifferentiated chlorite-sericite schist

PREDOMINANTLY SEDIMENTARY ROCKS: locally includes volcanic members

Undifferentiated metasedimentary clastic rocks including volcaniclastic sandstone (graywacke), bedded tuff, shale, and argillite; locally unit includes flow rocks

Medium- to coarse-grained metasedimentary rocks (sandstone, locally conglomeratic), generally noncalcareous; locally unit includes shale and argillite

Polymict conglomerate; gradational from locally derived volcanic fragmental rock (agglomerate) to residual mixed-clast conglomerate

Calcitic and dolomitic marble; interbedded with calcareous shales

Cover Rocks (not differentiated from Cenozoic basalt)

Meta-arenite and siltstone, locally conglomeratic; locally unit includes volcanic interbeds; in most places noncalcareous

LAYERED ROCKS 2

Strongly metamorphosed and deformed; original volcanic and sedimentary character blurred

Undifferentiated metamorphic rocks of sedimentary and volcanic origin; mainly schist, locally gneissic; unit includes amphibolite (metamorphosed volcanic rocks) and sericite-biotite-feldspar-quartz schist, muscovite-microline-quartz schist and quartz schist (metamorphosed felsic volcanic rocks and sedimentary rocks)

Quartzo-feldspathic schist

Talc-actinolite schist (associated with retrogressive metamorphism of serpentinite along the Nabitah Fault Zone)

Amphibolite, hornblende schist, locally quartz-biotite-feldspar-hornblende schist, locally hornblende gneiss; of diverse sedimentary and volcanic origin

Amphibolite unit as above; of inferred sedimentary origin

Amphibolite unit as above; of inferred plutonic origin

Hornblende gneiss, biotite-hornblende gneiss, locally hornblende schist, biotite-hornblende schist; of diverse origin

INTRUSIVE ROCKS

Alkali-feldspar granite (peralkaline riebeckite-arfvedsonite-biotite granite)

'Granite', calc-alkalic granite, quartz monzonite; locally unit includes granodiorite

Granodiorite, locally with quartz monzonite, undifferentiated granitoid rocks; in part gradational with 'Syntectonic granitic rocks'

Heterogeneous granitic rocks; undifferentiated granitoid rocks, mainly grandiorite to quartz monzonite in composition; commonly foliated

Diorite and quartz diorite; unit includes tonalite and minor gabbro

Undifferentiated gabbro and diorite

Gabbro, including massive, layered, and metamorphosed varieties; locally unit includes norite, tonalite, and anorthosite

Ultramafic, serpentinite complex

Quartz porphyry and granophyre

Syntectonic granitic rocks, orthogneiss, granite-gneiss; mainly quartz monzonite to granodiorite in composition

Strongly metamorphosed diorite-gabbro and tonalite with schistose and gneissic texture

Fine-grained diorite sills and dikes intruding volcanic rocks of andesitic composition

MINERALIZATION

J SELM — name of occurrence
MDDS number
principal commodity
associated commodity
surface expression (gossan)

copper
gold

GEOCHRONOLOGICAL DATA

K-Ar method
Rb-Sr method

age reported
location
rock sampled
method
data source

Data sources:

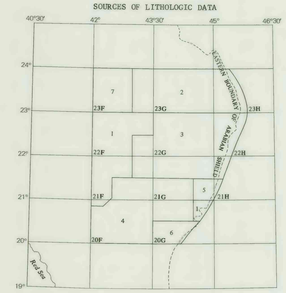
a Fleck, R. J., Greenwood, W. R., Hadley, D. G., Anderson, R. E., and Schmidt, D. L., 1980, Rubidium-strontium geochronology and plate-tectonic evolution of the southern part of the Arabian Shield: U.S. Geological Survey Professional Paper 1131, 38 p.

c Brown, G. F., Hedge, C. E., and Marvin, Richard, 1978, Tabulation of Rb-Sr and K-Ar ages given by rocks of the Arabian Shield: U.S. Geological Survey Saudi Arabian Project Report 240: sec. 2, p. 10–20.

e Kroner, A., Roobol, M. J., Ramsay, C. R., and Jackson, N. J., 1979, Pan-African ages of some gneissic rocks in the Saudi Arabian Shield: Journal of the Geological Society of London, v. 136, p. 445–461.

g Hadley, D. G., 1976, Geology of the B'ir Jujuq quadrangle, sheet 21/43 D, Kingdom of Saudi Arabia: Saudi Arabian Directorate General of Mineral Resources Geologic Map GM-26, 30 p., scale 1:100,000.

SOURCES OF LITHOLOGIC DATA



1. Jackson, R.O., and others, 1963
2. Riofinex Geological Mission, 1979
3. Barnes, P., and Johnson, P.R., 1980
4. Riofinex Geological Mission, 1980
5. Kashkary, A. A. R., 1974
6. Kellogg, K. S., USGS, unpublished geologic maps, 1981
7. Letalenet, J., 1979

OTHER SYMBOLS

Principal town
Other towns, villages, wells
Alluvium-bedrock boundary
Geologic boundary
Uncertain geologic boundary
Fault
Fault inferred under alluvium