



---, unconformity; —, deformation; (27+5), radiometric date with analytical uncertainty, if greater than 1 Ma; [50], approximate paleogeological age

DESCRIPTION OF MAP UNITS

<p>SEDIMENTS AND SEDIMENTARY AND METASEDIMENTARY ROCKS</p> <p>Qe EOLIAN SAND</p> <p>Qa1 ALLUVIAL DEPOSITS</p> <p>Qao</p> <p>Qs2 SABKHAH DEPOSITS</p> <p>Qs1</p> <p>Qr1 CORAL-REEF LIMESTONE--Submarine</p> <p>Qrb BACK-REEF DEPOSIT--Submarine</p> <p>Qrt3 CORAL-REEF LIMESTONE--Subaerial terrace deposits</p> <p>Qrt2</p> <p>Qrt1</p> <p>Qt WADI TERRACE DEPOSITS</p> <p>Tba BATHAN FORMATION--Conglomerate</p> <p>Ts SHUMAYSI FORMATION--Chiefly quartz arenite</p> <p>Jdo DOLOMITE AND DOLOMITIC LIMESTONE</p> <p>SA'DIYAH FORMATION</p> <p>sa PARA-AMPHIBOLITE</p> <p>sm MARBLE</p> <p>sq QUARTZITE</p>	<p>IGNEOUS AND META-IGNEOUS ROCKS</p> <p>Tb2 ALKALI BASALT (PLIOCENE)</p> <p>Tb1 ALKALI BASALT (MIOCENE)</p> <p>Tr SHAMA RHYOLITE--Rhyolite and subordinate dacite; flow rock, welded tuff, tuff breccia, ash, and perlite</p> <p>Tv SITA FORMATION--Alkali basalt, tholeiitic basalt, and trachyte lava flows, volcaniclastic rocks, and minor limestone interbeds</p> <p>DAMM DIKE COMPLEX</p> <p>Th DAMM DIKE SWARM MEMBER--Alkali basalt and hawaiite to trachyte, and tholeiitic basalt to dacite and rhyolite</p> <p>Di DIKE AND SILL MEMBER--Dikes, sills, and subordinate flow rock and flow breccia of plagioclase-megacrystic alkali basalt to hawaiite</p> <p>GABBRU AND MONZOGABBRU</p> <p>Tdr BURGATINAH DIORITE</p> <p>Tan ANORTHOSITE</p> <p>gd GRANDIORITE (PRECAMBRIAN)--Subporphyritic biotite granodiorite</p> <p>gs SYENOGANITE (PRECAMBRIAN)--Medium-grained alaskitic syenogranite</p> <p>gr MONZOGANITE (PRECAMBRIAN)--Massive to schistose; locally contains muscovite, garnet, and (or) biotite</p> <p>gn GRANITE GNEISS (PRECAMBRIAN)--Biotite and hornblende-biotite monzogranite orthogneiss</p>	<p>BAISH(?) IGNEOUS SUITE</p> <p>ba METADIABASE AND METABASALT</p> <p>bg METAGABBRO</p> <p>bq QUARTZOFELDSPATHIC GNEISS--Metatonalite and metatrendhjemite</p> <p>bag METADIABASE-METABASALT AND METAGABBRO COMPLEX</p>	<p>SYMBOLS</p> <p>--- CONTACT--Dashed where approximately located; dotted where concealed; Quaternary units enclosed by continuous contacts</p> <p>--- CONTACT DEFINED FROM AEROMAGNETIC DATA--Interpreted to separate Tertiary Red Sea oceanic crust and Precambrian crust of the Arabian Shield</p> <p>--- PROMINENT AEROMAGNETIC LINEAMENT</p> <p>--- FAULT--Dashed where approximately located; dotted where concealed; arrows indicate relative lateral displacement, U and D indicate up and down vertical displacement</p> <p>--- ANTIFORM--Showing trace of crestal plane and direction of plunge, where known; dashed where approximately located</p> <p>--- SYNFORM--Showing trace of trough plane and direction of plunge, where known; dashed where approximately located</p> <p>STRIKE AND DIP OF BEDS</p> <p>Inclined, showing dip</p> <p>Vertical</p> <p>STRIKE AND DIP OF FOLIATION</p> <p>Inclined, showing dip</p> <p>Inclined, variable dip</p> <p>Vertical</p> <p>Inclined axial planar foliation in zones of tight isoclinal folding, showing dip</p> <p>Vertical axial planar foliation in zones of tight isoclinal folding</p> <p>STRIKE AND DIP OF PROMINENT JOINT PLANES</p> <p>Inclined, showing dip</p> <p>Vertical</p> <p>STRIKE AND DIP OF DIKES--Letters adjacent to dike symbols indicate mafic (m), felsic (f), granite (g), or quartz (q) compositions. Number in brackets indicates percentage of dikes as a function of total outcrop</p> <p>Inclined, showing dip</p> <p>Vertical</p> <p>Inclined, showing dip; in zone of sheeted (>50 percent of outcrop) parallel dikes</p> <p>Vertical; in zone of sheeted (>50 percent of outcrop) parallel dikes</p> <p>Intersecting dikes, attitude of younger dike cuts attitude of older</p> <p>--- LINEATION--Showing plunge</p> <p>POTASSIUM-ARGON DATE--Showing analytical uncertainty; symbol of dated sample shown: p, plagioclase; c, clinopyroxene; h, hornblende; am, amphibole; wr, whole-rock; *, date from Gettings and Stoesser (1981) corrected for new decay constants, $\lambda_g = 4.962 \times 10^{-10} \text{ yr}^{-1}$, $\lambda_c = 0.5811 \times 10^{-10} \text{ yr}^{-1}$</p> <p>SKARN</p> <p>BARITE OCCURRENCE</p> <p>SHEAR ZONE</p> <p>TREND LINES--From aerial photographs</p> <p>PAVED ROAD</p>
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Quaternary surficial deposits omitted. Covered sections west of X and Y are shown as hypothetical Red Sea crust consisting of Quaternary and Tertiary sedimentary rocks, overlying basaltic pillow lava (Tp), sheeted diabase dike complex (Tdc), and gabbru plutons (Tg)

RECONNAISSANCE GEOLOGIC MAP OF THE HARRAT TUFFIL QUADRANGLE, SHEET 20/39 B, KINGDOM OF SAUDI ARABIA

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