DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

OPEN FILE REPORT 77-137
HAMEN QUAD., MONT.

Base from U.S. Geological Survey, 1951.

Geology mapped in 1976.

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

SCALE 1:24 000

1 ½ 0 1 MILE

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

MONTANA

QUADRANGLE LOCATION

CORRELATION OF MAP UNITS

Qa, Qc	Holocene	QUATERNARY
Qg, Qgs	Pleistocene	QUATERNARY
Qgo	Pleistocene	QUATERNARY
Tf	Lower Miocene	TERTIARY
Ti, Tif	Eocene(?)	TERTIARY
Kbc, Ksl, Ksb, Ksm, Kss (Livingston Group)	Upper Cretaceous	CRETACEOUS
Ke, Kec, Kct	Upper Cretaceous	CRETACEOUS
Kf	Lower Cretaceous	CRETACEOUS
Kmt	Lower Cretaceous	CRETACEOUS

DESCRIPTION OF MAP UNITS

Qa ALLUVIUM (HOLOCENE)--Mud, sand, and gravel; includes swamp deposits

Qc COLLUVIUM (HOLOCENE)--Mud, sand, and gravel; probably mostly slope wash and lag deposits, includes some valley alluvium and fan alluvium

Qg GRAVEL (PLEISTOCENE)--Cobbles as much as 25 cm across in dominantly sand matrix. Common fragments of quartzite, limestone, and argillite of Paleozoic and Precambrian age as well as fragments of Cretaceous age

Qgs GRAVEL (PLEISTOCENE)--Cobbles as much as 25 cm across in dominantly sand matrix. All clasts could have been derived from formations of Cretaceous and younger age cropping out in present drainage area of Sixteenmile Creek, locally has Qc veneer

Qgo OLDER GRAVEL (PLEISTOCENE)--Probably glacial outwash; coarse gravel with boulders as much as 1.5 m across composed of Paleozoic limestone. Caliche-like cement

Tf FORT LOGAN FORMATION (LOWER MIOCENE)--Poorly exposed light colored clay and sand, partly consolidated, tuffaceous

Ti Dikes and sills (Eocene?)--Alkalic rocks, medium-gray fine-grained matrix with phenocrysts of hornblende, biotite, or both

Tif Dike (Eocene?)--Yellowish gray, fine grained, composed of feldspar and minor quartz

Kbc BILLMAN CREEK FORMATION (UPPER CRETACEOUS)--Poorly exposed reddish weathering greenish-gray mudstone, siltstone, sandstone, and conglomeratic sandstone derived from volcanic terrane

SEDAN FORMATION (UPPER CRETACEOUS)

Ksl Lennep Sandstone Member--Grayish-yellow volcanic sandstone with minor clay matrix

Ksb Bearpaw Shale Member--Unexposed swale-forming unit. Chips of gray sandy claystone in float. Probably pinches out to south

Ksm Mudstone Member--Greenish-gray mudstone and volcanic sandstone, conglomerate beds near base in southeast part of quadrangle. Local bright green mudstone. The lower contact was shifted within the quadrangle for mapping convenience

Kss Middle and Lower Sandstone Members--Greenish-gray sandstone, conglomeratic sandstone, and mudstone derived from volcanic terrane. ++++ marks outcrops of yellowish-gray friable crossbedded sandstone containing Ophiomorpha; considered correlative of Parkman Sandstone

Ke EAGLE SANDSTONE (UPPER CRETACEOUS)--Poorly exposed yellowish-gray friable sandstone, mostly fine to medium grained

Kct TELEGRAPH CREEK FORMATION AND CODY SHALE (UPPER CRETACEOUS)--Poorly exposed medium- to dark-gray shale and gray to yellowish-gray fine sandstone, mostly thin bedded

Kec EAGLE SANDSTONE, TELEGRAPH CREEK FORMATION AND CODY SHALE (UPPER CRETACEOUS)--Undifferentiated where exposures inadequate for separation of units

Kf FRONTIER FORMATION (UPPER CRETACEOUS)--Yellowish- to greenish-gray sandstone with interbedded dark-gray shale. A few chert pebble conglomerate beds; chert pebbles well rounded with dark-gray surface coatings

Kmt MOWRY AND THERMOPOLIS SHALES (LOWER CRETACEOUS)--Dark-gray shale with very thin beds of fine sandstone. Rare siliceous shale

60 CONTACT--Approximately located, dotted where concealed, showing dip

U/D FAULT--Dashed where approximately located. Shows local relative displacement; U, upthrown side; D, downthrown side

ANTICLINE--Showing crestline and plunge

SYNCLINE--Showing trough line

55 STRIKE AND DIP OF BEDS--Number not shown where amount of dip is uncertain

STRIKE OF VERTICAL BEDS

85 STRIKE AND DIP OF OVERTURNED BEDS

HORIZONTAL BEDDING

OIL TEST HOLE

RECONNAISSANCE GEOLOGIC MAP OF THE HAMEN QUADRANGLE, MEAGHER COUNTY, MONTANA

By
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1977