U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE MISSOURI DEPARTMENT OF NATURAL RESOURCES, DIVISION OF GEOLOGY AND LAND SURVEY, AND THE ARKANSAS GEOLOGICAL COMMISSION

MISCELLANEOUS FIELD STUDIES
MAP MF-1994-D
PAMPHLET ACCOMPANIES MAP

MAP A. FAVORABLE CRITERIA AND ASSESSMENT BLOCKS FOR MISSISSIPPI VALLEY-TYPE DEPOSITS IN CAMBRIAN ROCKS--UPPER SEQUENCE

EXPLANATION

Edge of upper sequence rocks--Upper sequence present on hachured side. Upper sequence is defined as strata overlying the basal erosional contact of the Sullivan Siltstone Member of the Bonneterre Formation and underlying the basal erosional contact of the Gunter Sandstone Member of the Gasconade Formation

Permeable lithofacies--Delineated by zones of abrupt lithofacies changes at ramp facies margins

Limestone-dolostone interface--Hachures on dolostone side

Area of geochemical anomalies

Strong

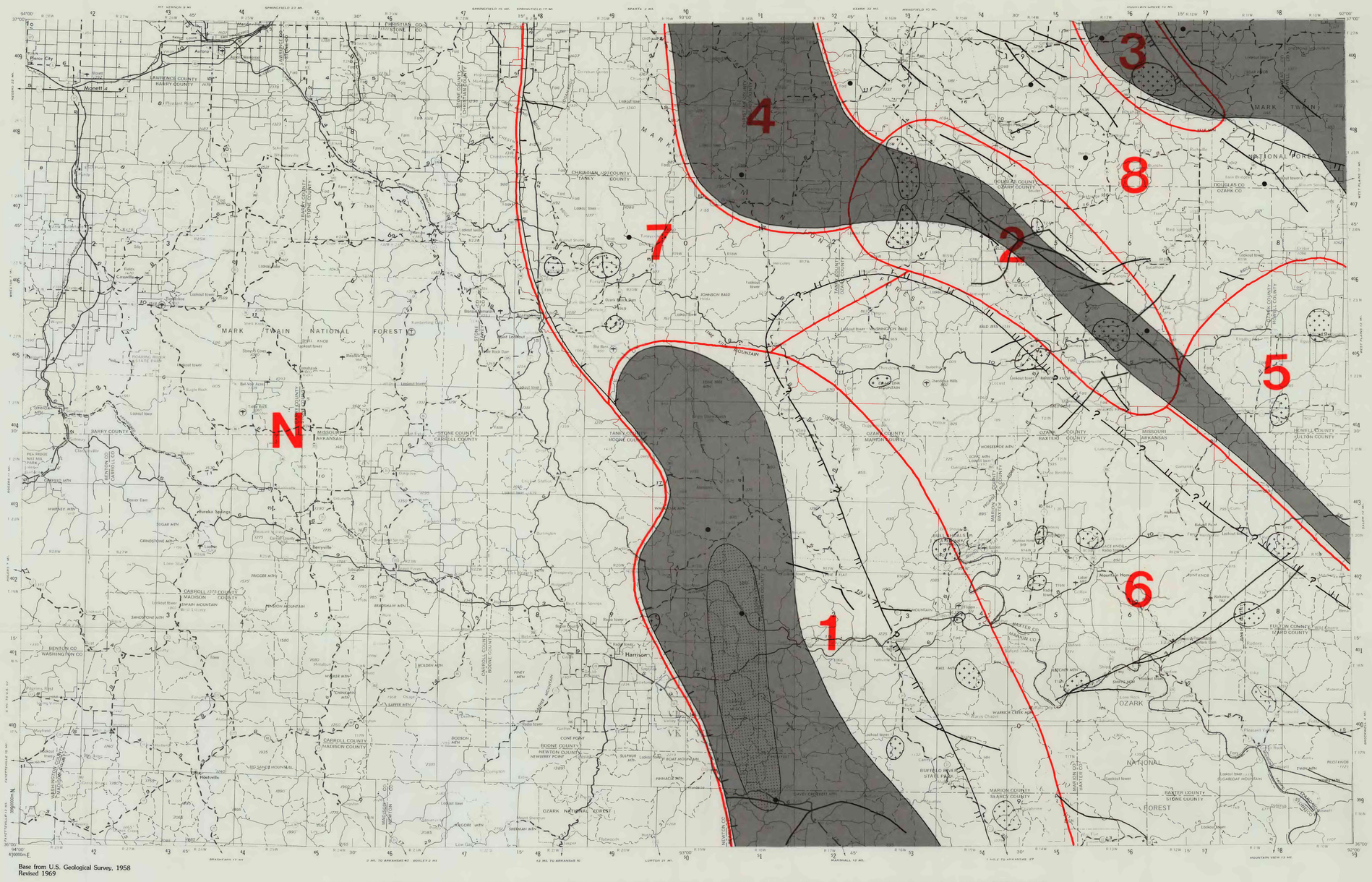
Moderate

Fault

Precambrian basement high inferred from aeromagnetic map--Query indicates uncertain identification

Drill hole penetrating upper sequence

5 **Boundary of assessment block discussed in accompanying pamphlet**--N, not rated because upper sequence is absent



Base from U.S. Geological Survey, 1958
Revised 1969

MAP B. FAVORABLE CRITERIA AND ASSESSMENT BLOCKS FOR MISSISSIPPI VALLEY-TYPE DEPOSITS IN CAMBRIAN ROCKS--LOWER SEQUENCE

EXPLANATION

Edge of lower sequence rocks--Lower sequence present on hachured side. Lower sequence is defined as the lower and middle parts of the Bonneterre Formation, consisting of strata between the base of the Sullivan Siltstone Member of the Bonneterre and the top of the Lamotte Sandstone

Permeable lithofacies--Delineated by zones of abrupt lithofacies changes at ramp facies margins

Limestone-dolostone interface--Hachures on dolostone side; queried where location inferred

Area of moderate geochemical anomalies

Fault--Shown only in area where lower sequence is present

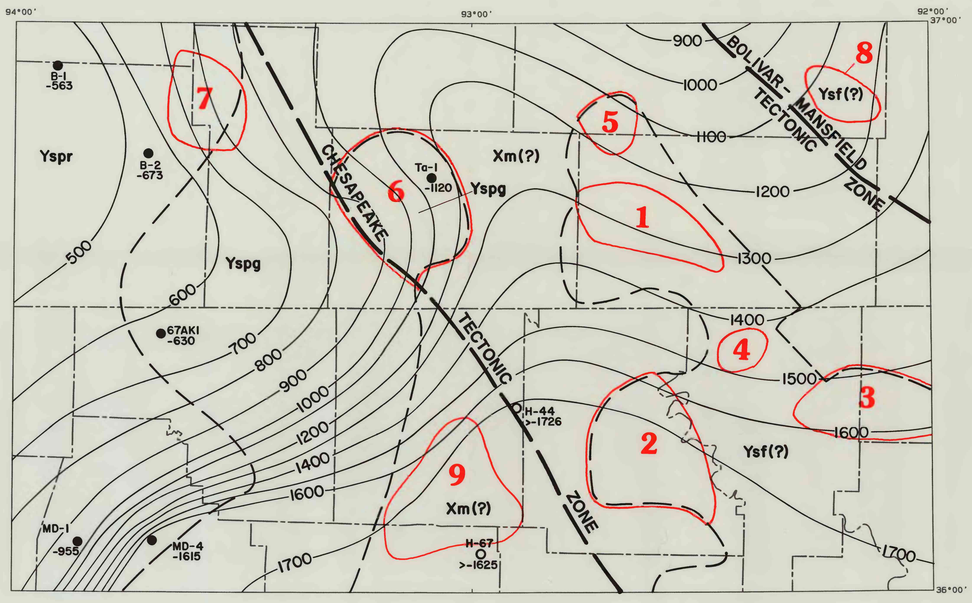
Precambrian basement high inferred from aeromagnetic map--Shown only in area where lower sequence is present

Drill hole penetrating lower sequence

5 **Boundary of assessment block discussed in accompanying pamphlet**--N, not rated because lower sequence is absent

Scale 1:250,000

CONTOUR INTERVAL 100 FEET
TRANSVERSE MERCATOR PROJECTION



EXPLANATION

[Unit symbols for Ysf and Xm have queries where identification is uncertain]

Yspg **Spavinaw Granite (Middle Proterozoic)**--Epizonal alkali granite and granophyre; 1.40-1.34 Ga (Thomas and others, 1984)

Yspr **Spavinaw terrane rhyolite (Middle Proterozoic)**--Rhyolite and ash-flow tuff; 1.40-1.34 Ga (Thomas and others, 1984)

Ysf **Granite terrane (Middle Proterozoic)**--Typically mesozonal; correlated with the St. Francois terrane exposed in southeastern Missouri; 1.45-1.38 Ga (Bickford and others, 1981)

Xm **Metamorphic terrane (Early Proterozoic)**--Schist, gneiss, and amphibolite; 1.65-1.55 Ga (Bickford and others, 1981)

Inferred contact

Principal tectonic zone--Inferred from regional structures and magnetic data (Kisvarsanyi, 1984)

–900– **Structure contour**--Elevation of basement-rock surface; contour interval 100 ft; datum is mean sea level

B-1 -563 **Drill hole to basement**--Showing "Operation Basement" drill-hole number in Missouri (Kisvarsanyi, 1975) or Arkansas Geological Commission log number in Arkansas, and elevation of basement surface in feet

H-67 >-1625 **Drill hole bottoming in sedimentary rocks**--Showing Arkansas Geological Commission log number and elevation of basement surface in feet

5 **Area of potential Olympic Dam-type mineralization**--Discussed in accompanying pamphlet

MAP C. PRECAMBRIAN BASEMENT GEOLOGY AND AREAS OF POTENTIAL OLYMPIC DAM-TYPE MINERALIZATION

SCALE 1:500 000

MINERAL-RESOURCE ASSESSMENT MAPS OF THE HARRISON 1° x 2° QUADRANGLE, MISSOURI AND ARKANSAS

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