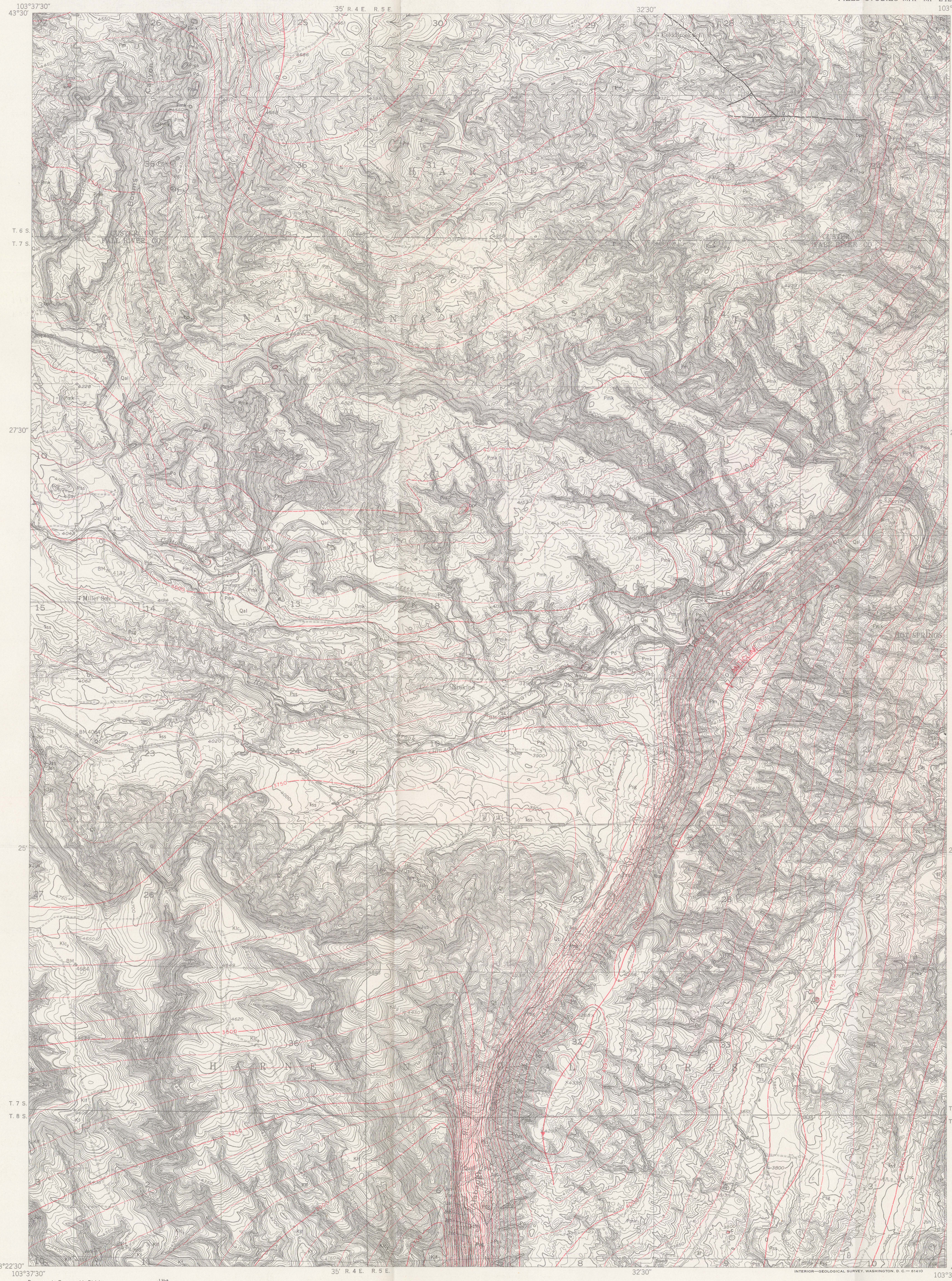
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MINERAL INVESTIGATIONS
FIELD STUDIES MAP MF-242



EXPLANATION

QUATERNARY

Qal — **Alluvium**

Qc — **Colluvium**

Qtg — **Terrace gravel**

Ql — **Landslide deposits**

CRETACEOUS

Lower Cretaceous

Inyan Kara group

Kf — **Fall River formation**
Middle and lower units, undivided; middle unit, principally yellowish-orange sandstone, lower unit is gray carbonaceous siltstone

Klf, Klc_2 — **Lakota formation**
Klf, Fuson member, variegated mudstone
Klc_2, Chilson member, dominantly grayish-yellow fine-grained sandstone, with interbedded brown, green, or gray mudstone

JURASSIC

Upper Jurassic

Jus — **Unkpapa sandstone**

Jsr, Jsl, Jsh, Jss, Jsc — **Sundance formation**
Jsr, Redwater shale member, gray shale, glauconitic siltstone, and thin fossiliferous limestone
Jsl, Lak member, reddish-brown siltstone and thin orange sandstone
Jsh, Hulett sandstone member, thin-bedded ripple-marked slabby yellowish-orange sandstone
Jss, Stockade Beaver shale member, olive-gray calcareous shale
Jsc, Canyon Springs sandstone member, reddish-brown to yellowish-orange fine-grained sandstone, mostly massive, thin-bedded near top

TRIASSIC

Tss, Psg, Pss — **Spearfish formation**
Tss, dark reddish-brown siltstone
Psg, interbedded white gypsum and dark reddish-brown siltstone
Pss, dark reddish-brown siltstone

PERMIAN

Pmk — **Minnekahta limestone**
Thin-bedded slabby pinkish-gray limestone

Po — **Opeche formation**
Dark reddish-brown siltstone, thin sandstone, and local gypsum

PENNSYLVANIAN AND CARBONIFEROUS

Pm_1, Pm_{2-3} — **Minnelusa formation**
Pm_1, unit 1, of Permian age, predominantly brecciated red and yellow sandstone and yellow to gray thin-bedded limestone; basal contact drawn at base of a prominent mudstone called the "red marker"
Pm_{2-3}, units 2 and 3, of Pennsylvanian age, slightly brecciated yellowish-gray dolomite and yellow calcareous sandstone, locally thin carbonaceous shale

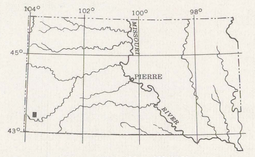
Contact, approximately located

Fault
Dashed where approximately located; U, upthrown side, D, downthrown side

Breccia pipe, bp, or collapse, c
Results from solution of underlying rock

Structure contours
Drawn on top of Minnekahta limestone. Long dashes where control less accurate; short dashes where projected above land surface. In some areas tectonic structure altered by nearly 250 feet of subsidence resulting from solution of anhydrite in the Minnelusa formation. Contour interval 50 feet. Datum is mean sea level

Asymmetrical anticline
Showing trace of present axial plane and plunge of axis. Short arrow indicates steeper limb



INDEX MAP OF SOUTH DAKOTA SHOWING AREA OF THIS REPORT

Base map by Topographic Division, U. S. Geological Survey, 1951

APPROXIMATE MEAN DECLINATION, 1962

GEOLOGIC AND STRUCTURE MAP OF THE MINNEKAHTA NE QUADRANGLE FALL RIVER AND CUSTER COUNTIES, SOUTH DAKOTA

By
Don E. Wolcott, C. Gilbert Bowles, Donald A. Brobst, and Edwin V. Post

SCALE 1:24 000

1 ½ 0 1 MILE

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

1962

Geology by D. E. Wolcott, C. G. Bowles, D. A. Brobst, and E. V. Post, May 1960. Compiled in part by photogeologic methods

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—61410

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