## Belt Island [7]

Eastward extension of Belt Island—a topographic high during Jurassic time that led to onlap and/or thinning of the Piper, Reirdon, and Swift Formations.

## Big Snowy Trough [8]

An east–west-trending paleo-low during the Late Mississippian; deposition of the Big Snowy Group (Meramecian/Chesterian).

## Bighorn Basin

A petroleum-rich structural basin located in north-central WY and south-central MT. Filled with ~20,000 ft of sedimentary rocks.

### LEGEND

- Significant regional unconformity or its correlative conformable surface
- Unconformity or its correlative conformable surface
- J4, J3 — Jurassic unconformities modified from Pipiringos and O'Sullivan (1978)
- Correlation line
- ?? — Correlation line, uncertain
- Tentative correlation of formation sub-divisions

**SP, R** Spontaneous Potential (SP) and Resistivity (R) log curves
**GR, NEUT** Gamma Ray (GR) and Neutron (NEUT) log curves

**SEDIMENT AND SEDIMENTARY ROCK** [2]

Nonmarine
- Gravel, conglomerate, breccia
- Sand, sandstone, quartzite
- Silt, mud, clay; siltstone, mudstone, claystone; siltite, argillite
- Carbonate, carbonate mud

Marine
- Sandstone, conglomerate
- Siltstone, mudstone, claystone, shale
- Carbonate

Montana Bureau of Mines and Geology
Open-File Report 681

# Stratigraphic Cross Section of Upper Mississippian through Lower Cretaceous rocks, Judith Basin, Montana to Big Horn Basin, Wyoming

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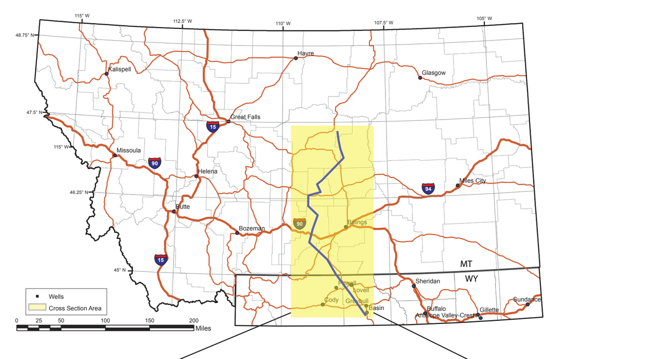
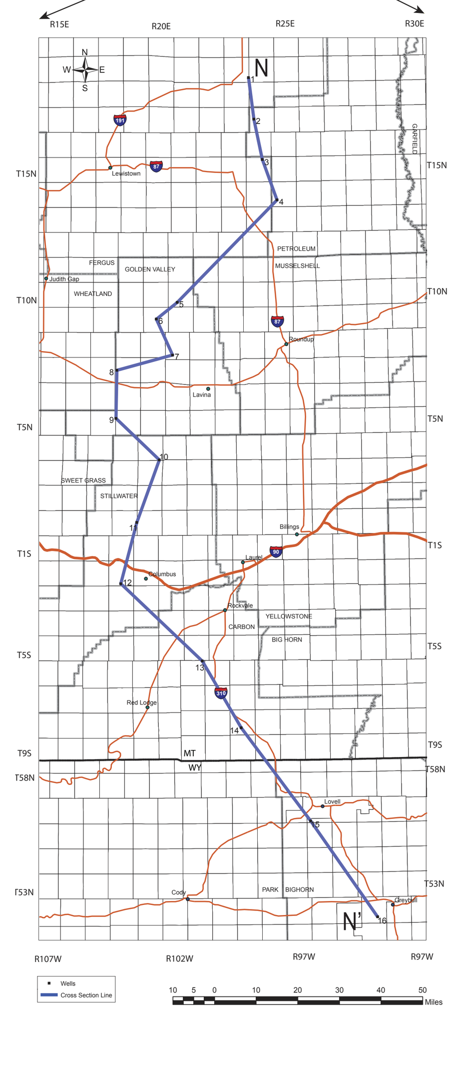
2016





**Author's Notes**

1. Section N–N' is one of a series of regional stratigraphic cross sections across central and eastern Montana showing subsurface geology of the Mississippian to Lower Cretaceous interval, intended to illustrate stratigraphic relationships between units and clarify some variations in stratigraphic nomenclature. Interpretations of formation tops are based on lithologic description, log signature, and several public sources of "tops" data (e.g., Montana Board of Oil and Gas Conservation and the Wyoming Board of Oil and Gas Conservation). The cross section datum is the Jurassic Swift Formation.
2. Formation and Member names and colors are those used by the Montana Bureau of Mines and Geology (Vuke, S.M., Porter, K.W., Lonn, J.D., and Lopez, D.A., 2007, Geologic Map of Montana: Montana Bureau of Mines and Geology Geologic Map 62 A-E) and the Wyoming State Geological Survey (Love, J.D., Christiansen, A.C., and Ver Ploeg, A.J., 1993, Stratigraphic chart showing Phanerozoic nomenclature for the State of Wyoming: Geological Survey of Wyoming Map Series 41). Informal names and names commonly used in the petroleum industry are in quotes.
3. Jurassic unconformities (J2-J5) are modified from Pipiringos, G.N., and O'Sullivan, R.B., 1978, Principal unconformities in Triassic and Jurassic rocks, Western Interior, United States—A preliminary survey: U.S. Geological Survey Professional Paper 1035-A, 20 p.
4. Well #16 (Gov't 1) ties work by Kvale, E.P., Johnson, G.D., Mickelson, D.L., Keller, K., Furer, L.C., and Archer, A.W., 2001, Middle Jurassic (Bajocian and Bathonian) Dinosaur Megatracksites, Bighorn Basin, Wyoming: Palaios, v. 16, p. 238.
5. Well #3 (Giardinello 1) ties the cross section by Furer, L., 2007, East–West stratigraphic cross section W–W' from well logs, showing interval from Upper Mississippian through Lower Cretaceous, Central Montana: Montana Bureau of Mines and Geology Open-File Report 559, 1 plate.
6. Sources of well log data: Northwest Geologic Survey (NWGS), Montana Bureau of Mines and Geology, Wyoming Oil and Gas Conservation Commission. Most of the well images are NWGS logs that include geophysical logs and lithology descriptions. To save space, descriptions were removed and only the lithologic columns remain for each well. Lithologic symbols are original American Stratigraphic Co. or Canadian Stratigraphic Co. symbols.
7. Imlay, R.W., Gardner, L.S., Rogers, C.P., Jr., and Hadley, H.D., 1948, Marine Jurassic formation of Montana: U.S. Geological Survey Oil and Gas Investigations Preliminary Chart 32.
8. Maughn, E.K., and Roberts, A.E., Big Snowy and Amsden Groups and the Mississippian–Pennsylvanian boundary in Montana: U.S. Geological Survey Professional Paper 554-B, p.B24.
9. Thermopolis formation nomenclature follows Porter, K.W., Dyman, T.S., Thompson, G.G., Lopez, D.A., and Cobban, W.A., 1997, Six outcrop sections of the marine Lower Cretaceous, Central Montana: Montana Bureau of Mines and Geology Report of Investigation 3.

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Maps may be obtained from
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