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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

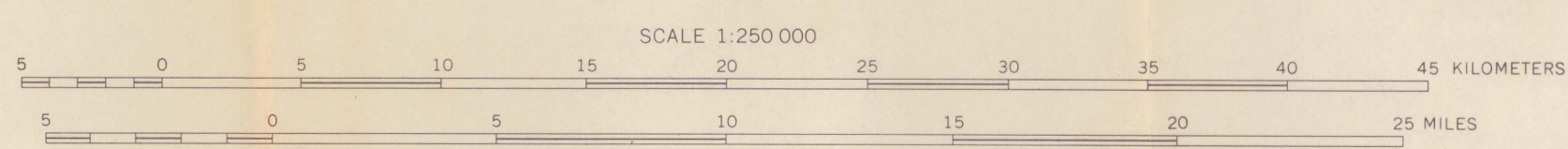
REPUBLIC OF LIBERIA
MINISTRY OF LANDS AND MINES
LIBERIAN GEOLOGICAL SURVEY

USGS OPEN-FILE REPORT 74-303
(IR) LI-69-B



Compiled by photogrammetric 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 graticule 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



EXPLANATION
Correlation of Map Units

Jd	Jurassic
gr	Plutonic igneous rocks
gn	
d	
md	
q	Metamorphic rocks
am	
z	
gnq	
gnl	Precambrian
gn2	

DESCRIPTION OF MAP UNITS

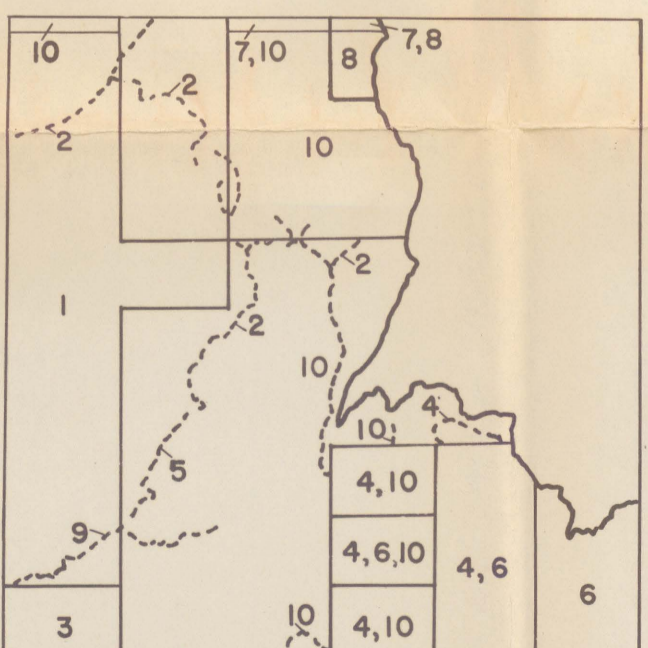
- Jd** Diabase-- dark gray rock, occurring in dikes and composed principally of augite and calcic plagioclase. Forms northwest-trending narrow ridges and produces a characteristic strong negative magnetic anomaly.
- d** Diabase-- dark gray rock, occurring in dikes and composed of clinopyroxene and calcic plagioclase with appreciable olivine. Forms east-trending, narrow ridges. Altered in places to metadiabase.
- gn** Granite-- dark gray medium-grained rock, occurring in small stocks. Composed of calcic plagioclase, hypersthene, and augite.
- gr** Granite rocks-- predominantly massive medium- to coarse-grained rock, mostly granite and granodiorite, but ranging to quartz diorite in composition. Locally has gneissic structure.
- md** Metadiabase-- dark gray rock, occurring in dikes and composed in part of foliated amphibolite derived from diabase. Forms north-trending, narrow ridges.
- z** Composite unit-- comprises rock units characteristically associated with stibnite and iron-formation that are too small to map separately. Includes schist, quartzite, iron formation, and amphibolite with minor amounts of gneiss.
- am** Amphibolite-- foliated rock composed of approximately equal amounts of plagioclase and hornblende. Forms a steep-sided sinuous ridge.
- q** Quartzite-- composed predominantly of quartzite with substantial amounts of schist and gneiss and minor amount of iron silicate rock.
- gn1** Composite gneiss-- an extensive composite unit of gneissic rock that includes granodiorite, syenite, quartz diorite, quartz mica schist, quartzite, and abundant amphibolite.
- gn2** Composite gneiss-- medium-grained granitic gneiss characterized by large portion of widely distributed amphibolite.
- gn3** Composite gneiss-- medium-grained granitic with substantial amount of amphibolite and quartzite.
- gnl** Leucocratic gneiss-- light colored, medium-grained rock with granitic composition and gneissic structure. In northwest area, includes some migmatite, amphibolite, and massive granitic rock. In extreme southeast area, includes substantial amounts of amphibolite and quartzite.
- gn2** Leucocratic gneiss-- light colored, medium-grained rock with granitic composition and gneissic structure. Includes appreciable amounts of schist, amphibolite, and quartzite.
- gn4** Quartz diorite gneiss-- medium- to coarse-grained gneiss of predominantly quartz diorite composition with biotite and hornblende comprising the mafic mineral component.
- gnq** Granite gneiss-- medium- to coarse-grained rock ranging in composition from granite to quartz diorite. Includes minor amount of amphibolite. Predominantly foliated, commonly banded. Locally grades to massive granitic rock.

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

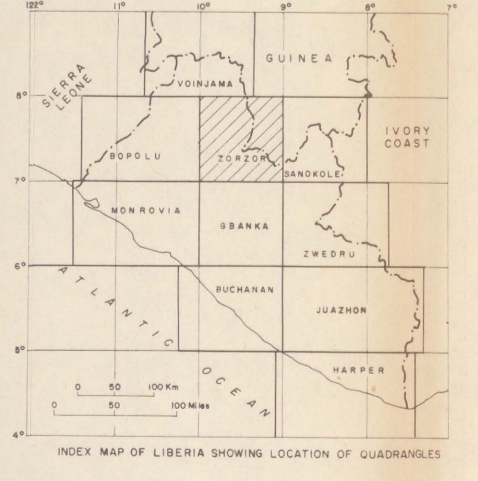
- Contact
- Fault--d, upthrown side; D, downthrown side
- Thrust fault--seaward on upper plate
- Fault zone or shear zone
- Fault intruded by dike
- Antiform--showing trace of crestral plane and direction of plunge
- Synform--showing trace of trough plane and direction of plunge
- Overturned antiform
- Overturned synform
- Strike and dip of axial plane of fold
- Inclined
- Vertical
- Strike and dip of base
- Inclined
- Horizontal
- Vertical
- Strike and dip of foliation--open symbol indicates foliation (transsecting, vector, foliation or bedding); solid symbol indicates relation to bedding, unconformity
- Inclined
- Horizontal
- Vertical
- Strike and dip of joints
- Inclined
- Horizontal
- Vertical
- Strike and dip of planar features determined from photo interpretation (P) or aeromagnetic data (M)--one, two, or three lines indicate gneiss, schist, or steep dip

- Bearing and plunge of lineation--barbed arrow indicates strike axis or intersecting foliations; solid arrow indicates general lineation
- Structural trend based on photo interpretation
- Structural trend based on magnetic
- Observed outcrop
- Marker bed distinguished by rock symbol or index mineral
- Index minerals:

ad andalusite	en enstatite	k kyanite
an anthophyllite	ep epidote	m muscovite
au augite	eu eulite	m muscovite
b biotite	ga garnet	py pyrite
cl clorite	gp graphite	px pyroxene
cg cummingtonite-greenschist	h hornblende	st staurolite
d diopside	hy hypersthene	st staurolite
	il ilmenite	ta tremolite-actinolite
- Fossil locality
- Invertebrate
- Plant
- Radiometric age in a. y.
- Boundary between radiometrically-determined age provinces--Pan-African, 900-700 a. y.; Shewan, 500-2000 a. y.; Liberian, 2700-3000 a. y.
- Tens, gravel, clay, or plaster pit--b, barite; D, diamond; G, gold
- Mine or quarry--B, bauxite; stone or road metal; C, clay; L, lime
- Prospect pit--b, barite; K, kyanite



- ZORZOR QUADRANGLE
Sources of Field Data
1. M. W. G. Baker
 2. L. V. Blade
 3. B. R. Cooper
 4. J. C. Johnson
 5. A. M. Mezzetti
 6. Sam Rosenblum
 7. S. P. Srivastava
 8. W. A. Steward
 9. J. F. Seitz
 10. R. W. White



GEOLOGIC MAP OF THE ZORZOR QUADRANGLE, LIBERIA
by
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U. S. Geological Survey
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This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards or nomenclature.