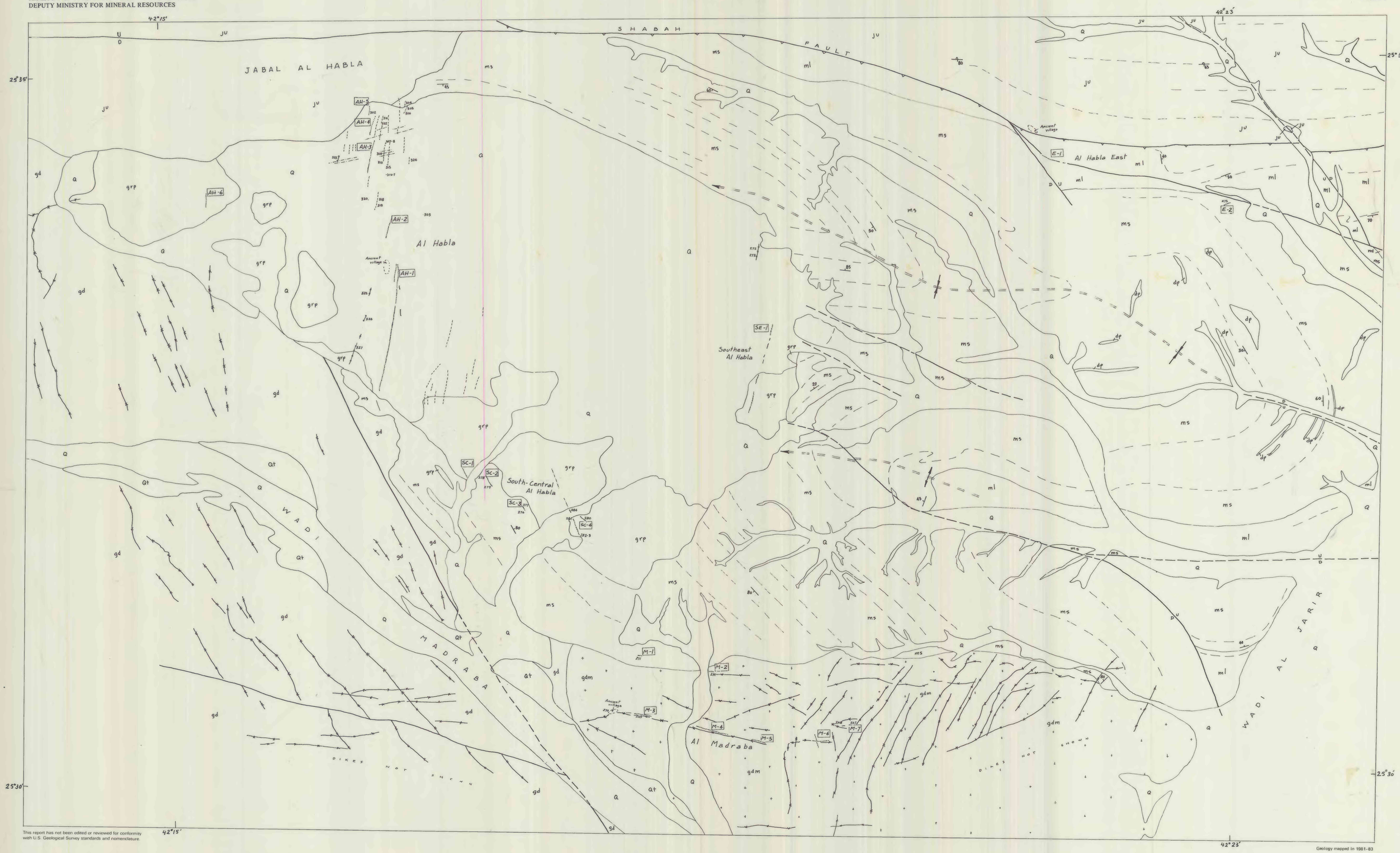
U.S. DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY, PREPARED FOR

MINISTRY OF PETROLEUM AND MINERAL RESORCES
DEPUTY MINISTRY FOR MINERAL RESOURCES

KINGDOM OF SAUDI ARABIA

OPEN-FILE REPORT USGS-OF-BS-128
PLATE 1



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

Geology mapped in 1981-83

EXPLANATION

INTRUSIVE ROCKS:

grp — AL HABLA GRANITE PORPHYRY--Pale pink, leucocratic, massive syenogranite porphyry with more than 50 percent phenocrysts of embayed quartz, perthitic microcline, and oligoclase in a fine-grained mosaic groundmass; contains less than 7 percent total of brown biotite, zinnwaldite(?), magnetite, zircon, and apatite. Dense dot pattern indicates border phase characterized by red color, local pegmatite and aplite, and local alteration to sericite, clay minerals, calcite, hematite, and pyrite.

x--x — FELSIC DIKE ROCKS--Fine-grained, leucocratic rocks that weather pink or gray and variously consist of aplite, microgranite, and dense red felsite; age relations are not known in detail, but dikes are believed to be contemporaneous with granodiorite, Al Madraba granodiorite, and Al Habla granite porphyry; parallel and cross-cutting mafic dikes not shown

gdm — AL MADRABA GRANODIORITE--Gray, medium-grained, massive biotite-hornblende granodiorite with characteristic discoid mafic inclusions; contains about 20 percent total hornblende (with augite cores), brown biotite, magnetite, sphene, apatite, and zircon; characterized by numerous comagmatic mafic and felsic dikes (see text)

gd — GRANODIORITE--Light-gray to pink-gray, massive, biotite- hornblende granodiorite; similar to Al Madraba granodiorite, but contains fewer mafic minerals, mafic inclusions, and comagmatic dikes

dp — DACITE PORPHYRY--Brown, massive, moderately porphyritic dike rock with hornblende and plagioclase phenocrysts; emplaced in Murdama group rocks before or during folding, dominantly subparallel to bedding

LAYERED ROCKS:

Q — SURFICIAL DEPOSITS--Includes alluvium in modern drainage channels and an extensive veneer of grus and eolian sand covering the Al Habla granite

Qt — TERRACE ALLUVIUM--Sand, silt, and gravel in terrace deposits marginal to the modern channel of Wadi Madraba

ju — AL JURDHAWIYAH GROUP, UNDIVIDED--Hornblende and pyroxene andesite flow rocks, andesitic and dacitic tuff and volcanic breccia, and volcaniclastic conglomerate and sandstone derived from similar rocks

--- UNCONFORMITY ---

MURDAMA GROUP:

ms — Clastic sediments--Thinly bedded, clacareous, pyrite-bearing, marine sandstone and siltstone; contains clasts of intermediate and felsic metavolcanic rock, granophyre, and monocrystalline quartz

ml — Limestone--Tan, blue-gray, and white, massive to thinly bedded limestone and sandy limestone; locally contains stromatolite structures replaced by silica; locally recrystallized to coarsely crystalline marble

N

0 1000 2000
METERS

CONTACT

HIGH-ANGLE REVERSE FAULT--Teeth on upper plate

NORMAL FAULT--Showing sense of offset (where known); dashed where concealed

ANTICLINE--Showing direction of plunge

SYNCLINE--Showing direction of plunge

STRIKE AND DIP OF BEDS (Dip in degrees):

Inclined

Overturned

TRACE OF BEDDING--From aerial photographs

QUARTZ VEIN

FELSIC DIKE

LINEATIONS ON AERIAL PHOTOGRAPHS:

Probable quartz vein traces

Probable fault traces

LINE OF ANCIENT TRENCHES--Showing letter and number

SAMPLE NUMBER IN THE 200000 SERIES SHOWING LAST THREE DIGITS

DETAILED GEOLOGIC MAP OF THE AL HABLA AREA, KINGDOM OF SAUDI ARABIA

by
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1985