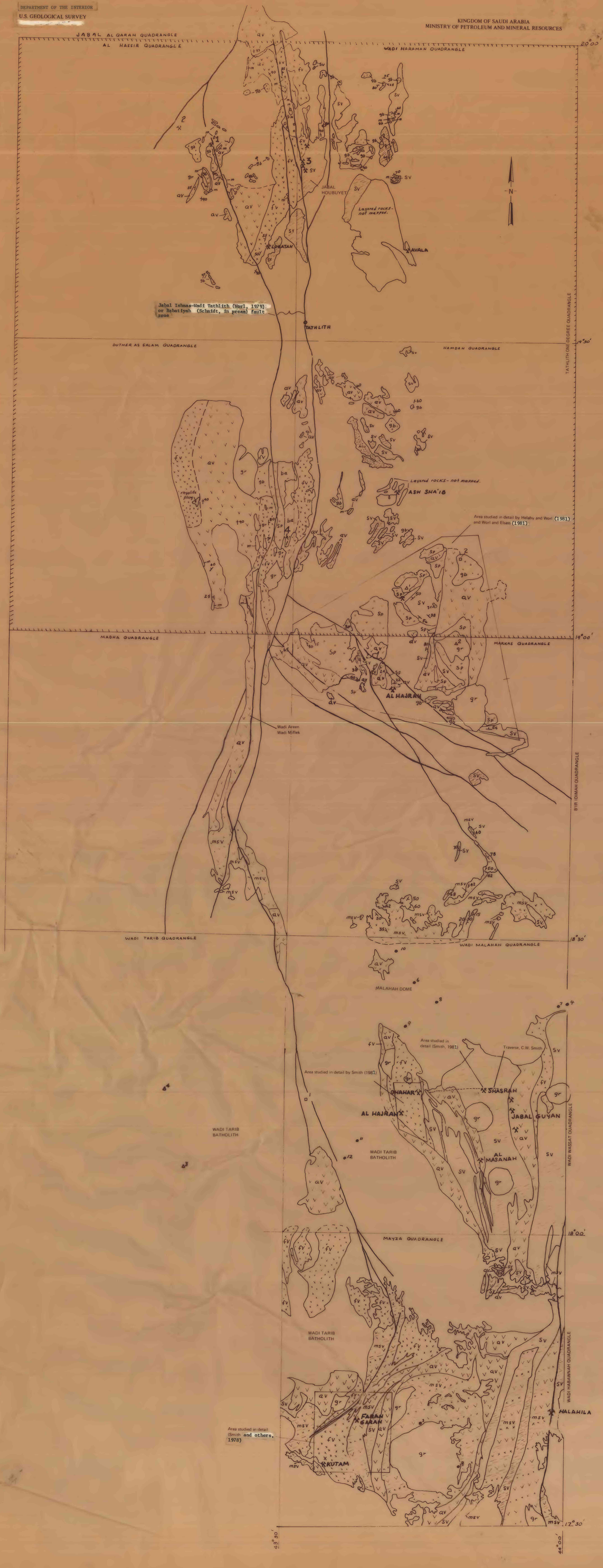
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

81-1292
OPEN FILE REPORT 81-
MISCELLANEOUS DOCUMENT
SA(IR)-3
PLATE 1

KINGDOM OF SAUDI ARABIA
MINISTRY OF PETROLEUM AND MINERAL RESOURCES

PRELIMINARY CORRELATION OF LAYERED ROCKS IN THE TATHLITH-KUTAM REGION KINGDOM OF SAUDI ARABIA



DESCRIPTION OF MAP UNITS

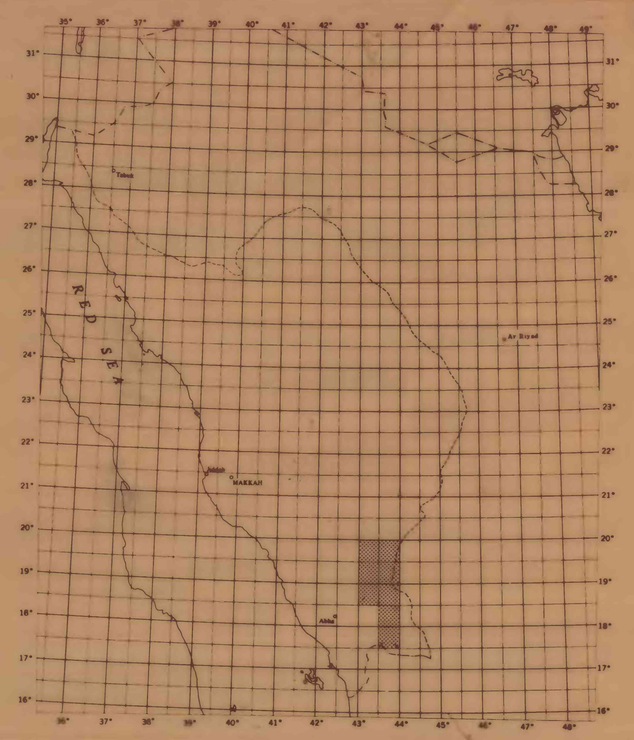
- ba — BASALT FLOWS RELATED TO SERPENTINIZATION
- sp — SERPENTINITE
- gr — GRANITE
- gb — MAFIC TO ULTRAMAFIC PLUTONIC ROCKS
- sv / m — PREDOMINANTLY VOLCANIC-DERIVED SEDIMENTARY ROCKS--Includes polymict conglomerate, graywacke, impure quartzite, argillite, graphitic schist, carbonaceous to black siliceous schist, siltstone, calcareous siltstone, and mudstone. Commonly immature and coarsely bedded, graded bedding in places. Well-bedded and sorted, clean, mature quartzite interlayered with siliceous argillite locally in the Hamdah quadrangle. Thick sections of sedimentary rocks ranging from graphitic schist to black argillite outcrop in the Wadi Malahah quadrangle. Interlayered with volcanic rocks. Weathers black to dark grayish green in the Tathlith area and dark to light gray in the southern area. Interbedded with thin lenses of black, gray, white, tan, and brown marble (m)
- fv / m — PREDOMINANTLY FELSIC TUFFS--Includes quartz crystal tuffs and tuff breccias bearing blue-tinted quartz crystals throughout map area; thin rhyolite flows in the Tathlith area. Interbedded with graywacke, argillite, carbonaceous to graphitic sedimentary rocks, calcareous siltstone, and various intermediate to mafic volcanic rocks. Weathers dark grayish green in the Tathlith area and dark to light grayish green in the Wadi Malahah and Mayza' quadrangles. Thin layers of white to brown dolomitic marbles along faults (m)
- av / m — PREDOMINANTLY ANDESITIC TUFFS AND TUFF BRECCIAS--Cinder tuff, crystal lithic tuff, pyroclastic breccia, and banded tuff interlayered with minor basalt flows common in the Wadi Malahah and Mayza' quadrangles. Amygdaloidal basalt, containing slender plagioclase crystals, present in the Tathlith area. Interbedded with metasedimentary and felsic volcanic rocks ranging from polymict conglomerate to crystal lithic tuff. Weather black to dark grayish green in the Tathlith area and dark to light green in the Wadi Malahah and Mayza' quadrangles. Boudins of white to brown marble along major faults (m)
- msv — MIXED VOLCANIC AND SEDIMENTARY ROCKS--Predominant rock type unknown

——— CONTACT
– – – – PROBABLE CONTACT
═══ MAJOR TECTONIC FAULT
60 ⊥ STRIKE AND DIP OF BEDDING
2 ⚒ ANCIENT MINE SITE--Referred to by number in text
○ VILLAGE

GEOCHRONOLOGY

Map symbol	Map number	Sample number	Rock type	Age, m.y.	Comments
Rubidium-strontium (Fleck and others, 1979)					
●	1	32,33	metadacite	593±53	Data not reliable; rocks deformed and metamorphosed by intrusion of granodiorite
	2	34, 35	granodiorite	643±20	
	3	36	quartz diorite	684±43	
	4	37	quartz diorite	843±243	
	5	38	quartz diorite	815	Two-point isochron
	6	89	quartz diorite	720	Two-point isochron
	7-10	88,90-92	granodiorite	684±43	
	11-12	93,94	diorite, trondhjemite	846±82	
Zircon dating (Cooper and others, 1979)					
Δ	1	112693	biotite granodiorite	660 to 700	Inaccurate date due to technical difficulties
	2	112695	metagabbro cutting serpentinite	664±12	
	3	112698	biotite granodiorite gneiss	714±28	
	4	112680	adamellite intrusion into older gneiss	660±7	
		112662	hornblende metatonalite	666±8	Not shown; in Jabal al Qarah quadrangle (Schmidt, in press)
Potassium-argon dating (Aldrich and others, 1978)					
□	1	225b	diorite	686±14	
	2	213b	layered gabbro	516±10	
Lead isotope dating (Stacey and others, 1981)					
X	1	107515	Kutam sulfide deposit	600	Calibration indicates 50 m.y. too young

0 5 10 15 20 25 KM
SCALE APPROXIMATELY 1:250,000
MAP BASED ON UNCONTROLLED LANDSAT IMAGERY



U.S. Geological Survey
Open-File Report -

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