

## STRUCTURE AT THE UPPER CRETACEOUS CLAY SPUR BENTONITE BED, POWDER RIVER BASIN, WYOMING AND MONTANA

By James E. Fox and Debra K. Higley

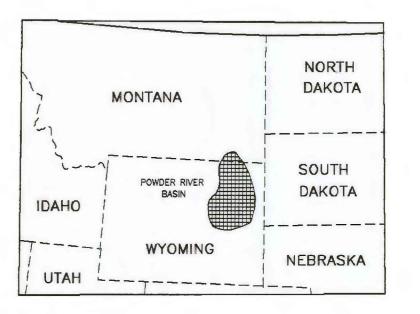
1987

Scale 1:500,000

10 0 10 20 MILES

10 0 10 20 KILOMETERS

Contour interval 500 feet

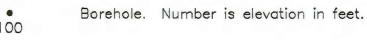


Location of the Powder River basin

TERTIARY	PALEO.	WEST EAST						
R		E SE LEBO			E RIVER MBR		J Z	
里		E.	LEBO'S		SHALE MBR		T. NON	
						T		
UPPER		FOX HILLS SS.			FOX HILLS SS			
					FOX HILLS SS			
		TECKLA SS. MBR LEWIS SH.						
		TEAPOT SS. MBR.						
					PIERRE SH.			
		- 0	SUSS	SEX SS MBR				
		SHANNON SS. MBR						
		5	SAGE BREAKS MBR		CARLILE SH. TURNE		BREAKS MBR	
		æ	WALL CREEK MBR.				ANDY MBR	
		FRONTIER	S BELLE FOURCHE MBR.		GREENHORN FM			
		SON IN	'2r	d WALL CREEK SAND	BELLE FOURCHE SH			
		H	-				SH.	
			BELLE FOURCHE MBR					
	2			MOWRY SH	MOWRY SH			
LOWER				MUDDY SS.	NEWCASTLE SS			
		THERMOPOLIS SH.			SKULL CREEK SH.			
O	TA	Z	50	FALL	RIVER SS.		AN AN	
_	R	KARA		LAKO	OTA FM		KARA	
	0	m	IT		וומומומומומו	MINIMA	mingh	
	1			MORRISON FM.	MORRISON FM.			
	0	_	"UF	PER SUNDANCE	REDWATER	SH. MBR.	u u	
	,	FM	THE		PINE BUTTE	MBR	SUNDANCE	
URASSIC		Ж			LAK MBR.		- 9	
		SUNDANCE	"LC	WER SUNDANCE"	HULETT SS. MBR		SC	
B		ND	Q N		STOCKADE I			
5	5	SC				CANYON SPRINGS SS. MBR.		
		TI	GYPSUM S		SPRING FM			
_ 5	-	M	M	THEFT		THIMIT	MITTELL	
		GPF	Щ				111	
			PC	OPO GIE FM.	Щ			
C		TEF		OW MTN. SS.		ЩШ		
RIASSIC		WA	ALCOVA LS. RED PEAK FM					
		CHUGWATER						
TR		5	nt	LO LANTIN	SPEAR	FISH FM.		
			LITT'LE MEDICINE LS.					
			MBR.					
		EN	FREEZEOUT SH MBR.					
		36	El	RVAY MBR.	PINE SALT MBR			
7		GOOSE EGG	DI	FFICULTY SH. MBR			-	
A		SO		DRELLE LS MBR	FORELLE LS MBR			
PERMIAN		9		ENDO SH. MBR.	GLENDO SH. MBR.			
P			MINNEKAHTA LS. MBR.		MINNEKAHTA LS.			
		-	OF	PECHE SH. MBR.	OPECHE SH.			
-								
1,		الما						
PENNSYL	Z	TENSLEEEP SS.				L	EO SS.	
SN :	VANIAN	TENSLECEF 35.			MINNELUSA FM.			
Z	A	AMSDEN FM AND CORRELATIVES						
III '	>						HIHIM	
PE:		-	~		THE PERSON NAMED IN			
					ما الما المن المن المن المن المن المن ال			
100	Z				MADISONES			
	(part)		M	ADISON LS	MAI	DISONES		

Generalized stratigraphic column in the Powder River basin

## **EXPLANATION**





Elevation of mapped interval in feet.

Structure values were not corrected nor labeled as anomalous in wells with inclination of beds, faulting, or problems of hole deviation. Such occasional conditions are more likely to occur in the southeast portion of the map and along deformed margins of the basin.



Generalized outcrop of the Upper Cretaceous Lance Formation and Fox Hills Sandstone, undivided.



Generalized outcrop of the Upper Cretaceous Fox Hills Sandstone.

Data from which this map was constructed are stored in a database of formation tops and bases determined from electric logs of 186 wells penetrating Upper Cretaceous and older rocks. These logs are shown in 22 cross sections of the Powder River basin by James E. Fox, 1986 (U.S. Geological Survey Open—File Reports OF 86—465A through OF 86—465V). The map was produced by using the Interactive Surface Modeling 1 (ISM) program of Dynamic Graphics, Inc. Values at some of the data localities may not be as closely honored as on a hand—contoured map because of the mathematical constraints of the mapping program.

This map is prepared in part for the Evolution of Sedimentary Basins program.

1 Any use of trade names is for descriptive purposes and does not imply endorsement by the U.S. Geological Survey.

This map is preliminary and has not been edited or reviewed for conformity with Geological Survey standards.