

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

COAL DRILLING DURING 1978 IN BIG HORN, DANIELS, DAWSON,
MUSSELSHELL, RICHLAND, ROOSEVELT, ROSEBUD, VALLEY,
AND YELLOWSTONE COUNTIES, MONTANA

By
U.S. Geological Survey
and
Montana Bureau of Mines and Geology

Open-File Report 80-267

1980

This report has not been edited for conformity
with U.S. Geological Survey editorial standards
stratigraphic nomenclature.

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Abbreviations used in this report

cbncc - carbonaceous
E.R. - electrical resistance
fe - ferruginous
Sens. setting - sensitivity setting
S.P. - spontaneous potential
T.C. - time constant

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Introduction

Between April 19 and December 1, 1978, 196 test holes, for a total of 69,986 ft, were drilled in Big Horn, Daniels, Dawson, Musselshell, Richland, Roosevelt, Rosebud, Valley, and Yellowstone Counties, Mont. (figs. 1-6). Selected samples were taken, and splits were submitted to the U.S. Bureau of Mines for proximate analyses, ultimate analyses, heating-value determinations, and analyses of forms of sulfur. Analyses of trace elements in coal ash have been made by the U.S. Geological Survey (USGS) and will be published later.

The drilling was conducted under two USGS grants (14-08-0001-G-441) and 14-08-0001-G-555) to the Montana Bureau of Mines and Geology (MBMG) for the purpose of evaluating and classifying mineral lands in the public domain.

Because of the lack of topographic map coverage and because of the poor weather conditions at the time of drilling, surface elevations for several drill holes were not recorded. These drill holes are: US-78150 through US-78162, US-78165 through US-78167, and US-78187 through US-78189. An altimeter survey of the drill sites will be conducted during the 1980 field season, and the results will be reported later.

The locations of drill holes are identified on the logs by township, range, section, and tract. For the tract designation, each section is

first divided symmetrically into four quadrants, designated A for northeast quadrant, B for northwest quadrant, C for southwest quadrant, and D for southeast quadrant. Then each of those is divided into four equal quadrants and designated by the same letter system. This system is repeated until a single section is divided into 256 equal units. A location within 1/256th of a section (2.5 acres is a standard section) is therefore designated by a progression of four letters. For example, the tract designation ACDC is in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ of a section.

Acknowledgments

Fieldwork was done by: H. J. Jensen, L. A. Sauer, and K. L. Williams, technicians, and Miller Hansen and R. J. Pederson, geologists (all MBMG personnel). Drill-hole locations were proposed by Deborah Allen, A. C. Banet, Jr., Carole Connor, Charles Frey, Jim Hinds, Vickie D. Niermeier, J. M. Spencer, M. A. S. Spencer, and Steven Volz (all USGS geologists). Field assistance was provided by A. C. Banet, Jr., Carole Connor, Charles Frey, and M. A. S. Spencer. Coordinator of field activities was R. E. Matson (MBMG).

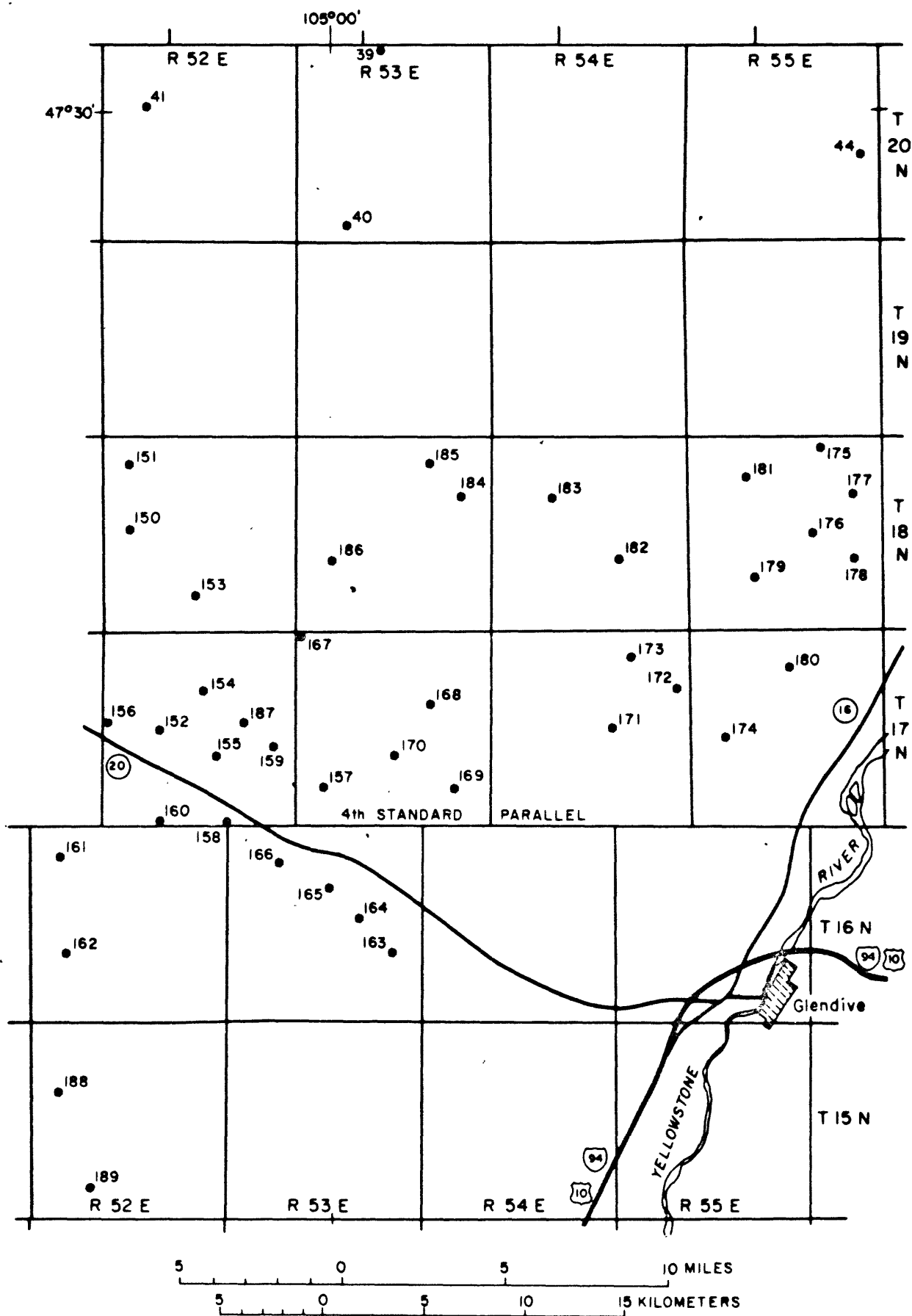


Figure 1. - Location of holes drilled by U.S. Geological Survey and Montana Bureau of Mines and Geology in Dawson County, Montana, in 1978. US-78 prefix omitted from each drill-hole number but included on logs.

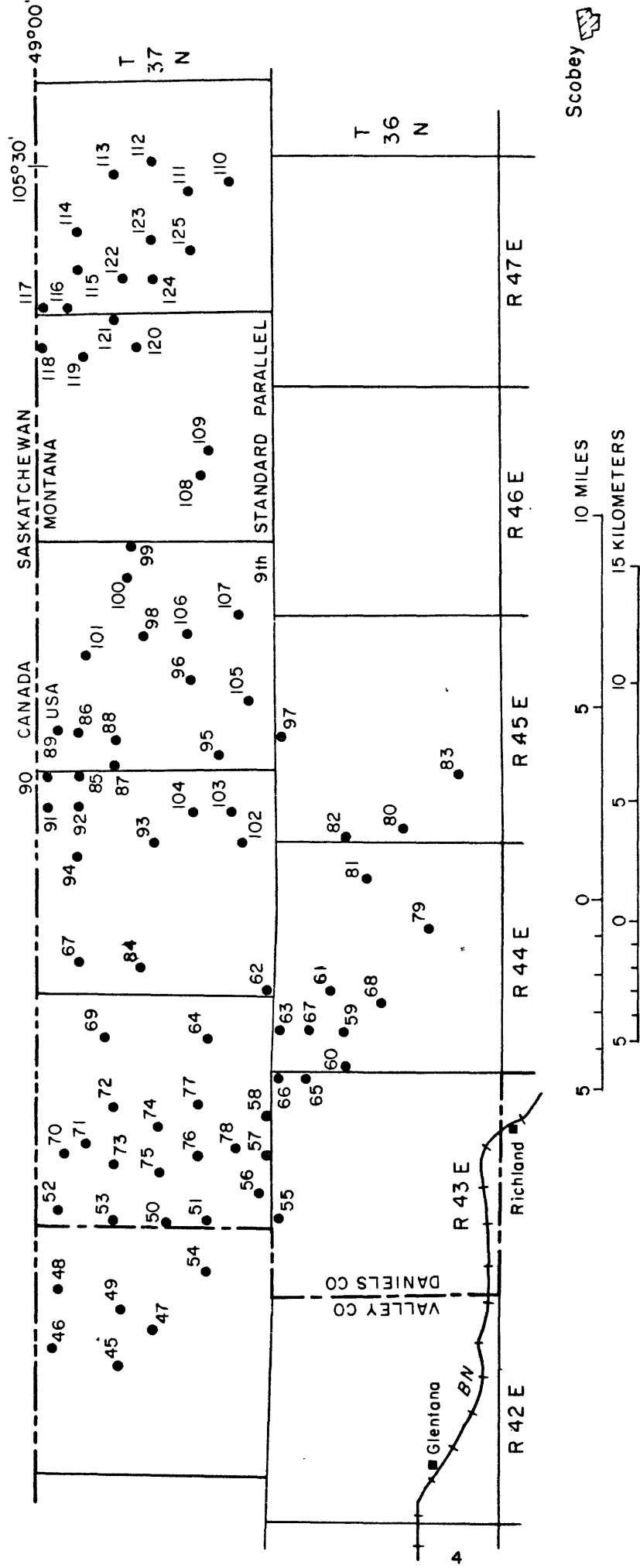


Figure 2. - Location of holes drilled by U.S. Geological Survey and Montana Bureau of Mines and Geology in Daniels and Valley Counties, Montana, in 1978. US-78 prefix omitted from each drill-hole number but included on logs.

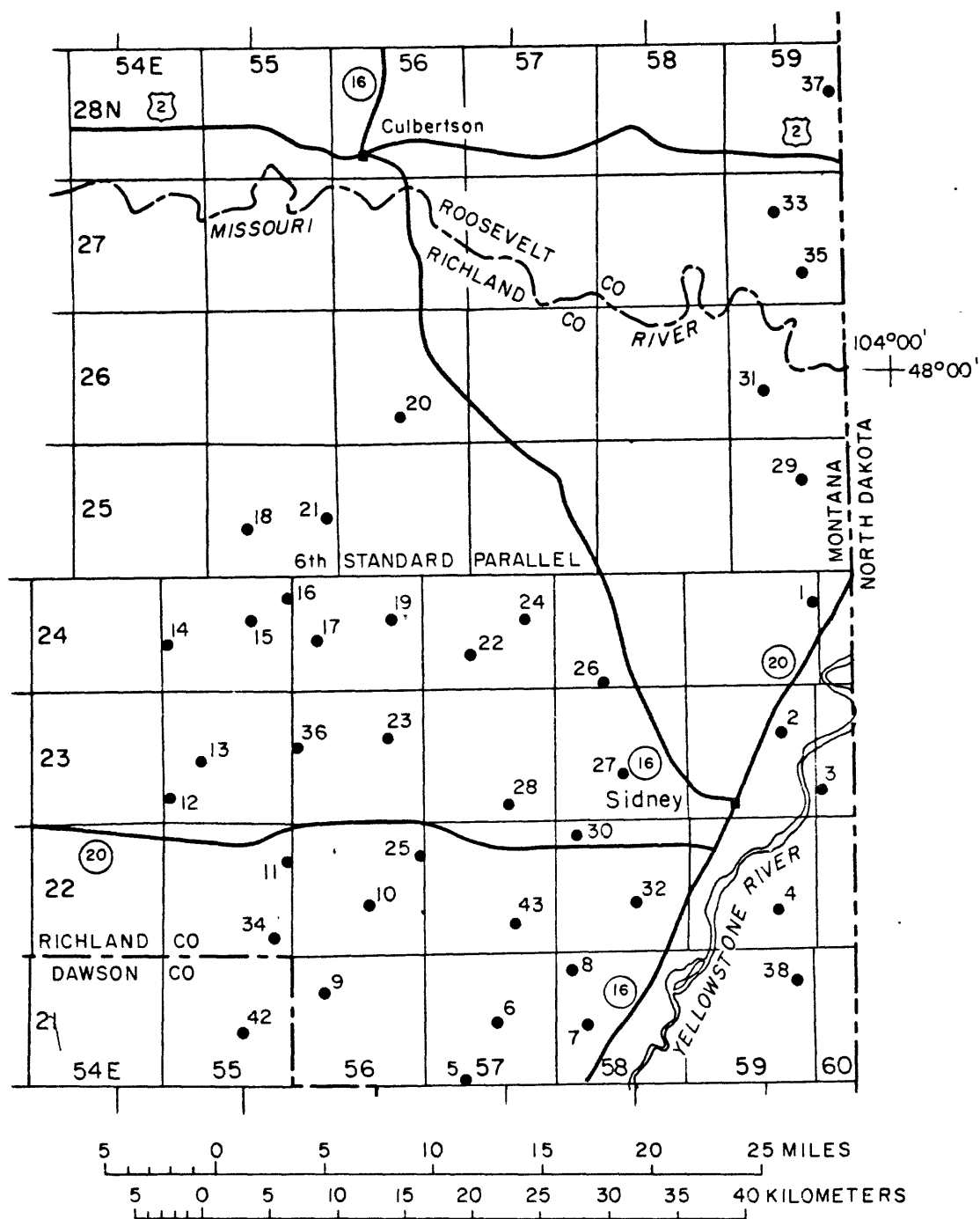


Figure 3. - Location of holes drilled by U.S. Geological Survey and Montana Bureau of Mines and Geology in Richland, Roosevelt, and Dawson Counties, Montana, in 1978. US-78 prefix omitted from each drill-hole number but included on logs.

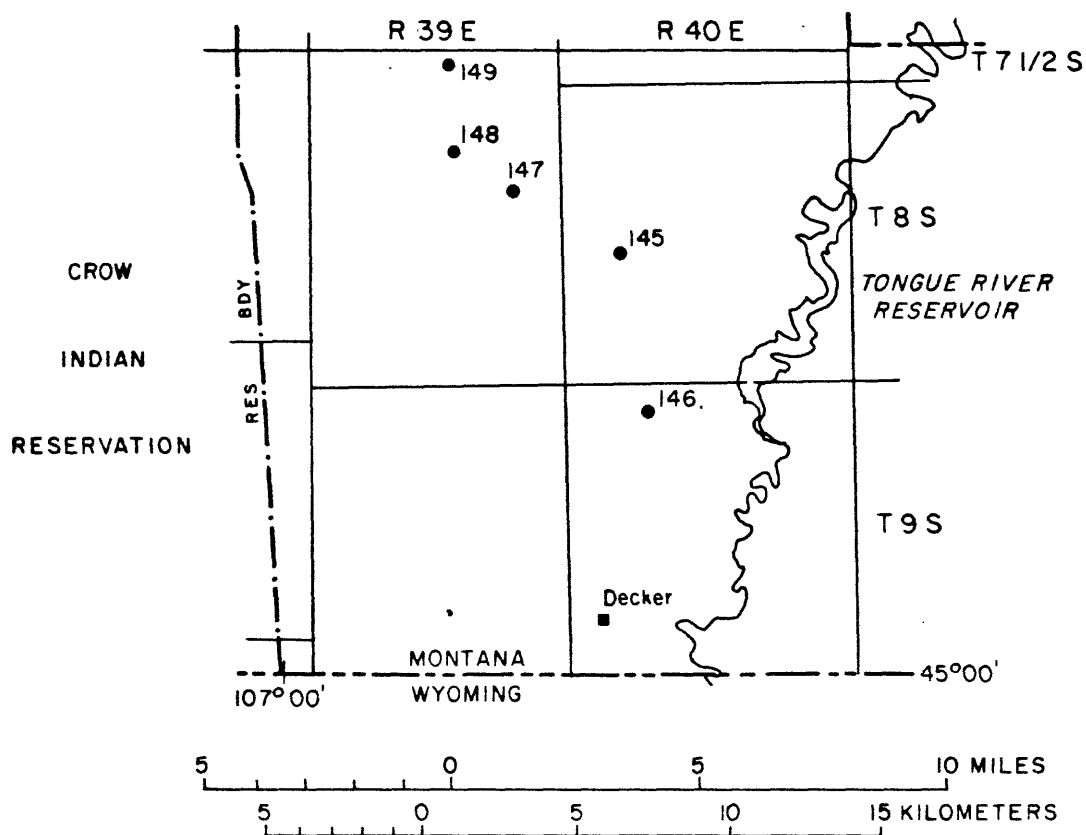


Figure 4. - Location of holes drilled by U.S. Geological Survey and Montana Bureau of Mines and Geology in Big Horn County, Montana, in 1978. US-78 prefix omitted from each drill-hole number but included on logs.

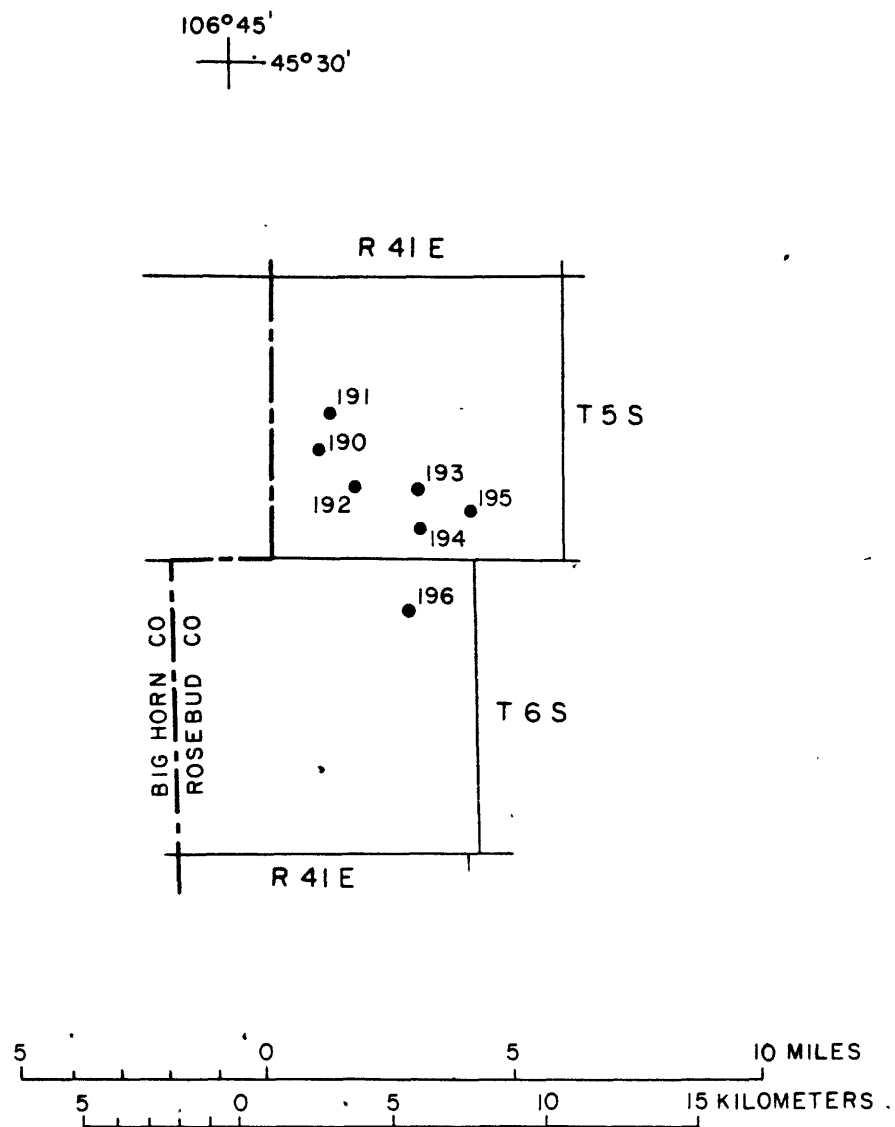


Figure 5. - Location of holes drilled by U.S. Geological Survey and Montana Bureau of Mines and Geology in Rosebud County, Montana, in 1978. US-78 prefix omitted from each drill-hole number but included on logs.

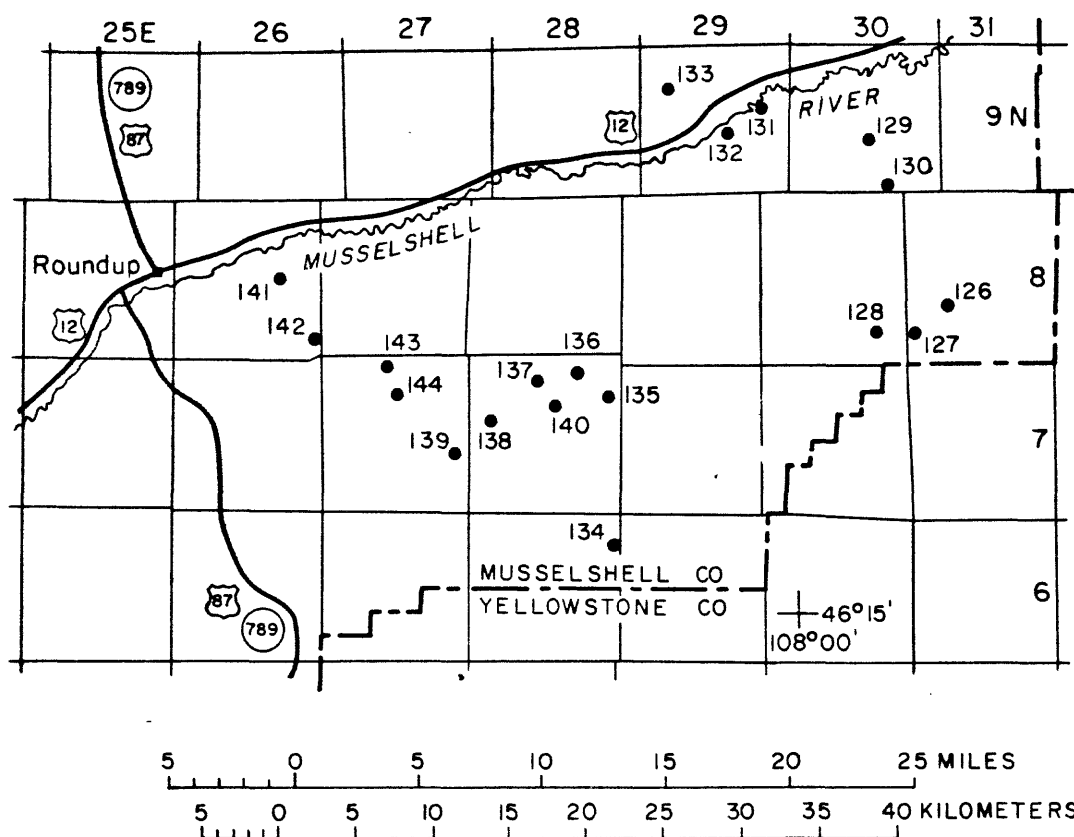
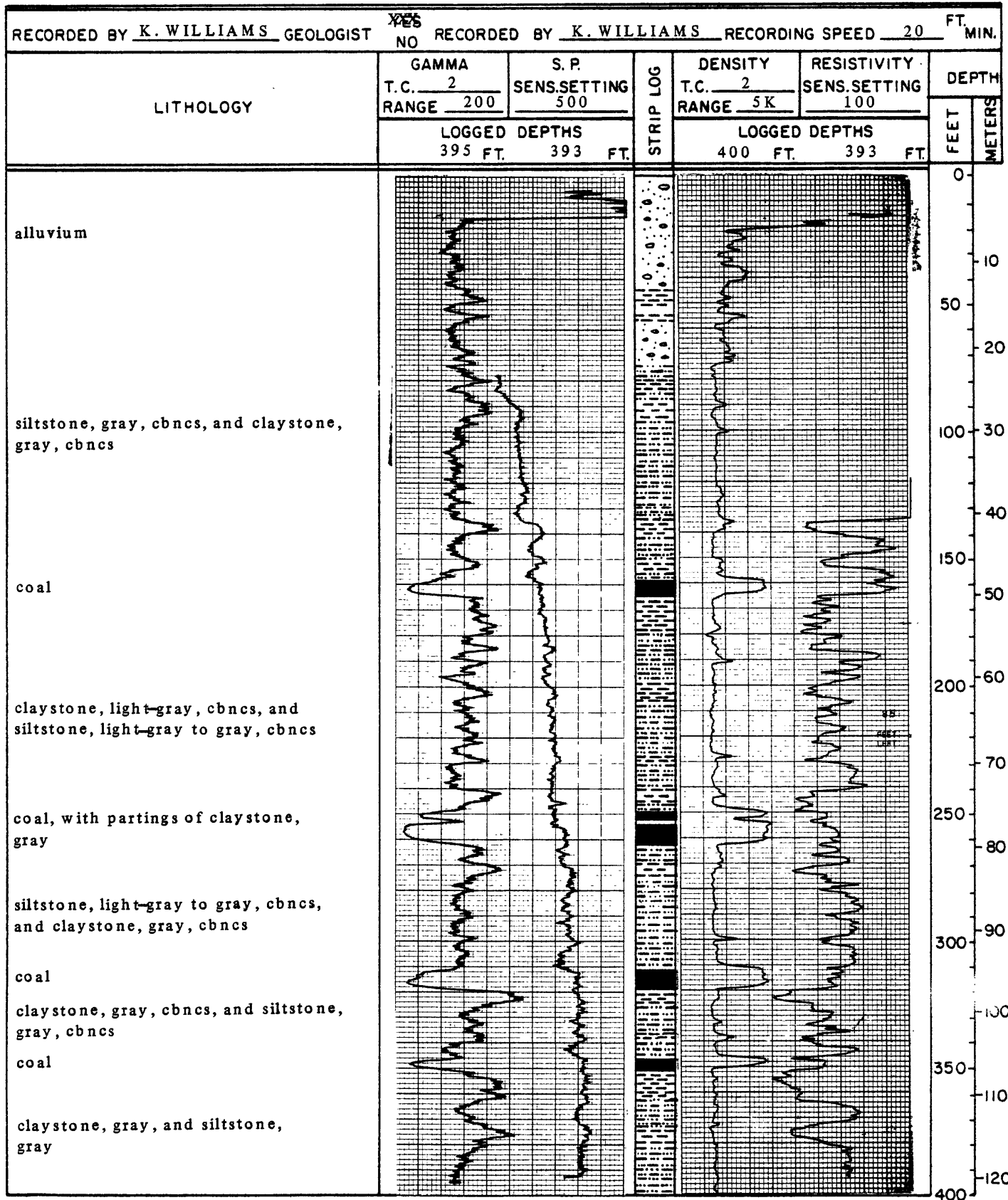
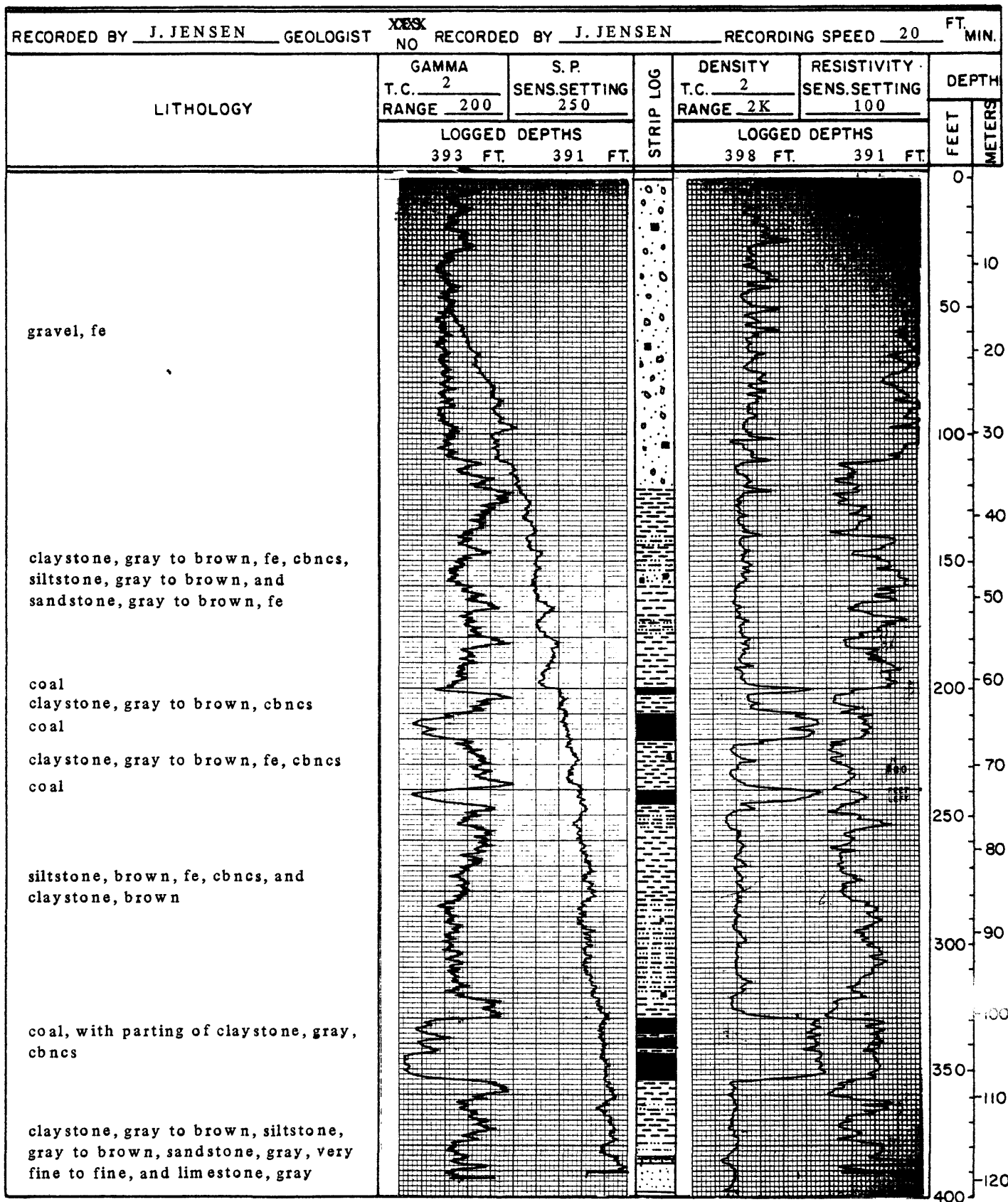


Figure 6. - Location of holes drilled by U.S. Geological Survey and Montana Bureau of Mines and Geology in Musselshell and Yellowstone Counties, Montana, in 1978. US-78 prefix omitted from each drill-hole number but included on logs.

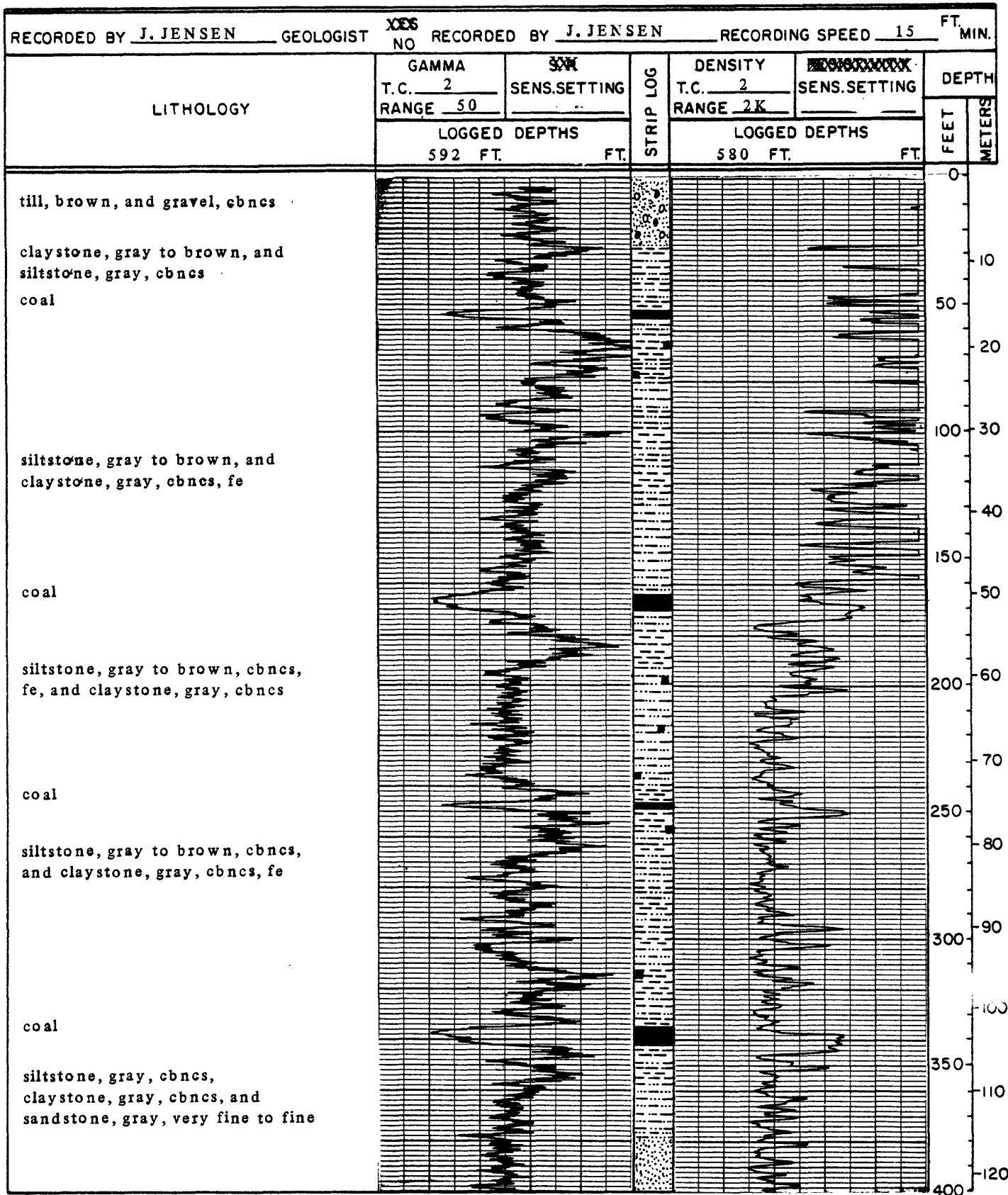
Hole no: US-781 Map: Fairview Date: 4/19/78 State: Montana County: Richland
 Elev: 2142 ft Location: T. 24 ^N, R. 59 ^E, Sec. 13, Tract AABA Drilled depth: 400 ft
 Measured: 90 ft ^{FNL} ~~800~~ ft ^{FEL} ~~800~~ ft, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

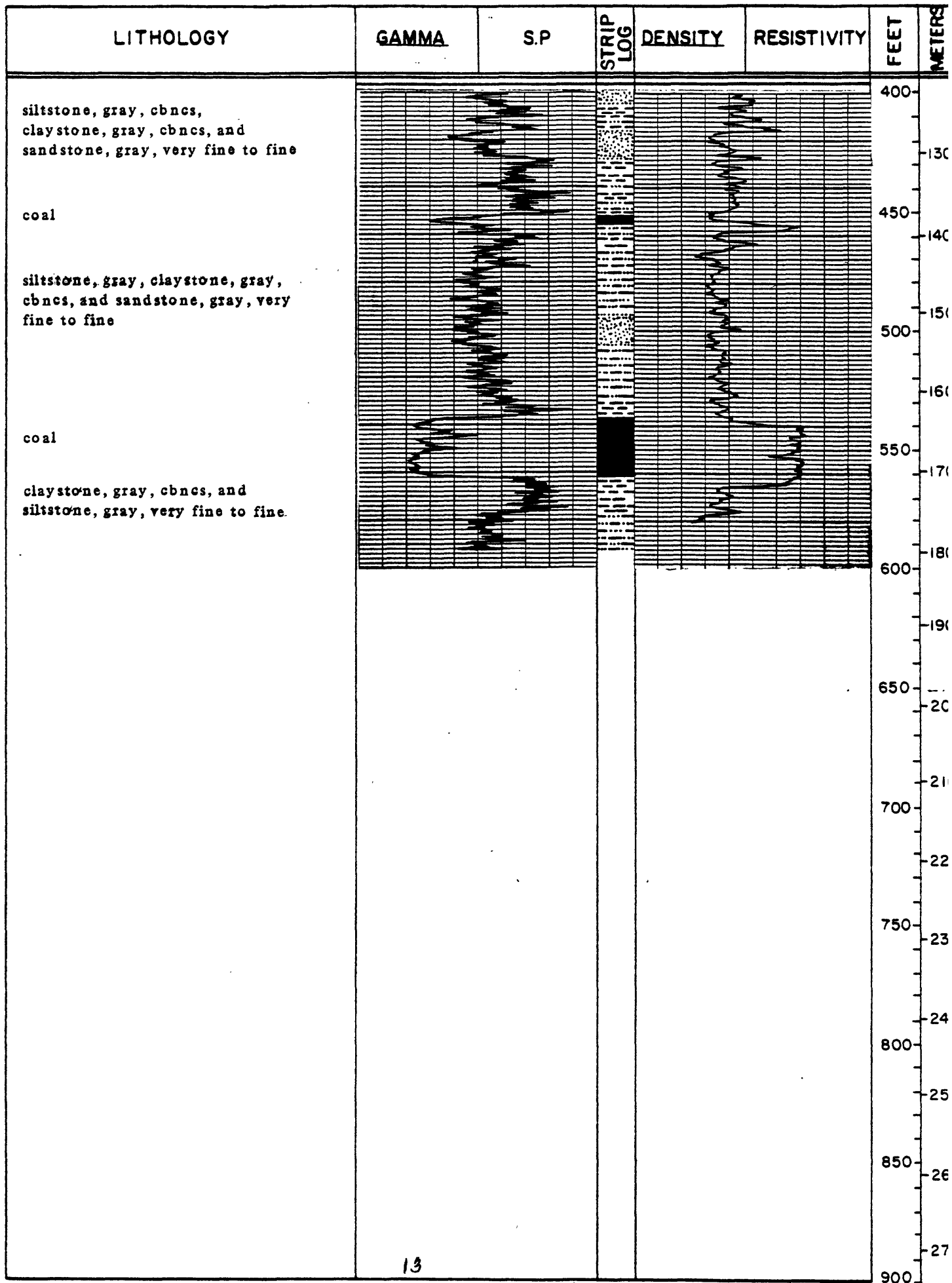


Hole no: US-782 Map: Fairview Date: 4/20/78 State: Montana County: Richland
 Elev: 1917 ft Location: T. 23 ^N, R. 59 ^E, Sec. 14, Tract BAAA Drilled depth: 400 ft
 Measured: 130 ft ^{FNL} ~~OK~~, 2607 ft ^{FWL} ~~OK~~, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



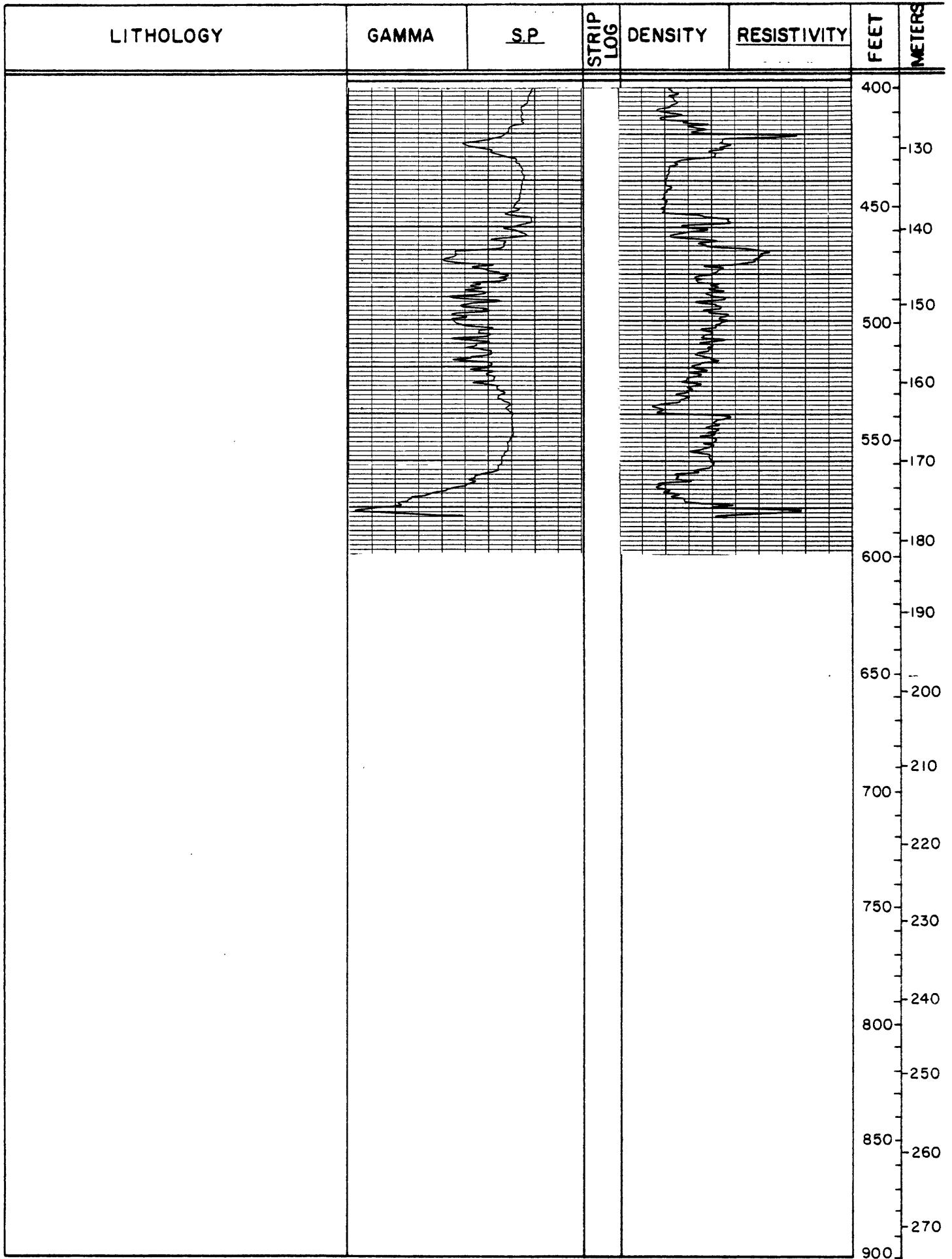
Hole no: US-783 Map: Sidney NE Date: 4/20/78 State: Montana County: Richland
 Elev: 2129 ft Location: T. 23 ^N, R. 60 ^E, Sec. 30, Tract. CCCB Drilled depth: 600 ft
 Measured: 500 ft FSL, 15 ft FWL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Gamma logged through pipe. - SP and resistivity logs on next page



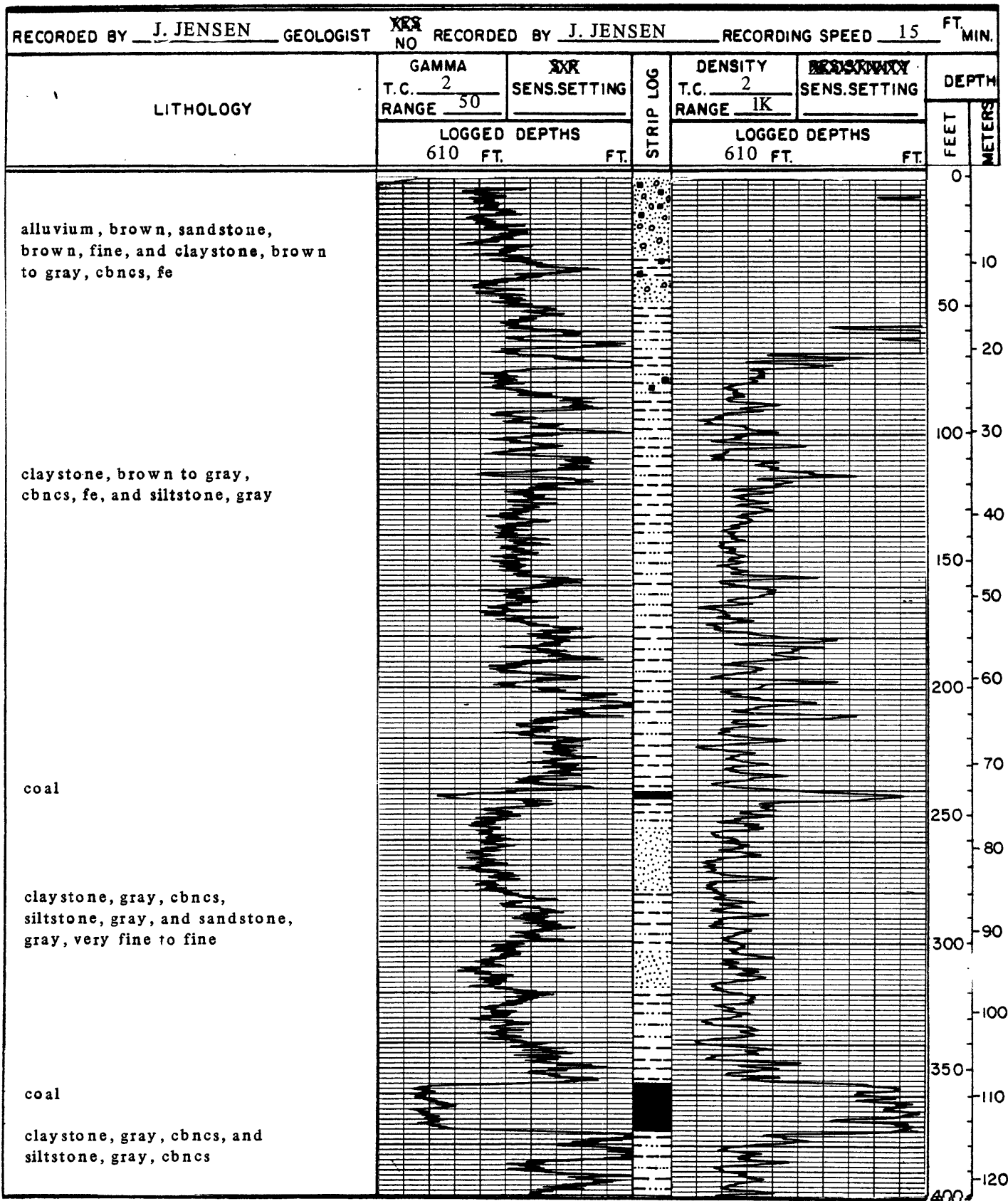


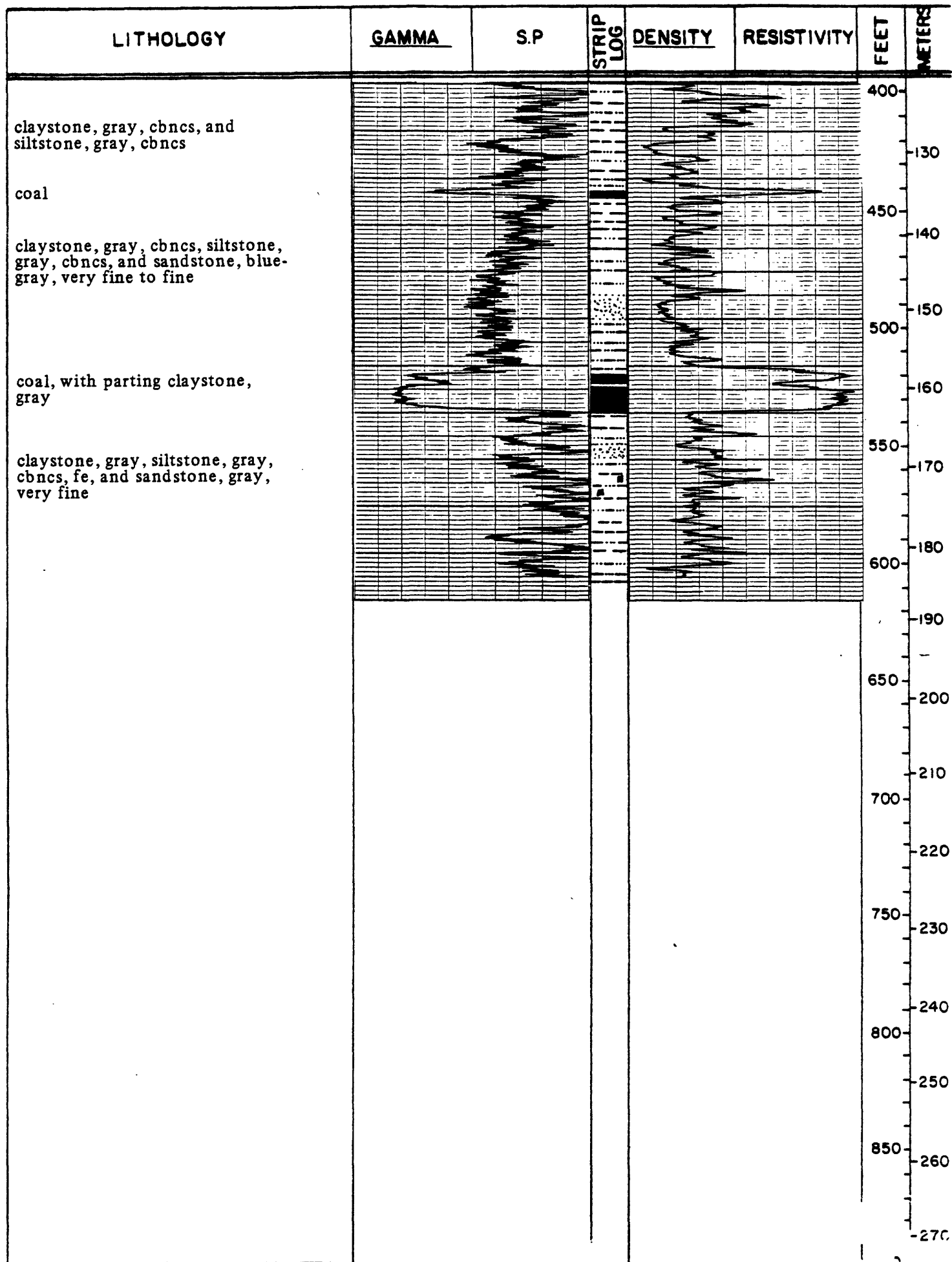
Hole no: US-783 Map: Sidney NE Date: 4/20/78 State: Montana County: Richland
 Elev: 2129 ft Location: T. 23 ^N, R. 60 ^E, Sec. 30, Tract CCCB Drilled depth: 600 ft
 Measured: 500 ft ^{FSL}, 15 ft ^{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>J. JENSEN</u> GEOLOGIST		YES NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>15</u> FT. MIN.	
LITHOLOGY	XXXX T.C. _____ RANGE _____	S. P. SENS. SETTING <u>10</u>	STRIP LOG	XXXX T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>10</u>	DEPTH FEET METERS	
	LOGGED DEPTHS FT. <u>584</u> FT.			LOGGED DEPTHS FT. <u>584</u> FT.			



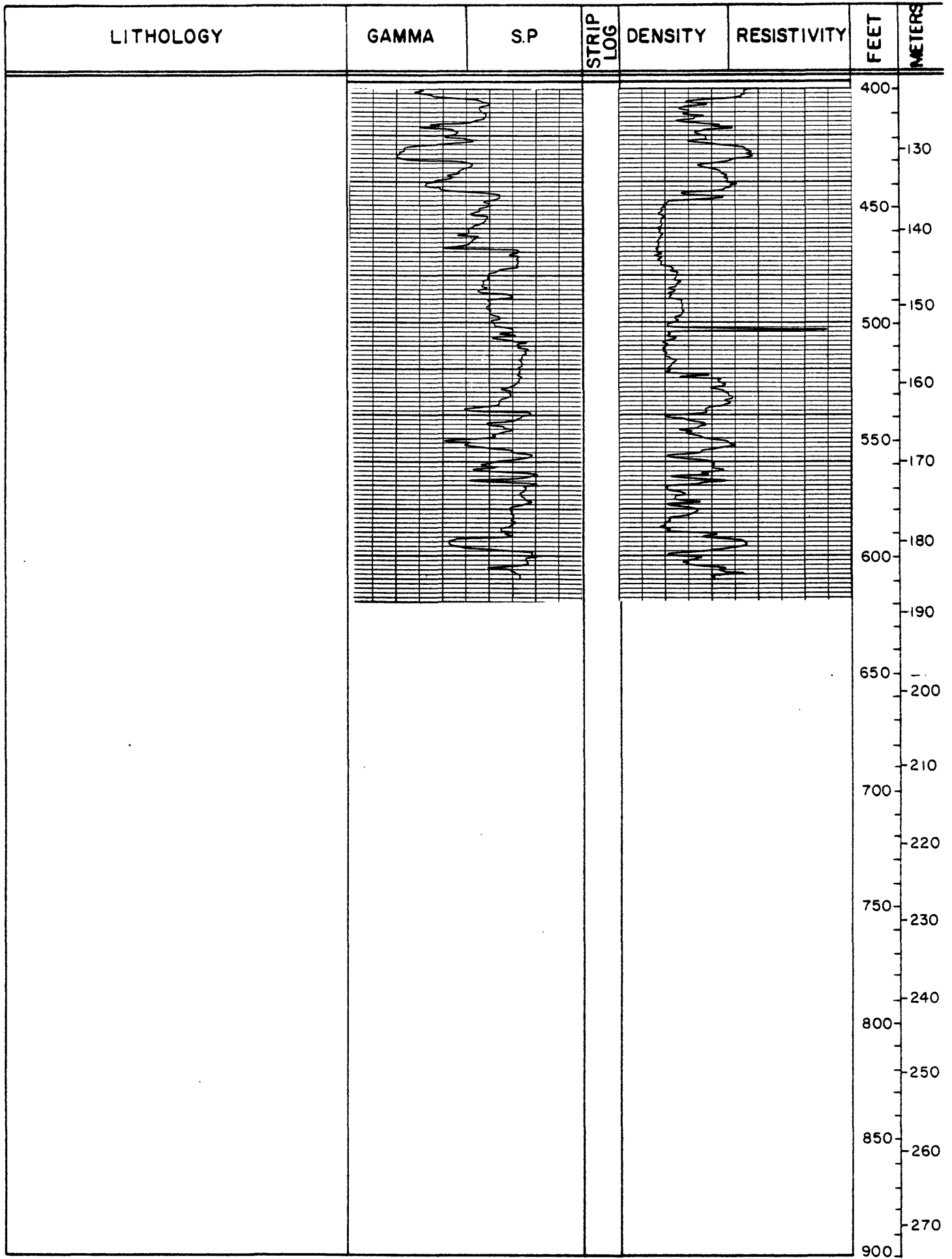
Hole no: US-784 Map: Sidney NE Date: 4/22/78 State: Montana County: Richland
 Elev: 2118 ft Location: T. 22 ^N, R. 59 ^E, Sec. 26, Tract BBBD Drilled depth: 610 ft
 Measured: 470 ft ^{FNL} ~~FSL~~, 600 ft ^{REL} ~~FWL~~, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP and ER on next page.



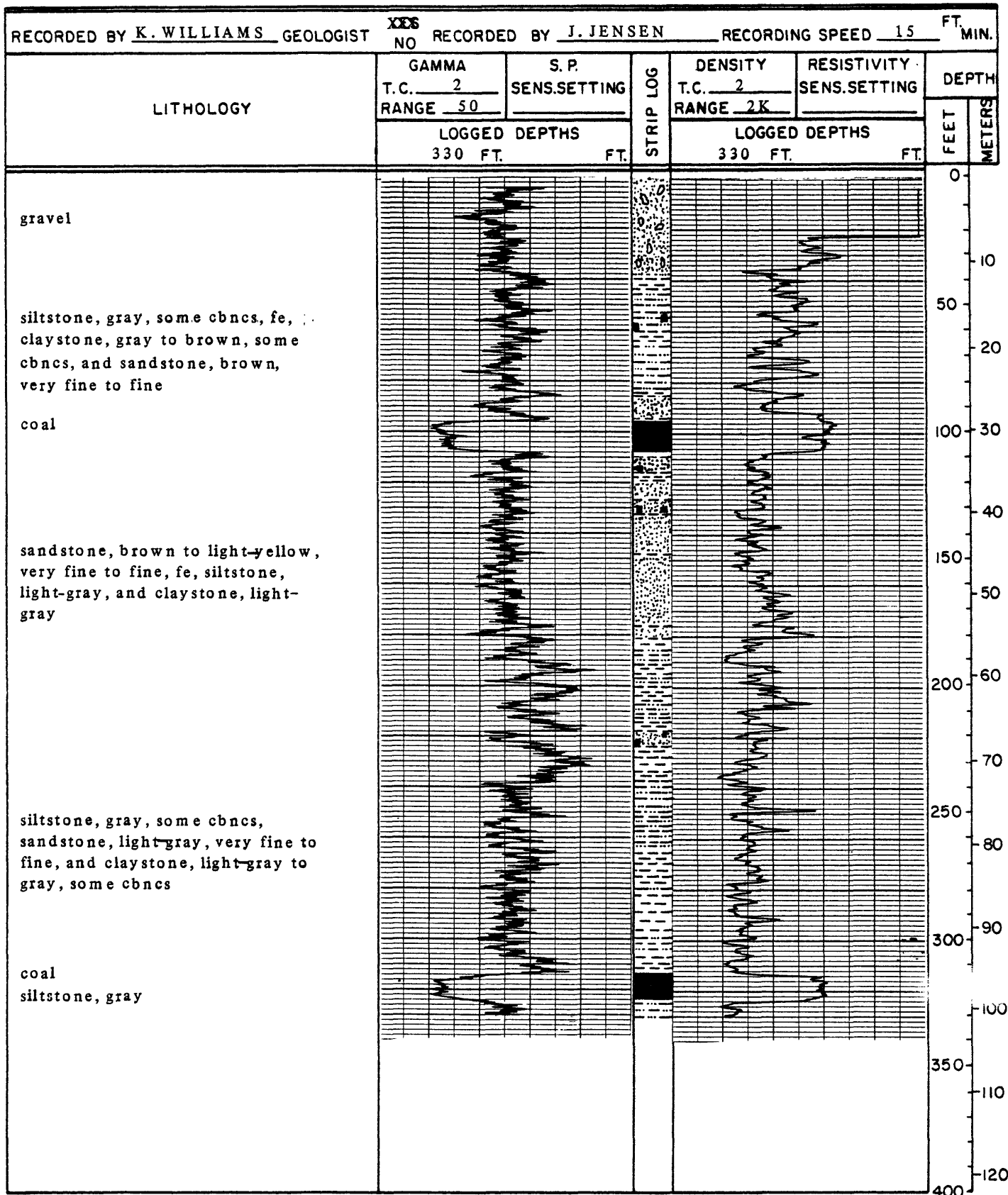


Hole no: US-784 Map: Sidney **NE** Date: 4/22/78 State: Montana County: Richland
 Elev: 2118 ft Location: T. 22 ^N, R. 59 ^E, Sec. 26, Tract BBBD Drilled depth: 610 ft
 Measured: 470 ft ^{FNL} ~~XXX~~, 600 ft ^{FEY} ~~XXX~~ PWT, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>J. JENSEN</u> GEOLOGIST		YES NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>15</u> FT. MIN.	
LITHOLOGY	XXXXX T.C. _____ RANGE _____	S. P. SENS. SETTING <u>10</u>	STRIP LOG	XXXXX T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>10</u>	DEPTH	
	LOGGED DEPTHS FT. <u>610</u> FT.			LOGGED DEPTHS FT. <u>610</u> FT.		FEET	METERS
							0
							10
							50
							20
							100
							30
							40
							150
							50
							200
							60
							70
							250
							80
							300
							90
							100
							350
							110
							120
							400



Hole no: US-785 Map: Larson School Date: 4/22/78 State: Montana County: Richland
 Elev: 2337 ft Location: T. 21 ^N, R. 57 ^E, Sec. 32, Tract DDDD Drilled depth: 330 ft
 Measured: 100 ft ^{FSL}, 60 ft ^{FEL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP and ER logs on next page.



Hole no: US-785 Map: Larson School Date: 4/22/78 State: Montana County: Richland
 Elev: 2337 ft Location: T. 21 ^N _S, R. 57 ^E _W, Sec. 32, Tract DDDD Drilled depth: 330 ft
 Measured: 100 ft ^{KMX} FSL, 60 ft ^{FEL} _{KMX}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>15</u> FT. MIN.		
LITHOLOGY	GAMMA	S. P.	STRIP LOG	DENSITY	RESISTIVITY	DEPTH
	T.C. _____	SENS. SETTING		T.C. _____	SENS. SETTING	
	RANGE _____	<u>10</u>		RANGE _____	<u>10</u>	
	LOGGED DEPTHS			LOGGED DEPTHS		
	FT. 330 FT.			FT. 330 FT.		FEET METERS
						0
						10
						50
						20
						100
						30
						40
						150
						50
						200
						60
						70
						250
						80
						300
						90
						100
						350
						110
						120
						400

Hole no: US-786 Map: Larson School Date: 4/23/78 State: Montana County: Richland
 Elev: 2329 ft Location: T. 21 ^N, R. 57 ^E, Sec. 22, Tract BBAB Drilled depth: 400 ft
 Measured: 110 ft ^{FNL} 930 ft ^{RKX} ~~FWL~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Logged gamma through pipes.

RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>15</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>50</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING	DEPTH
	LOGGED DEPTHS 400 FT. FT.			LOGGED DEPTHS FT. FT.		FEET
						METERS
gravel, with till deposit near surface						0
claystone, gray, cbncc						10
coal						50
						20
siltstone, gray, claystone, gray, and sandstone, gray, very fine, fe						100
						30
coal						40
						150
						50
siltstone, gray, and claystone, gray						200
						60
coal, with parting of claystone, gray, cbncc						70
						250
						80
siltstone, gray, and claystone, gray						300
						90
coal						100
						350
						110
sandstone, gray very fine to fine, and claystone, gray						120
coal						
claystone, gray						400

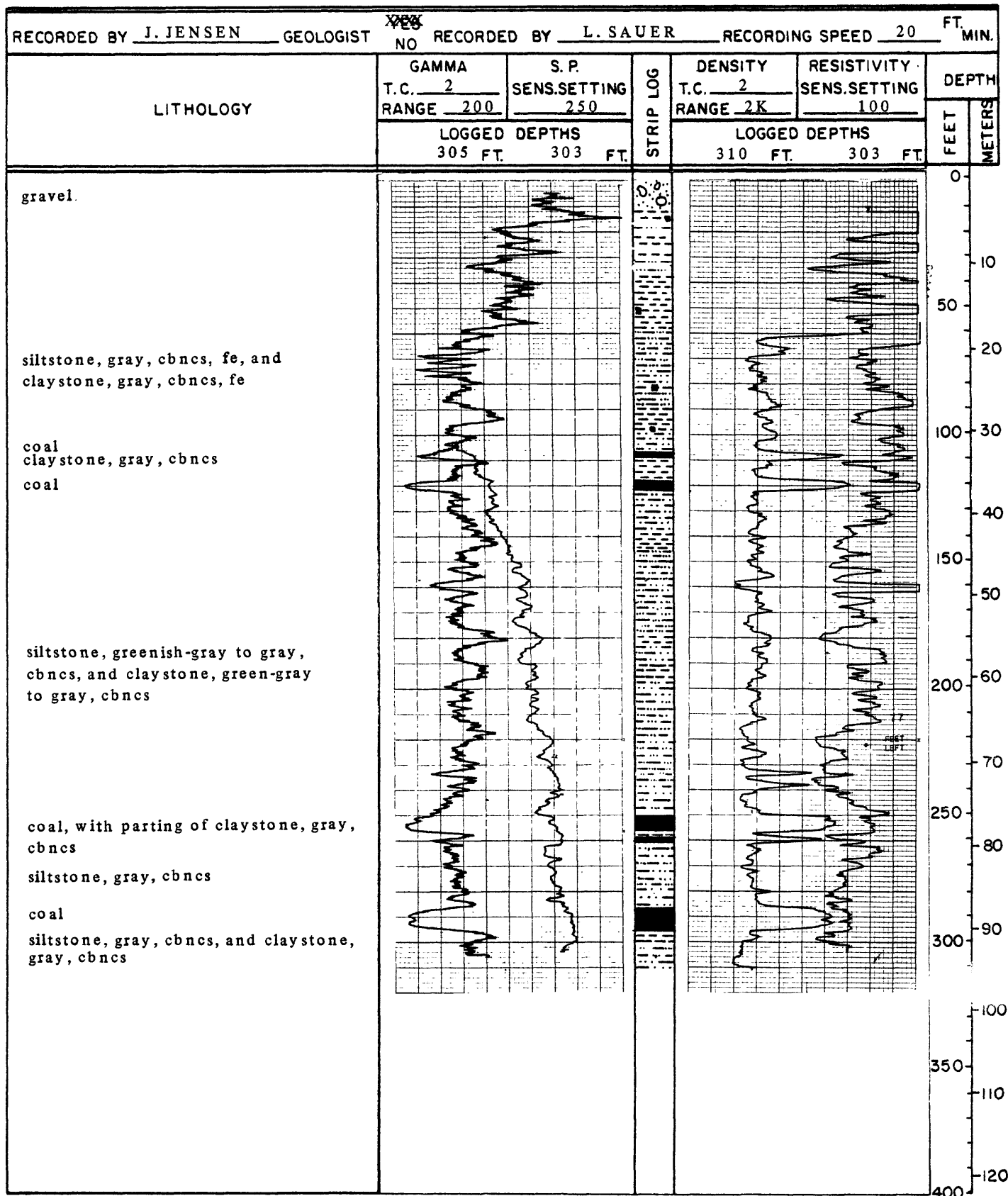
Hole no: US-787 Map: Crane Date: 4/24/78 State: Montana County: Richland
Elev: 2195 ft Location: T. 21 ^{N.} ~~S.~~, R. 58 ^{E.} ~~W.~~, Sec. 20, Tract BAAD Drilled depth: 310 ft
Measured: 580 ft ^{ENL} ~~FWL~~, 2320 ft ^{ENL} ~~FWL~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
Remarks: SP and ER logs on next page.

RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		YES NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>15</u> FT. MIN.					
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>50</u>		S. P. SENS.SETTING		STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>		RESISTIVITY SENS.SETTING		DEPTH	
	LOGGED DEPTHS					LOGGED DEPTHS				FEET	METERS
	310 FT. FT.					310 FT. FT.					
sandstone, brown, very fine to fine, and gravel										0	
										10	
claystone, brown to gray, siltstone, brown, and sandstone, white, very fine to fine, fe										50	
										100	
coal										200	
										250	
claystone, gray, some cbncls, and siltstone, gray, some cbncls										300	
										350	
coal										400	
										450	
claystone, gray, cbncls, and siltstone, gray, cbncls										500	
										550	

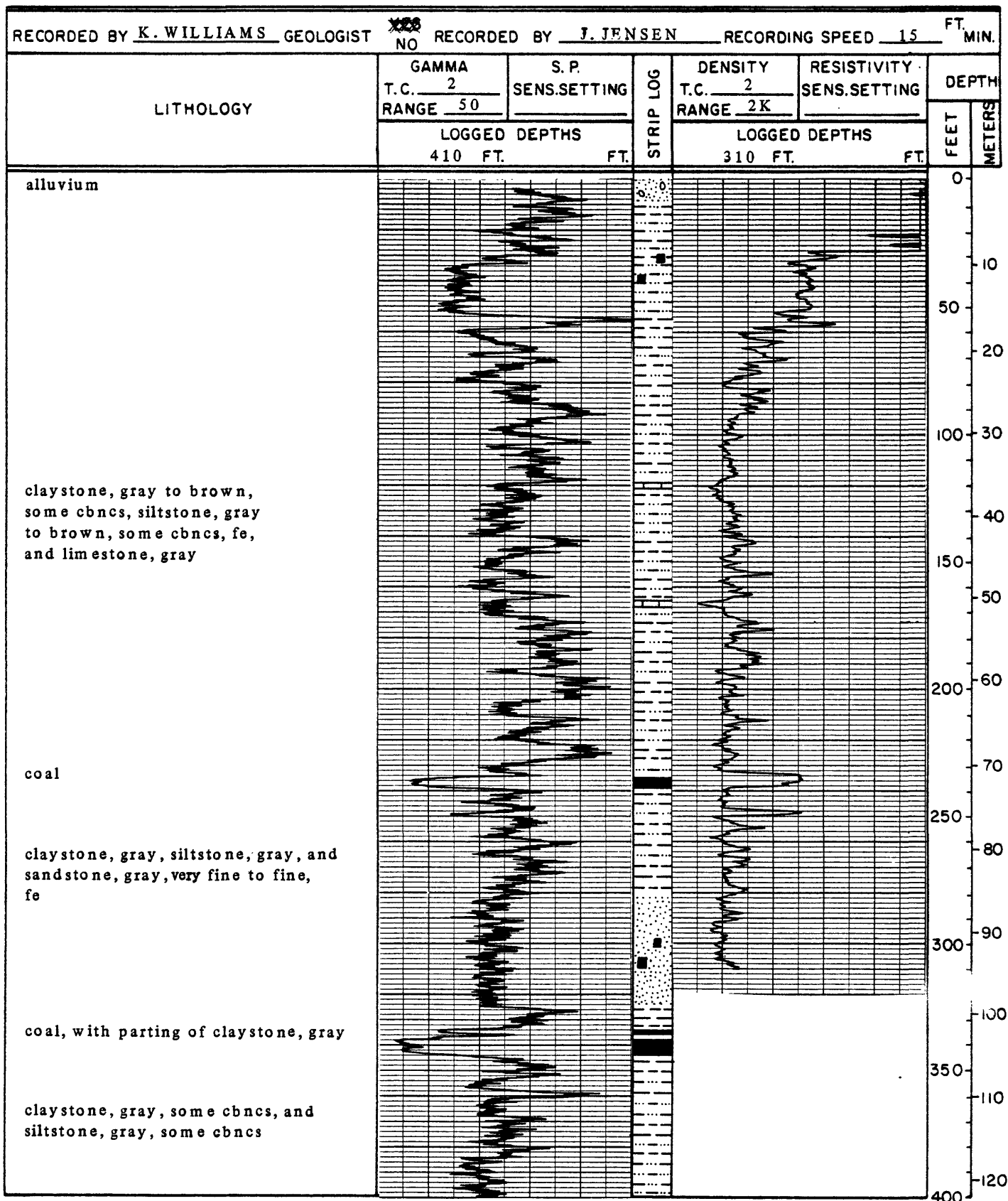
Hole no: US-787 Map: Crane Date: 4/24/78 State: Montana County: Richland
 Elev: 2195 ft Location: T. 21 ^{N.} _{S.}, R. 58 ^{E.} _{W.}, Sec. 20, Tract BAAD Drilled depth: 310 ft
 Measured: 580 ft ^{FNL} ~~580~~, 2320 ft ^{FWL} ~~2320~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____


RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		YES NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>15</u> FT. MIN.	
LITHOLOGY	GAMMA	S. P.	STRIP LOG	DENSITY	RESISTIVITY	DEPTH	
	T.C. _____	SENS. SETTING		T.C. _____	SENS. SETTING	FEET	METERS
	RANGE _____	<u>20</u>		RANGE _____	<u>20</u>		
LOGGED DEPTHS		LOGGED DEPTHS					
FT. 310 FT.		FT. 310 FT.					
						0	
						10	
						20	
						30	
						40	
						50	
						60	
						70	
						80	
						90	
						100	
						110	
						120	

Hole no: US-788 Map: Crane Date: 4/24/78 State: Montana County: Richland
 Elev: 2236 ft Location: T. 21^N, R. 58^E, Sec. 6, Tract DDBB Drilled depth: 310 ft
 Measured: 1280 ft ^{FSL}, 1190 ft ^{FEI}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

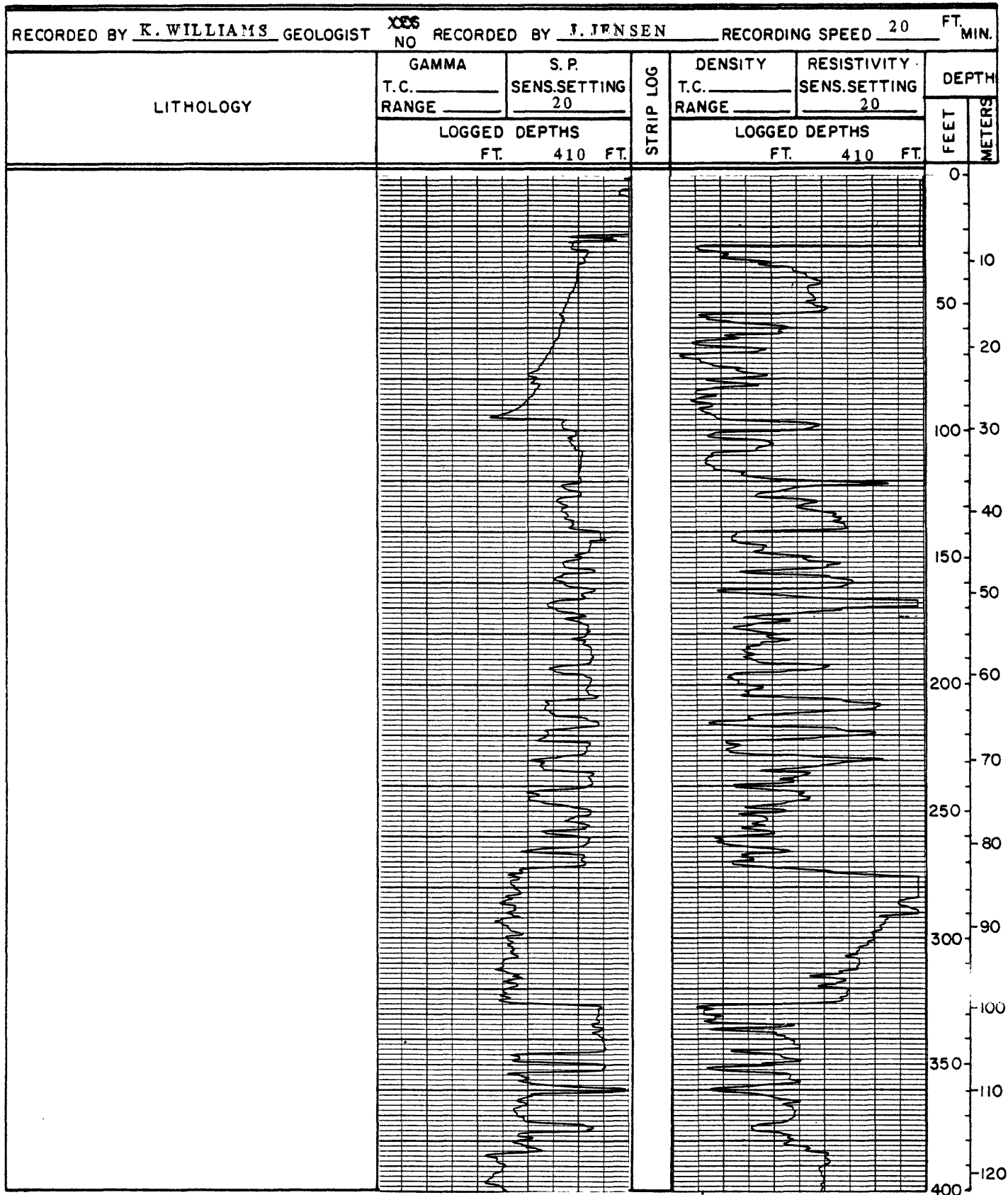


Hole no: US-789 Map: McCone Heights Date: 4/24/78 State: Montana County: Richland
 Elev: 2630 ft Location: T. 21 N., R. 56 E., Sec. 8, Tract CDAC Drilled depth: 410 ft
 Measured: 800 ft FSL, 2100 ft FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP and ER on next page.



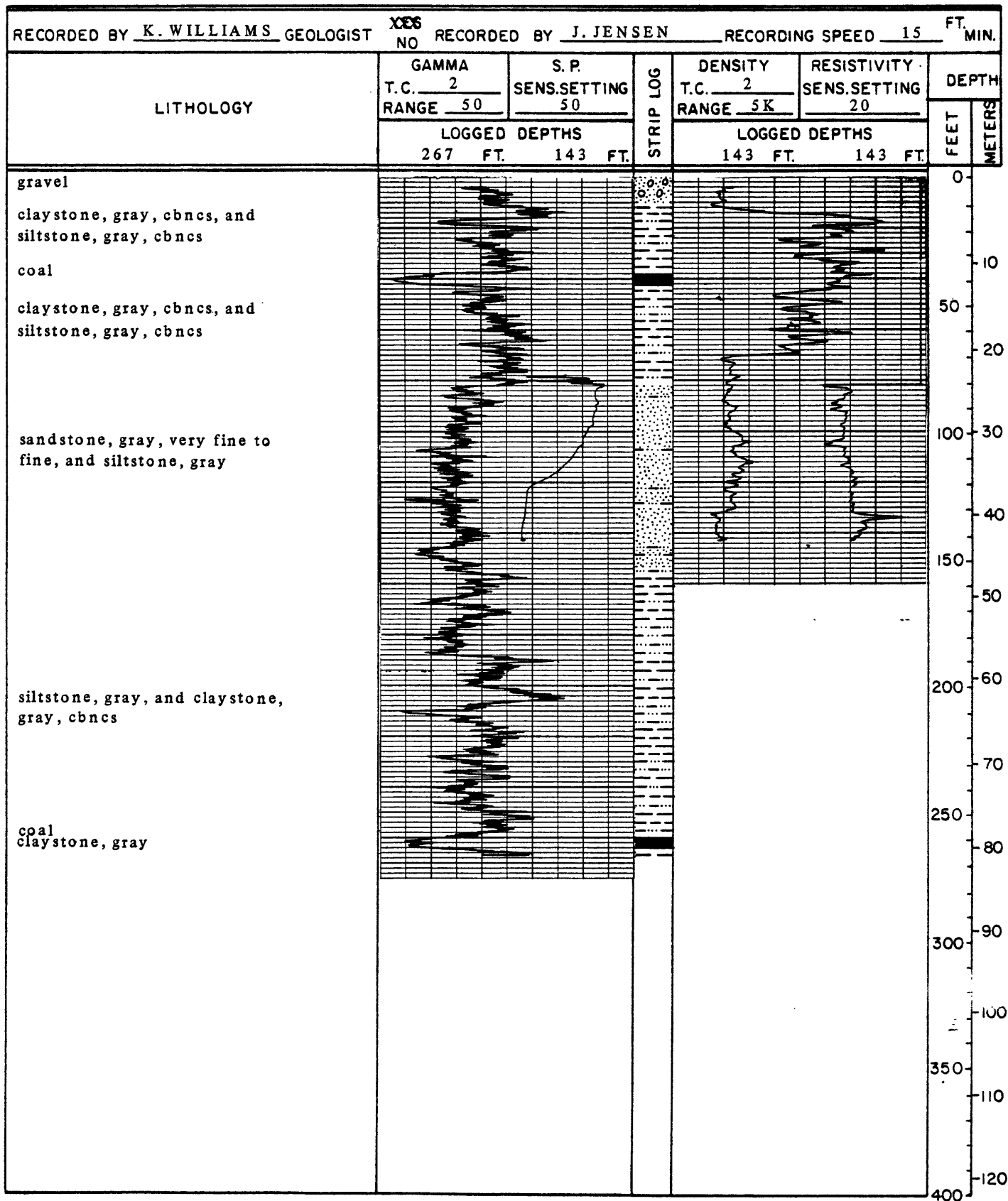
LITHOLOGY	GAMMA	S.P	STRIP LOG	DENSITY	RESISTIVITY	FEET	METERS		
claystone, gray, and siltstone, gray						400			
						130			
						450			
						140			
						150			
						500			
						160			
						550			
						170			
						180			
						600			
						190			
						650			
						200			
						210			
						700			
						220			
						750			
						230			
						240			
					800				
					250				
					850				
					260				
					270				
					900				

Hole no: US-789 Map: McCone Heights Date: 4/24/78 State: Montana County: Richland
 Elev: 2630 ft Location: T. 21 ^N _S, R. 56 ^E _W, Sec. 8, Tract CDAC Drilled depth: 410 ft
 Measured: 800 ft ^{SNL} _{FSL}, 2100 ft ^{XXX} _{PWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

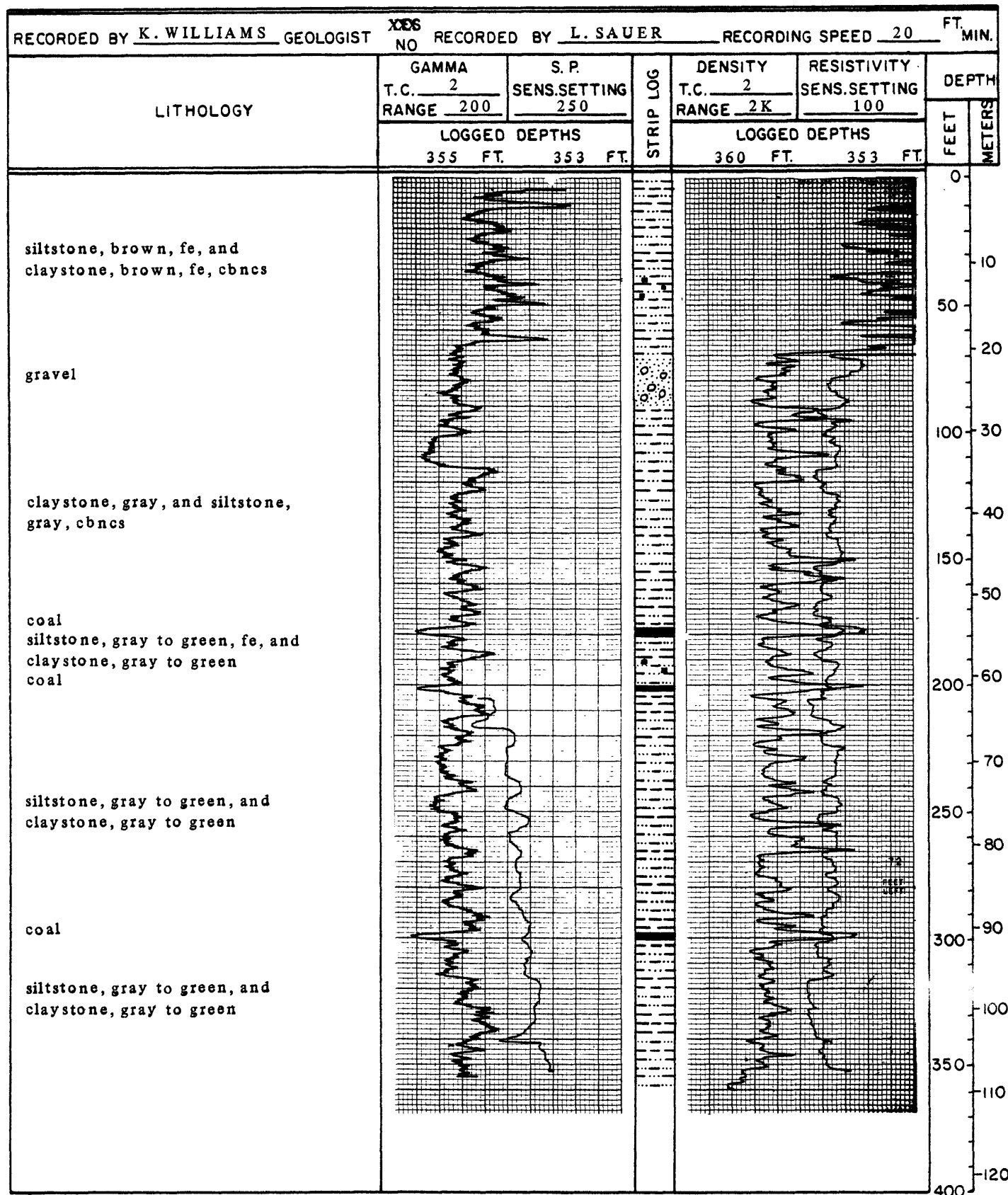


LITHOLOGY	GAMMA	S.P	STRIP LOG	DENSITY	RESISTIVITY	FEET	METERS
						400	
						130	
						450	
						140	
						150	
						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	
						230	
						240	
						800	
						250	
						850	
						260	
						270	
						900	

Hole no: US-7810 Map: Lambert Date: 4/20/78 State: Montana County: Richland
 Elev: 2384 ft Location: T. 22 ^N, R. 56 ^E, Sec. 22, Tract CDCD Drilled depth: 310 ft
 Measured: 75 ft ^{FSL}, 1800 ft ^{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: No return after 160 ft - logged gamma through casing to plugged pipe.



Hole no: US-7811 Map: Lambert Date: 5/2/78 State: Montana County: Richland
 Elev: 2405 ft Location: T. 22 N, R. 55 E, Sec. 12, Tract DDDD Drilled depth: 375 ft
 Measured: 110 ft ^{PSL}, 60 ft ^{FEI}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: No return after 190 ft.



Hole no: US-7812 Map: Fox Lake Date: 5/2/78 State: Montana County: Richland
 Elev: 2530 ft Location: T. 23 N, R. 55 W, Sec. 30, Tract CDCD Drilled depth: 400 ft
 Measured: 75 ft FSL, 1950 ft FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

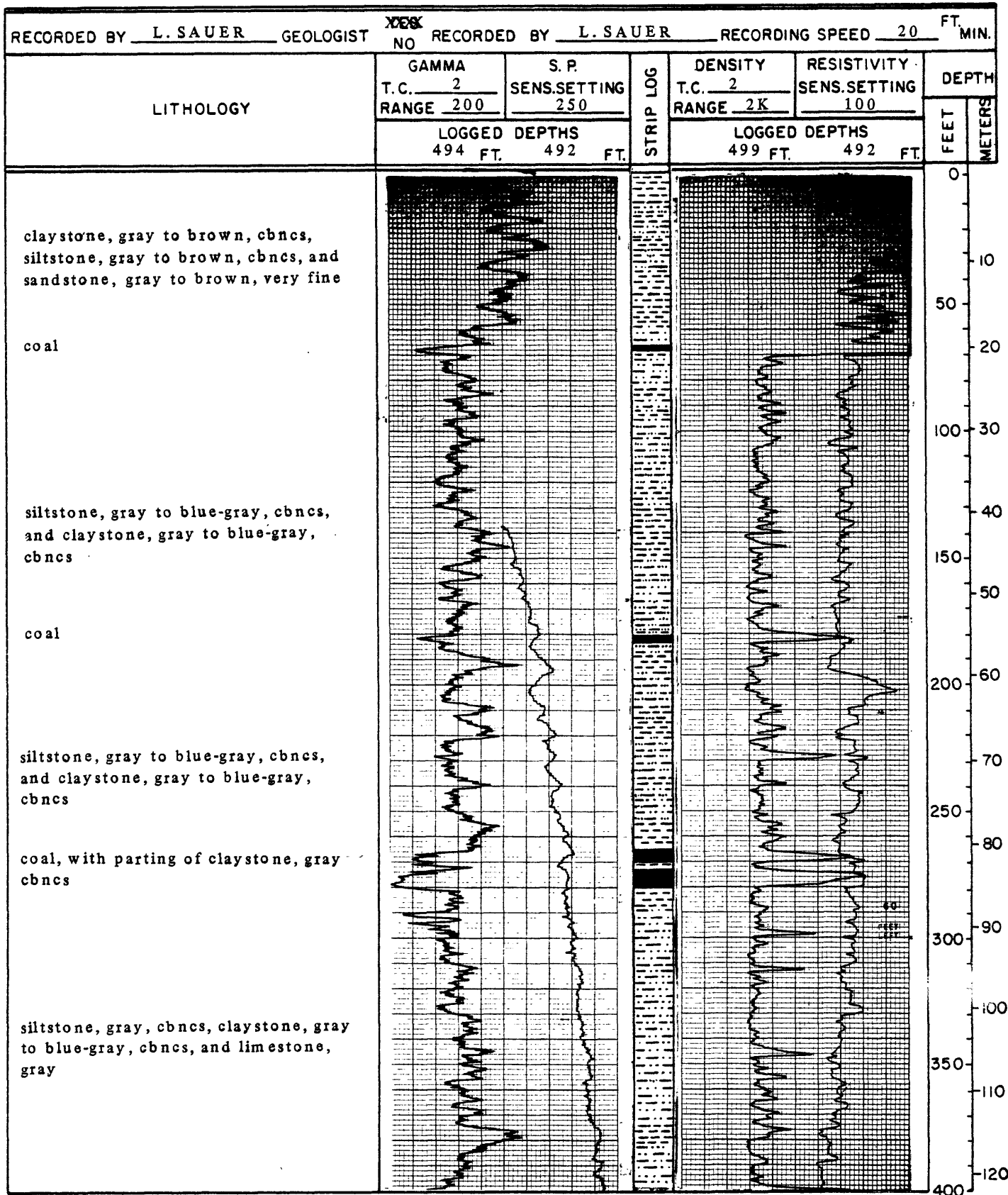
RECORDED BY <u>L. SAUER</u> GEOLOGIST		XXX NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.					
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>		S. P. SENS. SETTING <u>100</u>		STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>5K</u>		RESISTIVITY SENS. SETTING <u>100</u>		DEPTH	
	LOGGED DEPTHS		LOGGED DEPTHS			LOGGED DEPTHS		LOGGED DEPTHS		FEET	METERS
	393 FT. 391 FT.		398 FT. 391 FT.			398 FT. 391 FT.		398 FT. 391 FT.			
siltstone, brown, fe										0	
sandstone, gray, very fine to fine cbncls										10	
										50	
										20	
siltstone, gray, cbncls, fe, and claystone, gray, cbncls										100	30
										40	
coal										150	
claystone, gray, cbncls, and siltstone, gray										50	
coal										200	60
siltstone, gray, and claystone, gray, cbncls										70	
coal	250										
siltstone, gray, cbncls, and claystone, gray, cbncls	80										
	300	90									
	100										
	350	110									
sandstone, gray, very fine to fine	400	120									

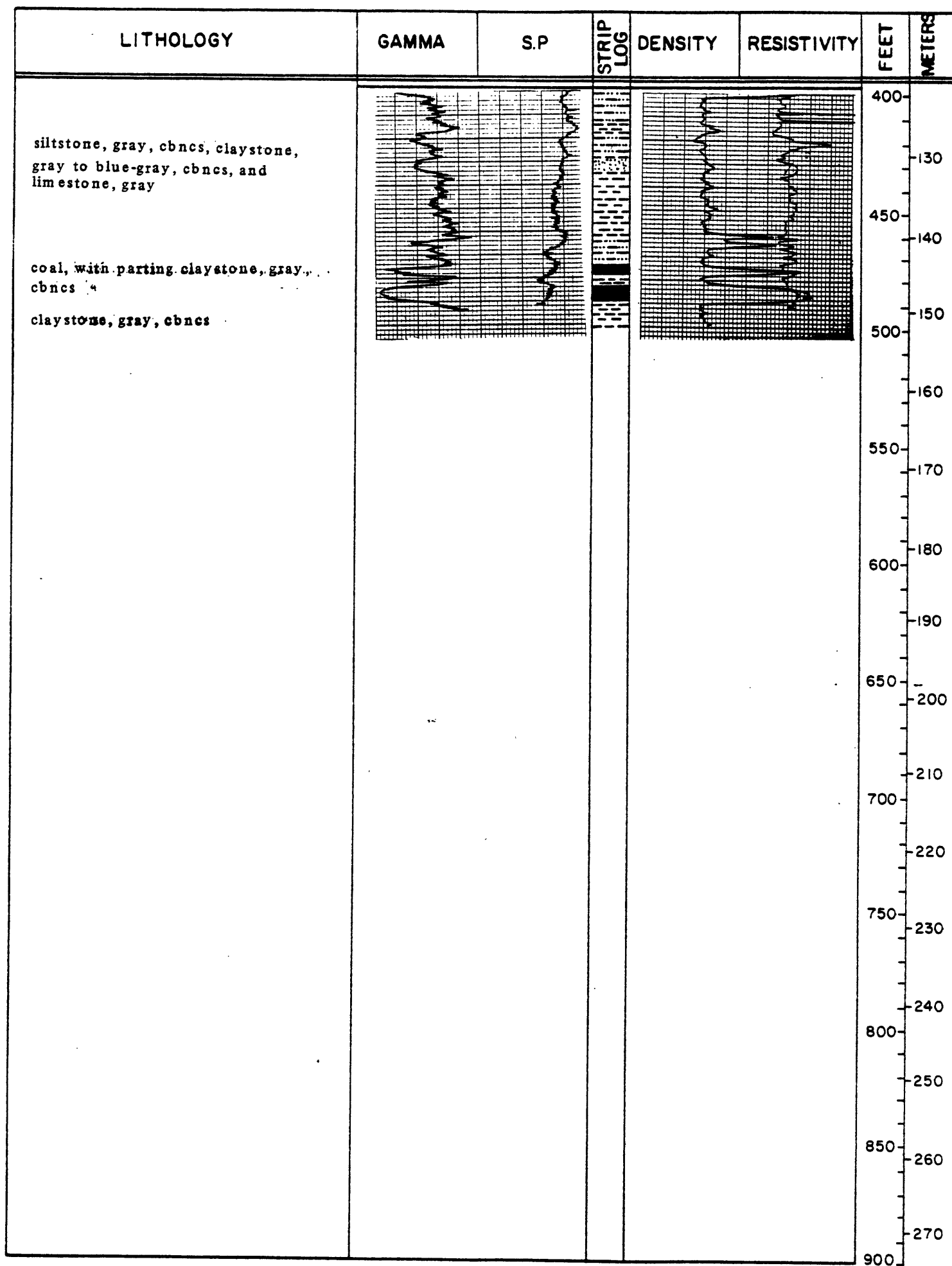
RECORDED BY <u>J. JENSEN</u> GEOLOGIST		NO <u>XXX</u>		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>15</u> FT. MIN.					
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>		S. P. SENS.SETTING		STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>		RESISTIVITY SENS.SETTING		DEPTH	
	LOGGED DEPTHS					LOGGED DEPTHS				FEET	METERS
	382 FT. FT.					346 FT. FT.					
siltstone, brown, fe, and claystone, gray to brown										0	
coal										10	
										50	
										20	
siltstone, gray to brown, some cbncs, fe, and claystone, gray to brown, some cbncs										100	30
										150	
										200	60
										250	
coal										300	90
										350	
claystone, gray, siltstone, brown, fe, and sandstone, gray, very fine to fine										400	120

Hole no: US-7813 Map: Fox Lake Date: 5/3/78 State: Montana County: Richland
 Elev: 2515 ft Location: T. 23 N. R. 55 E., Sec. 20, Tract AAAA Drilled depth: 390 ft
 Measured: 65 ft ^{ENL} ~~xxx~~, 65 ft ^{FEL} ~~xxx~~, Hole size: 4 3/4 in., Air ☒ Water ☐ Cored Yes ☐ No ☒
 Remarks: _____

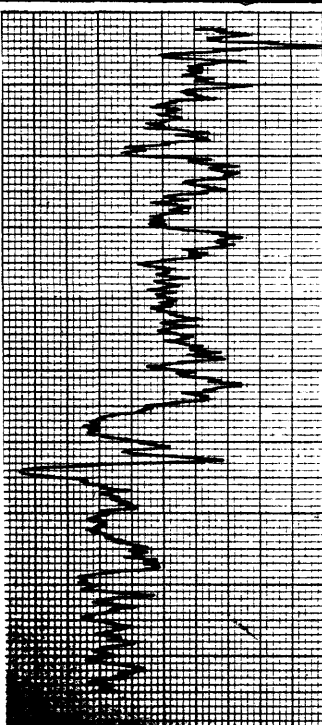

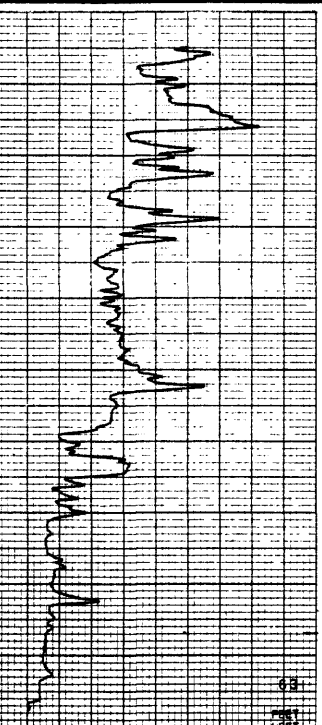
RECORDED BY <u>J. JENSEN</u> GEOLOGIST		xxx NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>15</u> FT. MIN.	
LITHOLOGY	GAMMA T.C. _____ RANGE _____	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>10</u>	DEPTH	
	LOGGED DEPTHS FT. <u>337</u> FT.			LOGGED DEPTHS FT. <u>337</u> FT.		FEET	METERS
						0	
						10	
						20	
						30	
						40	
						50	
						60	
						70	
						80	
						90	
						100	
						110	
120							

Hole no: US-7814 Map: BLM-NE-23 Poplar Date: 5/3/78 State: Montana County: Richland
 Elev: 2564 ft Location: T. 24 ^N, R. 55 ^E, Sec. 19, Tract CCCC Drilled depth: 500 ft
 Measured: 200 ft ^{RNK} FSL, 105 ft ^{XX} FWL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

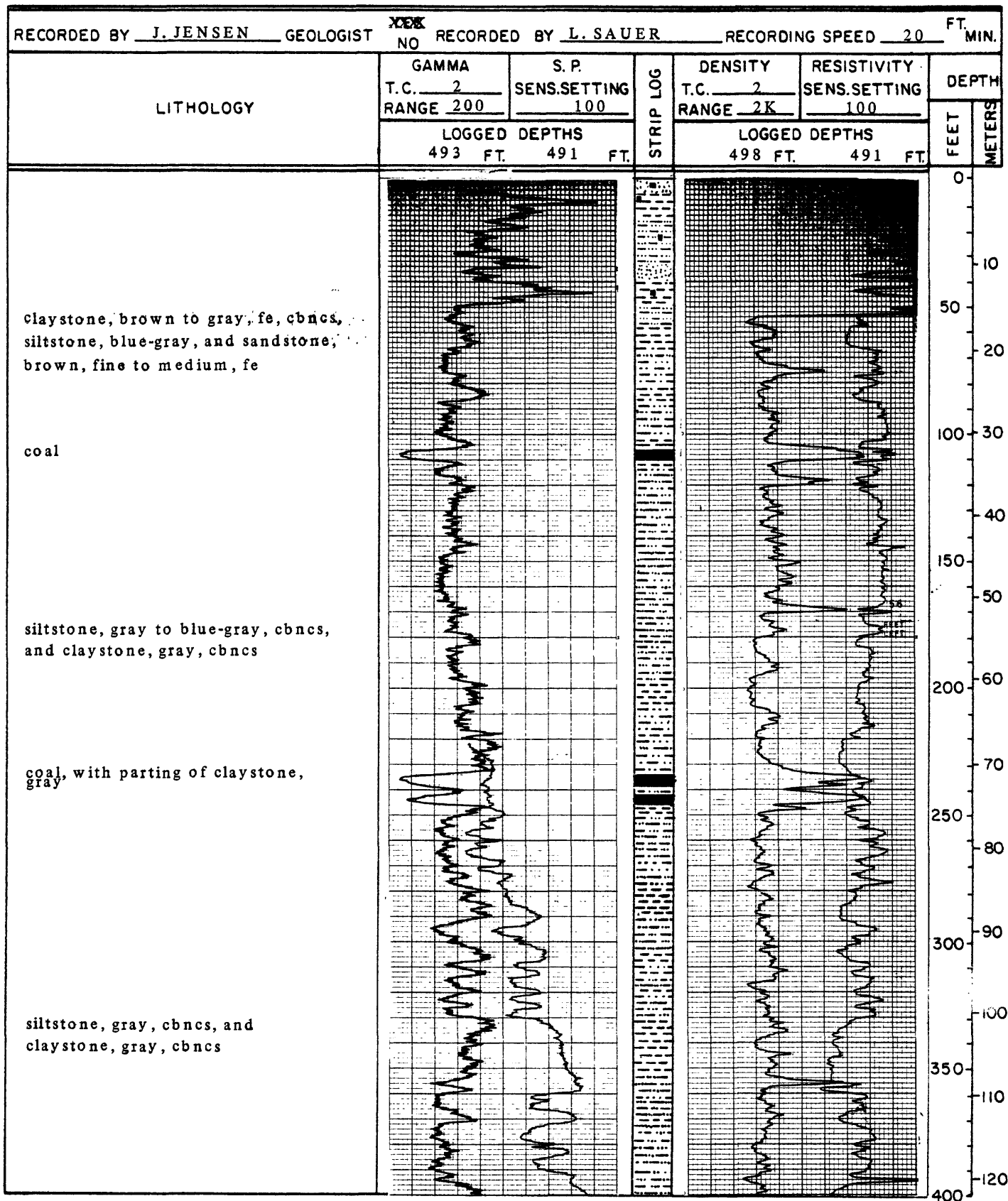


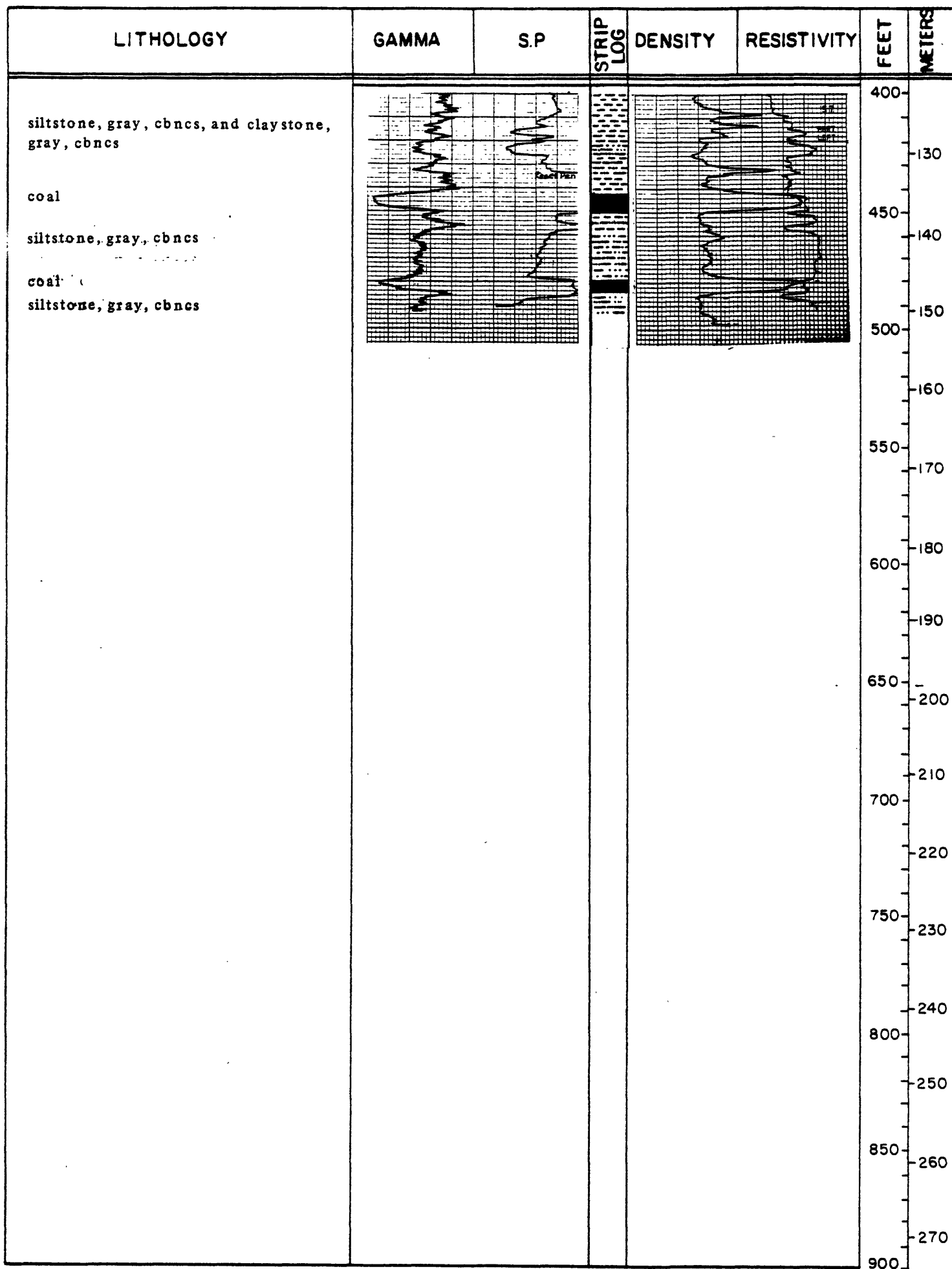


Hole no: US-7815 Map: BLM-NE-23 Date: 5/2/78 State: Montana County: Richland
 Elev: 2442 ft Location: T. 24 ^{N.} S., R. 55 ^{E.} W., Sec. 14, Tract CCCC Drilled depth: 200 ft
 Measured: 90 ft ^{FSL}, 120 ft ^{FWL}, Hole size: 4 3/4 in, Air ☒ Water ☐ Cored Yes ☐ No ☒
 Remarks: No SP or ER.

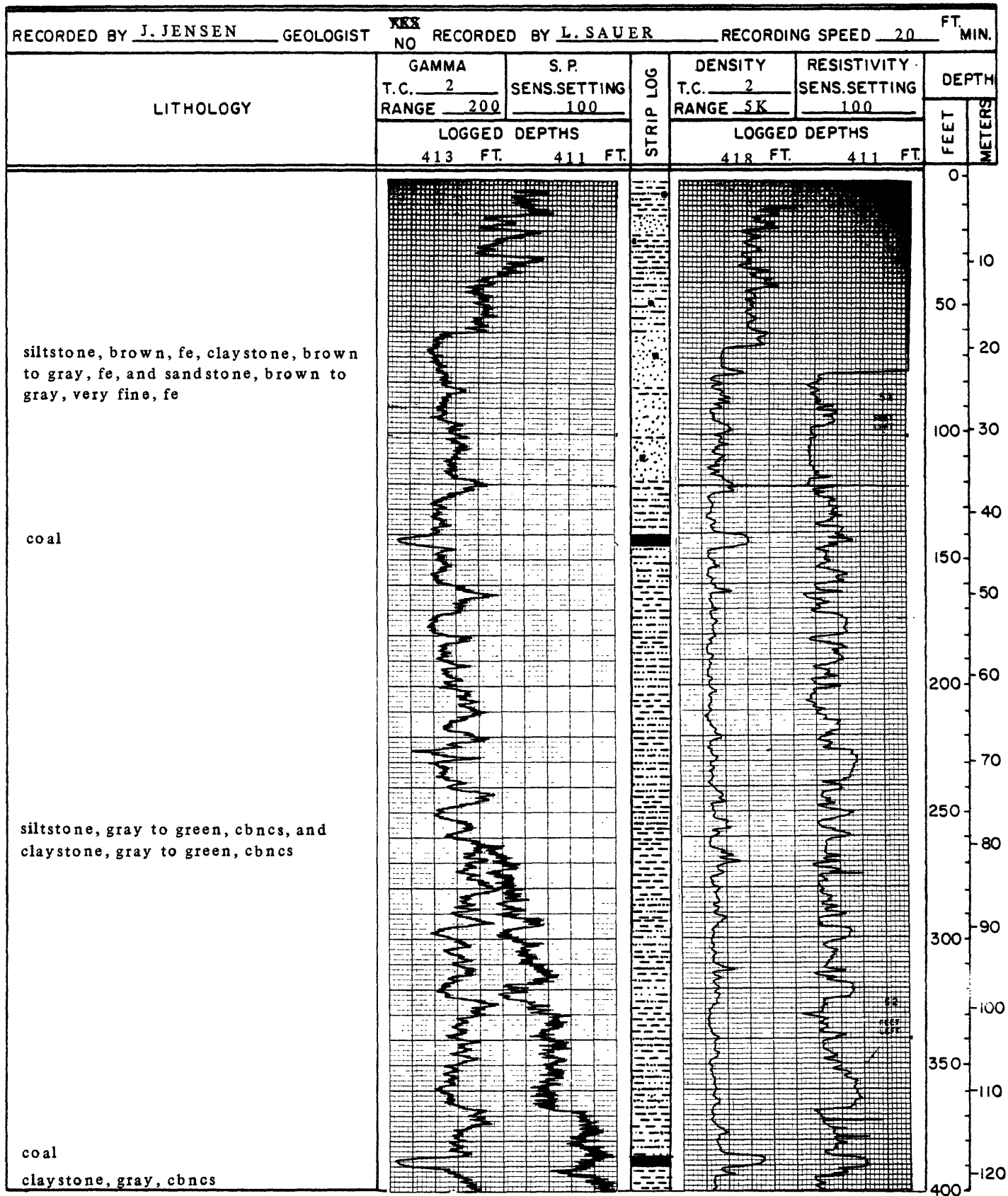
RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		YES NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.	
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS.SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>5K</u>	RESISTIVITY SENS.SETTING	DEPTH	
	LOGGED DEPTHS 190 FT. FT.			LOGGED DEPTHS 195 FT. FT.		FEET	METERS
claystone, gray to brown, fe, siltstone, gray to brown, fe, and limestone, gray						0	
						10	
coal						20	
siltstone, gray to brown, fe, cbncs, and claystone, gray, fe, cbncs						30	
						40	
						50	
						60	
						70	
						80	
						90	
						100	
						110	
						120	

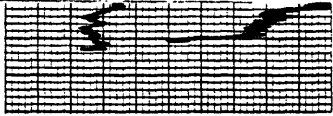
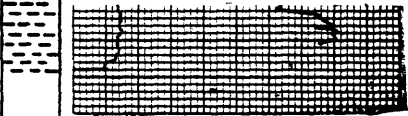
Hole no: US-7816 Map: BLM-NE-23 Date: 5/3/78 State: Montana County: Richland
 Elev: 2346 ft Location: T. 24 ^N, R. 55 ^E, Sec. 12, Tract DDDD Drilled depth: 500 ft
 Measured: 30 ft ^{PSL}, 35 ft ^{FEL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



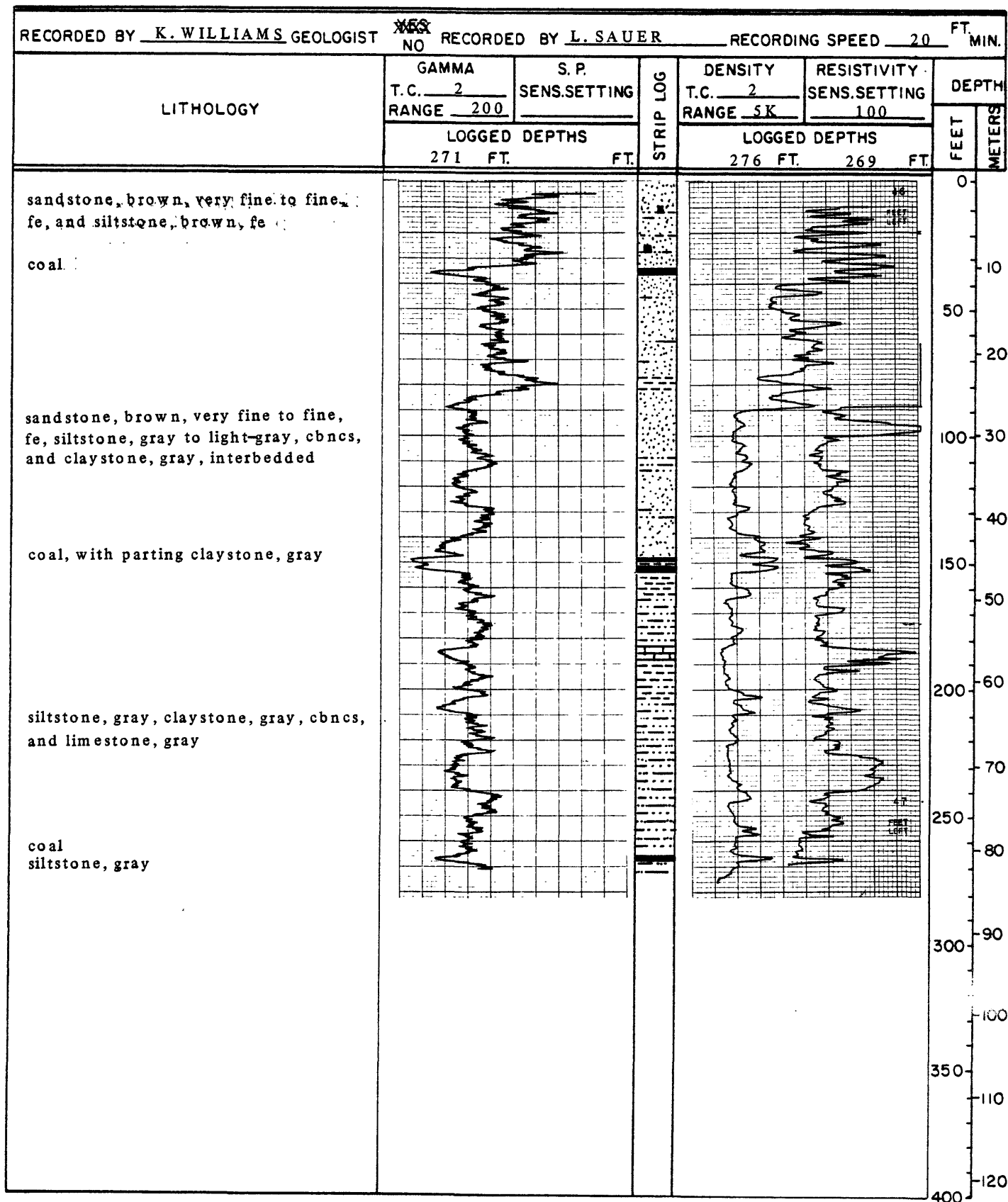


Hole no: US-7817 Map: BLM-NE-24 Date: 5/4/78 State: Montana County: Richland
 Elev: 2621 ft Location: T. 24 ^N_S, R. 56 ^E_W, Sec. 20, Tract cccc Drilled depth: 420 ft
 Measured: 158 ft FSL, 35 ft FWL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

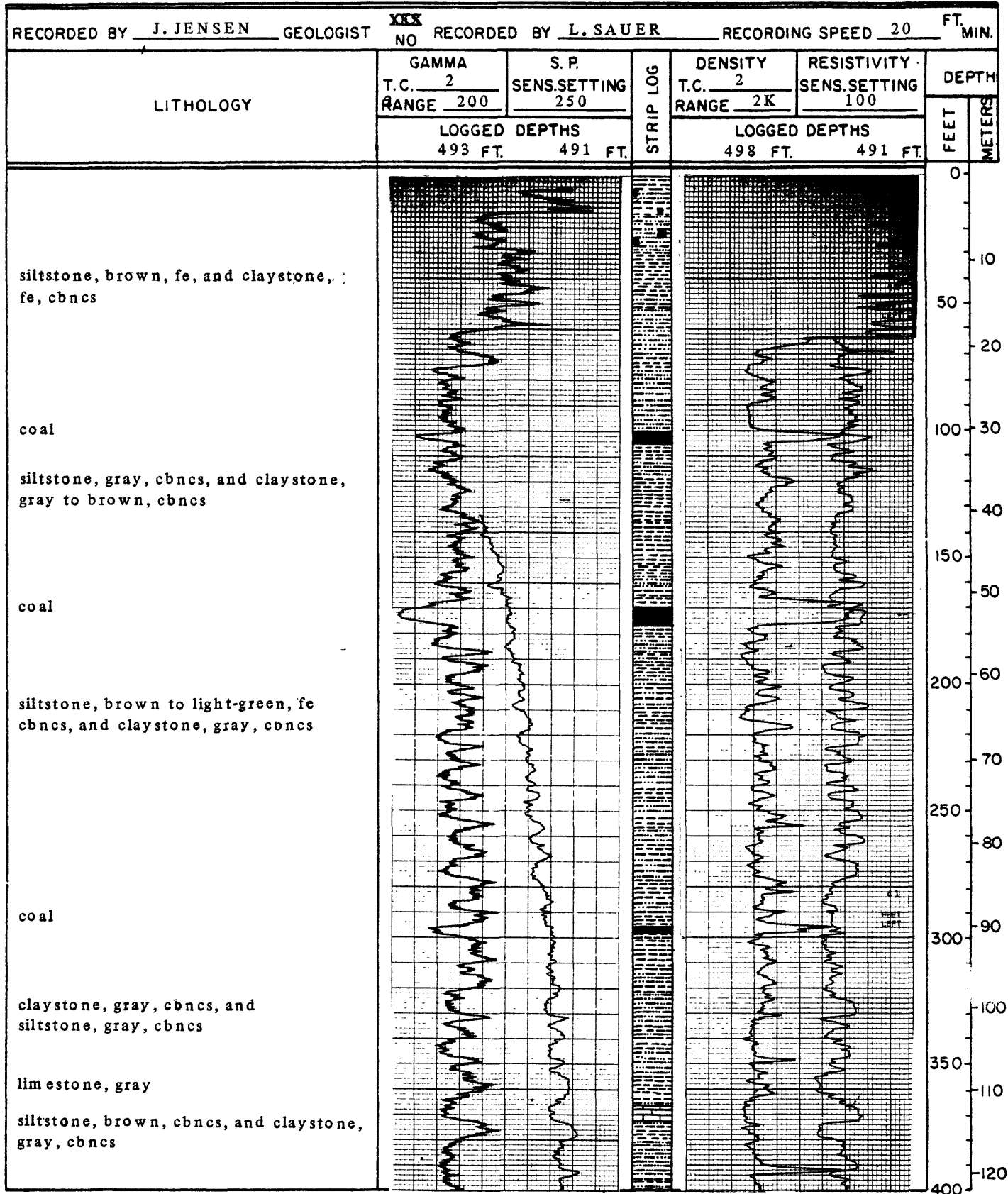


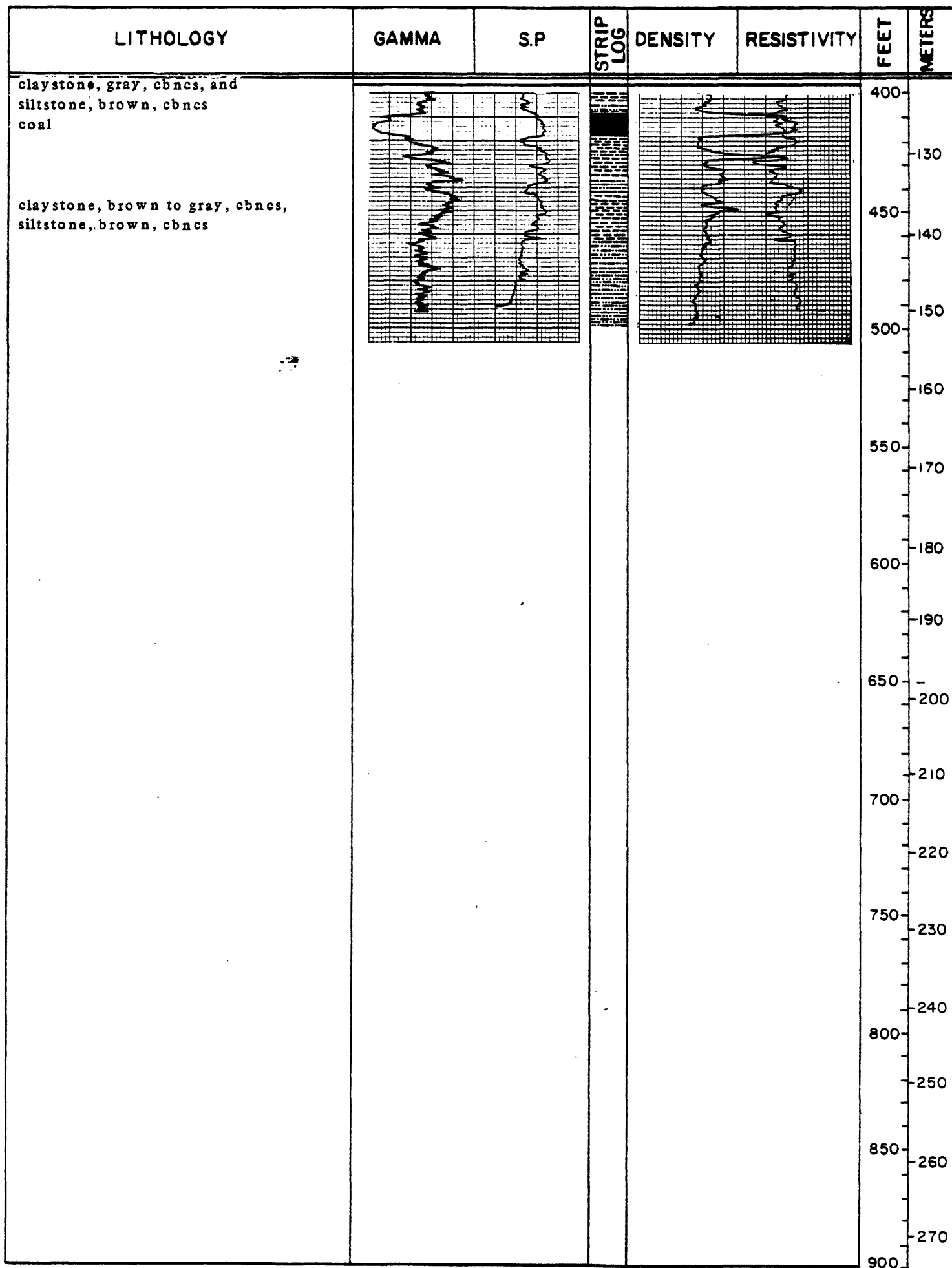
LITHOLOGY	GAMMA	S.P	STRIP LOG	DENSITY	RESISTIVITY	FEET	METERS
claystone, clay, cbnccs						400	
						130	
						450	
						140	
						150	
						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	
						230	
						240	
						800	
						250	
						850	
						260	
						270	
						900	

Hole no: US-7818 Map: BLM-NE-23 Date: 5/3/78 State: Montana County: Richland
 Elev: 2324 ft Location: T. 25 ^N, R. 55 ^E, Sec. 20, Tract DDDD Drilled depth: 280 ft
 Measured: 10 ft ^{KAK} FSL, 115 ft ^{FEL} KAK, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: No SP.

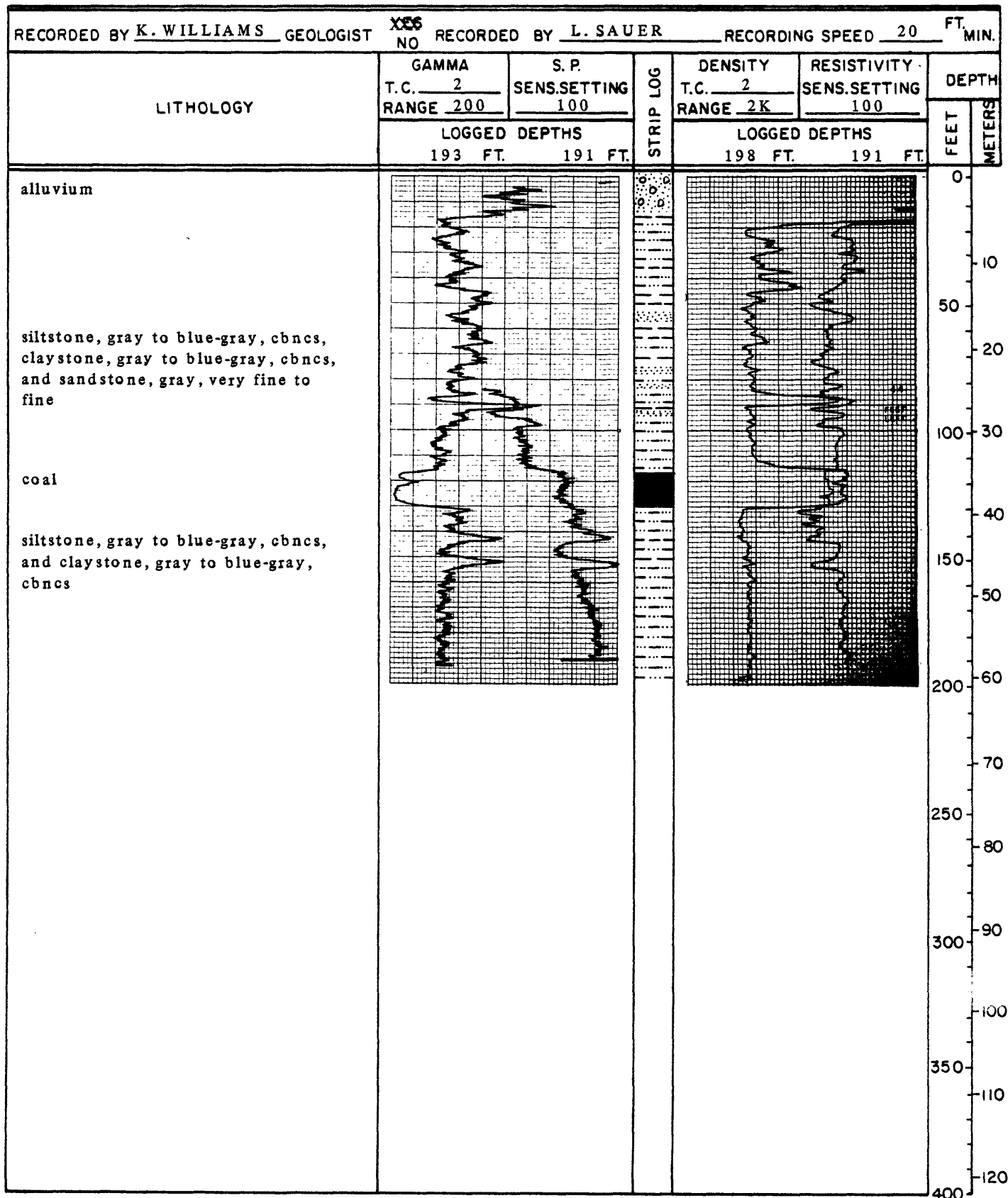


Hole no: US-7819 Map: Girard Date: 5/5/78 State: Montana County: Richland
 Elev: 2532 ft Location: T. 24 N, R. 56 E, Sec. 14, Tract DCCD Drilled depth: 500 ft
 Measured: 64 ft FSL, 2112 ft FSL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

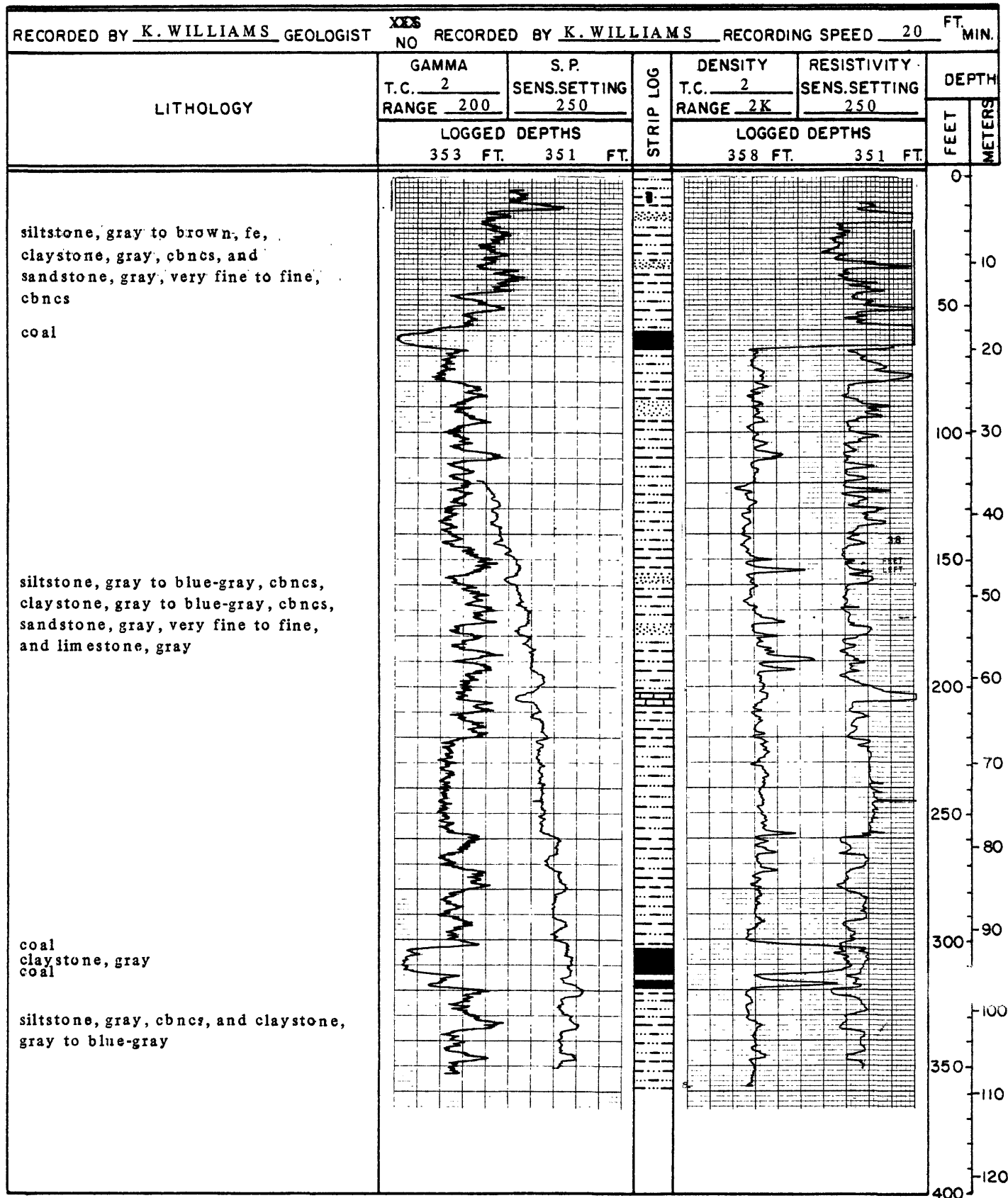




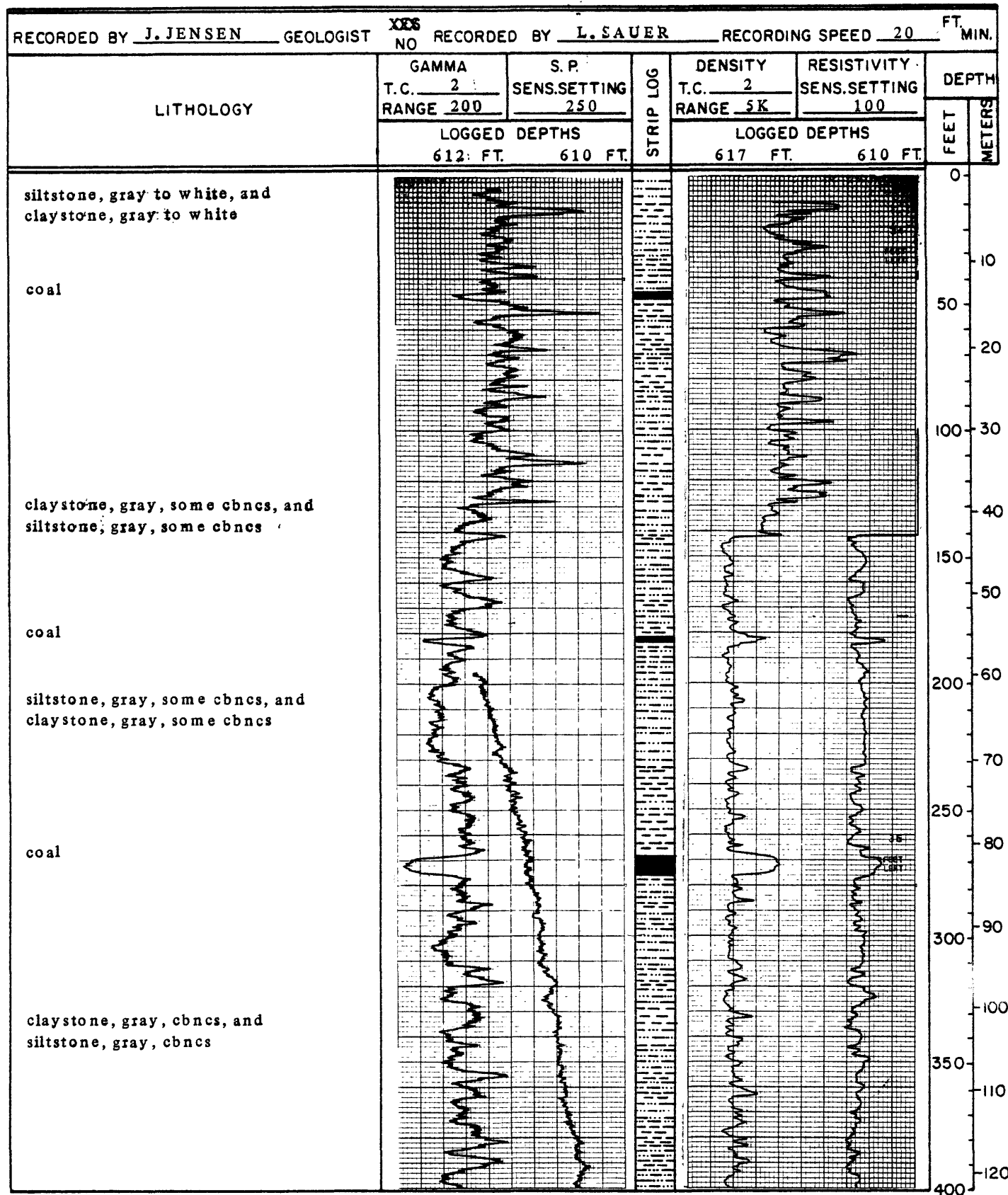
Hole no: US-7820 Map: Blue Hill Date: 5/4/78 State: Montana County: Richland
 Elev: 2129 ft Location: T. 26 N., R. 56 E., Sec. 28, Tract DDDD Drilled depth: 200 ft
 Measured: 210 ft ^{ROCK} FSL, 160 ft ^{FEL} ~~ROCK~~, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

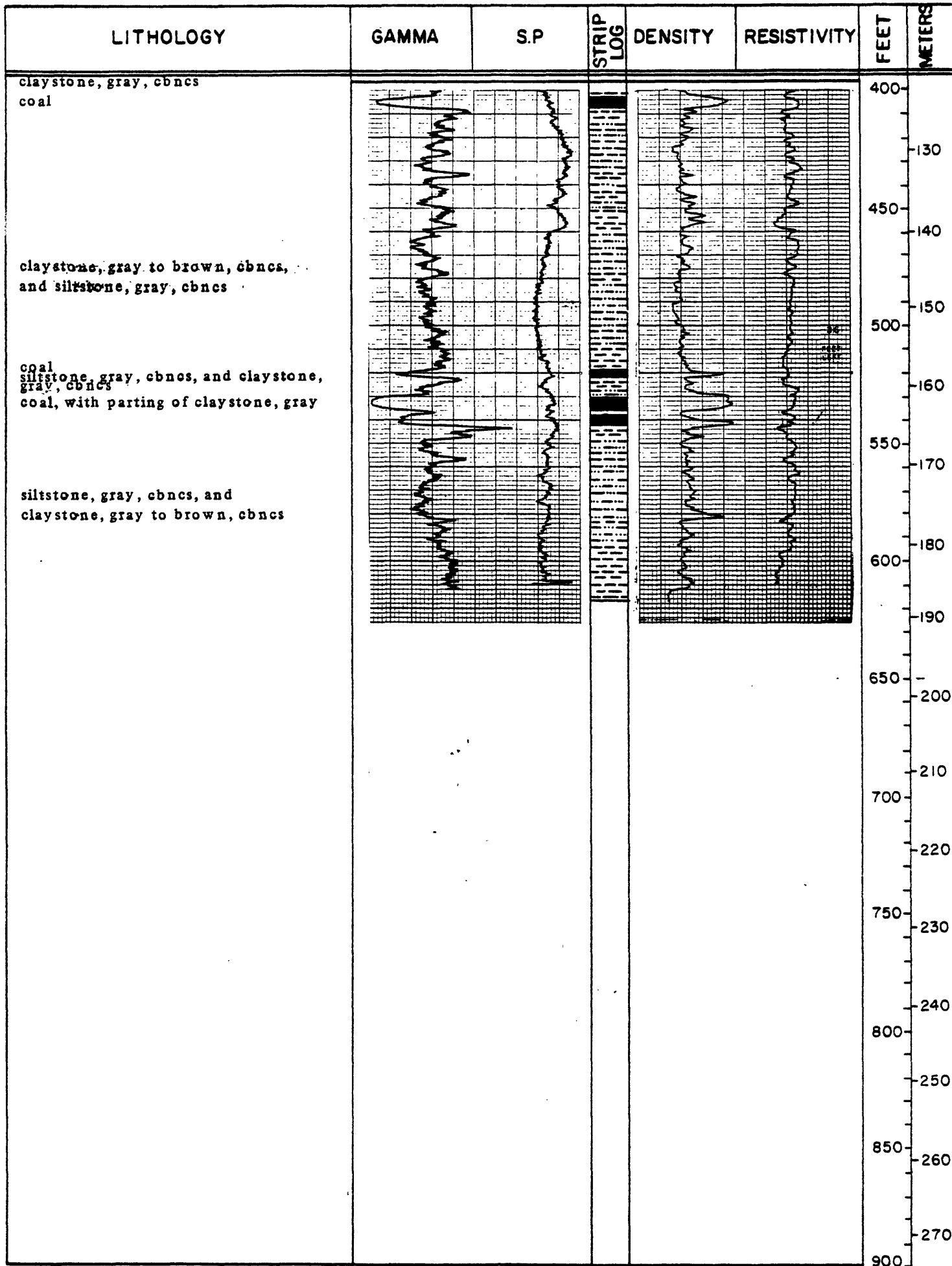


Hole no: US-7821 Map: BLM-NE-24 Date: 5/5/78 State: Montana County: Richland
 Elev: 2470 ft Location: T. 25 N, R. 55 E, Sec. 24, Tract ADBD Drilled depth: 360 ft
 Measured: 1940 ft ^{FNL} ~~xxx~~, 780 ft ^{FEU} ~~xxx~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

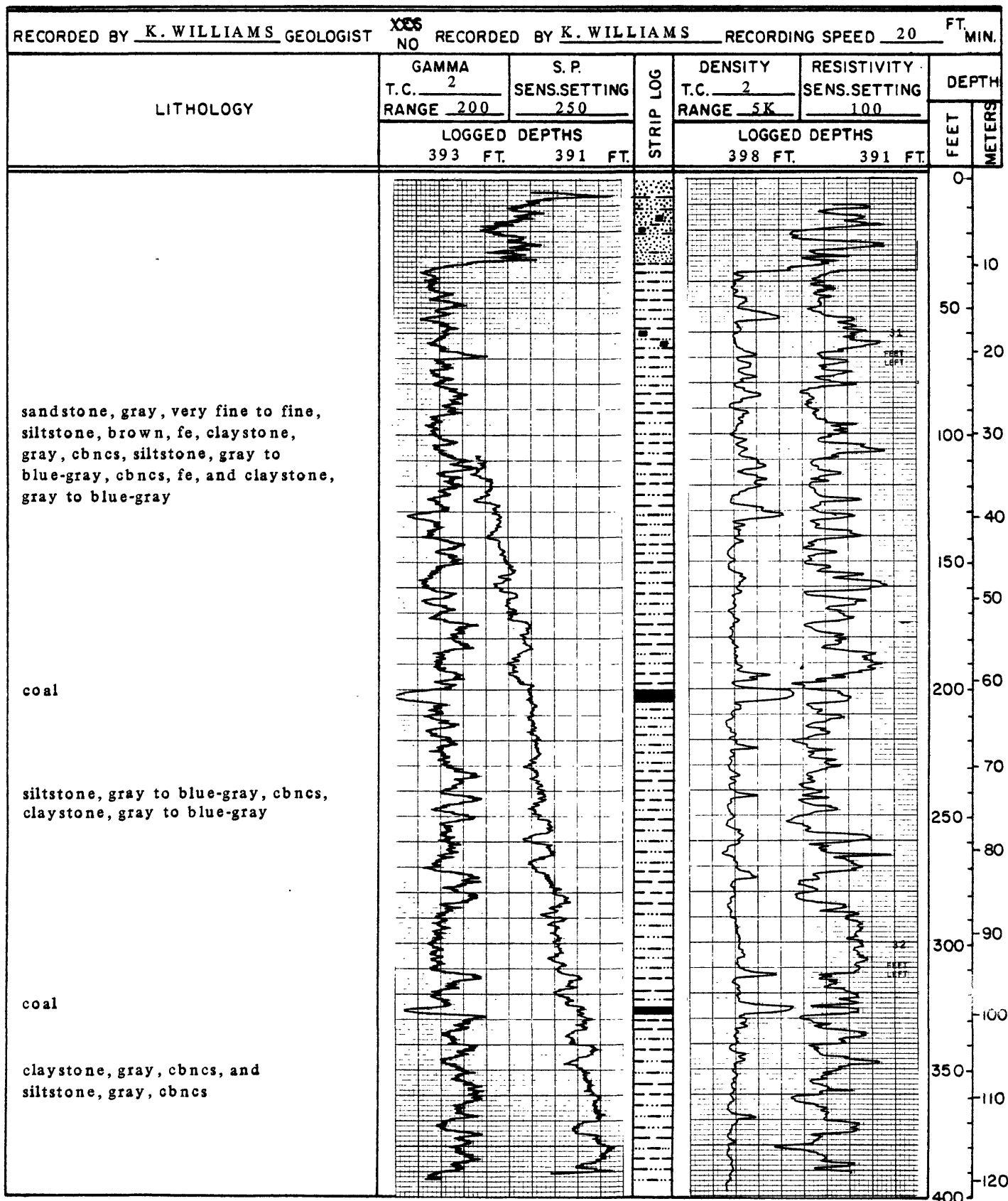


Hole no: US-7822 Map: Girard Date: 5/5/78 State: Montana County: Richland
 Elev: 2545 ft Location: T. 24 N, R. 57 E, Sec. 28, Tract BCBB Drilled depth: 640 ft
 Measured: 1550 ft ^{FNL} ~~SSL~~, 25 ft ^{XXX} ~~FWL~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Lost circulation at 180 ft.

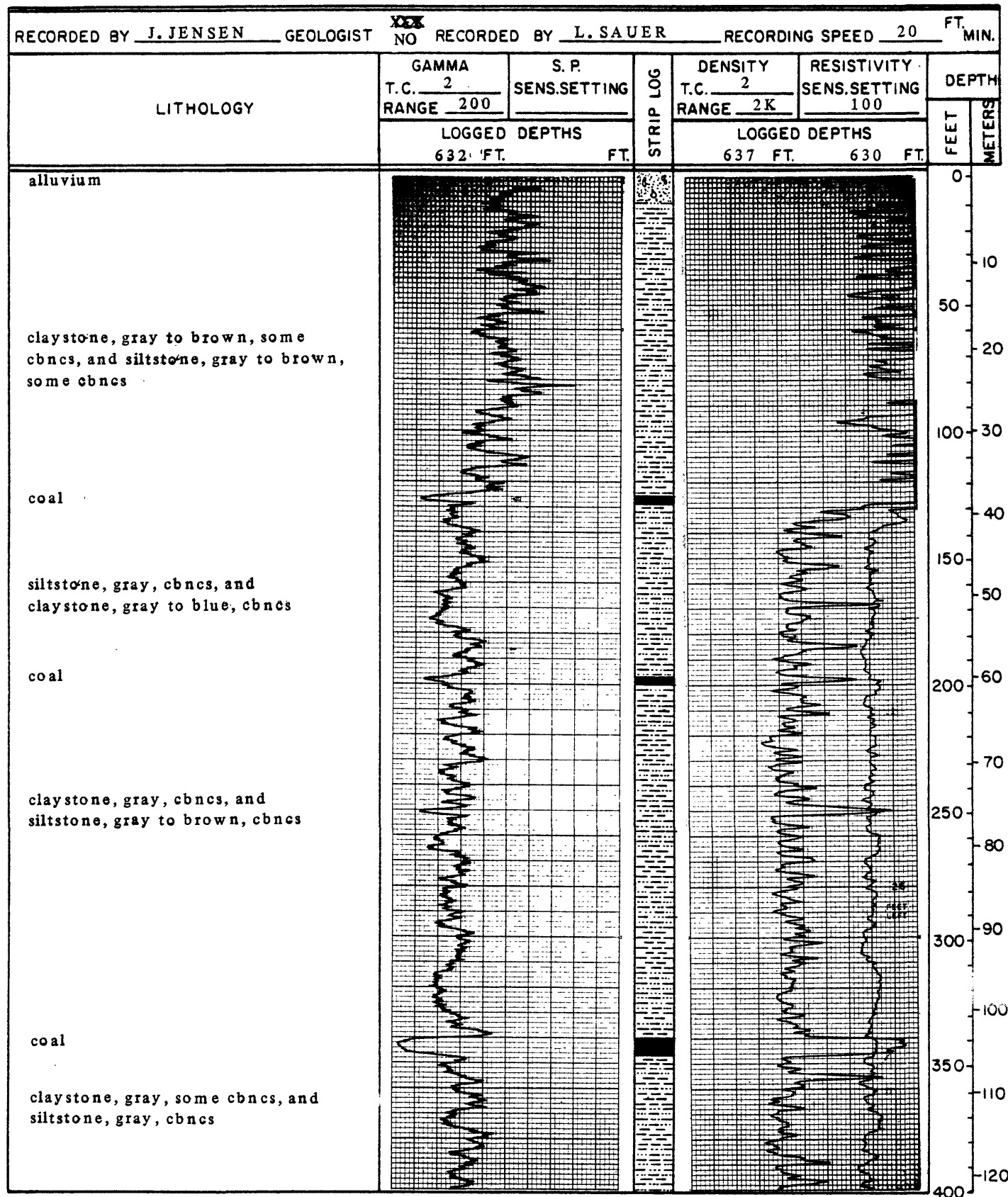


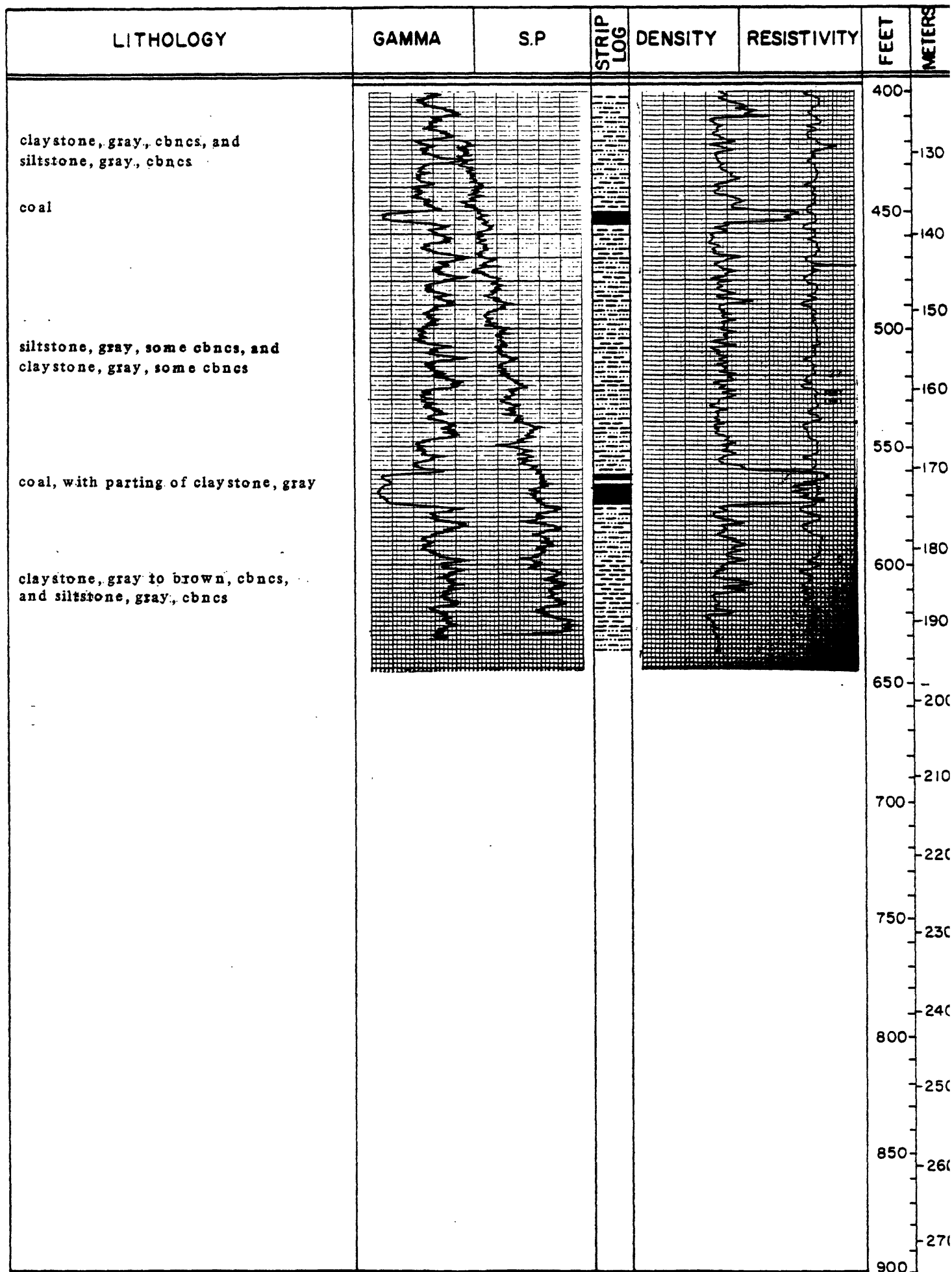


Hole no: US-7823 Map: Girard Date: 5/5/78 State: Montana County: Richland
 Elev: 2597 ft Location: T. 23 N, R. 56 E, Sec. 14, Tract BAAB Drilled depth: 400 ft
 Measured: 100 ft ^{FNL} ~~RXX~~, 3300 ft ^{FEL} ~~RXX~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

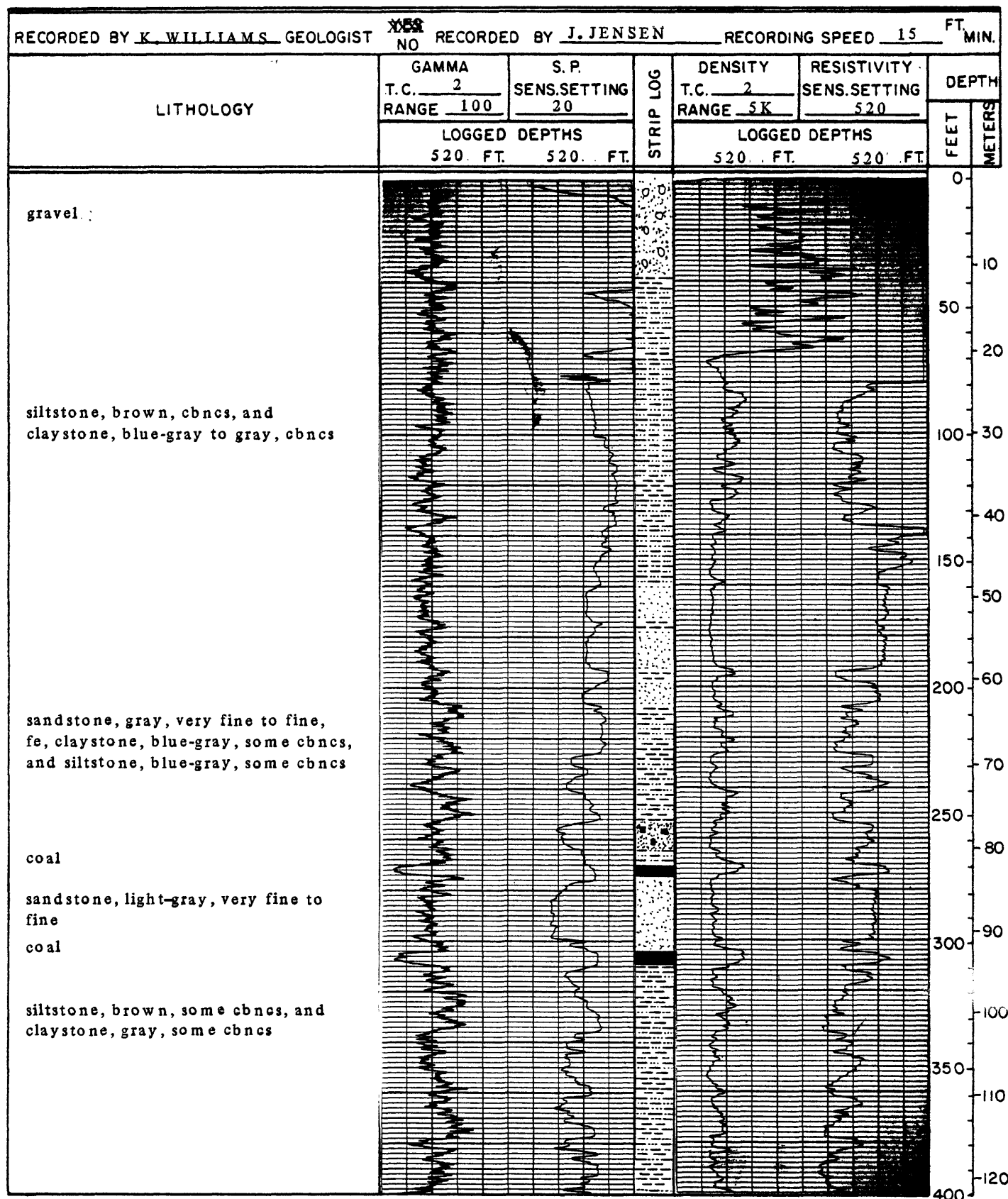


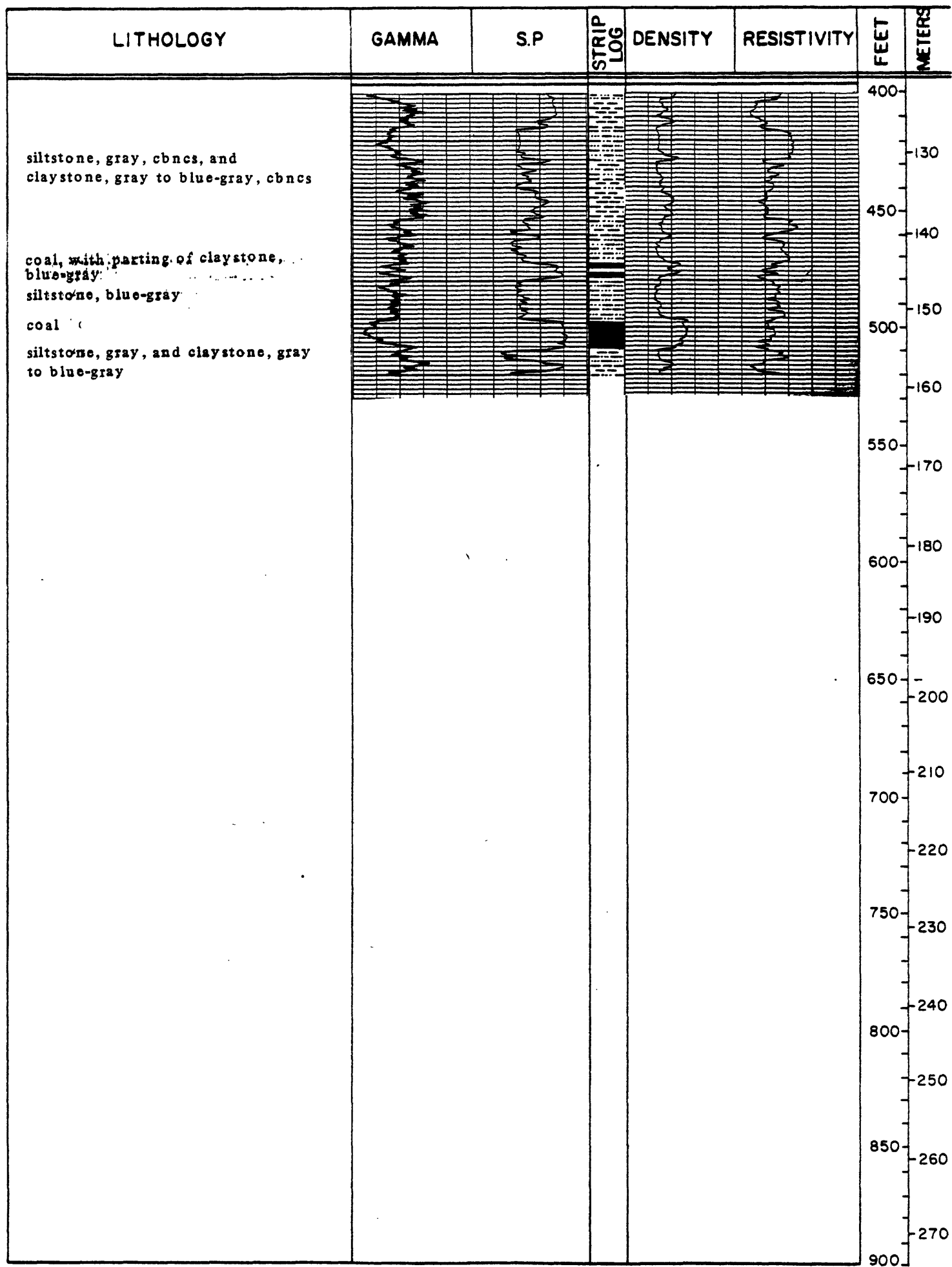
Hole no: US-7824 Map: Brorson Date: 5/6/78 State: Montana County: Richland
 Elev: 2547 ft Location: T. 24 N. R. 57 E. Sec. 14, Tract DCCD Drilled depth: 640 ft
 Measured: 315 ft FSL, 2225 ft ~~from~~, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: No SP log taken above 420 feet.



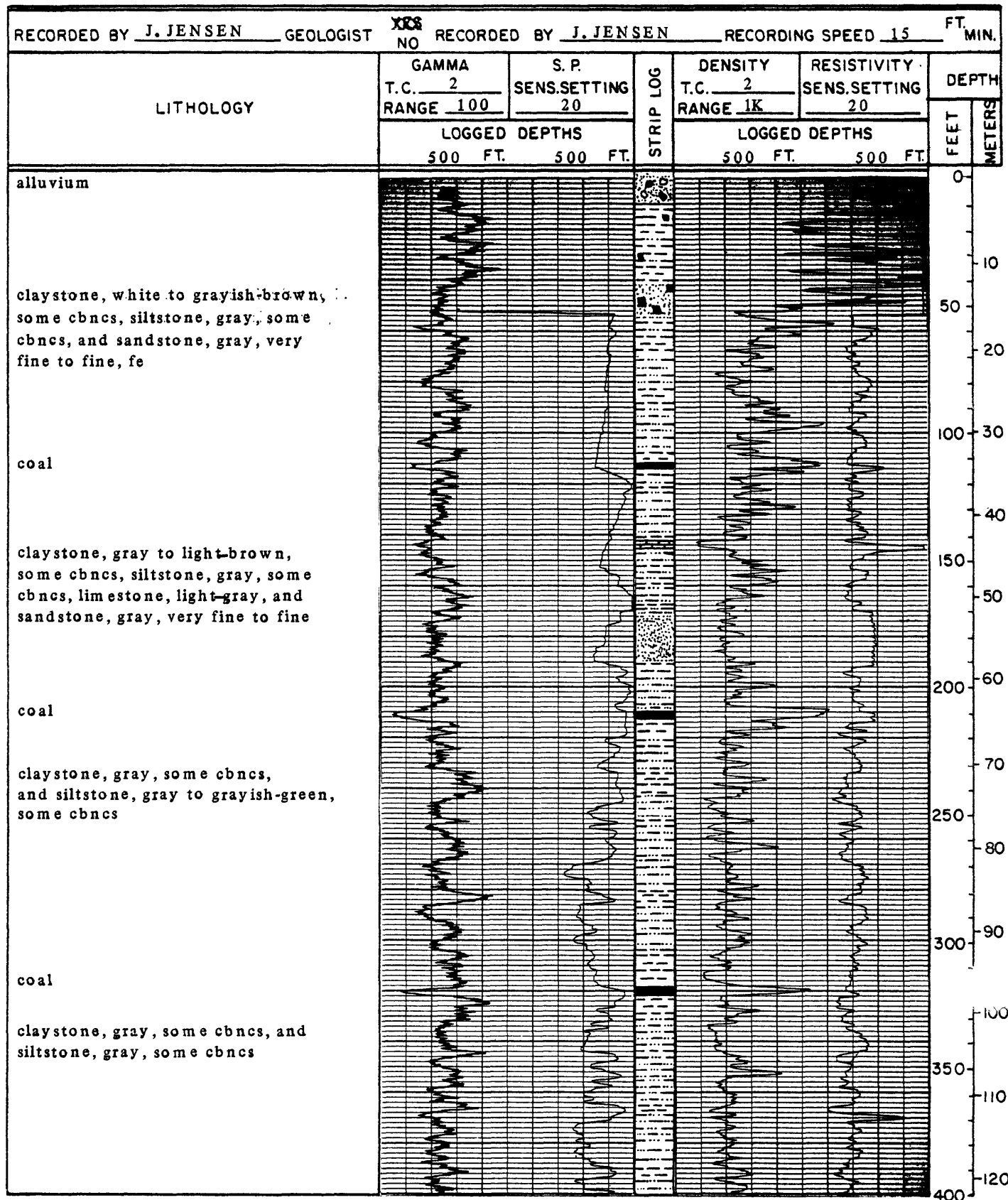


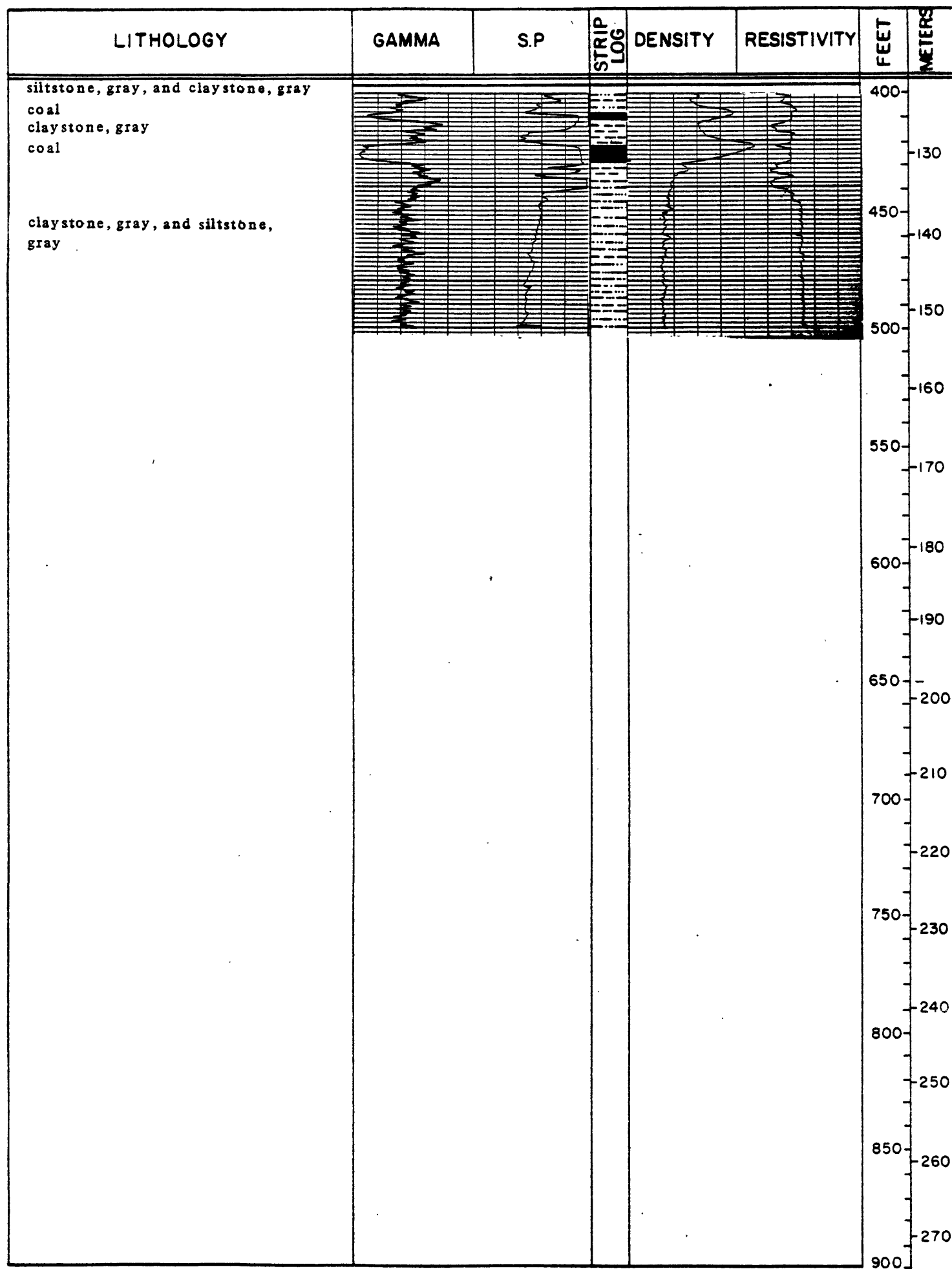
Hole no: US-7825 Map: Crane NW Date: 5/6/78 State: Montana County: Richland
 Elev: 2525 ft Location: T. 22 N, R. 56 E, Sec. 12, Tract DAAA Drilled depth: 520 ft
 Measured: 2520 ft ^{KMX}FSL, 175 ft ^{FEL}KMX, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



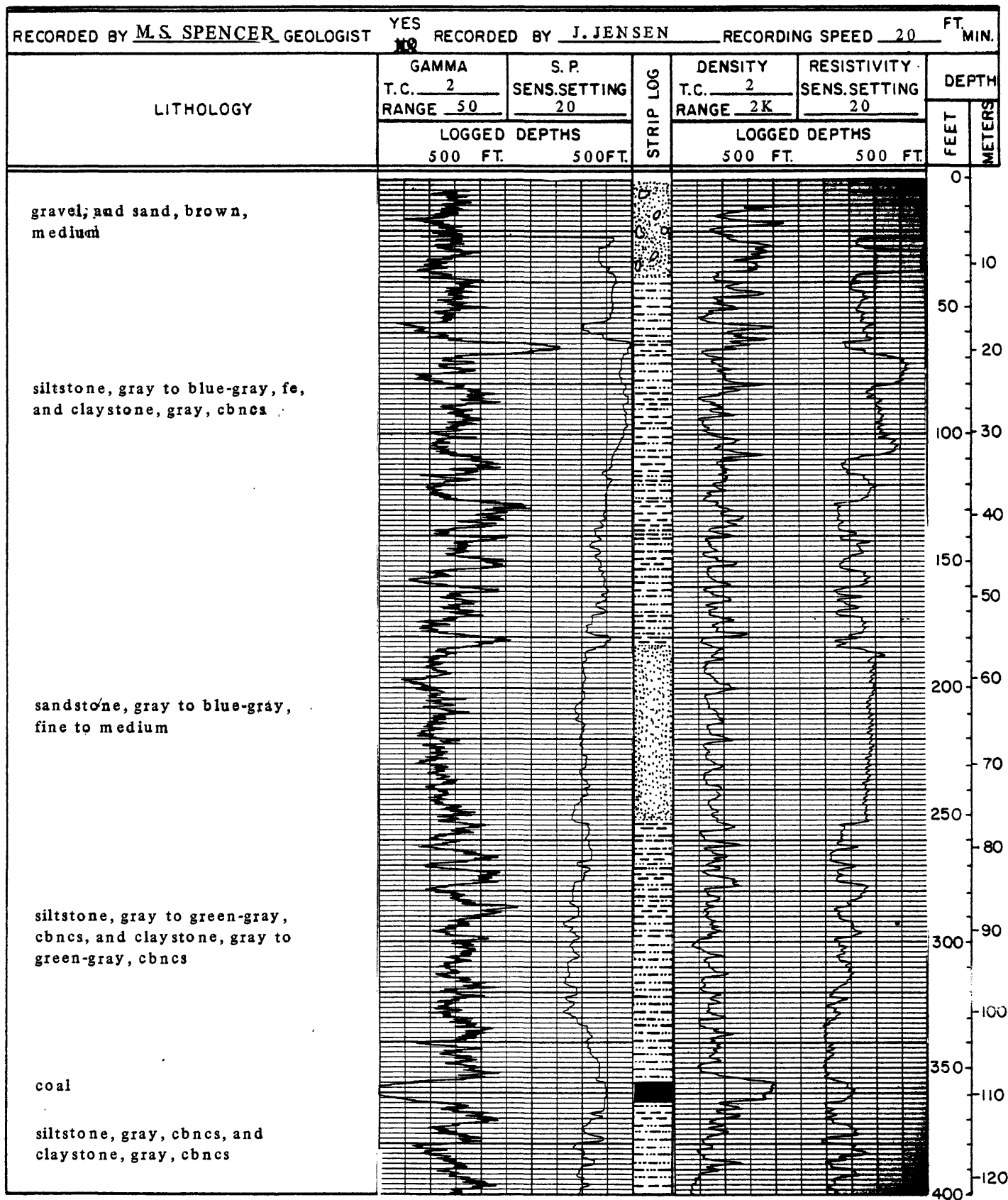


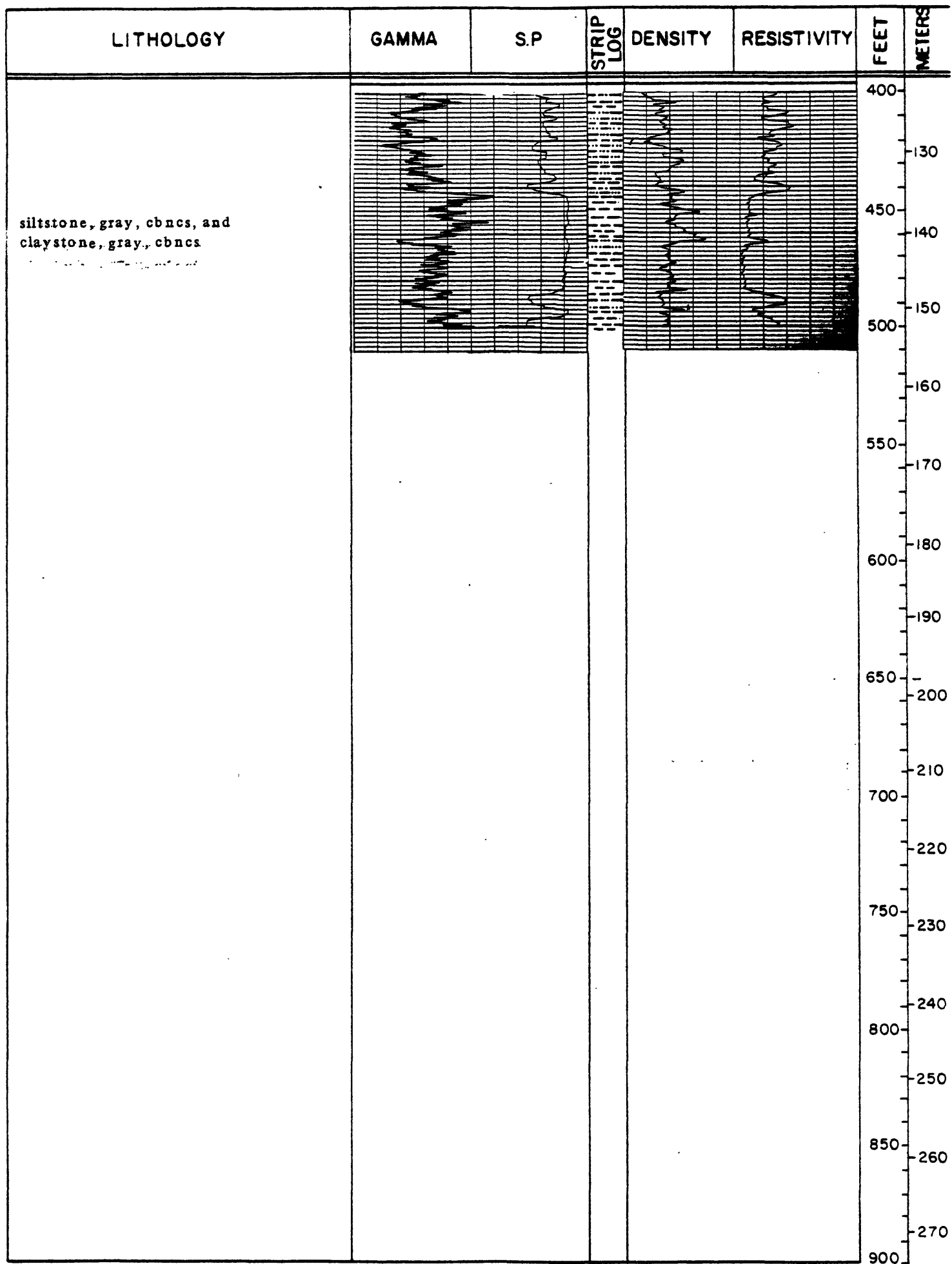
Hole no: US-7826 Map: Brorson Date: 5/9/78 State: Montana County: Richland
 Elev: 2382 ft Location: T. 24 ^N, R. 58 ^E, Sec. 33, Tract CCCC Drilled depth: 500 ft
 Measured: 72 ft ^{FMK} FSL, 140 ft ^{FMK} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



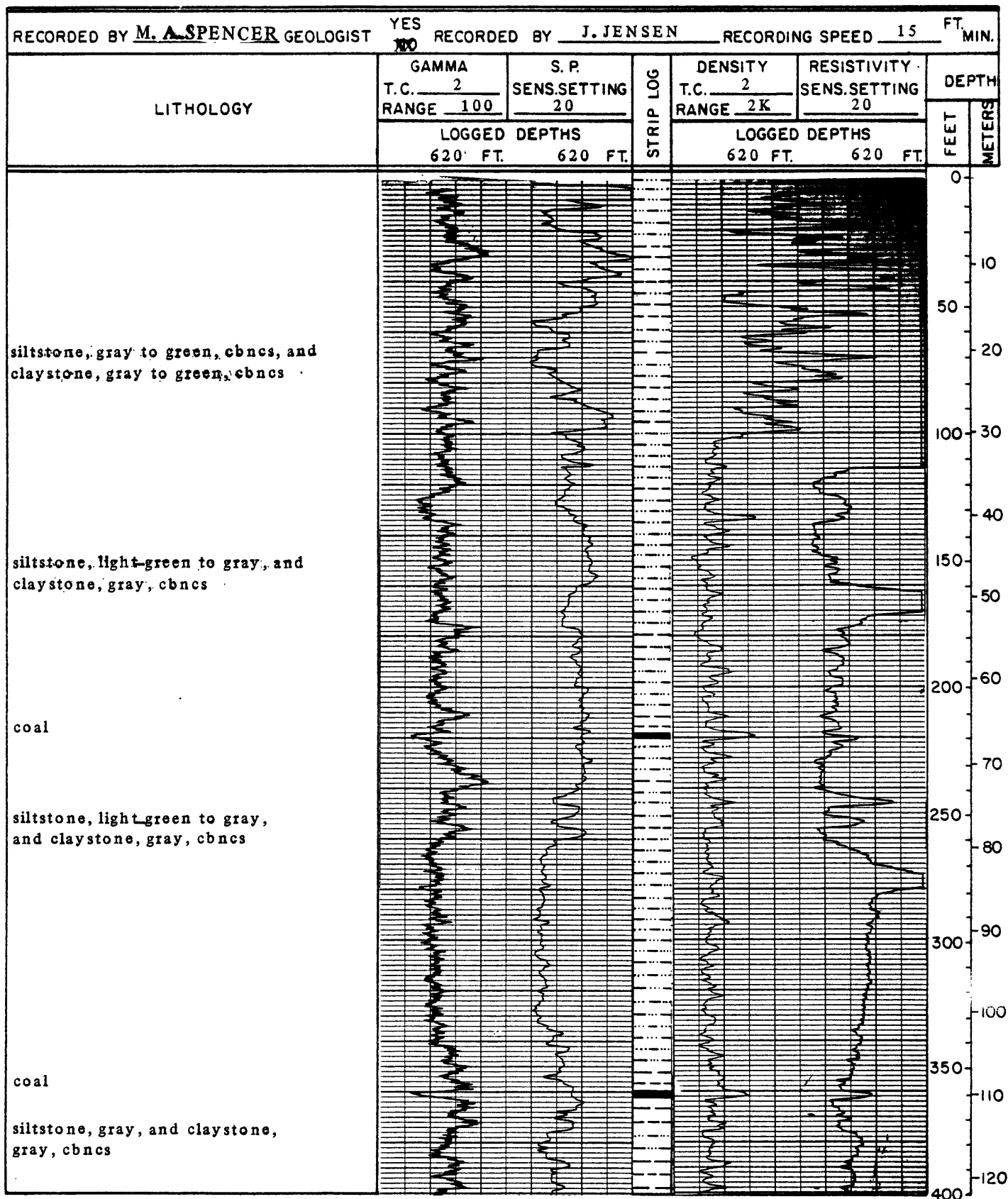


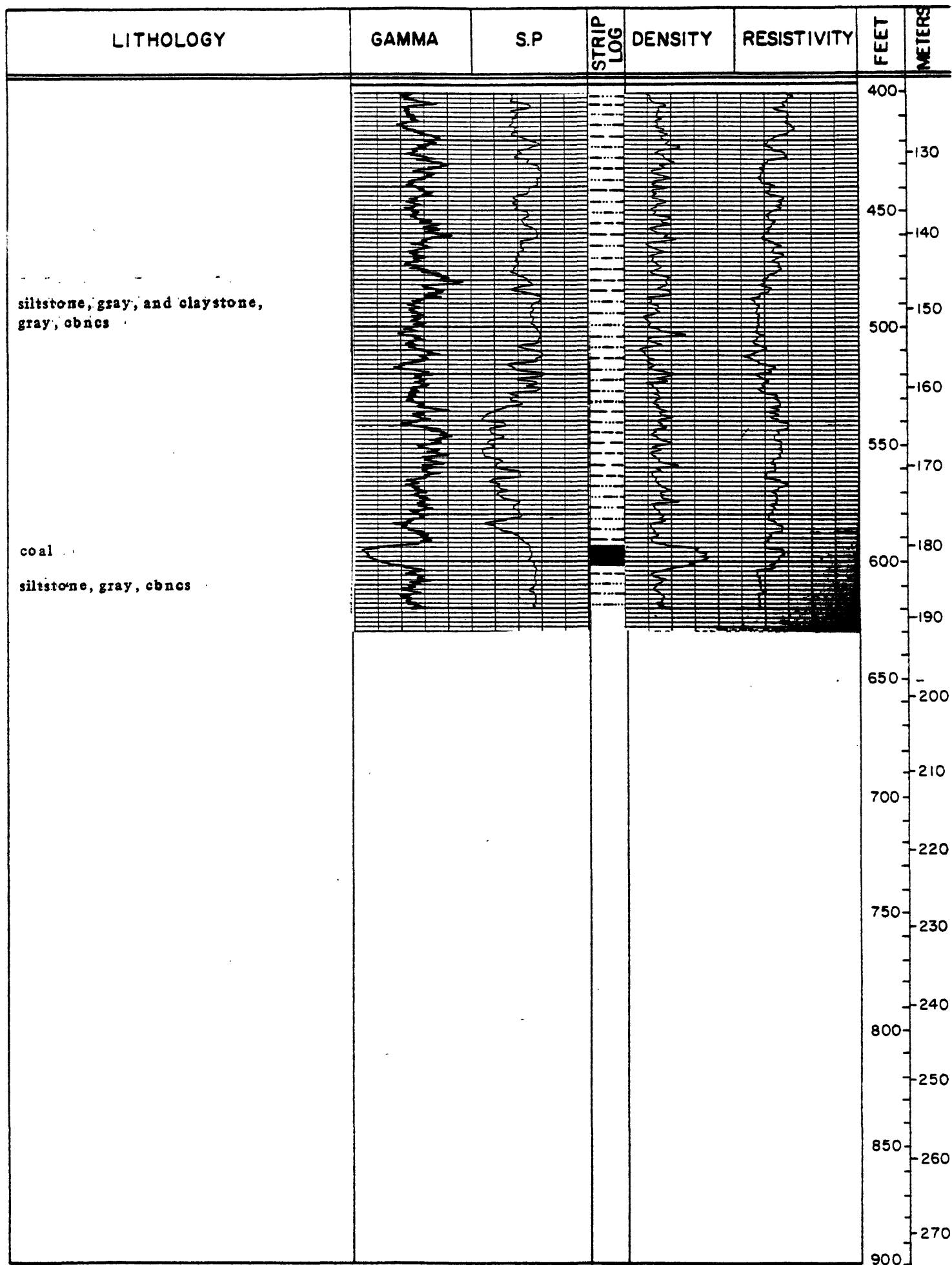
Hole no: US-7827 Map: Crane NE Date: 5/9/78 State: Montana County: Richland
 Elev: 2225 ft Location: T. 23 ^N, R. 58 ^E, Sec. 22, Tract CCCB Drilled depth: 500 ft
 Measured: 650 ft ^{ROCK} FSL, 175 ft ^{ROCK} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



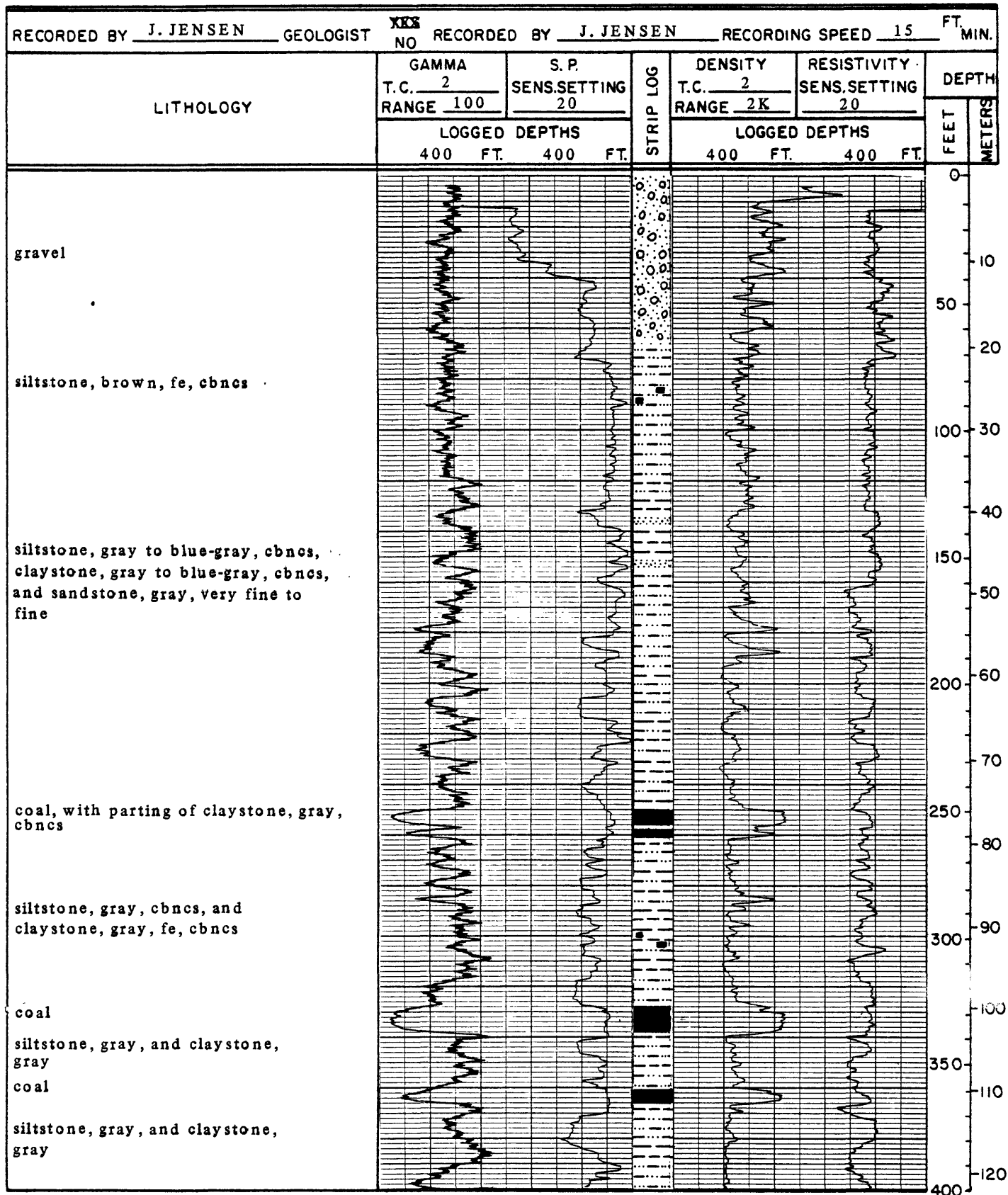


Hole no: US-7828 Map: Crane NW Date: 5/14/78 State: Montana County: Richland
 Elev: 2550 ft Location: T. 23 ^N, R. 57 ^E, Sec. 34, Tract AAAD Drilled depth: 620 ft
 Measured: 375 ft ^{FNL} ~~RSK~~, 325 ft ^{FEL} ~~RSK~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



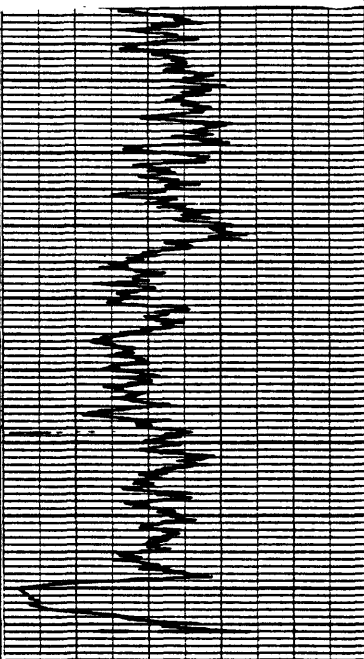
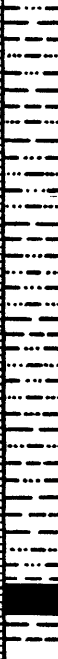
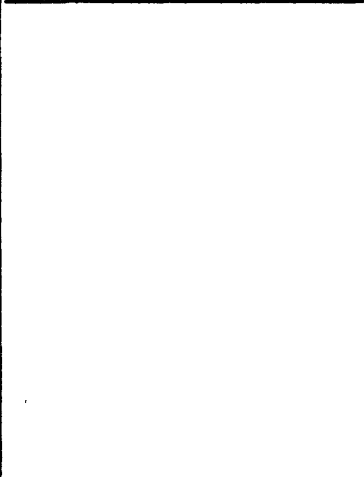







Hole no: US-7829 Map: Dore Date: 5/9/78 State: Montana County: Richland
 Elev: 2081 ft Location: T. 25 ^N, R. 59 ^E, Sec. 10, Tract CCCB Drilled depth: 400 ft
 Measured: 600 ft ^{FSL}, 20 ft ^{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

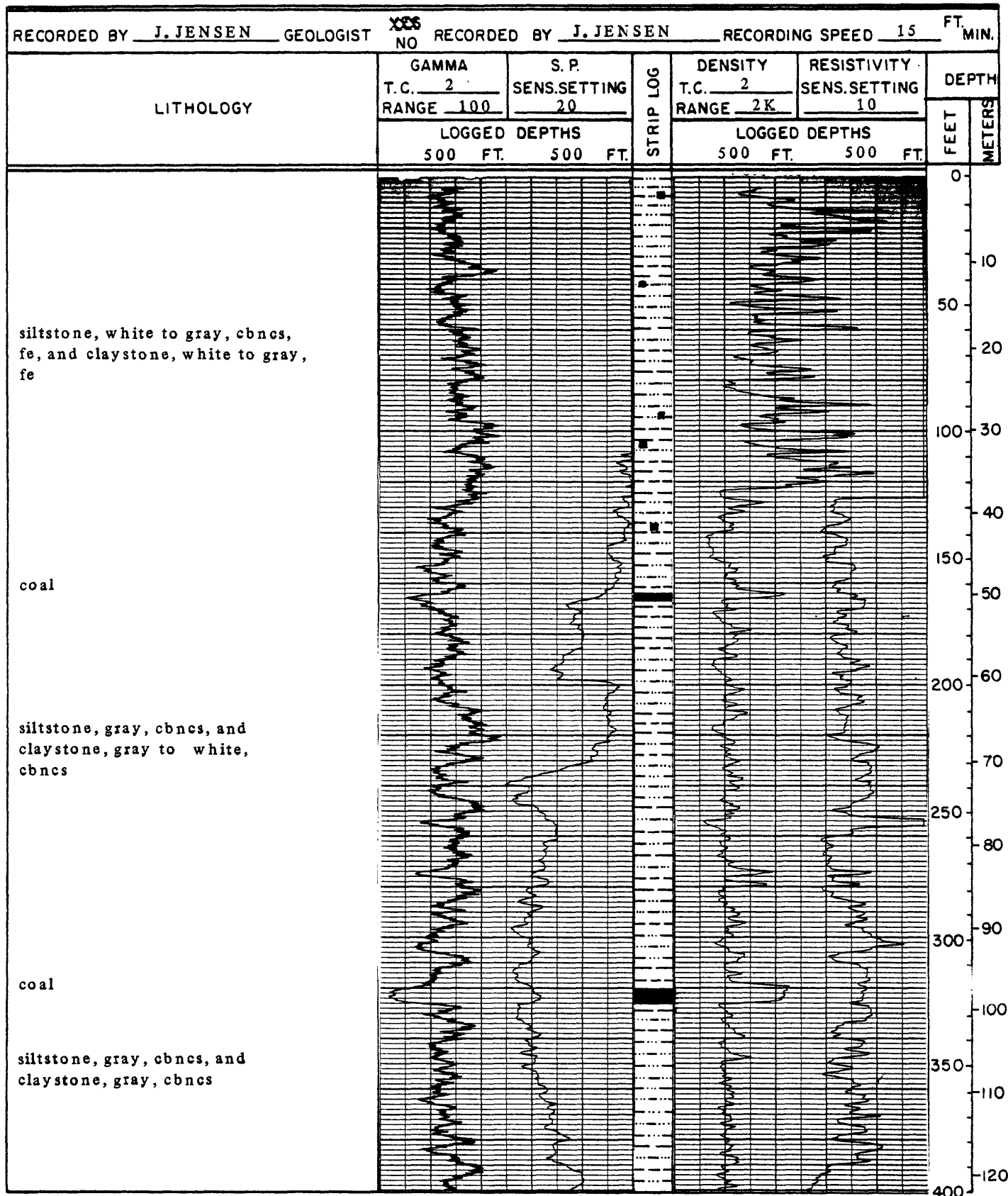


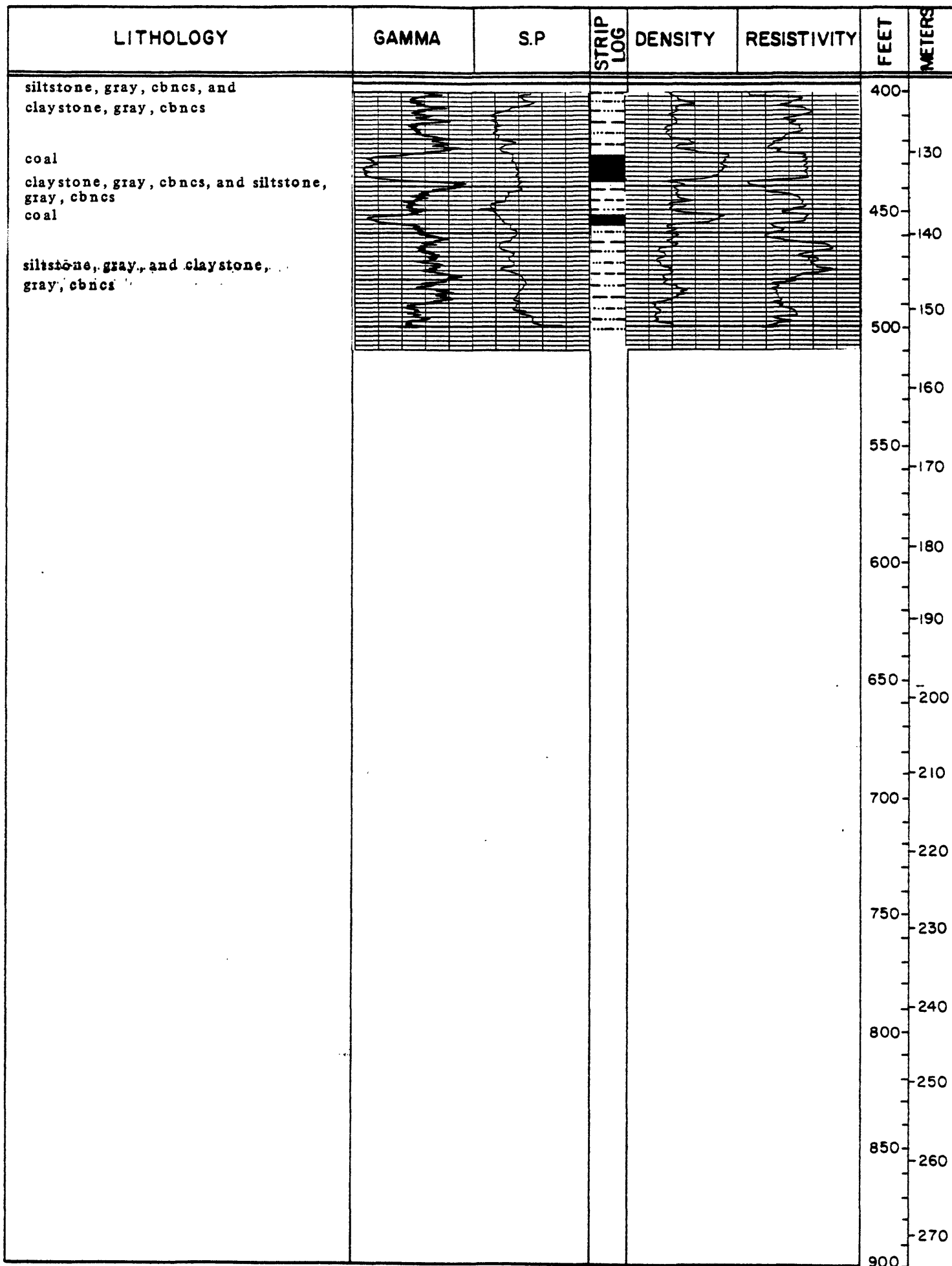
Hole no: US-7830 Map: Crane NE Date: 5/15/78 State: Montana County: Richland
 Elev: 2289 ft Location: T. 22 N, R. 58 W, Sec. 6, Tract DDDA Drilled depth: 580 ft
 Measured: 575 ft ^{ROCK} FSL, 195 ft ^{FEL} FSL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Logged through pipe.

RECORDED BY <u>M. A. SPENCER</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>15</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>50</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING	DEPTH FEET METERS
	LOGGED DEPTHS 572 FT. FT.			LOGGED DEPTHS 78 FT. FT.		
gravel, sand, brown, medium, and clay brown						0
sandstone, yellow-brown to gray, very fine to medium						10
claystone, blue-gray, cbncs						50
coal						100
						150
claystone, gray to blue-gray, cbncs, and siltstone, gray to blue-gray, cbncs						200
						250
coal						300
siltstone, gray to brown, cbncs, and claystone, white to gray, cbncs						350
						400
coal						450
siltstone, gray, and claystone, gray, cbncs						500

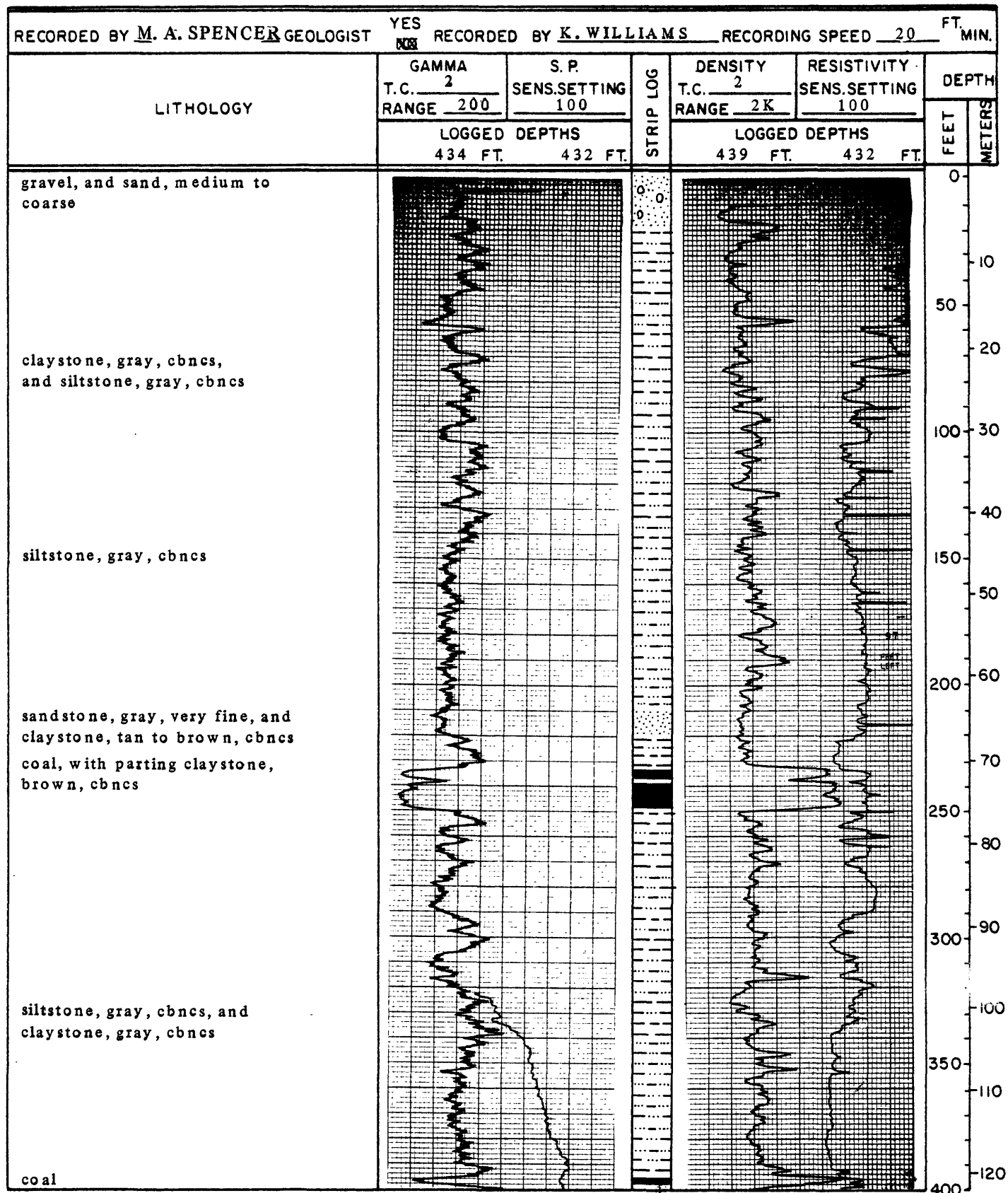
LITHOLOGY	GAMMA	S.P	STRIP LOG	DENSITY	RESISTIVITY	FEET	METERS
siltstone, gray, and claystone, gray						400	
						130	
coal						450	
						140	
claystone, gray, cbncc						150	
						500	
						160	
						550	
						170	
						600	
						180	
						190	
						650	
						200	
						210	
						700	
						220	
						750	
						230	
						800	
						240	
						850	
						250	
						260	
						270	
						900	

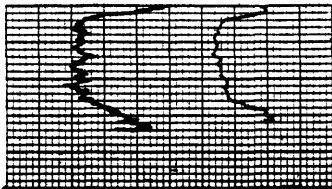
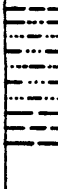
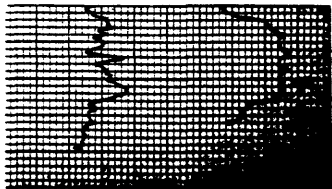
Hole no: US-7831 Map: Dore Date: 5/16/78 State: Montana County: Richland
 Elev: 2119 ft Location: T. 26 ^N_S, R. 59 ^E_W, Sec. 20, Tract DCDC Drilled depth: 500 ft
 Measured: 63 ft ^{FSL}~~XXX~~, 1930 ft ^{FEL}~~XXX~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____





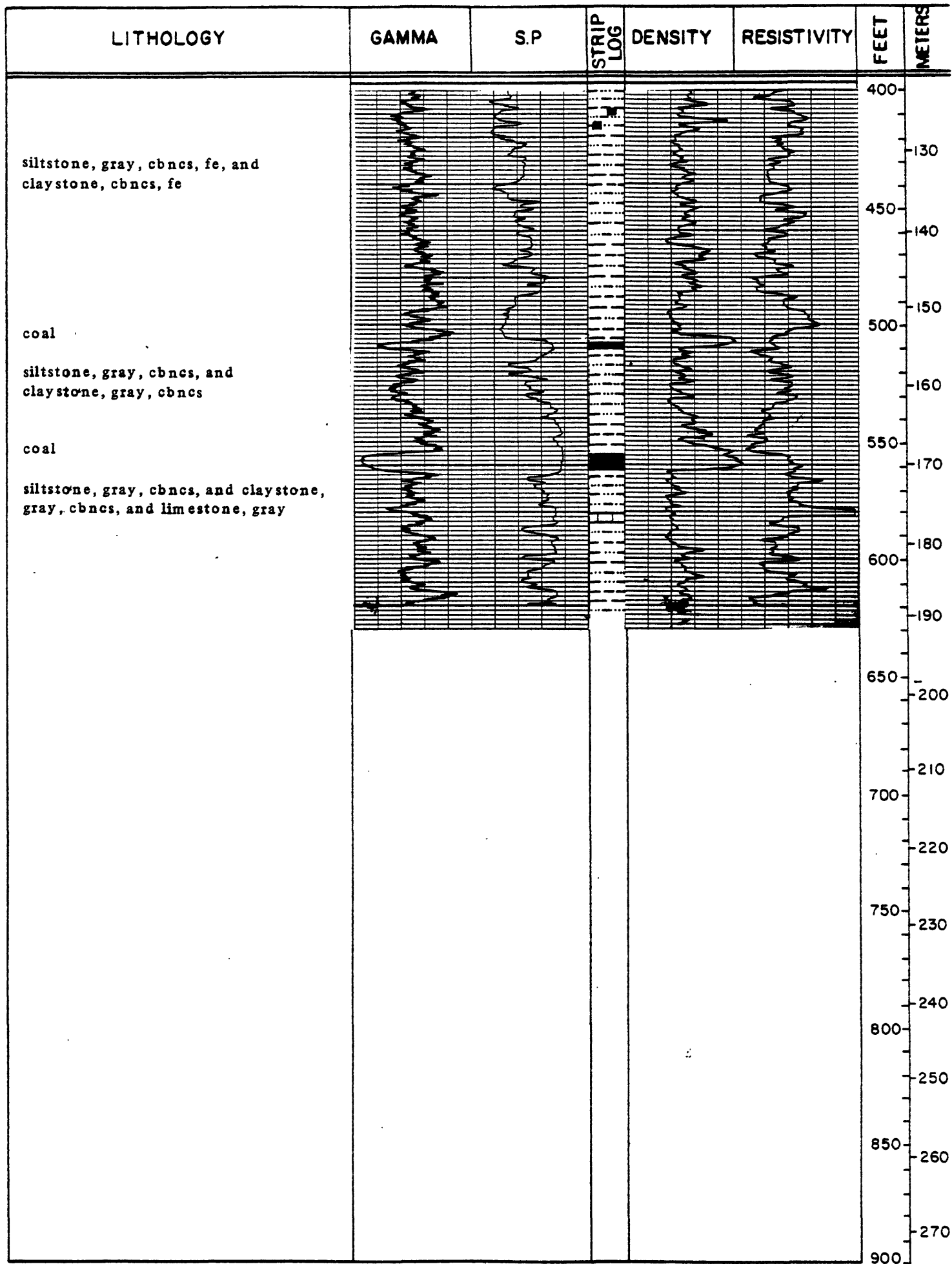
Hole no: US-7832 Map: Crane NE. Date: 5/16/78 State: Montana County: Richland
 Elev: 2130 ft Location: T. 22 ^N, R. 58 ^E, Sec. 22, Tract DCBB Drilled depth: 440 ft
 Measured: 1100 ft ^{POCK} FSL, 2725 ft ^{POCK} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



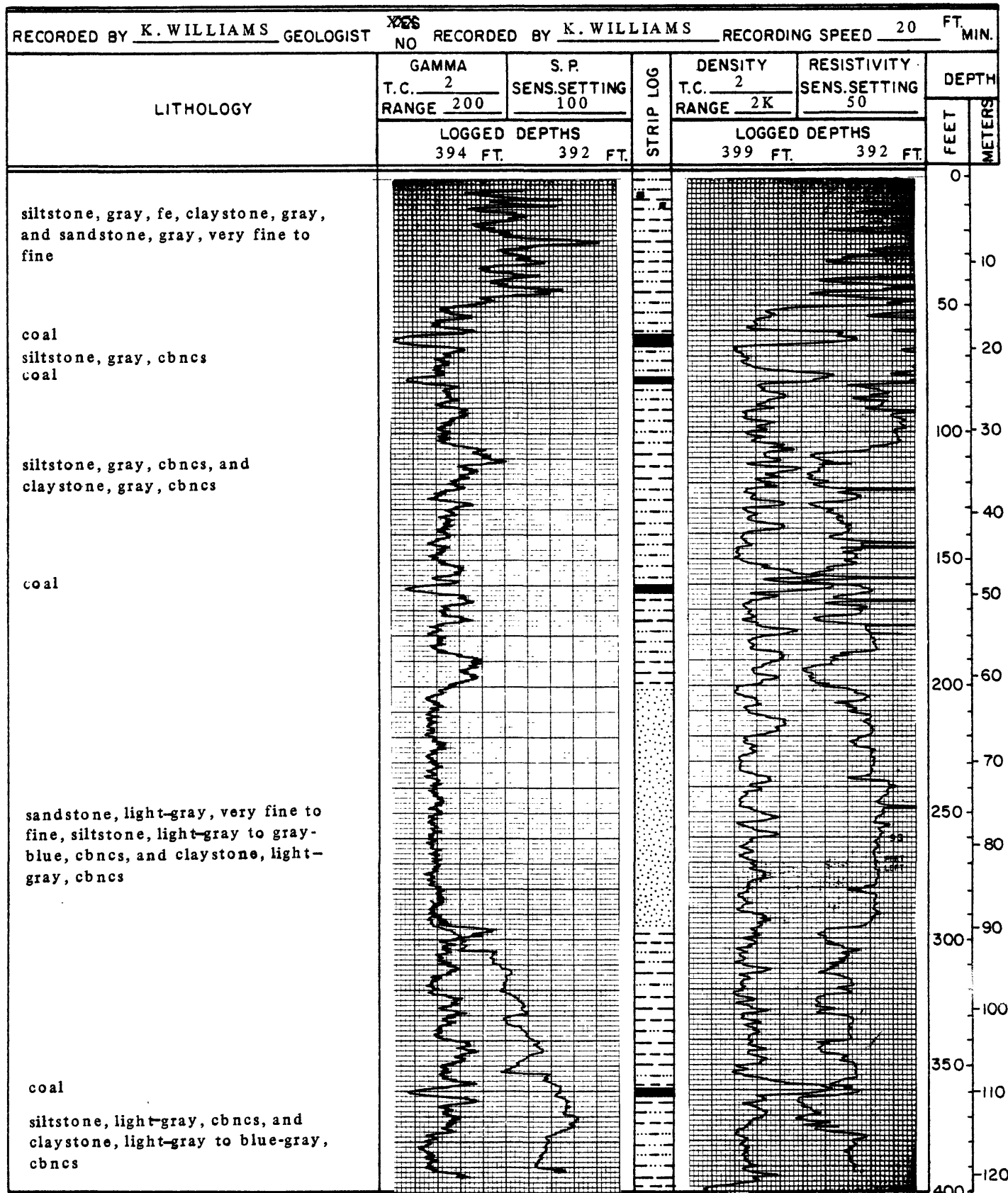
LITHOLOGY	GAMMA	S.P	STRIP LOG	DENSITY	RESISTIVITY	FEET	METERS
siltstone, gray, cbncs, and claystone, gray, cbncs						400	
						130	
						450	
						140	
						150	
						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	
						230	
						240	
						800	
						250	
						850	
						260	
						270	
						900	

Hole no: US-7833 Map: Bainville SE Date: 5/17/78 State: Montana County: Roosevelt
Elev: 2274 ft Location: T. 27 ^N, R. 59 ^E, Sec. 9, Tract CCDA Drilled depth: 620 ft
Measured: 620 ft FSL, 1247 ft FWL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
Remarks: _____

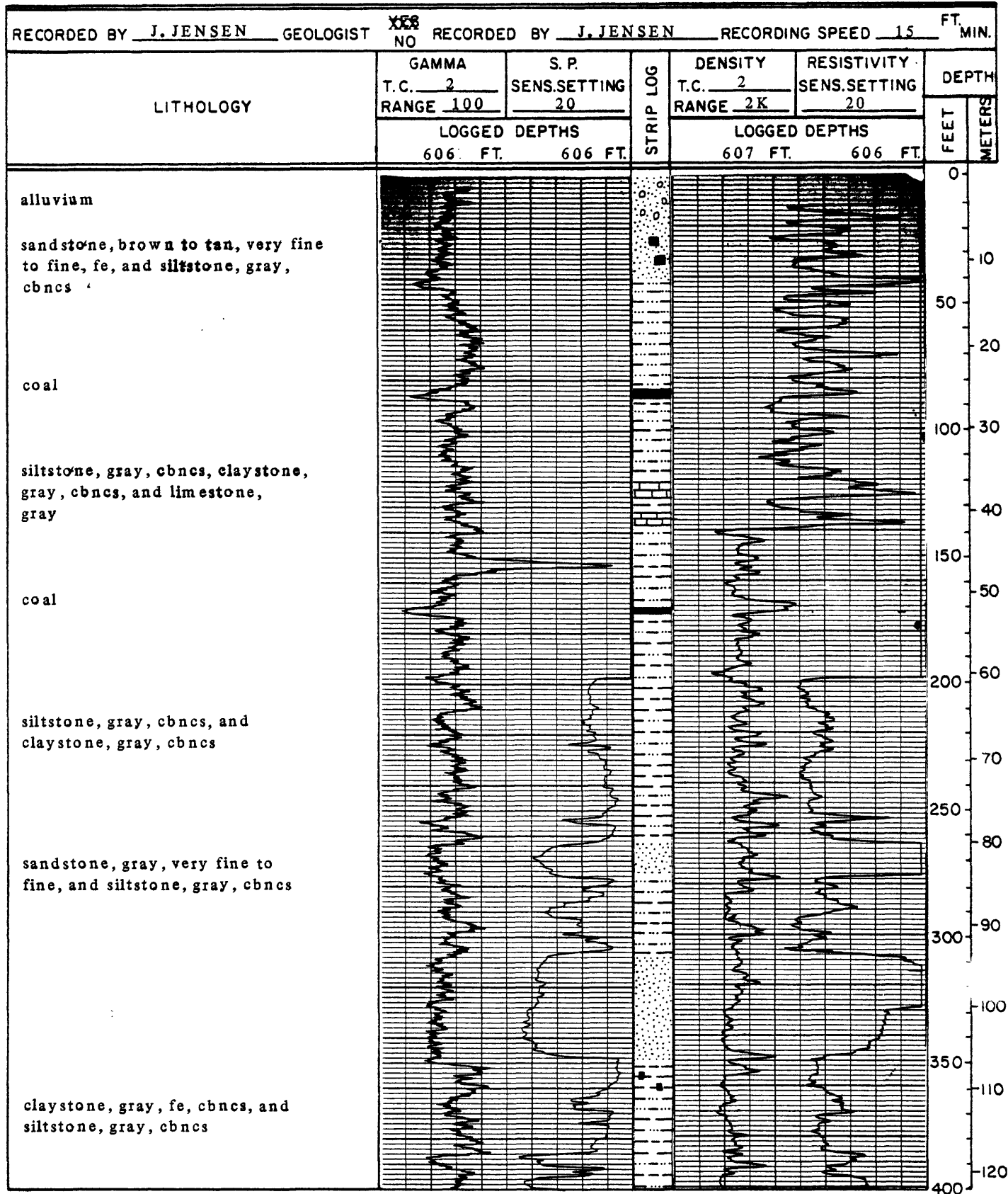
RECORDED BY <u>J. JENSEN</u> GEOLOGIST		XCS NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>15</u>		FT. MIN.			
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>		S. P. SENS. SETTING <u>20</u>		STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>		RESISTIVITY SENS. SETTING <u>10</u>		DEPTH	
	LOGGED DEPTHS 620 FT.		LOGGED DEPTHS 620 FT.			LOGGED DEPTHS 620 FT.		LOGGED DEPTHS 620 FT.		FEET	METERS
	alluvium										0
sandstone, brown, very fine to fine, fe, cbncs, siltstone, brown to gray, and claystone, gray, fe										10	
										50	
										20	
										100	30
coal										40	
										150	
										50	
										200	60
siltstone, gray, cbncs, and claystone, gray, cbncs										70	
										250	
										80	
										300	90
										100	
										350	
sandstone, blue-gray, very fine to fine, cbncs, and claystone, gray, cbncs										110	
siltstone, gray, cbncs, fe, and claystone, gray, cbncs, fe										120	

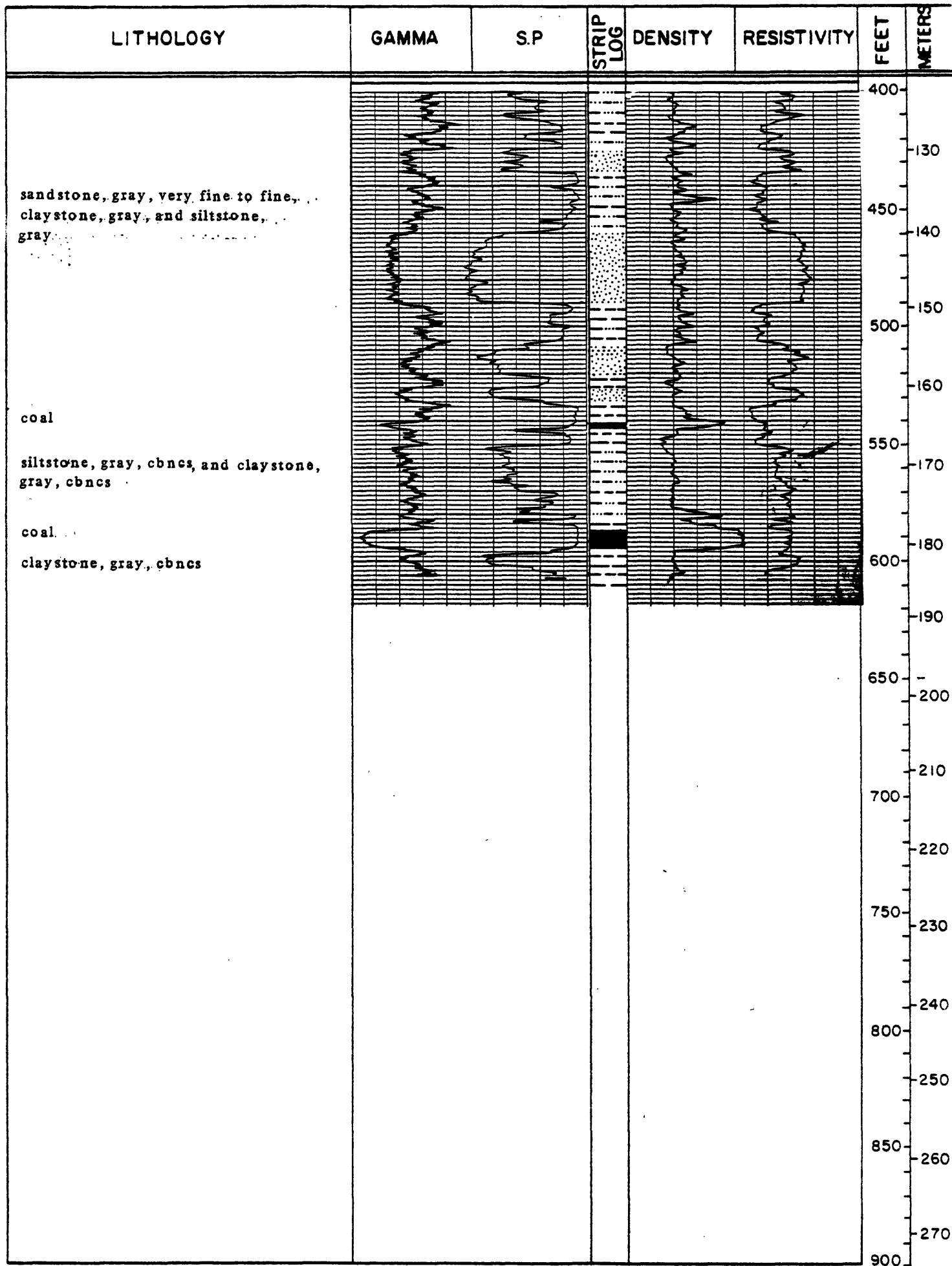


Hole no: US-7834 Map: Lambert Date: 5/16/78 State: Montana County: Richland
 Elev: 2518 ft Location: T. 22 N. R. 55 E. Sec. 36 Tract BBCB Drilled depth: 400 ft
 Measured: 700 ft FNL, 140 ft KKK, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



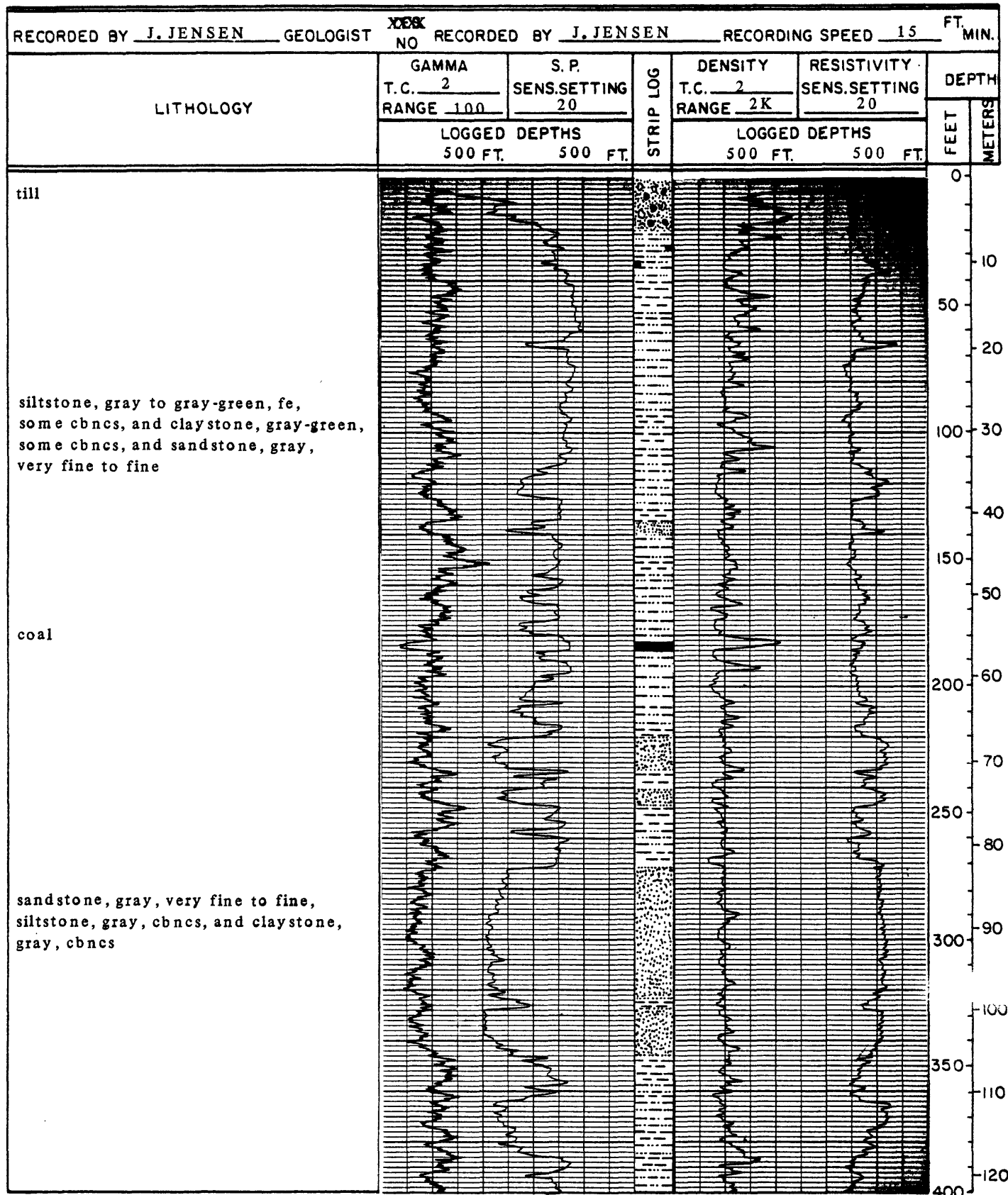
Hole no: US-7835 Map: Bainville SE Date: 5/17/78 State: Montana County: Roosevelt
 Elev: 2263 ft Location: T. 27 N. R. 59 E. Sec. 27, Tract CAAC Drilled depth: 620 ft
 Measured: 2105 ft FSL, 2047 ft FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

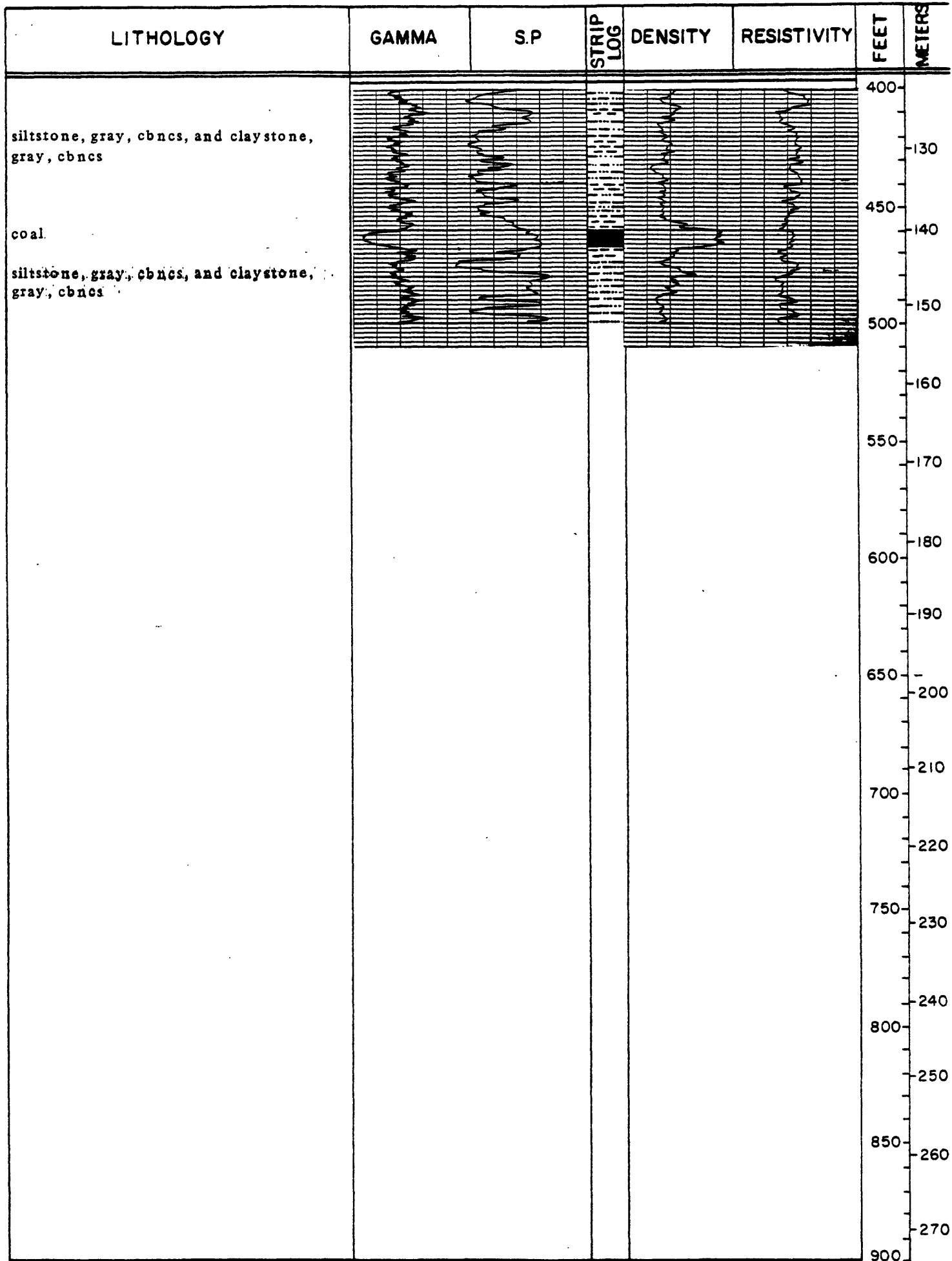




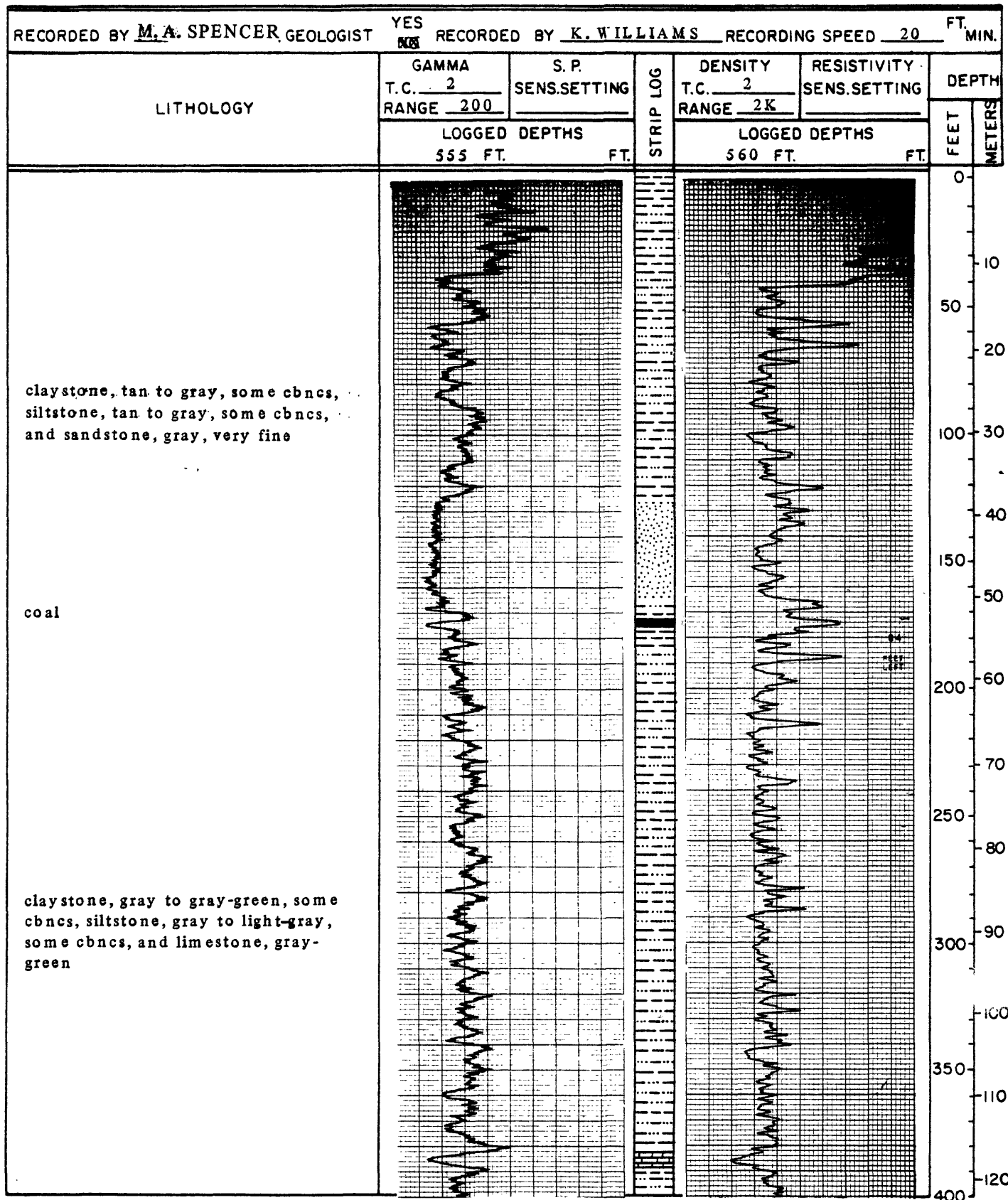
RECORDED BY K. WILLIAMS GEOLOGIST		XXX NO		RECORDED BY K. WILLIAMS		RECORDING SPEED 20		FT. MIN.	
LITHOLOGY	GAMMA T.C. 2 RANGE 200	S. P. SENS.SETTING	STRIP LOG	DENSITY T.C. 2 RANGE 2K	RESISTIVITY SENS.SETTING	DEPTH			
	LOGGED DEPTHS 395 FT. FT.			LOGGED DEPTHS 400 FT. FT.		FEET	METERS		
claystone, gray to blue-gray, cbncls, fe, and siltstone, brown, fe, cbncls						0			
						10			
claystone, gray to green-gray, cbncls, siltstone, tan, limestone, gray, and sandstone, dark-gray, very fine						50			
						60			
						70			
						80			
						90			
						100			
						110			
						120			
						130			
						140			
						150			
						160			
						170			
						180			
						190			
						200			

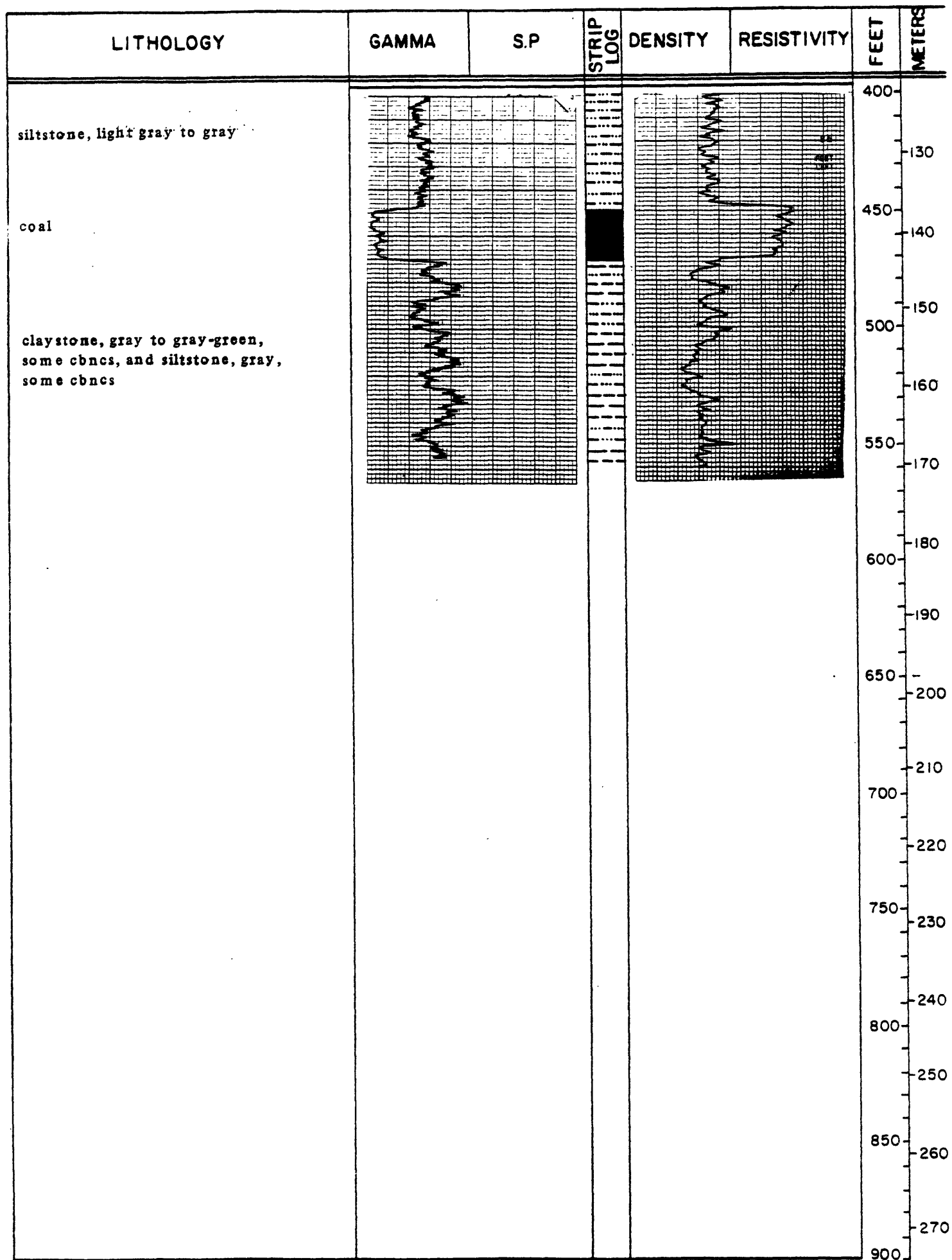
Hole no: US-7837 Map: Red Bank Creek Date: 5/18/78 State: Montana County: Roosevelt
 Elev: 2288 ft Location: T. 28 N., R. 59 E., Sec. 14, Tract AACC Drilled depth: 500 ft
 Measured: 1213 ft ^{FNL} ~~RSX~~, 1195 ft ^{FEL} ~~RSX~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Logged gamma through stems.



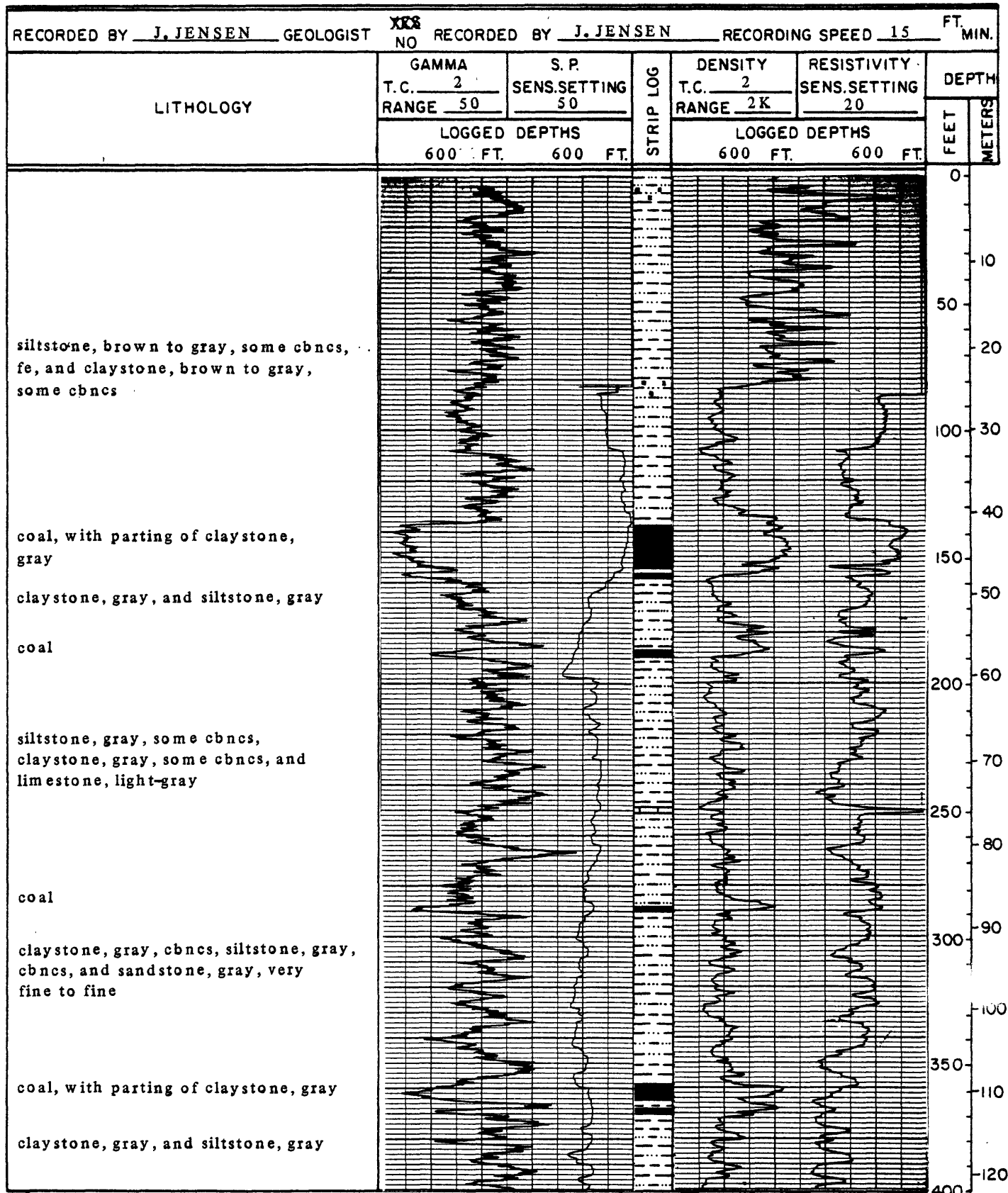


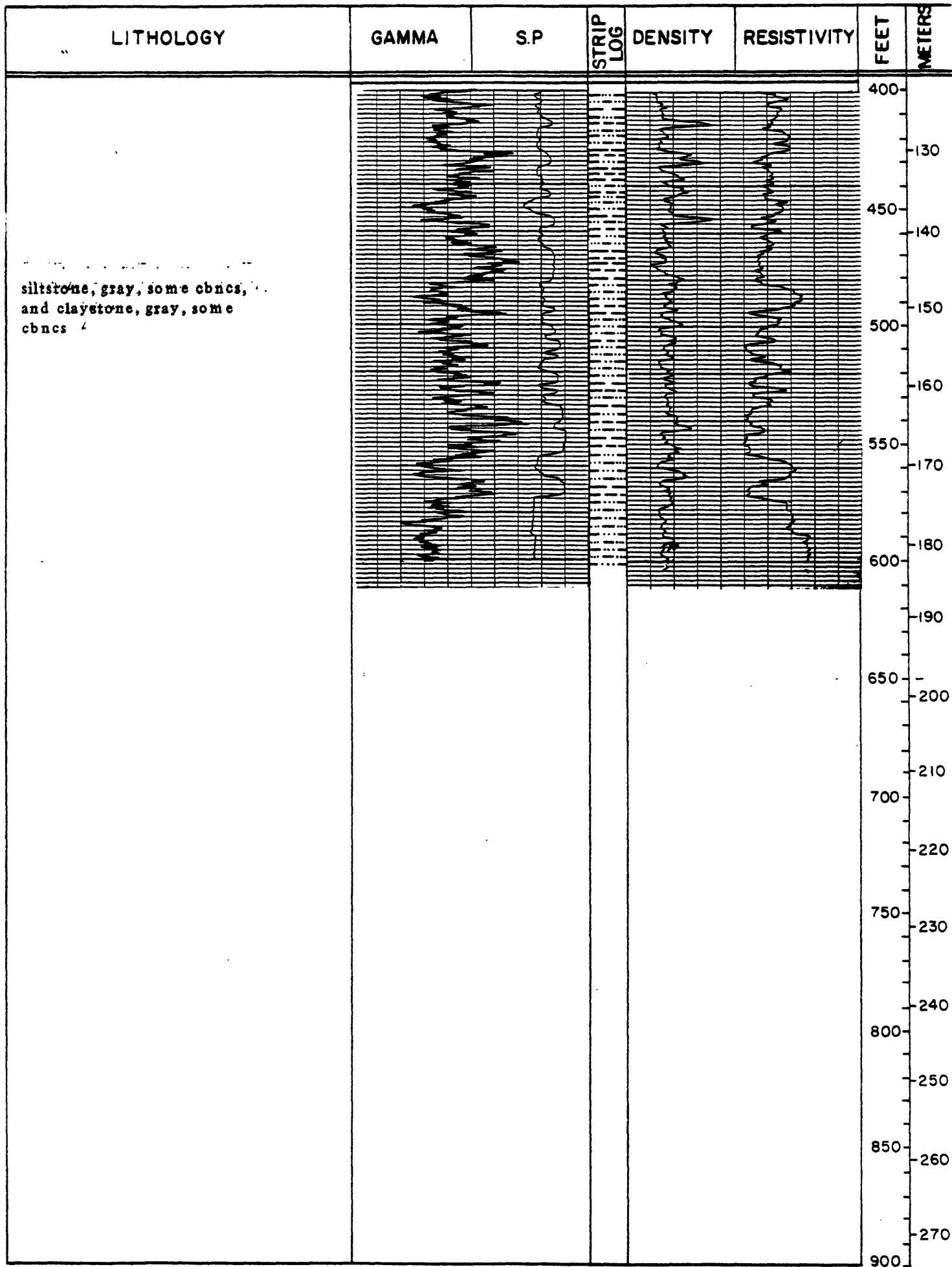
Hole no: US-7838 Map: Sidney SE Date: 5/18/78 State: Montana County: Richland
 Elev: 2298 ft Location: T. 21 ^N, R. 59 ^E, Sec. 12, Tract BCDB Drilled depth: 560 ft
 Measured: 2050 ft ^{FNL} ~~850~~ ^{FWL} ~~850~~ ^{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: No SP - ER logs, trouble with probe.





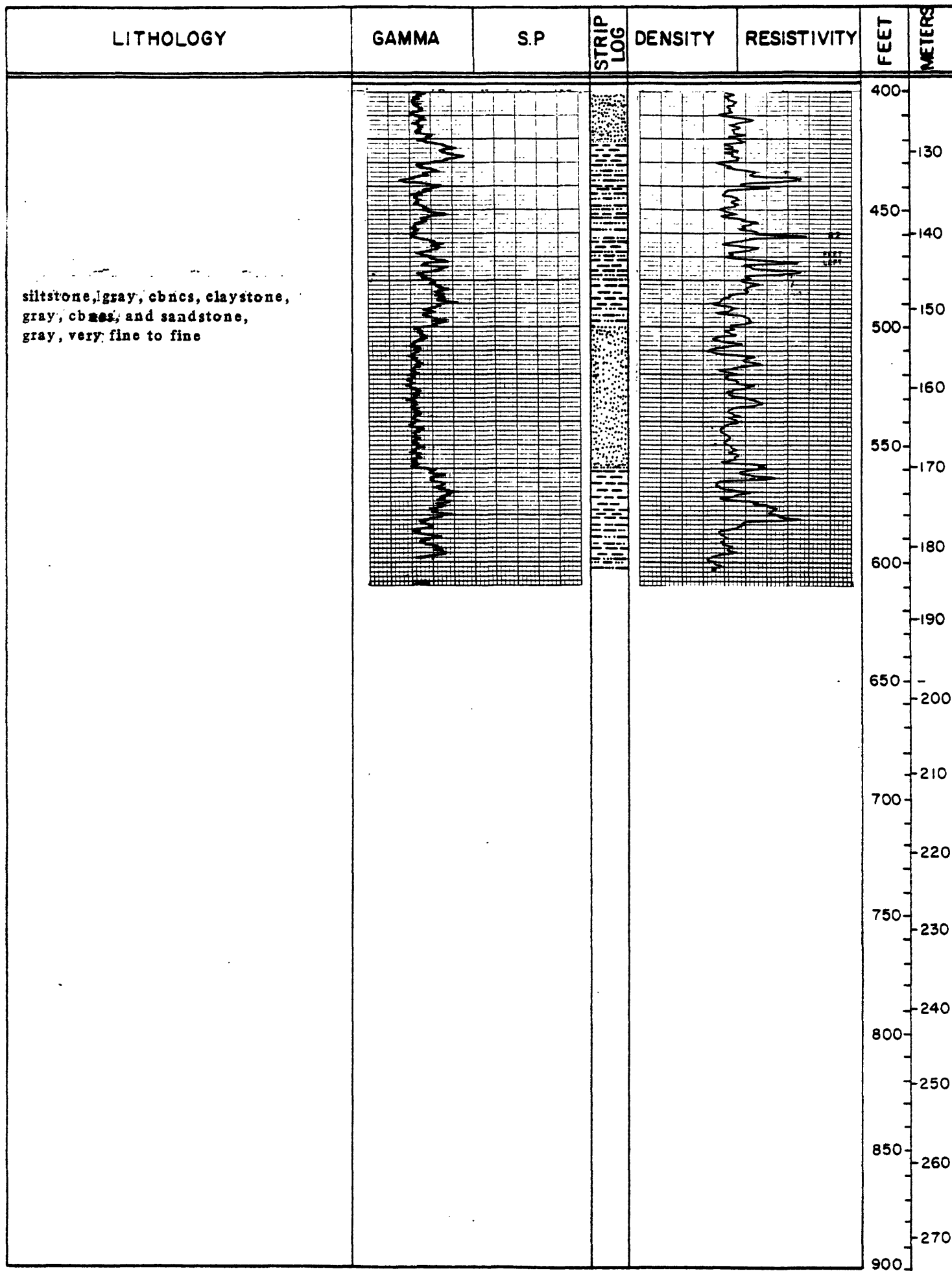
Hole no: US-7839 Map: Clay Butte Date: 5/20/78 State: Montana County: Dawson
 Elev: 2825 ft Location: T. 20 N, R. 53 E, Sec. 4, Tract ABAB Drilled depth: 600 ft
 Measured: 60 ft ^{FNL}, 1760 ft ^{FEL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



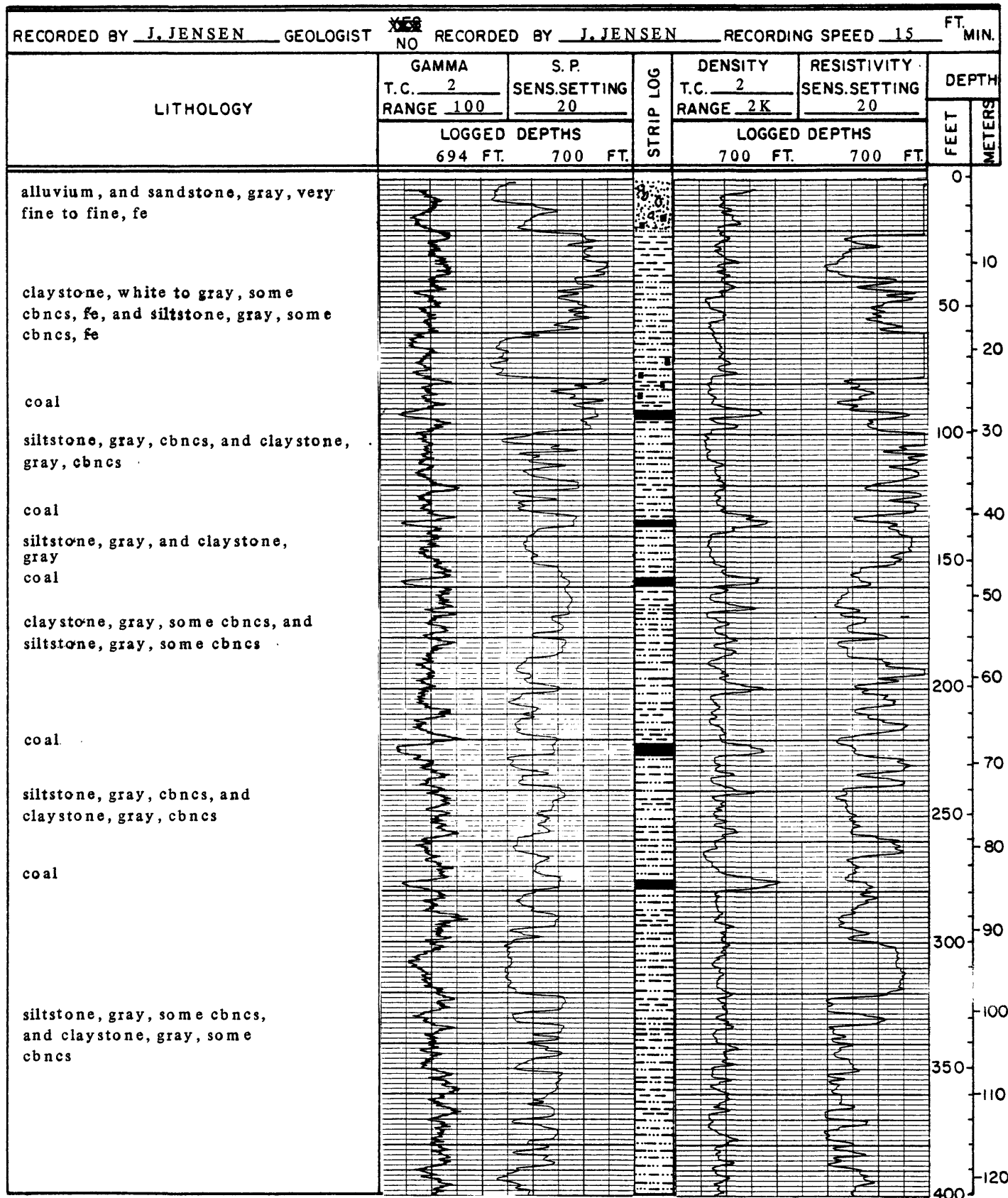


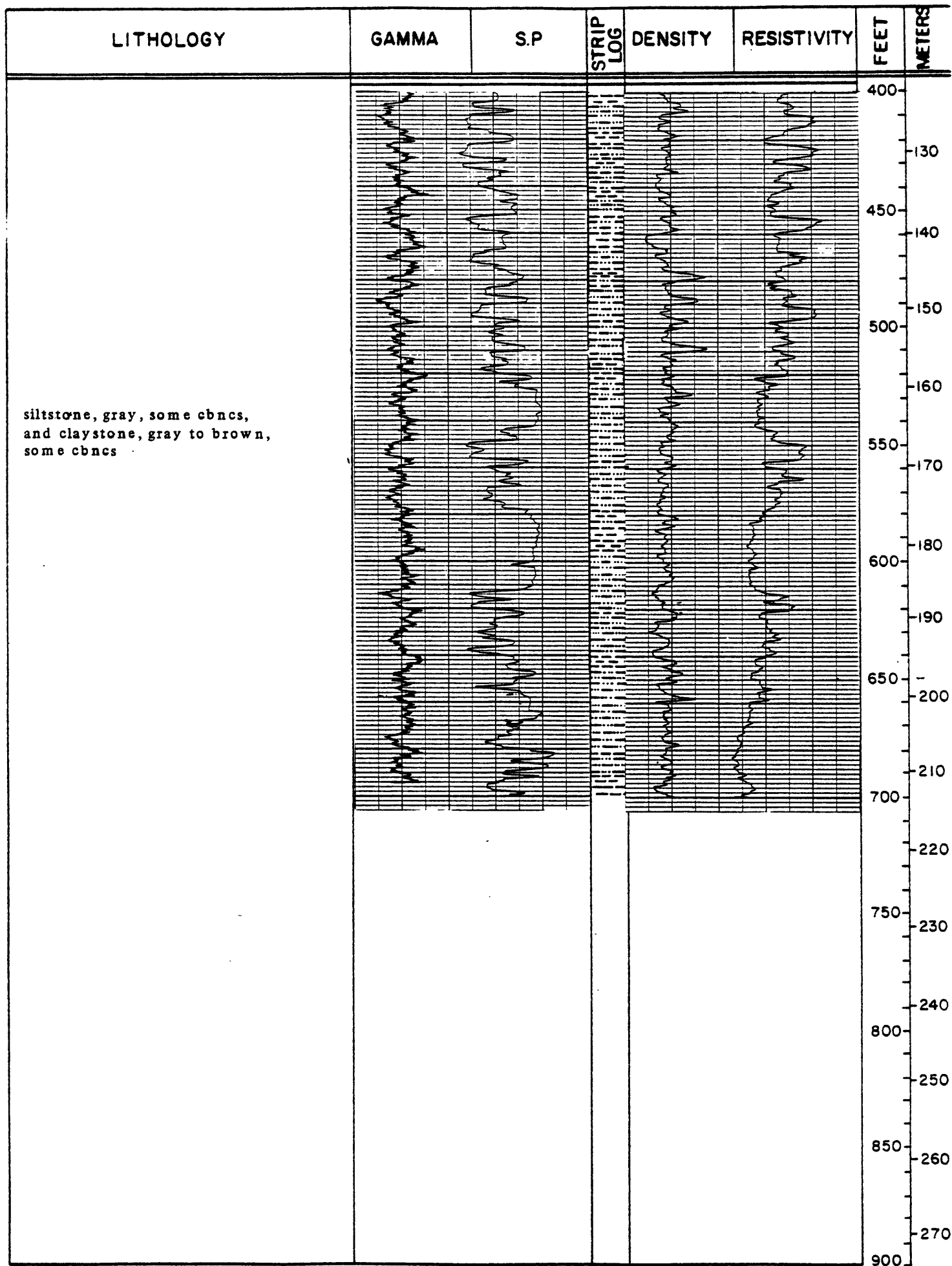
Hole no: US-7840 Map: Bloomfield Date: 5/19/78 State: Montana County: Dawson
 Elev: 2751 ft Location: T. 20 ^N, R. 53 ^E, Sec. 32, Tract ACCD Drilled depth: 605 ft
 Measured: 2400 ft ^{FNL} 2050 ft ^{FEL} 2050 ft ^{FEL} Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Moved 100-ft south to avoid clinker - no SP or ER - problems with probe.

RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		XES NO		RECORDED BY <u>K. WILLIAMS</u>		RECORDING SPEED <u>20</u> FT. MIN.	
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING	DEPTH	
	LOGGED DEPTHS 600 FT. FT.			LOGGED DEPTHS 605 FT. FT.		FEET	METERS
siltstone, gray to light-brown, fe, cbncs, and claystone, gray to light-brown, fe						0	
coal claystone, gray, cbncs, and siltstone, gray coal						10	
siltstone, gray, fe, and claystone, gray, fe						50	
coal claystone, gray to brown, cbncs coal						20	
claystone, light-gray, cbncs, and siltstone, gray, cbncs						100	
coal						30	
siltstone, gray, cbncs, and claystone, gray, cbncs						150	
coal						50	
claystone, light-gray, cbncs, and siltstone, gray, cbncs						200	
coal						60	
siltstone, gray, cbncs, and claystone, gray, cbncs						250	
coal						70	
claystone, light-gray, cbncs, and siltstone, gray, cbncs						300	
coal						80	
siltstone, gray, cbncs, and claystone, gray, cbncs						350	
coal						90	
siltstone, gray, cbncs, claystone, gray, cbncs, and sandstone, gray, very fine to fine						400	
						100	
						110	
						120	

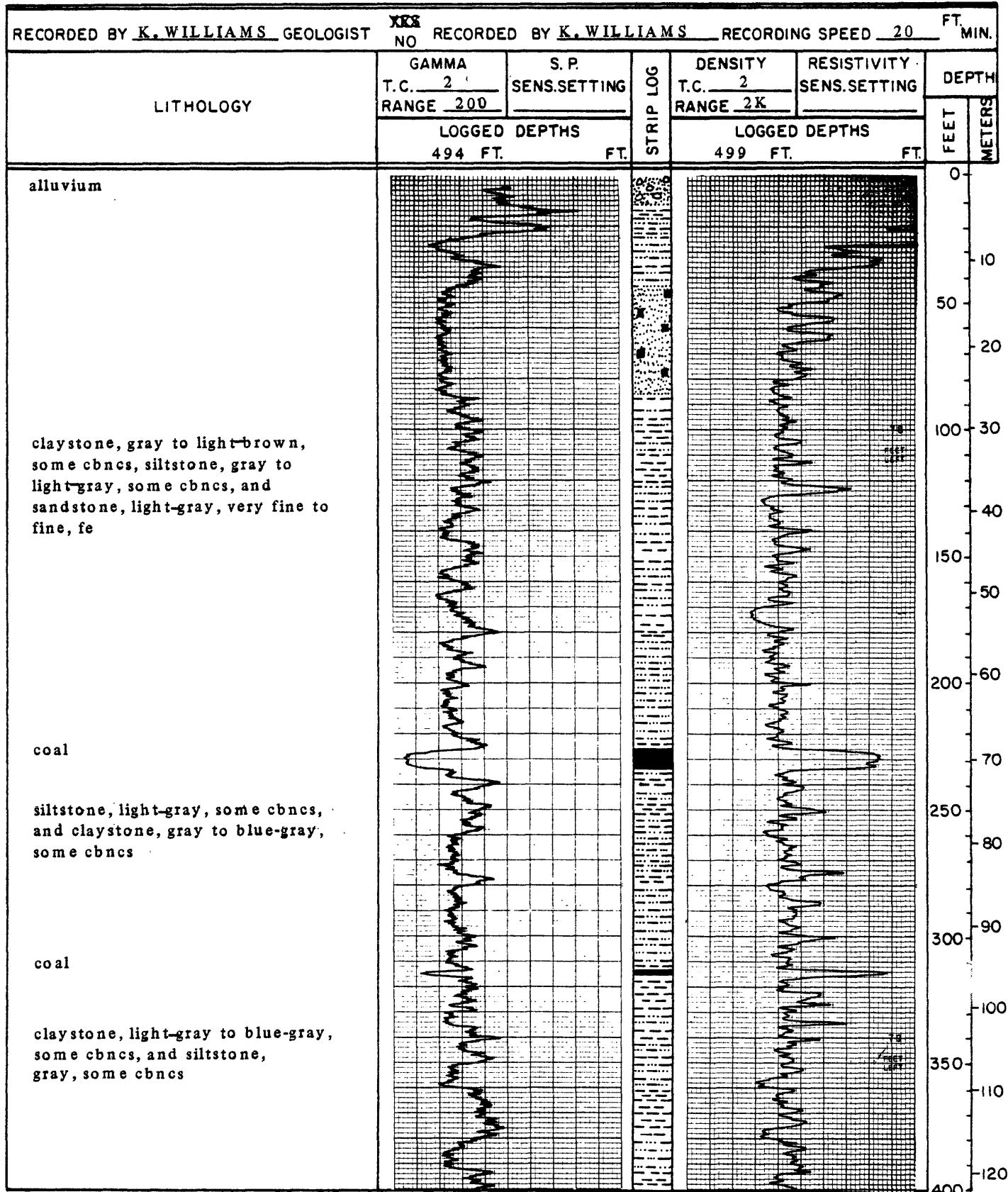


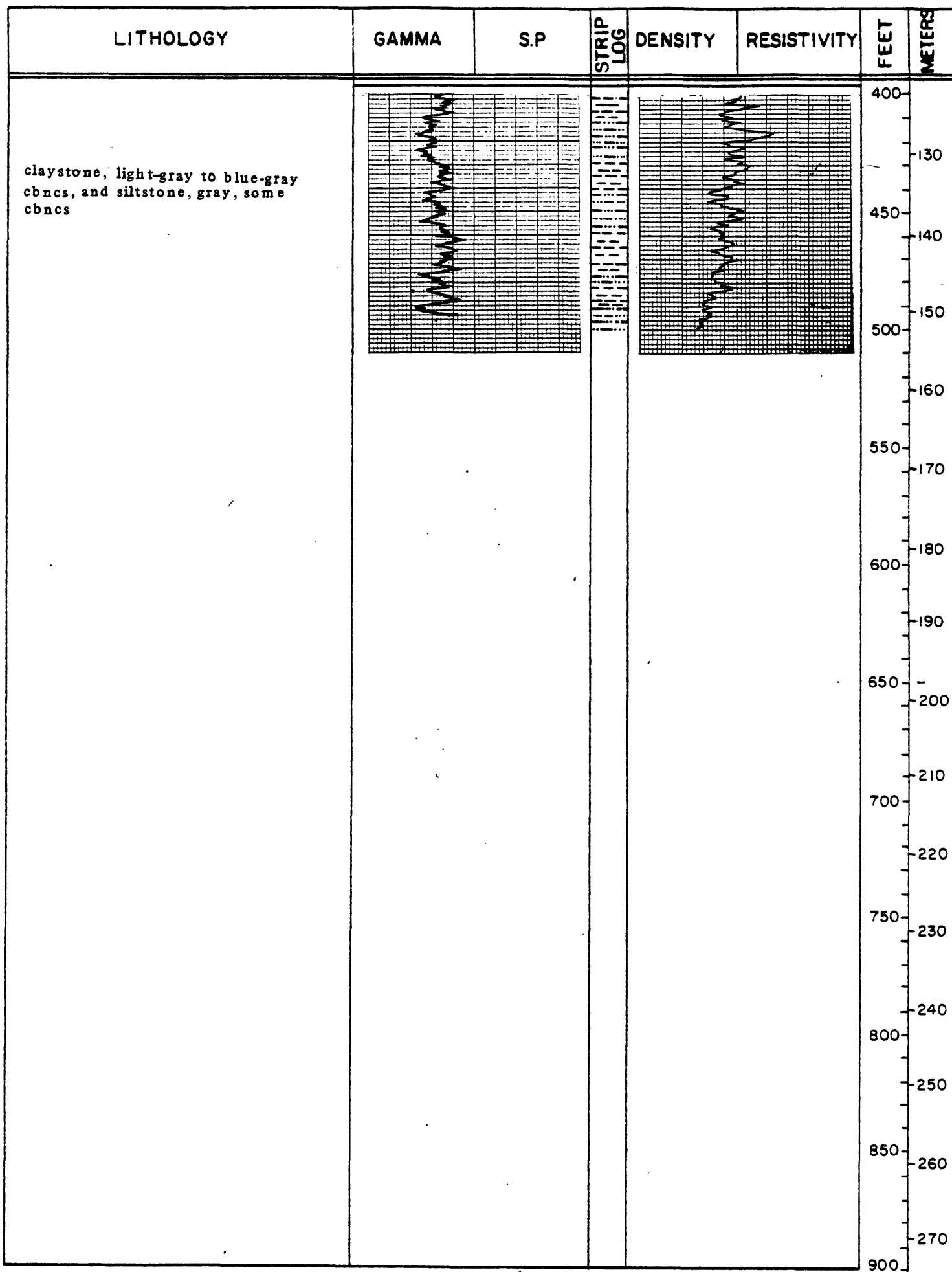
Hole no: US-7841 Map: BLM-NE-31 Date: 5/21/78 State: Montana County: Dawson
 Elev: 2619 ft Location: T. 20 ^N, R. 52 ^E, Sec. 8, Tract CDDDB Drilled depth: 700 ft
 Measured: 460 ft ^{RMX} FSL, 2112 ft ^{XXX} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



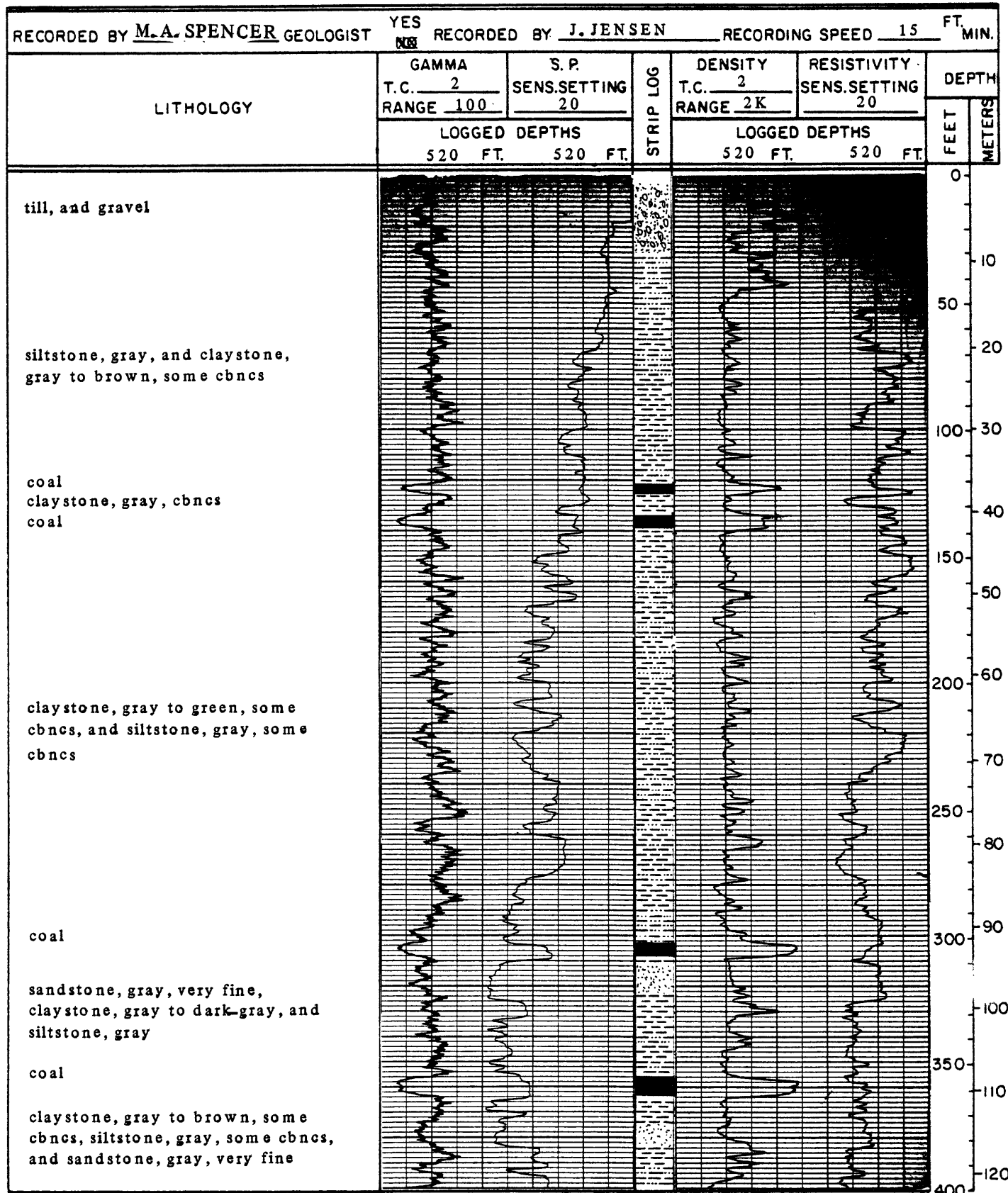


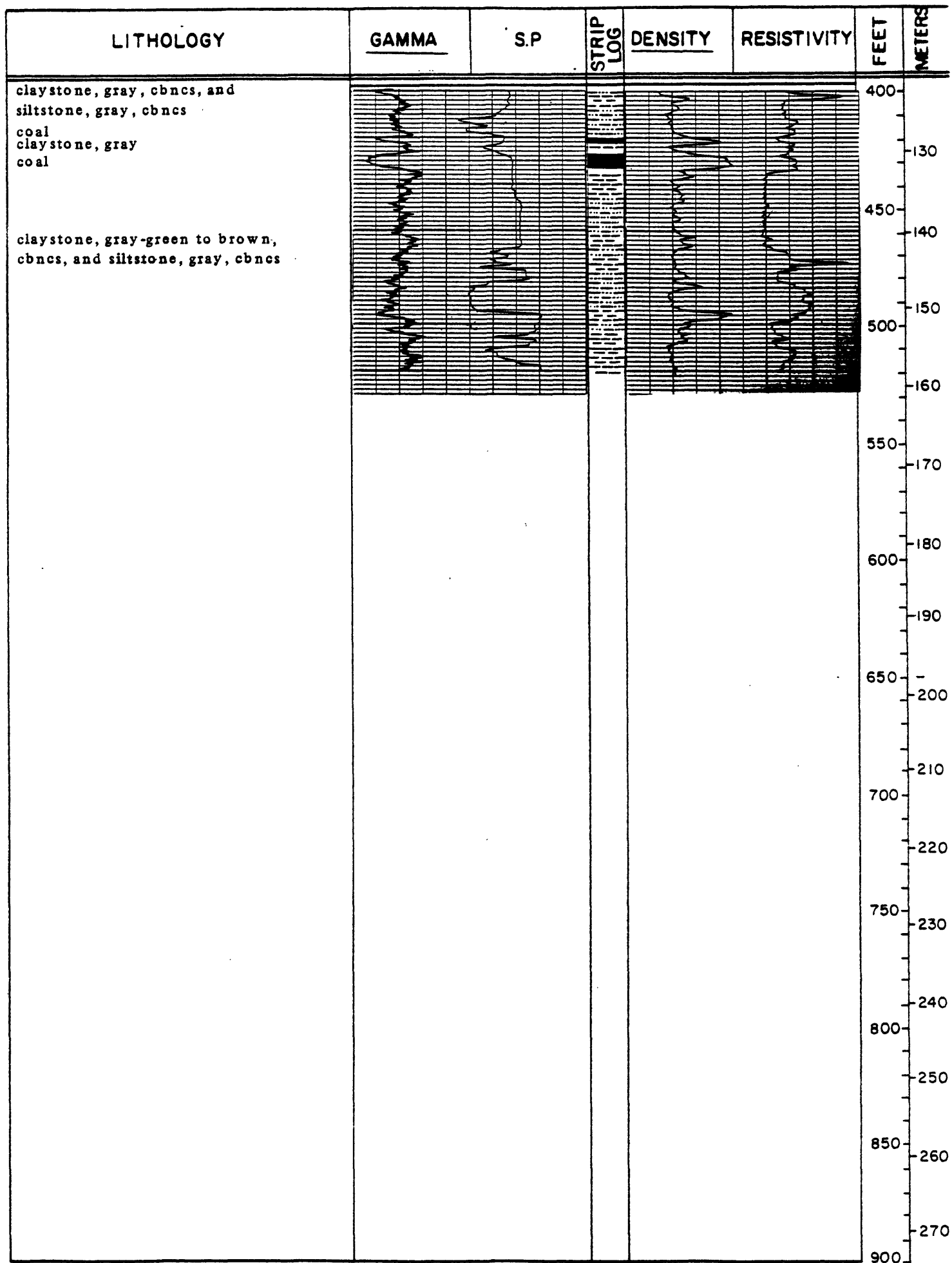
Hole no: US-7842 Map: Butler Table Date: 5/21/78 State: Montana County: Dawson
 Elev: 2391 ft Location: T. 21 N, R. 55 E, Sec. 22, Tract DBDD Drilled depth: 500 ft
 Measured: 1350 ft ^{XXX}FSL, 1410 ft ^{FEL}FW, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: No SP or EK logs taken.



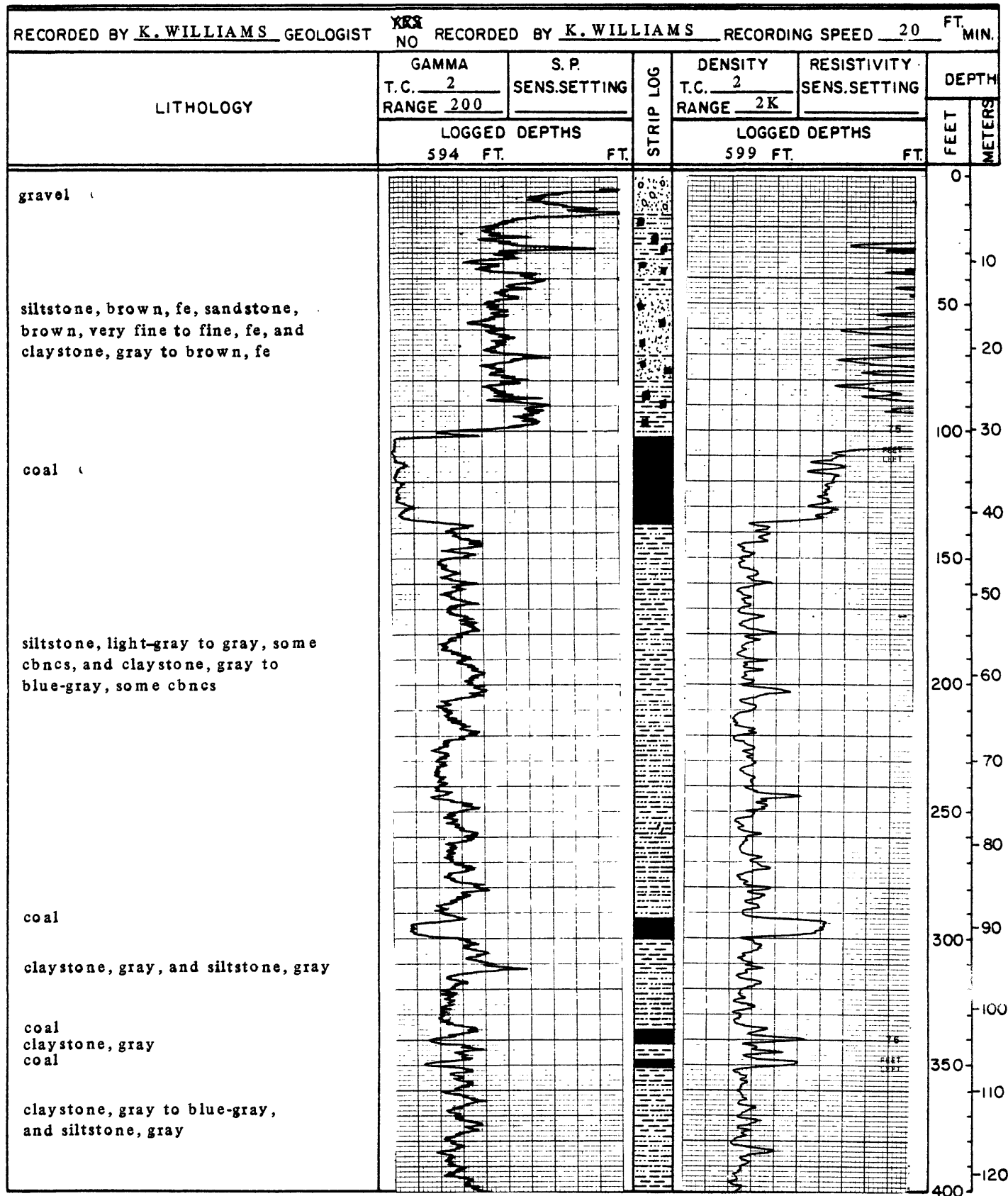


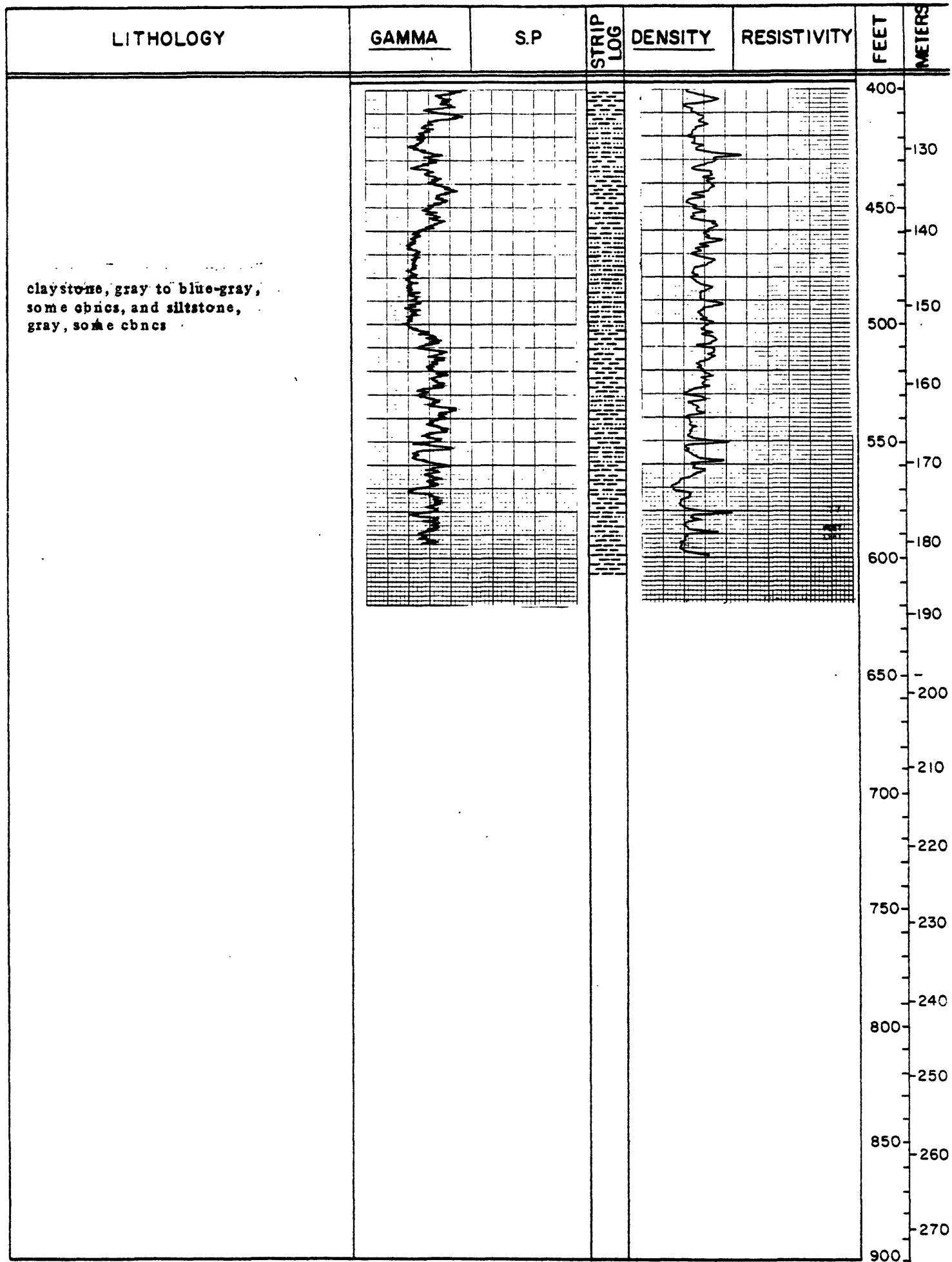
Hole no: UJS-7843 Map: Crane NW Date: 5/22/78 State: Montana County: Richland
 Elev: 2338 ft Location: T. 22 ^N_S, R. 57 ^E_W, Sec. 26, Tract CBCB Drilled depth: 520 ft
 Measured: 1800 ft ^{BSL}_{FWL}, 46 ft ^{BSL}_{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



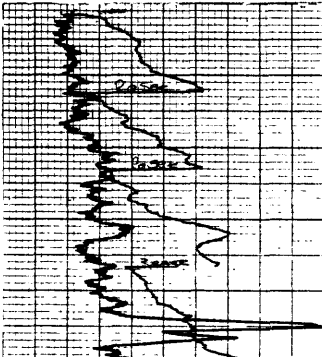
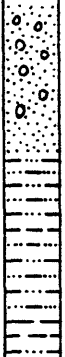
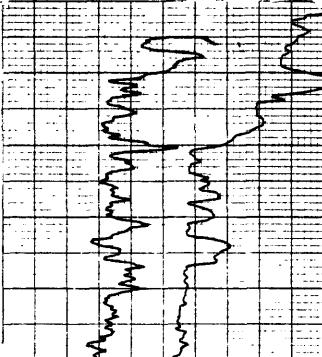
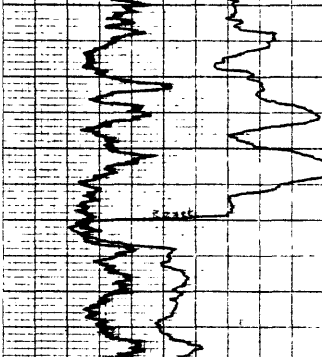
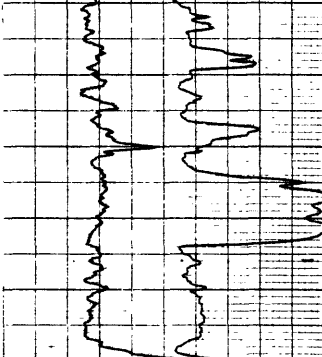
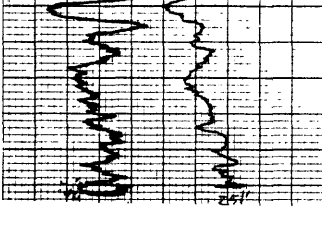

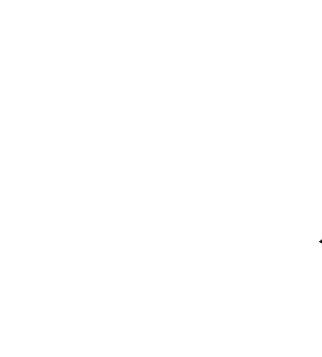



Hole no: US-7844 Map: Intake N.W. Date: 5/21/78 State: Montana County: Dawson
 Elev: 2543 ft Location: T. 20 ^N, R. 55 ^E, Sec. 24, Tract BDDC Drilled depth: 600 ft
 Measured: 2550 ft ^{FNL} ~~2550~~ ²⁰⁰⁰ ft ~~FWL~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: No SP or ER logs taken.

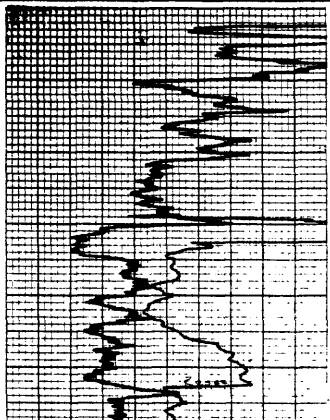
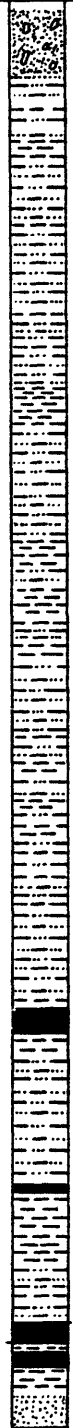
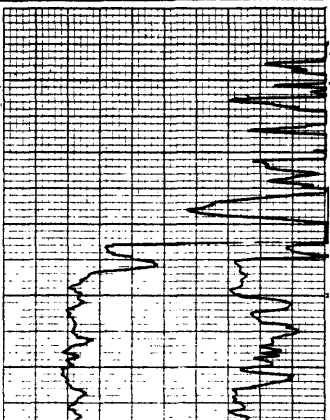
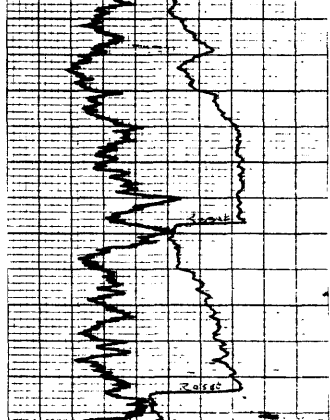
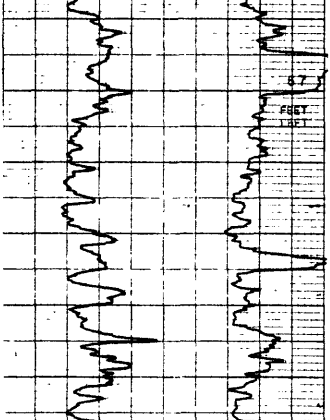
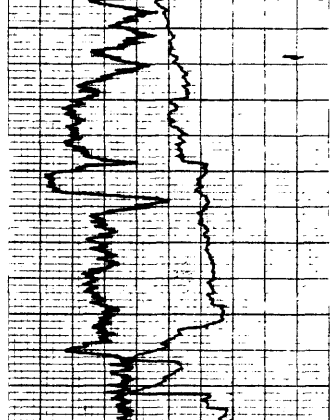
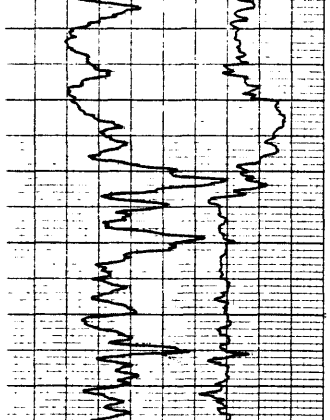

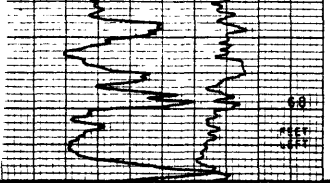


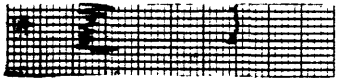




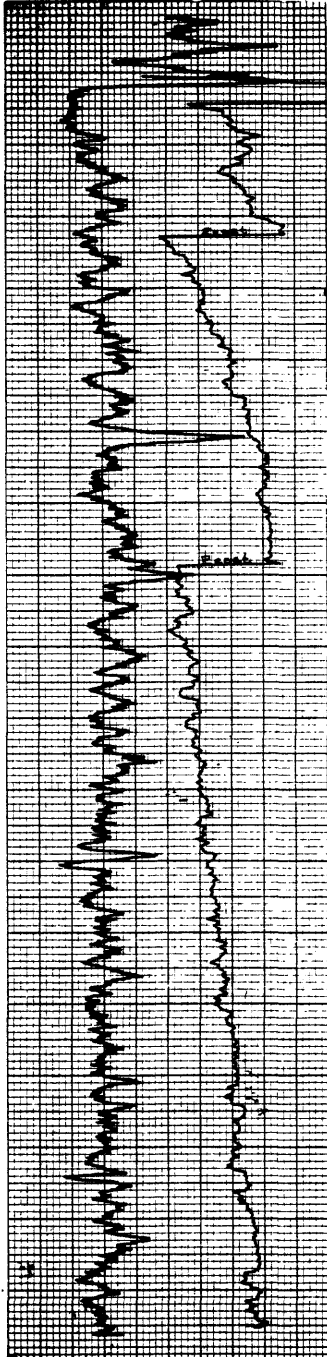
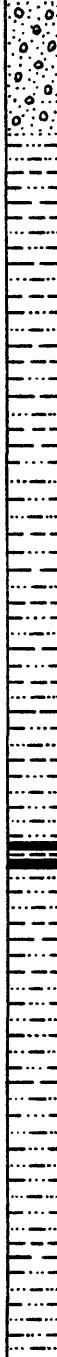
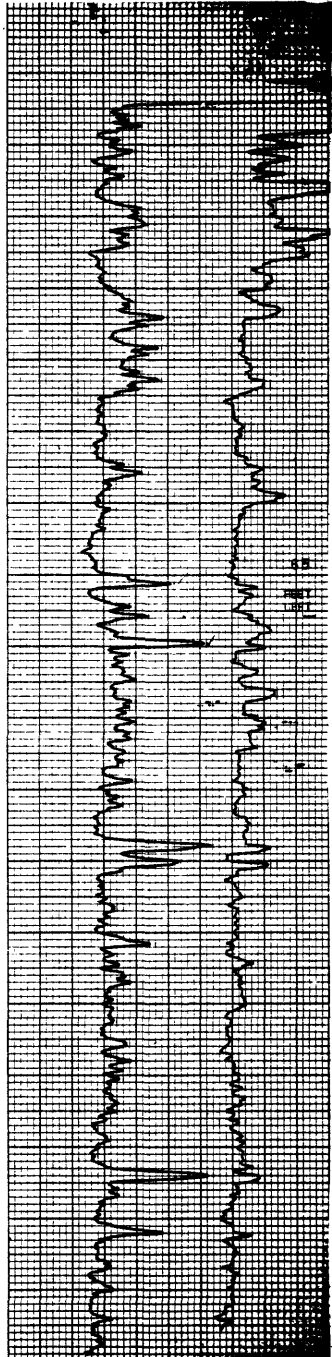
Hole no: US-7845 Map: Kaminski Hill Date: 7/19/78 State: Montana County: Valley
 Elev: 3126 ft Location: T. 37 N, R. 42 W, Sec. 16, Tract BAAB Drilled depth: 260 ft
 Measured: 20 ft FNL, 2300 ft FNL, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>L. SAUER</u> GEOLOGIST <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		RECORDED BY <u>J. JENSEN</u> RECORDING SPEED <u>20</u> FT. MIN.				
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING <u>100</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING <u>250</u>	DEPTH FEET METERS
	LOGGED DEPTHS			LOGGED DEPTHS		
	253 FT.	251 FT.		258 FT.	251 FT.	
gravel, and sandstone, brown, medium						0
siltstone, gray to brown, cbncls, and claystone, gray to black, cbncls						10
coal						50
siltstone, gray to brown, cbncls, and claystone, gray, cbncls						100
						150
						200
						250
						300
						350
						400

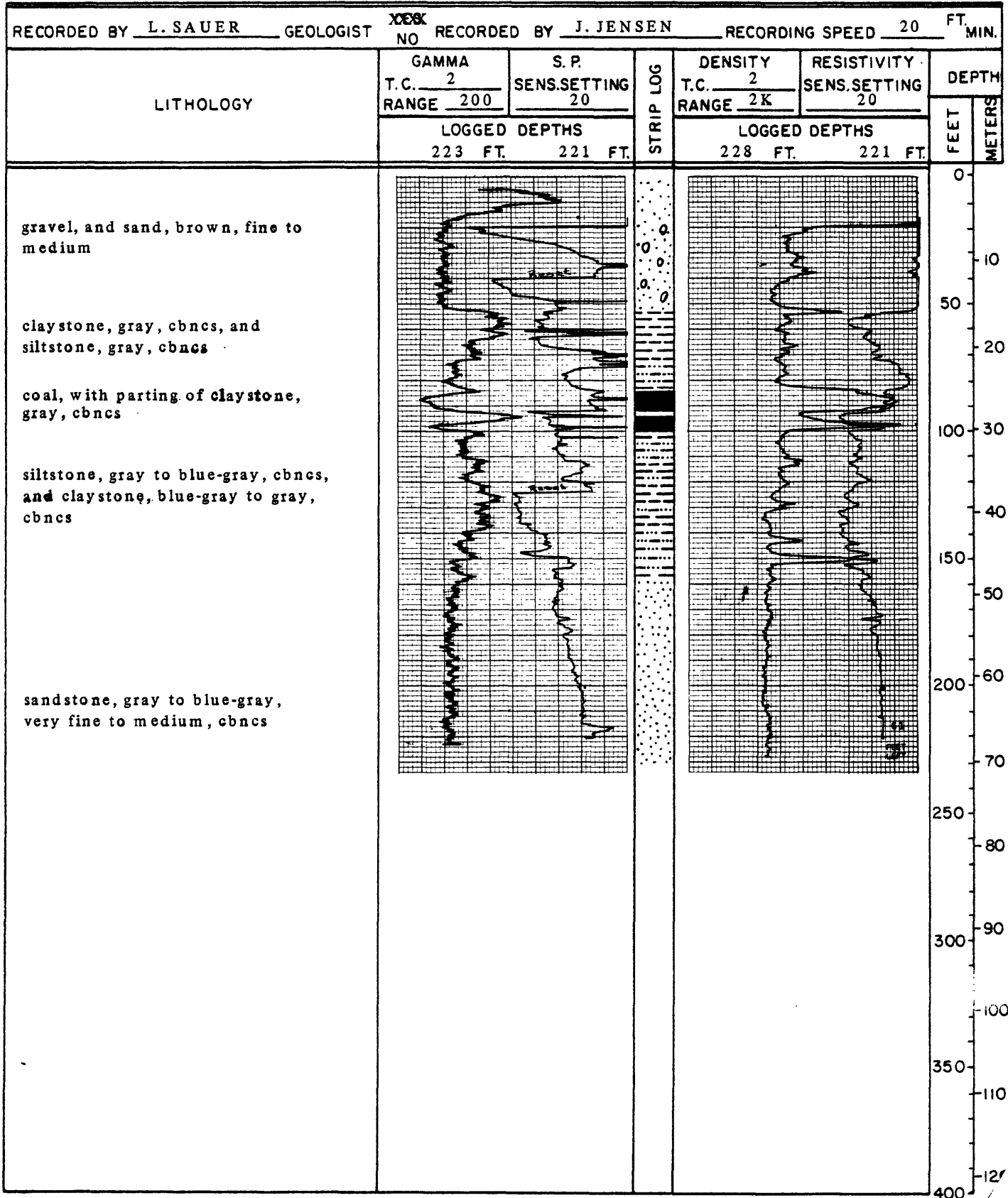
Hole no: US-7846 Map: Kaminski Hill Date: 7/21/78 State: Montana County: Valley
 Elev: 3169 ft Location: T. 37 ^N, R. 42 ^W, Sec. 4, Tract ADAA Drilled depth: 420 ft
 Measured: 1575 ft ^{FNL} ~~xxx~~, 250 ft ^{FEL} ~~xxx~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>L. SAUER</u> GEOLOGIST xxx NO		RECORDED BY <u>T. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.			
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING <u>20</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH	
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS
	413 FT.	411 FT.		418 FT.	411 FT.		
gravel, and sand, brown, very fine to fine						0	
						10	
						50	
						20	
						30	
siltstone, white to tan, and claystone, tan to brown, gray, cbncs						40	
						50	
						100	
						150	
						200	
coal						250	
claystone, tan, gray, blue-gray, cbncs, and siltstone, gray, cbncs						300	
						350	
						400	
						420	
coal							
claystone, gray to tan, cbncs, and siltstone, gray, cbncs							
coal, with parting of claystone, brown, cbncs							
siltstone, gray, claystone, tan, cbncs, and sandstone, white, very fine to fine							
coal							

LITHOLOGY	GAMMA	S.P	STRIP LOG	DENSITY	RESISTIVITY	FEET	METERS
sandstone, white, very fine to fine						400	
							130
						450	
							140
							150
						500	
							160
							170
						550	
							180
							190
							200
						650	
							210
							220
						700	
							230
							240
							250
						800	
							260
							270
						850	
							270
						900	

RECORDED BY <u>L. SAUER</u> GEOLOGIST		XCS NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.					
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>		S. P. SENS. SETTING <u>250</u>		STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>		RESISTIVITY SENS. SETTING <u>250</u>		DEPTH	
	LOGGED DEPTHS					LOGGED DEPTHS				FEET	METERS
	373 FT.		371 FT.			378 FT.		371 FT.			
sand, and gravel										0	
siltstone, brown to gray, cbncs and claystone, tan to gray, cbncs						10					
						50					
						20					
						100					
					30						
					40						
					50						
					60						
					70						
coal, with parting claystone, gray, cbncs					250						
					80						
					90						
					100						
					110						
					120						
					130						
					140						
					150						
					160						
					170						
					180						
					190						
					200						
					210						
					220						
					230						
					240						
					250						
					260						
					270						
					280						
					290						
					300						
					310						
					320						
					330						
					340						
					350						
					360						
					370						
					380						
					390						
					400						

Hole no: US-7848 Map: Kaminski Hill Date: 7/22/78 State: Montana County: Valley
 Elev: 2972 ft Location: T. 37 N, R. 42 E, Sec. 2, Tract BDDC Drilled depth: 240 ft
 Measured: 2730 ft ^{FSL}, 2200 ft ^{FWL}, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☒ No ☐
 Remarks: Cored interval - 82 ft - 92 ft



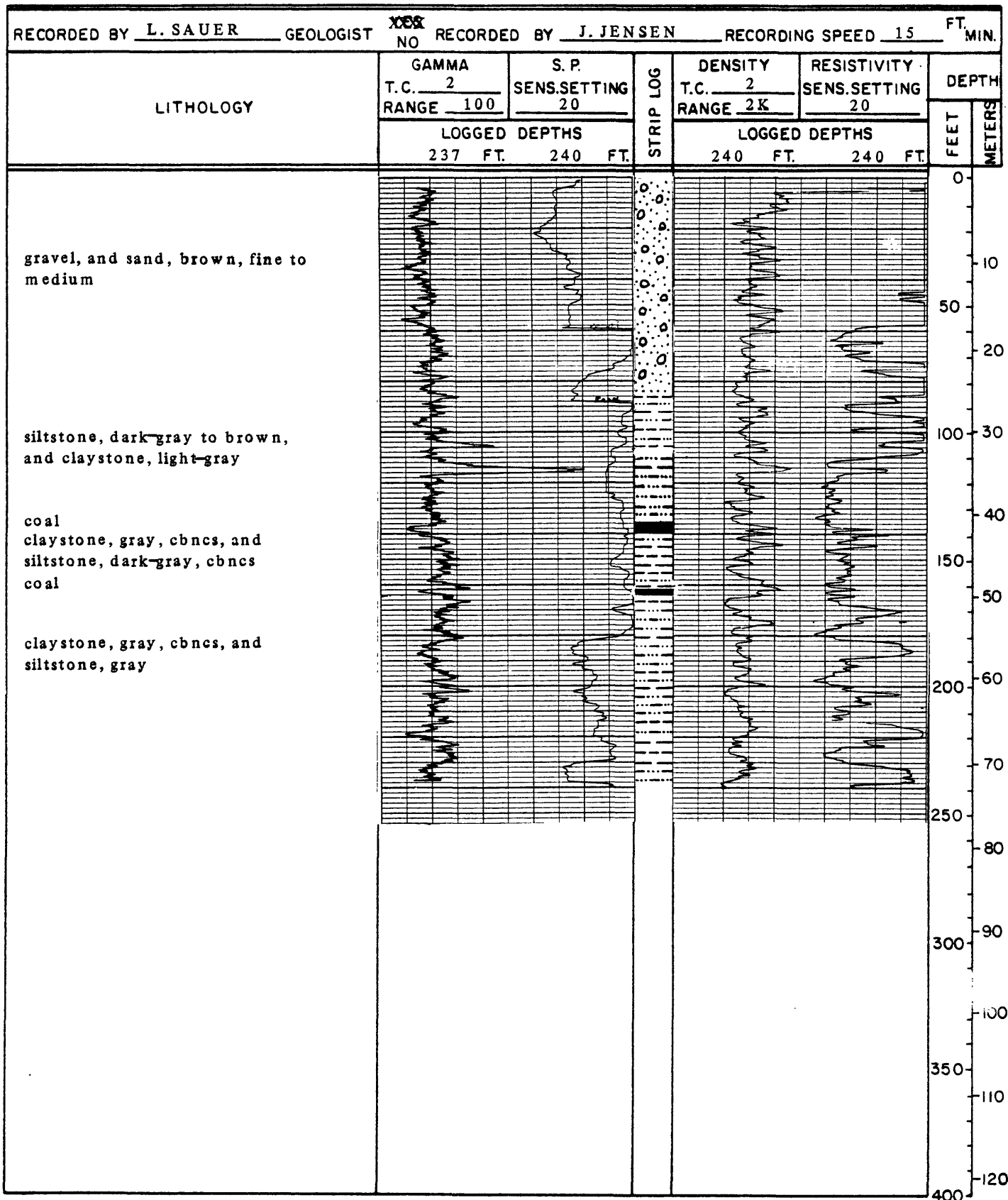
Hole no: US-7849 Map: Kaminski Hill Date: 7/23/78 State: Montana County: Valley
 Elev: 3136 ft Location: T. 37 ^N, R. 42 ^E, Sec. 15, Tract AAAA Drilled depth: 340 ft
 Measured: 100 ft ^{FNL}, 75 ft ^{FEL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Poor sample recovery after 320 ft.

RECORDED BY <u>L. SAUER</u> GEOLOGIST		XES NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>15</u> FT. MIN.	
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>50</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING	DEPTH	
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS
	340 FT.	FT.		FT.	FT.		
gravel, sand, brown, medium, and clay, light-tan						0	
claystone, gray and tan, cbncs, and siltstone, tan						10	
coal						50	
						20	
						100	30
						40	
						150	
siltstone, gray to blue-gray, and claystone, tan, gray, blue-gray, cbncs						50	
						200	60
						70	
						250	
						80	
coal, with parting of claystone, dark-gray, cbncs						90	
						300	
sandstone, gray, very fine to fine, and claystone, gray, cbncs						100	
						350	
						110	
						400	

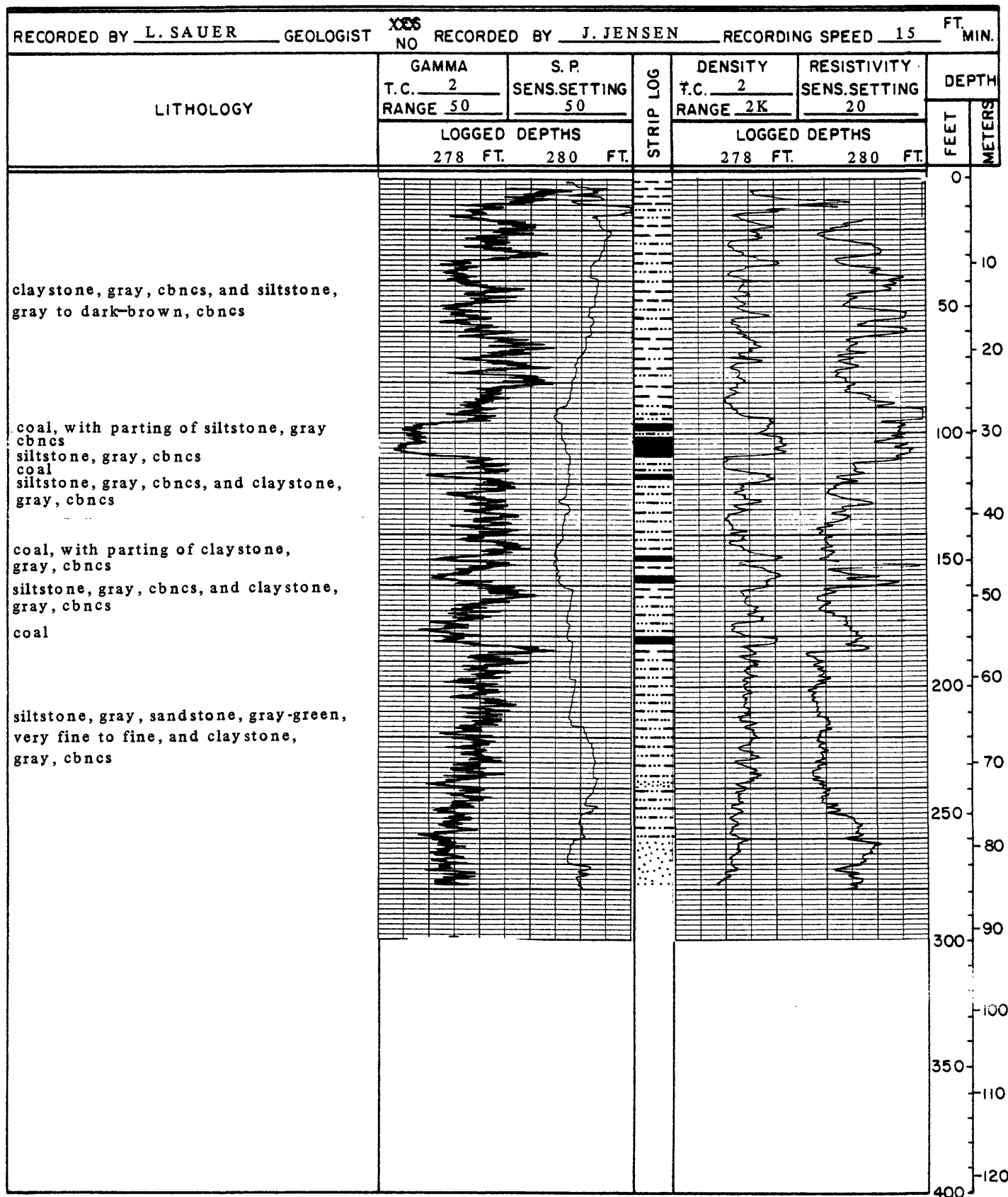
Hole no: US-7850 Map: Brockway Spring Date: 7/24/78 State: Montana County: Daniels
 Elev: 3090 ft Location: T. 37 ^N, R. 43 ^E, Sec. 19, Tract BCBB Drilled depth: 240 ft
 Measured: 1400 ft ^{FNL} ~~XXX~~, 90 ft ^{FWL} ~~XXX~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>L. SAUER</u> GEOLOGIST		XXX NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>15</u> FT. MIN.					
LITHOLOGY	GAMMA		S. P.		STRIP LOG	DENSITY		RESISTIVITY		DEPTH	
	T.C. <u>2</u>		SENS.SETTING			T.C. <u>2</u>		SENS.SETTING		FEET	METERS
	RANGE <u>50</u>		<u>50</u>			RANGE <u>2K</u>		<u>20</u>			
	LOGGED DEPTHS					LOGGED DEPTHS					
	235 FT. 235 FT.					192 FT. 235 FT.					
gravel, and sand, brown, fine to medium										0	
										10	
siltstone, tan, fe, and claystone, gray to brown, cbncls										50	
										20	
										30	
										40	
										50	
										60	
										70	
										80	
										90	
										100	
										110	
										120	
										400	

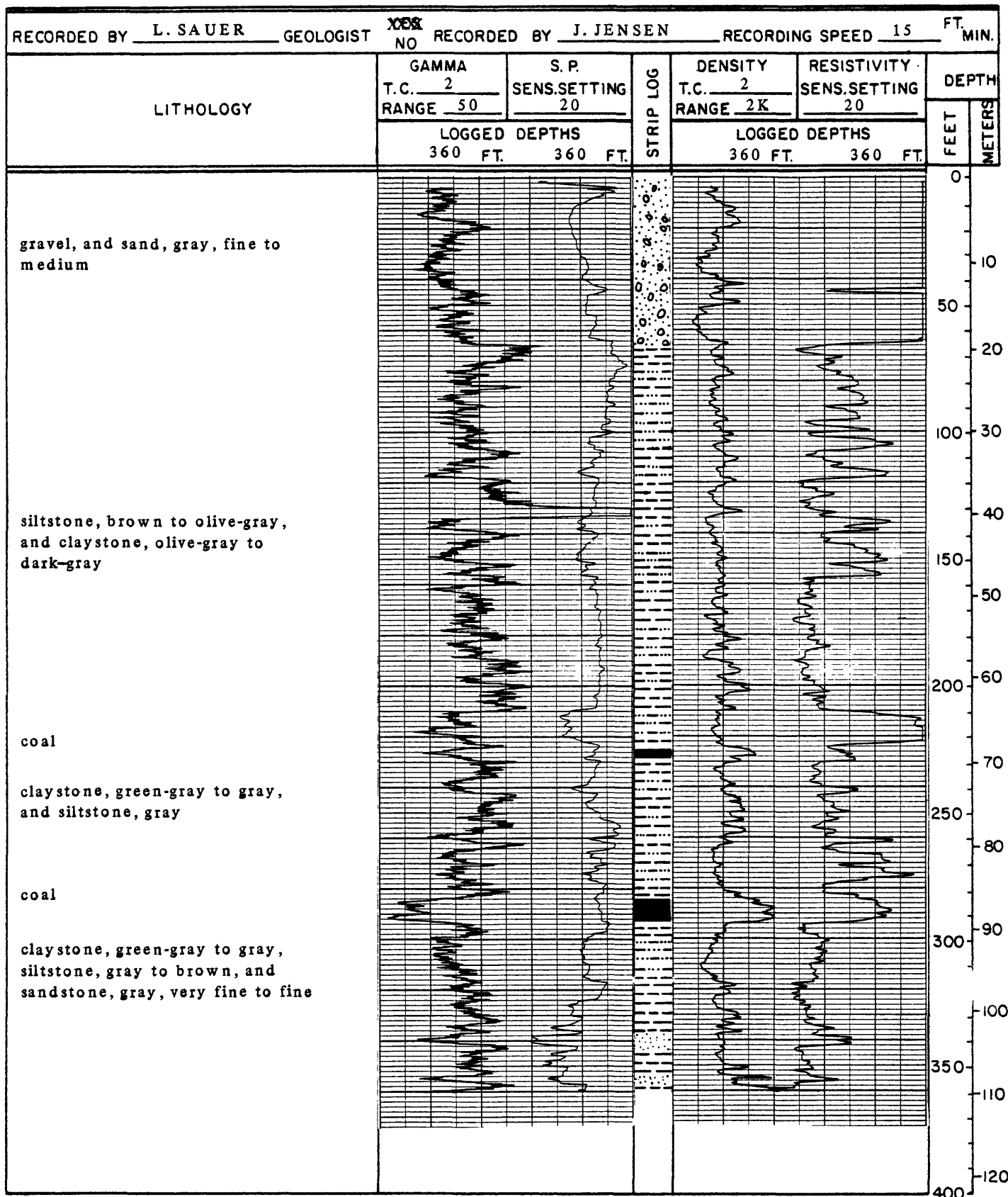
Hole no: US-7851 Map: Brockway Spring Date: 8/2/78 State: Montana County: Daniels
 Elev: 3069 ft Location: T. 37 ^N, R. 43 ^E, Sec. 30, Tract BCDB Drilled depth: 240 ft
 Measured: 2220 ft ^{FNL} ~~XXX~~, 745 ft ^{FWL} ~~XXX~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Logged gamma through rods.



Hole no: US-7852 Map: Brockway Spring Date: 8/2/78 State: Montana County: Daniels
 Elev: 2945 ft Location: T. 37 ^N, R. 43 ^E, Sec. 6, Tract BDCD Drilled depth: 280 ft
 Measured: 2580 ft ^{FNL}, 1960 ft ^{FWL}, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



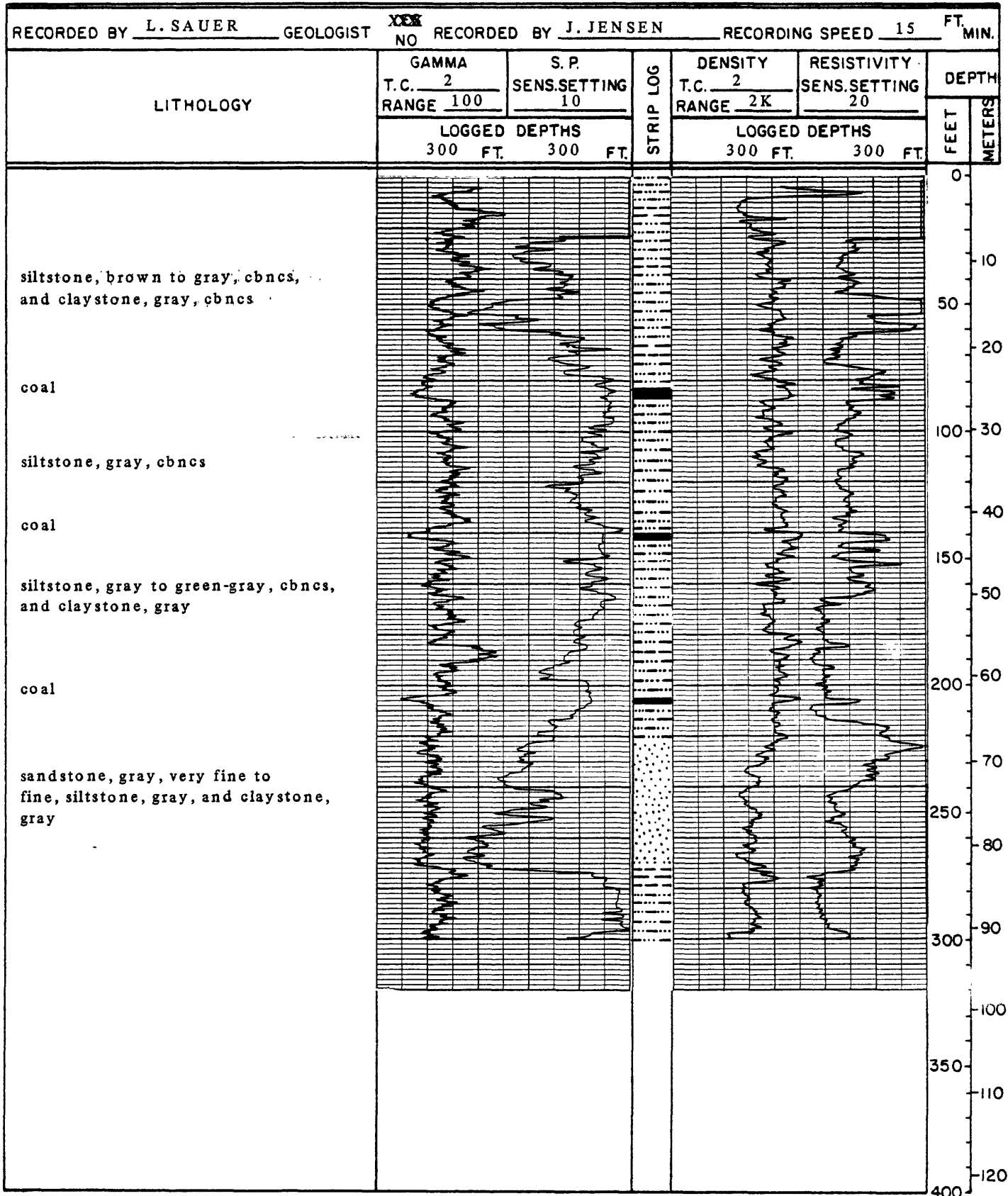
Hole no: US-7853 Map: Brockway Spring Date: 8/2/78 State: Montana County: Daniels
 Elev: 3129 ft Location: T. 37 ^N, R. 43 ^E, Sec. 7, Tract CCCC Drilled depth: 360 ft
 Measured: 15 ft ^{PMS} FSL, 130 ft ^{PMS} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



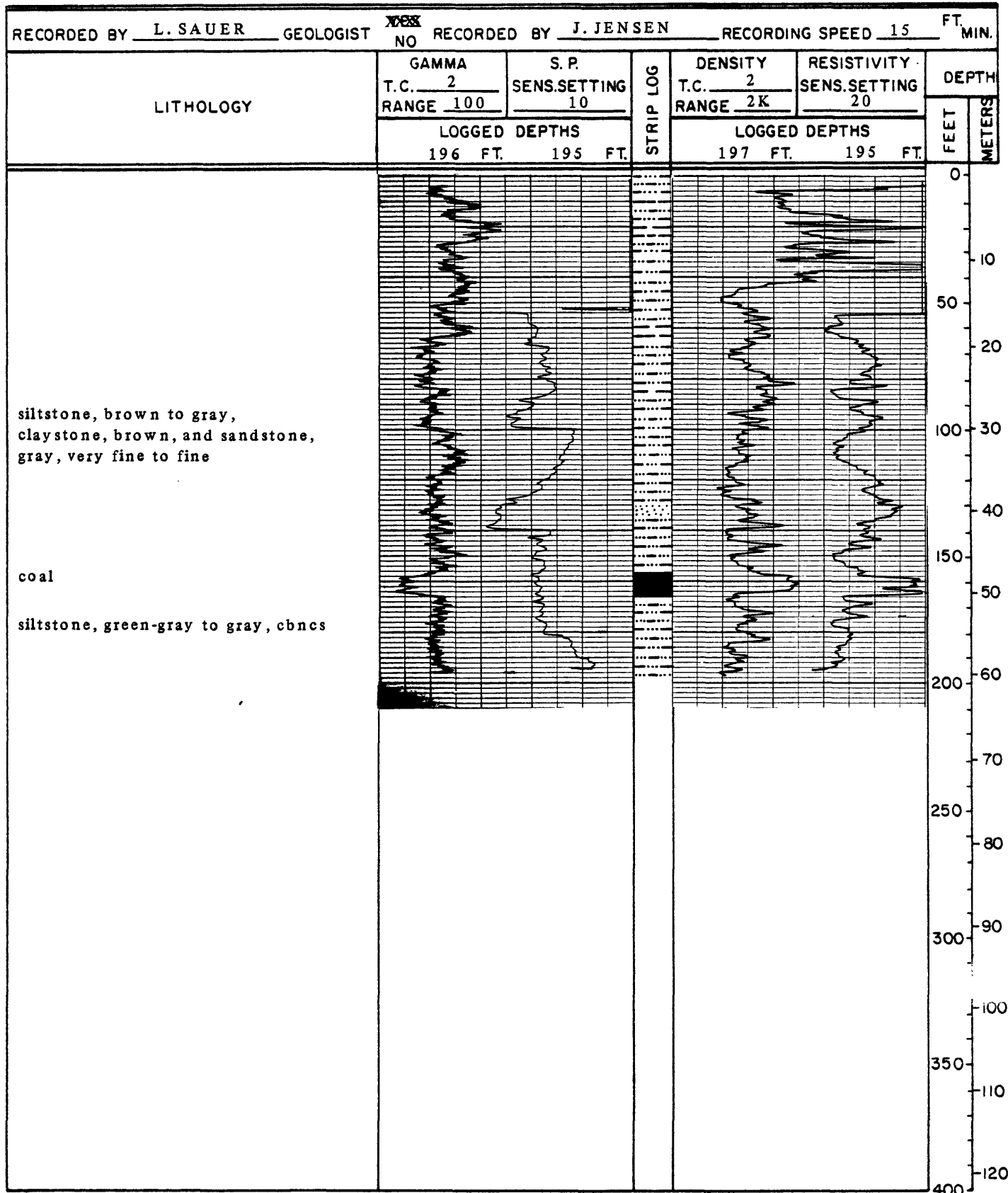
Hole no: US-7854 Map: Kaminski Hill Date: 8/3/78 State: Montana County: Valley
 Elev: 3022 ft Location: T. 37 ^{N.}, R. 42 ^{E.}, Sec. 26, Tract ADAD Drilled depth: 260 ft
 Measured: 1950 ft ^{FNL}, 320 ft ^{FEL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>L. SAUER</u> GEOLOGIST		YES NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>15</u> FT. MIN.					
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>		S. P. SENS. SETTING <u>20</u>		STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>		RESISTIVITY SENS. SETTING <u>20</u>		DEPTH	
	LOGGED DEPTHS					LOGGED DEPTHS				FEET	METERS
	260	FT.	260	FT.		260	FT.	260	FT.		
claystone, tan to brown, cbncs, and siltstone, gray to brown										0	
										10	
coal										20	
										30	
siltstone, gray, cbncs, and claystone, gray, cbncs										40	
										50	
coal										60	
										70	
sandstone, gray, very fine, siltstone, gray, and claystone, gray to green- gray, cbncs										80	
										90	
coal										100	
										110	
siltstone, gray, cbncs, and claystone, gray, cbncs										120	

Hole no: US-7855 Map: Brockway Spring Date: 8/4/78 State: Montana County: Daniels
 Elev: 2942 ft Location: T. 36 ^N, R. 43 ^E, Sec. 4, Tract BBDD Drilled depth: 300 ft
 Measured: 1260 ft ^{FNL} ~~KXX~~, 1315 ft ^{FWL} ~~KXX~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



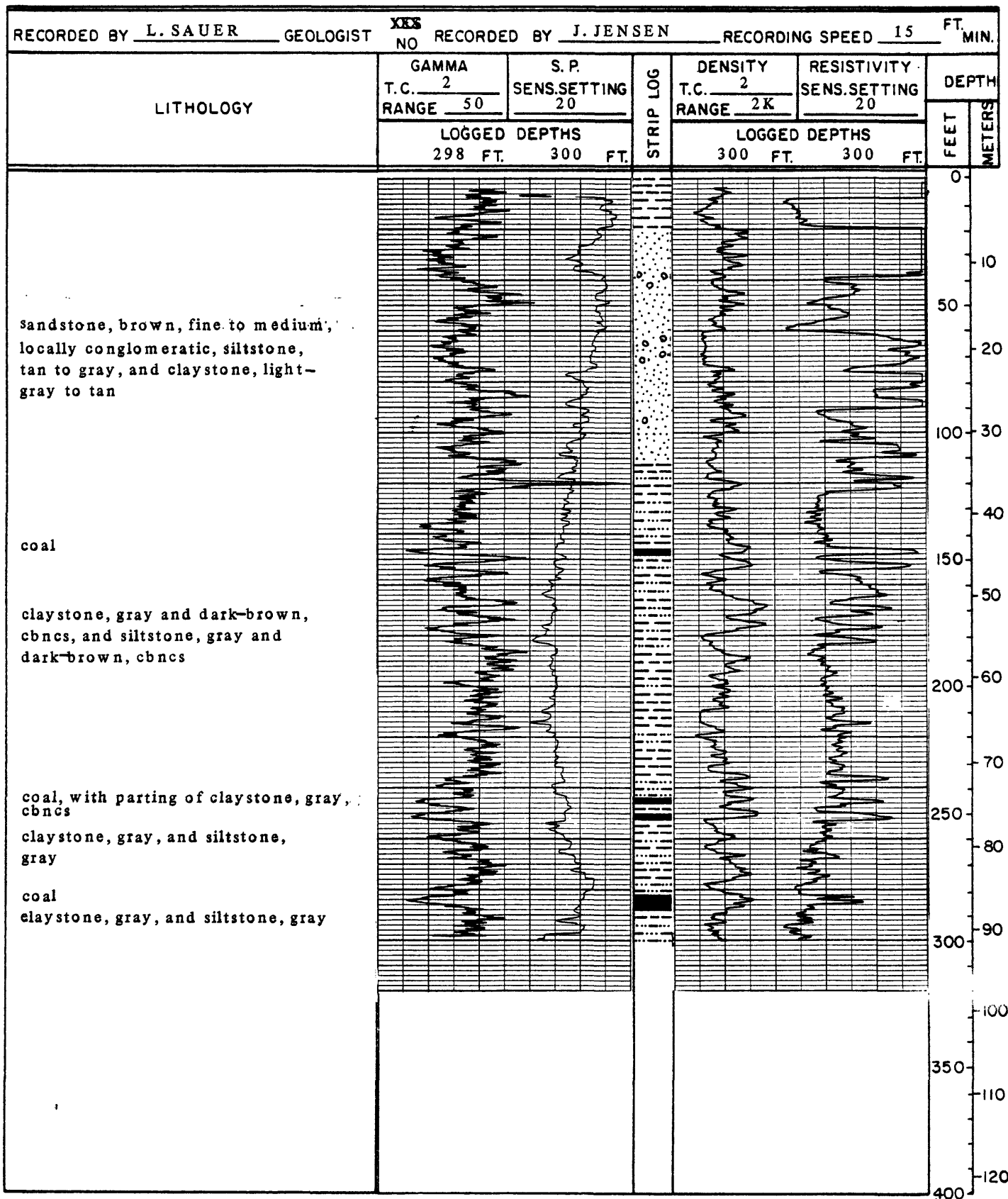
Hole no: US-7856 Map: Brockway Spring Date: 8/4/78 State: Montana County: Daniels
 Elev: 2969 ft Location: T. 37 ^N, R. 43 ^E, Sec. 31, Tract DADA Drilled depth: 200 ft
 Measured: 1950 ft ^{FSL}, 10 ft ^{FEL}, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: 30 ft. to 100 ft poor to no circulation, couldn't get good sample return.



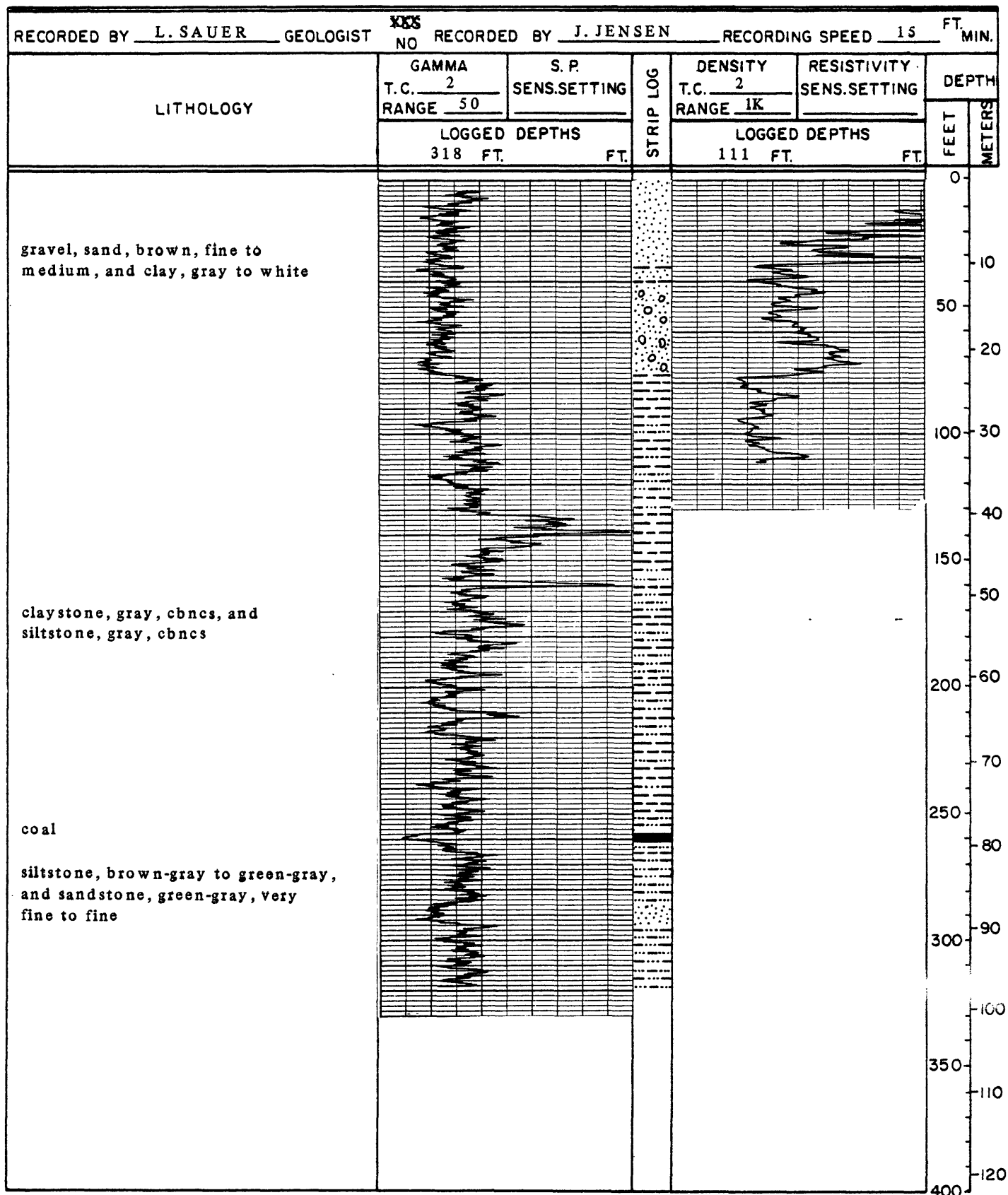
Hole no: US-7857 Map: Brockway Spring Date: 8/4/78 State: Montana County: Daniels
 Elev: 2960 ft Location: T. 37 ^N, R. 43 ^E, Sec. 32, Tract DDDD Drilled depth: 180 ft
 Measured: 140 ft ^{ROCK} FSL, 25 ft ^{FEL} FSL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>L. SAUER</u> GEOLOGIST		NO <u>XXX</u> RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>15</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>50</u>	S. P. SENS.SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS.SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 178 FT. 178 FT.			LOGGED DEPTHS 179 FT. 178 FT.		
	siltstone, gray to brown, claystone, light-brown to gray, cbncls, and sandstone, light-brown, fine to medium coal, with parting siltstone, green- gray siltstone, green-gray to gray, cbncls, and claystone, gray, cbncls					

Hole no: US-7858 Map: Brockway Spring Date: 8/5/78 State: Montana County: Daniels
 Elev: 3025 ft Location: T. 37 ^N, R. 43 ^E, Sec. 33, Tract DDDD Drilled depth: 300 ft
 Measured: 15 ft ^{FSL}, 15 ft ^{FEL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

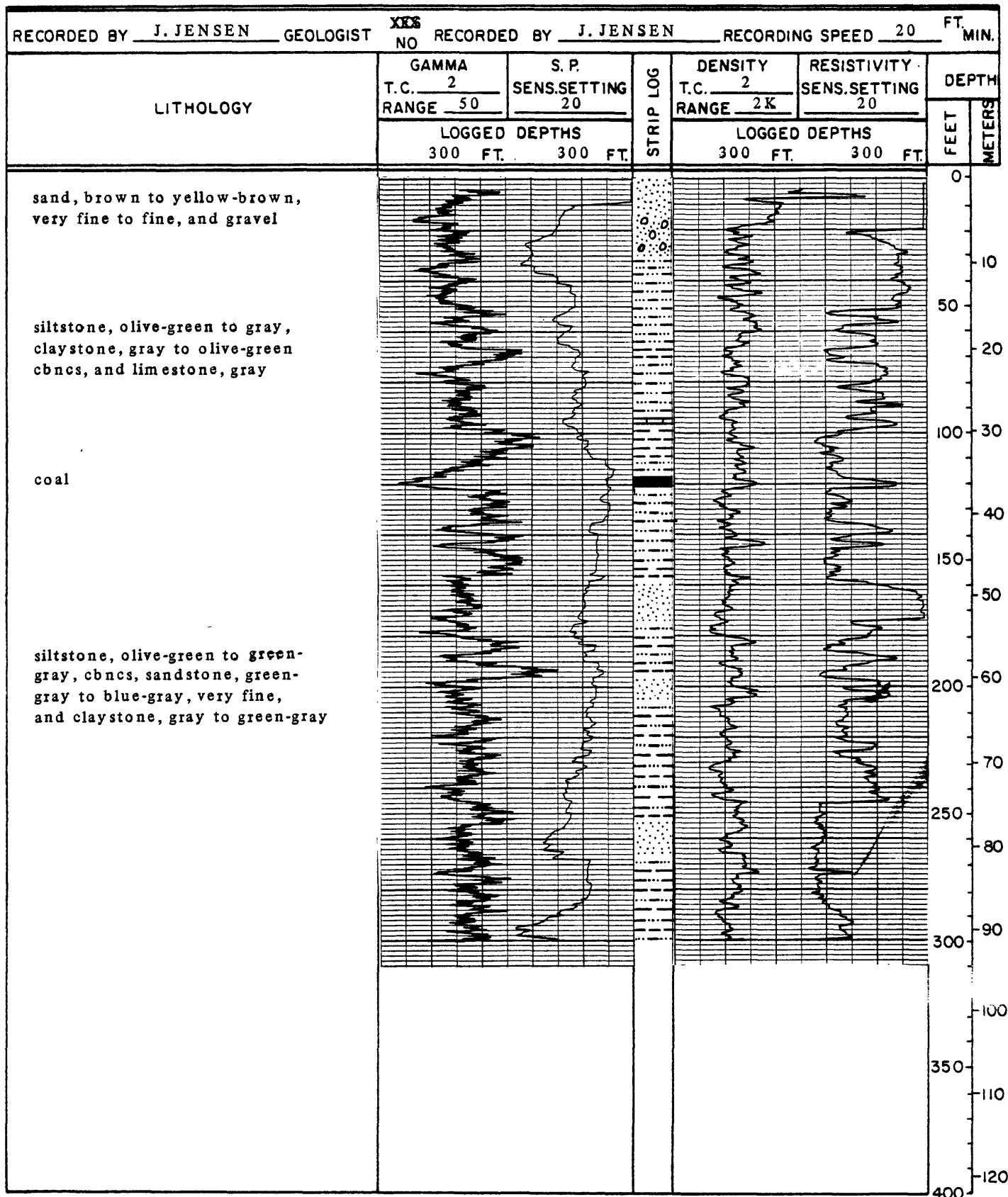


Hole no: US-7859 Map: Flaherty Coulee Date: 8/6/78 State: Montana County: Daniels
 Elev: 3034 ft Location: T. 36 ^N, R. 44 ^E, Sec. 8, Tract CCCC Drilled depth: 320 ft
 Measured: 34 ft ^{FSL}, 29 ft ^{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

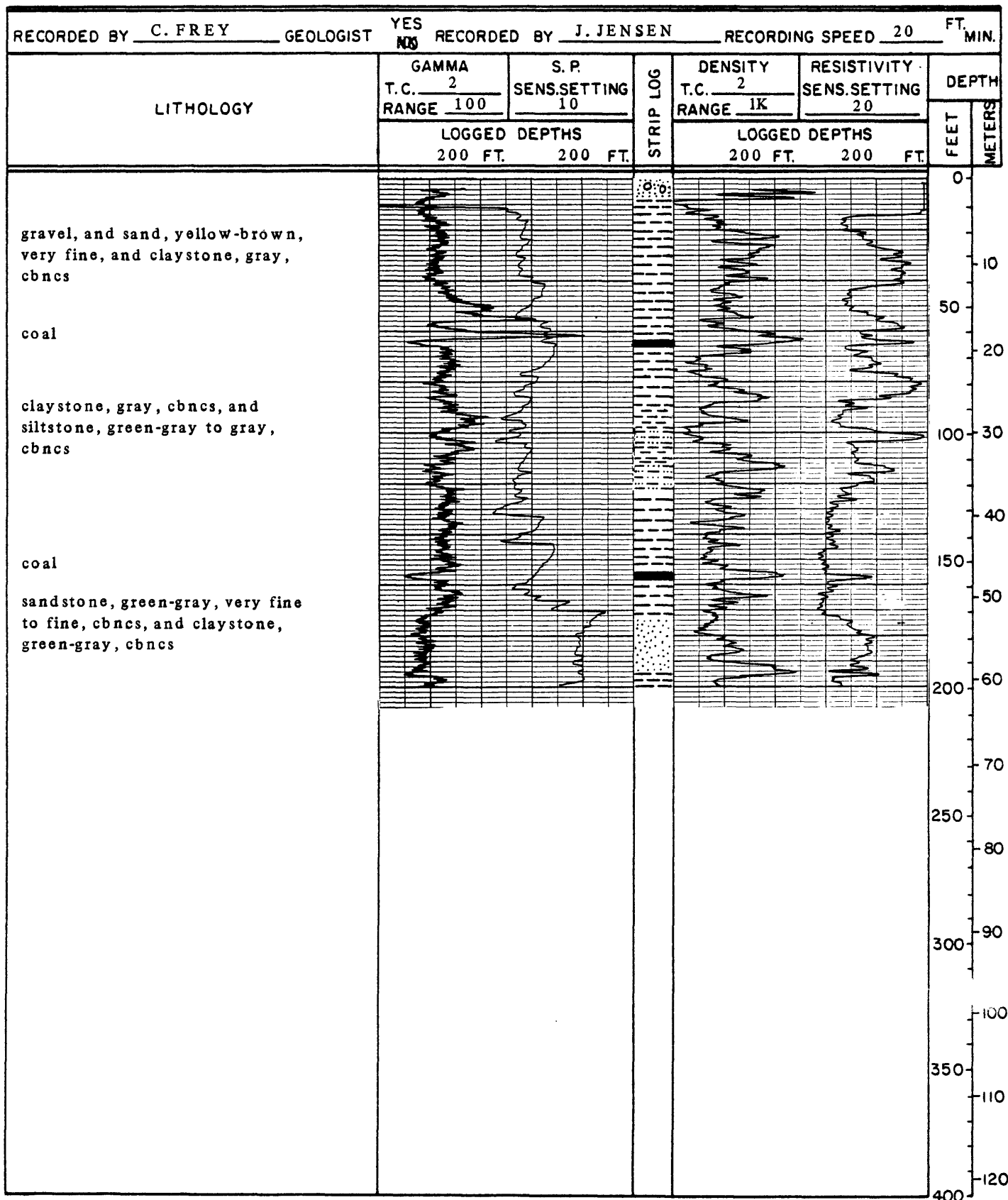


RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.					
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>50</u>		S. P. SENS. SETTING <u>20</u>		STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>		RESISTIVITY SENS. SETTING <u>20</u>		DEPTH	
	LOGGED DEPTHS					LOGGED DEPTHS				FEET	METERS
	360 FT.		360 FT.			360 FT.		360 FT.			
gravel; and sand, yellow-brown, fine to medium, fe										0	
										10	
siltstone, gray to green-gray, cbnes, claystone, gray to olive-gray, and sandstone, green-gray, very fine										50	
										20	
										30	
										40	
										50	
										60	
										70	
										80	
										90	
										100	
										350	
										400	

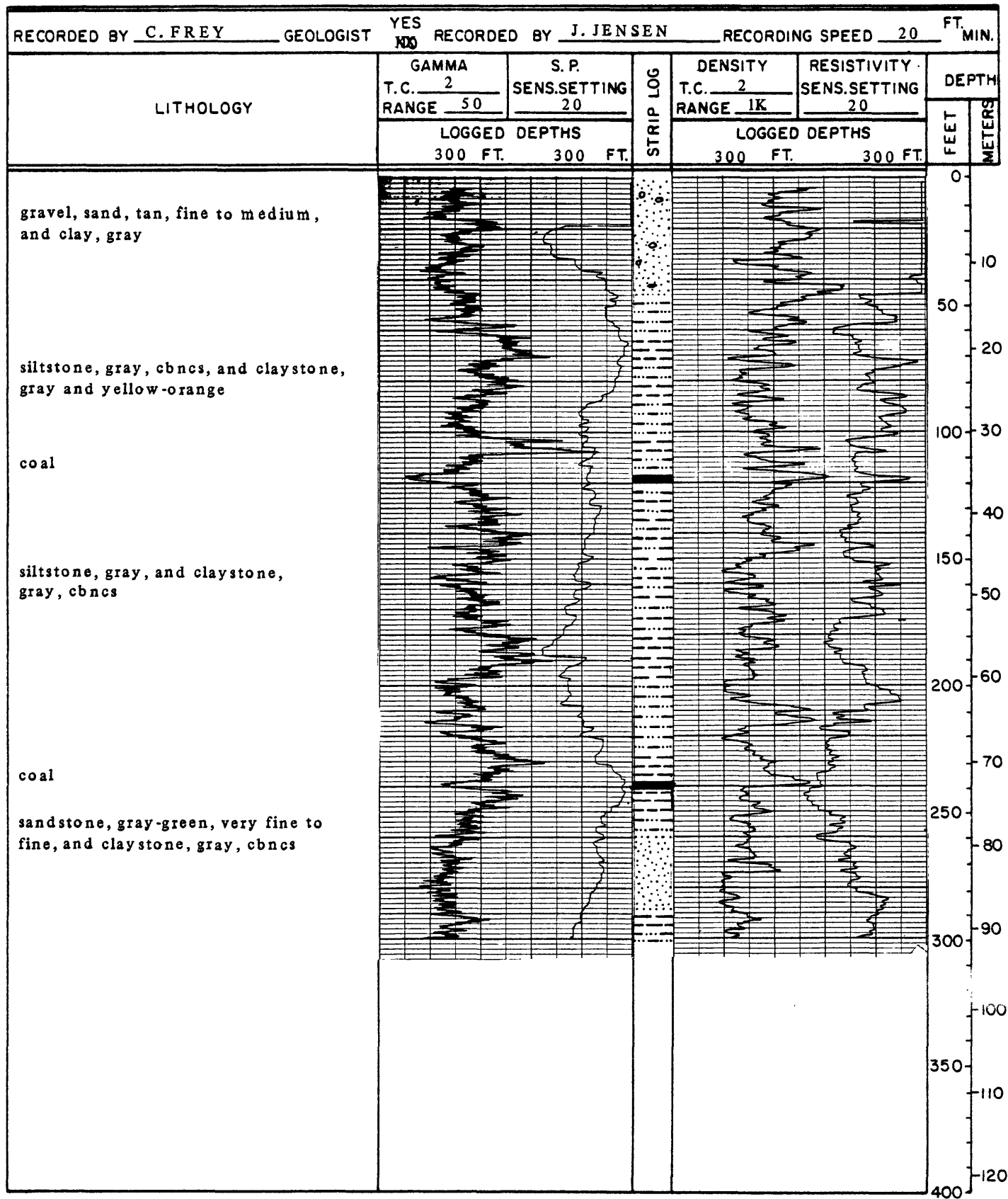
Hole no: US-7861 Map: Flaherty Coulee Date: 8/16/78 State: Montana County: Daniels
 Elev: 2998 ft Location: T. 36 ^N, R. 44 ^E, Sec. 9, Tract CBAA Drilled depth: 300 ft
 Measured: 2640 ft ^{FNL} 1220 ft ^{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Logged gamma through pipe.



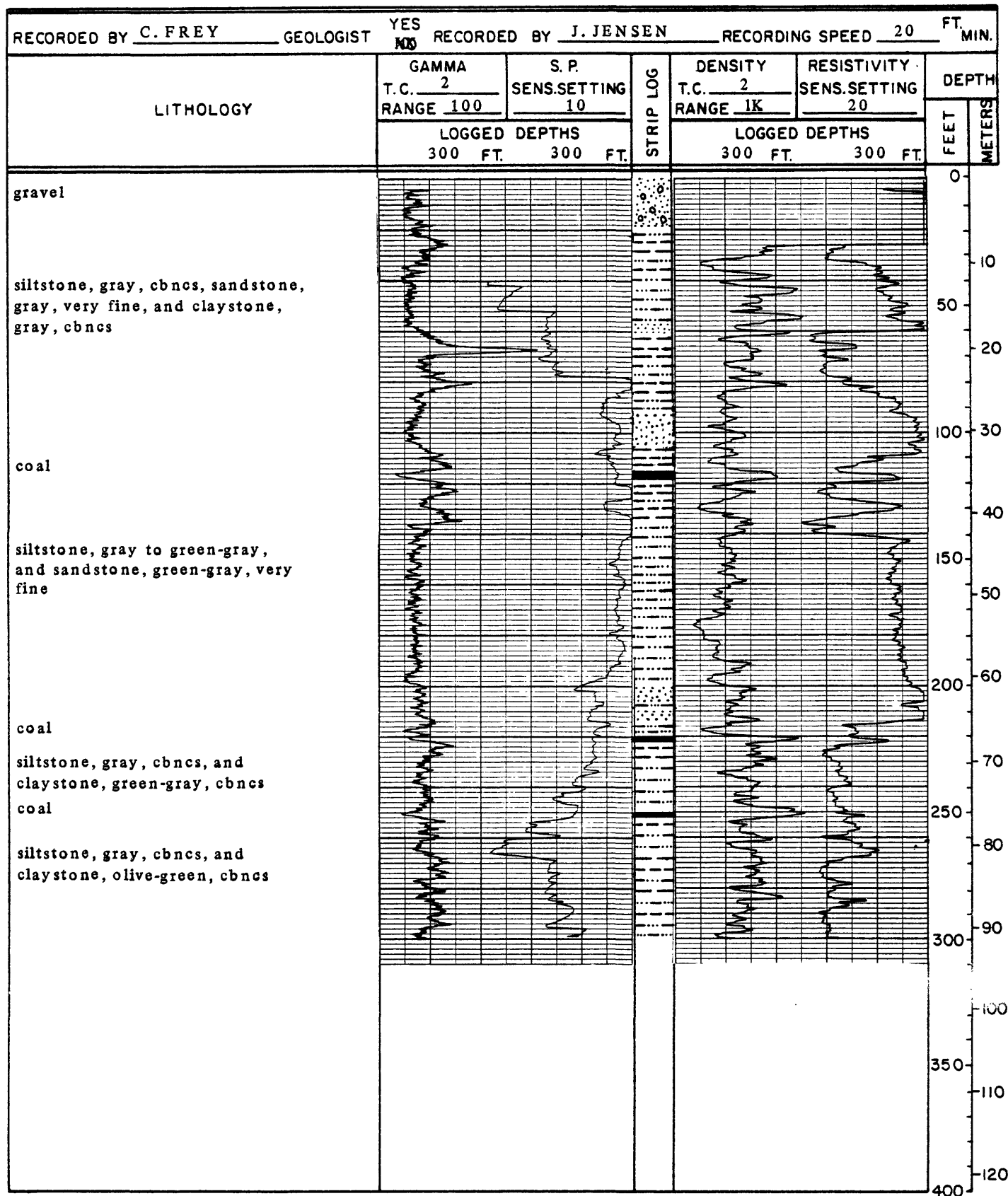
Hole no: US-7862 Map: Flaherty Coulee Date: 8/16/78 State: Montana County: Daniels
 Elev: 2923 ft Location: T. 37 ^N, R. 44 ^E, Sec. 31, Tract CCDC Drilled depth: 200 ft
 Measured: 307 ft ^{FSL}, 880 ft ^{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



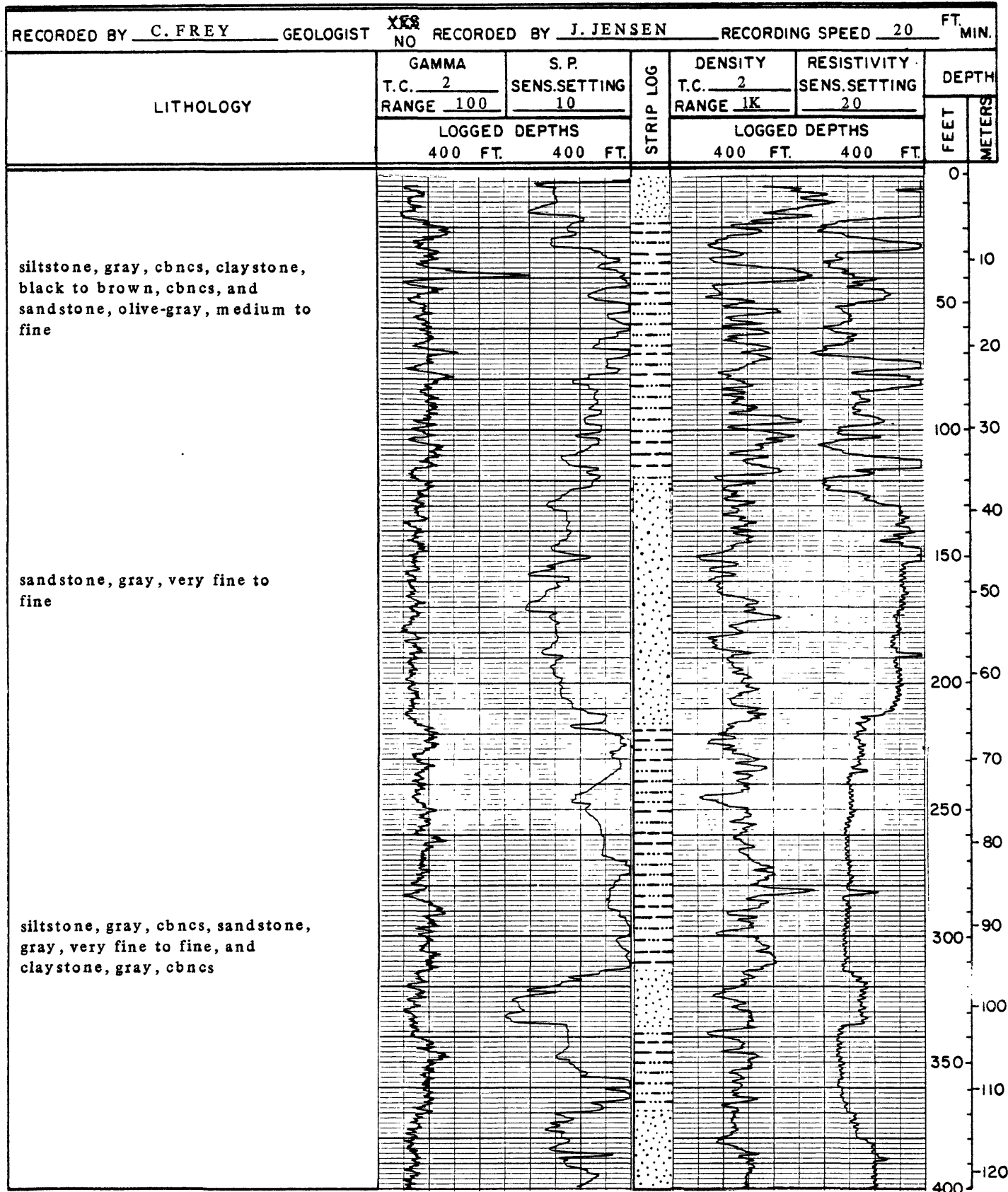
Hole no: US-7863 Map: Flaherty Coulee Date: 8/17/78 State: Montana County: Daniels
 Elev: 3007 ft Location: T. 36 ^N, R. 44 ^E, Sec. 5, Tract BBBB Drilled depth: 300 ft
 Measured: 65 ft ^{FNL} ~~xxx~~, 60 ft ^{FWL} ~~xxx~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



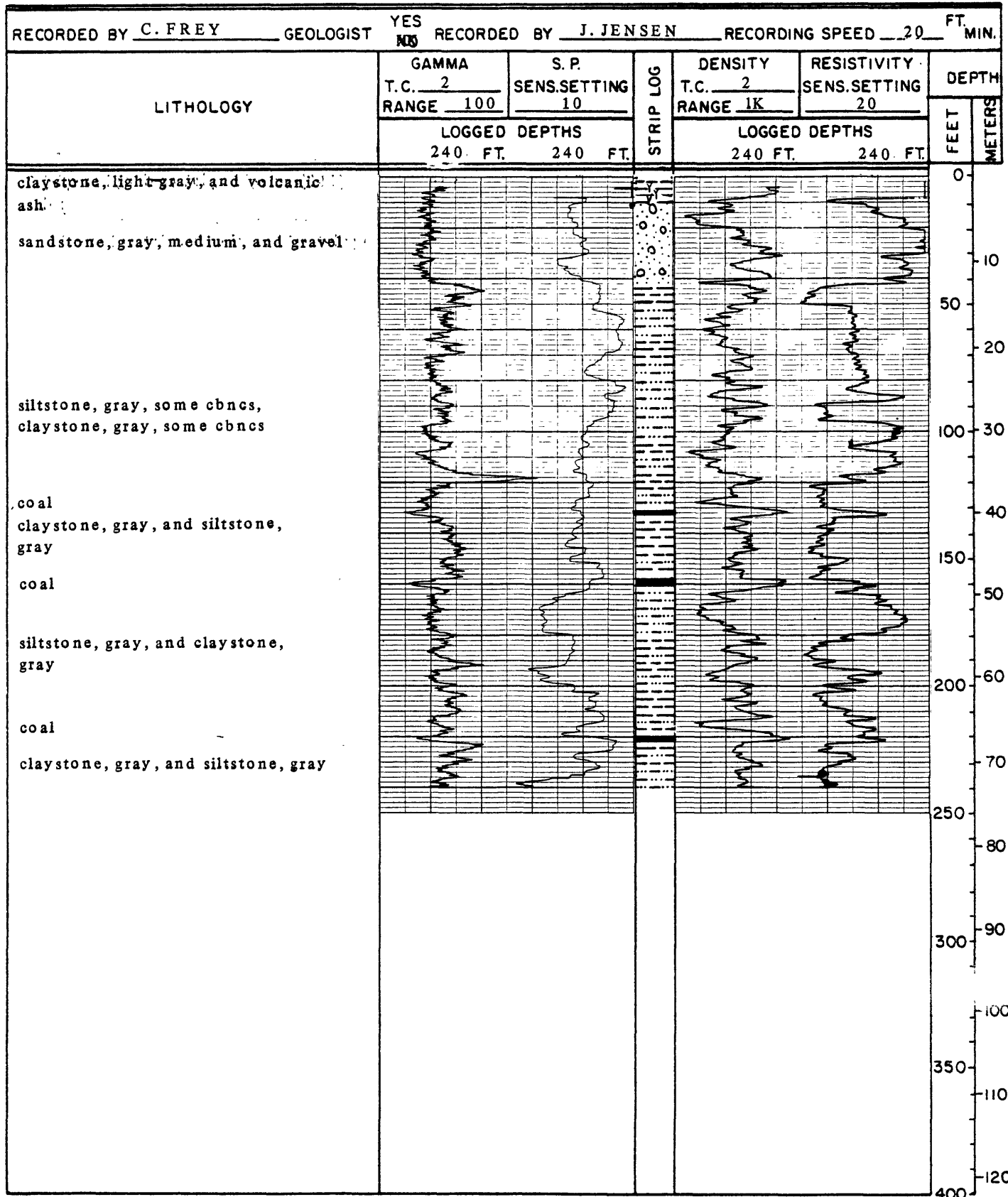
Hole no: US-7864 Map: Brockway Spring Date: 8/17/78 State: Montana County: Daniels
 Elev: 2970 ft Location: T. 37 ^N, R. 43 ^E, Sec. 26, Tract ADDA Drilled depth: 300 ft
 Measured: 2020 ft ^{FNL} ~~FEL~~, 50 ft ^{FEL} ~~FNL~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



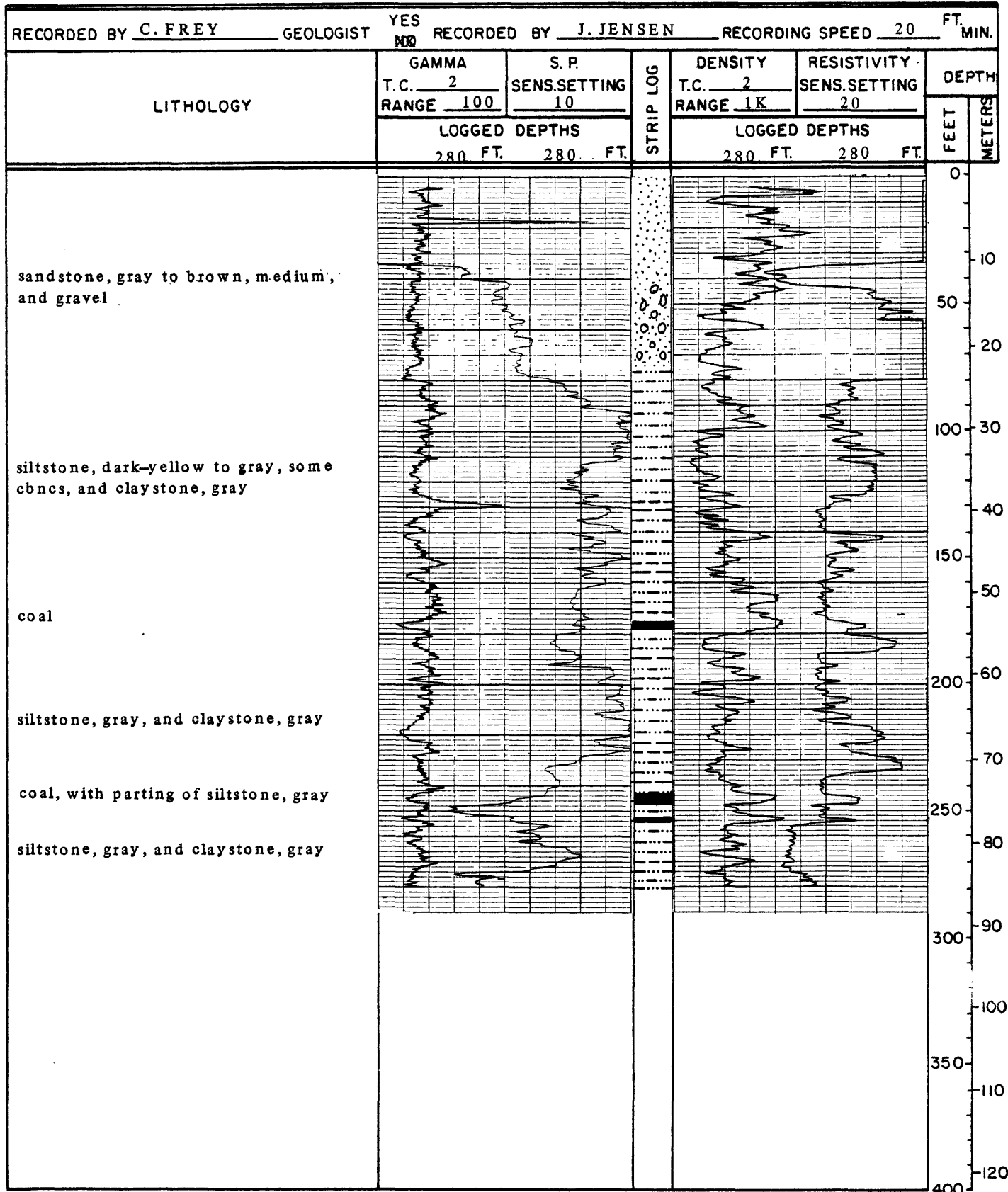
Hole no: US-7865 Map: Brockway Spring Date: 8/18/78 State: Montana County: Daniels
 Elev: 2961 ft Location: T. 36 ^N, R. 43 ^E, Sec. 1, Tract DDCD Drilled depth: 400 ft
 Measured: 300 ft ^{FSL} 700 ft ^{FEL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Logged gamma through stem.



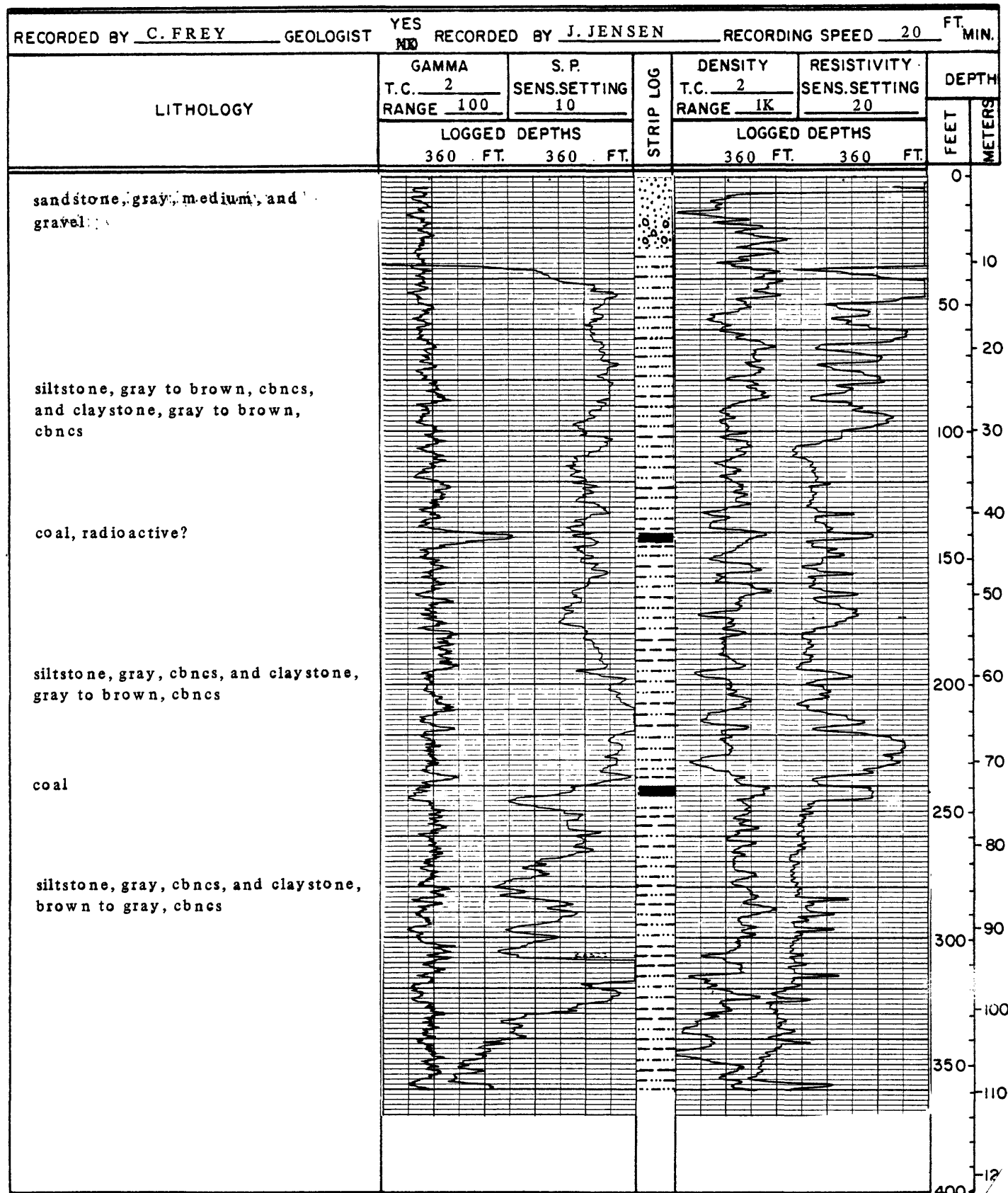
Hole no: US-7866 Map: Brockway Spring Date: 8/18/78 State: Montana County: Daniels
 Elev: 3019 ft Location: T. 36 N. R. 43 E. Sec. 1, Tract AAAB Drilled depth: 240 ft
 Measured: 70 ft ^{FNL} ~~1st~~, 580 ft ^{FEL} ~~2nd~~, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



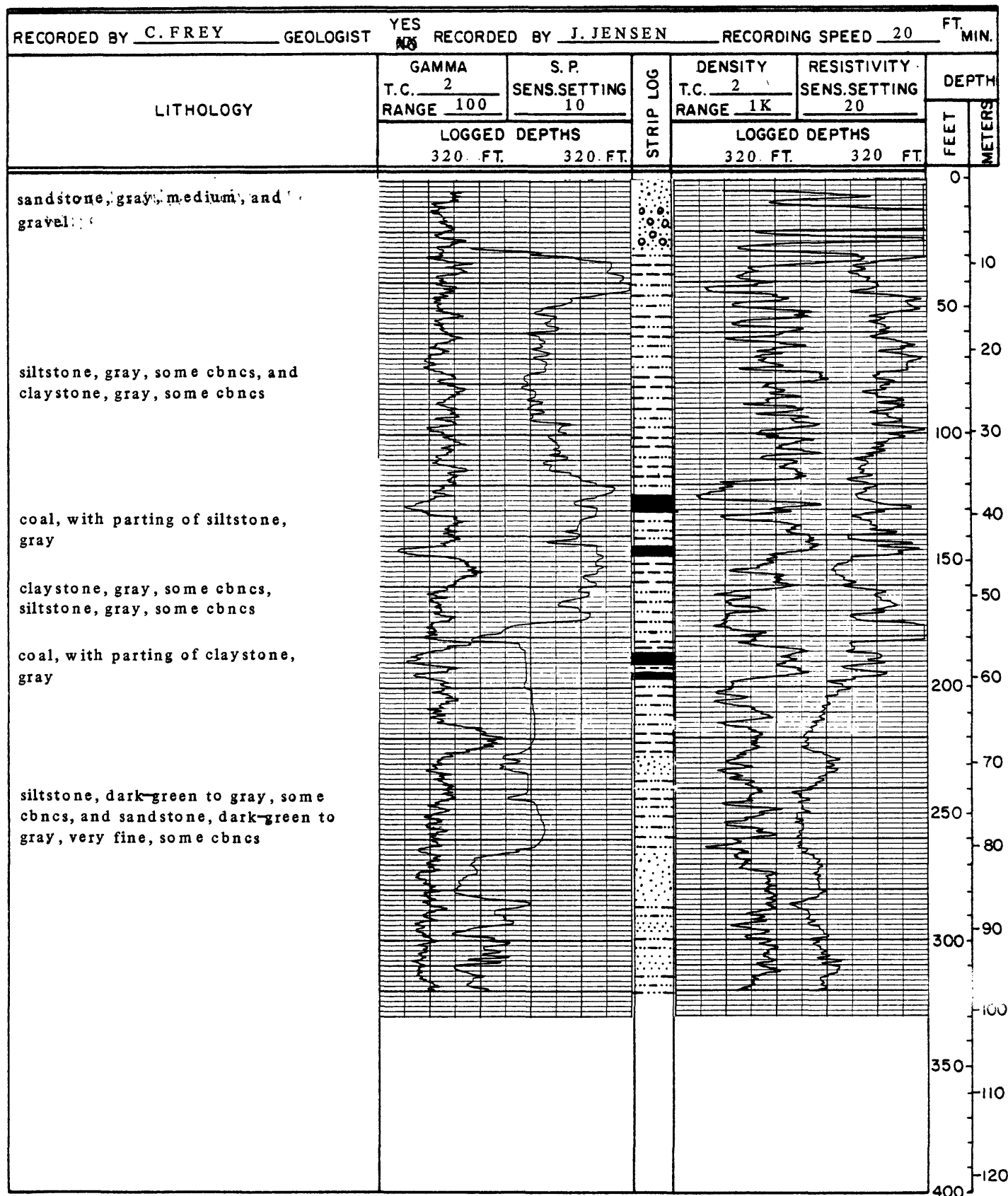
Hole no: US-7867 Map: Flaherty Coulee Date: 8/18/78 State: Montana County: Daniels
 Elev: 3027 ft Location: T. 36 ^N, R. 44 ^E, Sec. 5, Tract CCCC Drilled depth: 280 ft
 Measured: 30 ft ^{RMK} FSL, 60 ft ^{RXX} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Loss of circulation from 170 ft to 200 ft.



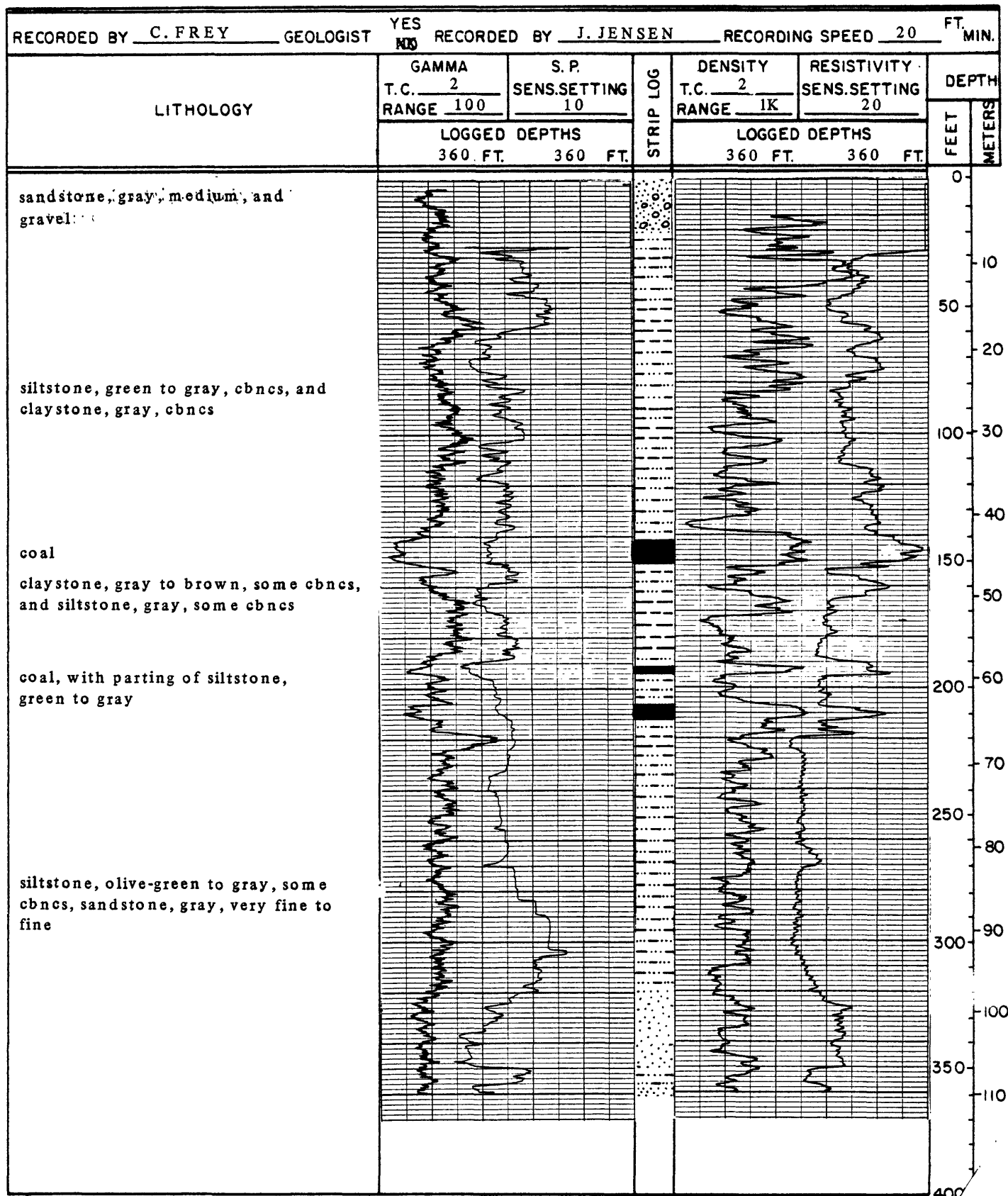
Hole no: US-7868 Map: Hoseshoe Basin Date: 8/20/78 State: Montana County: Daniels
 Elev: 3037 ft Location: T. 36 ^N, R. 44 ^E, Sec. 17, Tract DDDD Drilled depth: 360 ft
 Measured: 30 ft ^{KMX} FSL, 80 ft ^{FEL} ~~KMX~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



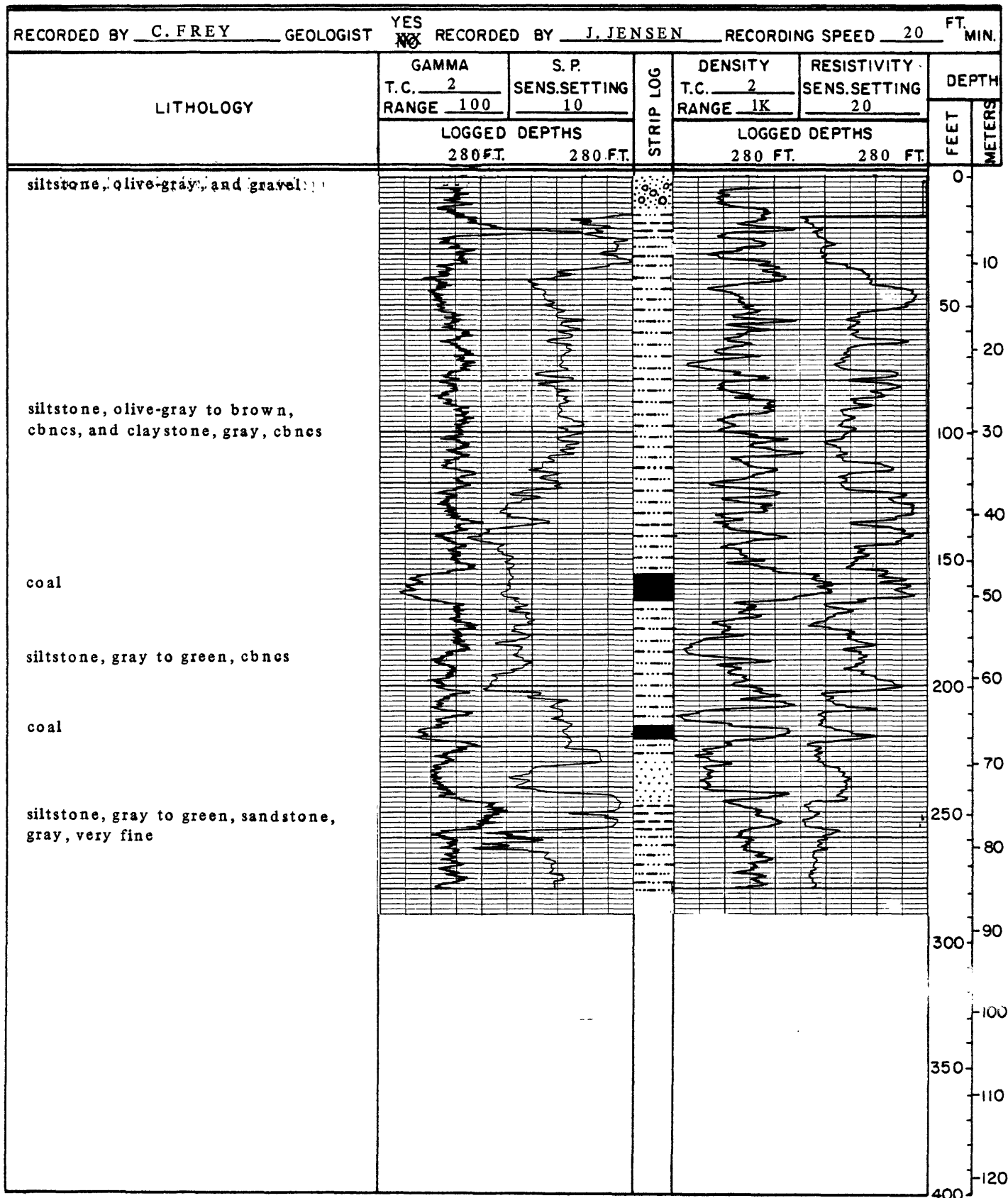
Hole no: US-7869 Map: Brockway Spring Date: 8/21/78 State: Montana County: Daniels
 Elev: 2850 ft Location: T. 37 ^N, R. 43 ^E, Sec. 11, Tract DADD Drilled depth: 320 ft
 Measured: 1600 ft ^{ROCK} FSL, 280 ft ^{FEL} FSL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



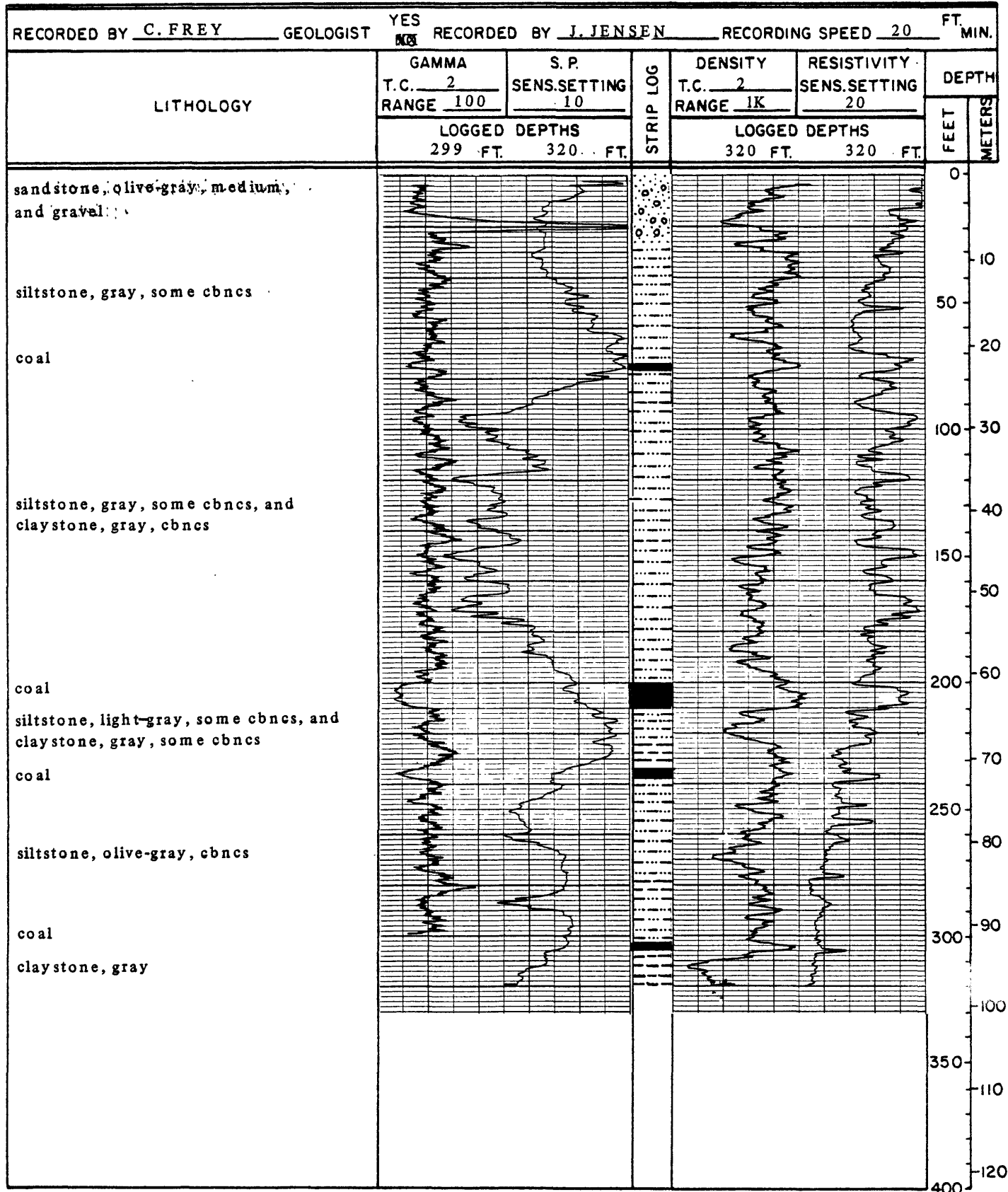
Hole no: US-7870 Map: Brockway Spring Date: 8/21/78 State: Montana County: Daniels
 Elev: 2905 ft Location: T. 37 ^N _S, R. 43 ^E _W, Sec. 5, Tract DAAA Drilled depth: 360 ft
 Measured: 2590 ft ^{FML} _{FSL}, 50 ft ^{FEL} _{FOL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



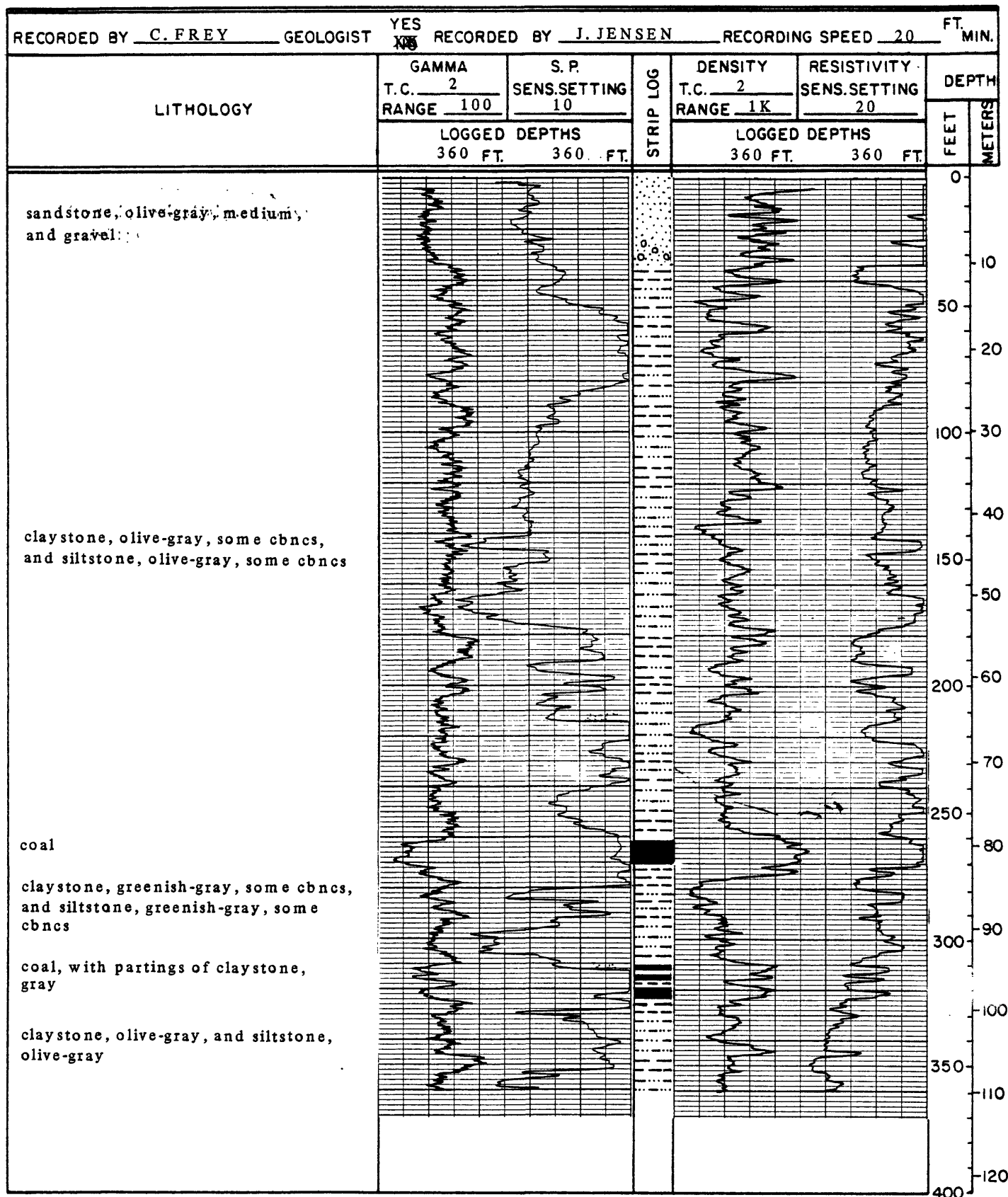
Hole no: US-7871 Map: Brockway Spring Date: 8/22/78 State: Montana County: Daniels
 Elev: 2938 ft Location: T. 37 ^N ~~S~~ R. 43 ^E ~~W~~, Sec. 9, Tract BBDC Drilled depth: 280 ft
 Measured: 1130 ft ^{FNL} ~~RSX~~, 690 ft ^{RSX} ~~FWL~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Lost circulation from 105 ft to 120 ft.



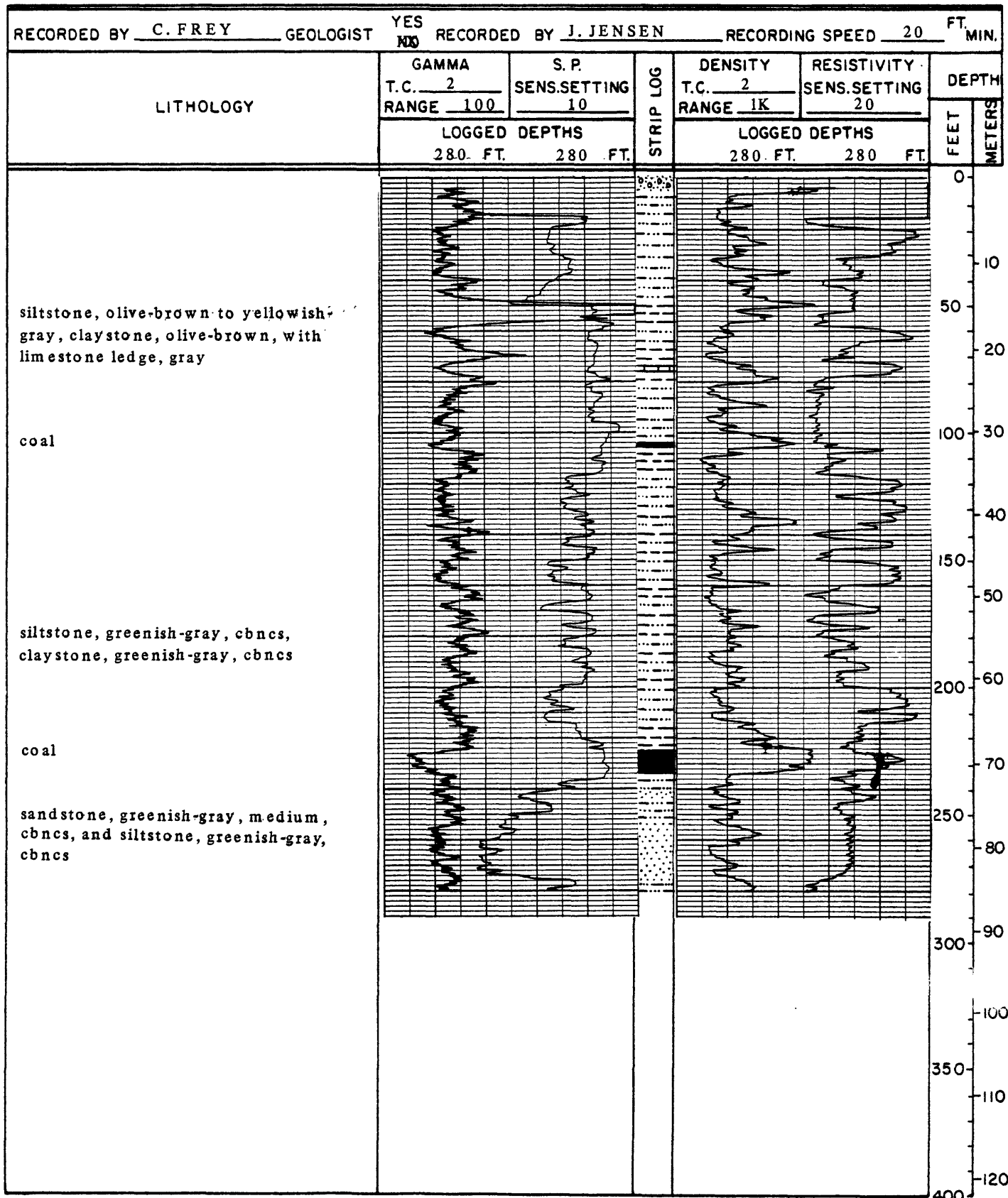
Hole no: US-7872 Map: Brockway Spring Date: 8/22/78 State: Montana County: Daniels
 Elev: 2936 ft Location: T. 37 ^N, R. 43 ^E, Sec. 10, Tract CCCC Drilled depth: 320 ft
 Measured: 30 ft ^{RKX} FSL, 160 ft ^{RKX} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Lost circulation at 285 ft.



Hole no: US-7873 Map: Brockway Spring Date: 8/23/78 State: Montana County: Daniels
 Elev: 3050 ft Location: T. 37 ^N, R. 43 ^E, Sec. 8, Tract DCCD Drilled depth: 360 ft
 Measured: 300 ft ^{RMK} FSL, 2300 ft ^{FEL} FSL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Logged gamma through the stems.



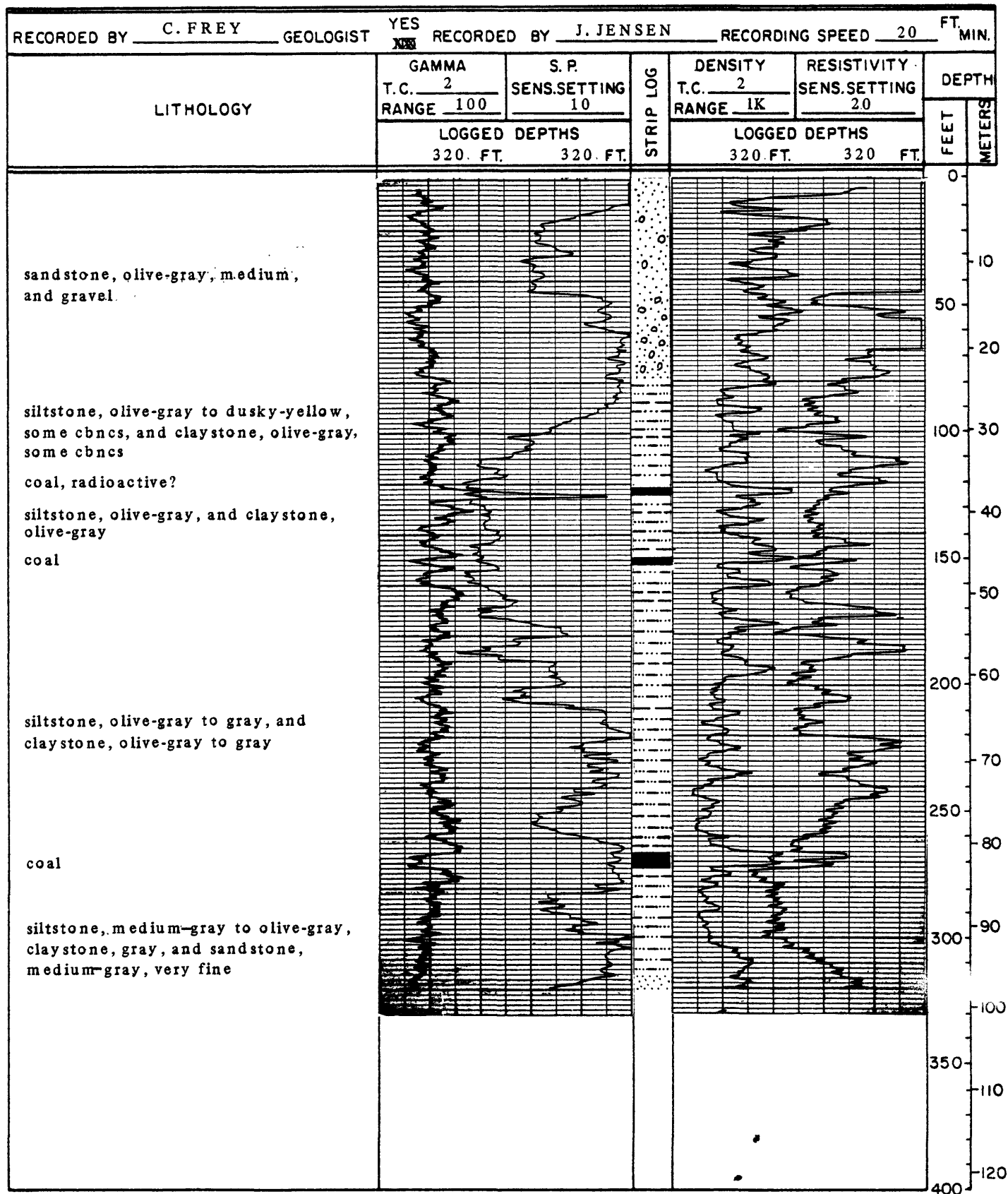
Hole no: US-7874 Map: Brockway Spring Date: 8/29/78 State: Montana County: Daniels
 Elev: 2983 ft Location: T. 37 ^N, R. 43 ^E, Sec. 21, Tract ABAA Drilled depth: 280 ft
 Measured: 15 ft ^{FNL} ~~xxx~~, 1350 ft ^{FEL} ~~xxx~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



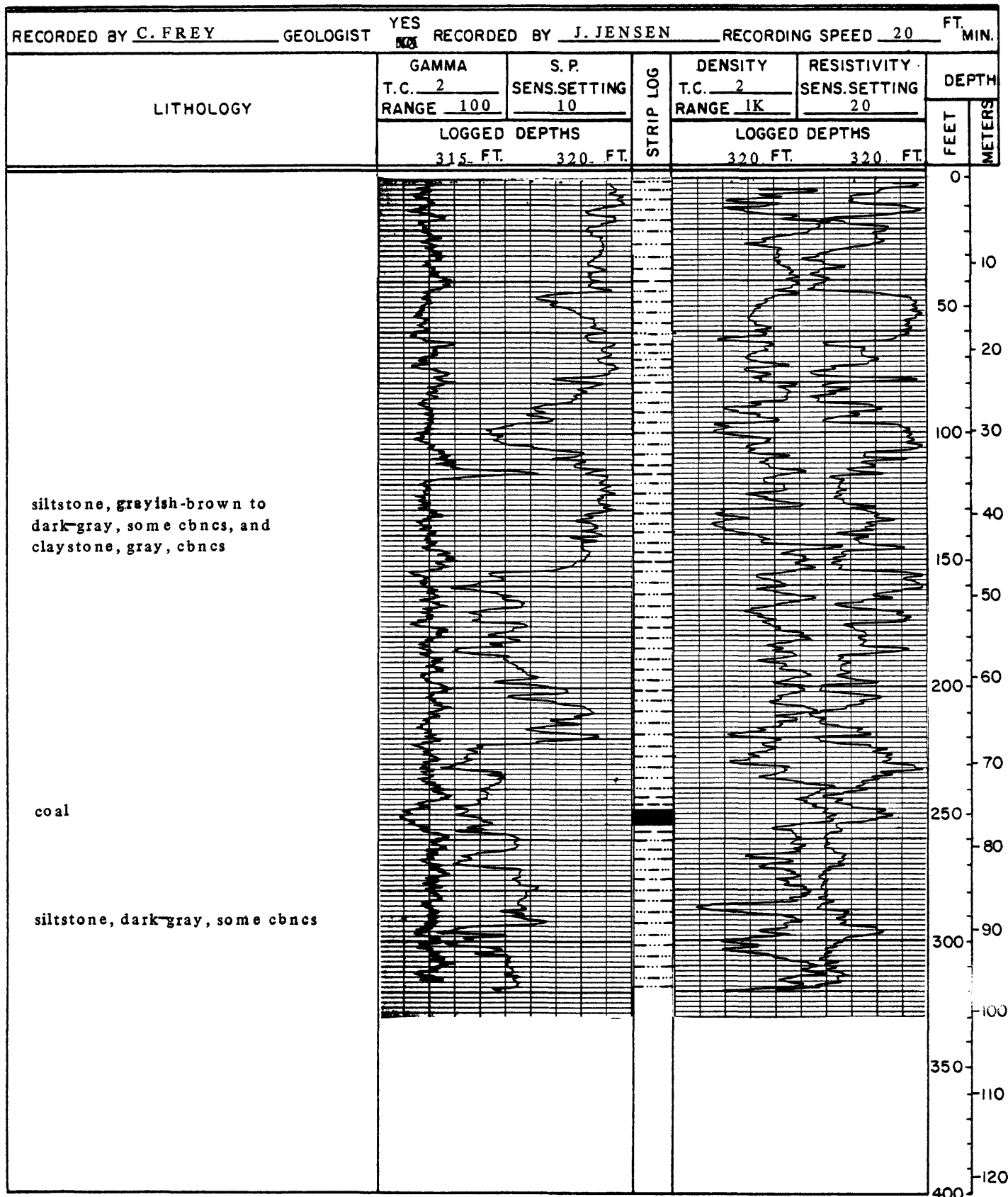
Hole no: US-7875 Map: Brockway Spring Date: 8/30/78 State: Montana County: Daniels
Elev: 3047 ft Location: T. 37 ^{N.}, R. 43 ^{E.}, Sec. 20, Tract BAAA Drilled depth: 280 ft
Measured: 15 ^{FNL} ft 2350 ^{SPK} ft, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA	S. P.	STRIP LOG	DENSITY	RESISTIVITY	DEPTH
	T.C. <u>2</u>	SENS.SETTING		T.C. <u>2</u>	SENS.SETTING	
	RANGE <u>100</u>	<u>10</u>		RANGE <u>1K</u>	<u>20</u>	
	LOGGED DEPTHS			LOGGED DEPTHS		
	280. FT.	280. FT.		280. FT.	280. FT.	FEET METERS
<p>sandstone, olive-gray to white, medium, and gravel</p> <p>siltstone, olive-gray to dusky-yellow, cbncs, and claystone, olive-gray to dusky-yellow, cbncs</p> <p>coal</p> <p>siltstone, olive-gray, some cbncs, and sandstone, olive-gray, medium, some cbncs</p>						<p>0</p> <p>10</p> <p>50</p> <p>20</p> <p>100</p> <p>30</p> <p>40</p> <p>150</p> <p>50</p> <p>200</p> <p>60</p> <p>70</p> <p>250</p> <p>80</p> <p>300</p> <p>90</p> <p>100</p> <p>350</p> <p>110</p> <p>400</p> <p>120</p>

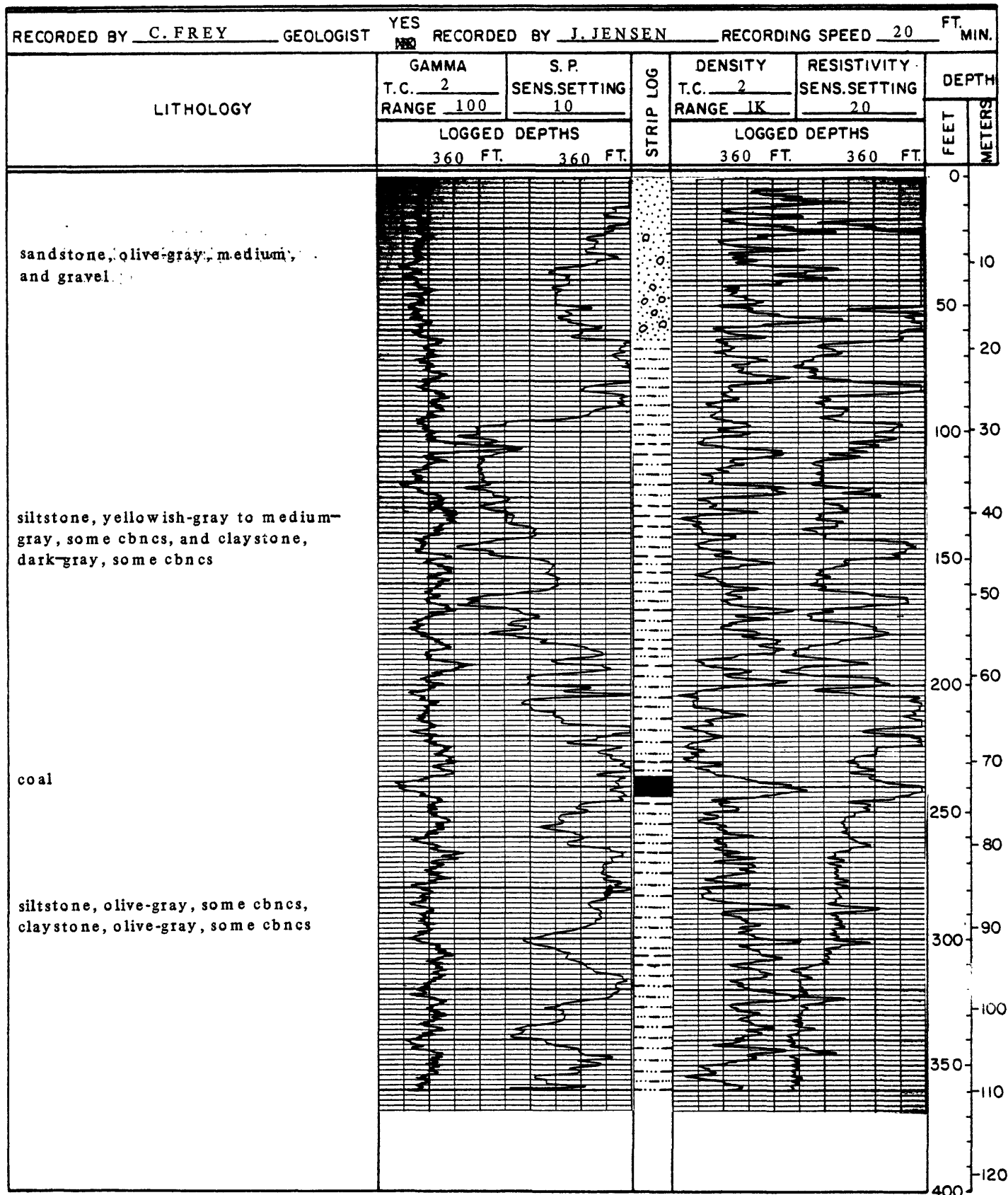
Hole no: US-7876 Map: Brockway Spring Date: 8/30/78 State: Montana County: Daniels
 Elev: 3072 ft Location: T. 37 ^N, R. 43 ^E, Sec. 29, Tract AAAA Drilled depth: 320 ft
 Measured: 4 ^{FEET} ~~ft~~, 7 ^{FEET} ~~ft~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



Hole no: US-7877 Map: Brockway Spring Date: 8/30/78 State: Montana County: Daniels
 Elev: 3013 ft Location: T. 37 ^N, R. 43 ^E, Sec. 27, Tract BBAA Drilled depth: 320 ft
 Measured: 15 ft ^{FNL} ~~SS~~, 1300 ft ^{SS} ~~FWL~~, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Lost circulation at 50 ft to 60 ft and 305 ft to 320 ft.



Hole no: US-7878 Map: Brockway Spring Date: 8/31/78 State: Montana County: Daniels
 Elev: 3050 ft Location: T. 37 ^N, R. 43 ^E, Sec. 33, Tract BBBB Drilled depth: 360 ft
 Measured: 5 ft ^{FNL} ~~15~~ ft ^{FWL} ~~15~~ ft, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Lost circulation 295 ft to 320 ft.



Hole no: US-7879 Map: Horseshoe Basin Date: 8/31/78 State: Montana County: Daniels
 Elev: 2913 ft Location: T. 36 ^N, R. 44 ^E, Sec. 27, Tract AACB Drilled depth: 240 ft
 Measured: 920 ft ^{FNL} ~~1230~~ ft ^{FEL} ~~1230~~ ft, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 240 FT. 240 FT.			LOGGED DEPTHS 240 FT. 240 FT.		
	siltstone, olive-brown, claystone, olive-brown, and limestone, gray coal siltstone, medium to dark-gray, some cbncls, and claystone, dark-gray, some cbncls coal siltstone, greenish-gray, some cbncls, claystone, greenish-gray, some cbncls coal, with parting of siltstone, olive-gray siltstone, greenish-gray coal siltstone, greenish-gray					

Hole no: US-7880 Map: Horseshoe Basin Date: 9/1/78 State: Montana County: Daniels
 Elev: 2845 ft Location: T. 36 N. R. 45 E. Sec. 19 Tract BDDD Drilled depth: 200 ft
 Measured: 2601 ft ^{FNL} ~~RSX~~, 2460 ft ^{FNL} ~~RSX~~ Hole size: 4 3/4 in. Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 200 FT. 200 FT.			LOGGED DEPTHS 200 FT. 200 FT.		
	siltstone, olive-gray to dark-gray, calcareous, some cbncs, and claystone, olive-gray sandstone, greenish-gray, medium, limestone ledge, gray, and claystone, greenish-gray coal siltstone, olive-gray to medium-gray some cbncs coal, with parting of siltstone, greenish-gray siltstone, greenish-gray, cbncs, and sandstone, medium-gray, very fine, cbncs					

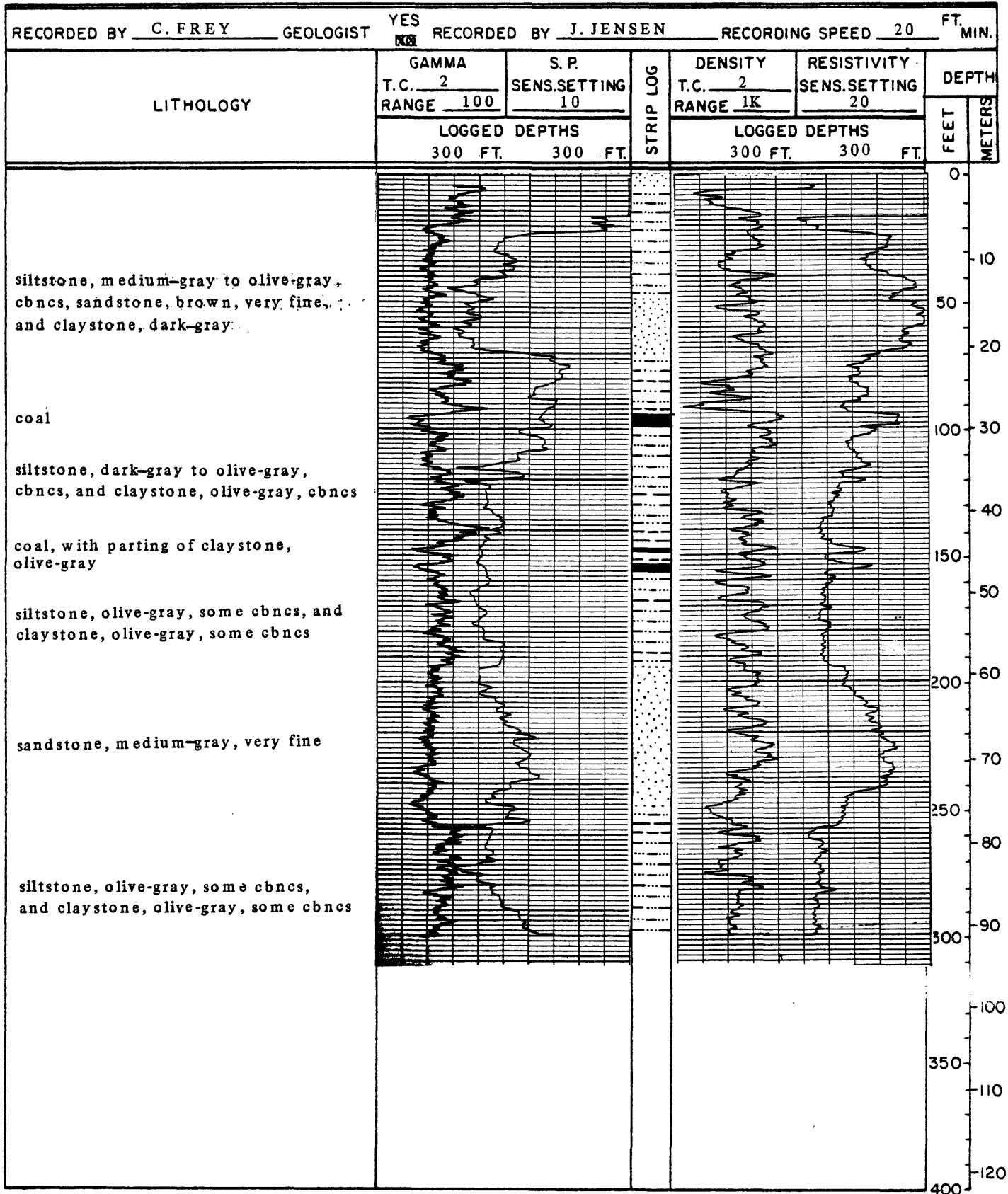
Hole no: US-7881 Map: Horseshoe Basin Date: 9/1/78 State: Montana County: Daniels
 Elev: 3022 ft Location: T. 36 ^{N.} S., R. 44 ^{E.} W., Sec. 13, Tract CCBB Drilled depth: 360 ft
 Measured: 1230 ft ^{FSL}, 10 ft ^{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Lost circulation 235 ft.

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 360 FT. 290 FT.			LOGGED DEPTHS 290 FT. 290 FT.		
	<p>sandstone, olive-gray, medium, calcareous, and gravel.</p> <p>siltstone, pale-olive to dusky-yellow, calcareous, some cbncs</p>					

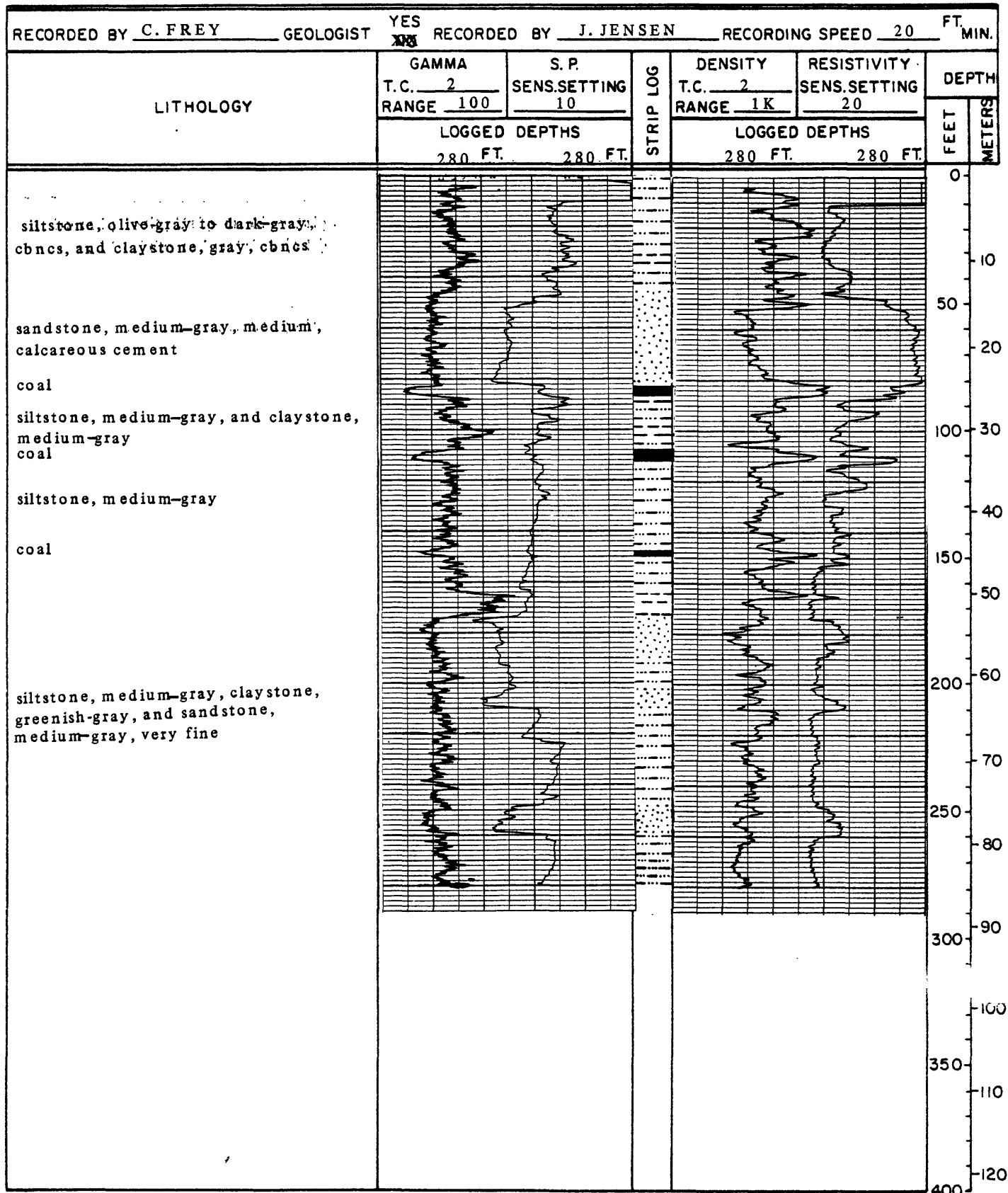
Hole no: US-7882 Map: Flaherty Coulee Date: 9/2/78 State: Montana County: Daniels
 Elev: 2820 ft Location: T. 36 ^N, R. 45 ^E, Sec. 7, Tract CCCD Drilled depth: 260 ft
 Measured: 150 ft ^{KOK} FSL, 400 ft ^{KOK} FWL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 260 FT. 260 FT.			LOGGED DEPTHS 260 FT. 260 FT.		
	sandstone, olive-gray, medium					
siltstone, medium-gray to greenish-gray, cbncls, and claystone, gray						10
coal						50
						20
						100
siltstone, medium-gray to olive-gray, cbncls, claystone, medium-gray to olive-gray, cbncls, and sandstone, greenish-gray, very fine						30
						40
						150
						50
coal						200
claystone, olive-green, and siltstone, olive-green						60
coal						70
						250
siltstone, greenish-gray, and sandstone, greenish-gray, very fine						80
						300
						100
						350
						110
						120
						400

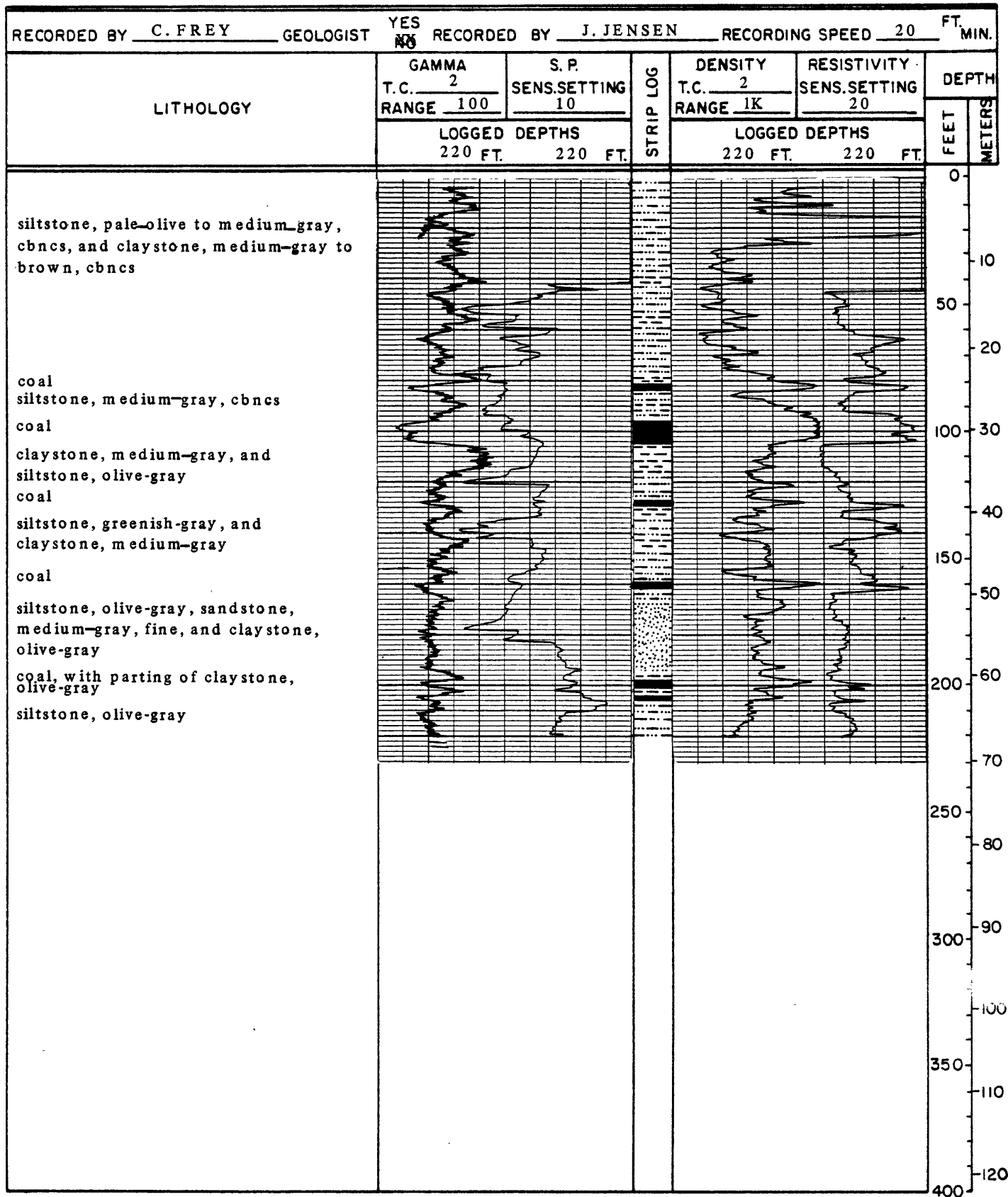
Hole no: US-7883 Map: Peerless Date: 9/2/78 State: Montana County: Daniels
 Elev: 2878 ft Location: T. 36 ^N, R. 45 ^E, Sec. 29, Tract DDDD Drilled depth: 300 ft
 Measured: 57 ft ^{ROCK} FSL, 45 ft ^{FEL} FSL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



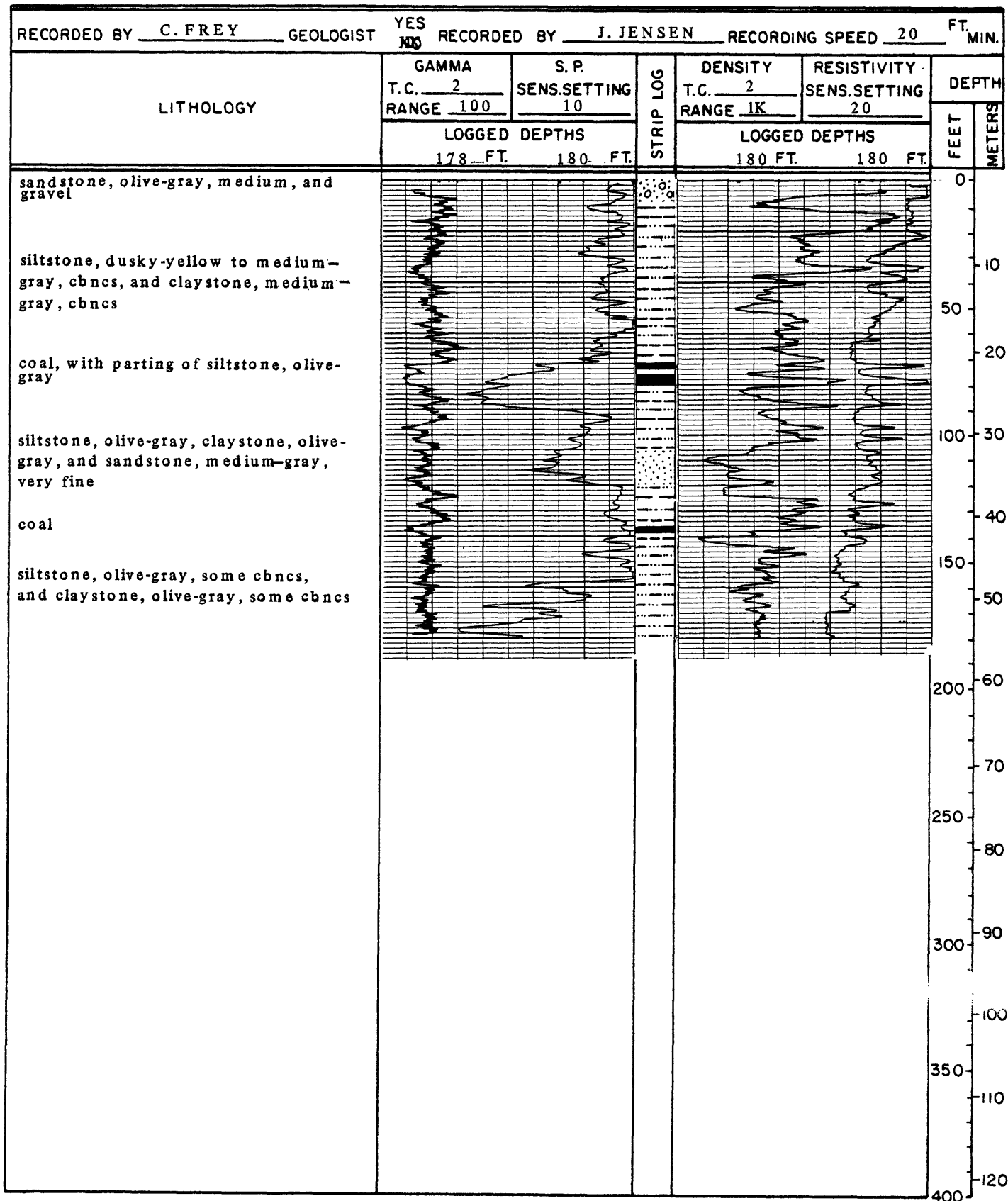
Hole no: US-7884 Map: Flaherty Coulee Date: 9/2/78 State: Montana County: Daniels
 Elev: 2790 ft Location: T. 37 ^{N.} ~~S.~~, R. 44 ^{E.} ~~W.~~, Sec. 18, Tract ADDC Drilled depth: 280 ft
 Measured: 2570 ft ^{FNL} ~~SSL~~, 400 ft ^{FEL} ~~SSL~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



Hole no: US-7885 Map: Carbert Date: 9/3/78 State: Montana County: Daniels
 Elev: 2757 ft Location: T. 37 ^N, R. 44 ^E, Sec. 1, Tract DDDC Drilled depth: 220 ft
 Measured: 40 ft ^{KK}FSL, 480 ft ^{FEL}FSL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



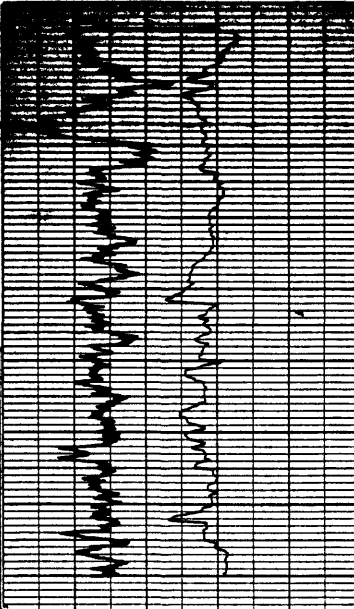
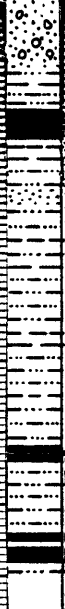
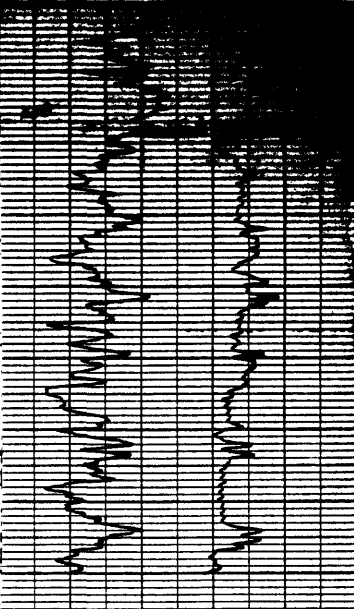
Hole no: US-7886 Map: Carbert Date: 9/3/78 State: Montana County: Daniels
 Elev: 2658 ft Location: T. 37 ^N, R. 45 ^E, Sec. 5, Tract CCCC Drilled depth: 180 ft
 Measured: 30 ft ^{KKK} FSL, 30 ft ^{KKK} FWL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



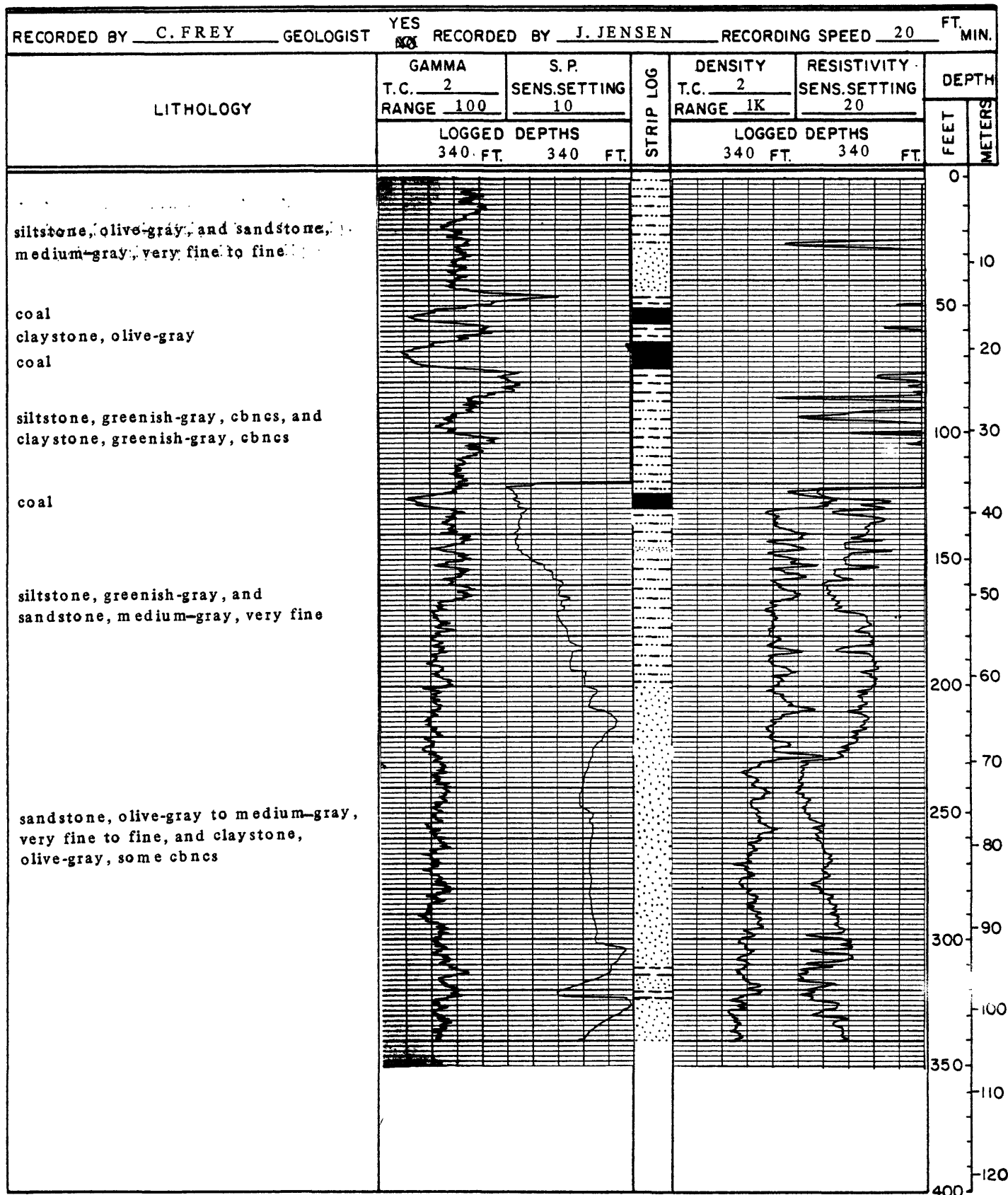
Hole no: US-7887 Map: Carbert Date: 9/3/78 State: Montana County: Daniels
 Elev: 2741 ft Location: T. 37 ^N, R. 45 ^E, Sec. 7, Tract CCCC Drilled depth: 220 ft
 Measured: 10 ft ^{FSL}, 10 ft ^{FWL}, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS <u>219</u> FT. <u>220</u> FT.			LOGGED DEPTHS <u>222</u> FT. <u>220</u> FT.		
	sandstone, light-brown, coarse					
siltstone, dusky-yellow to medium-gray, cbncs, claystone, medium-gray, cbncs, and sandstone, dusky-yellow, very fine						10
coal, with parting of siltstone, medium-gray						50
						20
						100
						30
						40
siltstone, olive-gray, some cbncs, claystone, olive-gray, some cbncs, and sandstone, greenish-gray, very fine						150
						50
						200
						60
						70
						250
						80
						300
						90
						100
						350
						110
						400

Hole no: US-7888 Map: Carhart Date: 9/4/78 State: Montana County: Daniels
 Elev: 2666 ft Location: T. 37 ^N, R. 45 ^E, Sec. 7, Tract DDDD Drilled depth: 160 ft
 Measured: 20 ft ^{FSL}, 20 ft ^{FEL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 160 FT. 160 FT.			LOGGED DEPTHS 160 FT. 160 FT.		
	sandstone, olive-gray, coarse, and gravel claystone, pale-olive, cbncls, and siltstone, olive-gray, cbncls coal siltstone, medium-gray to greenish-gray, claystone, olive-gray, and sandstone, medium-gray, very fine coal, with parting of siltstone, greenish-gray siltstone, greenish-gray, cbncls coal, with parting of claystone, olive-gray siltstone, greenish-gray					

Hole no: US-7889 Map: Carbert Date: 9/4/78 State: Montana County: Daniels
 Elev: 2729 ft Location: T. 37 ^N, R. 45 ^E, Sec. 5, Tract BCBC Drilled depth: 340 ft
 Measured: 1960 ft ^{FNL} ~~1960~~, 225 ft ^{XXX} ~~225~~ FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



Hole no: US-7890 Map: Carbert Date: 9/4/78 State: Montana County: Daniels
 Elev: 2780 ft Location: T. 37 ^N, R. 44 ^E, Sec. 1, Tract A.A.D.A. Drilled depth: 240 ft
 Measured: 830 ft ^{ENL}, 50 ft ^{FEL}, Hole size: 4 3/4 in, Air ☒ Water ☐ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.	
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH	
	LOGGED DEPTHS <u>238</u> FT. <u>238</u> FT.			LOGGED DEPTHS <u>238</u> FT. <u>238</u> FT.		FEET	METERS
	siltstone, olive-gray to dusky-yellow, calcareous sandstone, light-olive-brown to dusky-yellow, medium, calcareous, and claystone, light-gray coal claystone, light-gray, and siltstone, medium-gray coal siltstone, light-gray to medium-gray, and claystone, light-gray coal siltstone, medium-gray						0
						10	
						50	
						20	
						100	30
						40	
						150	
						50	
						200	60
						70	
						250	
						80	
						300	90
						100	
						350	
						110	
						400	120

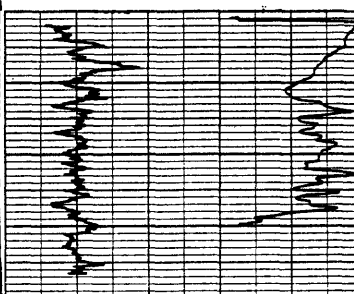
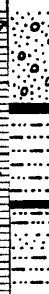
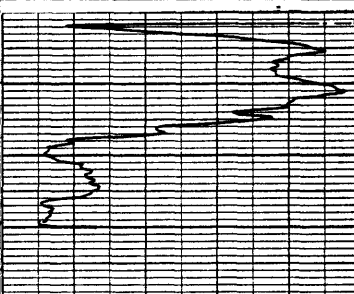
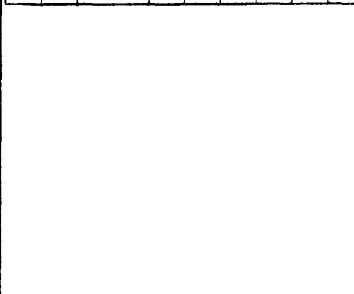

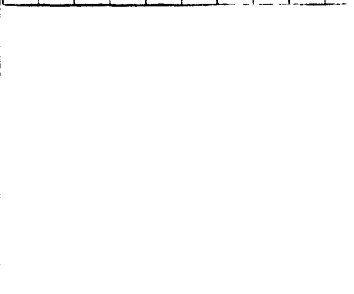


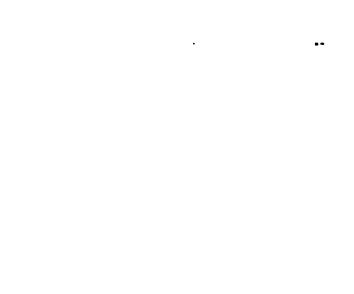



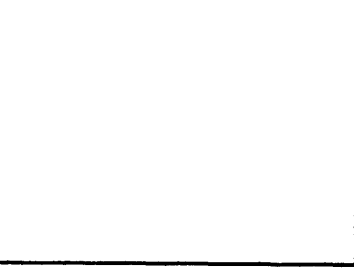

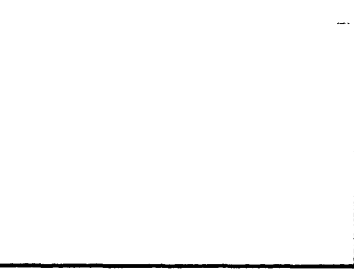
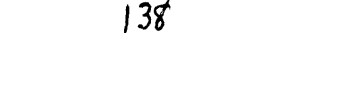


Hole no: US-7891 Map: Carbert Date: 9/4/78 State: Montana County: Daniels
 Elev: 2765 ft Location: T. 37 ^N, R. 44 ^E, Sec. 1, Tract BBCB Drilled depth: 300 ft
 Measured: 715 ft ^{FNL} ~~XXX~~, 50 ft ^{FWL} ~~XXX~~, Hole size: 4 3/4 in, Air ☒ Water ☐ Cored Yes ☐ No ☒
 Remarks: Air injected with water.

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 293 FT. 289 FT.			LOGGED DEPTHS 294 FT. 289 FT.		
	siltstone, light-olive-brown to dusky- yellow; cbncs, claystone, dusky-yellow, cbncs coal siltstone, olive-gray to medium-gray, cbncs, claystone, gray, cbncs coal siltstone, greenish-gray to medium- gray, cbncs coal, with parting of siltstone, olive-gray claystone, medium-gray, cbncs, and siltstone, greenish-gray to medium- gray, cbncs coal siltstone, olive-gray, and claystone, olive-gray coal siltstone, greenish-gray					

Hole no: US-7892 Map: Carbert Date: 9/5/78 State: Montana County: Daniels
 Elev: 2830 ft Location: T. 37 ^N _S, R. 44 ^E _W, Sec. 1, Tract CCCC Drilled depth: 320 ft
 Measured: 100 ft ^{XXX} FSL, 50 ft ^{XXX} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.	
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH	
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS
	320. FT.	320. FT.		320. FT.	320. FT.		
gravel:						0	
						10	
						50	
						20	
siltstone, dusky-yellow to olive-gray, cbncls, claystone, medium-gray, cbncls, and sandstone, dusky-yellow, very fine						100	30
						40	
coal						50	
						150	
siltstone, medium-gray, sandstone, medium-gray, very fine						50	
						200	60
coal, with parting of siltstone, medium-gray						70	
						250	
siltstone, medium-gray, claystone, medium-gray						80	
						300	90
coal						100	
claystone, medium-gray, and siltstone, olive-gray						350	
						110	
coal, with parting of claystone, medium-gray						120	
						400	
claystone, olive-gray to medium-gray, siltstone, olive-gray, and sandstone, greenish-gray, very fine							

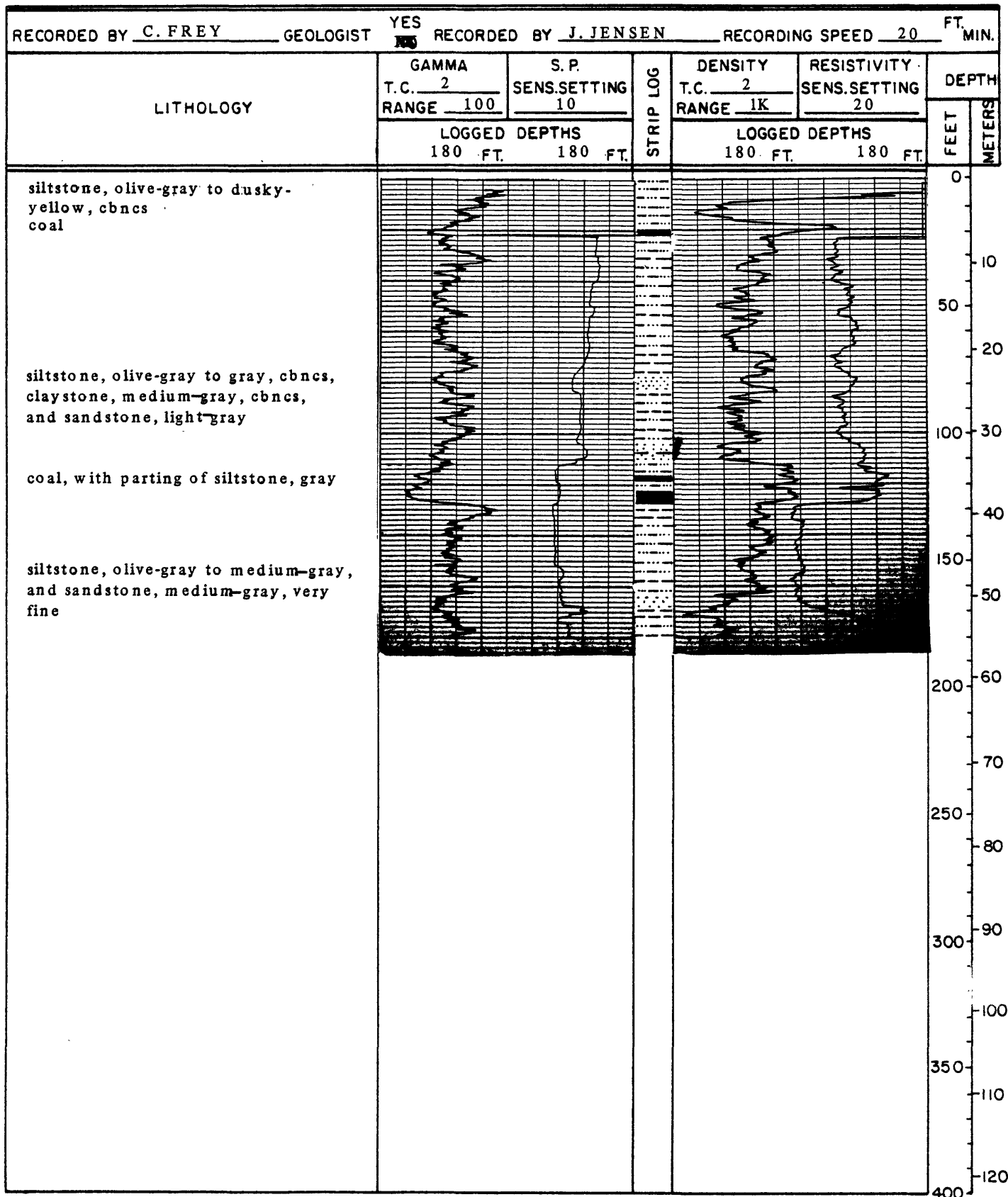
Hole no: US-7893 Map: Flaherty Coulee Date: 9/6/78 State: Montana County: Daniels
 Elev: 2755 ft Location: T. 37 ^N_S, R. 44 ^E_W, Sec. 14, Tract CCBD Drilled depth: 80 ft
 Measured: 950 ft ^{FWL}_{FSL}, 590 ft ^{FWL}_{FSL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Coal is possibly thinned by pre-Wiota erosion.

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>10</u>	DEPTH FEET METERS
	LOGGED DEPTHS <u>73</u> FT. <u>60</u> FT.			LOGGED DEPTHS FT. <u>60</u> FT.		
	gravel and sand, coarse					
coal	10					
siltstone, dusky-yellow to medium-gray						50
coal						20
siltstone, olive-gray, and sandstone, medium-gray, very fine						30
						40
						50
						60
						70
						80
						90
						100
						110
						120
						130
						140
						150
						160
						170
						180
						190
						200
						210
						220
						230
						240
						250
						260
						270
						280
						290
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						310
						320
						330
						340
						350
						360
						370
						380
						390
						400

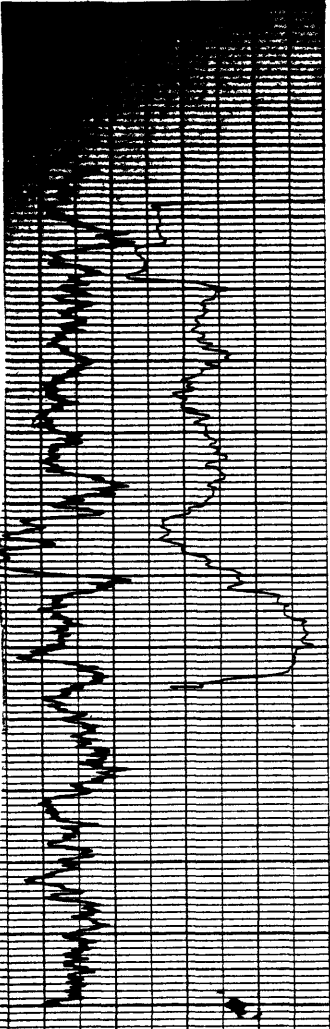

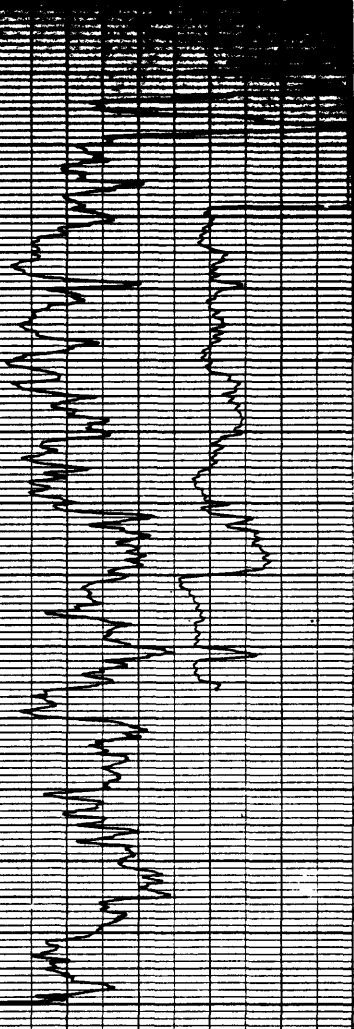
Hole no: US-7894 Map: Flaherty Coulee Date: 9/6/78 State: Montana County: Daniels
 Elev: 2855 ft Location: T. 37 ^N, R. 44 ^E, Sec. 3, Tract DDCA Drilled depth: 80 ft
 Measured: 520 ft ⁸⁰⁰ ~~FSL~~, 675 ft ^{FEEL} ~~FSL~~, Hole size: 4 3/4 in. Air ☐ Water ☐ Cored Yes ☐ No ☐
 Remarks: Abandoned hole, 80 ft of gravel. No Fort Union penetrated. No geophysical logs run.

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY _____		RECORDING SPEED _____ FT. MIN.			
LITHOLOGY	GAMMA T.C. _____ RANGE _____	S. P. SENS.SETTING _____	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS.SETTING _____	DEPTH	
	LOGGED DEPTHS			LOGGED DEPTHS			
	FT.	FT.		FT.	FT.	FEET	METERS
gravel						0	
							10
							50
							20
							100
							30
							40
							150
							50
							200
							60
							70
							250
					80		
					300		
					90		
					100		
					350		
					110		
					400		
					120		

Hole no: US-7895 Map: Carbert Date: 9/6/78 State: Montana County: Daniels
 Elev: 2761 ft Location: T. 37 ^{N.} 8, R. 45 ^{E.} 7, Sec. 30, Tract CAAB Drilled depth: 180 ft
 Measured: 2525 ft ^{BMK} FSL, 2175 ft ^{XXX} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



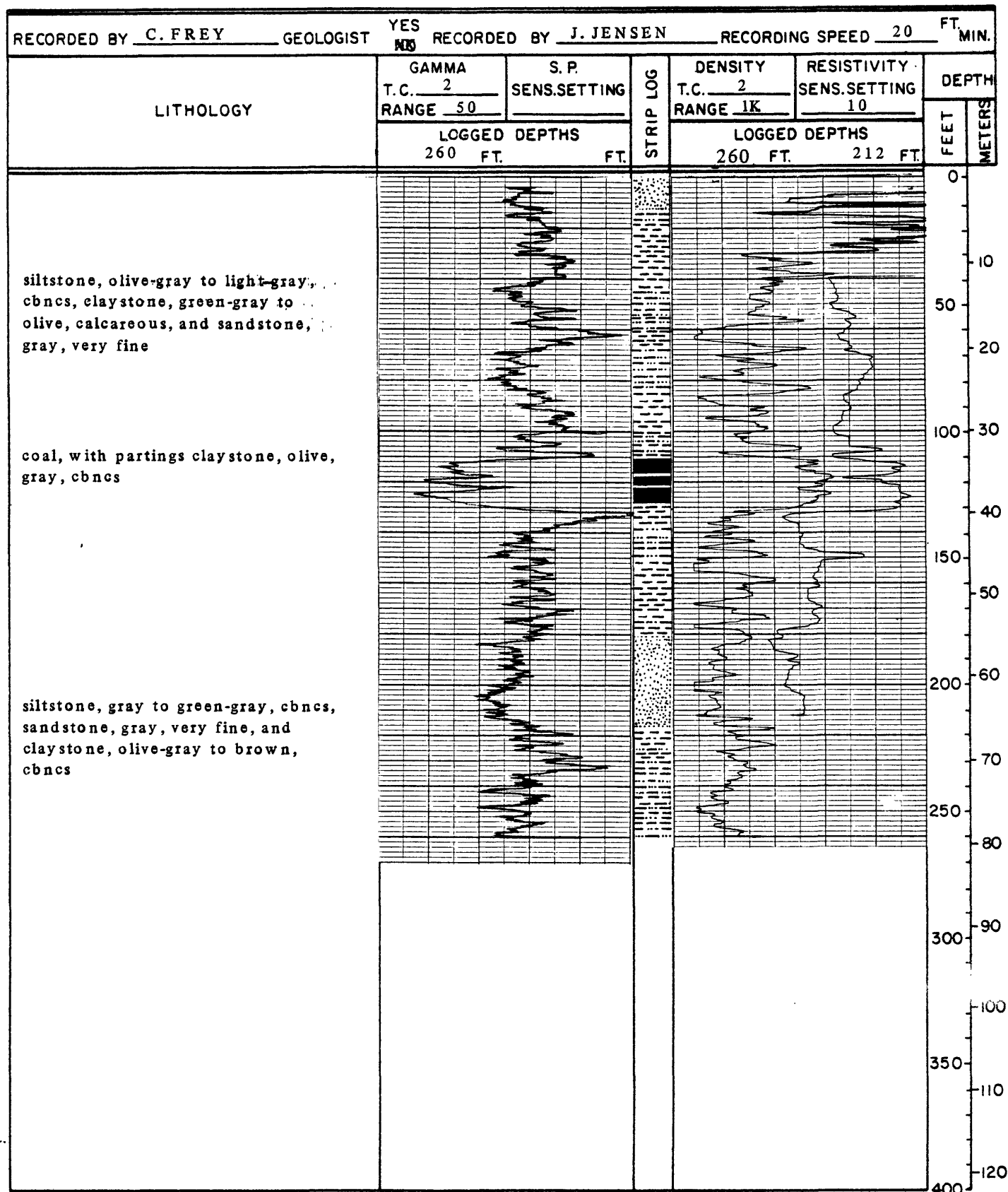
Hole no: US-7896 Map: Carbert Date: 9/6/78 State: Montana County: Daniels
 Elev: 2759 ft Location: T. 37 ^N, R. 45 ^E, Sec. 21, Tract CDDD Drilled depth: 280 ft
 Measured: 50 ft ^{SNK} FSL, 2555 ft ^{SNK} FWL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 280 FT. 192 FT.			LOGGED DEPTHS 280 FT. 192 FT.		
	<p>sandstone, olive-gray, very fine, calcareous, siltstone, olive-gray to medium-gray, and claystone, olive-gray to dark-gray</p> <p>coal, with partings of siltstone, gray</p> <p>siltstone, olive-gray, sandstone, medium-gray, very fine, and claystone, olive-gray coal</p> <p>claystone, olive-gray, siltstone, olive-gray to medium-gray, and sandstone, medium-gray, very fine coal</p> <p>siltstone, olive-gray to medium-gray, and sandstone, medium-gray, very fine</p>					

Hole no: US-7897 Map: Carbert Date: 9/7/78 State: Montana County: Daniels
 Elev: 2729 ft Location: T. 36 ^N, R. 45 ^E, Sec. 4, Tract AAAA Drilled depth: 220 ft
 Measured: 10 ft ^{FNL}, 30 ft ^{FEL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS <u>173</u> FT. <u>173</u> FT.			LOGGED DEPTHS <u>173</u> FT. <u>173</u> FT.		
	sandstone, olive-gray, coarse, and gravel siltstone, pale-olive to medium-gray, cbncls, and claystone, olive-gray, cbncls coal siltstone, olive-gray, cbncls, claystone, olive-gray, cbncls, limestone, tan, and sandstone, greenish-gray, medium					

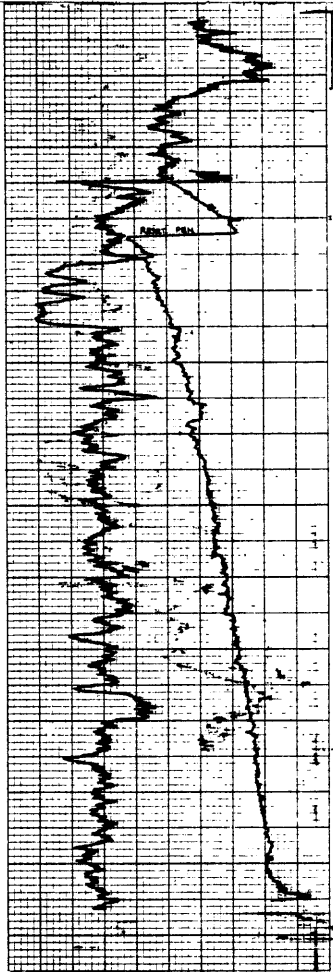
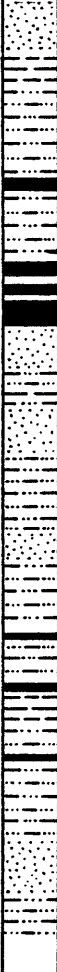
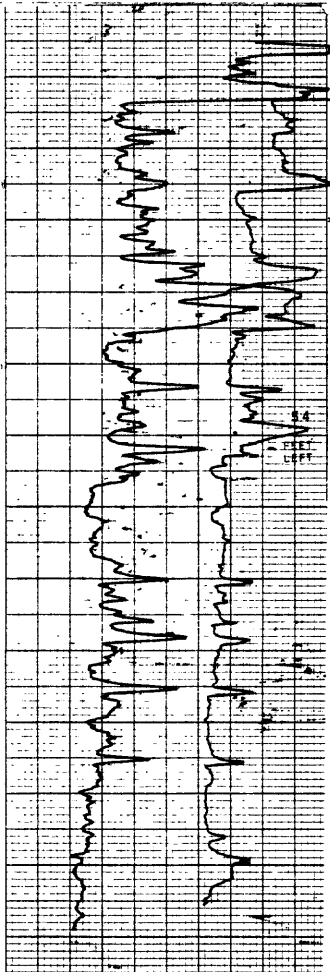
Hole no: US-7898 Map: Carbert Date: 9/14/78 State: Montana County: Daniels
 Elev: 2681 ft Location: T. 37 N, R. 45 W, Sec. 15, Tract DBBB Drilled depth: 260 ft
 Measured: 2650 ft ^{FNL}, 2590 ft ^{FEL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



Hole no: US-7899 Map: Four Buttes, N.W. Date: 9/16/78 State: Montana County: Daniels
 Elev: 2632 ft Location: T. 37 N., R. 45 E., Sec. 13, Tract ADDA Drilled depth: 340 ft
 Measured: 2270 ft ^{FNL} 200 ft ^{FEL} 270 ft, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING <u>250</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING <u>100</u>	DEPTH FEET METERS
	LOGGED DEPTHS <u>335</u> FT. <u>333</u> FT.			LOGGED DEPTHS <u>340</u> FT. <u>333</u> FT.		
	siltstone, olive-gray to dusky-yellow, cbncls, sandstone, olive-gray, very fine, and claystone, olive-gray, cbncls coal, with four partings of siltstone, medium-gray claystone, olive-gray, siltstone, olive-gray, and sandstone, medium-gray, fine coal siltstone, olive-gray, sandstone, greenish-gray, fine, and claystone, olive-gray coal siltstone, olive-gray coal, with parting of siltstone, olive-gray siltstone, greenish-gray, and sandstone, greenish-gray, fine					

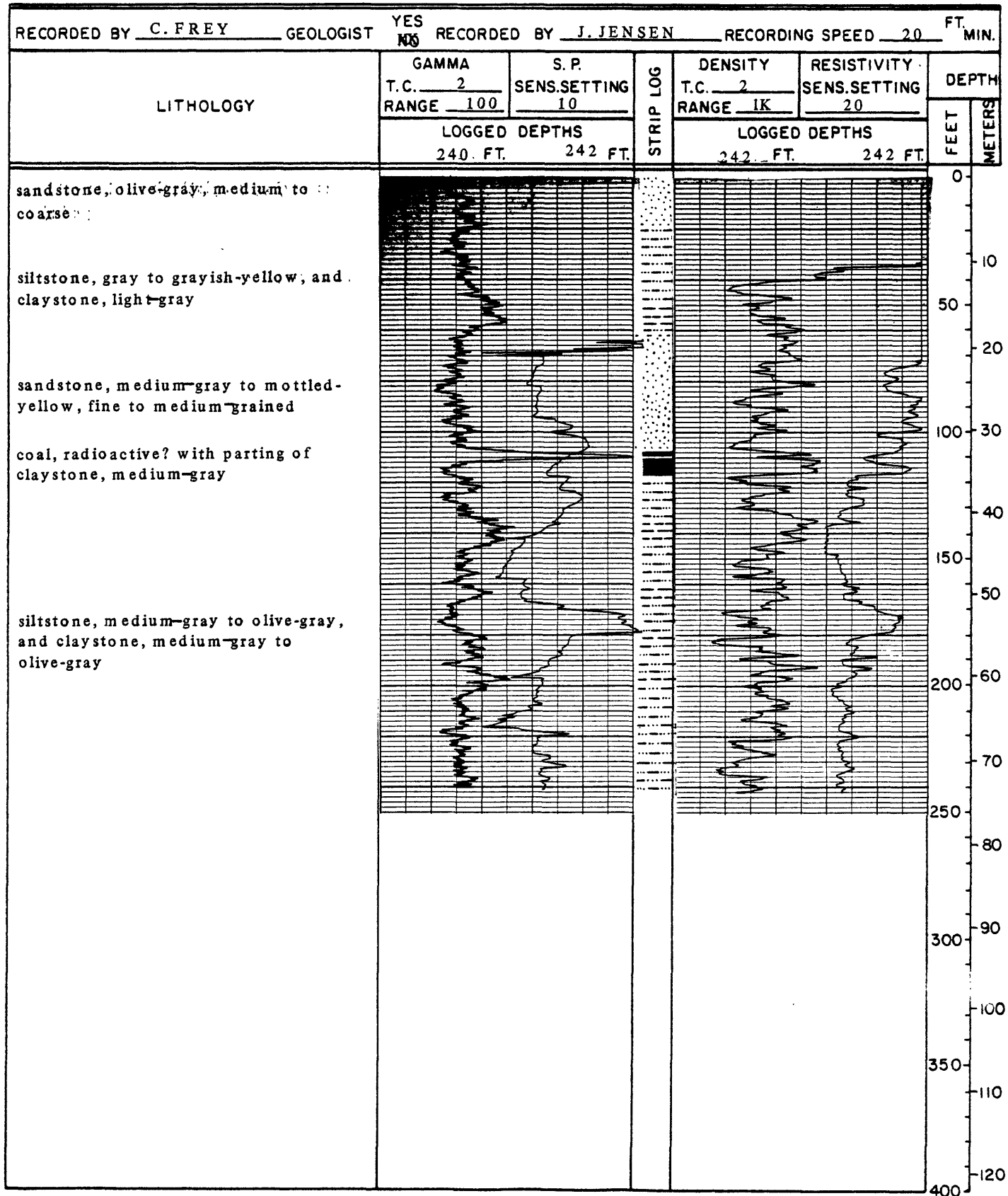
Hole no: US-78100 Map: Four Buttes N.W. Date: 9/17/78 State: Montana County: Daniels
 Elev: 2633 ft Location: T. 37 ^N, R. 45 ^E, Sec. 13, Tract CBBB Drilled depth: 260 ft
 Measured: 2480 ft ^{FSL}, 33 ft ^{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.					
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>		S. P. SENS. SETTING <u>500</u>		STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>		RESISTIVITY SENS. SETTING <u>100</u>		DEPTH	
	LOGGED DEPTHS					LOGGED DEPTHS				FEET	METERS
	253 FT.		250 FT.			258 FT.		250 FT.			
sandstone, light-olive-brown, medium, calcareous										0	
siltstone, dusky-yellow to medium-gray, cbncls, and claystone										10	
coal										50	
siltstone, dusky-yellow to medium-gray										20	
coal, with partings of siltstone, medium-gray										100	30
siltstone, greenish-gray, and sandstone, medium-gray, fine										40	
										150	50
coal										50	
siltstone, medium-gray										200	60
coal											
claystone, olive-gray, and siltstone, medium-gray										70	
coal										250	80
siltstone, greenish-gray to olive-gray, cbncls, and sandstone, medium-gray to greenish-gray, cbncls										300	90
										100	
										350	110
										400	120

Hole no: US-78101 Map: Carbert Date: 9/26/78 State: Montana County: Daniels
 Elev: 2610 ft Location: T. 37 ^N, R. 45 ^E, Sec. 10, Tract BBBB Drilled depth: 200 ft
 Measured: 55 ft ^{FNL} ~~55~~, 40 ft ^{FWL} ~~40~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.	
LITHOLOGY	GAMMA	S. P.	STRIP LOG	DENSITY	RESISTIVITY	DEPTH	
	T.C. <u>2</u>	SENS. SETTING		T.C. <u>2</u>	SENS. SETTING	FEET	METERS
	RANGE <u>100</u>	<u>10</u>		RANGE <u>1K</u>	<u>20</u>		
	LOGGED DEPTHS			LOGGED DEPTHS			
	200 FT.	200 FT.		200 FT.	200 FT.		
siltstone, light-olive-gray, cbncs, and claystone, light-gray						0	
claystone, light-gray to greenish-gray, cbncs						10	
siltstone, medium-gray, cbncs, and claystone, medium-gray, cbncs						20	
coal						30	
siltstone, greenish-gray, and sandstone, medium-gray, very fine						40	
coal						50	
sandstone, medium-gray, very fine, and siltstone, greenish-gray to medium-gray						60	
						70	
						80	
						90	
						100	
						110	
						120	
						130	
						140	
						150	
						160	
						170	
						180	
						190	
						200	

Hole no: US-78102 Map: Flaherty Coulee Date: 9/28/78 State: Montana County: Daniels
 Elev: 2834 ft Location: T. 37^N, R. 44^E, Sec. 35, Tract BBBB Drilled depth: 300 ft
 Measured: 35 ft ^{FNL} ~~FSK~~, 45 ft ^{FNL} ~~FSK~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Gamma needs to be shifted down 2 ft



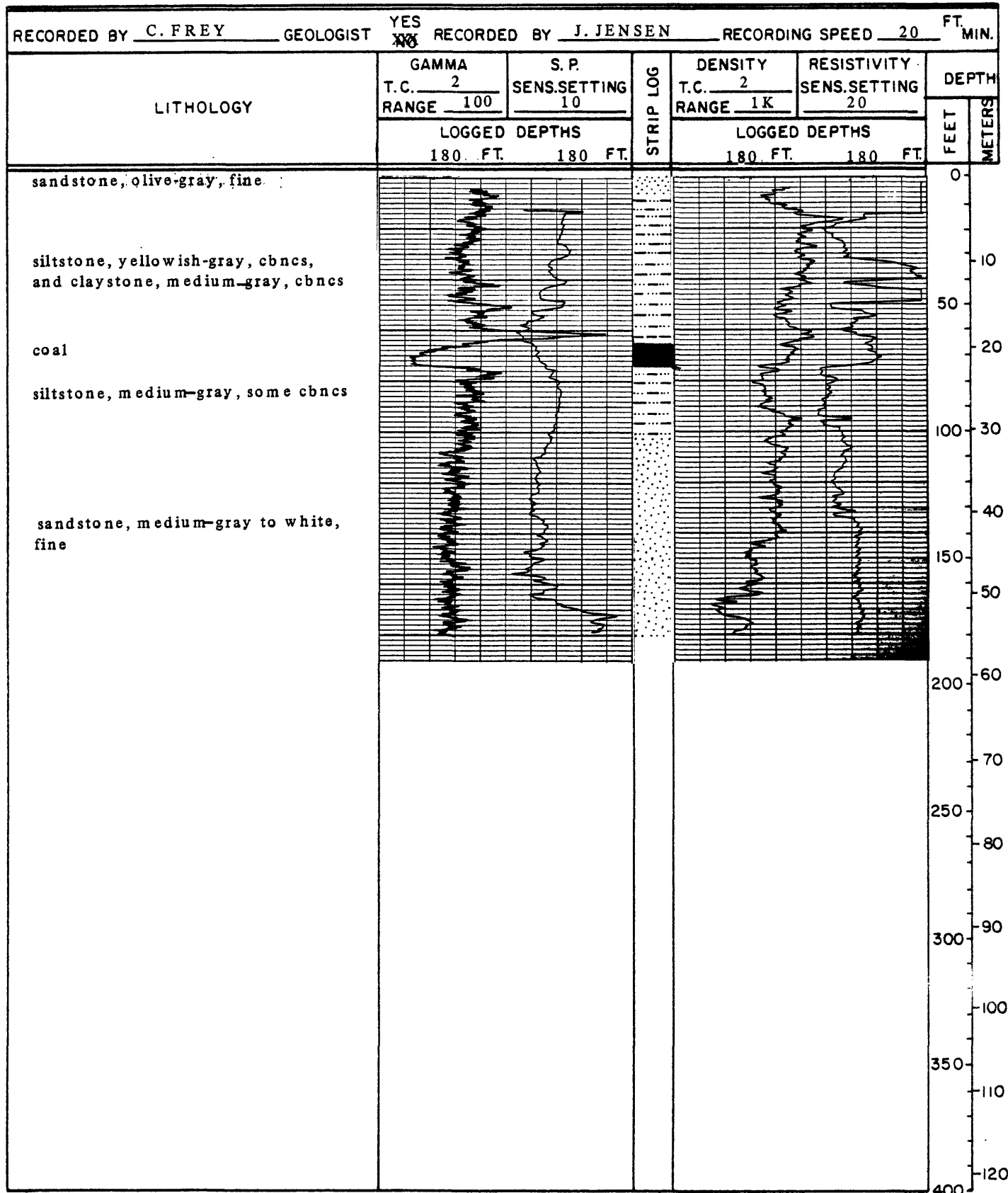
Hole no: US-78103 Map: Carbert Date: 9/27/78 State: Montana County: Daniels
 Elev: 2836 ft Location: T. 37 ^N, R. 44 ^E, Sec. 26, Tract DDDD Drilled depth: 240 ft
 Measured: 38 ft ^{RMX} FSL, 35 ft ^{FEI} FSL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NOX RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 240 FT. 240 FT.			LOGGED DEPTHS 240 FT. 240 FT.		
	sandstone, olive-gray, coarse siltstone, light-gray to medium-gray, and claystone, light-gray to medium- gray coal, with parting of siltstone, medium- gray siltstone, medium-gray coal siltstone, light-gray, and claystone, light-gray					

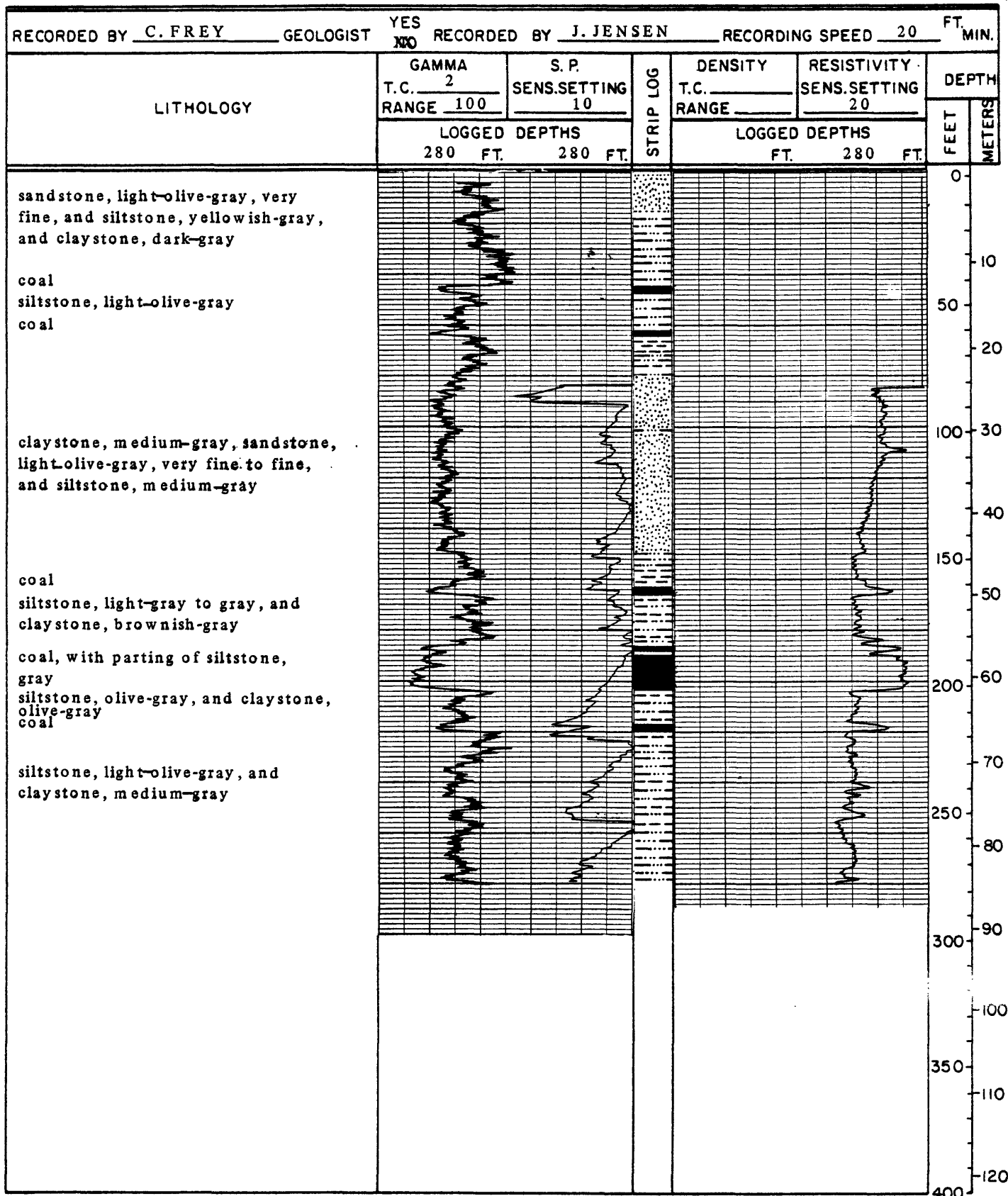
Hole no: US-78104 Map: Carbert Date: 9/28/78 State: Montana County: Daniels
 Elev: 2809 ft Location: T. 37 ^N ~~S~~, R. 44 ^E ~~W~~, Sec. 23, Tract DDDD Drilled depth: 180 ft
 Measured: 23 ft ^{FSL} ~~FSL~~, 4 ft ^{FEL} ~~FEL~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Probe stuck in hole, got it out and reamed out hole.

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.			
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S.P. SENS.SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS.SETTING	DEPTH	
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS
	80. FT. FT.			180 FT. FT.			
sandstone, olive-gray to olive-brown; coarse						0	
						10	
siltstone, gray to yellow, cbncs						20	
						30	
						40	
						50	
						60	
						70	
						80	
						90	
						100	
						110	
						120	
						130	
						140	
						150	
						160	
						170	
						180	

Hole no: US-78105 Map: Carbert Date: 9/28/78 State: Montana County: Daniels
 Elev: 2715 ft Location: T. 37 ^N, R. 45 ^E, Sec. 32, Tract ADDD Drilled depth: 180 ft
 Measured: 2500 ft ^{FNL}, 35 ft ^{FEL} Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Lost circulation at 25 ft



Hole no: US-78106 Map: Carbert Date: 9/28/78 State: Montana County: Daniels
 Elev: 2770 ft Location: T. 37 ^N, R. 45 ^E, Sec. 22, Tract DCBA Drilled depth: 280 ft
 Measured: 1270 ft ^{KMX} FSL, 2040 ft ^{FEL} KMX, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Hole was relocated to east - density on next page.



Hole no: US-78106 Map: Carbert Date: 9/28/78 State: Montana County: Daniels
 Elev: 2770 ft Location: T. 37 ^N_S, R. 45 ^E_W, Sec. 22, Tract DCBA Drilled depth: 280 ft
 Measured: 1270 ft ^{KMX}_{FSL}, 2040 ft ^{FEL}_{FWL}, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO	RECORDED BY <u>J. JENSEN</u>	RECORDING SPEED <u>20</u> FT. MIN.	
LITHOLOGY	GAMMA	S. P.	DENSITY	RESISTIVITY	DEPTH
	T.C. _____	SENS.SETTING _____	T.C. <u>2</u>	SENS.SETTING _____	
	RANGE _____	_____	RANGE <u>1K</u>	_____	FEET METERS
LOGGED DEPTHS		LOGGED DEPTHS			
FT. FT.		280 FT. FT.			
			STRIP LOG		

Hole no: US-78107 Map: Carbert Date: 9/28/78 State: Montana County: Daniels
 Elev: 2675 ft Location: T. 37 ^N_S, R. 45 ^E_W, Sec. 35, Tract BBBB Drilled depth: 280 ft
 Measured: 50 ft ^{FNL}_{SSL}, 25 ft ^{KKK}_{FWL}, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS <u>280</u> FT. <u>280</u> FT.			LOGGED DEPTHS <u>280</u> FT. <u>280</u> FT.		
	sandstone, olive-gray, very fine.					
siltstone, olive-gray to dusky-yellow, . . cbncls, and claystone, medium-gray; cbncls coal						10
siltstone, dusky-yellow to medium- gray, and claystone, medium						20
coal, with partings of siltstone, medium-gray						30
						40
siltstone, medium-gray to greenish-gray, some cbncls, and claystone, olive-gray, some cbncls						50
						60
coal						70
siltstone, olive-gray to medium-gray, and claystone, medium-gray						80
coal						90
siltstone, greenish-gray						100
						110
						120

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.			
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS.SETTING	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS.SETTING	DEPTH	
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS
	219 FT.	FT.		FT.	FT.		
siltstone, gray coal						0	
siltstone, medium-gray, claystone, medium-gray, and limestone, light-gray						10	
coal						50	
siltstone, olive-gray to medium-gray, claystone, medium-gray						20	
coal claystone, medium-gray coal claystone, medium-gray coal						100	30
siltstone, olive-gray coal						40	
						150	
						50	
siltstone, medium-gray to olive-gray, sandstone, greenish-gray, very fine, and claystone, medium-gray						200	60
						70	
	250						
	80						
	300	90					
	100						
	350	110					
	120						
	400						

Hole no: US-78108 Map: Four Buttes N.W. Date: 9/29/78 State: Montana County: Daniels
 Elev: 2555 ft Location: T. 37 ^N, R. 46 ^E, Sec. 29, Tract BAAA Drilled depth: 220 ft
 Measured: 50 ft ^{FNL} ~~SSX~~, 2640 ft ^{SSX} ~~FWL~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. _____ RANGE _____	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>10</u>	DEPTH FEET METERS
	LOGGED DEPTHS FT. <u>220</u> FT.			LOGGED DEPTHS FT. <u>220</u> FT.		
10						
50						
20						
100						
30						
40						
150						
50						
200						
60						
70						
250						
80						
300						
90						
100						
350						
110						
400						
120						

Hole no: US-78109 Map: Four Buttes N.W. Date: 10/2/78 State: Montana County: Daniels
 Elev: 2582 ft Location: T. 37 ^N, R. 46 ^E, Sec. 28, Tract BDAA Drilled depth: 220 ft
 Measured: 1600 ft ^{FNL}, 2380 ft ^{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Moved hole 200 ft north of original location. Lost circulation at 125 ft.

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>10</u>	DEPTH FEET METERS
	LOGGED DEPTHS 216 FT. 180 FT.			LOGGED DEPTHS FT. 180 FT.		
	siltstone, medium-gray to dusky- yellow; sandstone, dusky-yellow, fine and claystone, light-olive coal, with parting of siltstone, light-gray siltstone, medium-gray, and claystone, medium-gray coal claystone, medium-gray coal claystone, medium-gray, and siltstone, light-gray to medium-gray					

Hole no: US-78110 Map: Four Buttes N.E. Date: 10/2/78 State: Montana County: Daniels
 Elev: 2591 ft Location: T. 37 ^N, R. 47 ^E, Sec. 27, Tract CDCD Drilled depth: 140 ft
 Measured: 33 ft ^{RMX} FSL, 1770 ft ^{XXX} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Lost circulation at 65 ft.

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>10</u>	DEPTH FEET METERS
	LOGGED DEPTHS 138 FT. 140 FT.			LOGGED DEPTHS FT. 140 FT.		
gravel						0
siltstone, medium-gray, some cbncs, and claystone, pale-olive, some cbncs						10
coal						50
siltstone, medium-gray						20
coal, with parting of siltstone, medium-gray						100
siltstone, medium-gray						30
						40
						150
						50
						200
						60
						70
						250
						80
						300
						90
						100
						350
						110
						120
						400

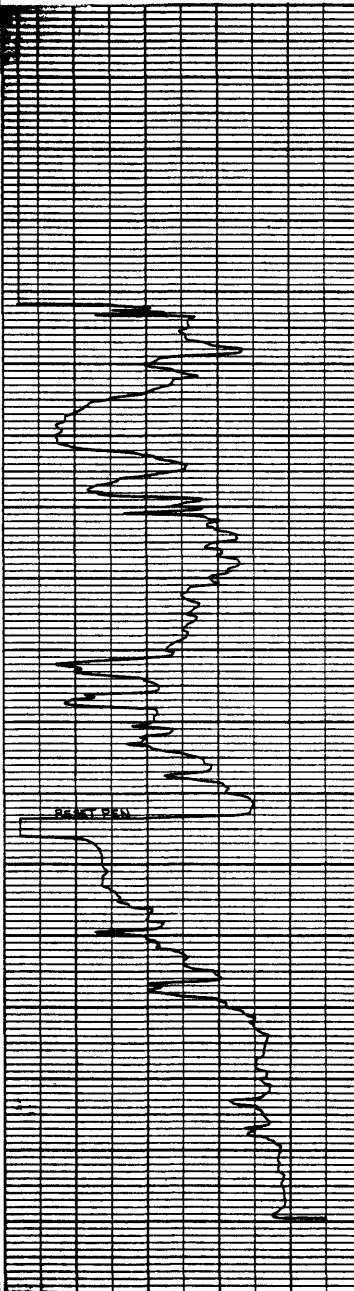
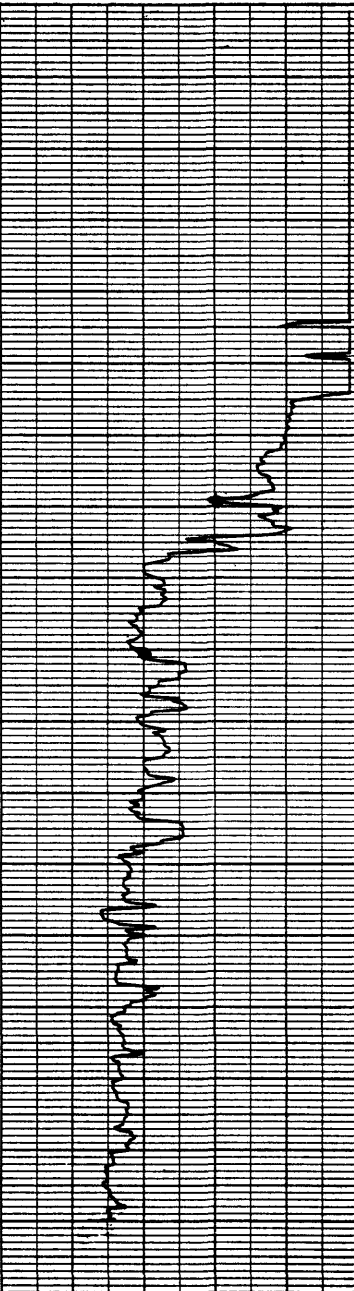
Hole no: US-78111 Map: Four Buttes N.E. Date: 10/2/78 State: Montana County: Daniels
 Elev: 2663 ft Location: T. 37 ^N, R. 47 ^E, Sec. 22, Tract CCCC Drilled depth: 320 ft
 Measured: 26 ft FSL, 12 ft FWL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Lost circulation 120 ft to 320 ft - could not get other tools down hole.

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES XNO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.	
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING	DEPTH	
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS
	318 FT.	FT.		FT.	FT.		
gravel						0	
						10	
						50	
						20	
						100	30
						40	
						150	50
						200	60
						70	
						250	80
						90	
						300	100
siltstone, medium-gray to pale-yellow, some cbncs, and claystone, medium-gray, some cbncs						110	
coal						120	
siltstone, medium-gray							

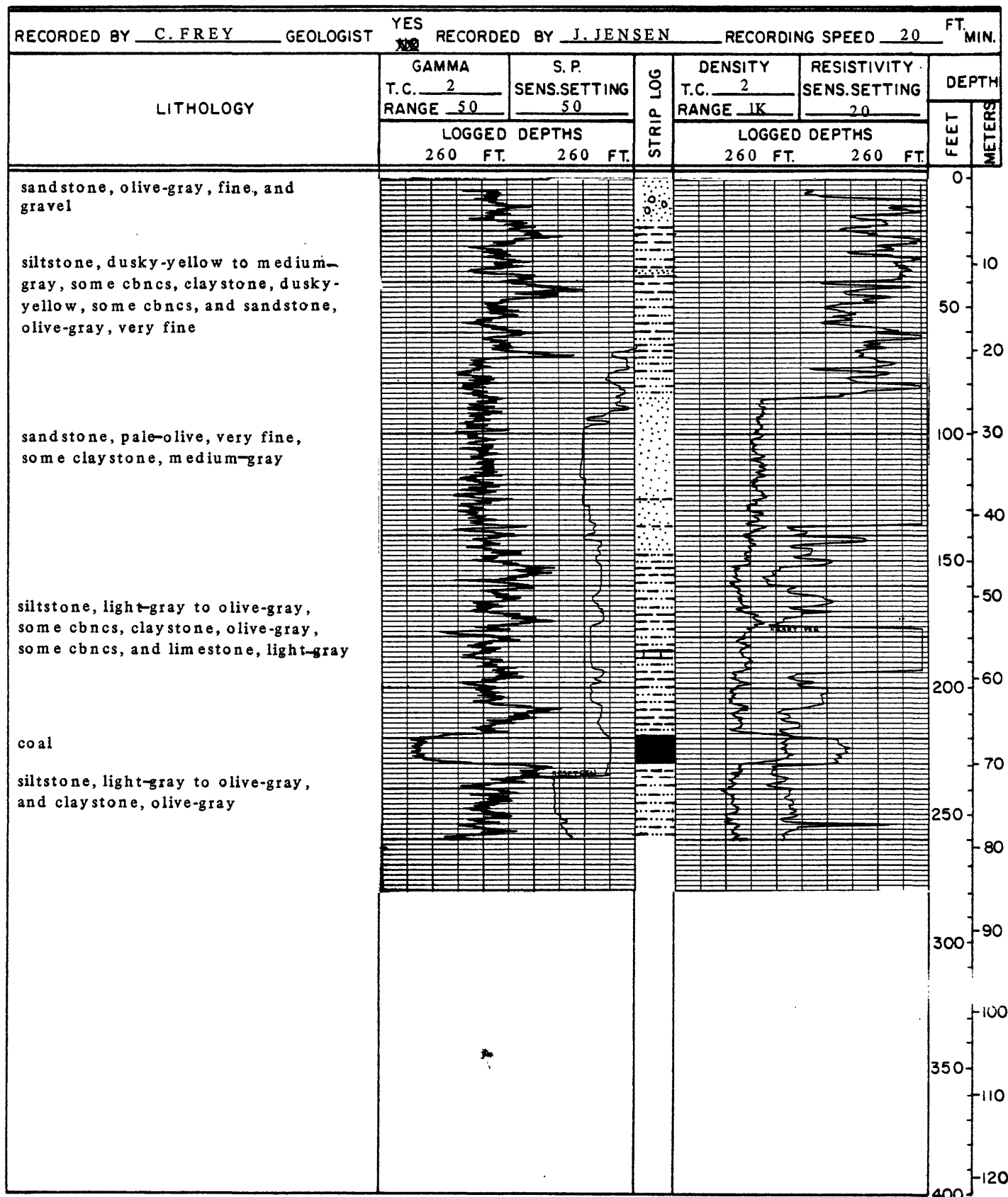
Hole no: US-78112 Map: Scobey N.W. Date: 10/10/78 State: Montana County: Daniels
 Elev: 2560 ft Location: T. 37 ^N, R. 47 ^E, Sec. 15, Tract DDDD Drilled depth: 340 ft
 Measured: 180 ft ^{RKX} FSL, 150 ft ^{FEI} KX, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Poor circulation below 250 ft - SP and ER on next page.

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>50</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 340 FT. 340 FT.			LOGGED DEPTHS 340 FT. 340 FT.		
	siltstone, medium-gray to dusky-yellow, cbncs, sandstone, pale-olive, very fine, and claystone, pale-olive, cbncs coal claystone, olive-gray, some cbncs, siltstone, olive-gray, some cbncs, and sandstone, medium-gray, very fine to fine coal siltstone, olive-gray to greenish-gray, claystone, pale-olive, and sandstone, greenish-gray, very fine to fine					

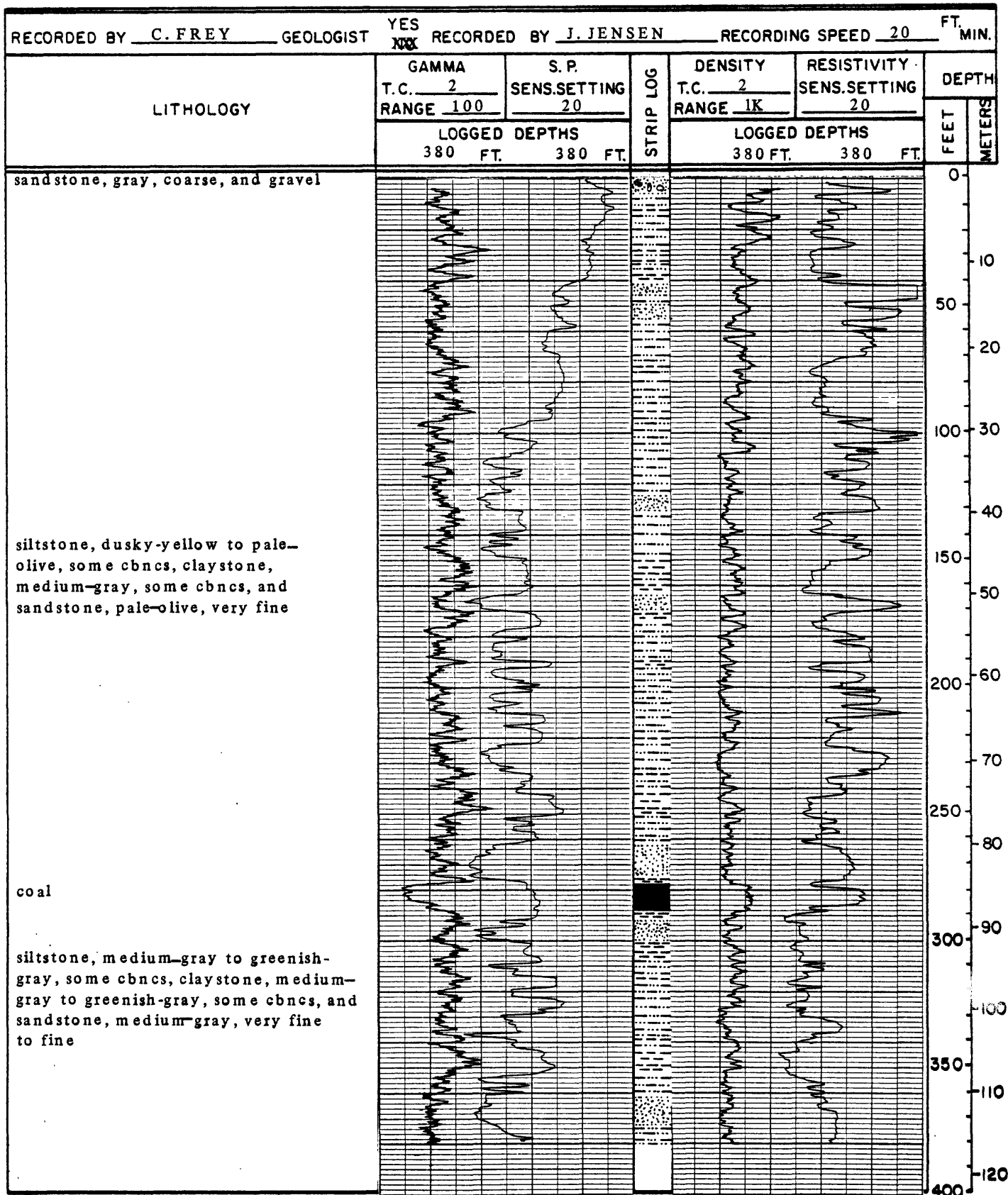
Hole no: US-78112 Map: Scobey N.W. Date: 10/10/78 State: Montana County: Daniels
 Elev: 2560 ft Location: T. 37 ^N S., R. 47 ^E W., Sec. 15, Tract DDDD Drilled depth: 340 ft
 Measured: 180 ft ^{KOK} FSL, 150 ft ^{FEL} FW, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES XNO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.	
LITHOLOGY	GAMMA T.C. _____ RANGE _____	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH	
	LOGGED DEPTHS FT. 340 FT.			LOGGED DEPTHS FT. 340 FT.		FEET	METERS
						0	
						10	
						50	
						20	
						100	30
						40	
						150	50
						200	60
						70	
						250	80
						80	
						300	90
						100	
						350	110
						120	
						400	

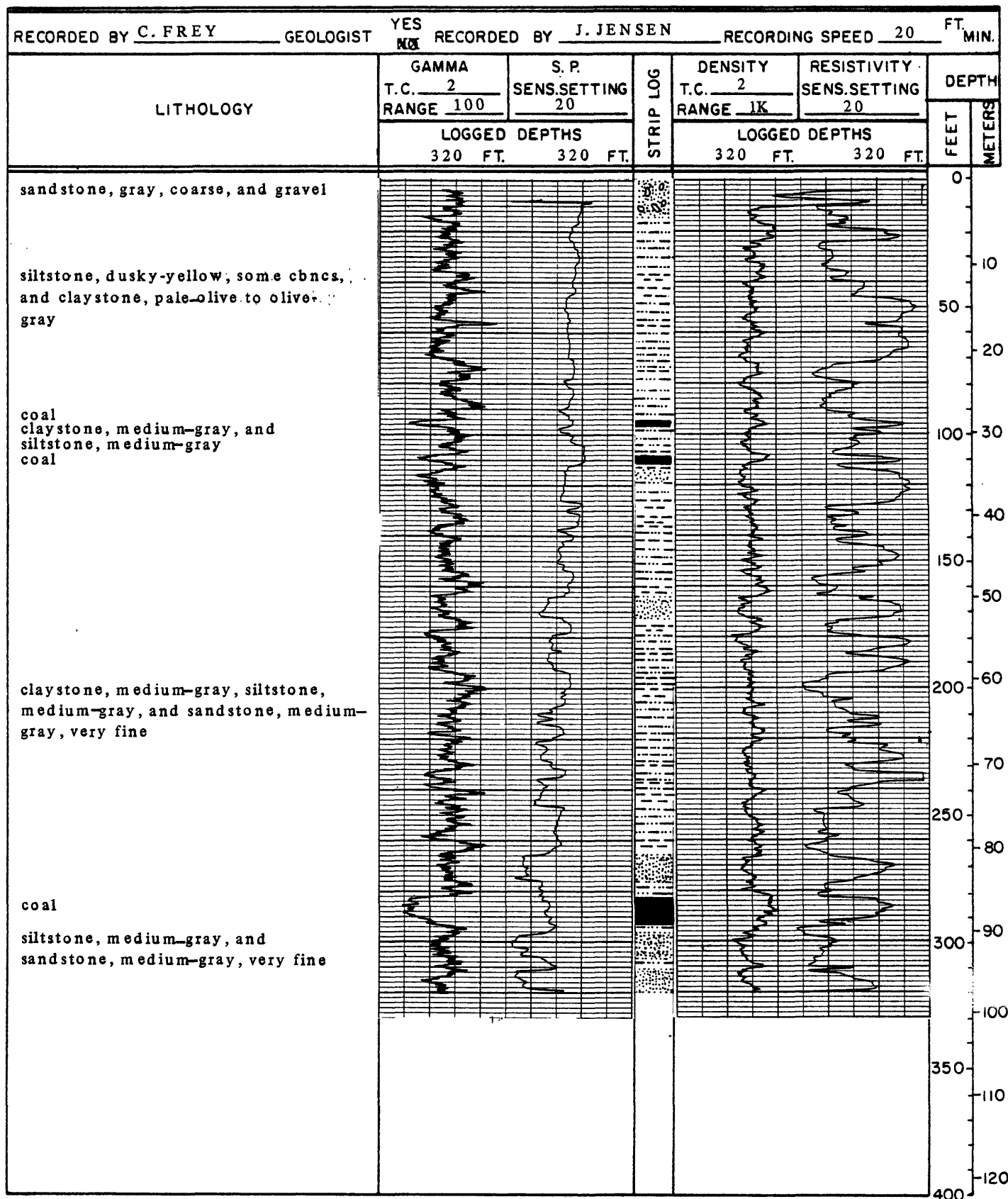
Hole no: US-78113 Map: Four Buttes N.E. Date: 10/11/78 State: Montana County: Daniels
 Elev: 2658 ft Location: T. 37 ^N S. 47 ^E W. Sec. 10 , Tract CCCD Drilled depth: 260 ft
 Measured: 45 ft ^{ROCK} FSL, 620 ft ^{XXX} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



Hole no: US-78114 Map: Four Buttes N.E. Date: 10/11/78 State: Montana County: Daniels
 Elev: 2722 ft Location: T. 37 ^N, R. 47 ^E, Sec. 4, Tract CCCC Drilled depth: 380 ft
 Measured: 55 ft ^{FSL}, 26 ft ^{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



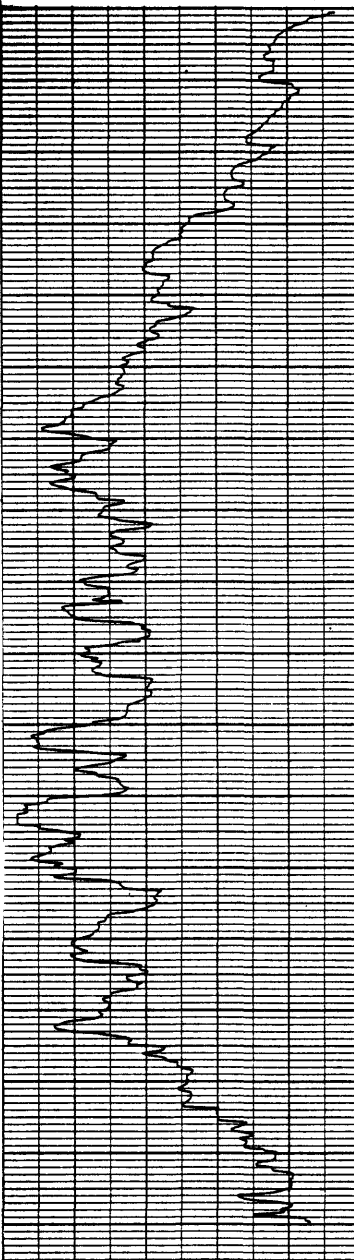
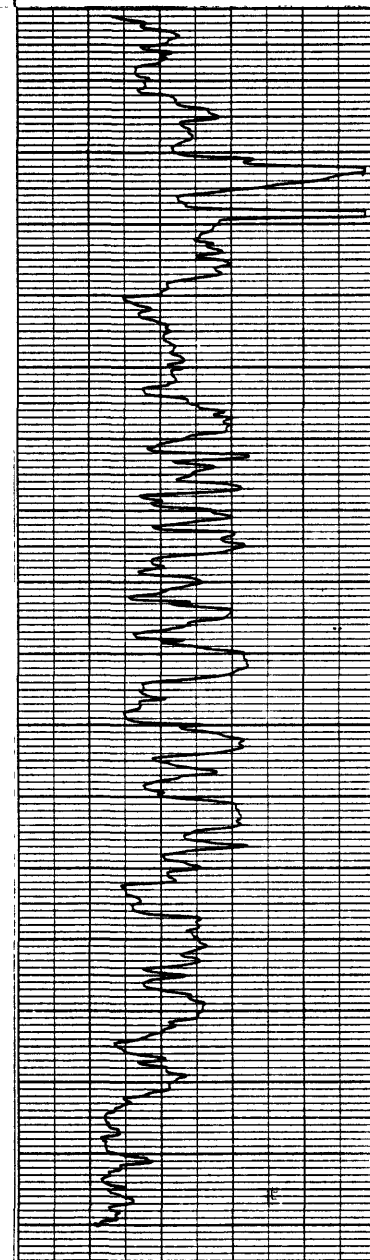
Hole no: US-78115 Map: Four Buttes N.E. Date: 10/12/78 State: Montana County: Daniels
 Elev: 2733 ft Location: T. 37 ^N, R. 47 ^E, Sec. 5, Tract CCCC Drilled depth: 320 ft
 Measured: 55 ft ^{FSL}, 78 ft ^{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



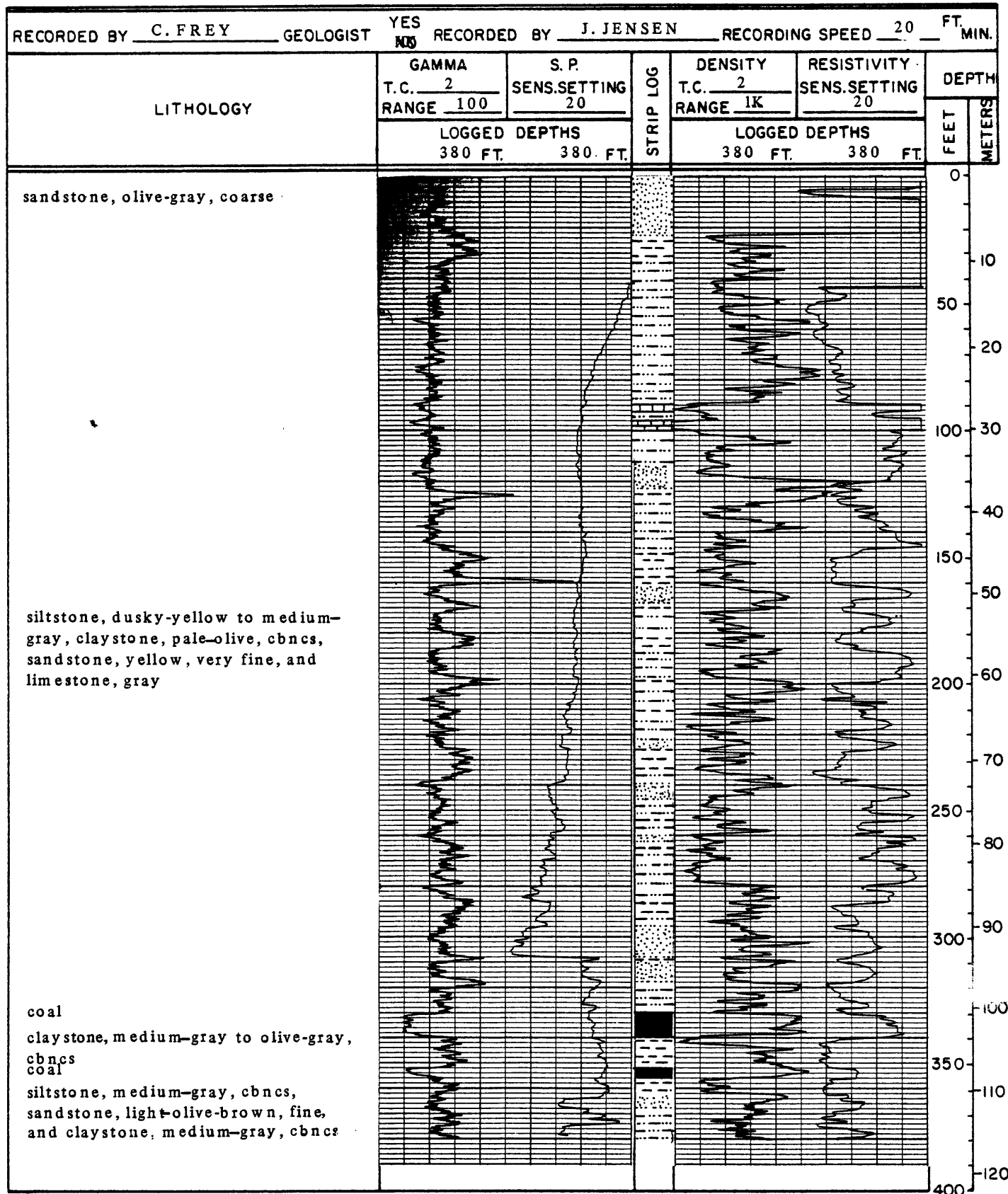
Hole no: US-78116 Map: Four Buttes N.E. Date: 10/12/78 State: Montana County: Daniels
Elev: 2725 ft Location: T. 37 ^{N.} _{S.}, R. 47 ^{E.} _{W.}, Sec. 6, Tract CBCA Drilled depth: 340 ft
Measured: 1690 ft ^{ENK} PSL, 450 ft ^{XXX} PWL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
Remarks: SP and ER logs on following page.

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.			
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>	RESISTIVITY SENS. SETTING	DEPTH	
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS
	338 FT.	FT.		340 FT.	FT.		
siltstone, dusky-yellow to light-gray, some cbncls, claystone, pale-olive, some cbncls, sandstone, yellow, very fine to coarse, and limestone, yellowish-gray						0	
						10	
						50	
						20	
						100	30
						40	
						150	
						50	
						200	60
						70	
coal siltstone, light-gray, and claystone, light-gray coal siltstone, light-gray, and claystone, light-gray						250	
						80	
						300	90
						100	
						350	
						110	
						120	
						400	

Hole no: US-78116 Map: Four Buttes N.E. Date: 10/12/78 State: Montana County: Daniels
 Elev: 2725 ft Location: T. 37 ^N _S, R. 47 ^E _W, Sec. 6, Tract CBCDA Drilled depth: 340 ft
 Measured: 1690 ft ^{FSL}, 450 ft ^{FWL}, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. _____ RANGE _____	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS FT. <u>340</u> FT.			LOGGED DEPTHS FT. <u>340</u> FT.		
						

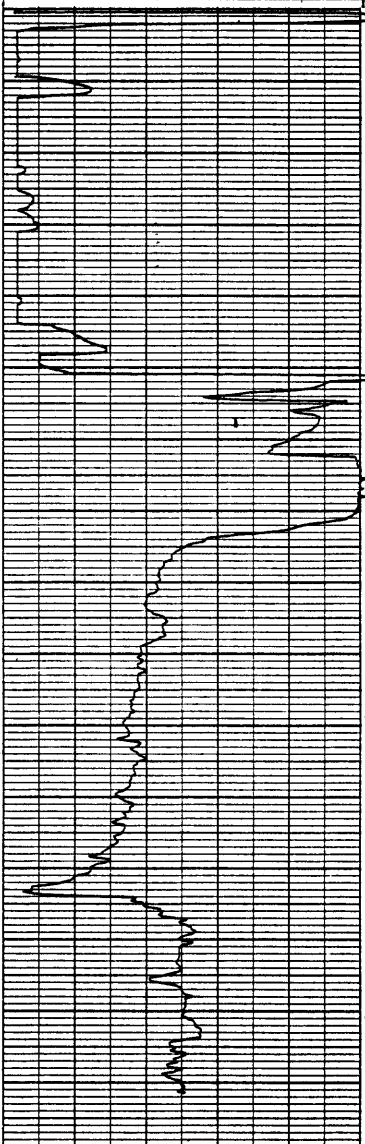
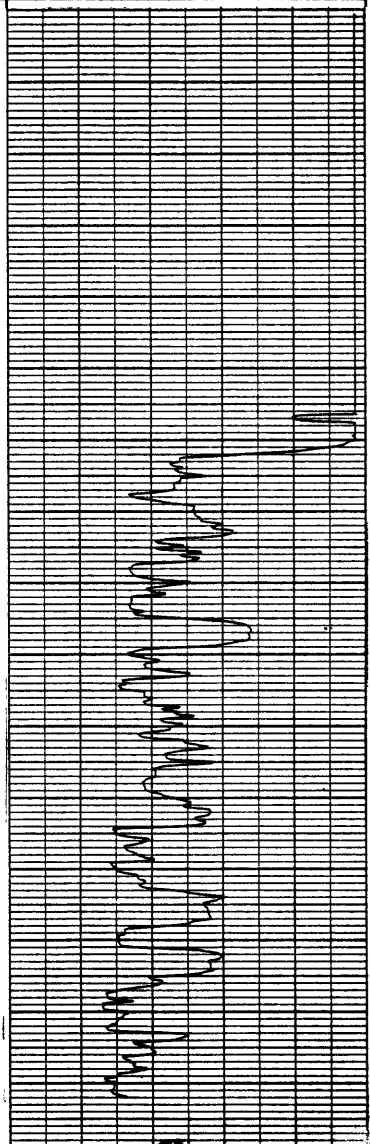
Hole no: US-78117 Map: Four Buttes N.E. Date: 10/12/78 State: Montana County: Daniels
 Elev: 2805 ft Location: T. 37 ^N, R. 47 ^E, Sec. 6, Tract BBBB Drilled depth: 380 ft
 Measured: 40 ft ^{FNL} ~~KXX~~, 120 ft ^{CEL} ~~CEL~~, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



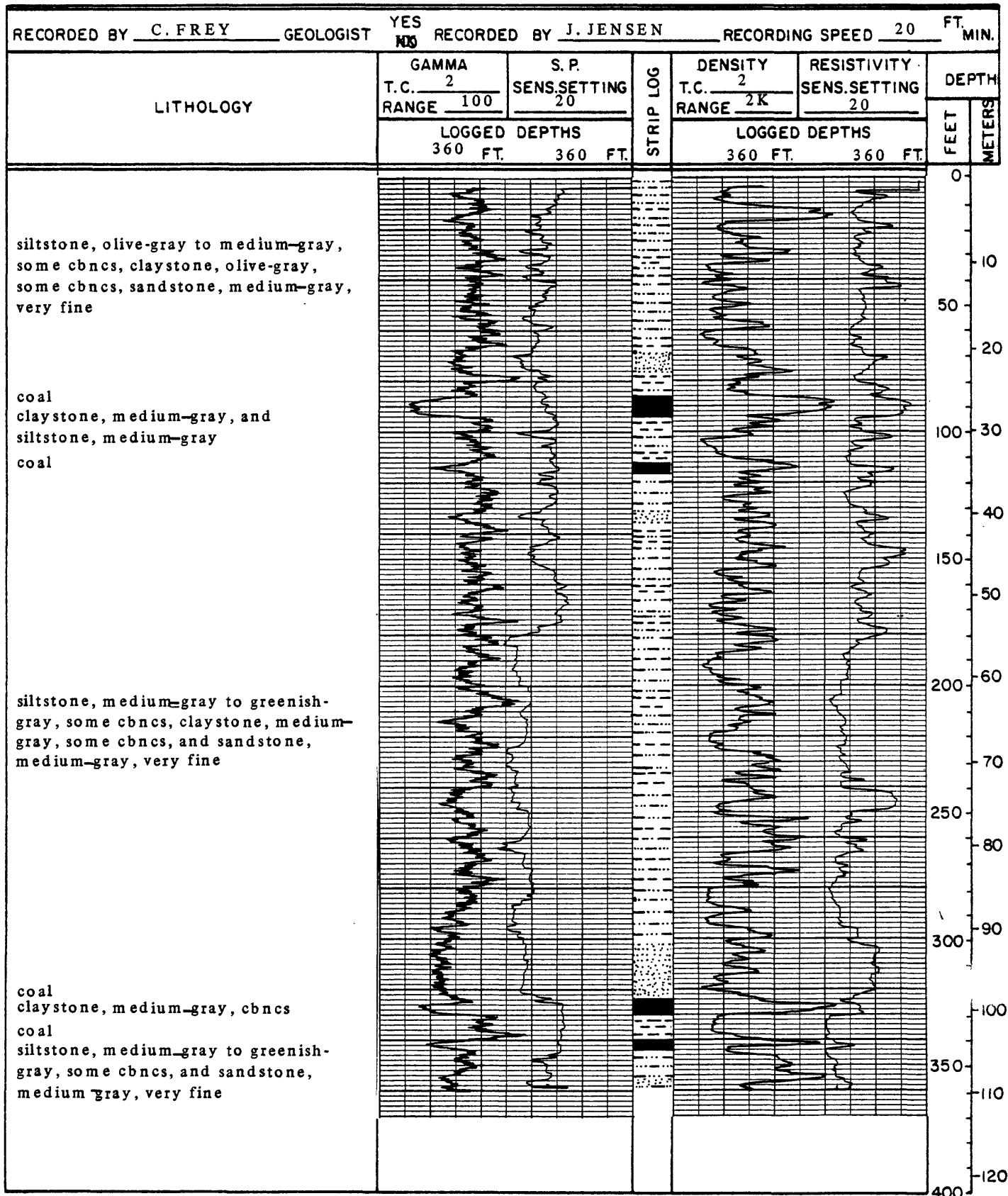
Hole no: US-78118 Map: Four Buttes N.E. Date: 10/1/78 State: Montana County: Daniels
 Elev: 2787 ft Location: T. 37 ^N, R. 46 ^E, Sec. 1, Tract BBBA Drilled depth: 340 ft
 Measured: 20 ft ^{FWL}, 470 ft ^{KKK} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: No sample return after 250 ft. SP and ER on next page.

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO	RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.					
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>		S.P. SENS.SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>		RESISTIVITY SENS.SETTING		DEPTH	
	LOGGED DEPTHS				LOGGED DEPTHS			FEET	METERS	
	340 FT. FT.				302 FT. FT.					
sandstone, dusky-yellow, medium to coarse								0		
								10		
siltstone, dusky-yellow to greenish-yellow, and claystone, greenish-yellow								50		
								20		
coal								100		
								30		
siltstone, dusky-yellow to medium-gray, some cbncs, and claystone, medium-gray, some cbncs								40		
								50		
siltstone, dusky-yellow to medium-gray, some cbncs, and claystone, medium-gray, some cbncs								60		
								70		
coal								80		
								90		
siltstone, medium-gray, and claystone, medium-gray								100		
								110		
siltstone, gray to medium-gray, claystone, gray								120		
								130		

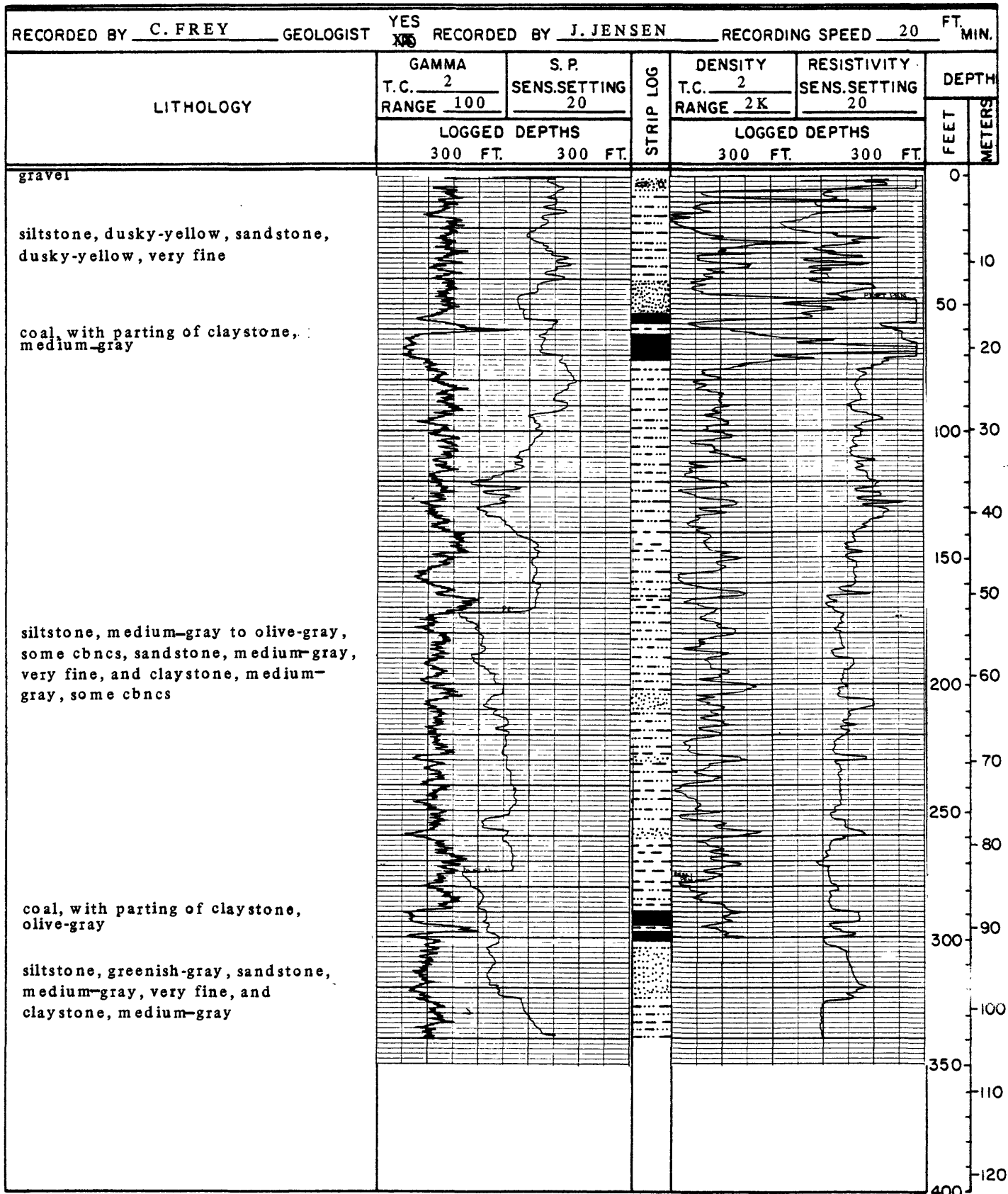
Hole no: US-78118 Map: Four Buttes N.E. Date: 10/1/78 State: Montana County: Daniels
 Elev: 2787 ft Location: T. 37 ^N, R. 46 ^E, Sec. 1, Tract BBBA Drilled depth: 340 ft
 Measured: 20 ft ^{FNL} ~~xxx~~, 470 ft ^{xxx} ~~FWL~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. _____ RANGE _____	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS FT. <u>304</u> FT.			LOGGED DEPTHS FT. <u>304</u> FT.		
						

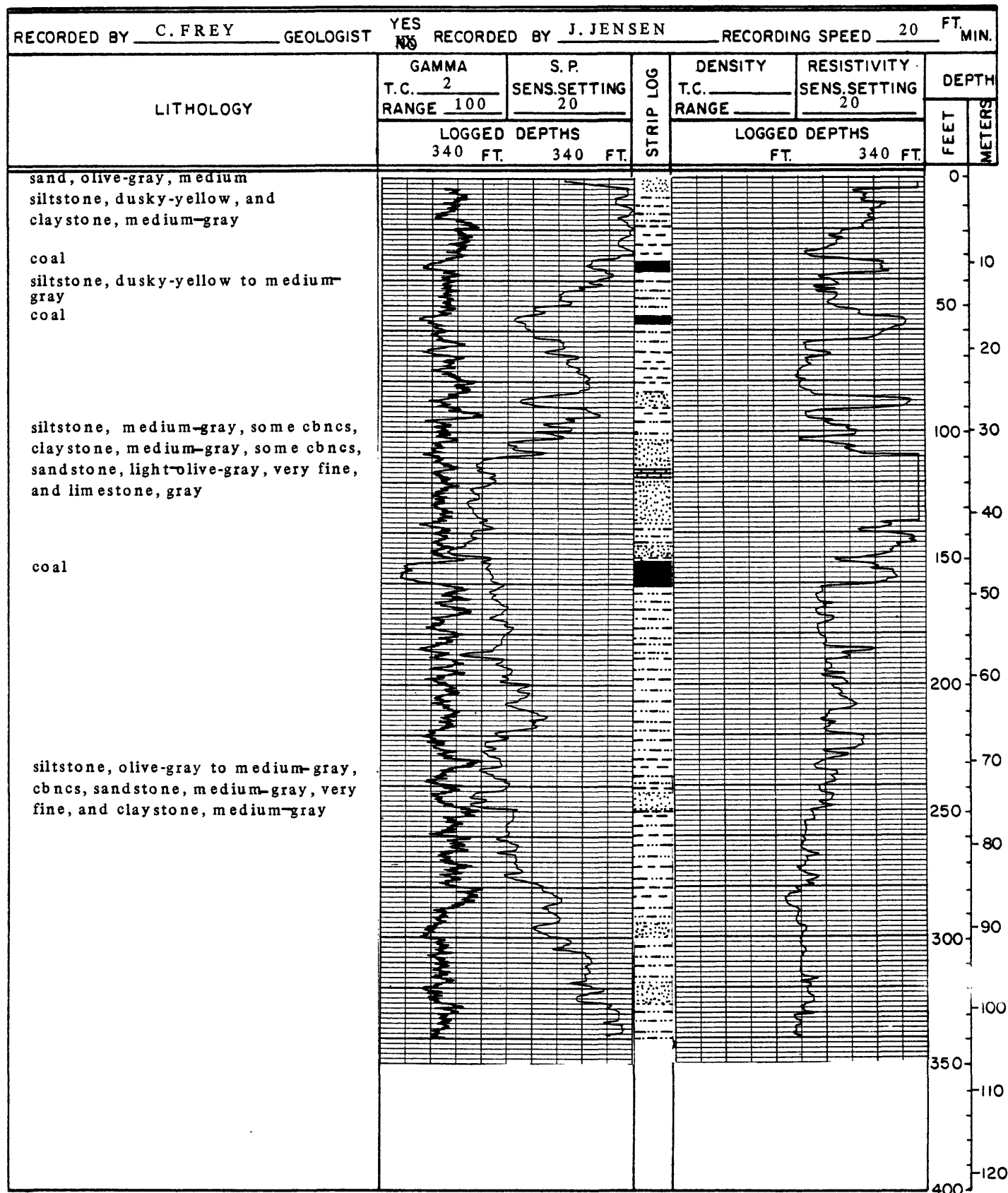
Hole no: US-78119 Map: Four Buttes N.E. Date: 10/14/78 State: Montana County: Daniels
 Elev: 2650 ft Location: T. 37 ^N _X, R. 46 ^E _X, Sec. 11, Tract AAAA Drilled depth: 360 ft
 Measured: 15 ft ^{FNL} _{FEI}, 30 ft ^{FNL} _{FEI}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



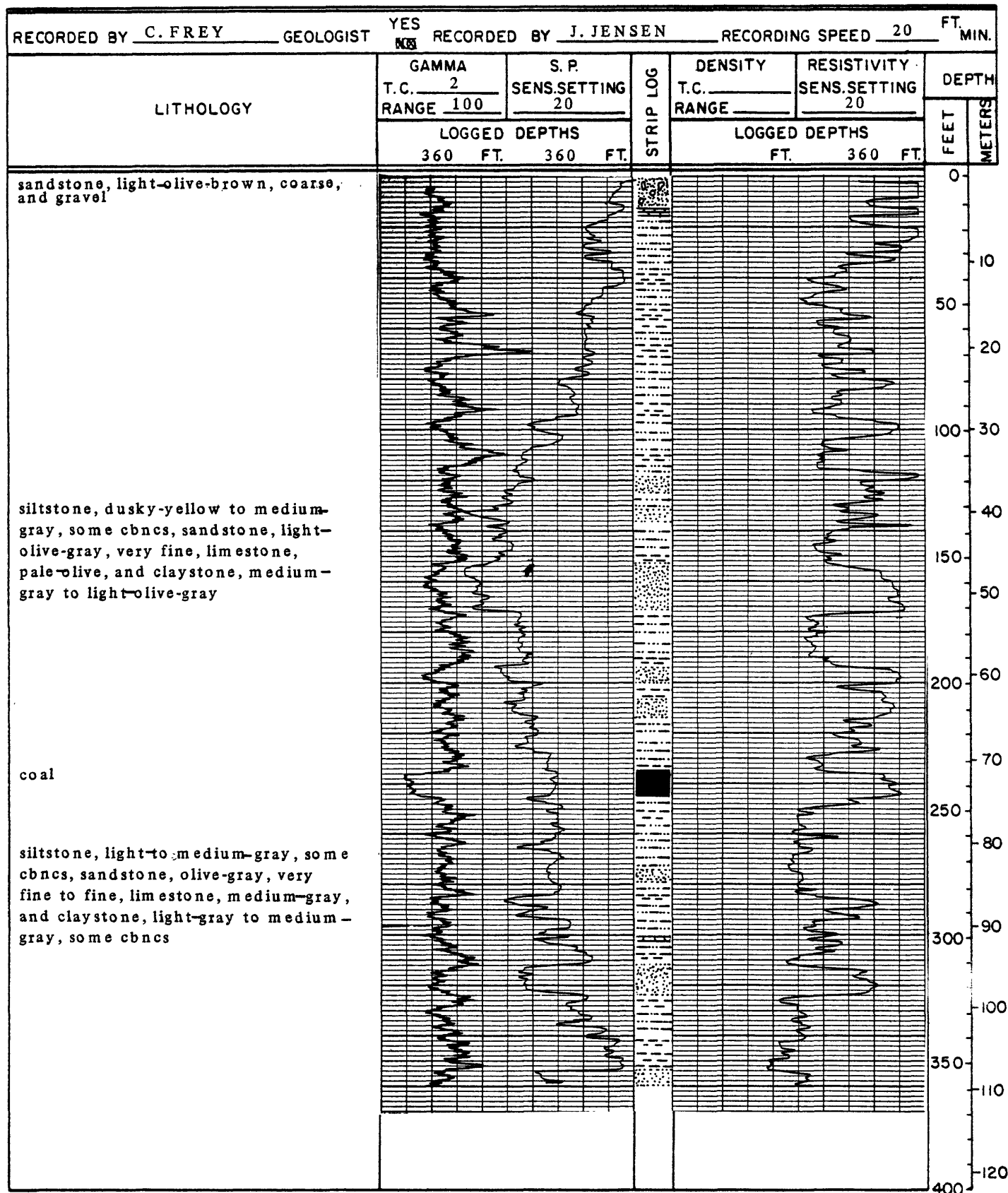
Hole no: US-78120 Map: Four Buttes N.E. Date: 10/14/78 State: Montana County: Daniels
 Elev: 2567 ft Location: T. 37 ^N, R. 46 ^E, Sec. 13, Tract CCDC Drilled depth: 340 ft
 Measured: 20 ft FSL, 980 ft FWL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



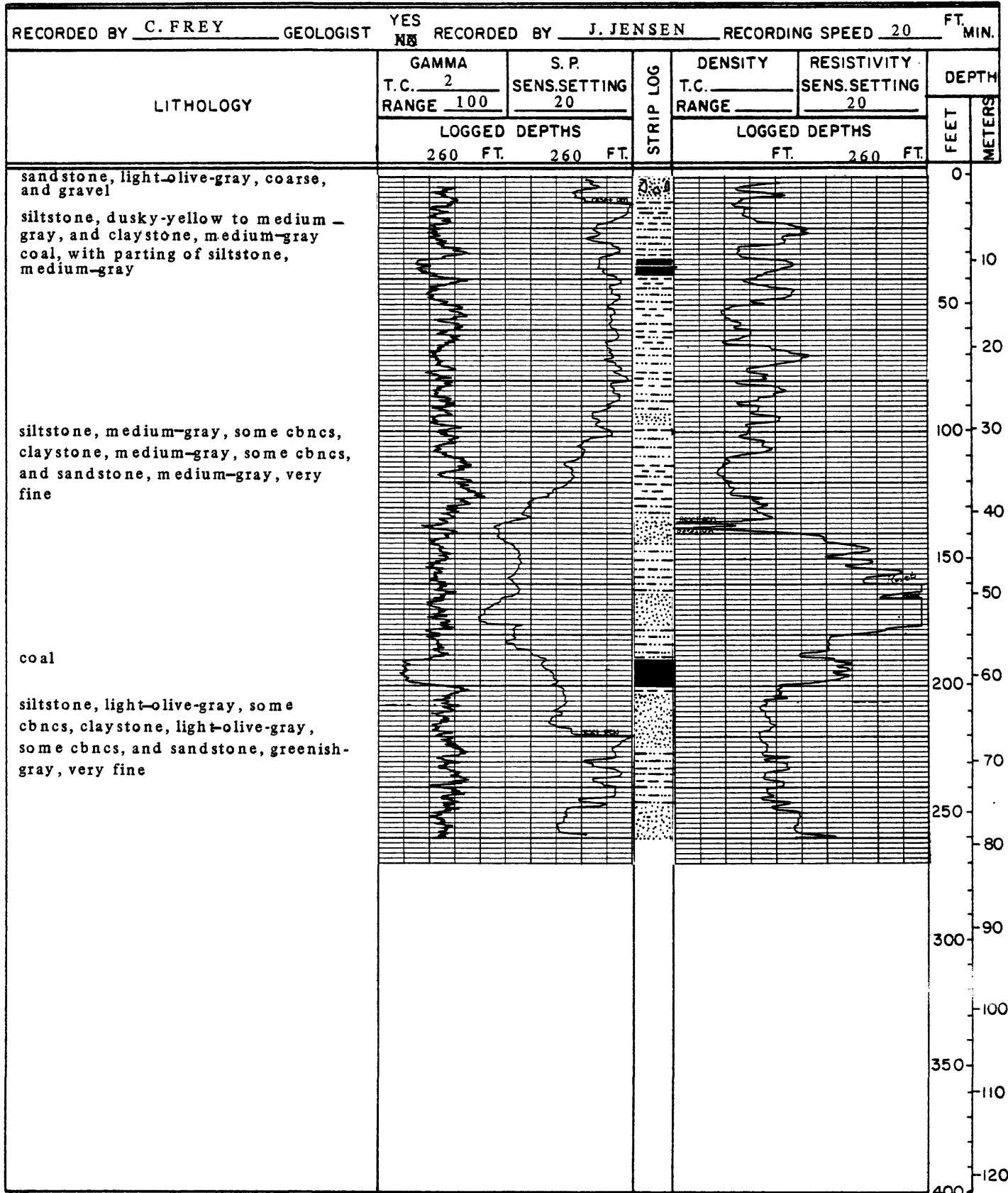
Hole no: US-78121 Map: Four Buttes, N.E. Date: 10/15/78 State: Montana County: Daniels
 Elev: 2651 ft Location: T. 37 ^N, R. 46 ^E, Sec. 12, Tract DDDD Drilled depth: 340 ft
 Measured: 22 ft ^{ROCK} FSL, 15 ft ^{FEL} FSL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



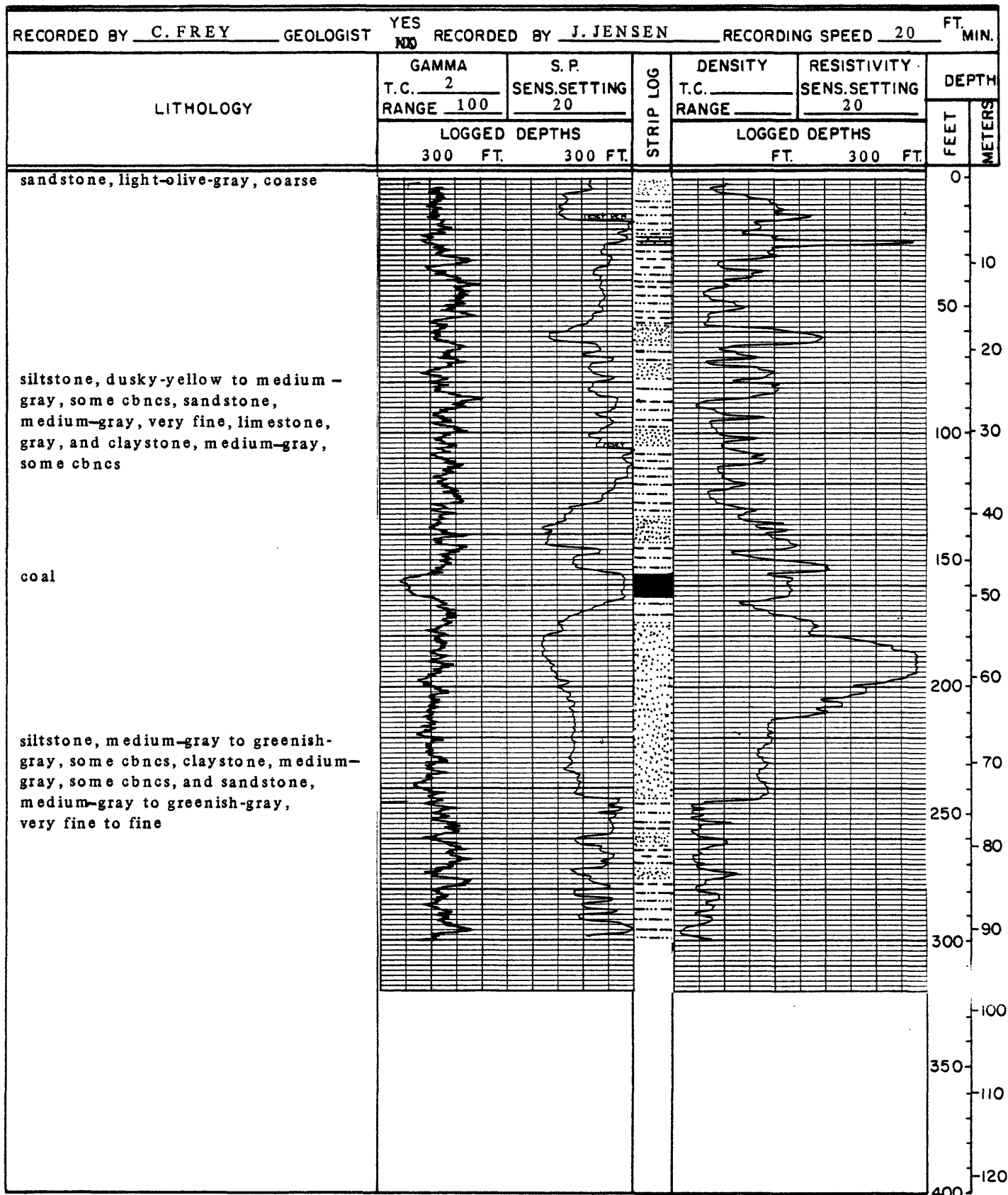
Hole no: US-78122 Map: Four Buttes N.E. Date: 10/16/78 State: Montana County: Daniels
 Elev: 2724 ft Location: T. 37 ^N, R. 47 ^E, Sec. 18, Tract AAAA Drilled depth: 360 ft
 Measured: 5 ft ^{FNL} 13 ft ^{FEL} 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: No density log taken.



Hole no: US-78123 Map: Four Buttes N.E. Date: 10/17/78 State: Montana County: Daniels
 Elev: 2631 ft Location: T. 37 ^N, R. 47 ^E, Sec. 17, Tract DDDD Drilled depth: 260 ft
 Measured: 55 ft ^{BSL}, 27 ft ^{FEL}, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: No density log taken.



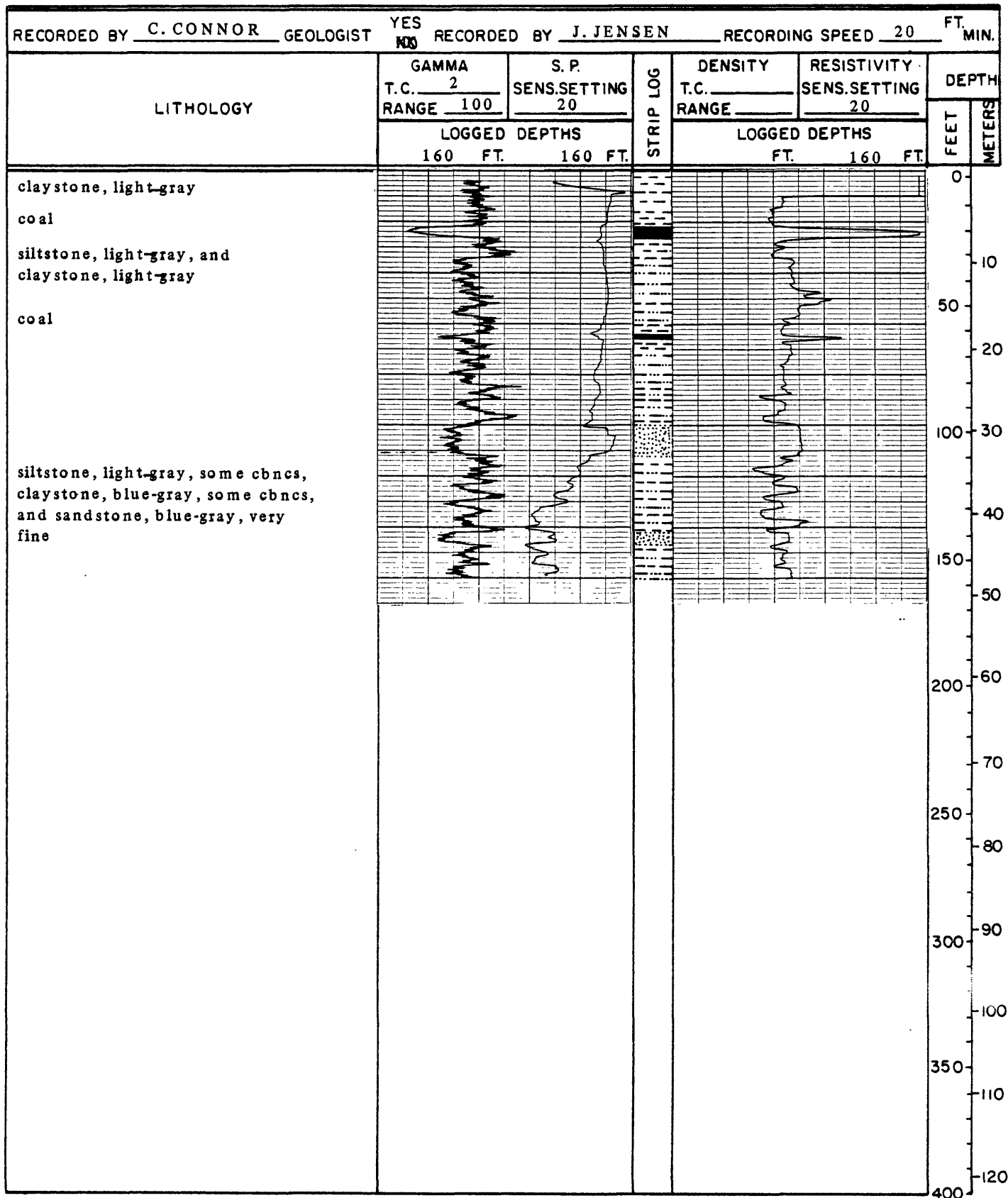
Hole no: US-78124 Map: Four Buttes N.E. Date: 10/17/78 State: Montana County: Daniels
 Elev: 2670 ft Location: T. 37 ^N, R. 47 ^E, Sec. 18, Tract DDDD Drilled depth: 300 ft
 Measured: 25 ft ^{RMX} FSL, 50 ft ^{FEL} RMX, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☒ No ☐
 Remarks: No density log taken. Cored intervals 57 ft - 75 ft.



Hole no: US-78125 Map: Four Buttes N.E. Date: 10/18/78 State: Montana County: Daniels
 Elev: 2597 ft Location: T. 37 ^N, R. 47 ^E, Sec. 20, Tract DCBC Drilled depth: 140 ft
 Measured: 900 ft ^{FSL}, 2450 ft ^{FEL}, Hole size: 4 3/4 in, Air ☒ Water ☐ Cored Yes ☐ No ☒
 Remarks: Logged gamma through stems, no other logs taken.

RECORDED BY <u>C. FREY</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.			
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING	DEPTH	
	LOGGED DEPTHS 137 FT. FT.			LOGGED DEPTHS FT. FT.		FEET	METERS
siltstone, dusky-yellow to medium-gray, sandstone, medium-gray, very fine, and claystone, medium-gray coal siltstone, medium to olive-gray, some cbn's						0	
						10	
						20	
						30	
						40	
						50	
						60	
						70	
						80	
						90	
						100	
						110	
						120	

Hole no: US-78126 Map: Waco 2 N.E. (P.M.) Date: 10/25/78 State: Montana County: Musselshell
 Elev: 3345 ft Location: T. 8 ^N, R. 31 ^E, Sec. 20, Tract DCDA Drilled depth: 161 ft
 Measured: 400 ft ^{KNO} FSL, 1450 ft ^{FEI} KNO, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: All sandstones are subgraywacke unless otherwise noted - no density logs taken.



Hole no: US-78127 Map: Waco 2 N.W. (P.M.) Date: 10/25/78 State: Montana County: Musselshell
Elev: 3560 ft Location: T. 8 ^N, R. 31 ^E, Sec. 30, Tract CDAB Drilled depth: 320 ft
Measured: 1040 ft ^{FSL} 2050 ft ^{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
Remarks: All sandstone subgraywackes unless otherwise noted - no density log.

RECORDED BY <u>C. CONNOR</u> GEOLOGIST		YES <u>NO</u> RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.			
LITHOLOGY	GAMMA		S. P.	STRIP LOG	DENSITY	RESISTIVITY	DEPTH
	T.C. <u>2</u>		SENS. SETTING		T.C. _____	SENS. SETTING	
	RANGE <u>100</u>		<u>20</u>		RANGE _____	<u>20</u>	
	LOGGED DEPTHS				LOGGED DEPTHS		
	320 FT.		320 FT.		FT. 320 FT.		FEET METERS
siltstone, yellowish-green, claystone, light-gray, and sandstone, yellowish-brown, fine							0
coal							10
claystone, light-gray, siltstone, light-gray, and sandstone, light-gray, fine							50
coal							20
							100
							30
							40
siltstone, light-gray, some cbncs, and claystone, light-gray							150
							50
							200
							60
							70
coal							250
claystone, light-gray, and siltstone, light-gray							80
coal							90
siltstone, light-gray, and claystone, light-gray							300
							100
							350
							110
							120
							400

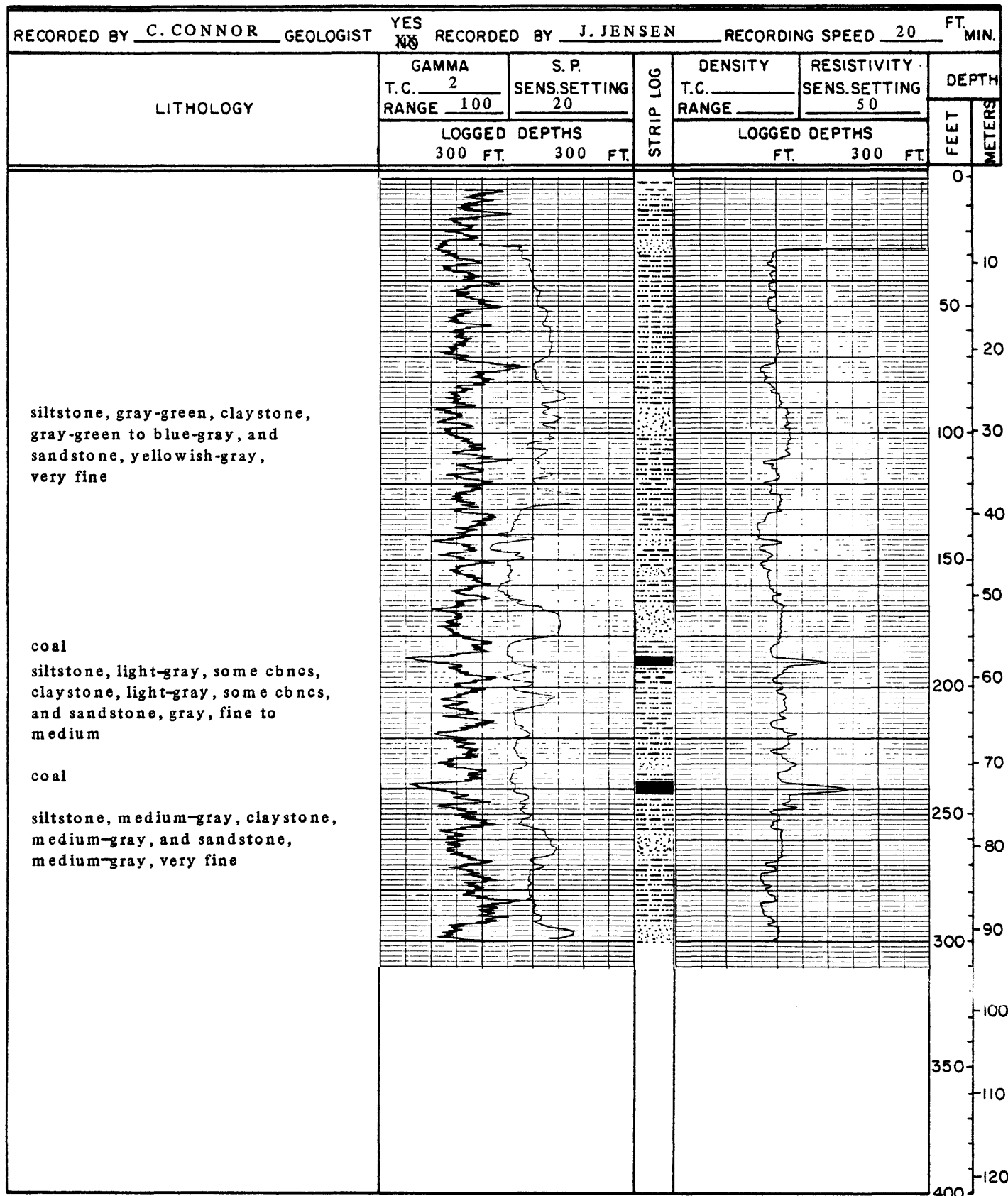
Hole no: US-78128 Map: Waco 2 N.W. (P.M.) Date: 10/25/78 State: Montana County: Musselshell
 Elev: 3420 ft Location: T. 8 ^N_S, R. 30 ^E_W, Sec. 26, Tract DACB Drilled depth: 100 ft
 Measured: 1800 ft ^{KMK}_{FSL}, 1270 ft ^{FEL}_{KMK}, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: All sandstone subgraywacke unless otherwise noted - no density log.

RECORDED BY <u>C. CONNOR</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>50</u>	S. P. SENS. SETTING <u>20</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 100 FT. 100 FT.			LOGGED DEPTHS FT. 100 FT.		
	sandstone, yellow, very fine, siltstone, yellowish-gray, and claystone, yellow and gray coal claystone, blue-gray, and siltstone, light-gray					

Hole no: US-78129 Map: Queens Point Date: 10/26/78 State: Montana County: Musselshell
 Elev: 3070 ft Location: T. 9 ^N_S, R. 30 ^E_W, Sec. 22, Tract CCCC Drilled depth: 120 ft
 Measured: 50 ft ^{FSL}_{FSL}, 50 ft ^{FWL}_{FWL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: All sandstones subgraywacke, unless otherwise noted.

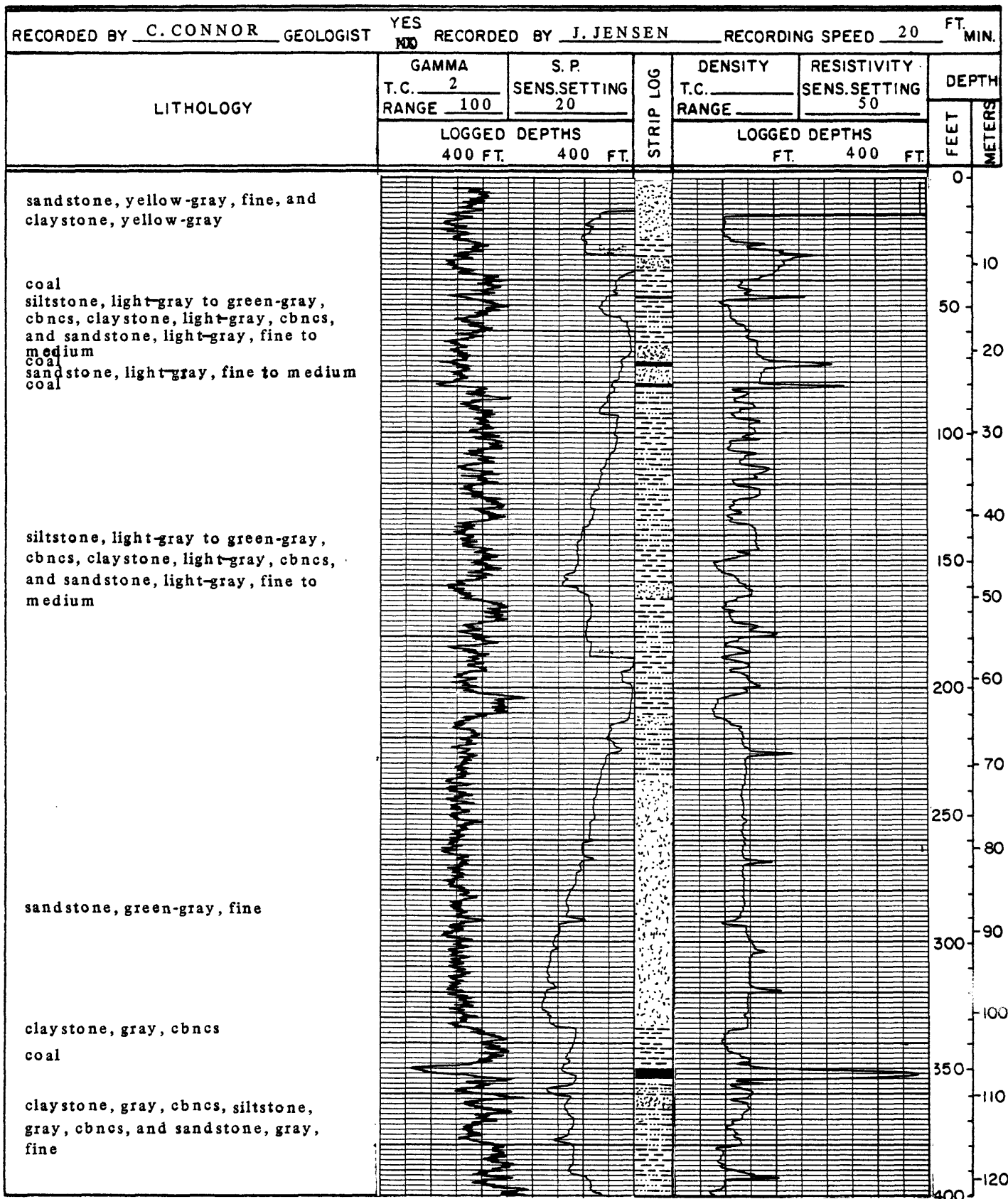
RECORDED BY <u>C. CONNOR</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>20</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 120 FT. 120 FT.			LOGGED DEPTHS FT. 120 FT.		
	colluvium claystone, greenish-gray, some cbn's sandstone, light to yellow-gray, very fine to fine coal, with parting claystone, light- gray siltstone, light-gray, some cbn's, claystone, light-gray, some cbn's, and sandstone, light gray, very fine to fine					

Hole no: US-78130 Map: Waco 2 N.W. (P.M.) Date: 10/26/78 State: Montana County: Musselshell
 Elev: 3160 ft Location: T. 9 ^N S, R. 30 ^E W, Sec. 34, Tract DDBA Drilled depth: 300 ft
 Measured: 1100 ft ^{BSL} 910 ft ^{FEL} 1100 ft, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: All sandstone subgraywacke unless otherwise noted - no density log.



RECORDED BY <u>C. CONNOR</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>20</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>50</u>	DEPTH
	LOGGED DEPTHS 385 FT. 385 FT.			LOGGED DEPTHS FT. 385 FT.		FEET METERS
siltstone, gray, claystone, gray, cbncls, and sandstone, gray, very fine						0
						10
						50
						20
						100
						30
						40
						150
						50
						200
coal						60
						70
						250
						80
claystone, gray, siltstone, gray, and sandstone, gray, very fine						90
						350
coal siltstone, gray						110
						120

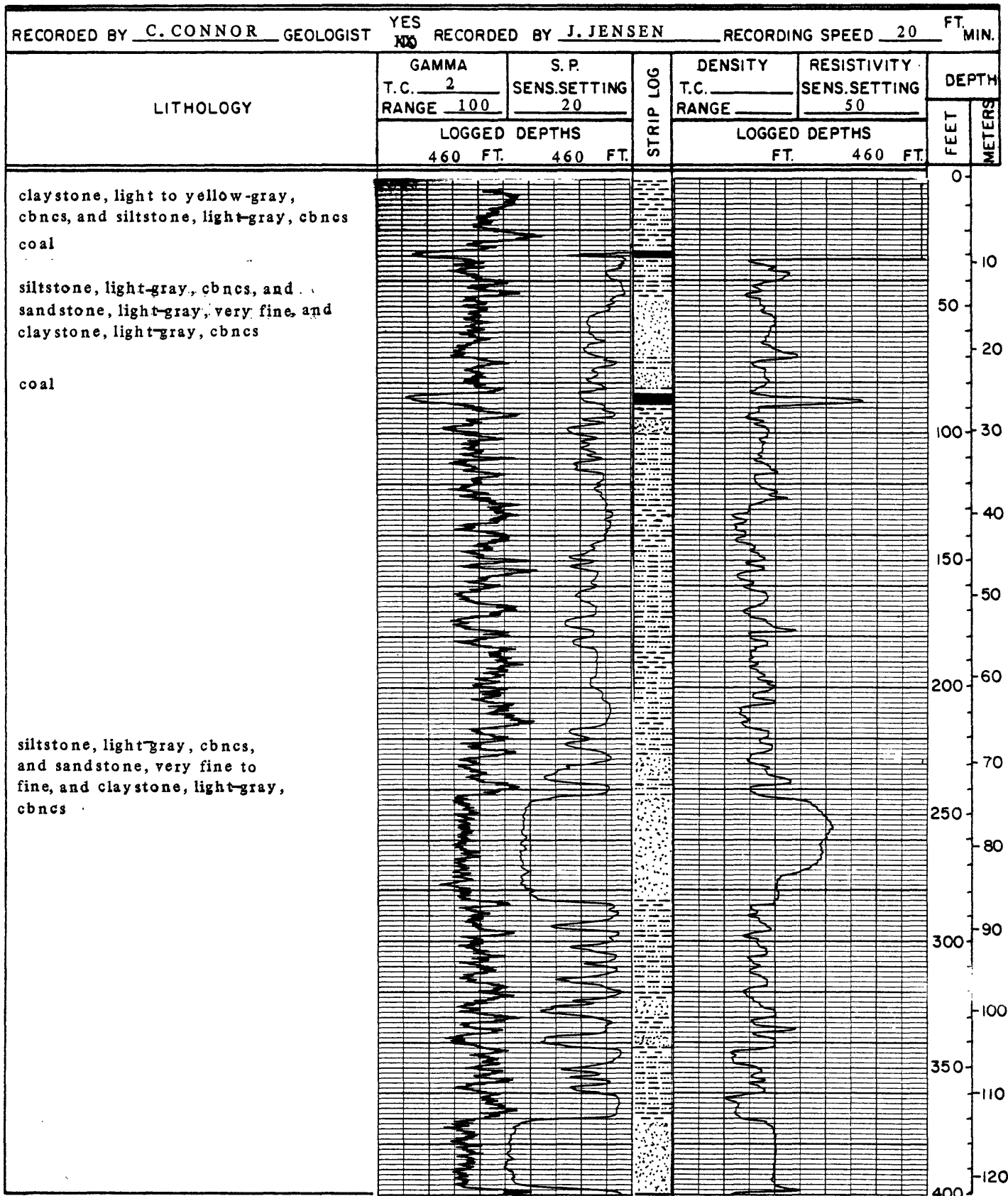
Hole no: US-78132 Map: Musselshell Date: 10/27/78 State: Montana County: Musselshell
 Elev: 2990 ft Location: T. 9 N, R. 29 E, Sec. 22, Tract DBAB Drilled depth: 400 ft
 Measured: 2350 ft ^{FSL}, 1760 ft ^{FRT}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Unless noted all sands appear to be subgraywacke.

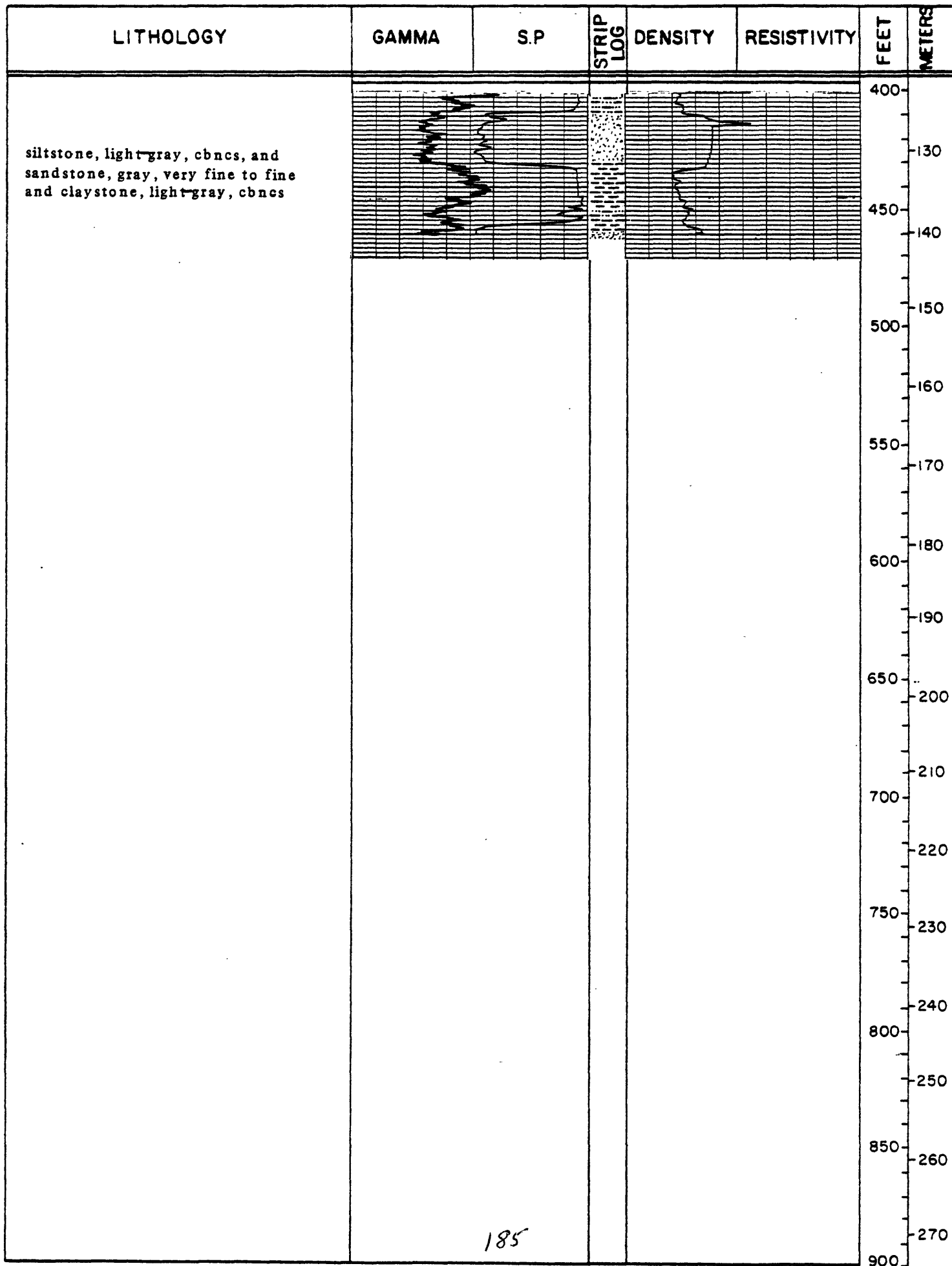


Hole no: US-78133 Map: Musselshell Date: 10/27/78 State: Montana County: Musselshell
 Elev: 3180 ft Location: T. 9 N. R. 29 E. Sec. 8 Tract CCCC Drilled depth: 100 ft
 Measured: 50 ft FSL, 75 ft FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Unless noted all sands appear to be subgraywacke.

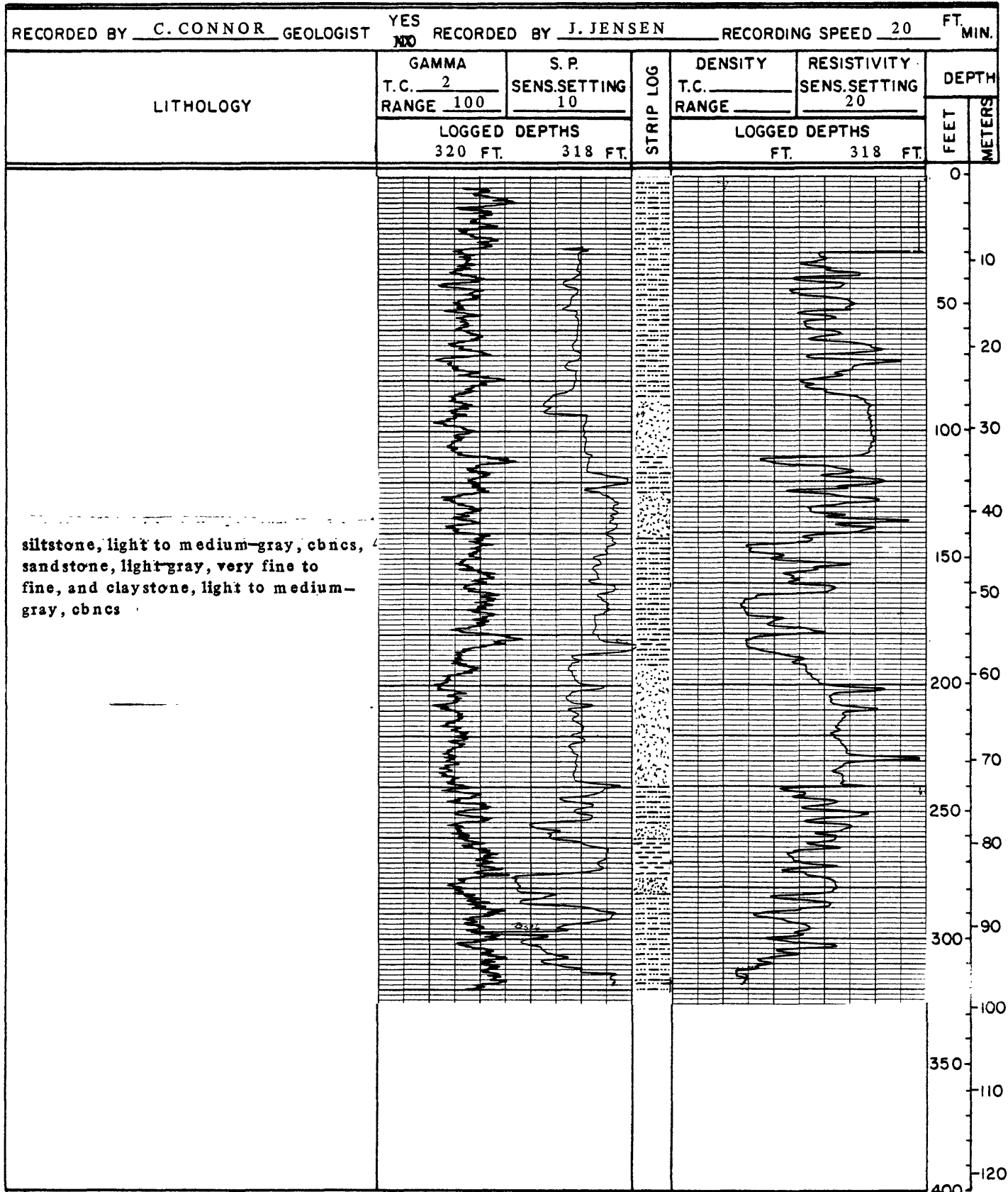
RECORDED BY <u>C. CONNOR</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>20</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 100 FT. 100 FT.			LOGGED DEPTHS FT. 100 FT.		
	siltstone, gray to blue-gray, cbncs, claystone, yellow-gray to gray, cbncs, and sandstone, green-gray to yellow-gray, very fine to fine					
						10
						20
						30
						40
						50
						60
						70
						80
						90
						100
						110
						120

Hole no: US-78134 Map: Fattig 1 S.W. (P.M.) Date: 10/27/78 State: Montana County: Musselshell
 Elev: 3977 ft Location: T. 6 ^{N.} _{S.}, R. 28 ^{E.} _{W.}, Sec. 12, Tract ADAD Drilled depth: 460 ft
 Measured: 1875 ft ^{FNL} ~~xxx~~, 65 ft ^{FEL} ~~xxx~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Unless noted all sands appear to be subgraywacke.





Hole no: US-78135 Map: Fattig 1 N.W. (P.M.) Date: 10/28/78 State: Montana County: Musselshell
 Elev: 3558 ft Location: T. 7 ^N, R. 28 ^E, Sec. 12, Tract BAAD Drilled depth: 320 ft
 Measured: 500 ft ^{FNL}, 2650 ft ^{FEL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Unless noted all sands appear to be subgraywacke.



Hole no: US-78136 Map: Fattig 1 N.W. (P.M.) Date: 10/29/78 State: Montana County: Musselshell
 Elev: 3425 ft Location: T. 7 ^N_S, R. 28 ^E_W, Sec. 2, Tract BCBD Drilled depth: 140 ft
 Measured: 2500 ft ^{FNL}~~xxx~~, 500 ft ^{FWL}~~xxx~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☒ No ☐
 Remarks: Unless noted all sands appear to be subgraywacke. Cored interval 98 ft - 115 ft.

RECORDED BY <u>C. CONNOR</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>20</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 140 FT. 14 FT.			LOGGED DEPTHS FT. 140 FT.		
	siltstone, green-gray, cbncs, and sandstone, yellow to blue-gray, very fine to medium, and claystone, blue-gray, cbncs					
					10	
					20	
					30	
					40	
					50	
					60	
					70	
					80	
					90	
					100	
					110	
					120	

Hole no: US-78137 Map: Fattig 1 N.W. (P.M.) Date: 10/31/78 State: Montana County: Musselshell
 Elev: 3410 ft Location: T. 7 ^N, R. 28 ^E, Sec. 4, Tract DCBC Drilled depth: 100 ft
 Measured: 800 ft ^{KAK} FSL, 2350 ft ^{FEI} ~~W~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☒ No ☐
 Remarks: Unless noted all sands appear to be subgraywacke. Cored interval 46 ft - 53 ft.

RECORDED BY <u>C. CONNOR</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>50</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>20</u>	DEPTH FEET METERS
	LOGGED DEPTHS 98 FT. FT.			LOGGED DEPTHS FT. 98 FT.		
	claystone, medium-gray, cbncs, and sandstone, medium-gray, very fine to medium, calcareous ledges coal claystone, medium-gray, cbncs, and sandstone, medium-gray, very fine to medium, calcareous ledges					

Hole no: US-78138 Map: Fattig 2 S.E. (P.M.) Date: 10/21/78 State: Montana County: Musselshell
 Elev: 3495 ft Location: T. 7 N, R. 28 W, Sec. 18, Tract ABBC Drilled depth: 300 ft
 Measured: 600 ft ^{FNL} ~~PSX~~, 2340 ft ^{FEL} ~~KMX~~, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>R. PEDERSON</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING <u>50</u>	DEPTH FEET METERS
	LOGGED DEPTHS 300 FT. 300 FT.			LOGGED DEPTHS FT. 300 FT.		
	siltstone, medium-gray to tan, cbncls, claystone, gray to brownish- tan, cbncls, and sandstone, medium-gray to tan, very fine to medium coal siltstone, medium-gray to tan, cbncls, claystone, gray to brownish-tan, cbncls, and sandstone, medium-gray to tan, very fine to medium					

Hole no: US-78139 Map: Fattig 2 S.E. (P.M.) Date: 10/31/78 State: Montana County: Musselshell
Elev: 3578 ft Location: T. 7 N., R. 27 E., Sec. 24, Tract CADB Drilled depth: 400 ft
Measured: 1970 ft ^{FOK} FSL, 2070 ft ^{FEW} FWL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
Remarks: _____

RECORDED BY R. PEDERSON GEOLOGIST		YES NO		RECORDED BY J. JENSEN		RECORDING SPEED 20		FT. MIN.	
LITHOLOGY	GAMMA T.C. 2 RANGE 100	S.P. SENS.SETTING 10	STRIP LOG	DENSITY T.C. 2 RANGE 1K	RESISTIVITY SENS.SETTING 50	DEPTH			
	LOGGED DEPTHS 400 FT. 400 FT.			LOGGED DEPTHS 400 FT. 400 FT.		FEET	METERS		
Colluvium						0			
siltstone, tan to medium-gray, cbncs, claystone, medium-to dark-gray, cbncs, and sandstone, medium-gray to greenish-gray, very fine to fine						10			
						50			
						20			
						100			
						30			
						40			
						50			
						60			
						70			
						80			
						90			
						100			
						110			
coal						120			
siltstone, medium-to dark-gray, cbncs, and sandstone, medium-gray, very fine to fine						130			
						140			
						150			
						160			
						170			
						180			
						190			
						200			
						210			
						220			
						230			
						240			
						250			
						260			
						270			
						280			
						290			
						300			
						310			
						320			
						330			
						340			
						350			
						360			
						370			
						380			
						390			
						400			

Hole no: US-78140 Map: Fattig 1 S.W. (P.M.) Date: 11/8/78 State: Montana County: Musselshell
 Elev: 3465 ft Location: T. 7 ^N, R. 28 ^E, Sec. 10, Tract CBAC Drilled depth: 200 ft
 Measured: 2260 ft ^{ROCK} FSL, 930 ft ^{ROCK} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Hole Bridged at 85 ft for E-logs.

RECORDED BY <u>C. CONNOR</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>10</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING <u>50</u>	DEPTH FEET METERS
	LOGGED DEPTHS 198 FT. 84 FT.			LOGGED DEPTHS 198 FT. 84 FT.		
	alluvium gravel					
siltstone, light green, claystone, light gray, cbncs, and sandstone, light gray, very fine						10
						50
						20
						100
coal						30
						40
siltstone, light green, claystone, light gray, cbncs, and sandstone, light gray, very fine						150
						50
						200
						60
						70
						250
						80
						300
						90
						100
						350
						110
						120
						400

Hole no: US-78141 Map: Fattig 2 N.W. (P.M.) Date: 11/30/78 State: Montana County: Musselshell
 Elev: 3406 ft Location: T. 8 N, R. 26 E, Sec. 14, Tract CDDD Drilled depth: 100 ft
 Measured: 45 ft FSL, 2475 ft FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☒ No ☐
 Remarks: Cored interval 23 ft - 31 ft.

RECORDED BY <u>R. PEDERSON</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>20</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING <u>50</u>	DEPTH FEET METERS
	LOGGED DEPTHS 98 FT. 97 FT.			LOGGED DEPTHS 98 FT. 98 FT.		
	sandstone, brown, very fine to fine, and claystone, medium-to dark-gray coal claystone, medium-to dark-gray, and sandstone, light-brown, very fine to fine, fe					

Hole no: US-78142 Map: Fattig 2 N.W. (P.M.) Date: 11/30/78 State: Montana County: Musselshell
 Elev: 3342 ft Location: T. 8 N. S., R. 26 W., Sec. 36, Tract AACA Drilled depth: 200 ft
 Measured: 875 ft ^{FNL} 690 ft ^{FEL} XXX, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Circulation lost within first 50 ft; possible washouts on density log.

RECORDED BY <u>R. PEDERSON</u> GEOLOGIST		YES NO		RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.					
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>		S. P. SENS. SETTING <u>20</u>		STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>1K</u>		RESISTIVITY SENS. SETTING <u>50</u>		DEPTH	
	LOGGED DEPTHS					LOGGED DEPTHS				FEET	METERS
	193 FT.		191 FT.			193 FT.		193 FT.			
alluvium										0	
										10	
										50	
										20	
										100	30
siltstone, medium-gray, cbncs, fissile, and sandstone, medium-gray, very fine, and claystone, medium- gray to greenish-gray, cbncs										40	
										150	50
										50	
										200	60
										70	
										250	80
										80	
										300	90
										100	
										350	110
										110	
										400	120

Hole no: US-78143 Map: Fattig 2 N.E. (P.M.) Date: 11/30/78 State: Montana County: Musselshell
 Elev: 3470 ft Location: T. 7 ^N, R. 27 ^E, Sec. 4, Tract ADAB Drilled depth: 100 ft
 Measured: 1500 ft ^{FNL} ~~xxx~~, 560 ft ^{FEL} ~~xxx~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>R. PEDERSON</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING <u>20</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING <u>50</u>	DEPTH FEET METERS
	LOGGED DEPTHS 100 FT. 99 FT.			LOGGED DEPTHS 100 FT. 100 FT.		
	alluvium					
siltstone, medium-gray, cbncs, and sandstone, tan, very fine to medium, and claystone, medium-gray, cbncs coal					10 50 20	
siltstone, medium-gray, cbncs, fissile, and claystone, medium-gray						20 100 30
						40 150 50
						200 60
						70 250 80
						300 90 100 350 110 120

Hole no: US-78144 Map: Fattig 2 N.E. Date: 12/1/78 State: Montana County: Musselshell
 Elev: 3520 ft Location: T. 7 N, R. 27 E, Sec. 10, Tract BBCC Drilled depth: 240 ft
 Measured: 1220 ft ^{FNL} ~~FSX~~, 200 ft ^{FWL} ~~FSX~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP on next page.

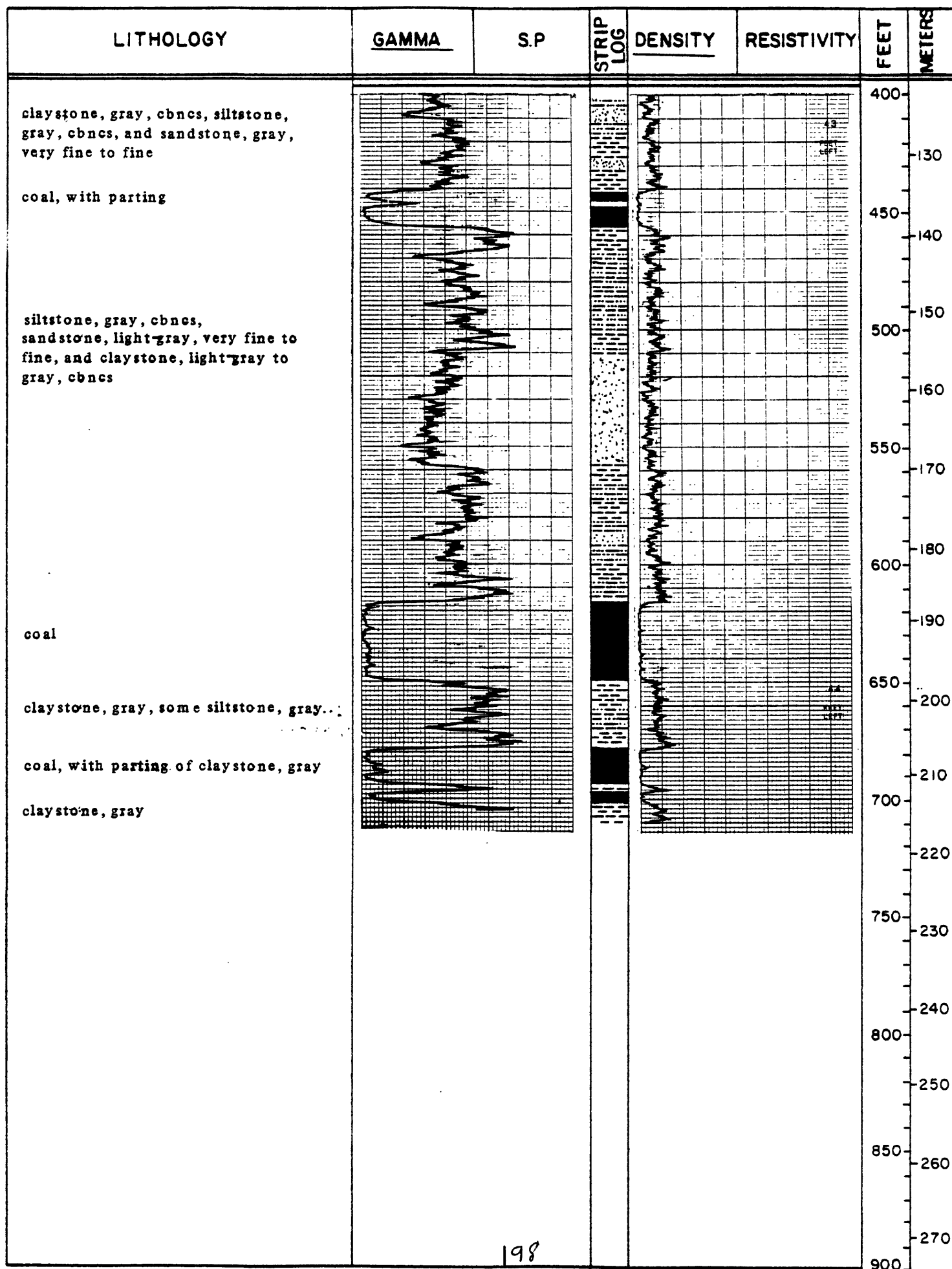
RECORDED BY <u>R. PEDERSON</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING <u>50</u>	DEPTH FEET METERS
	LOGGED DEPTHS 240 FT. FT.			LOGGED DEPTHS 238 FT. 238 FT.		
	colluvium, alluvium					
siltstone, medium-gray, cbncs, fissile, and claystone, medium-gray, cbncs, and sandstone, medium-gray, very fine to fine						10
						50
						20
						100
						30
						40
						150
						50
coal						200
siltstone, medium-gray, and claystone, medium-gray to brown, cbncs						60
						70
						250
						80
						90
						100
						350
						110
						120
						400

Hole no: US-78144 Map: Fattig 2 N.E. (P.M.) Date: 12/1/78 State: Montana County: Musselshell
 Elev: 3520 ft Location: T. 7 ^N _S, R. 27 ^E _W, Sec. 10, Tract BBCC Drilled depth: 240 ft
 Measured: 1220 ft ^{ENL} ~~ft~~, 200 ft ^{BOX} ~~ft~~ FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

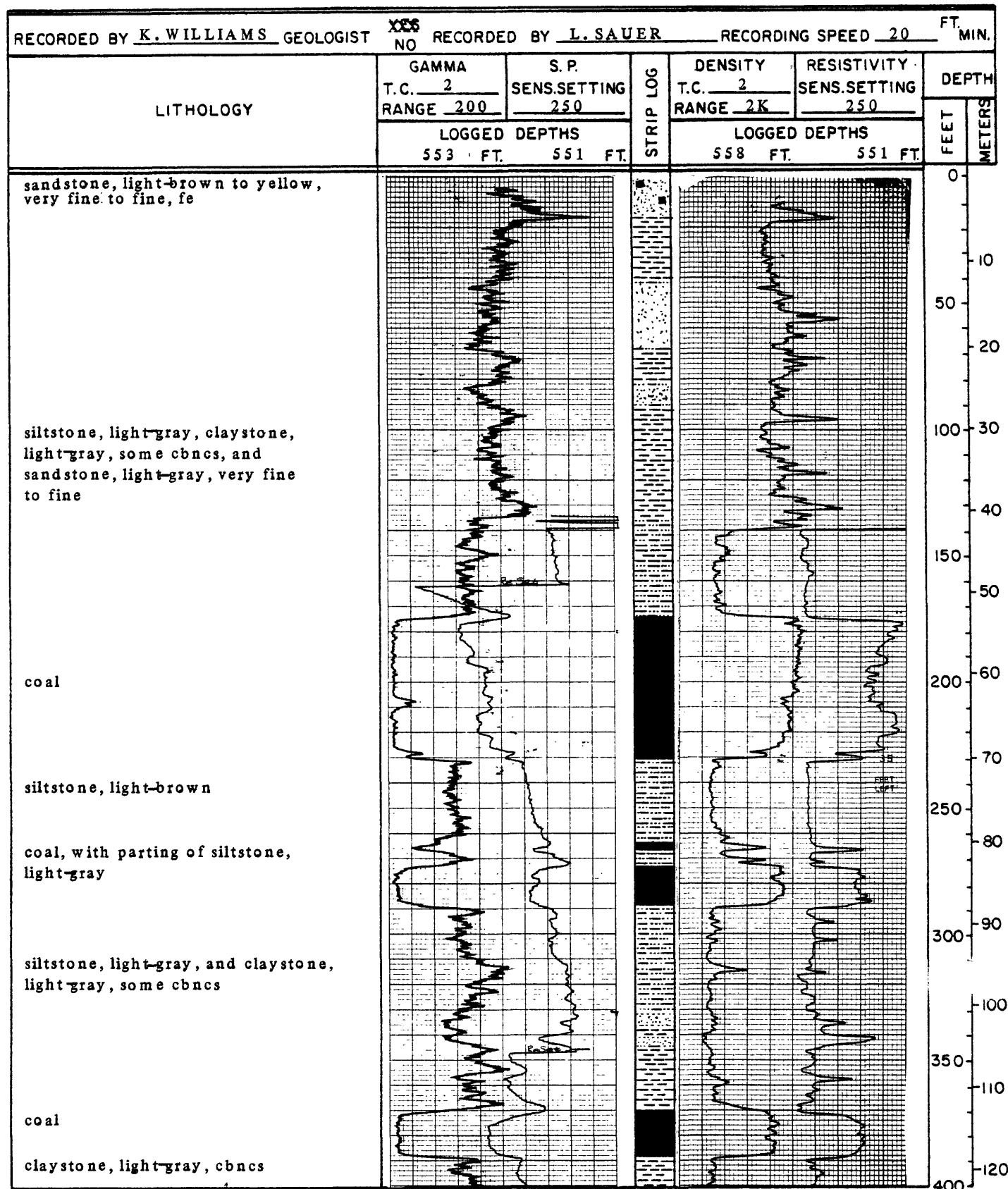
RECORDED BY <u>R. PEDERSON</u> GEOLOGIST		YES NO RECORDED BY <u>J. JENSEN</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. _____ RANGE _____	S. P. SENS. SETTING <u>20</u>	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS. SETTING _____	DEPTH FEET METERS
	LOGGED DEPTHS FT. <u>236</u> FT.			LOGGED DEPTHS FT. _____ FT.		

Hole no: US-78145 Map: Decker Date: 9/27/78 State: Montana County: Big Horn
 Elev: 3760 ft Location: T. 8 S., R. 40 W., Sec. 20, Tract BDAB Drilled depth: 715 ft
 Measured: 3950 ft ^{FKK}FSL, 2300 ft ^{FKK}FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Lost circulation at 620 ft no return to 715 ft, logged through rods, no source on density tool.

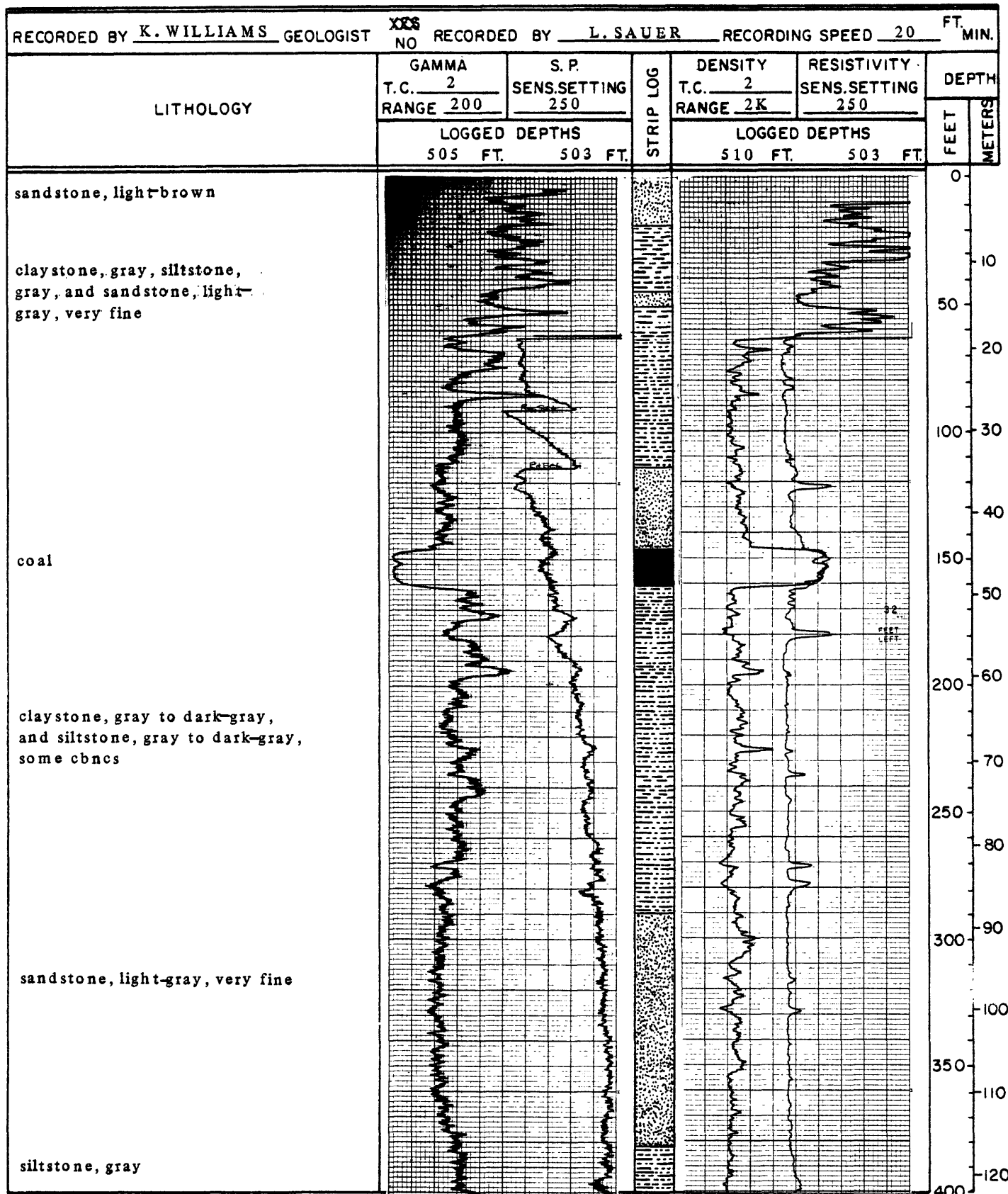
RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST ^{XSS} NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.			
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>50</u>	RESISTIVITY SENS. SETTING	DEPTH	
	LOGGED DEPTHS 704 FT. FT.			LOGGED DEPTHS 710 FT. FT.		FEET	METERS
sandstone, gray, very fine, and siltstone, gray			✓ X			0	
			✓ X			10	
			✓ X			50	
			✓ X			20	
			✓ X			30	
			✓ X			40	
			✓ X			50	
			✓ X			60	
claystone, gray, cbncs, siltstone, gray, cbncs, and sandstone, gray, very fine			✓ X			70	
			✓ X			80	
			✓ X			90	
			✓ X			100	
coal			✓ X			110	
			✓ X			120	
			✓ X			130	
			✓ X			140	
claystone, gray, cbncs, siltstone, gray, cbncs, and sandstone, gray, very fine			✓ X			150	
			✓ X			160	
			✓ X			170	
			✓ X			180	

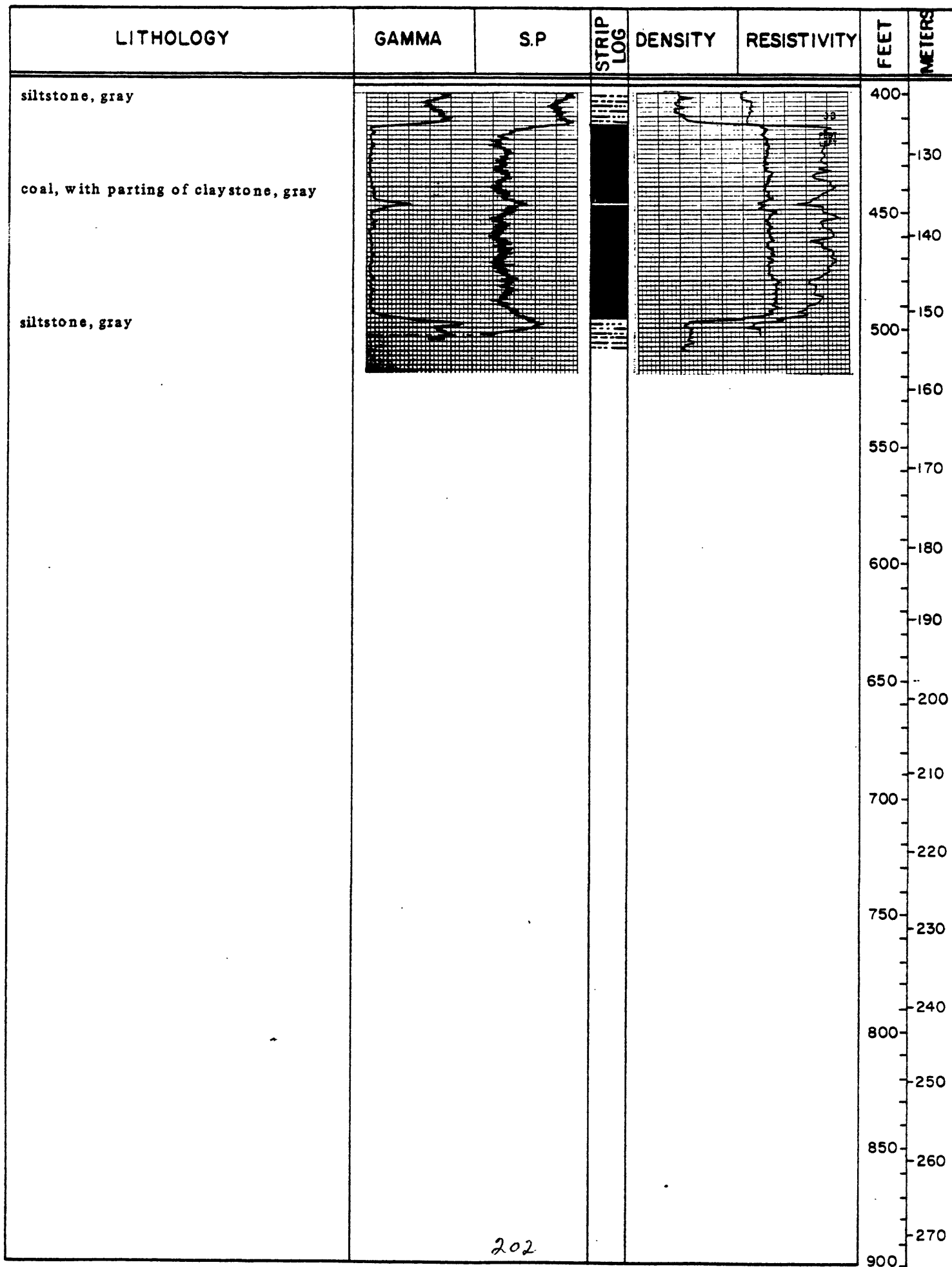


Hole no: US-78146 Map: Decker Date: 9/29/78 State: Montana County: Big Horn
 Elev: 3671 ft Location: T. 9 ^N S., R. 40 ^E W., Sec. 5, Tract DADC Drilled depth: 560 ft
 Measured: 1450 ft ^{RMX} FSL, 625 ft ^{FEL} RMX, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Numerous hard zones.



Hole no: US-78147 Map: Half Moon Hill Date: 9/30/78 State: Montana County: Big Horn
 Elev: 4114 ft Location: T. 8 S., R. 39 E., Sec. 13, Tract BBBC Drilled depth: 510 ft
 Measured: 500 ft ^{FNL} ~~FWL~~, 100 ft ^{FWL} ~~FWL~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Logged with pit over hole.





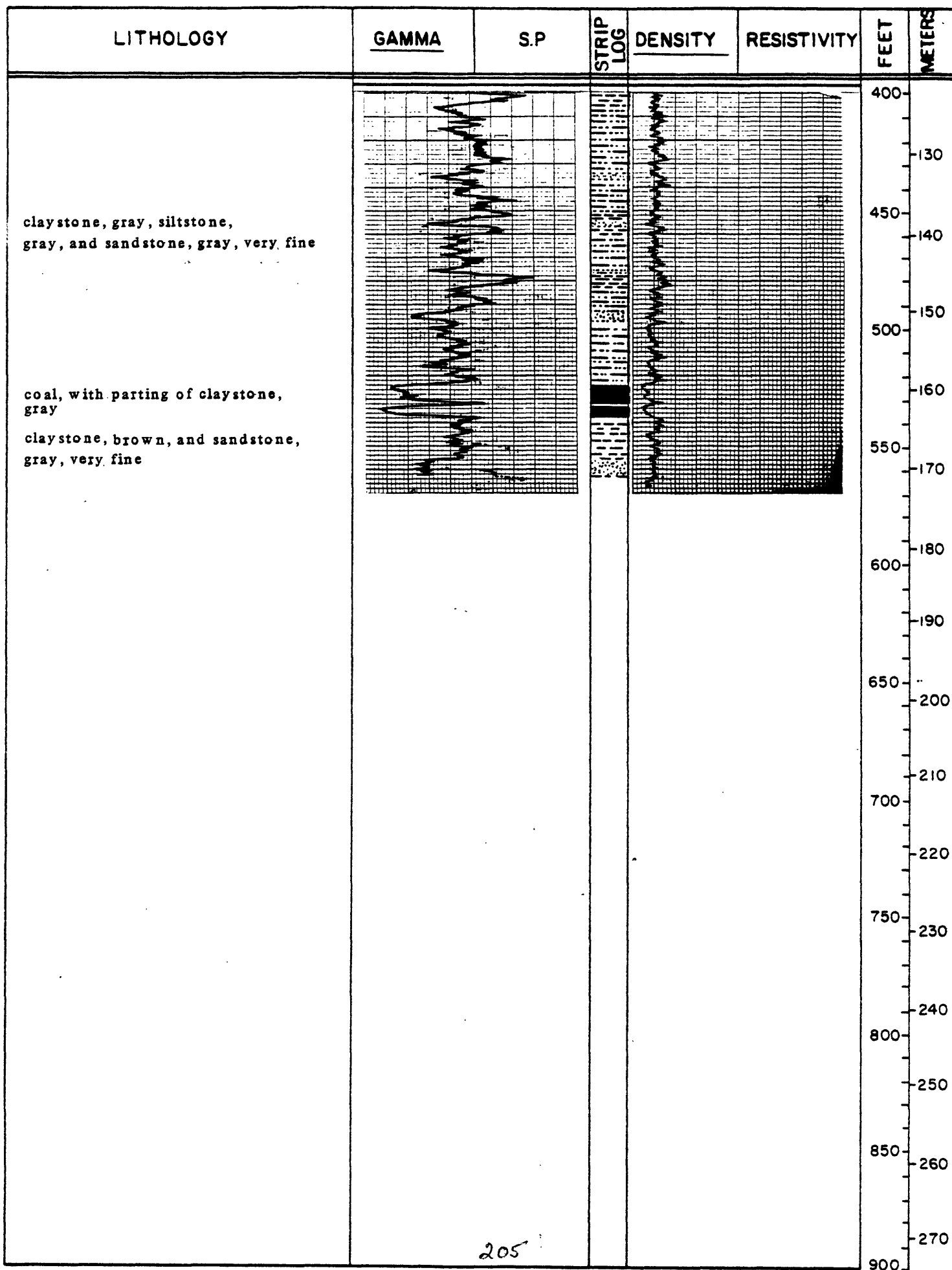
Hole no: US-78148 Map: Half Moon Hill Date: 10/1/78 State: Montana County: Big Horn
 Elev: 4059 ft Location: T. 8 S., R. 39 E., Sec. 10, Tract ADAC Drilled depth: 270 ft
 Measured: 1750 ft ^{ENL} 340 ft ^{FEL} 1750 ft, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Abandoned 270 ft lost circulation still in clinker - no geophysical logs.

RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		<input checked="" type="checkbox"/> YES NO		RECORDED BY _____		RECORDING SPEED _____		FT. MIN.	
LITHOLOGY	GAMMA T.C. _____ RANGE _____	S. P. SENS.SETTING _____	STRIP LOG	DENSITY T.C. _____ RANGE _____	RESISTIVITY SENS.SETTING _____	DEPTH			
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS		
	FT.	FT.		FT.	FT.				
claystone, gray, siltstone, gray, clinker, and sandstone, gray, very fine						0			
						10			
						50			
						20			
						100	30		
						40			
						150			
						50			
						200	60		
clinker						70			
						250			
						80			
						300	90		
						100			
						350			
						110			
						400	120		

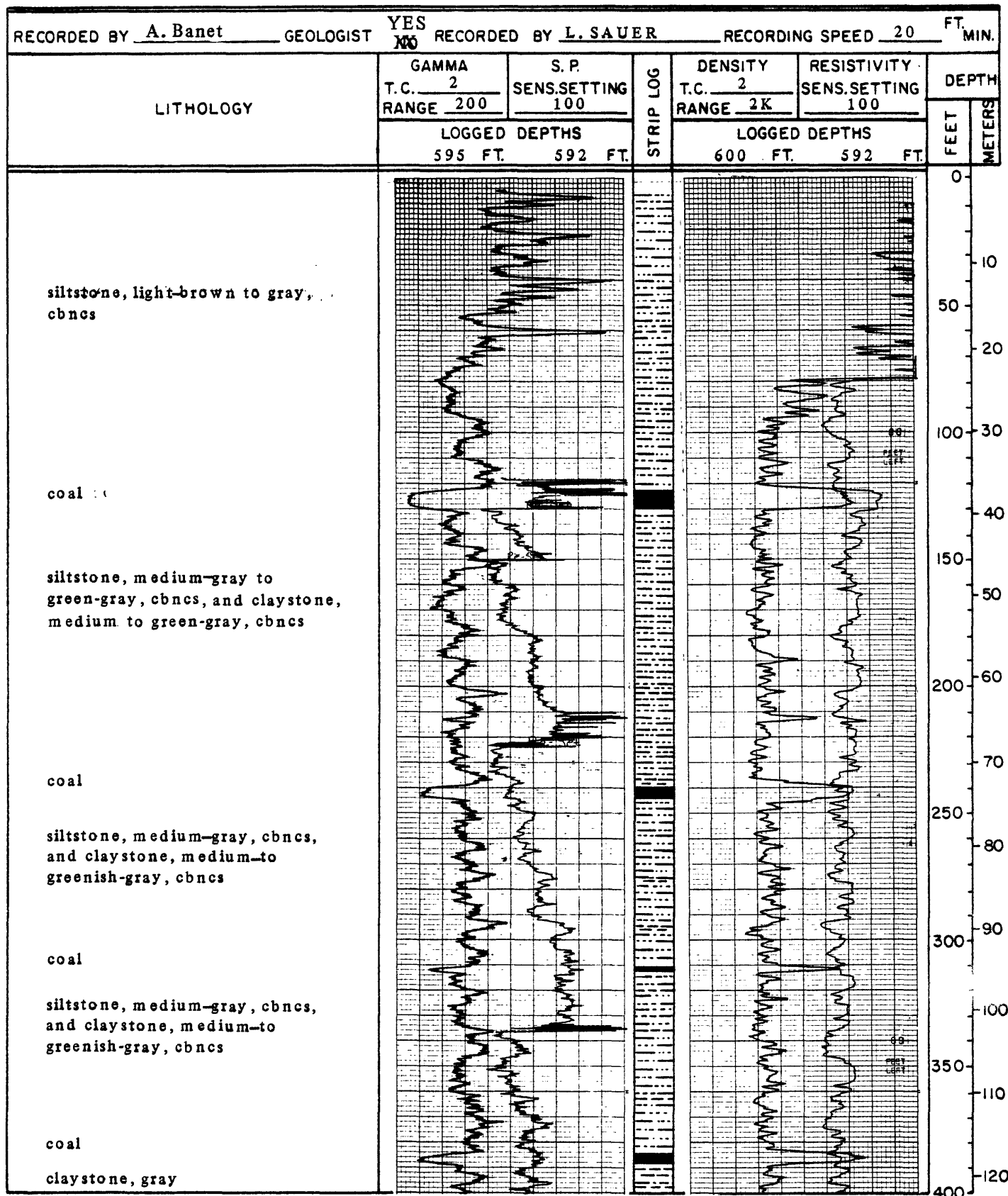
203

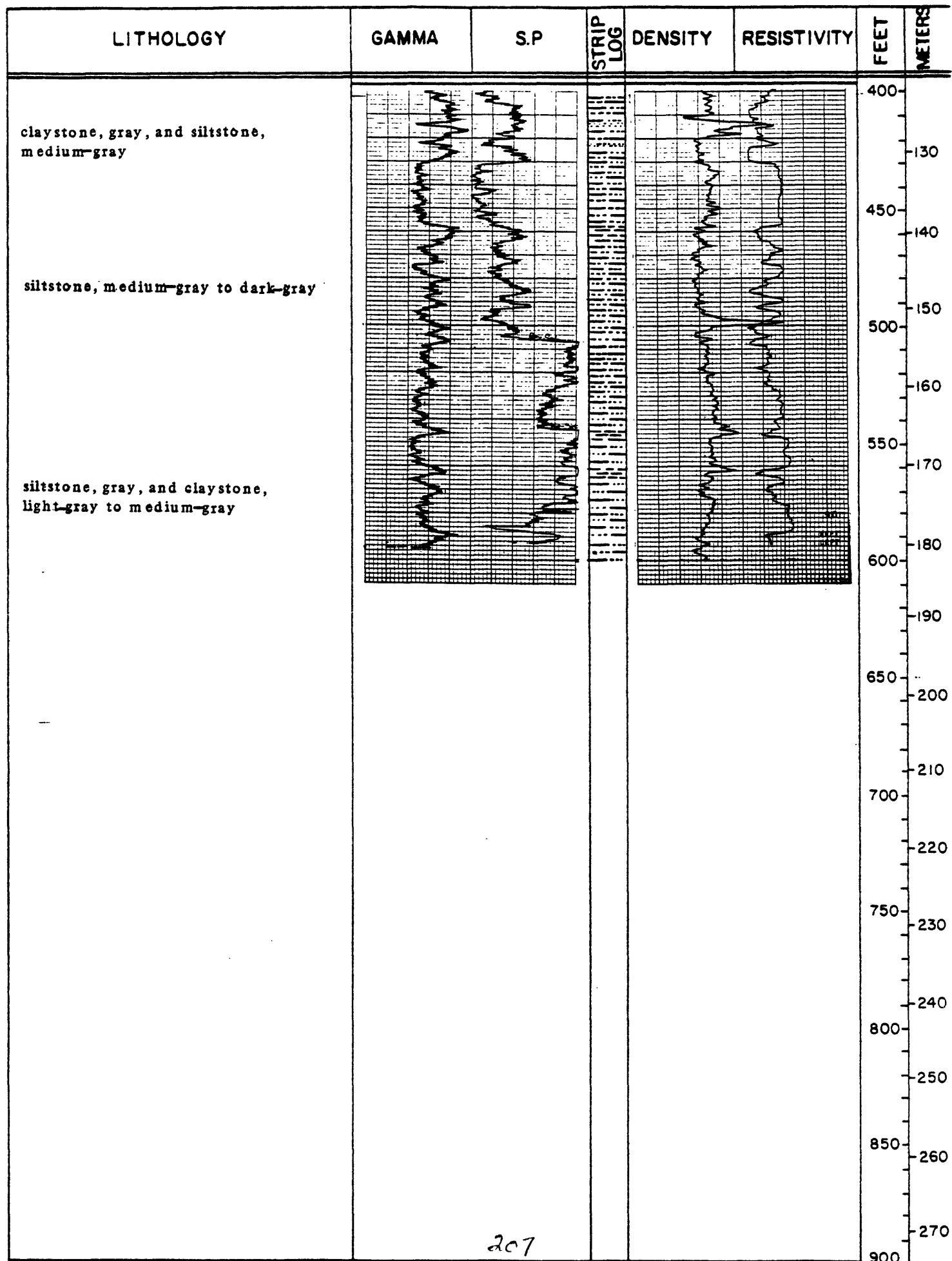
Hole no: US-78149 Map: Half Moon Hill Date: 10/1/78 State: Montana County: Big Horn
 Elev: 4240 ft Location: T. 8 S., R. 39 E., Sec. 3, Tract AAA Drilled depth: 570 ft
 Measured: 1600 ft ^{FNL} ~~xxx~~, 200 ft ^{FEL} ~~xxx~~, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Hard zones then clinker, logged through stems, no source on density log.

RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST ^{XXX} NO		RECORDED BY <u>K. WILLIAMS</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>50</u>	RESISTIVITY SENS. SETTING	DEPTH FEET METERS
	LOGGED DEPTHS 562 FT. FT.			LOGGED DEPTHS 567 FT. FT.		
	<p>sandstone, yellow, very fine, and claystone, gray</p> <p>clinker, with ledges of sandstone, yellow, very fine</p> <p>claystone, gray, siltstone, gray and sandstone, gray, very fine</p>					



Hole no: US-78150 Map: BLM-NE-31 Date: 10/11/78 State: Montana County: Dawson
 Elev: 2771 ft Location: T. 18 ^N, R. 52 ^E, Sec. 18, Tract DDDD Drilled depth: 600 ft
 Measured: 25 ft FSL, 15 ft FEL, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP malfunction at 210 ft.

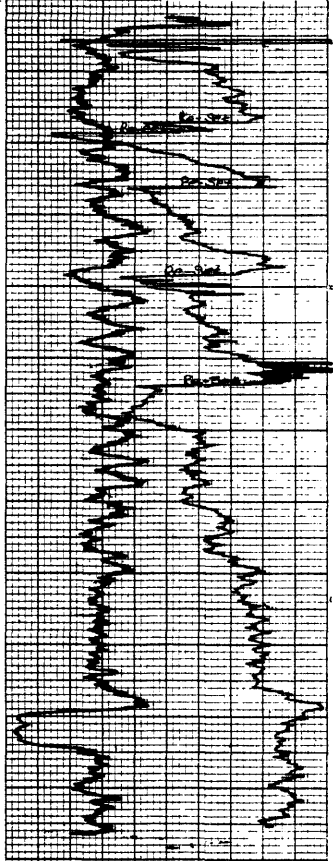
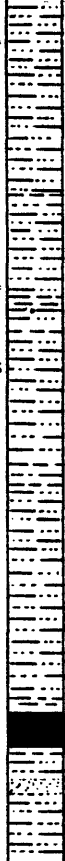
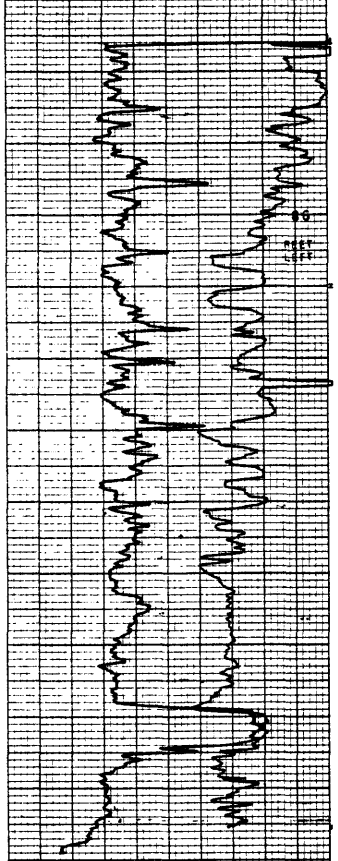







Hole no: US-78151 Map: BLM-NE-31 Date: 10/11/78 State: Montana County: Dawson
Elev: 2751 ft Location: T. 18 ^N, R. 52 ^E, Sec. 6, Tract DDDD Drilled depth: 400 ft
Measured: 165 ^{RMX} ft 95 ^{FEL} ft RMX, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
Remarks:

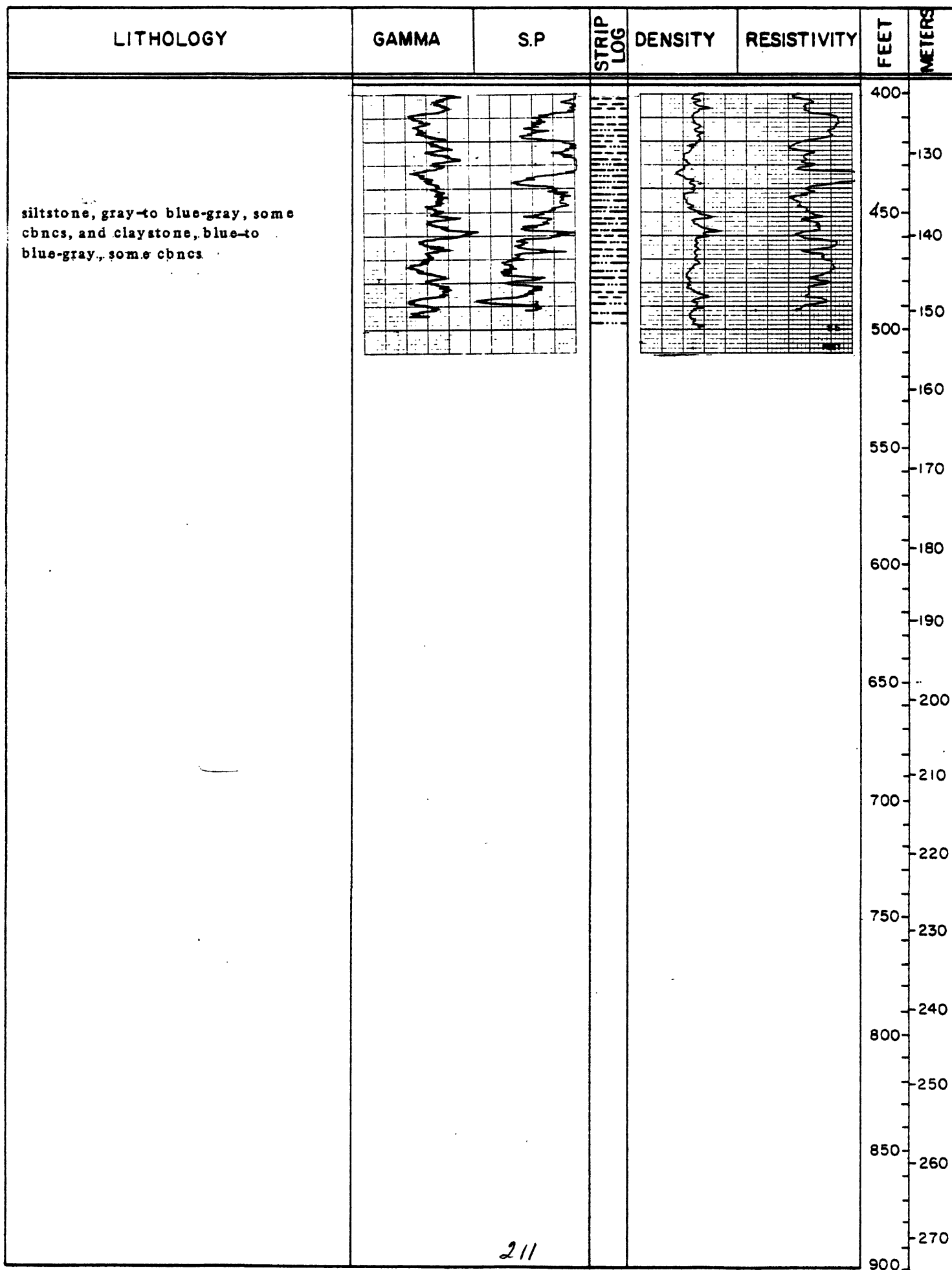
RECORDED BY <u>R. PEDERSON</u> GEOLOGIST		YES NO RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.				
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS.SETTING <u>250</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS.SETTING <u>100</u>	DEPTH		
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS	
	394 FT.	392 FT.		399 FT.	392 FT.			
siltstone, gray, cbncls, claystone, gray, cbncls, and sandstone, gray, very fine coal claystone, gray coal siltstone, gray, cbncls, claystone, gray, cbncls, and sandstone, gray, fine coal siltstone, gray, cbncls, and claystone, gray, cbncls coal siltstone, gray, cbncls, and claystone, gray, cbncls coal siltstone, gray, cbncls, and claystone, gray, cbncls						0		
							10	
							50	
							20	
							100	30
							40	
							150	
							50	
							200	60
							70	
					250			
					80			
					300	90		
					100			
					350			
					110			
					400	120		

Hole no: US-78152 Map: BLM-NE-39 Date: 10/11/78 State: Montana County: Dawson
 Elev: 2696 ft Location: T. 17 ^N, R. 52 ^E, Sec. 20, Tract AAAA Drilled depth: 240 ft
 Measured: 55 ft ^{FNL} ~~XXX~~, 5 ft ^{FEL} ~~XXX~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

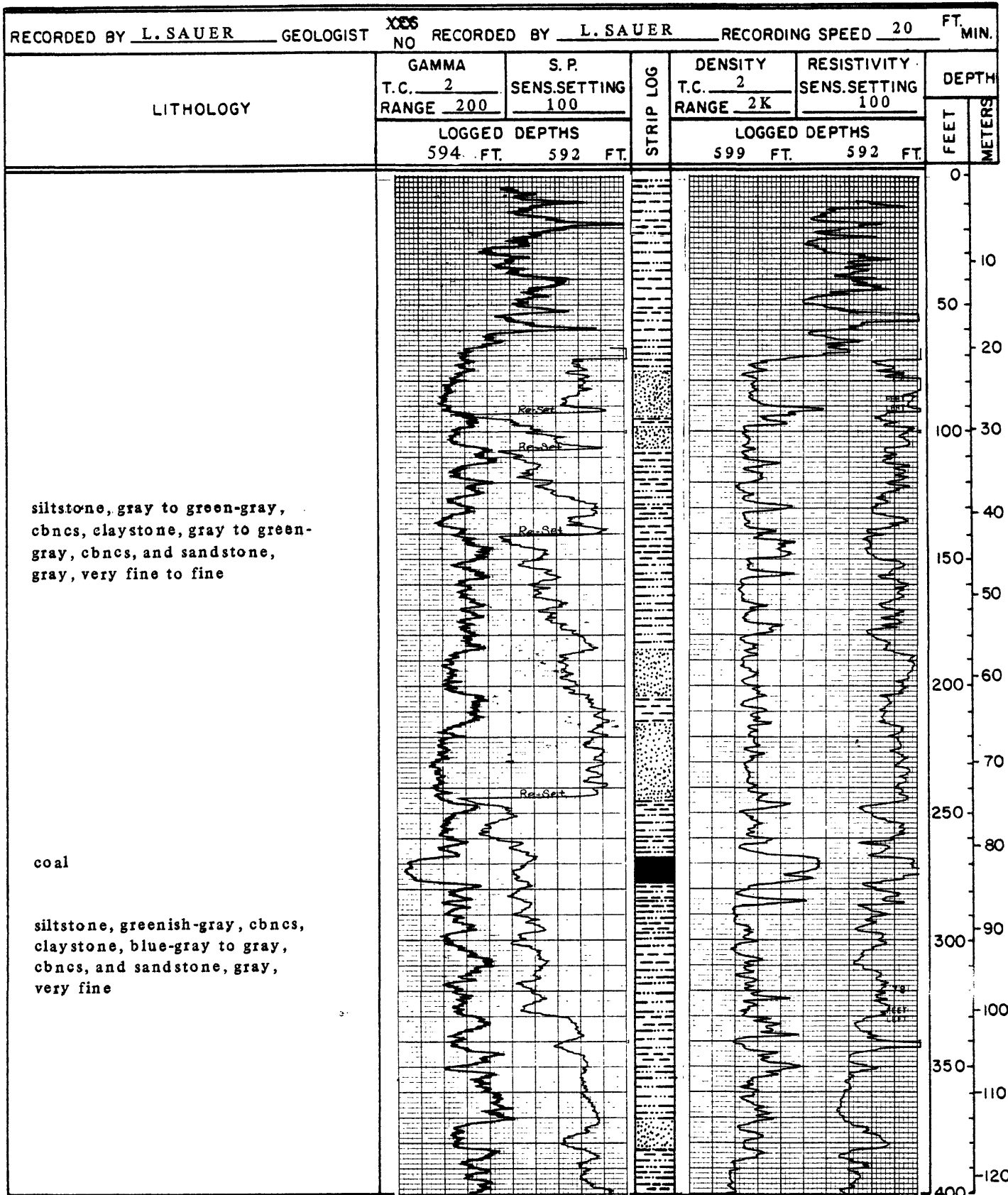
RECORDED BY <u>R. PEDERSON</u> GEOLOGIST		YES NO RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING <u>100</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING <u>100</u>	DEPTH FEET METERS
	LOGGED DEPTHS <u>233</u> FT. <u>231</u> FT.			LOGGED DEPTHS <u>238</u> FT. <u>231</u> FT.		
siltstone, gray-green to brown, cbncls, and claystone, gray to green, cbncls,						0
						10
coal						50
						20
siltstone, gray, cbncls, and claystone, gray, cbncls, and sandstone, gray, very fine						100
						30
						40
						50
						150
						50
						200
						60
						250
						70
						350
						80
						90
						100
						110
						120
						400

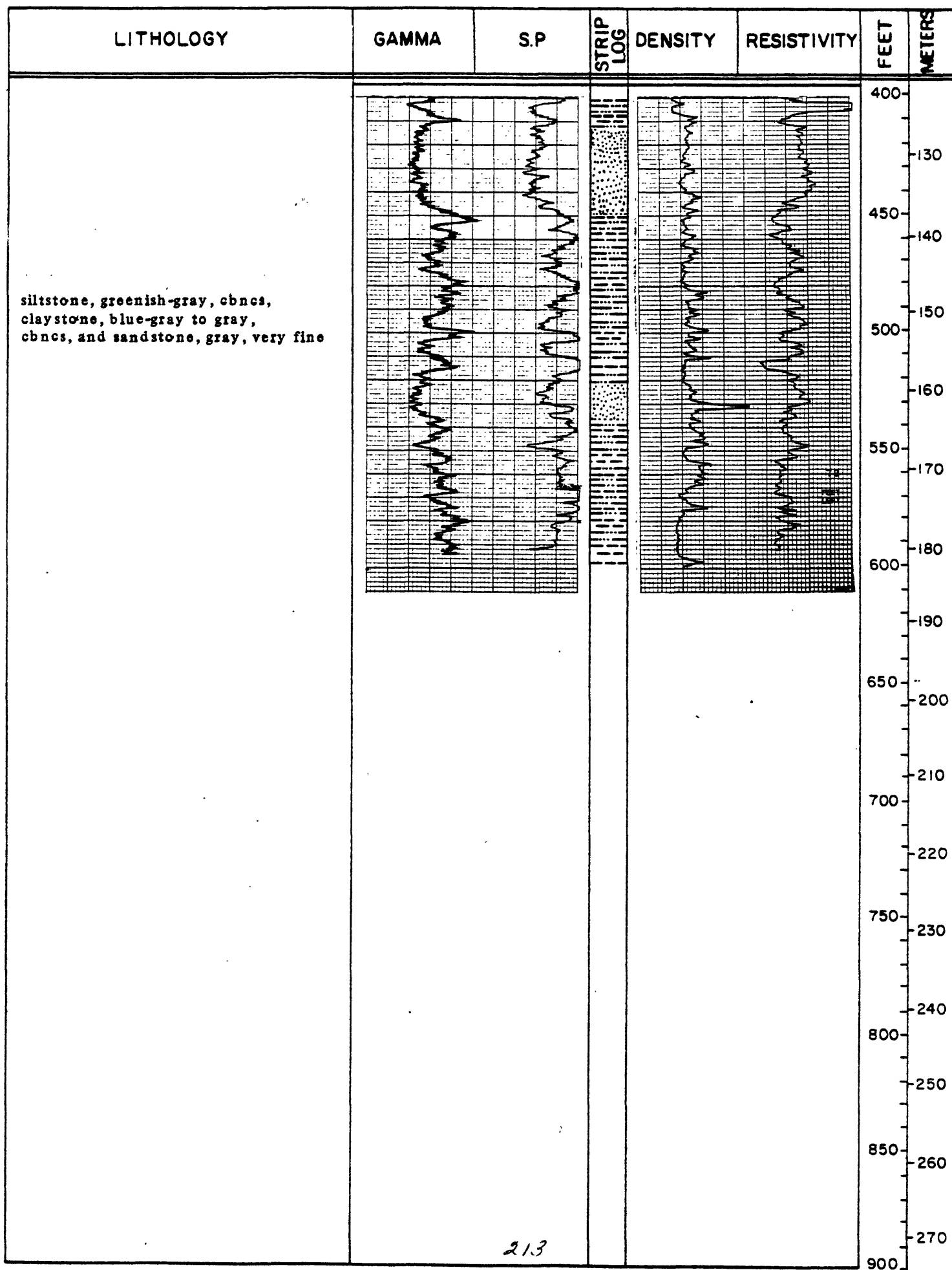
Hole no: US-78153 Map: BLM-NE-31 Date: 10/11/78 State: Montana County: Dawson
 Elev: 2740* ft Location: T. 18 N, R. 52 W, Sec. 28, Tract DDDD Drilled depth: 500 ft
 Measured: 15 ft ^{RMK} FSL, 40 ft ^{FEL} RMK, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Elevation estimated from Glendive AMS; scale 1:250,000 and 100 ft contour interval
SP malfunction at 198 ft.

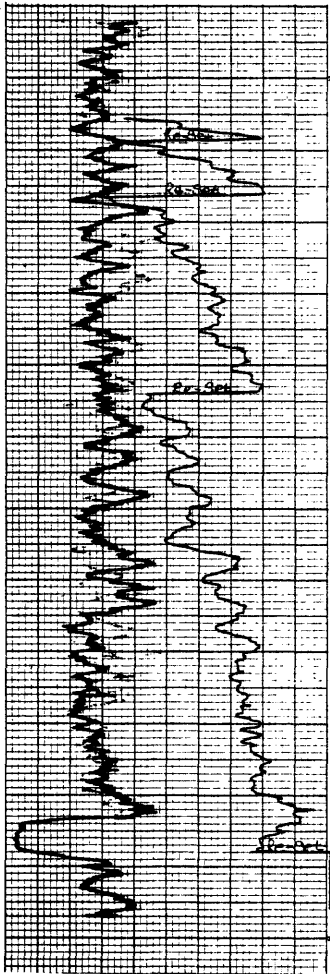

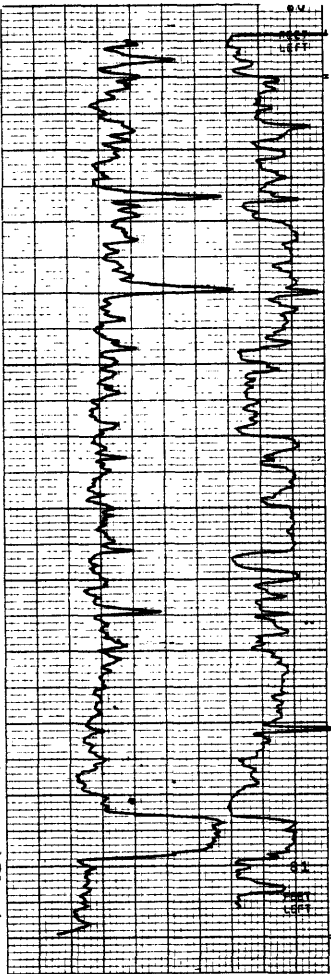





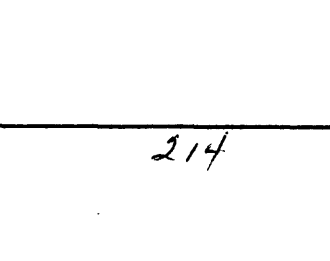
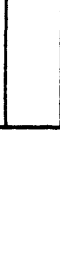
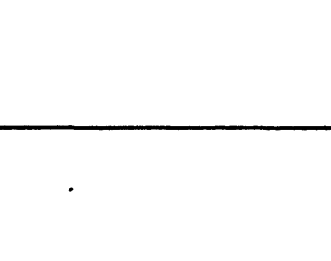
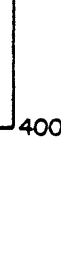
RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		XES NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.					
LITHOLOGY	GAMMA		S. P.		STRIP LOG	DENSITY		RESISTIVITY		DEPTH	
	T.C. <u>2</u>	RANGE <u>200</u>	SENS. SETTING <u>100</u>			T.C. <u>2</u>	RANGE <u>2K</u>	SENS. SETTING <u>100</u>		FEET	METERS
	LOGGED DEPTHS					LOGGED DEPTHS					
	494 FT.		492 FT.			499 FT.		492 FT.			
gravel, and sandstone, white and black, medium, fe										0	
claystone, gray, cbncs										10	
coal										50	
										20	
siltstone, gray to brown, some cbncs, and claystone, gray										100	30
										40	
										150	
coal, with parting of claystone, gray										50	
										200	60
siltstone, gray to blue-gray, some cbncs, and claystone, gray to blue-gray, some cbncs										70	
										250	
coal										80	
										300	90
siltstone, gray to blue-gray, some cbncs, and claystone, gray to blue-gray, some cbns										100	
										350	
coal										110	
										400	120



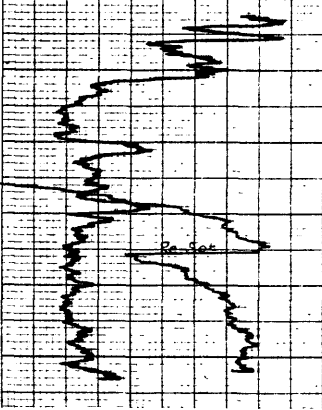
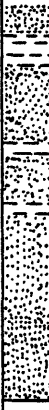
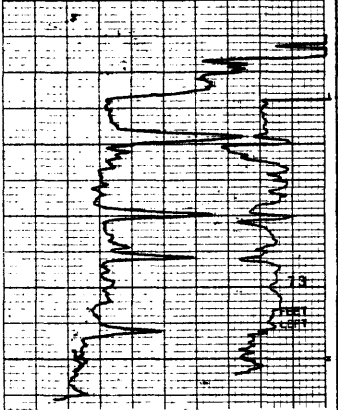
Hole no: US-78154 Map: BLM-NE-39 Date: 10/11/78 State: Montana County: Dawson
 Elev: 2790* ft Location: T. 17 ^N, R. 52 ^E, Sec. 10, Tract CCDD Drilled depth: 600 ft
 Measured: 8 ft ^{KMX} FSL, 1060 ft ^{KMX} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Elevation estimated from Glendye AMS; scale 1:250,000, 100 ft contour interval;



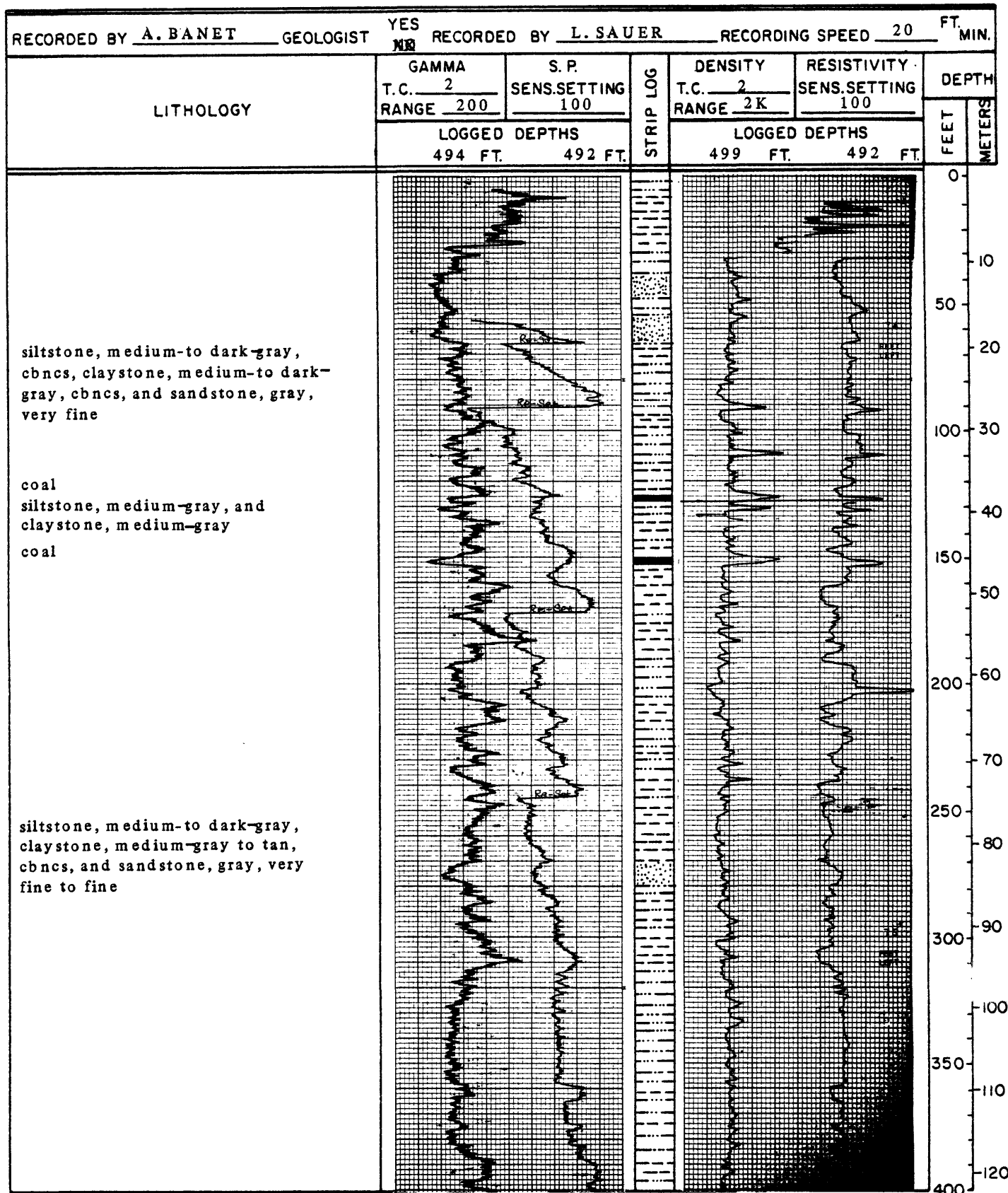


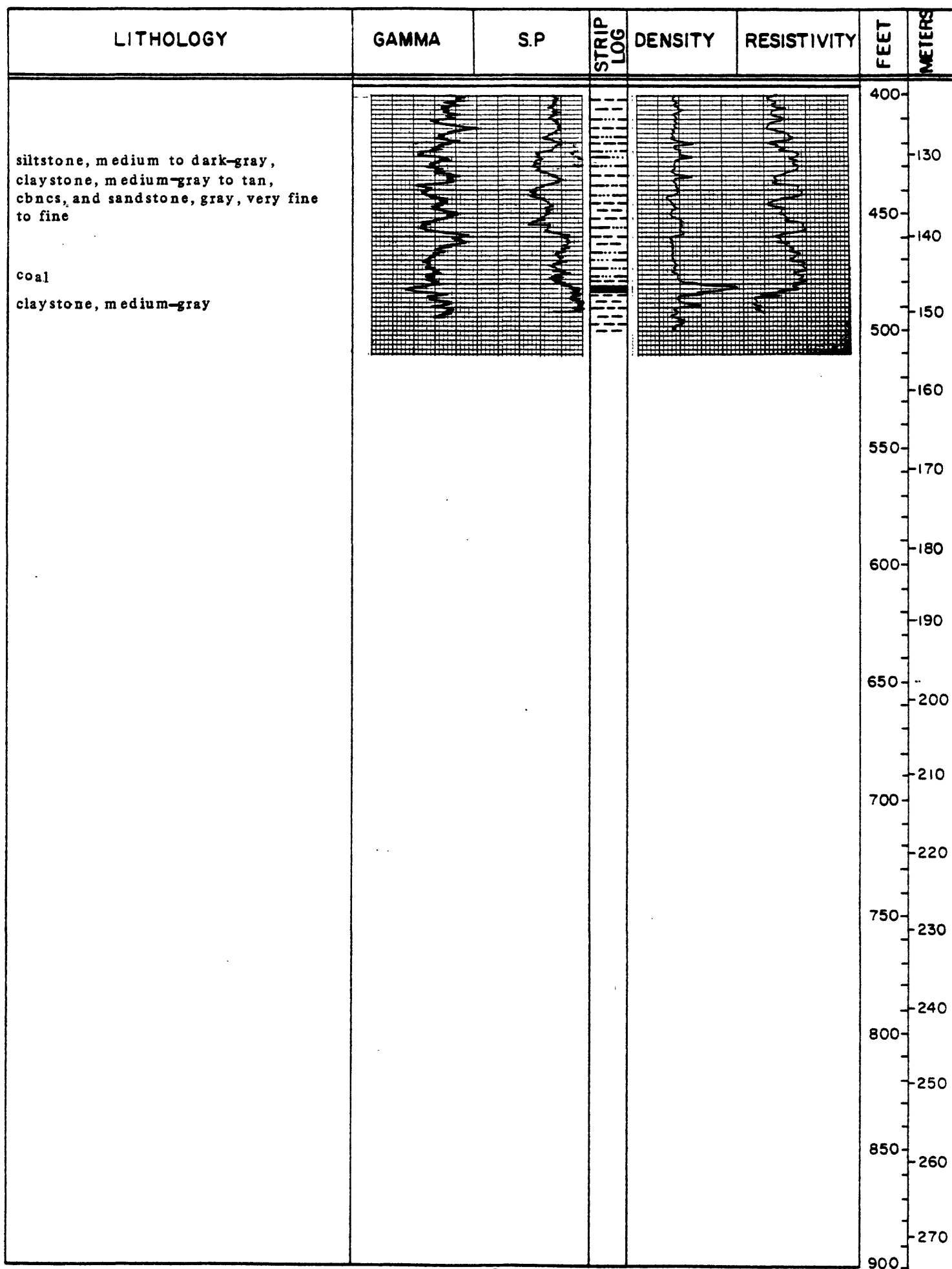
RECORDED BY <u>A. BANET</u> GEOLOGIST		YES NO RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING <u>100</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING <u>100</u>	DEPTH
	LOGGED DEPTHS 254 FT. 252 FT.			LOGGED DEPTHS 259 FT. 252 FT.		FEET METERS
siltstone, medium-gray to brown, cbncls, and claystone, medium-gray, cbncls, and sandstone, gray, very fine					0	0
coal					50	20
siltstone, medium-to dark-gray, and claystone, medium-to dark-gray					150	50
					250	80
					350	110

Hole no: US-78156 Map: BLM-NE-39 Date: 10/12/78 State: Montana County: Dawson
 Elev: 2691 ft Location: T. 17 ^N_S, R. 52 ^E_W, Sec. 18, Tract CCCD Drilled depth: 110 ft
 Measured: 15 ft ^{FSL}, 650 ft ^{FWL}, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Lost circulation at 105 ft. SP malfunction at 42 ft.

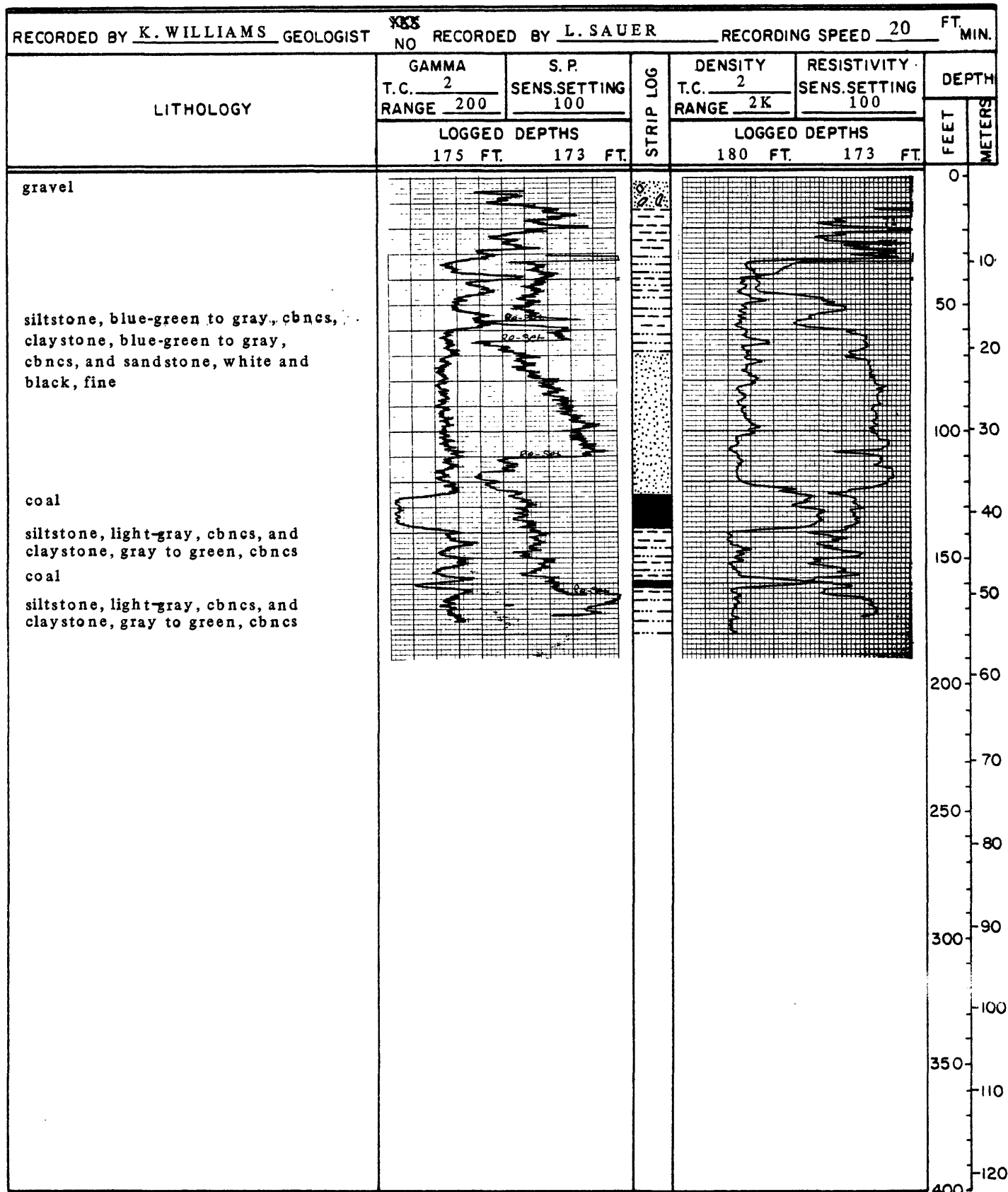
RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		YES NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.	
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING <u>100</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING <u>100</u>	DEPTH	
	LOGGED DEPTHS <u>106</u> FT. <u>104</u> FT.			LOGGED DEPTHS <u>111</u> FT. <u>104</u> FT.		FEET	METERS
sandstone, gray to brown, very fine to fine, and claystone, gray to brown, cbncs						0	
						10	
						50	
						20	
						100	30
						40	
						150	
						50	
						200	60
						70	
						250	
						80	
						300	90
100							
350							
110							
400	120						

Hole no: US-78157 Map: BLM-NE-39 Date: 10/12/78 State: Montana County: Dawson
 Elev: 2555 ft Location: T. 17 ^N, R. 53 ^E, Sec. 30, Tract DDDD Drilled depth: 500 ft
 Measured: 100 ft ^{FSL}, 215 ft ^{FEL}, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP malfunction at 57 ft

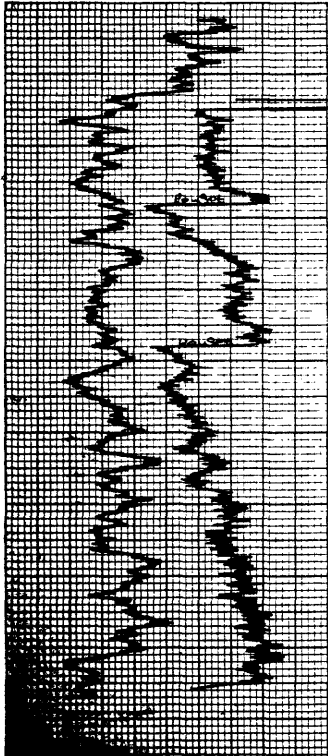

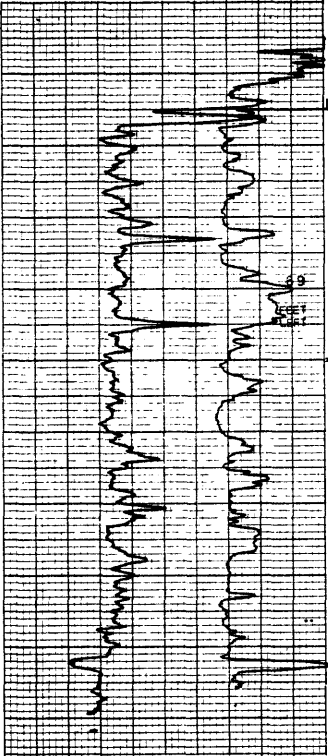




Hole no: US-78158 Map: BLM-NE-39 Date: 10/13/78 State: Montana County: Dawson
 Elev: 2590* ft Location: T. 17 ^N_S, R. 52 ^E_W, Sec. 34, Tract DDDD Drilled depth: 180 ft
 Measured: 15 ft ^{FWL}_{FSL}, 65 ft ^{FWL}_{FSL}, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Elevation estimated from Glendive AMS; scale 1:250,000, 100 ft contour interval.



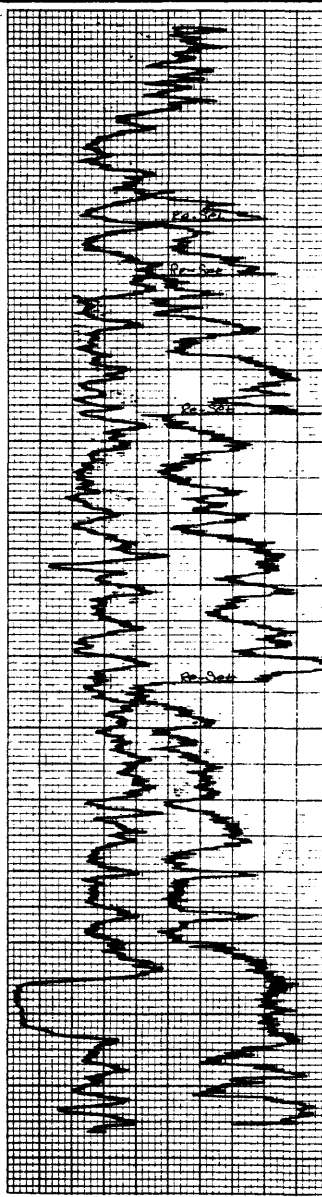
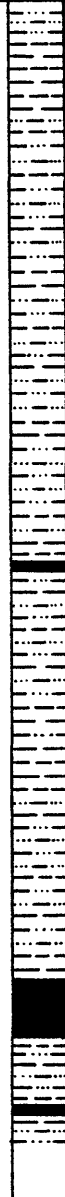
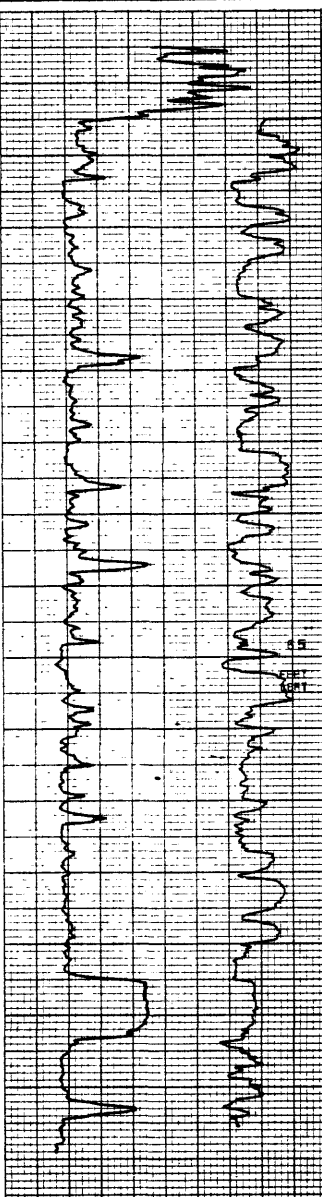
Hole no: US-78159 Map: BLM-NE-39 Date: 10/13/78 State: Montana County: Dawson
 Elev: 2750 ft Location: T. 17 ^N, R. 52 ^E, Sec. 24, Tract CABC Drilled depth: 200 ft
 Measured: 2297 ft ^{FSL}, 1372 ft ^{FWL}, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Elevation estimated from Glendive AMS; scale 1:250,000, 100 ft contour interval.

RECORDED BY <u>A. BANET</u> GEOLOGIST		YES NO RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS.SETTING <u>250</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>200</u>	RESISTIVITY SENS.SETTING <u>250</u>	DEPTH FEET METERS
	LOGGED DEPTHS 194 FT. 192 FT.			LOGGED DEPTHS 199 FT. 192 FT.		
	siltstone, brown to dark-gray, cbncs, and claystone, medium-gray to dark- gray, cbncs coal siltstone, brown to dark-gray, cbncs, claystone, medium-gray to dark-gray, cbncs, and sandstone, brown, very fine					

Hole no: US-78160 Map: BLM-NE-39 Date: 10/13/78 State: Montana County: Dawson
 Elev: 2640 ft Location: T. 17 ^N, R. 52 ^E, Sec. 32, Tract DDDD Drilled depth: 250 ft
 Measured: 12 ft ^{FSL}, 108 ft ^{FEL}, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Log recorded through drill pipe, no source on density section.

RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		YES NO RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.			
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>500</u>	RESISTIVITY SENS. SETTING	DEPTH	
	LOGGED DEPTHS 210 FT. FT.			LOGGED DEPTHS 215 FT. FT.		FEET	METERS
gravel, brown, and silt, brown						0	
						10	
						50	
						20	
siltstone, gray to blue-gray, cbncs, and sandstone, light-gray, very fine to fine, some calcareous material						100	30
						40	
						150	
coal						50	
siltstone, gray to blue-gray, cbncs							
coal							
siltstone, gray to blue-gray, cbncs						200	60
						70	
						250	
						80	
						300	90
						100	
						350	
						110	
						400	120

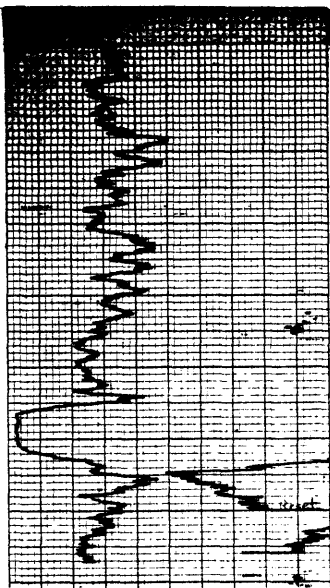
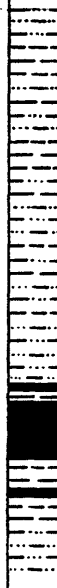
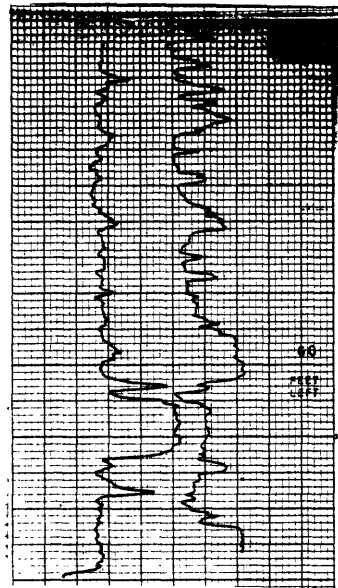
Hole no: US-78161 Map: BLM-NE-39 Date: 10/13/78 State: Montana County: Dawson
 Elev: 2796 ft Location: T. 16 N, R. 52 E, Sec. 6, Tract DDDD Drilled depth: 320 ft
 Measured: 38 ft FSL, 126 ft FEL, Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP malfunction at 50 ft.

RECORDED BY <u>A. BANET</u> GEOLOGIST		YES NO RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.			
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING <u>100</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>5K</u>	RESISTIVITY SENS. SETTING <u>250</u>	DEPTH	
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS
	313 FT.	312 FT.		318 FT.	312 FT.		
siltstone, tan to medium-gray, cbncs, and claystone, dark-yellow to medium-gray, cbncs						0	
coal						10	
						20	
						30	
						40	
						50	
						60	
						70	
						80	
						90	
						100	
						110	
						120	
						130	
						140	
						150	
						160	
						170	
						180	
						190	
						200	
						210	
						220	
						230	
						240	
						250	
						260	
						270	
						280	
						290	
						300	
						310	
						320	

Hole no: US-78162 Map: BLM-NE-39 Date: 10/13/78 State: Montana County: Dawson
 Elev: 2770* ft Location: T. 16 ^N, R. 52 ^E, Sec. 20, Tract CCCC Drilled depth: 280 ft
 Measured: 54 ft ^{ROK} FSL, 105 ft ^{REX} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Elevation estimated from Glendive AMS; scale 1:250,000, 100 ft contour interval
SP malfunction at 151 ft.

RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		YES NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u>		FT. MIN.	
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING <u>100</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>5K</u>	RESISTIVITY SENS. SETTING <u>100</u>	DEPTH			
	LOGGED DEPTHS <u>273</u> FT. <u>271</u> FT.			LOGGED DEPTHS <u>278</u> FT. <u>271</u> FT.		FEET	METERS		
gravel, and sandstone, brown, very fine						0			
						10			
siltstone, gray, cbncs, claystone, blue-gray to gray, cbncs, and sandstone, gray, very fine to fine						50			
						20			
						100	30		
						30			
						40			
						40			
						150	50		
						50			
coal						200	60		
						60			
siltstone, gray, cbncs, and claystone, gray, cbncs						70			
						70			
coal						250	75		
						75			
siltstone, gray, cbncs, and claystone, gray, cbncs						80			
						80			
						90			
						90			
						100			
						100			
						350	110		
						110			
						400	120		
						120			

Hole no: US-78163 Map: Pleasant View Date: 10/13/78 State: Montana County: Dawson
 Elev: 2555 ft Location: T. 16 ^{N.} 8 ^{E.} R. 53 W. Sec. 24 Tract CCCC Drilled depth: 160 ft
 Measured: 233 ft ^{FSL}, 242 ft ^{FWL}, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP malfunction at 126 ft.

RECORDED BY <u>A. BANET</u> GEOLOGIST		YES NO RECORDED BY <u>K. WILLIAMS</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS.SETTING <u>100</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>5K</u>	RESISTIVITY SENS.SETTING <u>250</u>	DEPTH FEET METERS
	LOGGED DEPTHS <u>154</u> FT. <u>152</u> FT.			LOGGED DEPTHS <u>159</u> FT. <u>152</u> FT.		
siltstone, medium-gray to yellow, cbncls, and claystone, medium-gray to tan, cbncls coal, with a parting of claystone, gray claystone, medium-to dark-gray coal claystone, medium-to dark-gray						0 10 20 30 40 50 60 70 80 90 100 110 120

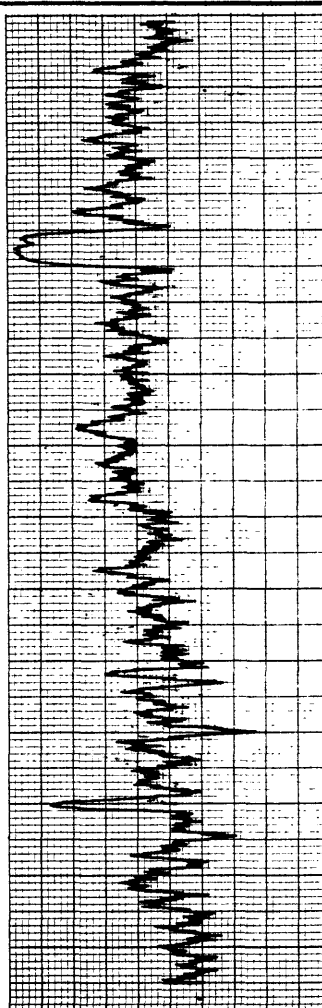
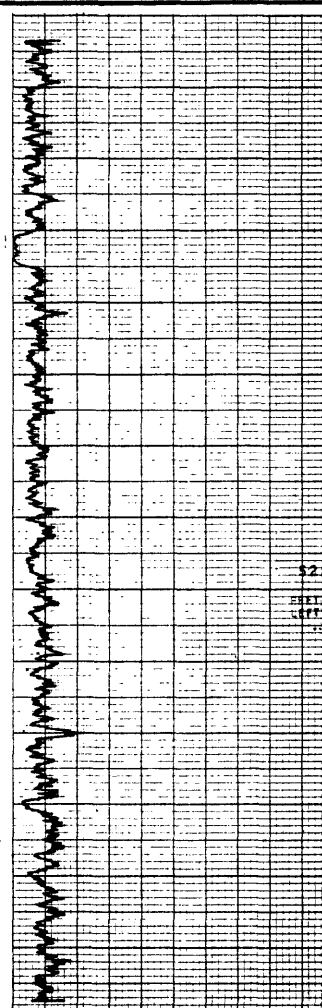
Hole no: US-78164 Map: Poverty Flat West Date: 10/14/78 State: Montana County: Dawson
 Elev: 2576 ft Location: T. 16 ^N R. 53 ^E Sec. 14 Tract CCCC Drilled depth: 220 ft
 Measured: 66 ft ^{FSL} 240 ft ^{FWL} Hole size: 5 in. Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP log malfunction.

RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		YES NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.					
LITHOLOGY	GAMMA		S. P.		STRIP LOG	DENSITY		RESISTIVITY		DEPTH	
	T.C. <u>2</u>		SENS. SETTING			T.C. <u>2</u>		SENS. SETTING		FEET	METERS
	RANGE <u>200</u>		<u>250</u>			RANGE <u>5K</u>		<u>100</u>			
	LOGGED DEPTHS					LOGGED DEPTHS					
	209 FT. 207 FT.					214 FT. 207 FT.					
sandstone, brown, very fine.										0	
										10	
siltstone, gray, cbncs, and claystone, gray, cbncs										50	
										20	
coal, with parting of claystone, gray										100	
siltstone, gray, cbncs										30	
coal										40	
										50	
siltstone, gray, cbncs, sandstone, gray, very fine to fine, and claystone, gray, cbncs										150	
										50	
										200	
										60	
										70	
										250	
										80	
										90	
										300	
										100	
										350	
										110	
										400	

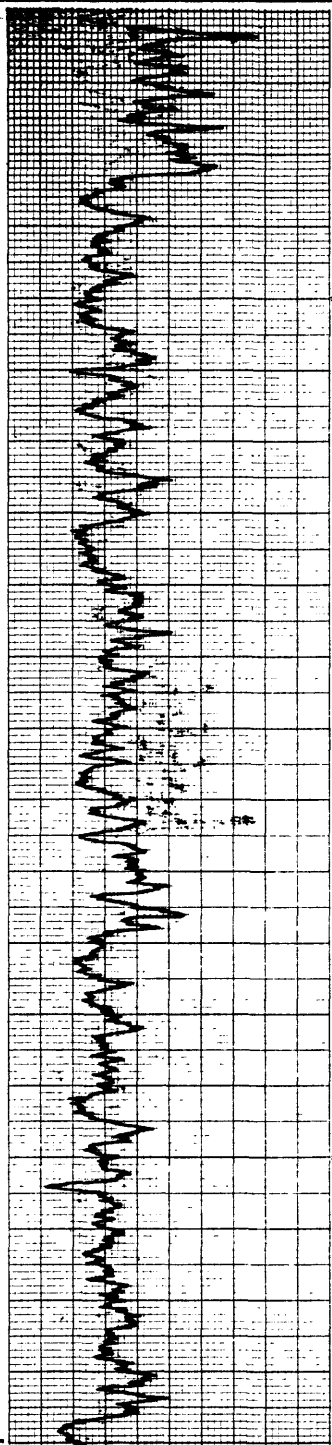
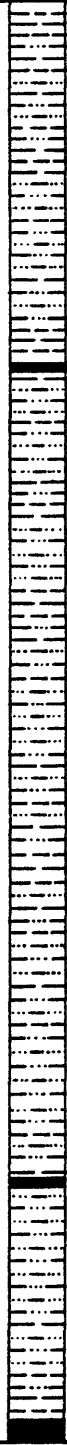
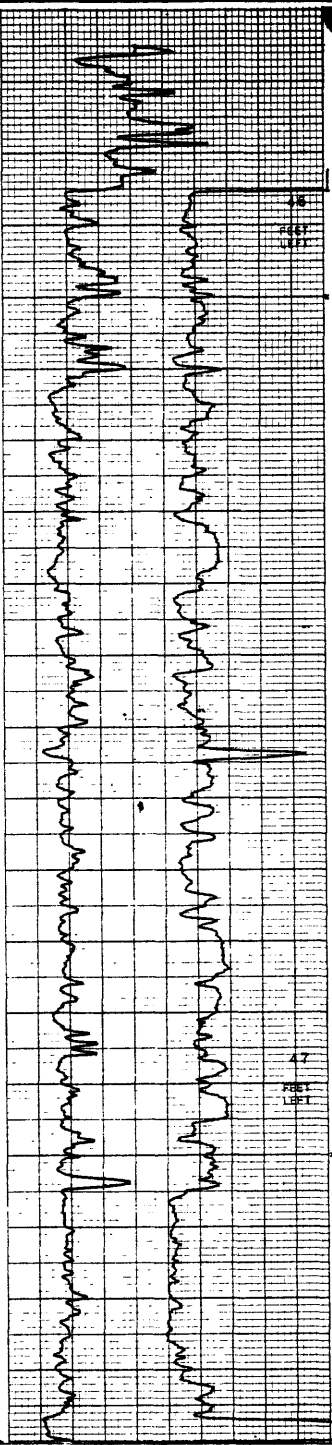
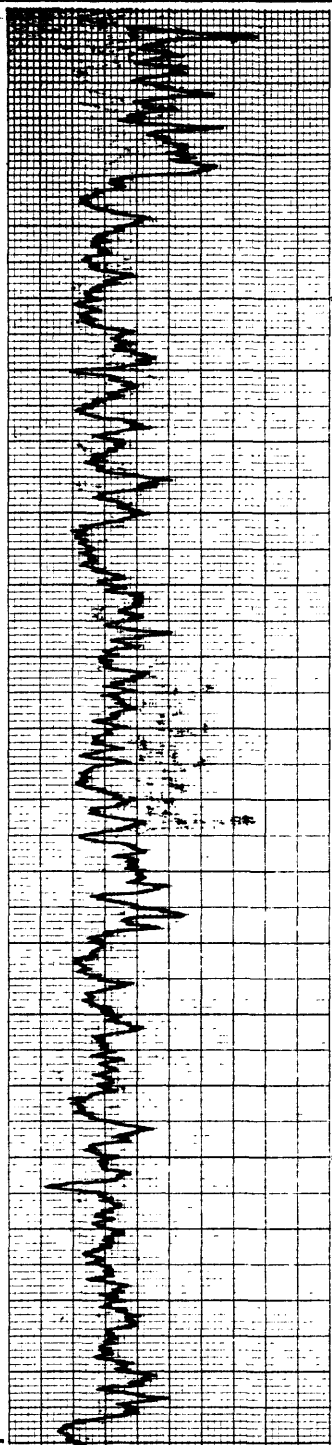
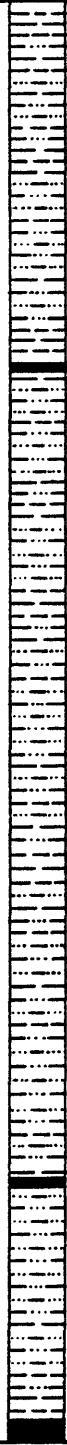
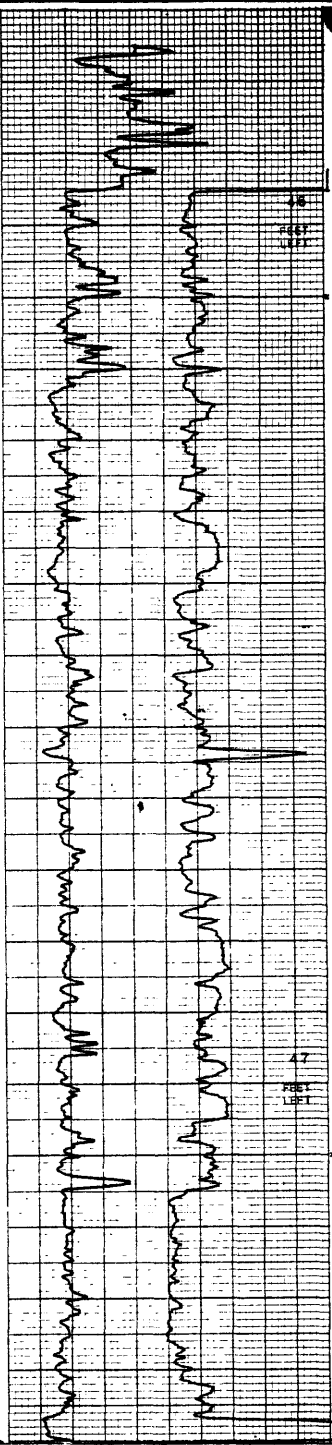
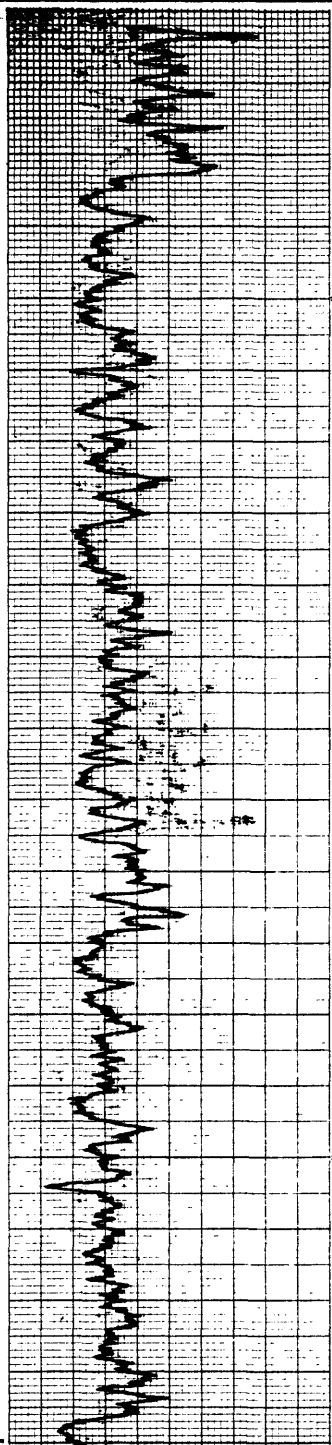
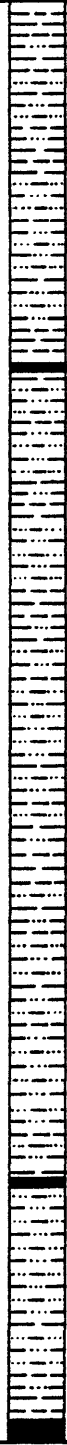
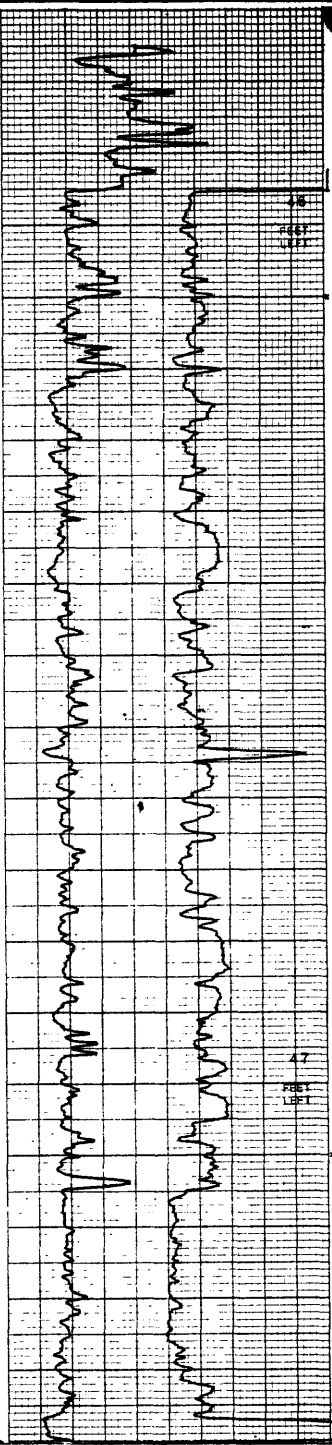
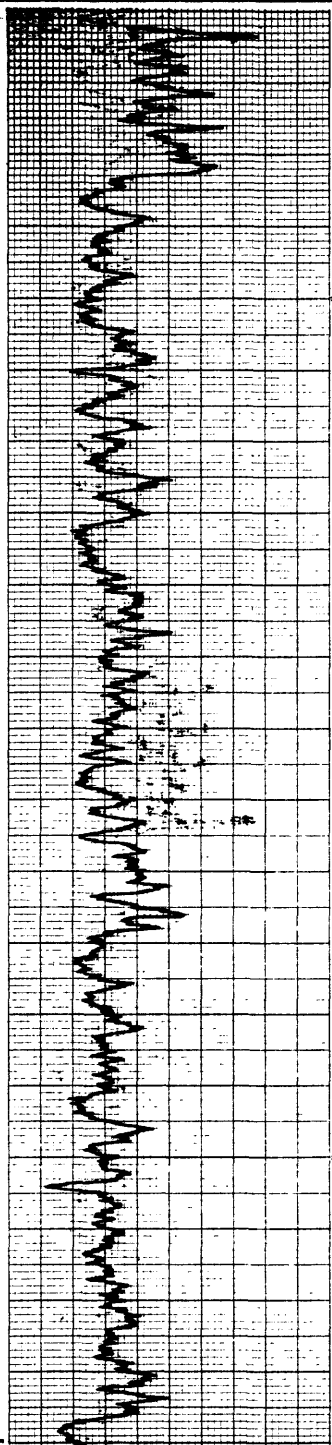
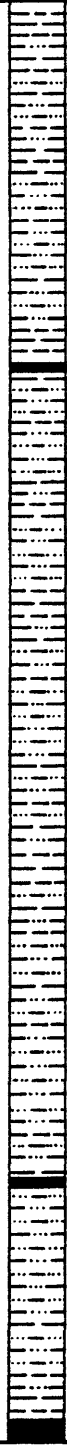
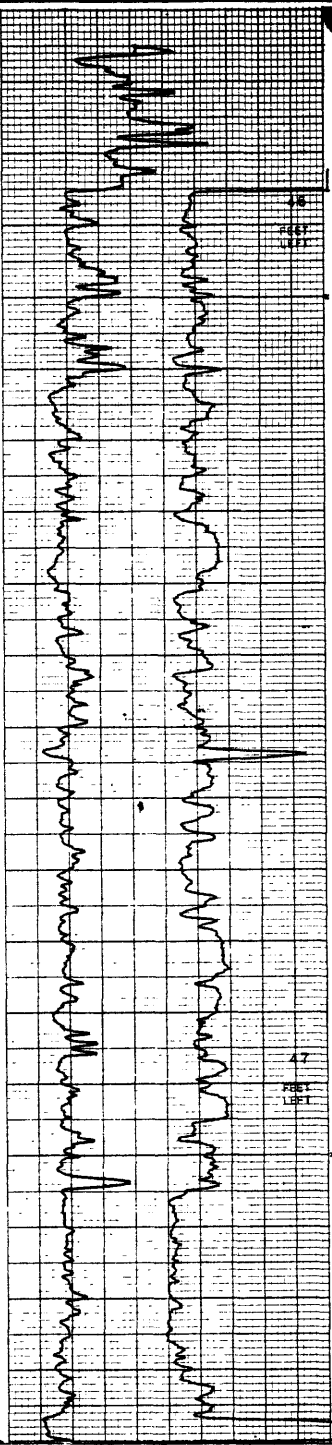
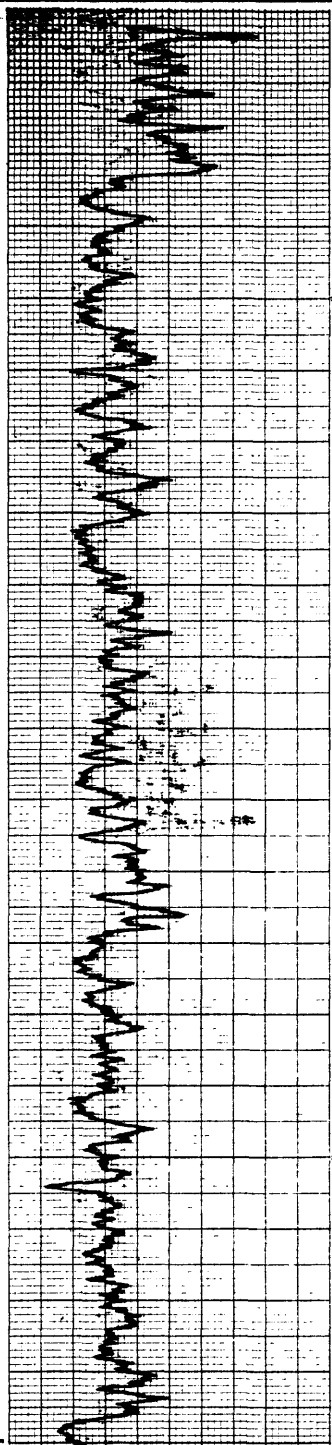
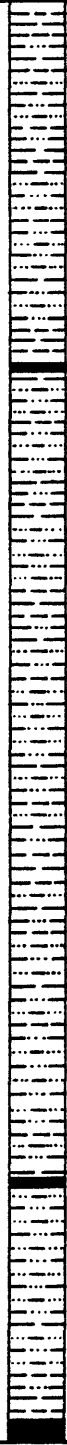
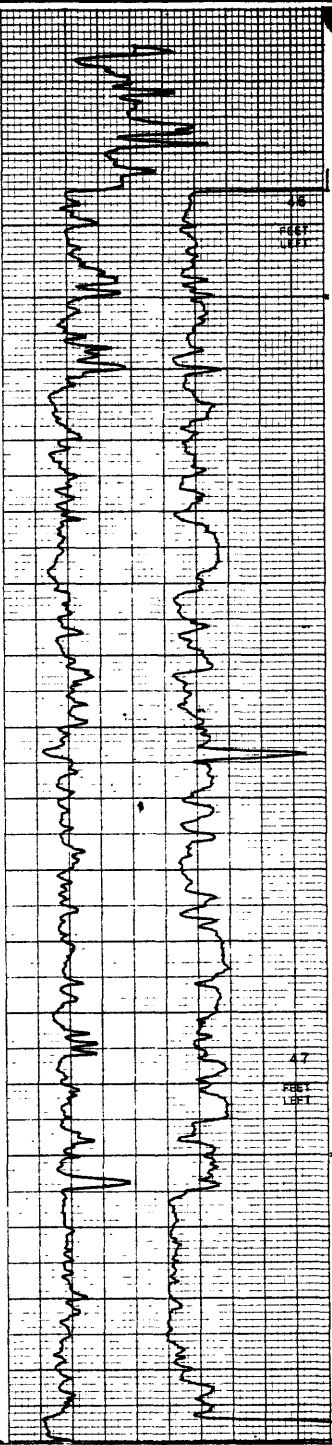
Hole no: US-78165 Map: BLM-NE-39 Date: 10/14/78 State: Montana County: Dawson
 Elev: 2510* ft Location: T. 16 ^N, R. 53 ^E, Sec. 10, Tract CCDC Drilled depth: 160 ft
 Measured: 55 ft ^{RKX} FSL, 733 ft ^{RKX} FWL, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Logged through drill rods, no source on density section. Elevation estimated from Glendive AMS;
scale 1:250,000, 100 ft contour interval.

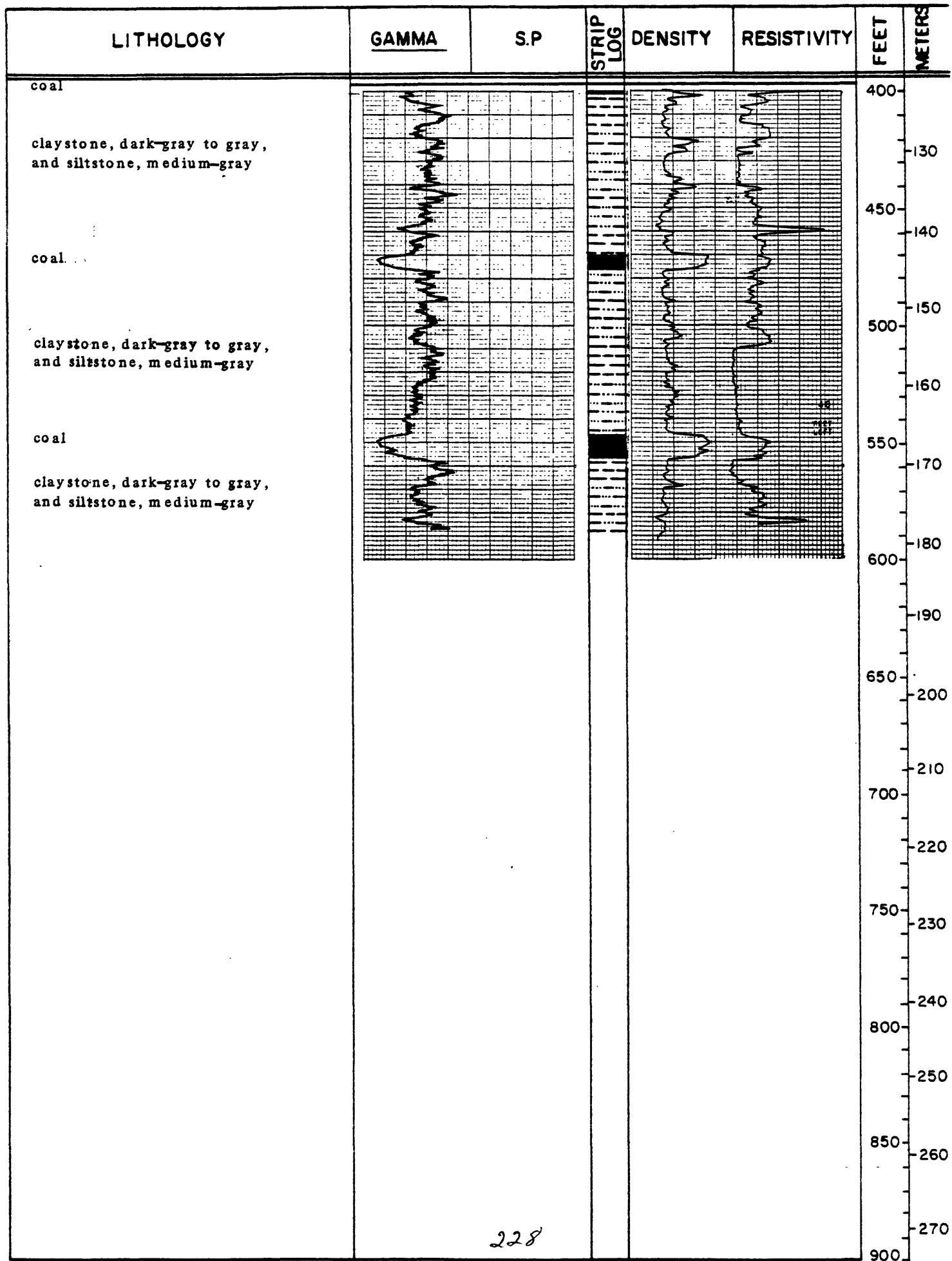
RECORDED BY <u>A. BANET</u> GEOLOGIST		YES NOX RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.			
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>2K</u>	S. P. SENS.SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>50</u>	RESISTIVITY SENS.SETTING	DEPTH	
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS
	153 FT.	FT.		158 FT.	FT.		
siltstone, medium-gray, cbncls, and claystone, tan to medium-gray, cbncls						0	
coal						50	
siltstone, medium-gray, cbncls						20	
coal, with parting of claystone, gray						100	
claystone, medium-gray, siltstone, gray coal						30	
claystone, medium-gray, and siltstone, gray						40	
						50	
						100	
						200	
						300	
						400	

Hole no: US-78166 Map: BLM-NE-39 Date: 10/14/78 State: Montana County: Dawson
 Elev: 2520* ft Location: T. 16 ^N, R. 53 ^E, Sec. 8, Tract ABBB Drilled depth: 280 ft
 Measured: 43 ft ^{FNL} ~~xxx~~, 2610 ft ^{FEL} ~~xxx~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Hole logged through drill pipe, no source on density section. Elevation estimated from Glendive
AMS; scale 1:250,000, 100 ft contour interval

RECORDED BY <u>L. SAUER</u> GEOLOGIST YES NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.	
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S. P. SENS.SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>50</u>	RESISTIVITY SENS.SETTING
	LOGGED DEPTHS 270 FT. FT.			LOGGED DEPTHS 275 FT. FT.	
gravel, and sandstone, tan, very fine to coarse				0	
siltstone, gray, and sandstone, gray, very fine to fine				10	
coal				50	
				20	
				100	
siltstone, gray, cbncls, claystone, gray, cbncls, and sandstone, gray, very fine to fine				52	
				50	
				200	
coal				70	
				250	
claystone, gray to green-gray, cbncls, and siltstone, gray to green-gray, cbncls				80	
				300	
				90	
				100	
				350	
				110	
				400	

Hole no: US-78167 Map: BLM-NE-39 Date: 10/15/78 State: Montana County: Dawson
Elev: 2600* ft Location: T. 17 ^{N.}_{S.}, R. 53 ^{E.}_{W.}, Sec. 6, Tract BBBB Drilled depth: 600 ft
Measured: 55 ft ^{FNL}~~RSX~~, 25 ft ^{PEX}~~PWL~~, Hole size: 5 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
Remarks: Elevation estimated from Glendive AMS: 1:250,000 scale, 100 ft contour interval,
SP malfunction.

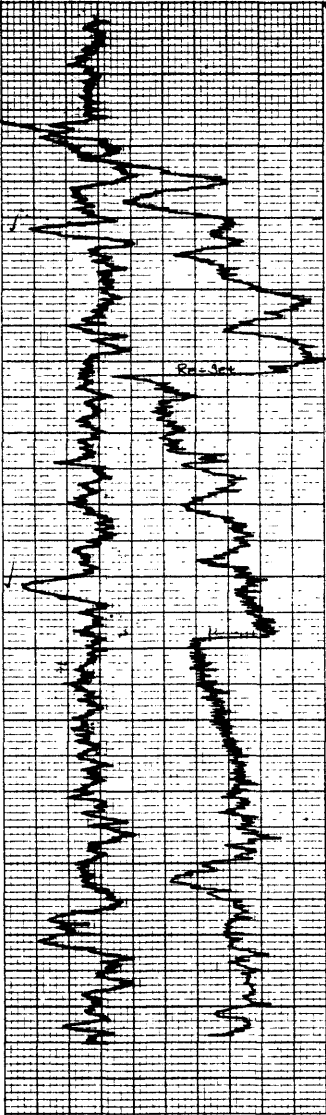
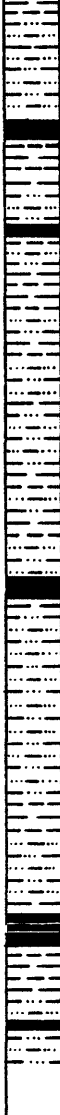
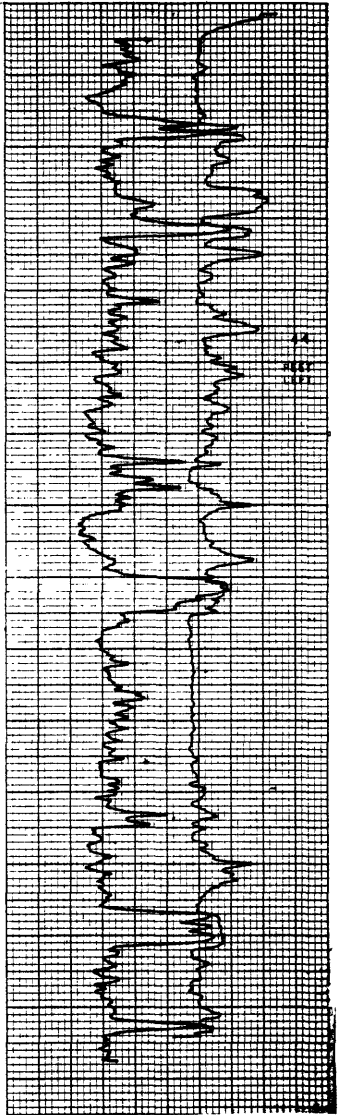
RECORDED BY <u>A. BANET</u> GEOLOGIST		YES NO RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS.SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>5K</u>	RESISTIVITY SENS.SETTING <u>100</u>	DEPTH FEET METERS
	LOGGED DEPTHS 587 FT. FT.			LOGGED DEPTHS 592 FT. 585 FT.		
	siltstone, tan to medium-gray, cbncs, and claystone, medium-to dark-gray, cbncs					
coal	10					
siltstone, tan to medium-gray, cbncs, and claystone, medium to dark-gray, cbncs						50
coal						100
siltstone, tan to medium-gray, cbncs, and claystone, medium to dark-gray, cbncs						200
coal						250
siltstone, tan to medium-gray, cbncs, and claystone, medium-to dark-gray, cbncs						300
coal						350
siltstone, tan to medium-gray, cbncs, and claystone, medium-to dark-gray, cbncs						400
coal						400



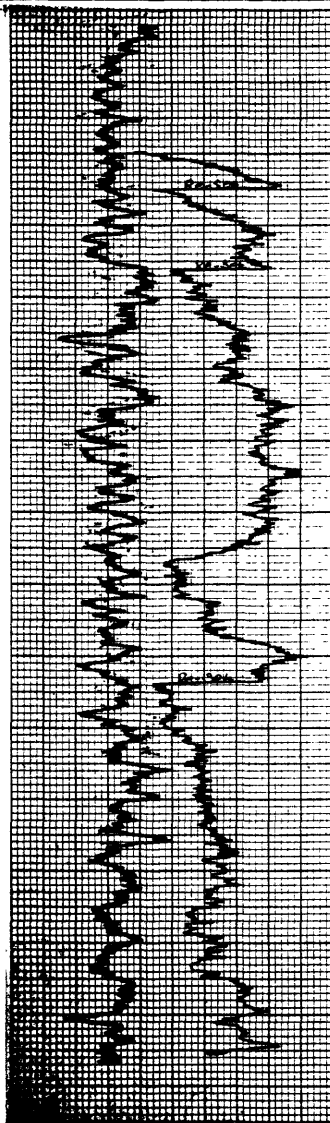

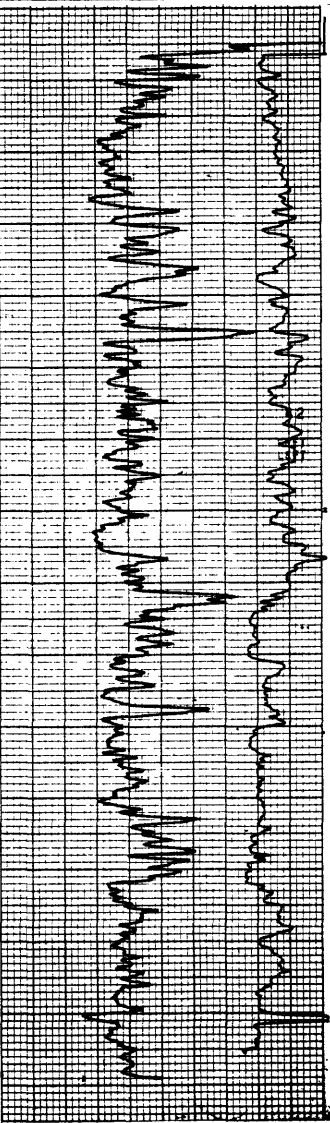
Hole no: US-78168 Map: Poverty Flat West Date: 10/15/78 State: Montana County: Dawson
 Elev: 2532 ft Location: T. 17 N, R. 53 W, Sec. 14, Tract BCAB Drilled depth: 300 ft
 Measured: 1350 ft ~~FNL~~ 850 ft ~~FWL~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP malfunction.

RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST XXXX		NO RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>5K</u>	RESISTIVITY SENS. SETTING <u>250</u>	DEPTH FEET METERS
	LOGGED DEPTHS 293 FT. FT.			LOGGED DEPTHS 298 FT. 291 FT.		
	sandstone, brown claystone, brown, cbncs coal, with parting of claystone, gray siltstone, gray, cbncs, and claystone, gray, cbncs coal siltstone, gray, cbncs, claystone, gray, cbncs, and sandstone, interbedded, gray to brown, very fine to fine coal siltstone, gray, cbncs, claystone, gray, cbncs, and sandstone, interbedded, gray to brown, very fine to fine coal siltstone, gray, cbncs, claystone, gray, cbncs, and sandstone, interbedded, gray to brown, very fine to fine coal siltstone, gray, cbncs, claystone, gray, cbncs, and sandstone, interbedded, gray to brown, very fine to fine					

Hole no: US-78169 Map: Poverty Flat West Date: 10/15/78 State: Montana County: Dawson
 Elev: 2730 ft Location: T. 17 ^N, R. 53 ^E, Sec. 26, Tract DDDD Drilled depth: 300 ft
 Measured: 300 ft ^{FSL}, 10 ft ^{FEL}, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☒ No ☐
 Remarks: _____

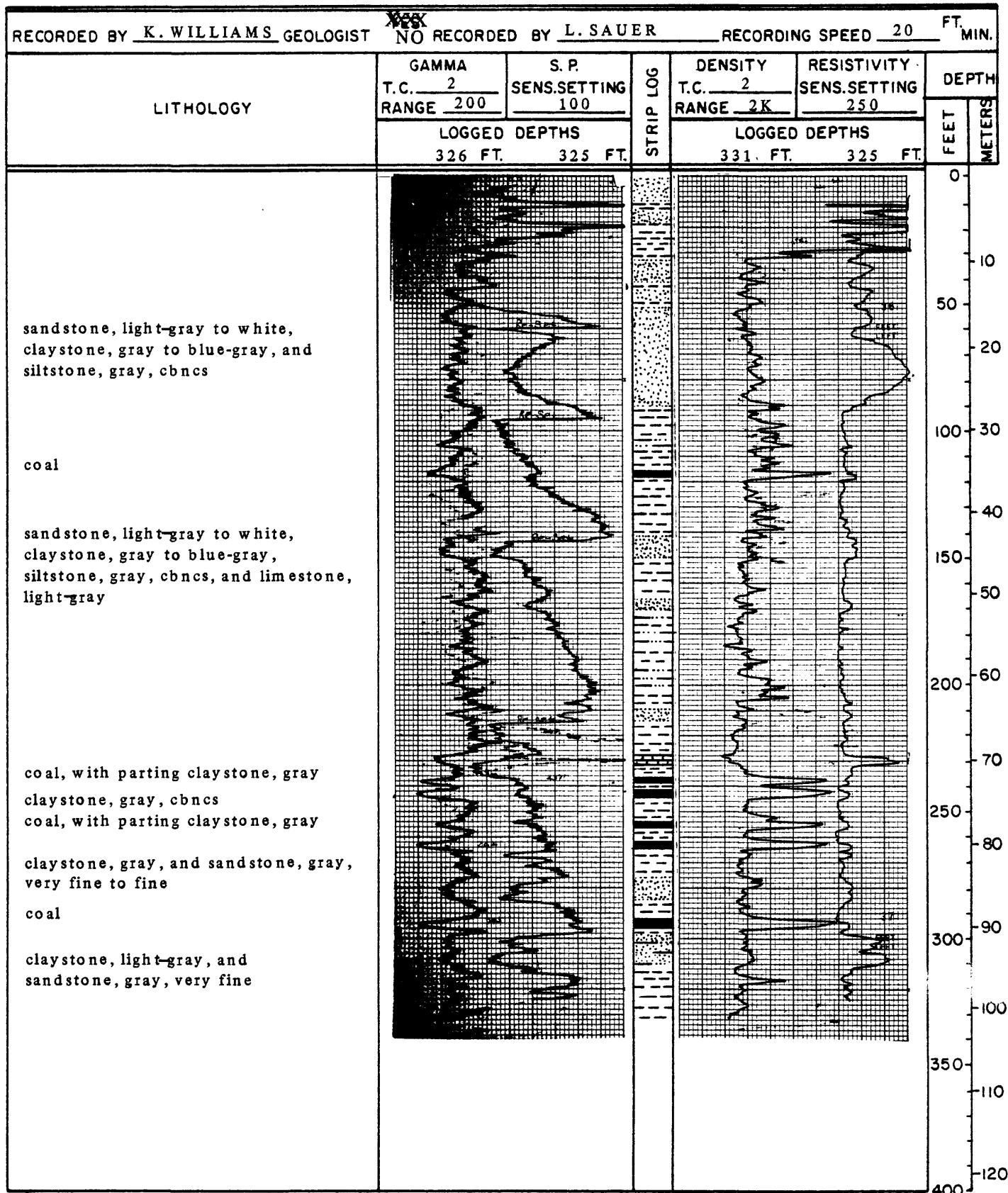
RECORDED BY <u>A. BANET</u> GEOLOGIST		YES NO RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING <u>100</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING <u>100</u>	DEPTH FEET METERS
	LOGGED DEPTHS <u>290</u> FT. <u>288</u> FT.			LOGGED DEPTHS <u>295</u> FT. <u>288</u> FT.		
siltstone, tan to brown, and claystone, tannish-brown to gray						0
coal						10
siltstone, gray, and claystone, gray						50
coal						20
						100
siltstone, medium-gray to brown, and claystone, medium-to dark-gray, cbnecs						30
						40
coal						150
						50
						200
siltstone, medium-to dark-gray, cbnecs						60
						70
						250
coal, with parting claystone, gray						80
siltstone, medium-to dark-gray, cbnecs						300
coal						90
siltstone, medium-to dark-gray, cbnecs						100
						350
						110
						120
						400

Hole no: US-78170 Map: Poverty Flat West Date: 10/15/78 State: Montana County: Dawson
 Elev: 2573 ft Location: T. 17 ^N, R. 53 ^E, Sec. 22, Tract CCCC Drilled depth: 300 ft
 Measured: 138 ft ^{FMX} FSL, 48 ft ^{FMX} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

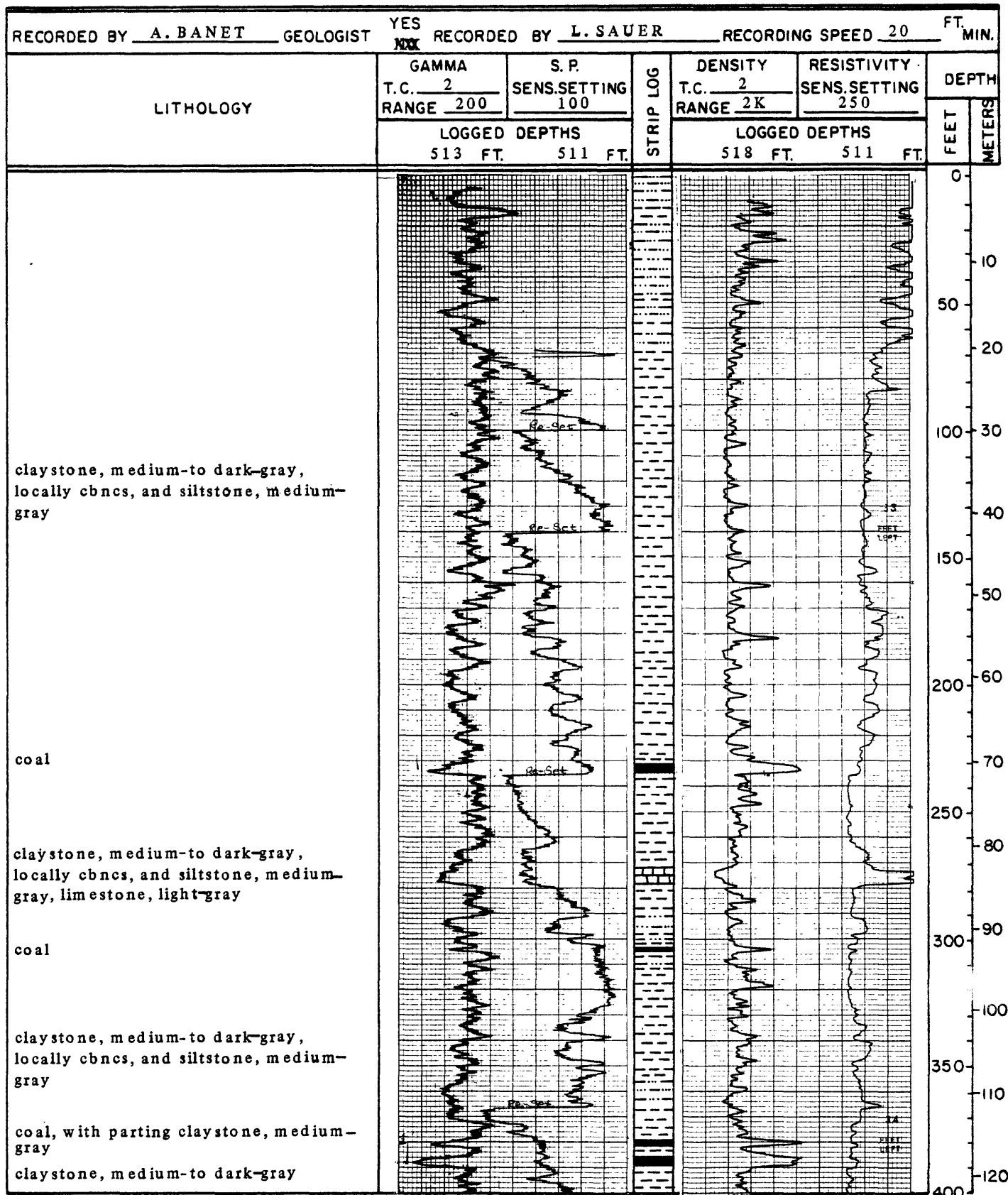
RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		YES NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.					
LITHOLOGY	GAMMA		S. P.		STRIP LOG	DENSITY		RESISTIVITY		DEPTH	
	T.C. <u>2</u>		SENS. SETTING			T.C. <u>2</u>		SENS. SETTING		FEET	METERS
	RANGE <u>200</u>		<u>10</u>			RANGE <u>2K</u>		<u>100</u>			
	LOGGED DEPTHS					LOGGED DEPTHS					
	293 FT. 291 FT.					298 FT. 291 FT.					
gravel, and sandstone, very fine to fine, brown										0	
siltstone, brown to gray, cbncs, fe, and claystone, brown to gray										10	
coal										50	
siltstone, gray, cbncs, and claystone, gray to blue-gray, cbncs										20	
coal										100	
										30	
										40	
										150	
										50	
										200	
										60	
										70	
										250	
										80	
claystone, gray, cbncs, and siltstone, gray, cbncs										90	
										300	
										100	
										350	
										110	
										400	

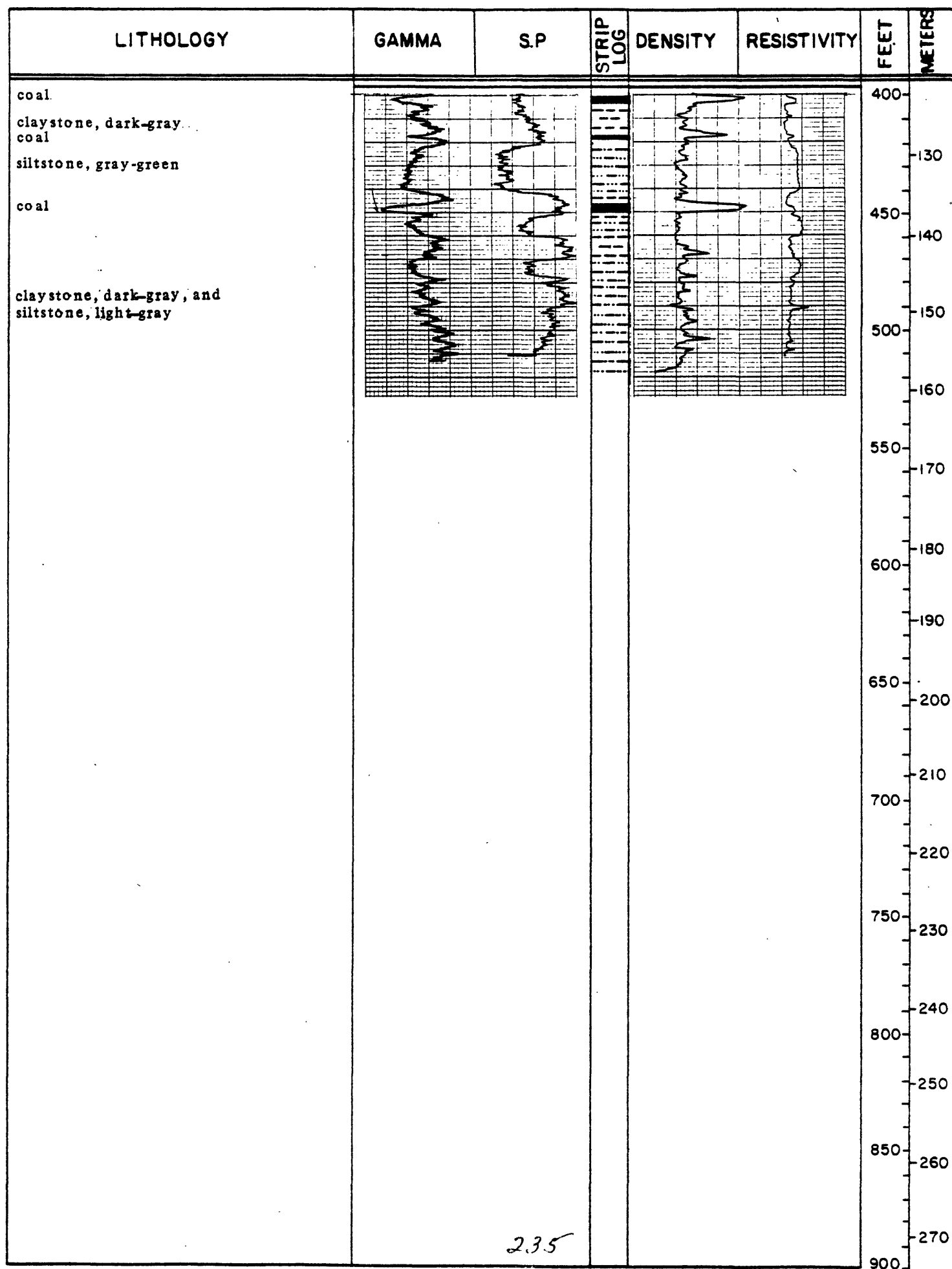
RECORDED BY <u>A. BANET</u> GEOLOGIST		YES NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u>		FT. MIN.			
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>		S. P. SENS.SETTING		STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>		RESISTIVITY SENS.SETTING <u>250</u>		DEPTH	
	LOGGED DEPTHS 333. FT. FT.					LOGGED DEPTHS 338 FT. 321 FT.				FEET	METERS
siltstone, medium-gray to tan, claystone, medium-to dark-gray, cbncls, and limestone, gray										0	
										10	
coal, with parting of claystone, gray										50	
										20	
siltstone, medium-to dark-gray, and claystone, medium-to dark-gray										30	
										40	
coal										50	
										60	
siltstone, medium-to dark-gray, and claystone, medium-to dark-gray										70	
										80	
coal										90	
										100	
siltstone, medium-to dark-gray, and claystone, medium-to dark-gray										110	
										120	

Hole no: US-78172 Map: Poverty Flat East Date: 10/16/78 State: Montana County: Dawson
 Elev: 2607 ft Location: T. 17 ^N, R. 54 ^E, Sec. 12, Tract DCBC Drilled depth: 331 ft
 Measured: 850 ft ^{RMK} 2500 ft ^{FEL} RMK, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

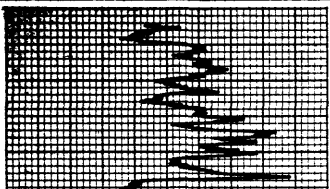
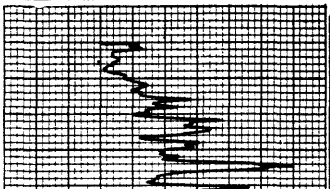
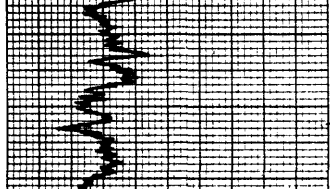
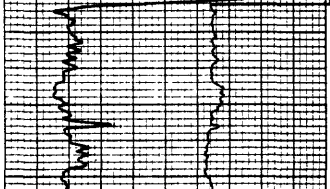
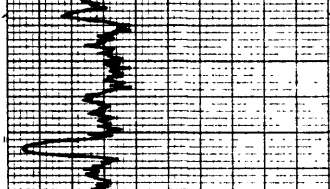
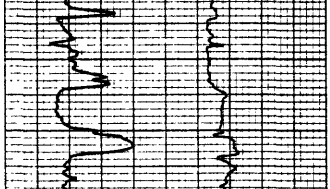
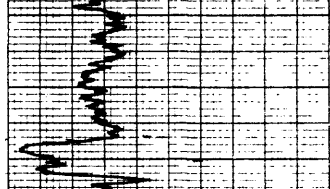

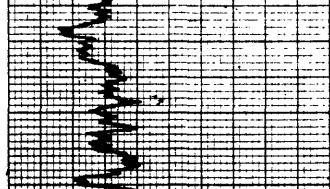
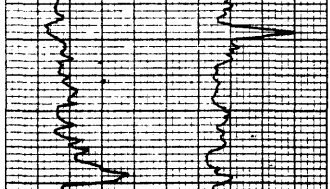
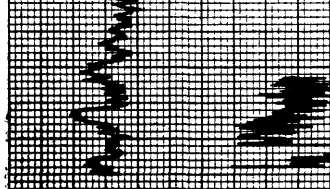
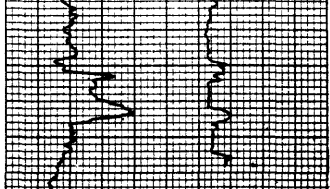








Hole no: US-78173 Map: Morgan Creek School Date: 10/16/78 State: Montana County: Dawson
 Elev: 2750 ft Location: T. 17 N, R. 54 E, Sec. 2, Tract CCAD Drilled depth: 520 ft
 Measured: 700 ft ^{RKX}FSL, 1000 ft ^{RKX}FWL, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

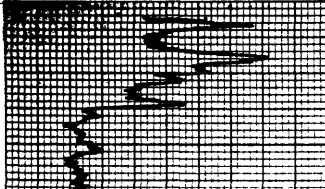
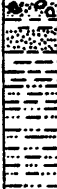
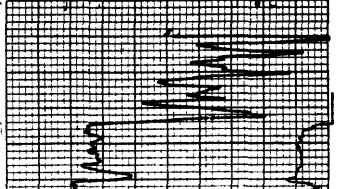
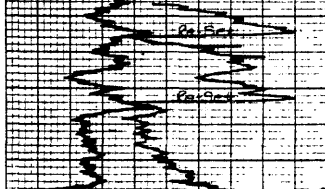
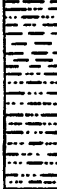
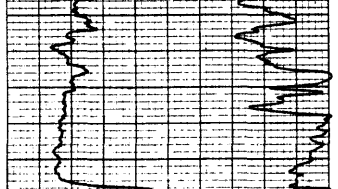
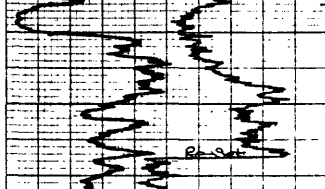
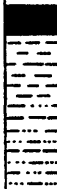
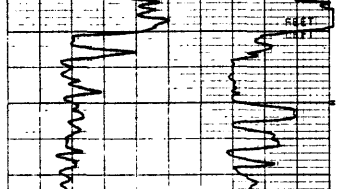
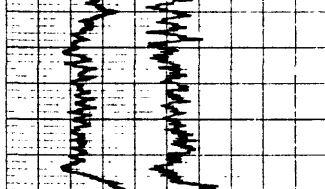
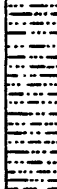

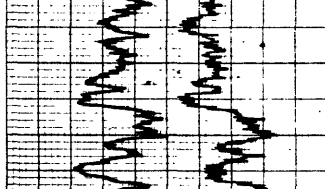
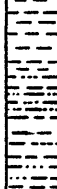
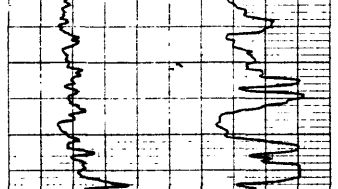
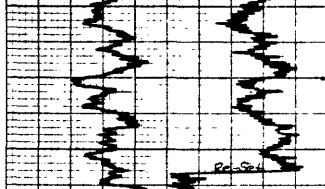
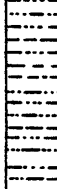
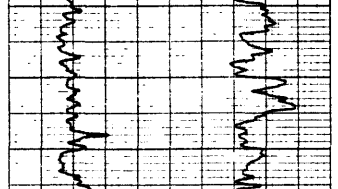
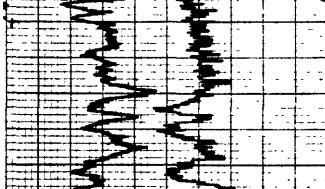
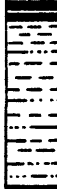
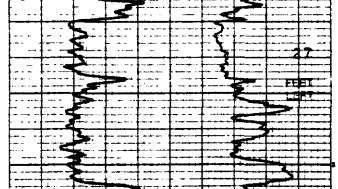
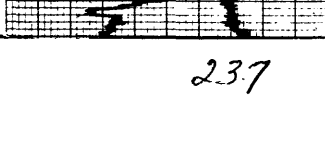

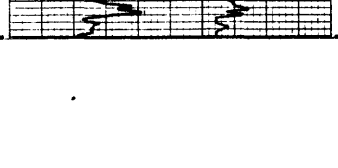


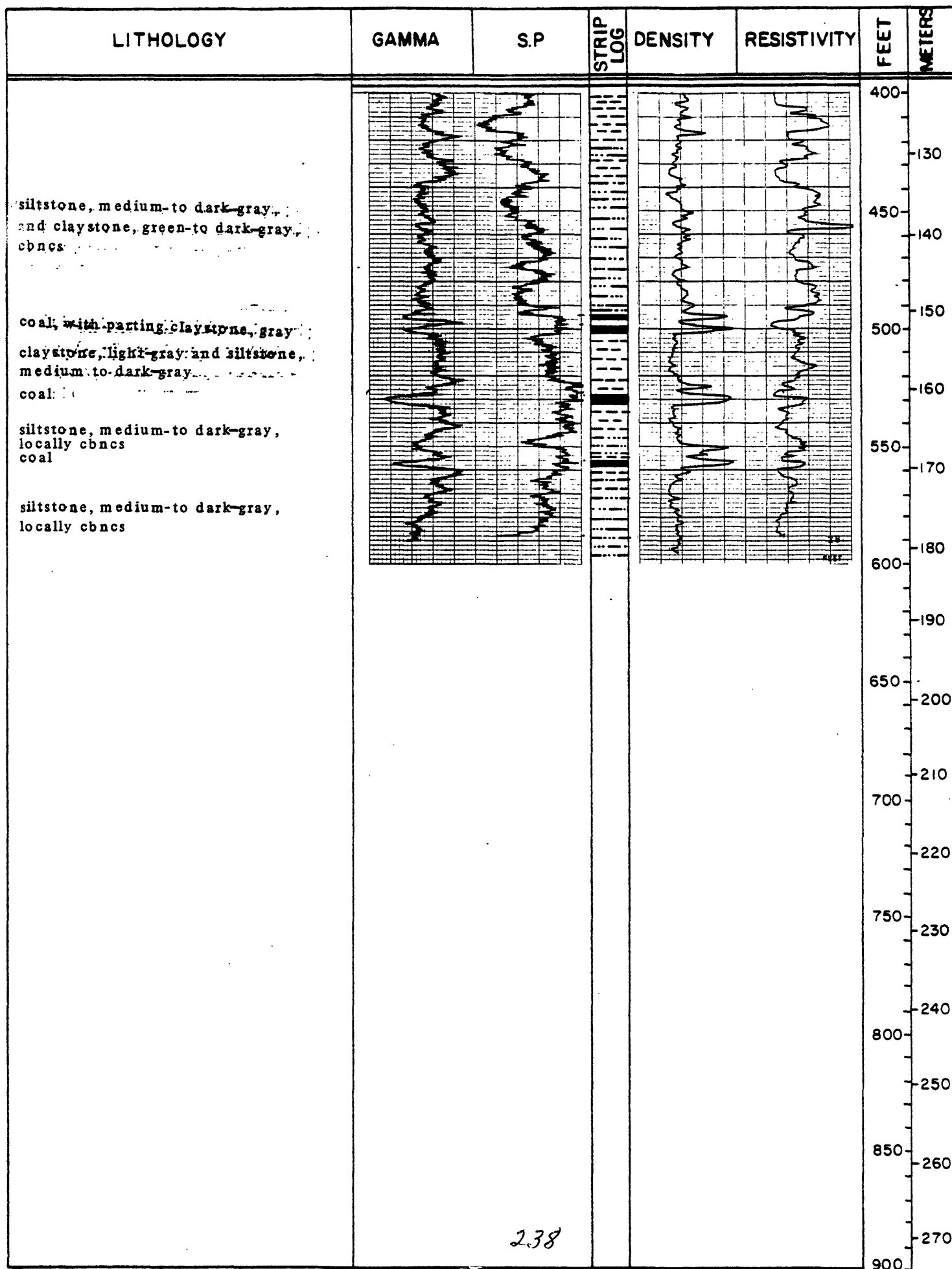


Hole no: US-78174 Map: Stipek Date: 10/16/78 State: Montana County: Dawson
 Elev: 2500 ft Location: T. 17 ^N, R. 55 ^E, Sec. 20, Tract BCBA Drilled depth: 320 ft
 Measured: 1320 ft ^{ENL} 500 ft ^{PKK} FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST ^{XXX} NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S.P. SENS.SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>5K</u>	RESISTIVITY SENS.SETTING <u>250</u>	DEPTH FEET METERS
	LOGGED DEPTHS 310 FT. FT.			LOGGED DEPTHS 315 FT. 308 FT.		
	claystone, light gray, cbncls, siltstone, brown, fe, and sandstone, blue to light gray, very fine					
coal						10
claystone, light gray, and sandstone, light gray, very fine						50
coal, with parting of claystone, gray						20
claystone, gray, siltstone, gray, sandstone, sandstone, gray, very fine, and limestone, gray						30
coal						40
siltstone, gray, claystone, gray, and sandstone, gray, very fine						50
coal						60
claystone, gray, and siltstone, gray						70

Hole no: US-78175 Map: Kolberg Ranch Date: 10/17/78 State: Montana County: Dawson
 Elev: 2405 ft Location: T. 18 ^N, R. 55 ^E, Sec. 2, Tract BCDB Drilled depth: 600 ft
 Measured: 2050 ft ^{FNL} 750 ft ^{FWL} Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

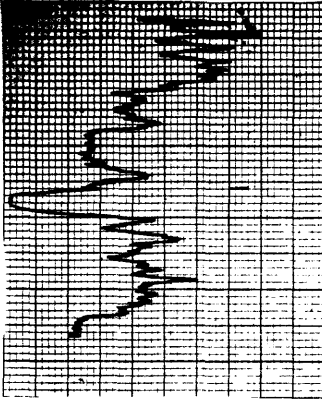
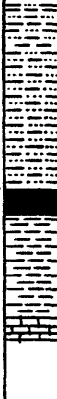
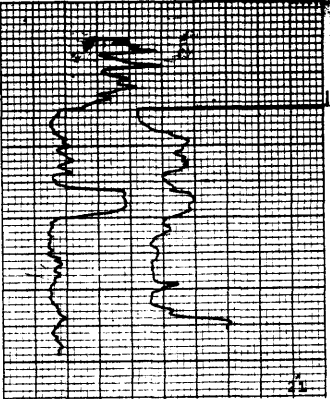

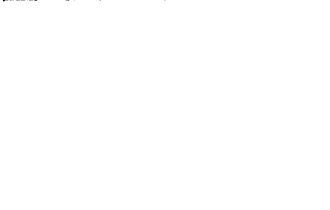











RECORDED BY <u>A. BANET</u> GEOLOGIST		YES NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.					
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>		S.P. SENS. SETTING <u>100</u>		STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>		RESISTIVITY SENS. SETTING <u>100</u>		DEPTH	
	LOGGED DEPTHS					LOGGED DEPTHS				FEET	METERS
	590. FT. 588. FT.					595. FT. 588. FT.					
gravel, tan										0	
										10	
siltstone, tan-to dark-gray, cbncs, and claystone, medium-to greenish-gray, cbncs										50	
										20	
coal, with parting claystone, dark-gray										100	
										30	
										40	
										50	
siltstone, medium-to dark-gray, and claystone greenish-gray										150	
										200	
										250	
										300	
coal, with parting claystone, dark-gray										350	
										400	
siltstone, medium-to dark-gray, and claystone, green-to dark-gray, cbncs										110	
										120	
coal											
siltstone, medium-to dark-gray, and claystone, green-to dark-gray, cbncs											



Hole no: US-78176 Map: Kolberg Ranch Date: 10/17/78 State: Montana County: Dawson
Elev: 2450 ft Location: T. 18 ^N, R. 55 ^E, Sec. 22, Tract AAAB Drilled depth: 400 ft
Measured: 60 ft ^{FNL} 500 ft ^{FEL} 500 ft ^{FAL} Hole size: 4 3/4 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
Remarks: _____

RECORDED BY K. WILLIAMS GEOLOGIST		YES NO		RECORDED BY L. SAUER		RECORDING SPEED 20		FT. MIN.	
LITHOLOGY	GAMMA T.C. 2 RANGE 200	S. P. SENS.SETTING 100	STRIP LOG	DENSITY T.C. 2 RANGE 2K	RESISTIVITY SENS.SETTING 100	DEPTH			
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS		
	393 FT.	391 FT.		398 FT.	391 FT.				
sandstone, brown, very fine and fine, fe						0			
coal						10			
						50			
						20			
						100			
						30			
						40			
						150			
						50			
claystone, blue to dark-gray, silty, sandstone, gray to blue-gray, very fine, and siltstone, gray to dark- gray						200			
						60			
						70			
						250			
						80			
						90			
						300			
						100			
						350			
						110			
						120			
						400			

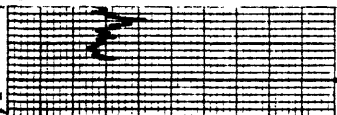
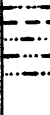
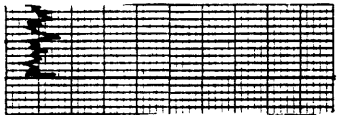
Hole no: US-78177 Map: Kolberg Ranch Date: 10/18/78 State: Montana County: Dawson
 Elev: 2405 ft Location: T. 18 N. R. 55 E. Sec. 12 Tract CCCB Drilled depth: 100 ft
 Measured: 650 ft FSL, 150 ft FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP malfunction.

RECORDED BY <u>A. BANET</u> GEOLOGIST		YES <input checked="" type="checkbox"/> RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>5K</u>	RESISTIVITY SENS. SETTING <u>250</u>	DEPTH FEET METERS
	LOGGED DEPTHS 93 FT. FT.			LOGGED DEPTHS 98 FT. 91 FT.		
	siltstone, tan to gray, and claystone, medium-to light gray					
coal					10	
claystone, light-to medium-gray					50	
limestone, light-gray					20	
						100
						30
						40
						50
						60
						70
						80
						90
						100
						110
					120	

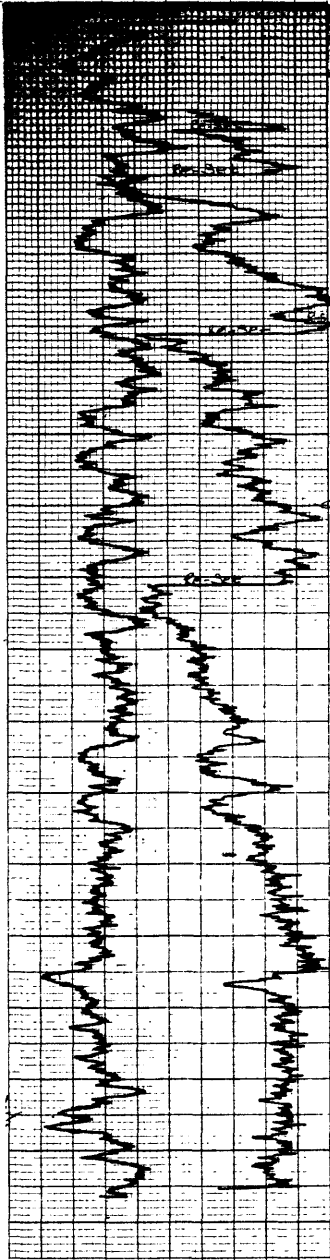
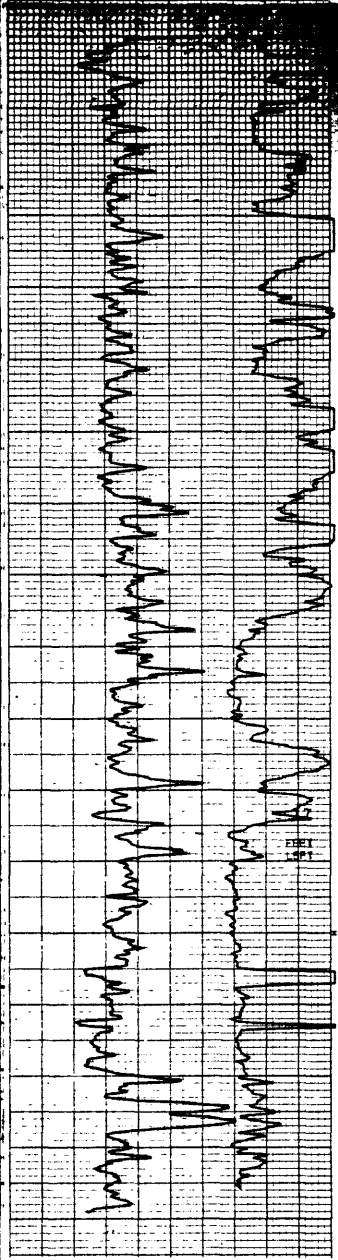
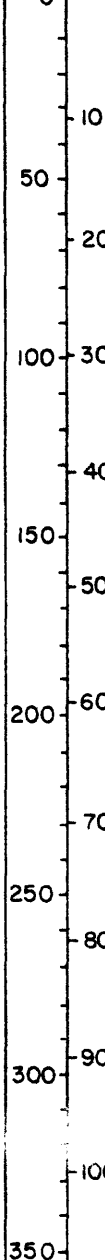
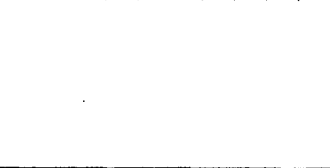

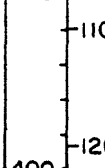
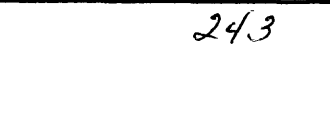


240

Hole no: US-78178 Map: Kolberg Ranch Date: 10/18/78 State: Montana County: Dawson
 Elev: 2506 ft Location: T. 18 N, R. 55 E, Sec. 24, Tract CCCC Drilled depth: 420 ft
 Measured: 12 ft FSL, 36 ft FWL, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Logged open hole.

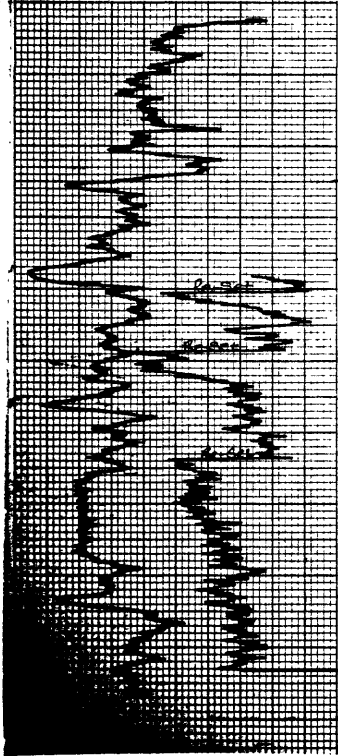

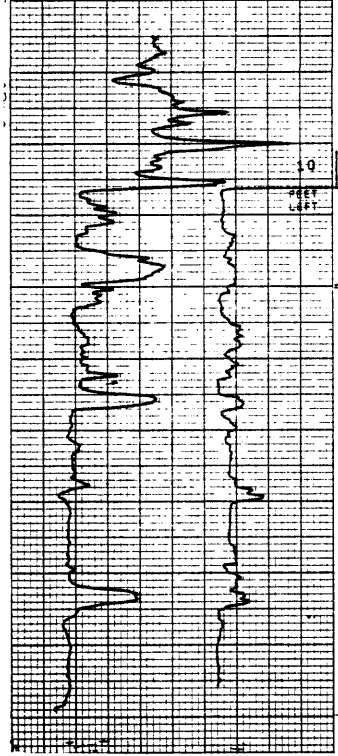
RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		NO YES RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.			
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S.P. SENS.SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>50</u>	RESISTIVITY SENS.SETTING	DEPTH	
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS
	414 FT.	FT.		419 FT.	FT.		
sandstone, brown, very fine to fine gravel						0	
siltstone, brown						10	
						50	
						20	
gravel						100	30
						150	40
						200	60
						250	70
coal trace at 270 ft						300	90
claystone, blue-gray to gray, cbncs, and siltstone, gray						350	110
coal trace at 336 ft						400	120

LITHOLOGY	GAMMA	S.P	STRIP LOG	DENSITY	RESISTIVITY	FEET	METERS
claystone, blue-gray to gray, cbncs, and siltstone, gray						400	
							130
						450	
							140
							150
						500	
							160
							170
							180
						600	
							190
							200
						650	
							210
						700	
							220
							230
						750	
							240
							250
							260
						850	
							270
							280
						900	

Hole no: US-78179 Map: Kolberg Ranch Date: 10/18/78 State: Montana County: Dawson
 Elev: 2502 ft Location: T. 18 ^N, R. 55 ^E, Sec. 28, Tract BCCC Drilled depth: 340 ft
 Measured: 2500 ft ^{FNL} ~~KXX~~, 30 ft ^{FE} ~~KXX~~ FWL, Hole size: 5 in, Air ☒ Water ☐ Cored Yes ☐ No ☒
 Remarks: _____

RECORDED BY <u>A. BANET</u> GEOLOGIST		YES NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.	
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING <u>100</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING <u>100</u>	DEPTH	
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS
	<u>333</u> FT.	<u>331</u> FT.		<u>338</u> FT.	<u>331</u> FT.		
siltstone, medium-to dark-gray, and claystone, medium-to dark-gray, cbncls, and limestone, gray						0	
						10	
coal, with parting, claystone, gray						50	
						20	
siltstone, medium-to dark-gray, and claystone, medium-to dark-gray						100	
						30	
						40	
						50	
						60	
						70	
						80	
						90	
						100	
						110	
						120	

Hole no: US-78180 Map: Kolberg Ranch Date: 10/18/78 State: Montana County: Dawson
 Elev: 2253 ft Location: T. 17 ^N, R. 55 ^E, Sec. 10, Tract BBBB Drilled depth: 200 ft
 Measured: 48 ft ^{FNL} ~~XXX~~, 115 ft ^{FWL} ~~XXX~~, Hole size: 4 3/4 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP malfunction at 50 ft.

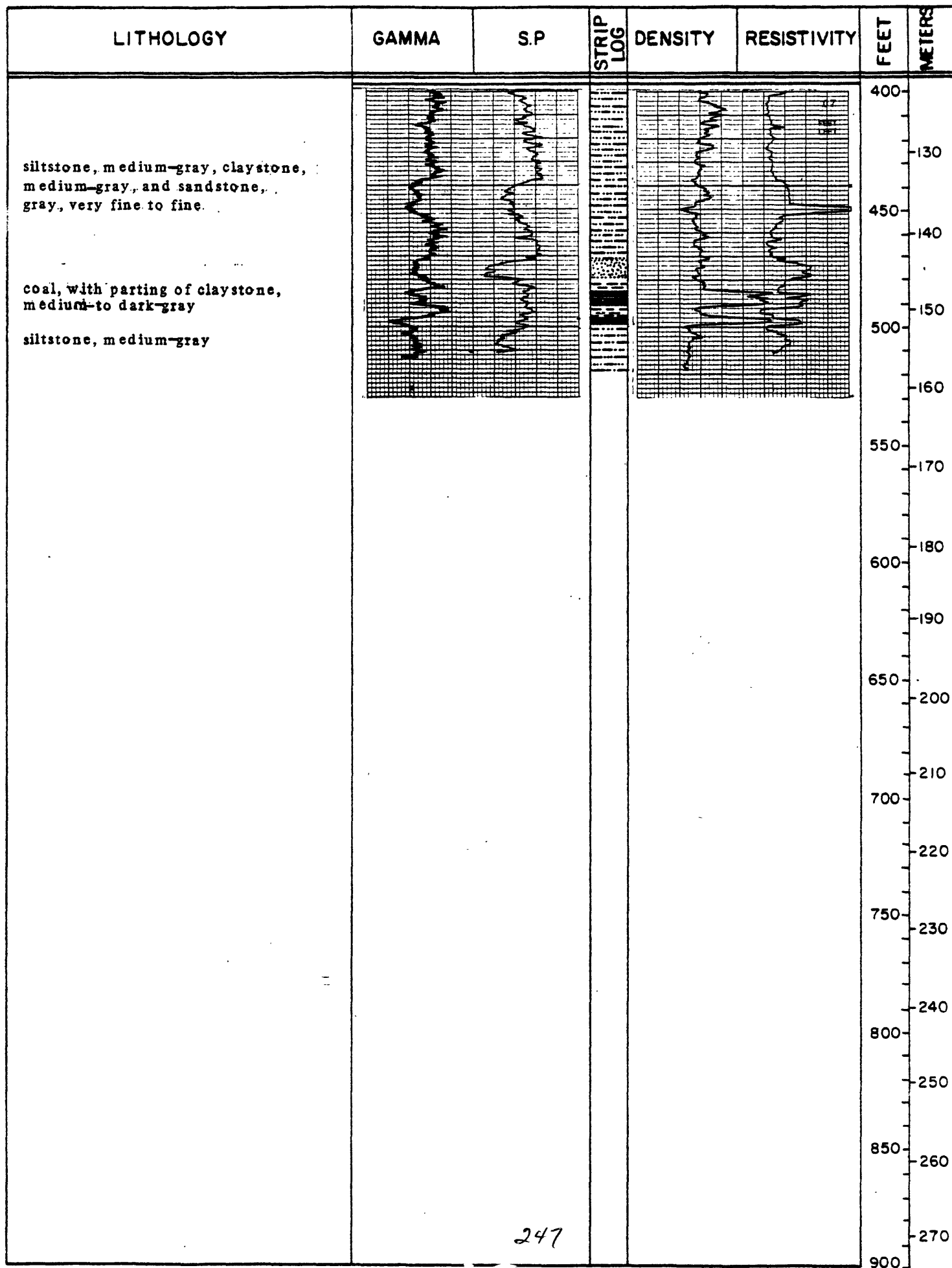
RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		YES NO RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING <u>100</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>5K</u>	RESISTIVITY SENS. SETTING <u>250</u>	DEPTH FEET METERS
	LOGGED DEPTHS <u>193 FT.</u> <u>188 FT.</u>			LOGGED DEPTHS <u>198 FT.</u> <u>191 FT.</u>		
	siltstone, brown, and sandstone, brown, very fine claystone, gray, cbncs coal claystone, gray, cbncs coal claystone, gray, cbncs coal claystone, dark-gray, cbncs, and sandstone, gray, very fine coal claystone, dark-gray					

Hole no: US-78181 Map: Kolberg Ranch Date: 10/18/78 State: Montana County: Dawson
 Elev: 2580 ft Location: T. 18 ^N, R. 55 ^E, Sec. 8, Tract ADAC Drilled depth: 220 ft
 Measured: 1650 ft ^{FNL} ~~rock~~, 450 ft ^{FEL} ~~iron~~, Hole size: 5 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Hole logged through rods, no source on density tool.

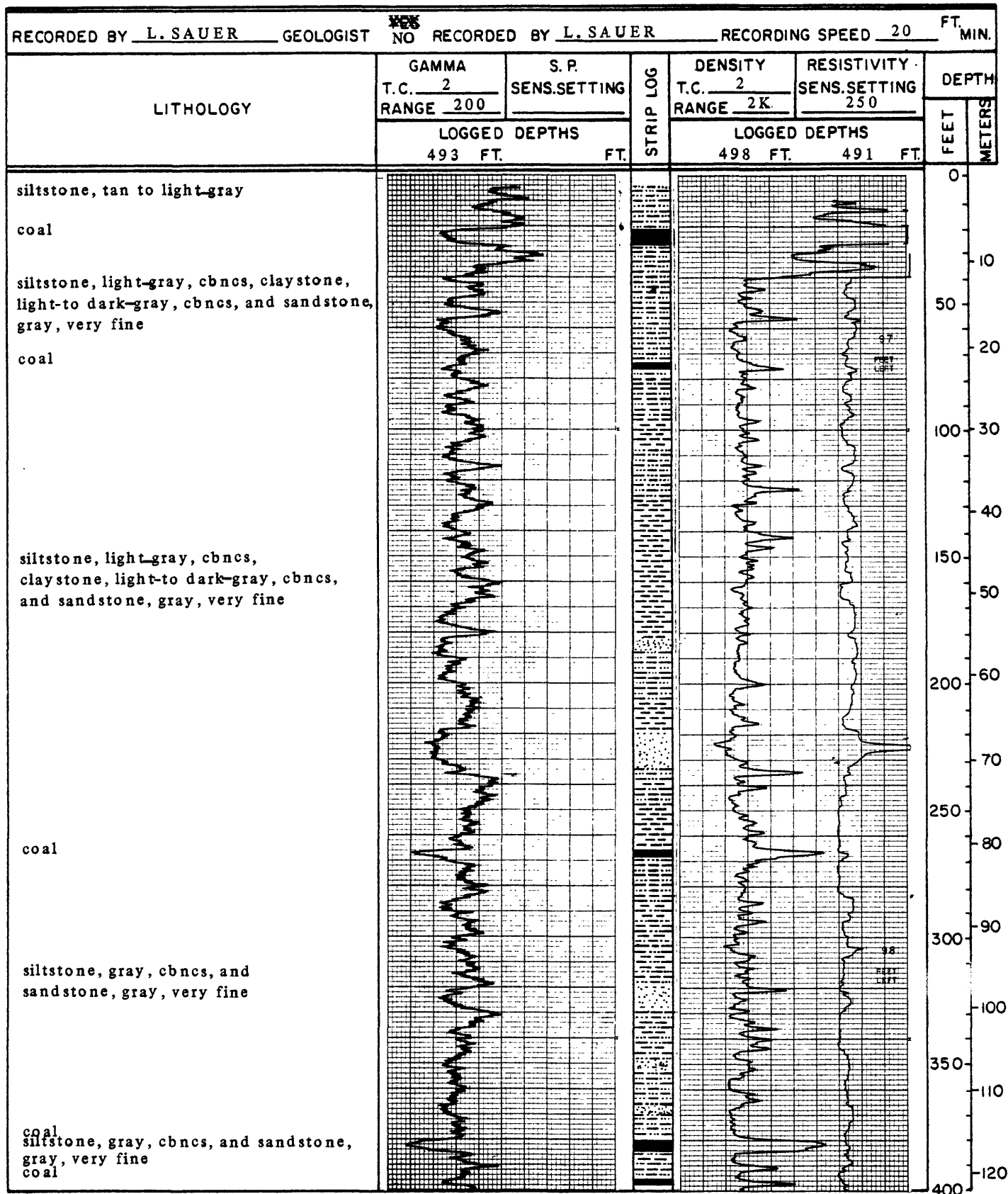
RECORDED BY <u>A. BANET</u> GEOLOGIST		YES NO	RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>50</u>	RESISTIVITY SENS. SETTING	DEPTH		
	LOGGED DEPTHS		LOGGED DEPTHS		FEET	METERS	
	210 FT.		FT.	215 FT.			FT.
gravel and sand					0		
claystone, medium-gray to tan coal					10		
siltstone, medium-gray coal					50		
					20		
					100		
					30		
siltstone, medium-gray to dark- brown, cbncs, and claystone, medium-gray, cbncs					40		
					50		
					150		
					50		
coal					200		
claystone, gray					60		
coal					70		
siltstone, medium-gray					80		
					90		
					100		
					350		
					110		
					400		
					120		

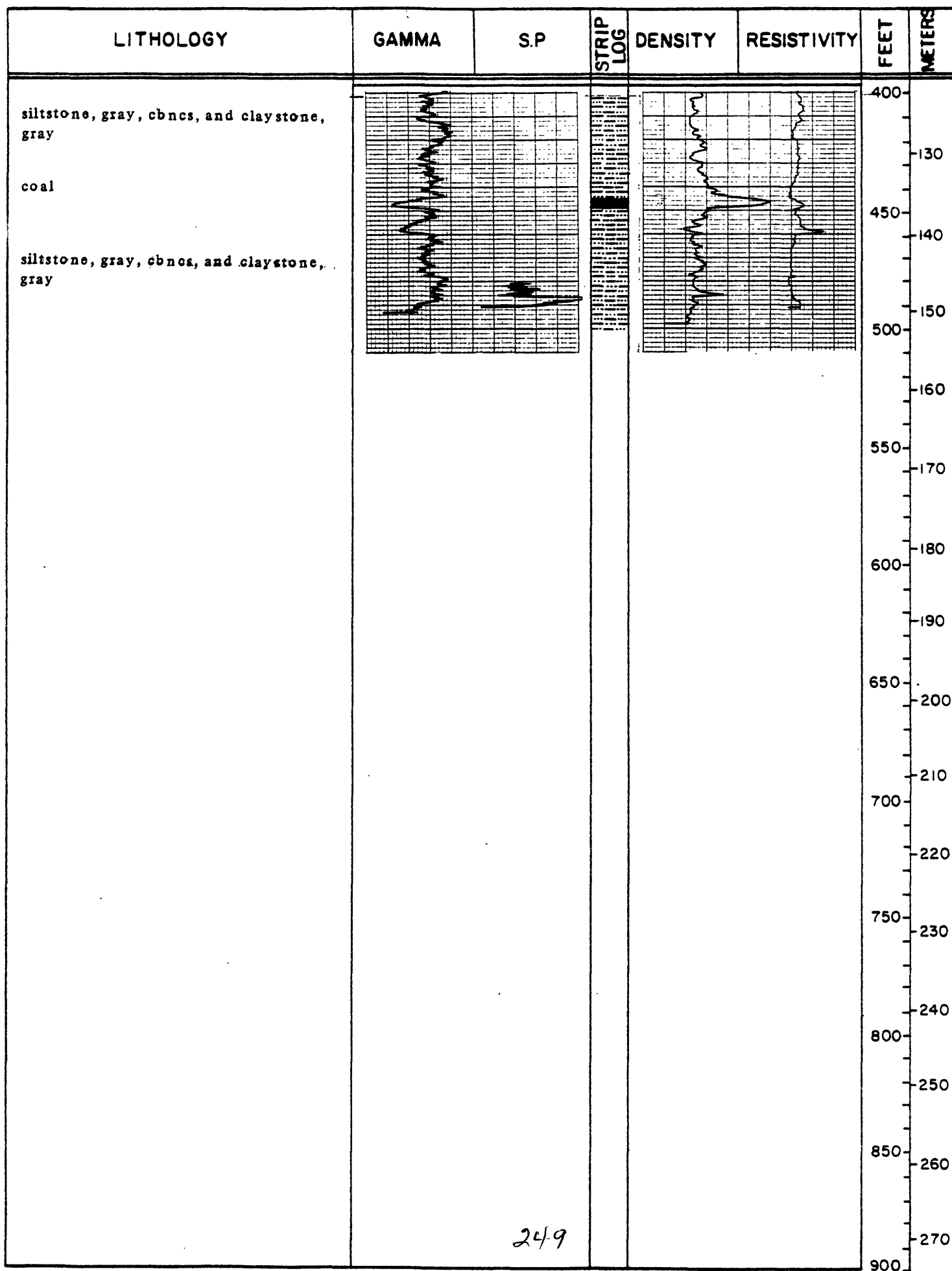
Hole no: US-78182 Map: Morgan Creek School Date: 10/19/78 State: Montana County: Dawson
Elev: 2510 ft Location: T. 18 ^N, R. 54 ^E, Sec. 22, Tract DDDD Drilled depth: 520 ft
Measured: 25 ft ^{BOX}FSL, 50 ft ^{FEL}~~BOX~~, Hole size: 5 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
Remarks: _____

RECORDED BY <u>A. BANET</u> GEOLOGIST		YES NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u>		FT. MIN.			
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>		S. P. SENS. SETTING <u>100</u>		STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>		RESISTIVITY SENS. SETTING <u>100</u>		DEPTH	
	LOGGED DEPTHS					LOGGED DEPTHS				FEET	METERS
	513 FT.		511 FT.			518 FT.		511 FT.			
siltstone, medium-to dark-gray, cbncls, and claystone, medium-to dark-gray, cbncls										0	0
										50	15
										100	30
										150	45
										200	60
coal										250	75
										300	90
										350	105
										400	120
										450	135
siltstone, gray, and claystone, light-to dark-gray, and sandstone, gray, very fine to fine										500	150
										550	165
										600	180
										650	195
										700	210
coal										750	225
siltstone, gray, and claystone, light-to dark-gray										800	240
										850	255
										900	270
										950	285

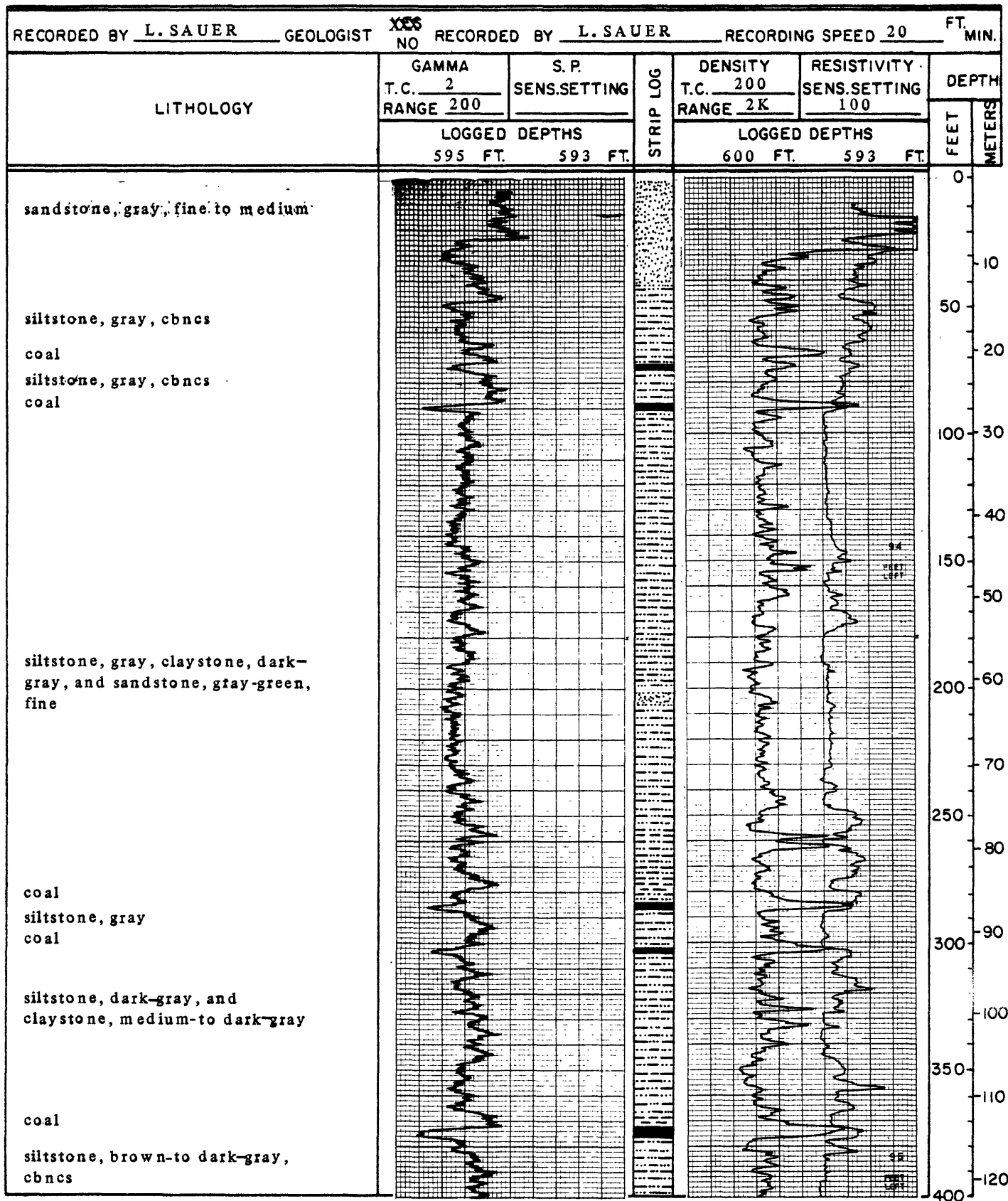


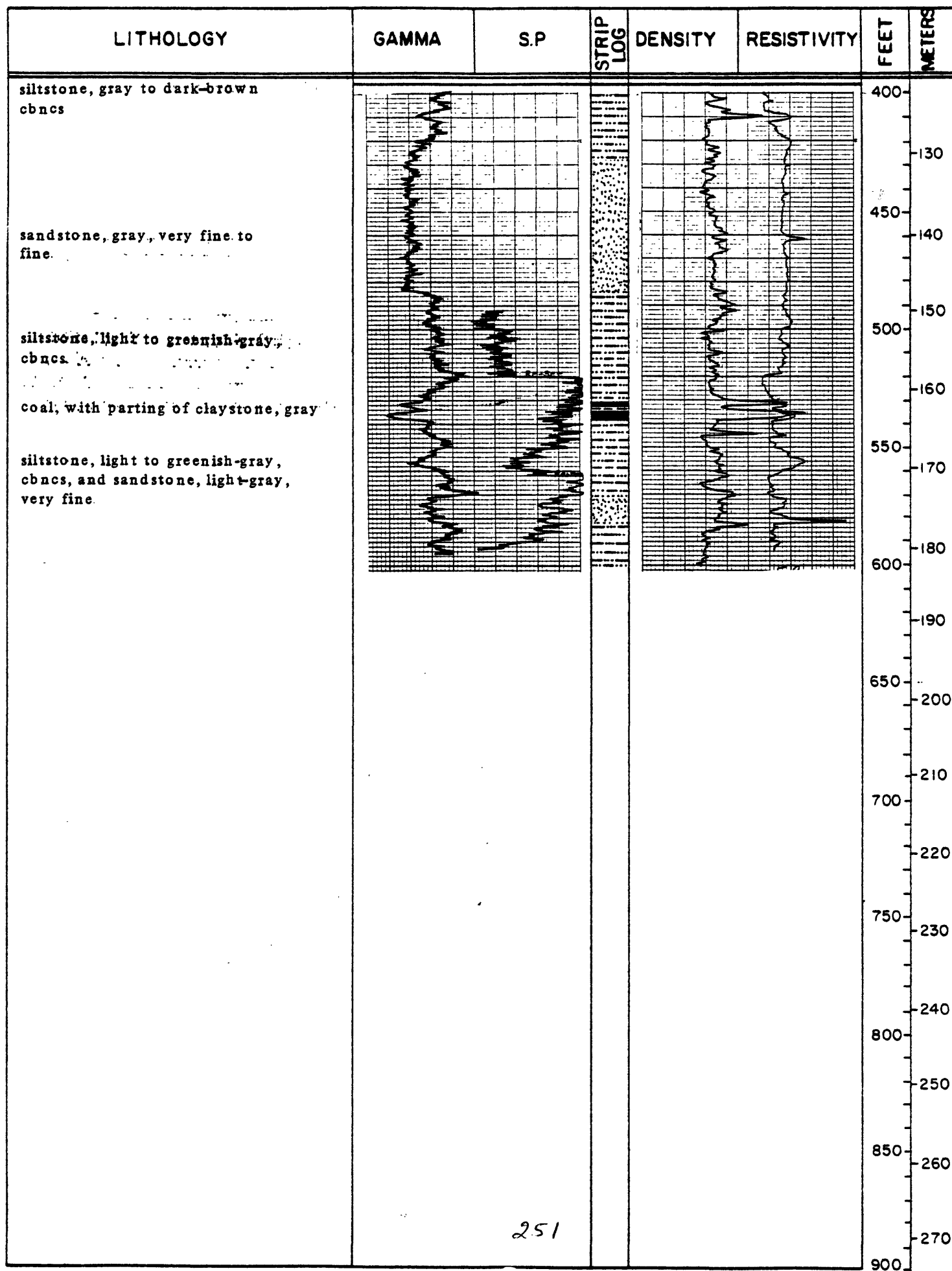
Hole no: US-78183 Map: Morgan Creek School Date: 10/24/78 State: Montana County: Dawson
 Elev: 2649 ft Location: T. 18 N, R. 54 E, Sec. 8, Tract DDDC Drilled depth: 500 ft
 Measured: 100 ft FSL, 400 ft FEL, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP log malfunction.



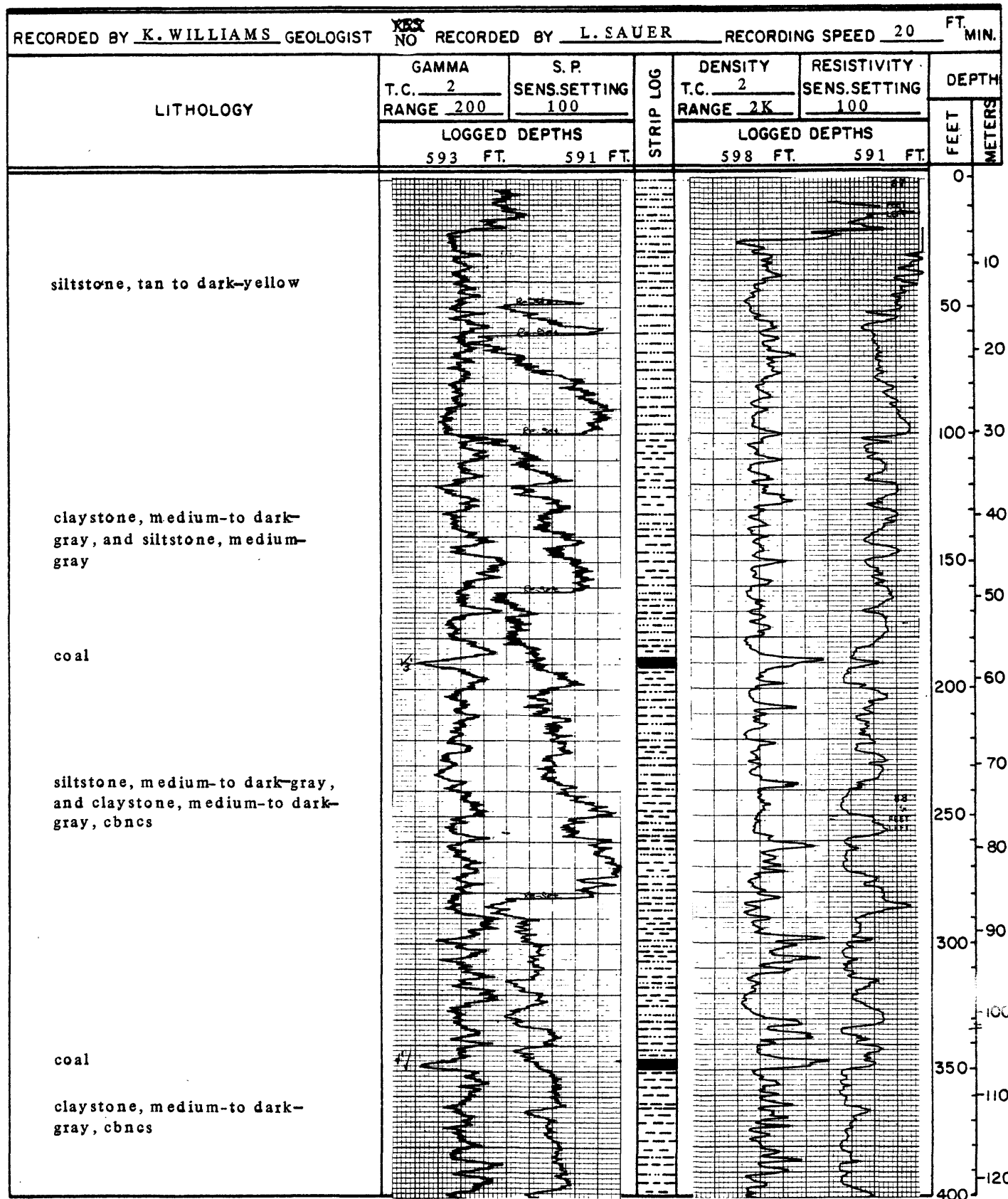


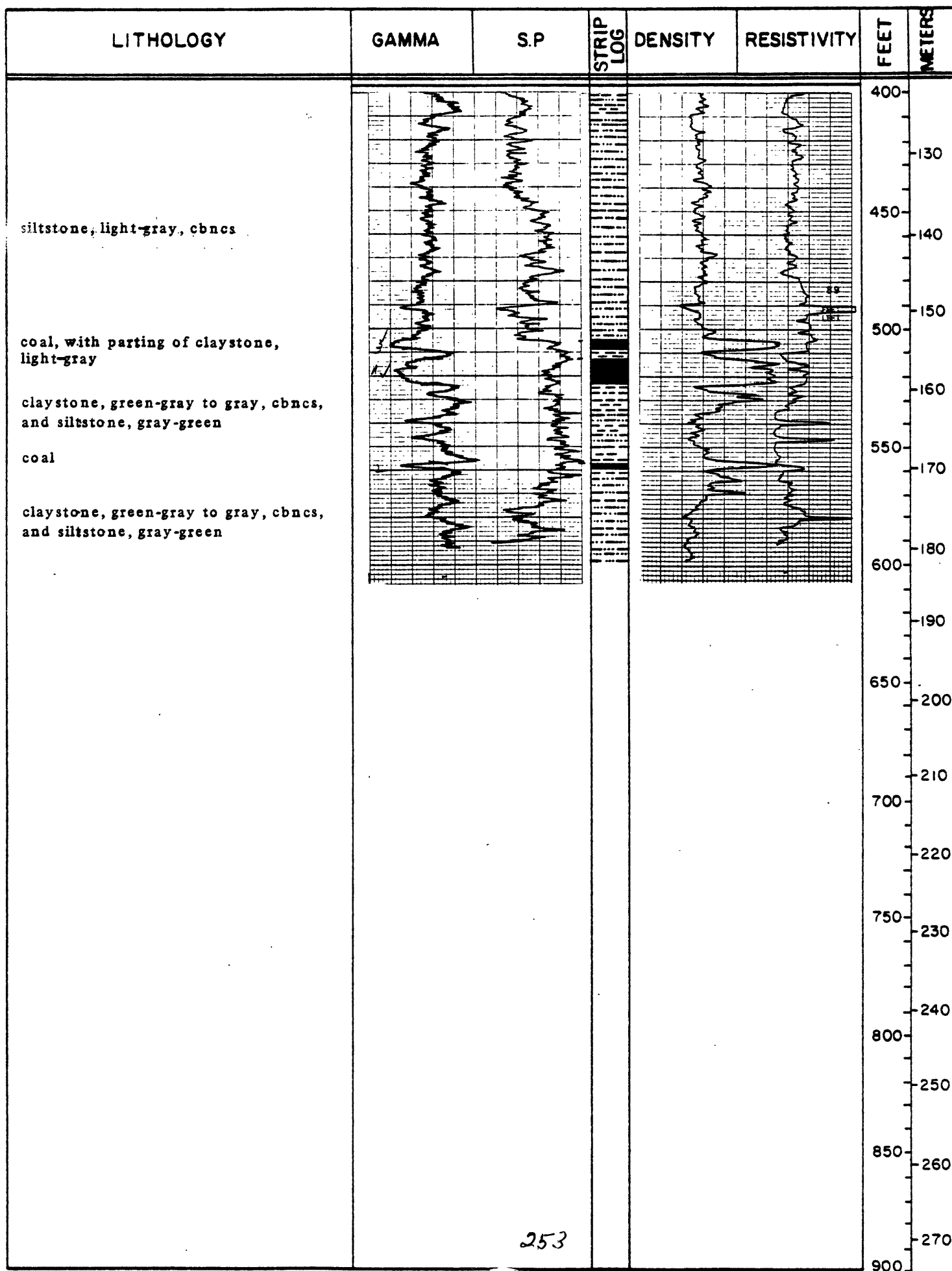
Hole no: US-78184 Map: Stinking Coulee Date: 10/25/78 State: Montana County: Dawson
 Elev: 2608 ft Location: T. 18 N. R. 53 E. Sec. 12, Tract CCCC Drilled depth: 600 ft
 Measured: 63 ft FSL, 107 ft FWL, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP log malfunction





Hole no: US-78185 Map: Stinking Coulee Date: 10/25/78 State: Montana County: Dawson
 Elev: 2663 ft Location: T. 18 ^N, R. 53 ^E, Sec. 2, Tract CCCC Drilled depth: 600 ft
 Measured: 100 ft FSL, 130 ft FWL, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: SP log malfunction at 46 ft





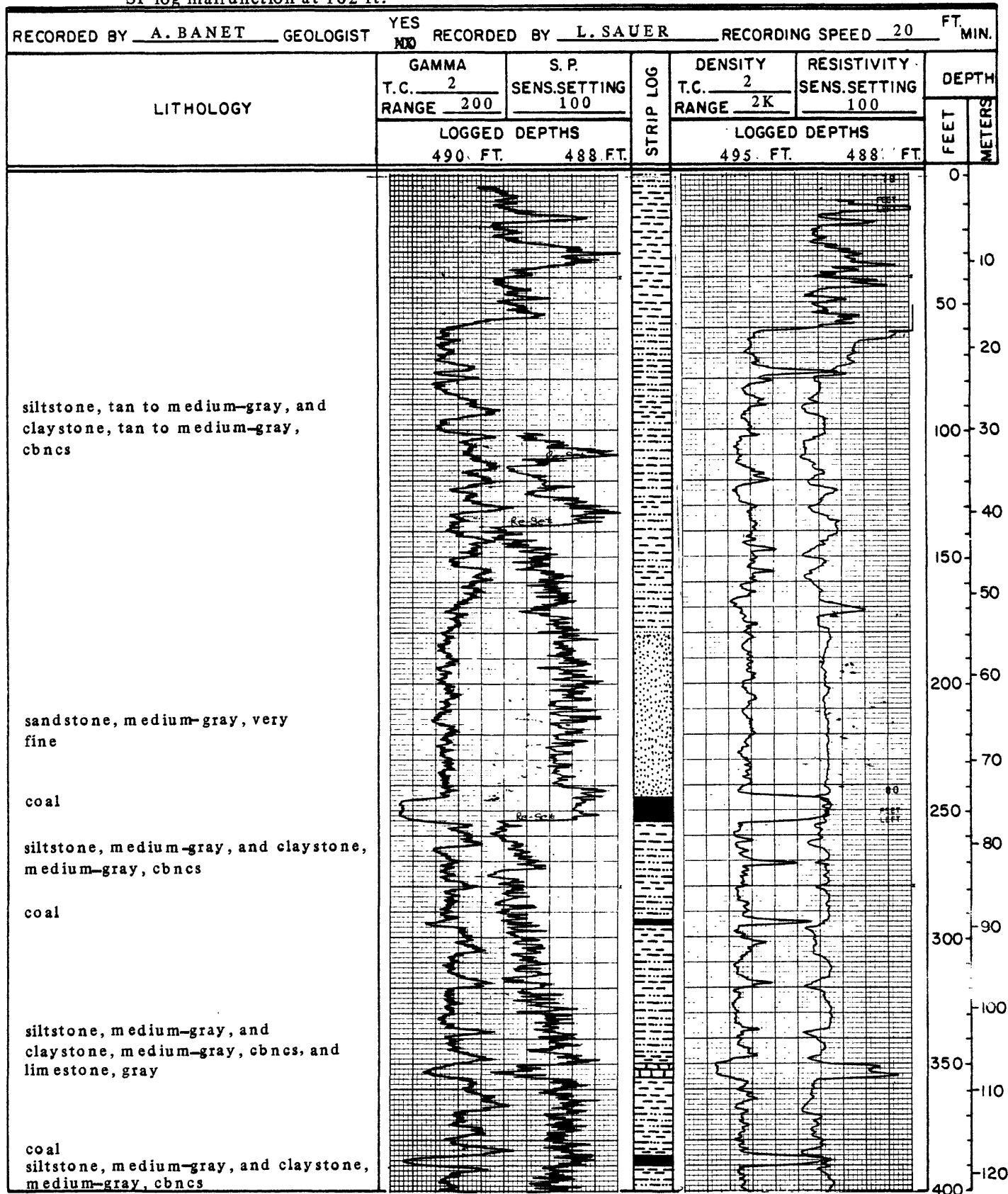
Hole no: US-78186 Map: BLM-NE-31 Date: 10/26/78 State: Montana County: Dawson
 Elev: 2546 ft Location: T. 18 ^N, R. 53 ^E, Sec. 20, Tract CCBD Drilled depth: 320 ft
 Measured: 960 ft FSL, 600 ft FWL, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____

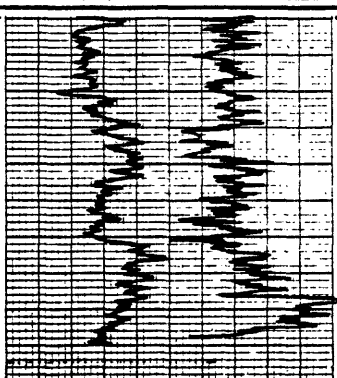
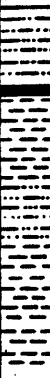
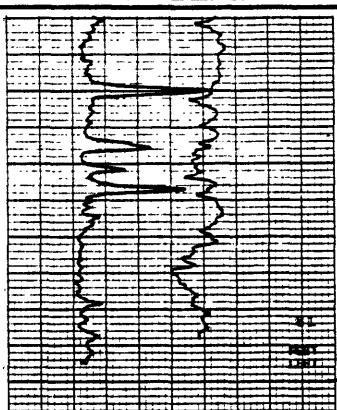
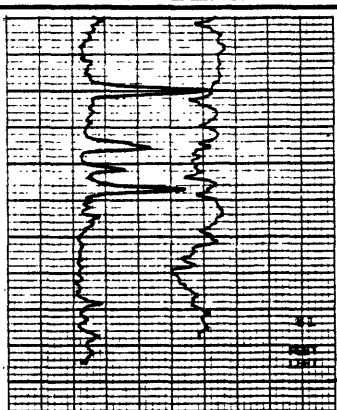
RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		YES NO RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S. P. SENS. SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>5K</u>	RESISTIVITY SENS. SETTING <u>250</u>	DEPTH FEET METERS
	LOGGED DEPTHS 313 FT. FT.			LOGGED DEPTHS 318 FT. 312 FT.		
	claystone, gray to brown, cbncs, sandstone, brown, very fine, and siltstone, gray					
coal	10					
claystone, gray-to blue-gray, cbncs, and sandstone, light-gray, very fine to fine						50
						20
siltstone, light-to blue-gray, claystone, light-to blue-gray, cbncs, and limestone, gray						100
						30
						150
						40
						200
						50
						250
						60
						300
coal						70
claystone, gray-to blue-gray, cbncs						350
						80
						400
						90
						450
						100
						500
						110
						550
						120

Hole no: US-78187 Map: BLM-NE-39 Date: 10/26/78 State: Montana County: Dawson
 Elev: 2750* ft Location: T. 17 ^N, R. 52 ^E, Sec. 14, Tract CDDD Drilled depth: 140 ft
 Measured: 8 ft FSL, 2600 ft FWL, Hole size: 5 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Elevation estimated from Glendive AMS; 1:250,000 scale, 100 ft contour interval,
SP malfunction at 56 ft.

RECORDED BY <u>A. BANET</u> GEOLOGIST		YES NO	RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS. SETTING <u>100</u>	DEPTH		
	LOGGED DEPTHS		LOGGED DEPTHS		FEET	METERS	
	133 FT.		131 FT.	138 FT.	131 FT.		
claystone, light-gray to tan, and siltstone, dark-yellow and light- gray					0		
coal					10		
siltstone, light-gray to medium-gray					50		
coal					20		
siltstone, light-gray, and claystone, light-gray, cbnes					100	30	
					40		
					150		
					50		
					200	60	
					70		
					250		
					80		
					300	90	
					100		
					350		
					110		
					400	120	

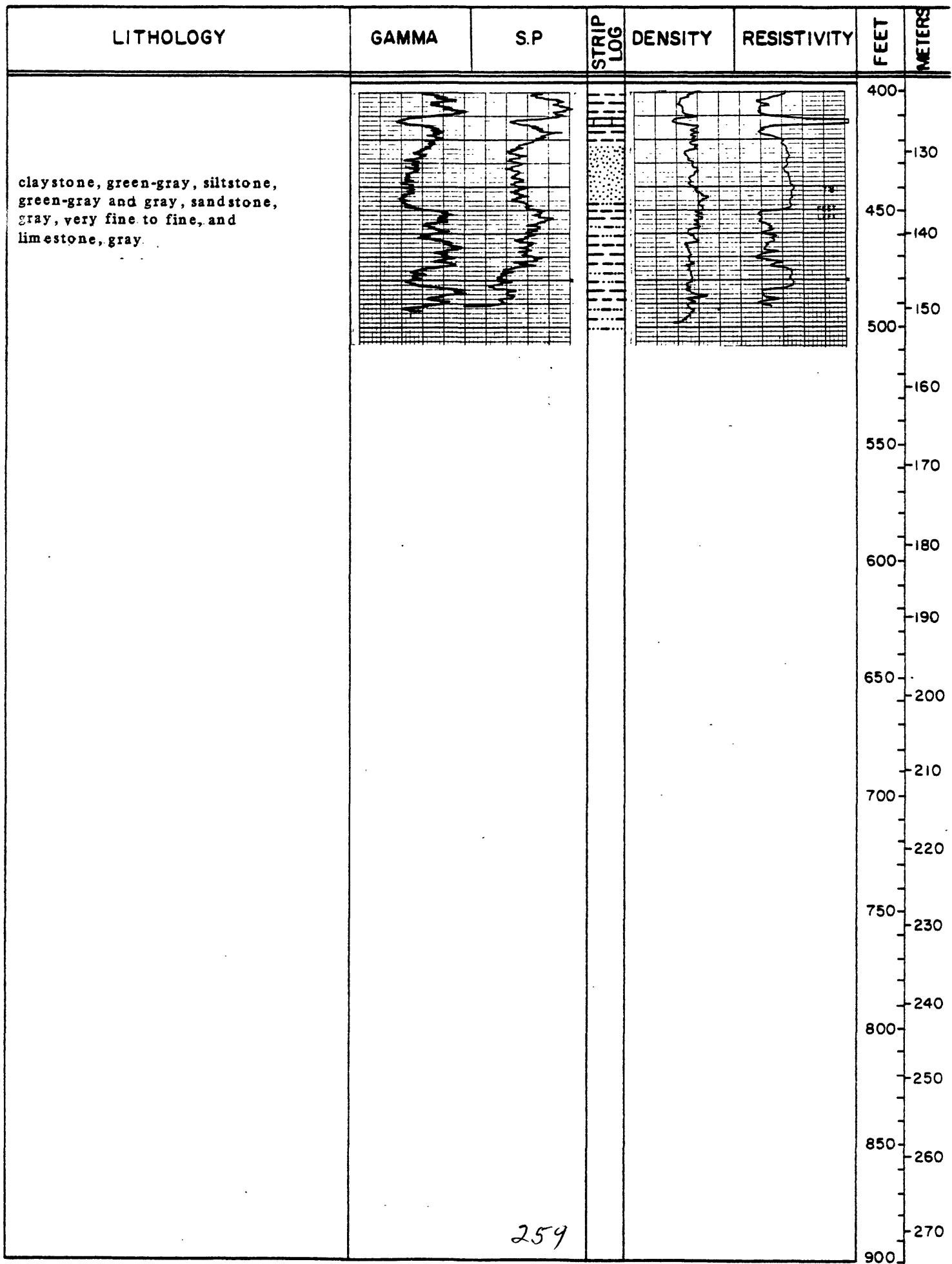
Hole no: US-78188 Map: BLM-NE-39 Date: 10/27/78 State: Montana County: Dawson
 Elev: 2780* ft Location: T. 15 N, R. 52 W, Sec. 18, Tract AAAA Drilled depth: 500 ft
 Measured: 19 ft ^{FNL} ~~xxx~~, 46 ft ^{FEL} ~~xxx~~, Hole size: 5 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Elevation estimated from Glendive A.M.S. 1:250,000 scale, 100 ft contour interval,
SP log malfunction at 102 ft.



LITHOLOGY	GAMMA	S.P	STRIP LOG	DENSITY	RESISTIVITY	FEET	METERS
claystone, medium-to greenish-gray, cncls, and siltstone, gray to gray- green coal						400	
claystone, medium-to greenish-gray, cncls, and siltstone, gray to gray- green						130	
						450	
						140	
						150	
						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	
						230	
						240	
						800	
						250	
						850	
						260	
						270	
						900	

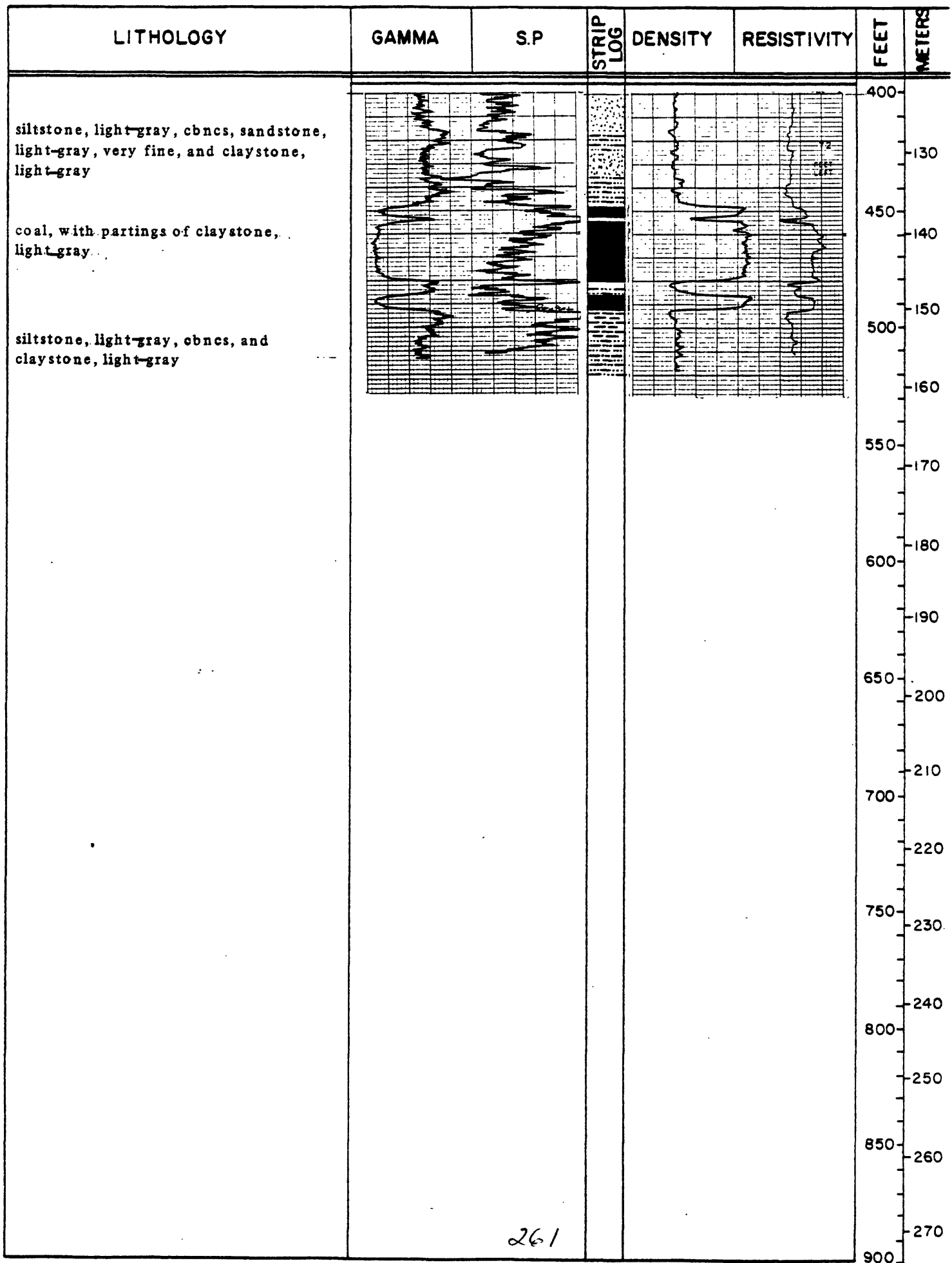
Hole no: US-78189 Map: BLM-NE-39 Date: 10/27/78 State: Montana County: Dawson
 Elev: 2710* ft Location: T. 15 N, R. 52 E, Sec. 32, Tract AAAD Drilled depth: 500 ft
 Measured: 336 ft ^{FNL} ~~132~~ ^{FEL} ~~132~~ ft, Hole size: 5 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Elevation estimated from Glendive AMS; scale 1:250,000, 100 ft contour interval,
SP log malfunction at 78 ft.

RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		NO YES RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.				
LITHOLOGY	GAMMA		S. P.	DENSITY		RESISTIVITY	DEPTH	
	T.C. <u>2</u>			T.C. <u>2</u>			FEET	METERS
	RANGE <u>200</u>			RANGE <u>2K</u>				
	LOGGED DEPTHS		STRIP LOG	LOGGED DEPTHS				
	493 FT.	491 FT.		498 FT.	491 FT.			
siltstone, tan to gray, cbncs, sandstone, brown to gray, very fine to fine, and claystone, gray coal siltstone, light to greenish-gray, and claystone, light to greenish-gray, cbncs coal siltstone, light to greenish-gray, and claystone, light to greenish- gray, cbncs coal siltstone, light gray to greenish-gray coal siltstone, light gray to greenish-gray, and claystone, light gray coal siltstone, light to greenish-gray, and claystone, light to greenish- gray, cbncs						0 10 50 20 100 30 40 150 50 200 60 70 250 80 300 90 100 350 110 400		

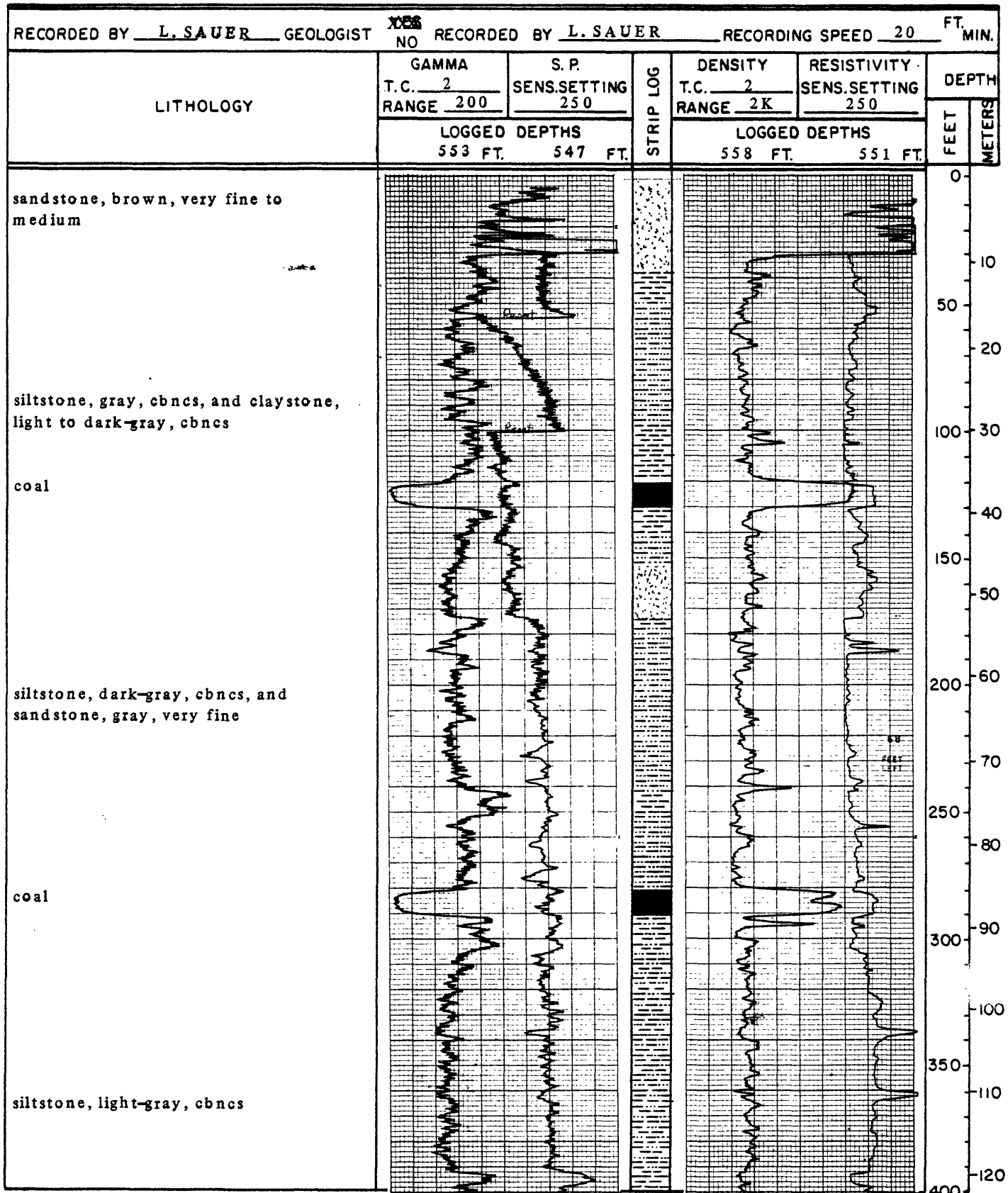


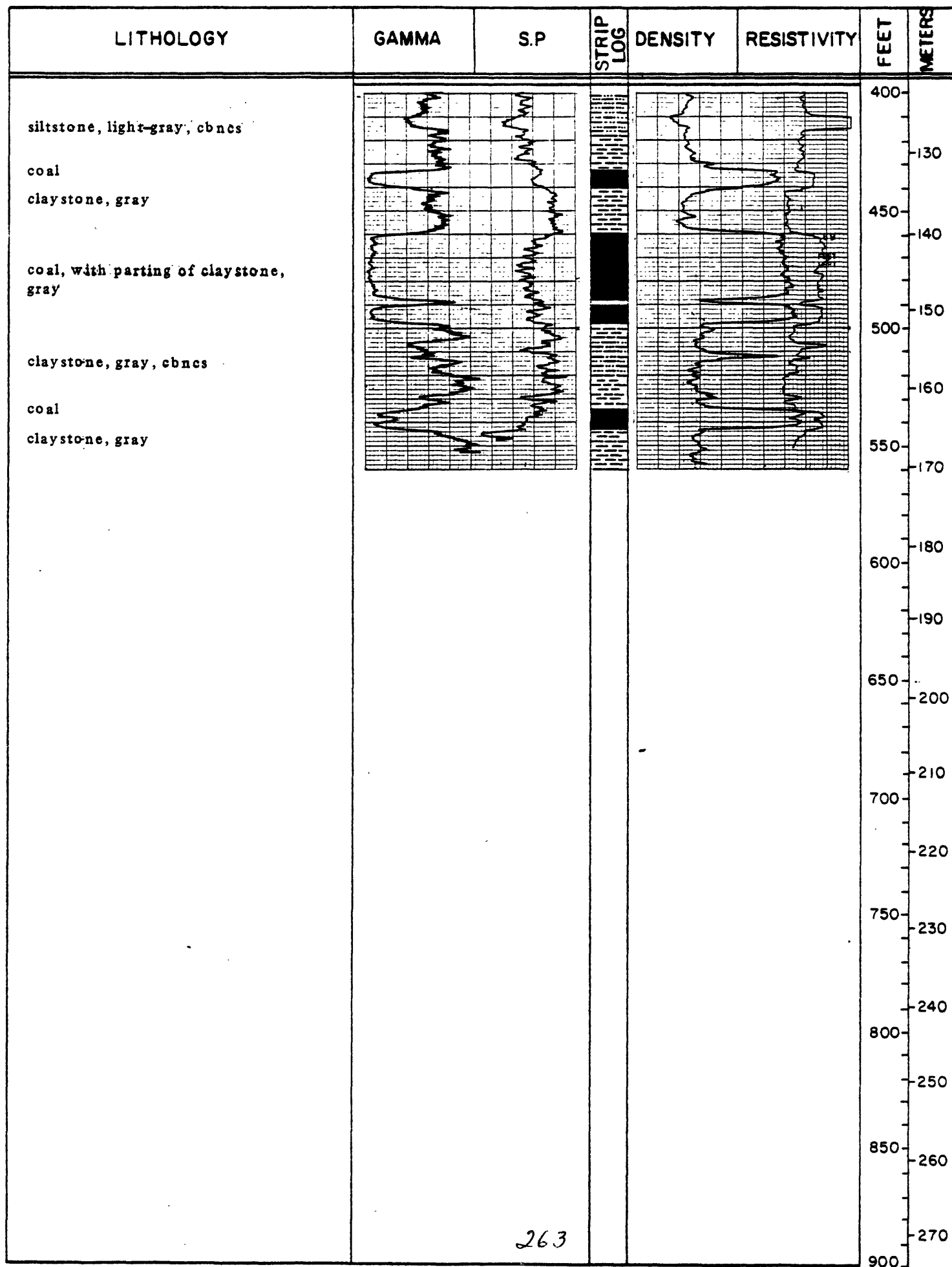
Hole no: US-78190 Map: Cook Creek Butte Date: 10/28/78 State: Montana County: Rosebud
 Elev: 4104 ft Location: T. 5 ^N S., R. 41 ^E W., Sec. 20, Tract CCBC Drilled depth: 520 ft
 Measured: 940 ft ^{RKX} FSL, 70 ft ^{RKX} FWL, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☒ No ☐
 Remarks: Cored interval 204.5 ft - 214.5 ft.

RECORDED BY <u>L. SAUER</u> GEOLOGIST		X58 NO		RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.	
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S.P. SENS.SETTING <u>100</u>	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>2K</u>	RESISTIVITY SENS.SETTING <u>100</u>	DEPTH	
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS
	<u>513</u> FT.	<u>511</u> FT.		<u>518</u> FT.	<u>511</u> FT.		
claystone, brown to gray, and sandstone, light gray, very fine						0	
coal						10	
siltstone, light gray, and sandstone, light gray, very fine						50	
coal						20	
siltstone, light gray,						100	30
coal						40	
siltstone, dark gray, claystone, dark-gray, cbnecs, and sandstone, gray, very fine to fine						150	50
coal						200	60
siltstone, light gray, claystone, light to dark gray, cbnecs, and sandstone, gray, very fine to fine						250	80
coal						300	90
siltstone, light gray, cbnecs, sandstone, light gray, very fine, and claystone, light gray						350	110
						400	120

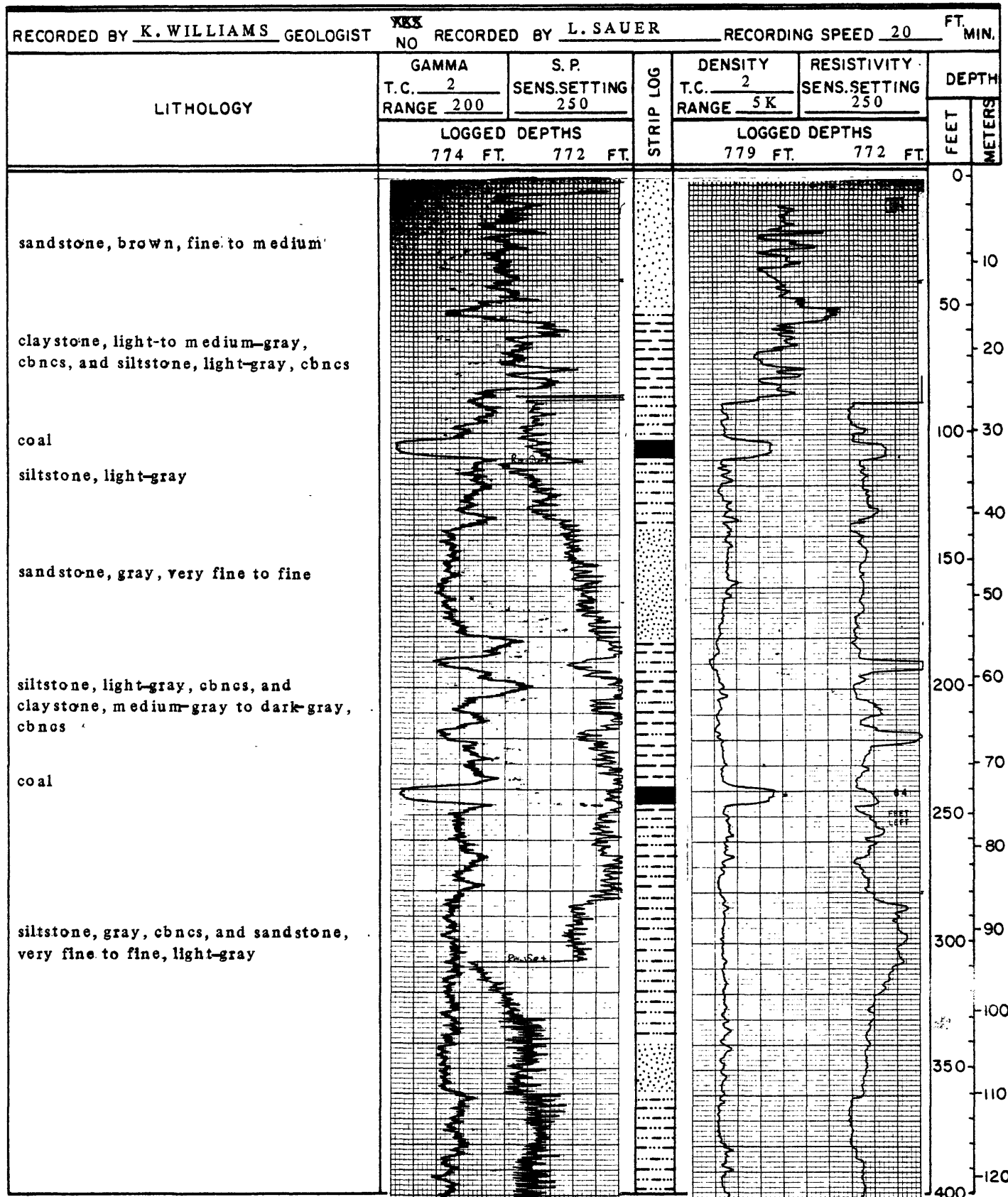


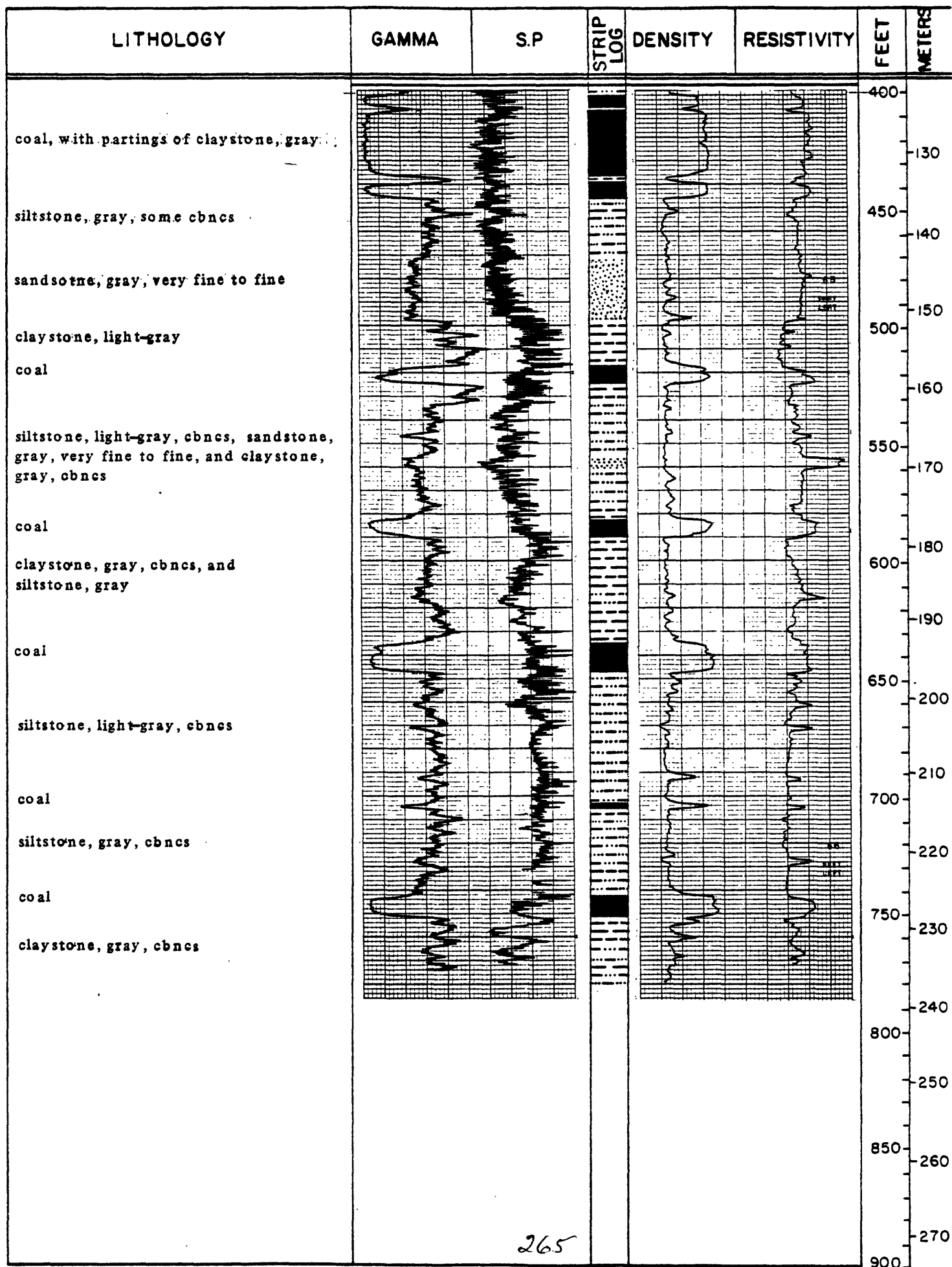
Hole no: US-78191 Map: Cook Creek Butte Date: 10/29/78 State: Montana County: Rosebud
 Elev: 4042 ft Location: T. 5 S., R. 41 E., Sec. 20, Tract BABB Drilled depth: 560 ft
 Measured: 68 ft ^{ENL} 1420 ft ^{XXX} FWL, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



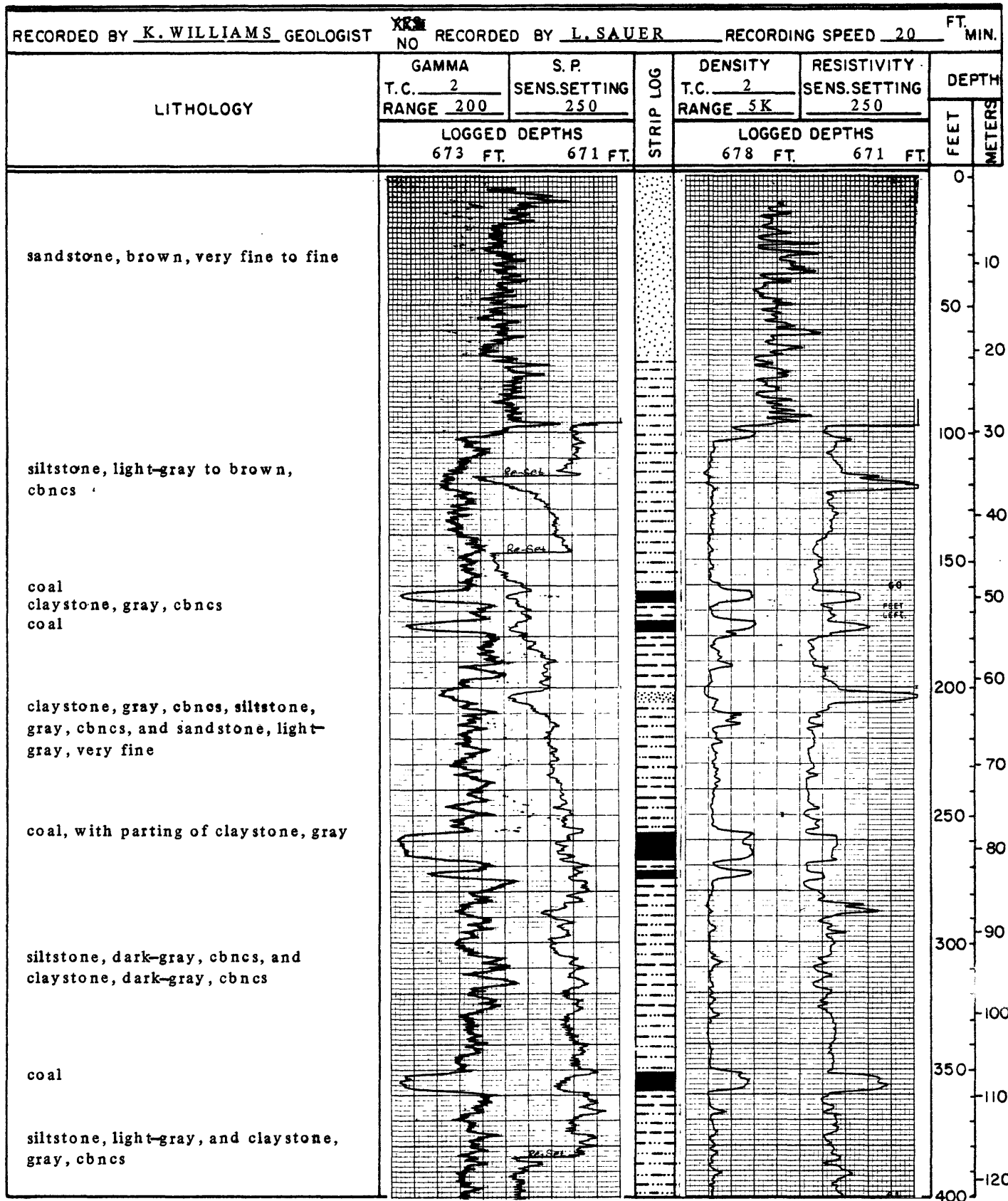


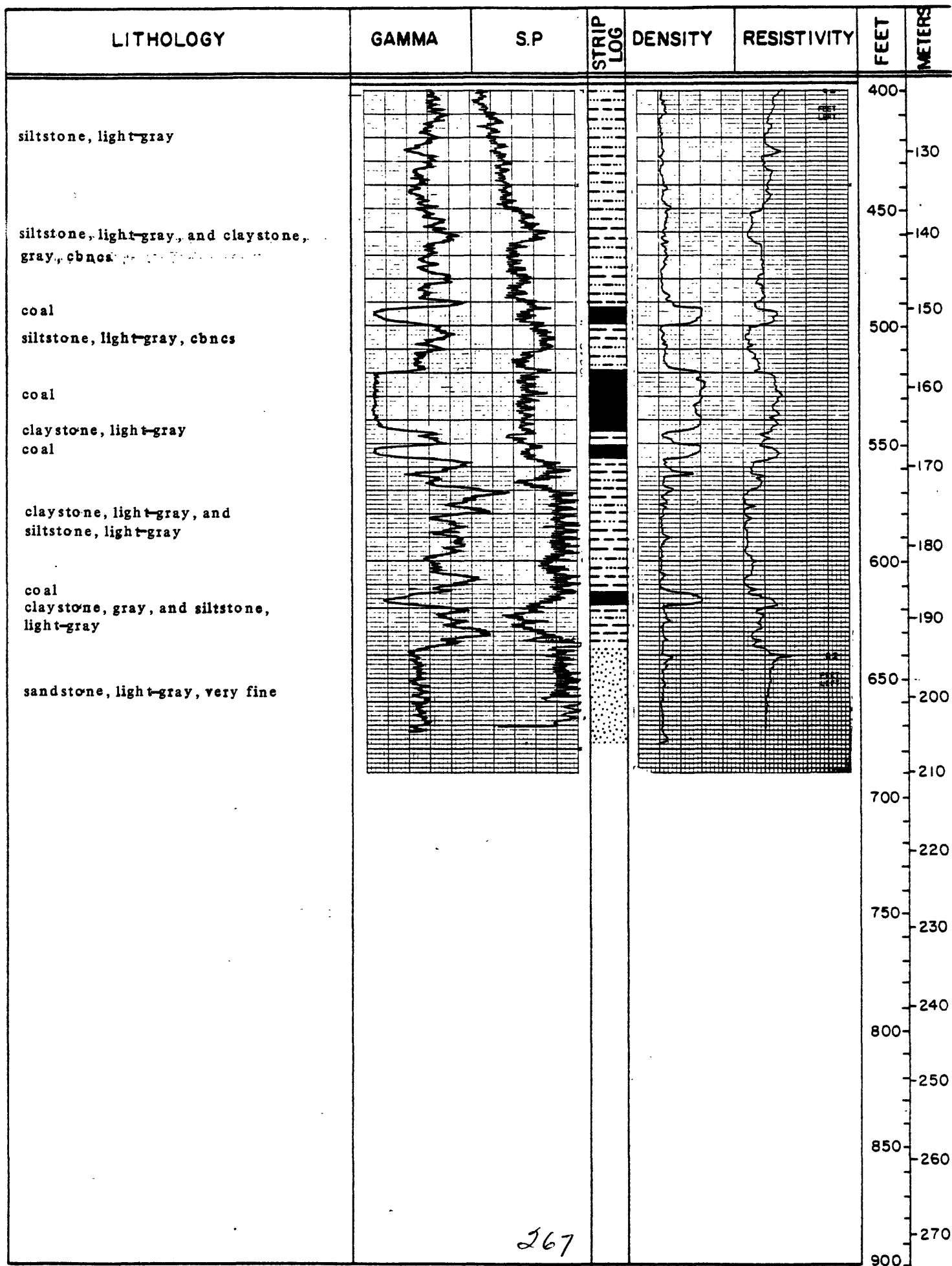
Hole no: US-78192 Map: Birney S.W. Date: 10/30/78 State: Montana County: Rosebud
 Elev: 4014 ft Location: T. 5 S., R. 41 E., Sec. 29, Tract DABD Drilled depth: 780 ft
 Measured: 2060 ft ~~ST~~, 810 ft ~~FEL~~, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



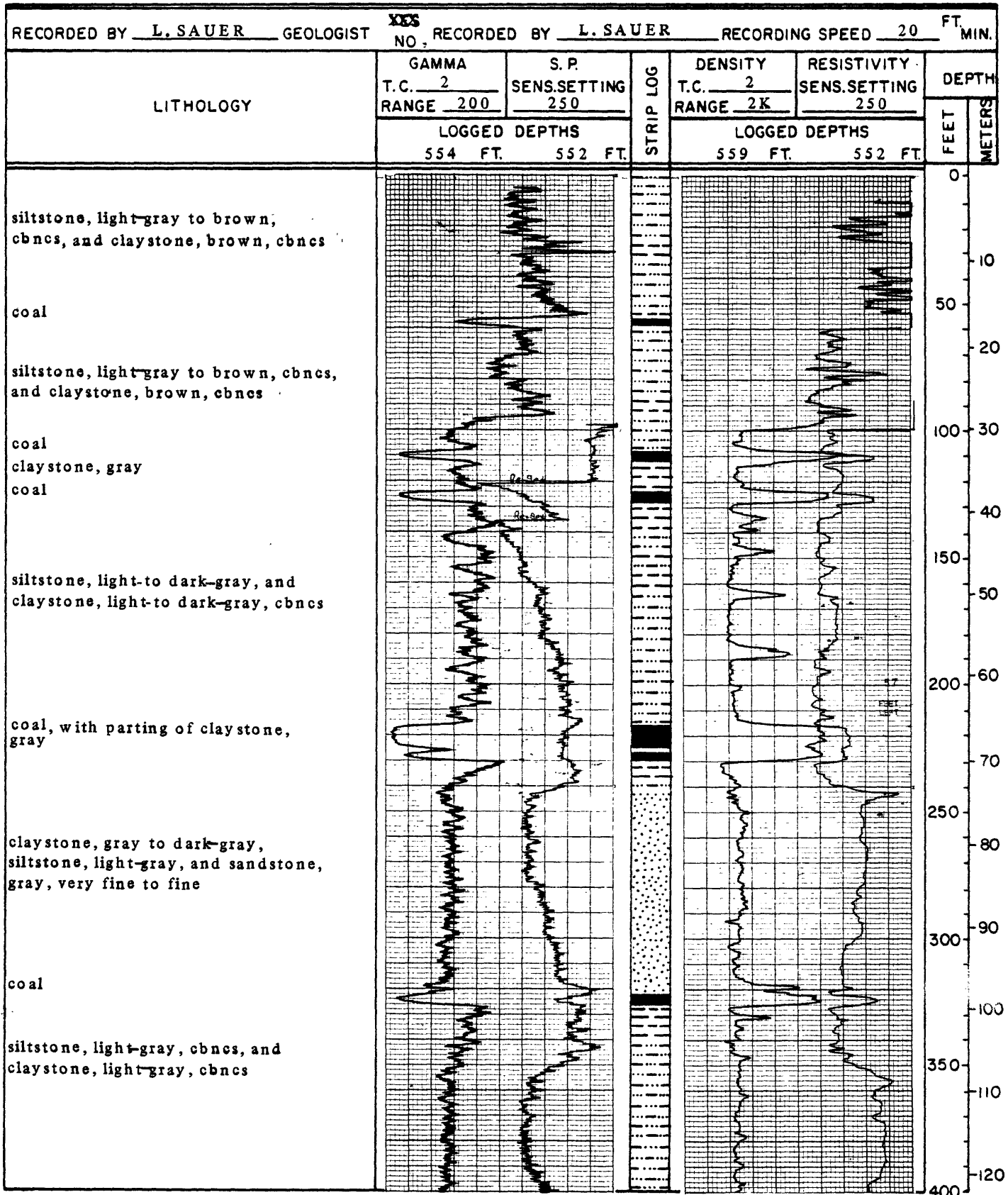


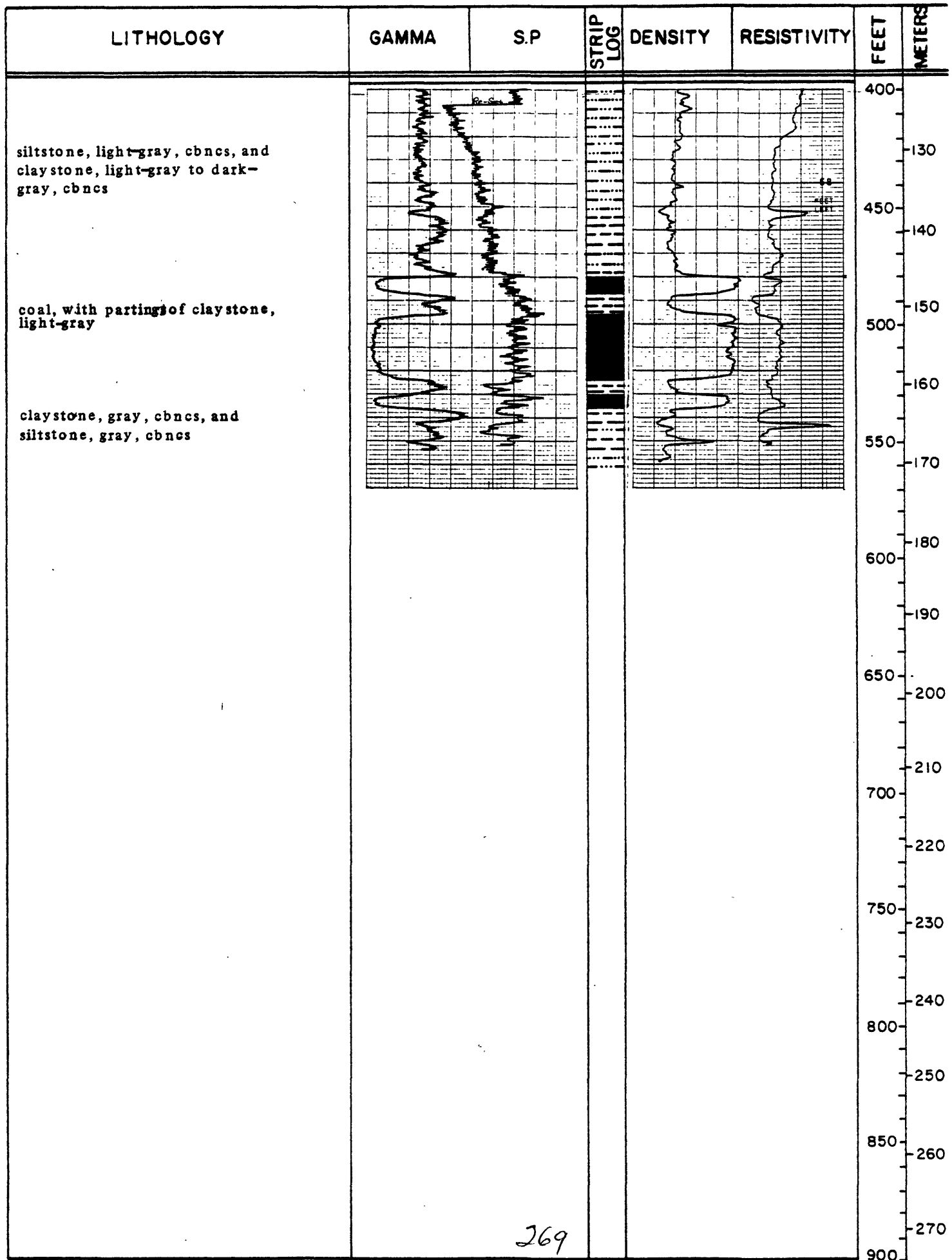
Hole no: US-78193 Map: Birney S.W. Date: 10/31/78 State: Montana County: Rosebud
 Elev: 4101 ft Location: T. 5 S., R. 41 E., Sec. 27, Tract CBCB Drilled depth: 680 ft
 Measured: 1900 ft ~~FSL~~, 200 ft ~~FWL~~, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____



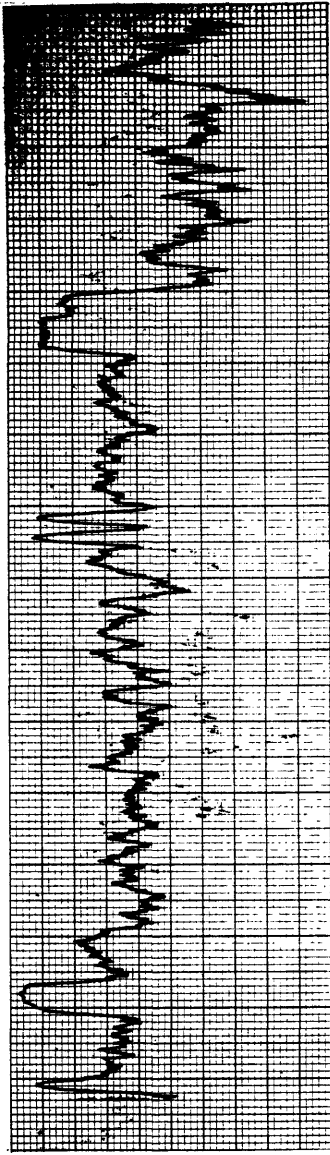
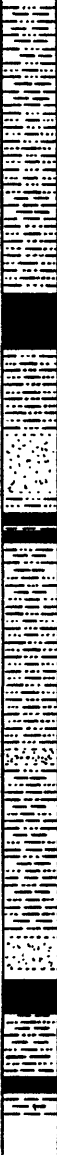
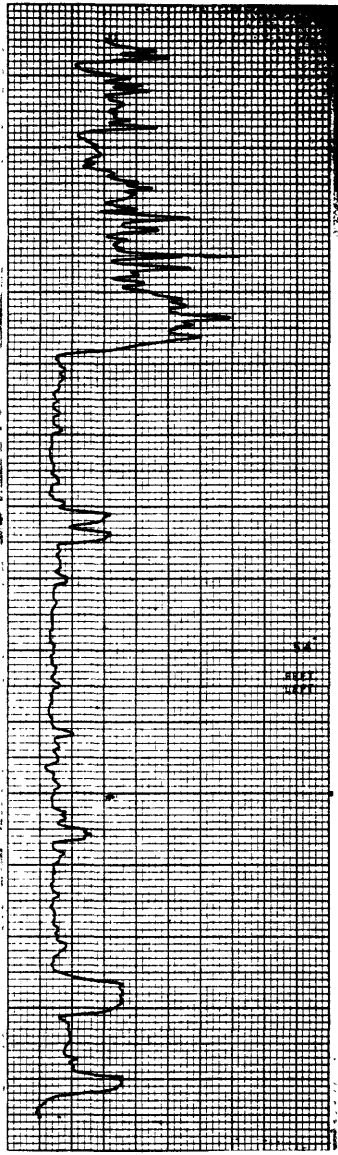


Hole no: US-78194 Map: Birney S.W. Date: 11/2/78 State: Montana County: Rosebud
 Elev: 4083 ft Location: T. 5 S., R. 41 W., Sec. 34, Tract BCDB Drilled depth: 560 ft
 Measured: 1990 ft ^{FNL} ~~1988~~, 900 ft ^{XXX} ~~FWL~~, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: _____





Hole no: US-78195 Map: Birney S.W. Date: 11/8/78 State: Montana County: Rosebud
 Elev: 4138 ft Location: T. 5 ^N, R. 41 ^E, Sec. 35, Tract BBAB Drilled depth: 320 ft
 Measured: 310 ft ^{FNL} ~~XXX~~, 800 ft ^{FWL} ~~XXX~~, Hole size: 5 in, Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Lost circulation at 100 ft through 120 ft, then again at 200 ft.

RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		YES NO RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.			
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>200</u>	S.P. SENS. SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>5K</u>	RESISTIVITY SENS. SETTING	DEPTH	
	LOGGED DEPTHS			LOGGED DEPTHS		FEET	METERS
	305	FT.		310	FT.		
siltstone, light-brown, and claystone, light-gray, cbncs						0	
coal						10	
siltstone, light-gray, cbncs, and sandstone, gray to brown, very fine to fine						50	
coal, with parting of claystone, gray						20	
						100	30
						40	
						150	50
						50	
						200	60
						60	
						70	
						250	80
						80	
						300	90
						90	
						100	
						350	110
						110	
						400	120

Hole no: US-78196 Map: Birney S.W. Date: 12/1/78 State: Montana County: Rosebud
 Elev: 3453 ft Location: T. 6 S., R. 41 W., Sec. 11, Tract ABAC Drilled depth: 240 ft
 Measured: 450 ft ^{FNL} ~~1740~~ ^{FEL} ~~ft~~, Hole size: 5 in., Air ☐ Water ☒ Cored Yes ☐ No ☒
 Remarks: Logged through rods, no source on density section.

RECORDED BY <u>K. WILLIAMS</u> GEOLOGIST		XXX NO RECORDED BY <u>L. SAUER</u>		RECORDING SPEED <u>20</u> FT. MIN.		
LITHOLOGY	GAMMA T.C. <u>2</u> RANGE <u>100</u>	S.P. SENS.SETTING	STRIP LOG	DENSITY T.C. <u>2</u> RANGE <u>50</u>	RESISTIVITY SENS.SETTING	DEPTH FEET METERS
	LOGGED DEPTHS			LOGGED DEPTHS		
	228 FT.	FT.		234 FT.	FT.	
Alluvium						0
clinker						10
siltstone, gray						50
coal						20
claystone, gray, cbncs, and siltstone, light-gray						30
coal						40
siltstone, light-gray, claystone, gray, and dark-gray, and sandstone, gray, very fine cbncs,						150
coal						50
siltstone, light-gray, cbncs, and claystone, gray, cbncs						60
coal						200
claystone, gray, cbncs, and siltstone, light-gray	70					
						250
						80
						90
						100
						350
						110
						120