

Eocene boundary for the Powder River Basin. The lower zone (X), of definite Paleocene age, is represented by the Anderson coal (Dietz 1 of this report). An intermediate zone (Y) is also of Paleocene age. An upper zone (Z), defined by the entrance of the Platycarya group pollen flora, is of definite Eccene age. Two samples of the Holmes coal bed (D4861-A and -B) from the adjacent Decker quadrangle yielded zone Z pollen flora. All samples examined from this quadrangle are of zone Y. The Wasatch Formation, as defined in this report, is Paleocene and Eocene in age. WEL, west of east section line; NSL, north

of south section line]		
Name of coal bed or zone	Location (Principal Meridian, Mont.)	USGS paleobo localit
Double Top	Goal, 3,650 ft WEL, 1,300 ft NSL, sec. 22, T. 9 S., R. 39 E.	D4860
Squirrel Creek zone	Squirrel Creek No. 1, 1.8 ft coal. Same locality as D4859-A.	D4859
Squirrel Creek zone	Carb. shale between Squirrel Creek No. 2 and No. 1. Same locality as D4859-A.	04859
Squirrel Creek zone	Squirrel Creek No. 2, 0.8 ft coal. Same locality as D4859-A.	D4859
Squirrel Creek zone	Squirrel Creek No. 3, 1.2 ft coal, 2,800 ft WEL, 2,750 ft NSL, sec. 25, T. 9 S., R. 39 E.	D4859
Local	Coal below Squirrel Creek sone, 2,700 ft WEL, 2,650 ft NSL, sec. 25, T. 9 S., R. 39 E.	D4858
Roland of Taff	Middle coal (2.5 ft coal which is aplit). Same locality as D4857-A.	D4857
Roland of Tafi	Middle coal, 2.7 ft coal, 2,700 ft WEL, 2,600 ft NSL, sec. 25, T. 9 S., R. 39 E.	D4857
Local	Coal above Smith, 2,650 ft WEL, 2,500 ft NSL, sec. 25, T. 9 S., R. 39 E.	04856
Smith	Cos1(2), 1,200 ft WEL, 1,740 ft MSL,	04855

sec. 25, T. 9 S., R. 39 E.

UNITED STATES BAR V RANCH QUADRANGLE PEARL SCHOOL QUADRANGLE DEPARTMENT OF THE INTERIOR MONTANA - BIG HORN CO. MONTANA-BIG HORN CO 7.5 MINUTE SERIES (TOPOGRAPHIC) Geology mapped, 1971-72

Falcon and Seaboard Local Coal 2300 2100 -Tftl Thickness of thinner coal beds not to scale Normal drag adjacent to fault planes not shown AS, 850, and RT tood seel beds not shown

CORRELATION OF MAP UNITS Holocene and QUATERNARY Pleistocene Pleistocene Unconformity Locene and Paleocene TERTIARY Paleocene

DESCRIPTION OF MAP UNITS

ALLUVIUM AND COLLUVIUM UNDIVIDED (HOLOCENE) -- Mostly unconsolidated clay, silt, sand, and larger clasts of sandstone and baked and fused rock derived from local bedrock units. Includes better sorted alluvial channel deposits in major stream valleys. Coarser gravel deposits underlying the Tongue River valley floor include detritus derived from the Bighorn Mountains as well as local rock units. Includes local alluvial fan deposits and colluvial slope-wash detritus along the margins of stream valleys

LANDSLIDE DEPOSITS (HOLOCKNE AND PLEISTOCENE) -- Masses of bedrock and soil which have slumped. Slumps occur most frequently in the stratigraphic interval between the Smith (S) and Roland of Baker (RB) coal bads TERRACE DEPOSITS UNDIVIDED (PLEISTOCENE) -- Gravel deposits on terraces 15-20 ft above the Tongue River in the southeastern map corner and about 65-100 ft above Youngs Creek along the southwestern map boundary. Deposits above the Tongue River consist of cobbles and pebbles of granite, sandstone, quartzite, chert, dolomite, limestone, and porphyritic andesite(?)

from the Bighorn Mountains and local bedrock sources

Only lower 300 ft of formation exposed in mapped area

FORT UNION FORMATION (PALEOCENE)

in a matrix of medium-grained argillaceous and; detritus probably derived

WASATCH FORMATION (EOCENE AND PALEOCENE) -- Interbedded sandstone, claystone, shale, carbonaceous shale, coal, and minor limestone and coquina; nonmarine. Sandstone is generally oxidized yellowish brown to yellowish may fine grained to very fine grained crossbedded resistant to nonresistant. Claystone is light to dark gray or pale brown nonresistant; may contain yellowish-brown calcareous clay-ironstone concretions, 0.2-5 ft in diameter, and nonmarine gastropod and pelecypod shell fragments. Carbon cous shale is pale brown paper-shale layered and may contain silicified and ocherized logs and stumps. Coal beds are thin (less than 4 ft thick), lenticular, and may contain silicified and ocherized logs and stumps. Limestone is pale yellowish brown, contains nonmarine pelecypod ani gastropod shell fragments and plant impressions, and is thin, lenticular, and resistant. Coquina is light brown and consists of limestonecemented nonmarine pelecypod and gastropod shells and shell fragments; this unit is resistant. A basal sandstone unit forms a relatively resistant cap, especially where baked and fused, along mesa margins. The lower contact is placed at top of Roland (RB) coal bed (of Bake, 1929).

Tongue River Member--Lithologies in upper part of member, between Roland (RB) coal bed of Baker and Smith (S) coal bed interval, are war similar to the Wasatch Formation, but with less coquina and nonwarine elecypod and gastropod fragments, thicker and more continuous coal beds, and persistent zones of silicified logs and stumps near the middle. A fissile brownish-gray shale 5-10 ft thick overlies the Squirrel Creek (SC) coal zone and is a good stratigraphic marker bed throughout the mapped area. Only 75 ft of the lower part of this member, that part subjecent to the Smith coal, is well exposed in the mapped area. Exposed strate are predominantly light-gray claystone with large (5-10 ft in diameter) clayironstone concretions. Interbedded sandstone beds are illowish orange very fine grained and weather flaggy to blocky, forming ledges 2-3 ft thick. The basal unit is very light gray very fine grained argillaceous sandstone with scattered interbeds of reddish-brown clay ironstone concretions. About 500 ft exposed in mapped area Subsurface--Interbedded andstone, claystone, and shale, carbonaceous shale, and coal beds. Sandstone is gray to brown fine to very fine

River Member to be about 1,360-1,470 ft Lebo Shale Member--Shown in cross section and drill heles only Tullock Member -- Shown in cross section only

S COAL BED OR ZONE--Long dashed where approximately located; short dashed where inferred; dotted where concealed. Letter denotes specific coal bed identified on Coal Index. Triangle and adjacent number identify measured coal section shown on appropriate sheet; triangle not connected to coal bed indicates only bed top exposed were measured

grained. Claystone and shale are gray to brown and locally carbonaceous.

Estimates from area well logs show the subsurface thickness of the Tongue

RBAA BAKED AND FUSED ROCK--Overburden baked and fused by burning of coal bed identified by letter. Attached v's indicate best long dashed where approximately located; short dashed where inferred. Dotted line delineates inferred extent of burning; areas enclosed by dotted boundary line delineate burn d coal without exposed base

CONTACT-Long dashed where approximately located; short dashed where inferred FAULT-Bar and ball on downthrown side; long dashed where approximately located; short dashed where inferred; dotted where concealed ANTICLINE-Showing direction of plune; dashed where approximately located

SYNCLINE-Showing direction of plunge; dasher where approximately located MONOCLINE--Showing axial trace and dip direction; long dashed where approximately located; short dashed where interred; dotted where concealed

STRIKE AND DIP OF BEDS Inclined Horizontal

Component of dip

-3700 - STRUCTURE CONTOUR--Drawn on base of Smith (S) coal or associated baked and fused rocks; interval 40 ft; about dashed where above land surface; hactures indicate depression contour

DRILL BOLES--Leadered index number refers to measured coal sections (sheet 2) or selected drill holes (sheet 3/

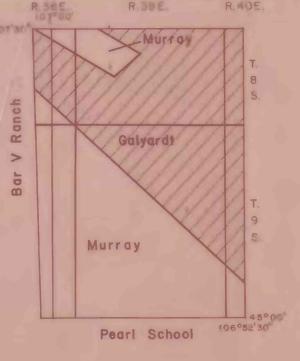
Coal test hole-- number with letter prefix refers to drilling project: SH, Montana Bureau of Mines and Goology (1973); BME, U.S. Geological Survey and Montana Boresu of Mines and Geology (1973); MT, Matson and Blumer (1973); U.S. Geological Survey and Montana Bureau of Mines and

Tom Vessels Geology (1977a, 1977b, 1978) 250 Fed Cook I Abandoned oil-and-gas test hole

ARANDONED COAL MINE--Adjacent number identifies measured coal section (sheet 2)

	CONVERSION TABLE	
To convert	Multiply by	To obtain
Inches	2.54	Centimeters
Feet	.3048	Meters
Miles	1.609	Kilcueters

This report has not been edited for conformity with U.S. Coological Survey editorial standards



GEOLOGIC MAP AND COAL SECTIONS OF THE PEARL SCHOOL QUADRANGLE AND THE EASTERNMOST PART OF THE BAR V RANCH QUADRANGLE, BIG HORN COUNTY, MONTANA