

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

**GEOLOGIC MAP AND COAL RESOURCES OF THE
WHITE BUTTE NW QUADRANGLE, STARK AND
HETTINGER COUNTIES, NORTH DAKOTA**


By K. S. Soward

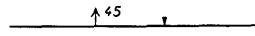
COAL INVESTIGATIONS MAP
Published by the U.S. Geological Survey, 1975
Reston, Va. 22092

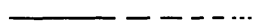
GEOLOGIC MAP SYMBOLS


COMMONLY USED ON MAPS OF THE UNITED STATES GEOLOGICAL SURVEY


(Special symbols are shown in explanation)

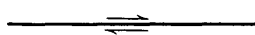
 Contact — Dashed where approximately located; short dashed where inferred; dotted where concealed


 Contact — Showing dip; well exposed at triangle

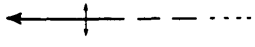
 Fault — Dashed where approximately located; short dashed where inferred; dotted where concealed


 Fault, showing dip — Ball and bar on downthrown side

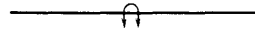
 Normal fault — Hachured on downthrown side

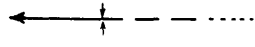
 Fault — Showing relative horizontal movement

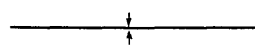
 Thrust fault — Sawteeth on upper plate


 Anticline — Showing direction of plunge; dashed where approximately located; dotted where concealed

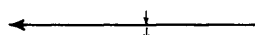
 Asymmetric anticline — Short arrow indicates steeper limb


 Overturned anticline — Showing direction of dip of limbs


 Syncline — Showing direction of plunge; dashed where approximately located; dotted where concealed

 Asymmetric syncline — Short arrow indicates steeper limb





 Overturned syncline — Showing direction of dip of limbs

 Monocline — Showing direction of plunge of axis




 Minor anticline — Showing plunge of axis

 Minor syncline — Showing plunge of axis




Strike and dip of beds — Ball indicates top of beds known from sedimentary structures

 70° Inclined  Horizontal
 40° Vertical  Overturned




Strike and dip of foliation

 20° Inclined  Vertical  Horizontal




Strike and dip of cleavage

 15° Inclined  Vertical  Horizontal

Bearing and plunge of lineation

 15° Inclined  Vertical  Horizontal

Strike and dip of joints



 40° Inclined  Vertical  Horizontal

Note: planar symbols (strike and dip of beds, foliation or schistosity, and cleavage) may be combined with linear symbols to record data observed at same locality by superimposed symbols at point of observation. Coexisting planar symbols are shown intersecting at point of observation.

Shafts



 Vertical  Inclined

Adit, tunnel, or slope

 Accessible  Inaccessible

x Prospect









Quarry

 Active  Abandoned

Gravel pit

 Active  Abandoned

Oil well

 Drilling  Shut-in  Dry hole
 Gas  Show of gas  abandoned
 Oil  Show of oil