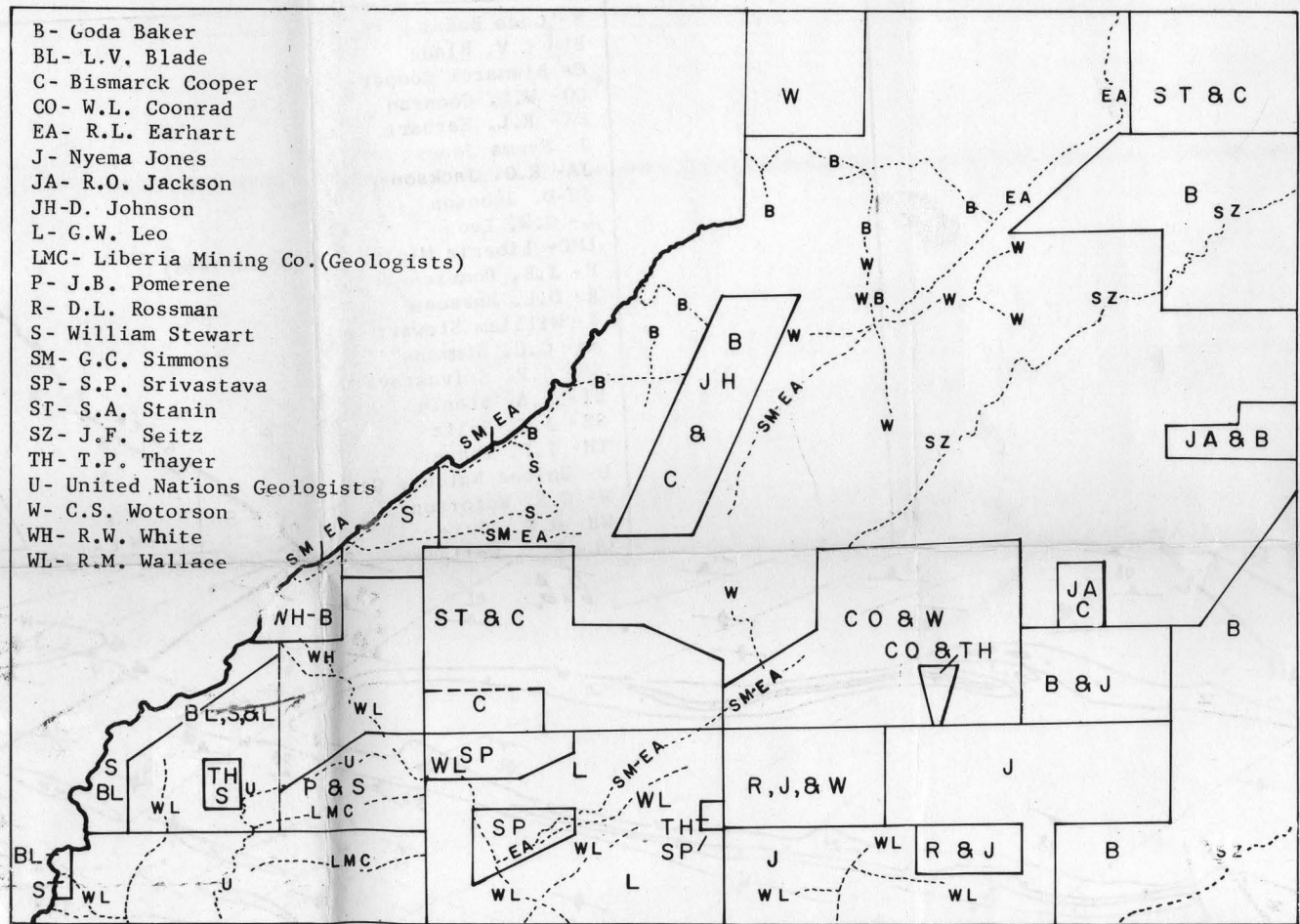
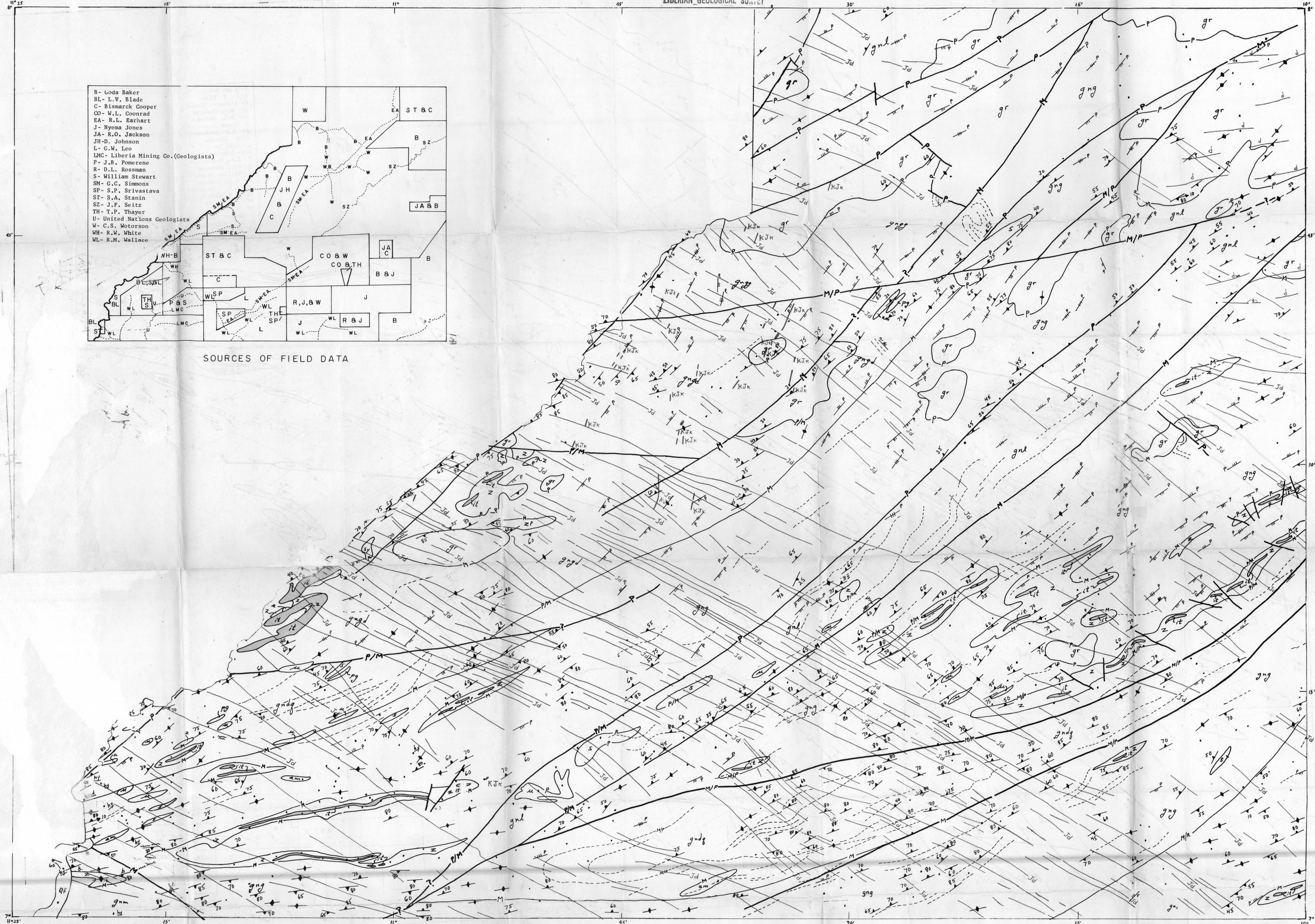


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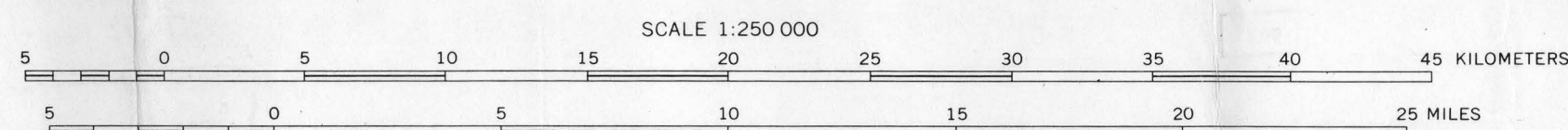


SOURCES OF FIELD DATA



Compiled by photo-planimetric methods from aerial photographs taken 1968-69.
The international boundary must not be considered authoritative.
Form lines have no consistent interval and show only the general shape of terrain.
Geographic grid and rectangular grid based on Hotine's Rectified Skew Orthomorphic projection.

PREPARED BY THE U.S. GEOLOGICAL SURVEY AND THE LIBERIAN
GEOLOGICAL SURVEY UNDER THE JOINT SPONSORSHIP OF THE
GOVERNMENT OF LIBERIA AND THE AGENCY FOR INTERNATIONAL
DEVELOPMENT U.S. DEPARTMENT OF STATE



GEOLOGIC MAP OF THE BOPOLU QUADRANGLE, LIBERIA

by
R. M. Wallace

U. S. Geological Survey
OPEN FILE REPORT 74-302
This report is preliminary and has
not been edited or reviewed for
conformity with Geological Survey
standards or nomenclature.

EXPLANATION Correlation of Map Units

Qf	Holocene	Quaternary
Kjk	Cretaceous or Jurassic	
Jd	Jurassic	
d		
gr		
sy		
pg		
u		
s		
am		
gngq		
gndq		
gngd		
gng		
gnl		
gnm		

Stratigraphic succession not implied for the following units

gr	Plutonic Igneous rocks
sy	
pg	
u	
s	
am	
gngq	
gndq	
gngd	
gng	
gnl	
gnm	

DESCRIPTION OF MAP UNIT

Qf Fluvial and deltaic deposits undivided--Forms flat to hummocky terrain. Upper unit; grayish-yellow to buff, well sorted, silty sand, 4 to 5 m thick. Lower unit; light yellow to buff, well sorted, medium to fine sand, 0 to 5 m thick, grades upwards into silty sand.

Kjk Kimberlite--Rarely exposed, commonly strongly weathered. Dark gray, fine-grained matrix with abundant large ilmenite crystals and minor garnet, olivine, mica, and augite. Diamonds are associated with kimberlite in the Bopolu quadrangle.

Jd Diabase--Dark gray, fine grained, tholeiitic basaltic composition composed of labradorite and pyroxene. Locally shows ophitic texture. Weathers to dark brown sand and clay.

d Diabase

pg Pegmatite--Coarsely crystalline masses of essentially granitic composition, generally within or near the granitic bodies. Columbite-tantalite is associated with some of the pegmatites.

sy Syenite--Grayish-buff, fine grained, structureless rock consisting essentially of perthite and minor hornblende and/or biotite.

gr Granitic rocks--Light yellowish gray to light pinkish-yellow, medium to coarse grained, nearly structureless rock; consists essentially of quartz, K-spar and plagioclase with minor micas and hornblende.

u Ultramafic rocks undivided--Commonly very dark gray to black, fine- to medium-grained, massive to schistose dunite composition; from serpentinite.

z Composite unit--Quartzite, schist, and amphibolite, with minor iron-formation; associated with major iron formation units.

it Iron formation, oxide facies (itabirite)--Thinly laminated light gray fine- to medium-grained quartz layers, and dark to blue-black fine-grained magnetite and/or hematite layers; grades into ferruginous quartzite.

am Amphibolite undivided--Banded medium gray to black, fine- to medium-grained rock that consists essentially of hornblende, plagioclase, with minor augitic pyroxene, sphene, biotite, epidote, and quartz.

s Schist, undivided--About 300 m to about 1600 m thick. Includes fine-grained mica, biotite, and amphibolite schists not associated with iron-formation (it), and consists of quartz, biotite, muscovite, plagioclase, hornblende and epidote.

gnm Melanocratic gneiss--Dark colored rocks consisting of hypersthene-dioptase-hornblende plagioclase-biotite gneiss with varying amounts of pyroxene and hornblende; amphibolite; pyroxenic granitic gneiss; and sillimanite-hypersthene-garnet-two mica gneiss.

gnl Leucocratic gneisses--Undivided light-colored, fine- to coarse-grained gneisses of granitic to quartz dioritic composition; includes minor amphibolite, quartzite, and schist.

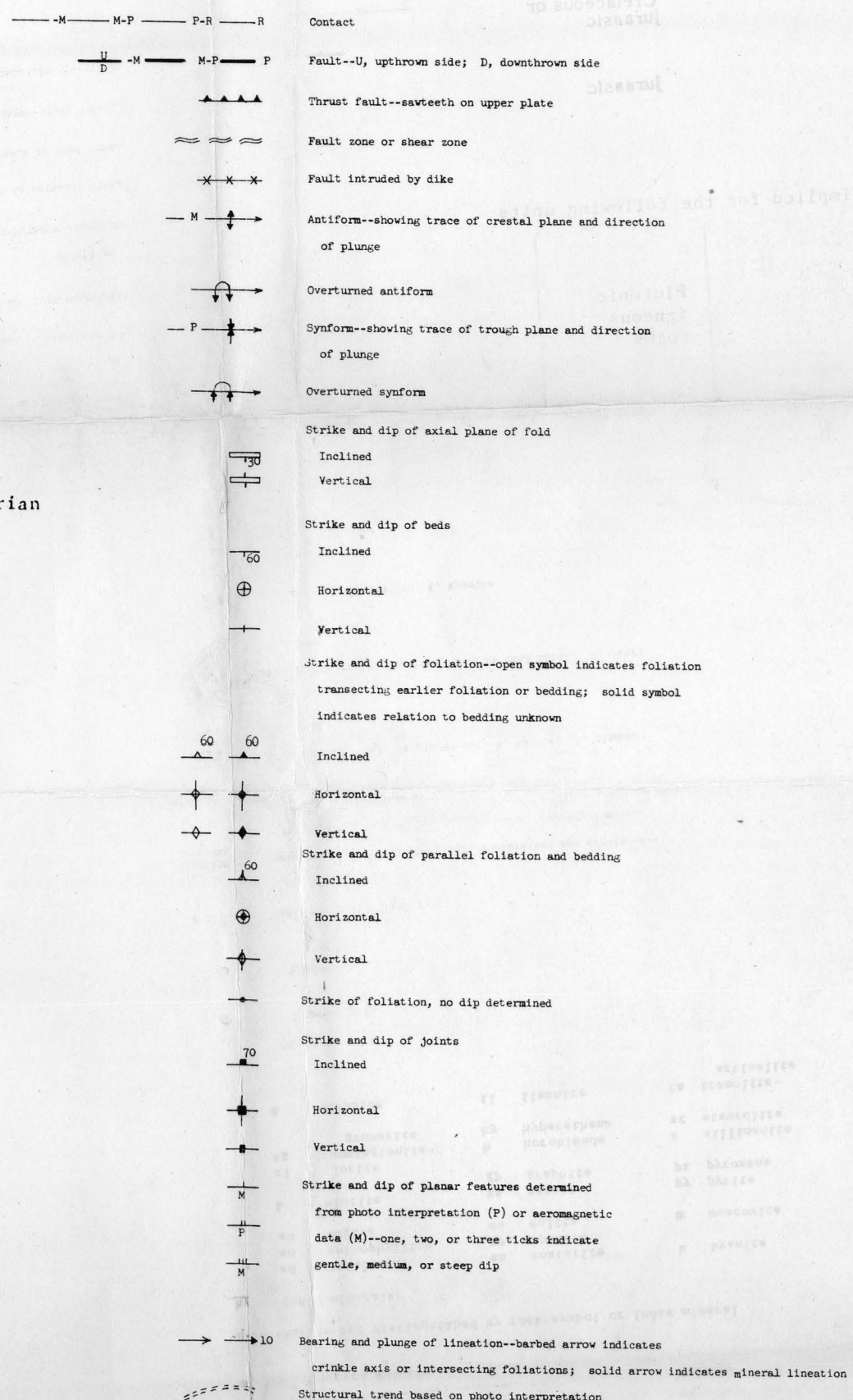
gndq Quartz diorite gneiss--well foliated, medium gray to tan and light brown, fine to coarse grained; consists essentially of sodic (andesine and/or oligoclase) plagioclase feldspar, hornblende, and/or biotite with small amounts of quartz and virtually no potassium feldspar.

gngq Granitic gneiss--Light-colored, medium-grained, banded, biotite-bearing gneiss; predominately granodiorite, but ranging in composition from granite to granodiorite; magnetic and aerial photographic trends are parallel to regional structural trends; contains less amphibolite than adjacent units.

gngd Granodiorite gneiss--Well foliated, light gray to buff to tan, fine to coarse grained; consists essentially of quartz, and plagioclase feldspar with minor potassium feldspar with moderate hornblende and/or biotite.

gngg Granite gneiss--Well foliated, light gray to buff and light pink, fine to coarse grained gneiss of granitic composition. Consists essentially of quartz, plagioclase feldspar, and microcline with minor hornblende and biotite.

MAP SYMBOLS
Field data are shown by conventional symbols; other data sources are indicated by letter symbols adjacent to structural symbols, or at least of line segment to which the symbol applies.
M, metamorphic data; P, photo interpretation; R, radiometric data



Index minerals:			
ad andalusite	an anorthite	k kyanite	
ep epidote	py pyrite		
gr garnet	px pyroxene		
h hornblende	st staurolite		
il ilmenite	ta tremolite-actinolite		

