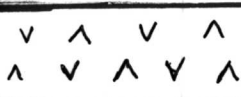


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RAPID CITY QUADRANGLE
SOUTH DAKOTA
1:100 000-SCALE SERIES (TOPOGRAPHIC)

EXPLANATION



TERTIARY IGNEOUS ROCKS
(Only larger bodies shown)

BASE OF SKULL CREEK SHALE
(top of Fall River Formation)

BASE OF MINNELUSA FORMATION
(top of Pahasapa Limestone)

BASE OF DEADWOOD FORMATION
(top of Precambrian rocks)

CONTACT--Dashed where approximately located
or concealed by younger rocks.

FAULT--Dashed where approximately located
or inferred. Queried where uncertain.
Bar and ball on downthrown side.

ANTICLINE-- Showing trace of axial plane
and approximate direction of plunge. Dashed
where approximately located.

SYNCLINE-- Showing trace of axial plane
and approximate direction of plunge. Dashed
where approximately located.

MONOCLINE--Showing trace of upper flexure.
Short arrow indicates steep limb.

DOMES--Symbol size approximately
proportional to size of dome.
Dome asymmetry indicated by arrow length.

STRUCTURAL CONTOURS ON TOP OF FALL RIVER
FORMATION. Dashed where eroded. Elevations
in hundreds of feet (30 = 3,000'). Contour
interval varies from 100' to 200' to 500'
where appropriate; heavy lines at 500'
intervals; light lines at 100' or 200'
intervals.

STRUCTURAL CONTOURS ON TOP OF PAHASAPA
LIMESTONE. Dashed where eroded. Elevations
in hundreds of feet (40 = 4,000'). Contour
interval varies from 100' to 200' to 500'
where appropriate; heavy lines at 500'
intervals; light lines at 100' or 200'
intervals.

STRUCTURAL CONTOURS ON TOP OF PRECAMBRIAN
ROCKS. Short lines where restored. Contour
interval varies from 100' to 200' to 500'
where appropriate; heavy lines at 500'
intervals; light lines at 100' or 200'
intervals.

Location of wells including formation
elevations used for structural contours
are in computer files and may be obtained
from J.A. Redden, Dept. of Geology, South
Dakota School of Mines, Rapid City, SD.

Structural contours prepared from a geologic map compilation of
the Central Black Hills now in preparation by Jack A. Redden,
Central Mineral Resources Branch Geologic Division, U.S.
Geological Survey. This map is open filed for use prior to final
completion and publication of the Central Black Hills map;
contours may deviate in some areas from the final map. Well data
were obtained largely from files of Dr. J.P. Gries, South Dakota
School of Mines and Technology, Rapid City. Dann Halverson,
Xiaodan Tan, and Greg Gosser assisted in digitization and contour
preparation. Financial support for this work was in part by the
South Dakota Geological Survey, Department of Environment and
Natural Resources.

This report is preliminary and has not
been edited or reviewed for conformity
with U. S. Geological Survey standards
or stratigraphic nomenclature.

STRUCTURAL CONTOURS AND PHANEROZOIC STRUCTURES IN THE RAPID CITY, SOUTH DAKOTA, 1:100,000 SCALE QUADRANGLE:
PART I. STRUCTURAL CONTOURS ON TOP OF THE FALL RIVER FORMATION, PAHASAPA LIMESTONE AND PRECAMBRIAN ROCKS

By Jack A. Redden 1994