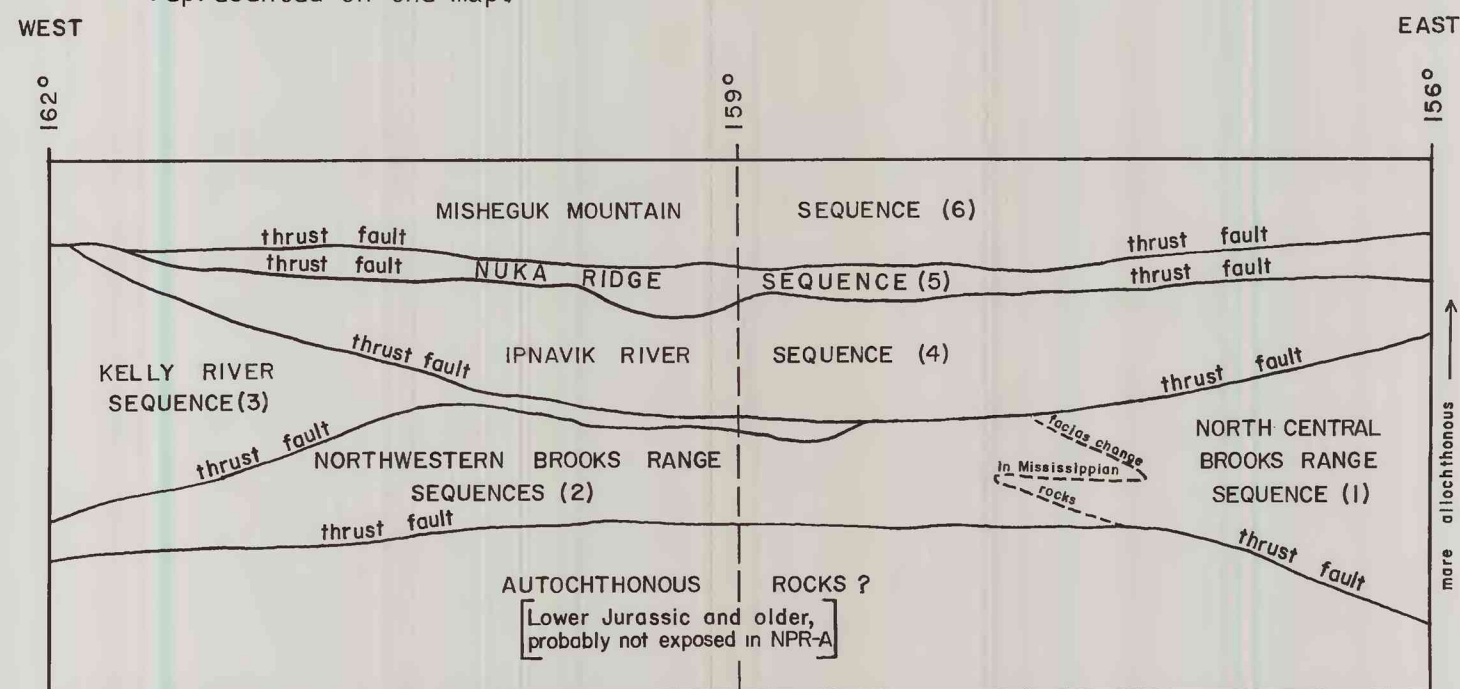


INTRODUCTION

The accompanying geologic map and description of rock units represents an interpretation of the geology in the southern part of NPR-A based upon the publications of Tailleux and others, 1966, Snelson and others, 1968, and Martin, 1970.

The south edge of NPR-A (Delong and Endicott Mountains) consists of generally coeval rock assemblages of slightly different facies which are believed to have been superimposed by large-scale horizontal thrust faults. Movement of the hanging wall relative to the footwall side of thrust faults has been from south to north, and it is probable that a distance of more than 160 km would be required to unstack the thrust plates to their original positions. Major foreshortening occurred in the latest Jurassic to middle Cretaceous. Numerous open folds and high angle faults affected the rocks after the thrusting ended.

Rock units have been grouped into discrete thrust sequences. Five of the sequences, the north central Brooks Range, northwestern Brooks Range, Kelly River, Inpavik River, and Nuka Ridge thrust sequences, have rocks ranging in age from Cretaceous to Mississippian or Devonian. Rocks of the Misheguk Mountain thrust sequence have less certain age, but must be Jurassic or older. The relationship between the north central Brooks Range sequence and the northwestern Brooks Range sequences is uncertain; however, apparent gradational facies change in Mississippian rocks and similar structural position of these sequences suggests that they are not separated by major thrust faults. The northwestern Brooks Range thrust sequences are not well enough understood to be separated on the map, but discrete sequences may be mappable using shaley versus cherty Mississippian rocks. The diagram below is a schematic cross-section in southern NPR-A showing the relative stacking positions and spatial (east-west) distribution of the 6 major thrust plates represented on the map.



DESCRIPTION OF ROCK UNITS

SURFICIAL DEPOSITS

Q
Unconsolidated surficial deposits, stream alluvium, glacial deposits, tundra soils, and lacustrine deposits

Quaternary

Unconformity

AUTOCHTHONOUS ROCKS

Kc
Golville Group
Turonian to Maastrichtian sandstone, shale, and conglomerate

Upper Cretaceous

Disconformity

Kn
Nanshuk Group
Albian to Cenomanian sandstone, conglomerate, and shale

Kf
Fortress Mountain Formation
Flyschoid wacke, conglomerate, and mudstone; has Albian pelecypods and ammonites

Kt
Torok Formation
Gray shale

Upper and Lower Cretaceous

Km
Mudstone with local coquina bed consisting of Valanginian pelecypod, Buchia; mapped only on the lower Killik River

Lower Cretaceous

ALLOCHTHONOUS ROCKS

NORTH CENTRAL BROOKS RANGE THRUST SEQUENCE 1

Disconformity ?
K1
Flyschoid mudstone and subordinate wacke; has Neocomian pelecypod, Buchia; includes Oupiknuak Formation and informally named Ipevik Formation
db1
Dabase and basalt, occurs mainly as dikes and sills
JP1
Gray red, and green chert and shale with few fine-grained gray limestone beds in upper third of unit. Has Triassic pelecypod, Monotis, in upper part; includes informally named Blankenship Formation and Shublik and Sikisipuk Formations

Lower Cretaceous to Jurassic

NORTHWESTERN BROOKS RANGE THRUST SEQUENCES 2

Disconformity ?
K2
Flyschoid wacke, mudstone, and conglomerate with local quartzitic sandstone. Has Lower Cretaceous and upper Jurassic pelecypod, Buchia; includes Oupiknuak Formation and informally named Ipevik Formation
Disconformity ?
RP2
Gray, red, and green chert and shale with few fine-grained gray limestone beds and Triassic pelecypod, Monotis, in upper part. Includes Shublik and Sikisipuk Formations; locally may include Lower Jurassic oil shale and chert
RM2
Triassic to Mississippian rocks undifferentiated; includes gray chert and shale (RP2), and black chert and shale (M2) in structurally complex terranes
KP2
Lower Cretaceous to Permian rocks undifferentiated; includes wacke and mudstone (K2), and chert and shale (RP2) in structurally complex terranes
KM2
Lower Cretaceous to Mississippian rocks undifferentiated; includes wacke and mudstone (K2), chert and shale (RP2), and black chert and shale (M2) in structurally complex terranes
M2
Lisburne Group
M2a - carbonaceous black chert and shale with few dark limestone beds; M2b - rhyolitic tuffs and flows at Drenchwater Creek

Triassic to Permian to Mississippian

KELLY RIVER THRUST SEQUENCE 3

K3
Flyschoid wacke and lesser mudstone; has Neocomian pelecypod, Buchia; includes Oupiknuak Formation
Disconformity ?
RP3
Gray and red chert and shale, has few limestone beds and Triassic pelecypod, Monotis, in upper part; includes Shublik and Sikisipuk Formations

Lower Cretaceous to Triassic to Permian

IPNAVIK RIVER THRUST SEQUENCE 4

K4
Flyschoid wacke and mudstone with local conglomerate; has Neocomian pelecypod, Buchia; includes Oupiknuak Formation
db4
Dabase and basalt, occurs mainly as sills and dikes
RP4
Gray, red, and green chert, commonly has diabase sills; subordinate shale

Lower Cretaceous to Jurassic to Permian

NUKA RIDGE THRUST SEQUENCE 5

K5
Flyschoid wacke and mudstone with concretionary concretions; includes Oupiknuak Formation
Disconformity ?
RP5
Well-bedded gray and red chert with minor shale; has Triassic pelecypod, Monotis, in upper part

Lower Cretaceous to Triassic to Permian

MISHEGUK MOUNTAIN THRUST SEQUENCE 6

db6
Pillow basalt and diabase, local chert and shale
gb
Layered gabbro consisting of augite and plagioclase with variable amounts of hornblende, orthopyroxene, and olivine

Jurassic or Older

Jurassic or Older

KP1
Lower Cretaceous to Permian rocks undifferentiated; includes mudstone and wacke (K1) and chert and shale (RP1) in structurally complex terranes
KM1
Lower Cretaceous to Mississippian rocks undifferentiated; includes mudstone (K1), chert and shale (RP1), and limestone (M1) in structurally complex terranes
M1
Lisburne Group
Limestone and dolomite with local black chert nodules in irregular layers; abundant crinoids, corals, brachiopods, and foraminifera; lateral equivalent to Wachusett and Alapah Formations
Mks
Kavak Shale
Mks-siltstone, shale, and sandstone; Mks-black shale with few intercalated beds of orange or brown weathering limestone and siltstone
Dk
Kanayut Conglomerate
Includes quartz and chert pebble conglomerate and clean white sandstone
Dss
Sandstone, siltstone, and shale

FACIES CHANGE, ESPECIALLY IN MISSISSIPPIAN ROCKS

THRUST FAULT

THRUST FAULT

THRUST FAULT

THRUST FAULT