DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MINERAL INVESTIGATIONS
FIELD STUDIES MAP MF 53

R.18 W. R.17 W.

T.3 S.

MAGNET COVE TITANIUM CORPORATION DEPOSIT

MO-TI PROSPECT

WEST TUFA HILL

KIMZEY CALCITE QUARRY

PEROVSKITE HILL

MIDDLE TUFA HILL

EAST TUFA HILL

MAGNET COVE CHURCH

KIMZEY MAGNETITE PIT

US HIGHWAY 270

MAGNET

MAGNET COVE SCHOOL

DIAMOND JOE QUARRY

CHICAGO ROCK ISLAND & PACIFIC

JONES MILLS

Creek

Quarry

Stone

13 18 17 16 24 19 20 21 25 30 29 28

R.18 W. R.17 W.

Geology mapped in 1953,1954

EXPLANATION

CENOZOIC

rp — Phosphate-rich weathering product of carbonatite
Mapped as tufa by Williams (1891).

i — Iron oxides
Weathering residuum from unknown parent material.

ptp — Pseudoleucite tinguaite porphyry
White to pink pseudoleucite and nepheline phenocrysts in a green aphanitic groundmass.

ftp — Feldspar tinguaite porphyry
Contains white soda-orthoclase phenocrysts in dark-gray aphanitic groundmass.

fp | tpb — Trachytic phonolite, fp; and phonolite breccia, tpb
Fine-grained dark-green to gray rocks chemically identical with tinguaites but texture is trachytic. Locally brecciated and calcareous.

ff — Fluorite trachyte porphyry
Purple fluorite occurs in aggregates of white feldspar crystals. Nepheline not observed.

gf — Garnet fourchite porphyry
Black pyroxene phenocrysts in a dark-gray groundmass of garnet, green mica, magnetite, and isotropic material that may be analcine.

aom — Analcime olivine melagabbro
Chief minerals are pyroxene, olivine and its alteration products, labradorite, amphibole, apatite, and late analcime. Mapped as monchiquite by Williams (1891) and Fryklund and Holbrook (1950).

apr — Apatite pyrite rock(?)
Similar to rp, shows lost-outcrop resembles gossan owing to abundant iron oxides. Also contains small amounts of barium, strontium, rare earths, and thorium.

c — Carbonatite
Dikes and irregular bodies of coarsely crystalline calcite. Locally contains concentrations of apatite, monticellite, magnetite, perovskite, and new zirconium-rich black garnet.

ep — Eudialyte-aegirine-nepheline pegmatite

fs — Leucosyenite
Irregular bodies and dikes of coarse-grained alkalic feldspar with accessory nepheline and mafic minerals.

nsd — Nepheline syenite at the Diamond Joe quarry
Occurs as small irregular bodies along the southern margin of Magnet Cove. Composed of abundant coarse-grained soda orthoclase (as much as 2 inches long), aegirine-augite, black garnet, nepheline, and cancrinite. Blue sodalite and purple fluorite present along joint planes.

gns — Garnet-nepheline syenite
Coarse-grained phase of garnet pseudoleucite syenite.

gps — Garnet-pseudoleucite syenite
Light gray, medium grained, composed of white pseudoleucite, tabular feldspar, pyroxene, and black garnet. The presence of black garnet and absence of sphene is diagnostic.

CRETACEOUS (?)

as — Amphibole shonkinite
Similar to plagioclase shonkinite and forms part of same intrusive body. Reddish-brown amphibole is abundant and plagioclase is accessory.

ps — Plagioclase shonkinite
Closely related to sphene nepheline syenite, but titaniferous augite makes up about 50 percent of rock. Orthoclase, andesine, amphibole, and biotite are also present.

sns — Sphene nepheline syenite
Composed of soda orthoclase, zoned pyroxenes from calcic to sodic, nepheline. Sphene crystals visible in hand specimen and absence of black garnet are diagnostic. Texture ranges from medium to coarse grained.

ns — Nepheline syenite
Light-gray, medium-grained rocks with abundant soda orthoclase. Pyroxene, nepheline and other feldspathoids, and pyrite are the other minerals. Sphene is sparingly present or absent.

ls — Lime silicate rock
Local altered area in biotite-garnet ijolite. Composed chiefly of vesuvianite, magnetite, mica, and black (titanium) garnet.

gi — Garnet ijolite
Medium- to coarse-grained rocks that range in composition from melteigite to urtite. Composed chiefly of nepheline, diopside, and black (titanium) garnet. Feldspar is absent.

bgi — Biotite-garnet ijolite
Similar to garnet ijolite except that biotite is an essential mineral. Biotite is black when fresh, alters to green mica and then to pale-brown vermiculite(?). Contacts between ijolite rock types are gradational.

fgi — Fine-grained ijolite
Dense dark-colored rock. Hand specimens resemble dark phonolite, but luster imparted by fine-grained garnet is diagnostic. Composed of nepheline, garnet, biotite, and diopside.

gbm — Garnet-biotite melteigite
Resembles biotite ijolite or ouachitite but presence of as much as 25 percent nepheline and absence of feldspar make this rock a melteigite.

j — Jacupirangite
Medium- to coarse-grained magnetite pyroxenite with accessory sphene, perovskite, and feldspathoids. Forms magnetic highs and is cut by swarms of nepheline syenite stringers and dikes.

bp — Banded phonolite, breccia, and nepheline syenite
Banding in phonolite unit at contact with ijolite.

p | pb — Phonolite, p; and phonolite breccia, pb
Previously mapped as metamorphosed sandstone and shale. Fine-grained grey to greenish rocks, locally brecciated.

pcp | pcpb — Pyrite-calcite phonolite, pcp; and pyrite-calcite phonolite breccia, pcpb
Fine-grained dark rock with abundant disseminated pyrite crystals and calcareous groundmass. Locally brecciated. Cut by abundant feldspar-carbonate-pyrite-zeolite veins, particularly in the old noble pit area in secs. 18 and 17.

CRETACEOUS (?)

PALEOZOIC

ms — Metamorphosed sedimentary rocks
Includes shale, sandstone, and novaculite.

INDEX MAP SHOWING LOCATION OF MAGNET COVE IGNEOUS AREA IN ARKANSAS

Contact — *Dashed where approximately located.*

Indefinite contact

Gradational contact

Concealed contact

Outline of open pits and trenches

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MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1956

LITERATURE CITED

Fryklund, V. C., Jr., and Holbrook, D. F., 1950, Titanium ore deposits of Hot Springs County, Ark.: Arkansas Res. and Devel. Comm., Div. Geology Bull. 16, 173 p.

Williams, J. F., 1891, The igneous rocks of Arkansas: Arkansas Geol. Survey Ann. Repts. for 1890, p. 1-391, 429-457.

MAP OF BEDROCK GEOLOGY OF MAGNET COVE IGNEOUS AREA, HOT SPRING COUNTY, ARKANSAS

By
R. L. Erickson and L. V. Blade

Scale 1:6000

1000 0 1000 2000 3000 Feet

1956

MINERAL INVESTIGATIONS
FIELD STUDIES MAP MF 53

Arkansas. (Magnet Cove area). Geol. 1:6,000
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