

UNITED STATES DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

GEOPHYSICAL AND LITHOLOGIC LOGS AND COAL ANALYSES  
FROM TEST HOLES DRILLED DURING 1978  
IN CAMPBELL AND CONVERSE COUNTIES, WYOMING

By

Frank B. Kistner, Alex J. Donatich,  
and Gregg A. Hollomon

Open-File Report 80- 851

1980

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

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## Conversion Table

<u>To convert</u> <u>English Units</u>	<u>Multiply by</u>	<u>To obtain</u> <u>metric Units</u>
Btu/lb	2326	Joule/kilogram (J/kg)
Fahrenheit (°F)	°C=(°F-32)/1.8	Celsius (°C)
Feet (ft)	0.3048	Meters (m)
Feet/mile	.1894	Meters/kilometer
Miles (mi)	1.609	Kilometers (km)

## ABBREVIATIONS

acc - accessory  
ang - angular  
arg - argillaceous  
blk - black  
brn - brown  
calc - calcareous  
carb - carbonaceous  
clst - claystone  
CPS - counts per second  
dk - dark  
f - fine  
frag - fragment(al)  
GR - gamma-ray (well survey)  
grn(d) - grain(ed)  
grnl - granule  
gy - gray  
intbd - interbed  
lmn - limonite  
lstr- luster  
lt - light  
LTD - logged total depth  
m - medium  
mnrl - mineral(s)  
mod - moderate  
MV - millivolt(s)  
NR - no record  
orng - orange  
pos - possible  
rd - round(ed)  
RES - resistance  
subang - subangular  
sdy - sandy  
sh - shale  
sltst - siltstone  
SP - spontaneous potential  
srt(d,g) - sort(ed, ing)  
ss - sandstone  
T.C. - time constant  
v - very  
wthrd - weathered  
yel - yellow

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INTRODUCTION

Between June 6 and November 8, 1978, 72 coal test holes were drilled in Campbell and Converse Counties, Wyo. (fig.1). Drilling was done as part of an ongoing U.S. Geological Survey (USGS) program to evaluate and classify mineral lands in the public domain. The overall purpose of the program is to gather data on the thickness, quality, extent, correlation, and recoverability of coal beds and data on the thickness and lithologic characteristics of the associated rocks in the Tertiary Fort Union and Wasatch Formations of the Powder River Basin.

This report presents geophysical logs and lithologic descriptions, lagged (or corrected in depth intervals) to match the geophysical logs for 70 coal test holes and analyses of coal samples obtained from 3 offset core holes. Test-holes CD-78058 and CD-78069 were abandoned without geophysical logging because of excessive caving of clinker materials. Test-holes CD-78024, CD-78038, and CD-78047 were cased on completion and converted to ground-water observation wells.

Similar information from 371 test holes, approximately 157 coal samples from 56 core tests, and geophysical logs of 35 wells in Campbell and Converse Counties, Wyo., was presented in earlier reports (U.S. Geological Survey and Montana Bureau of Mines and Geology, 1973, 1974, 1976a, 1976b, 1977, 1978; Kistner, 1977, 1980; Kistner and others, 1979). Figure 1 shows the locations and numbers of all test holes drilled in Campbell and Converse Counties, Wyo., during the 1978 field season.

Specific drill-site localities on the individual logs are in the format of land survey used by the U.S. Bureau of Land Management. The localities are described in terms of distances, in feet, scaled from section lines on the topographic quadrangle sheets. Collar elevations are approximated from the topographic contours. Drill-hole information for all coal test holes is summarized in table 1.

A conventional rotary-drill rig was used, with circulating water as the usual drilling fluid. Except where circulation was difficult to maintain, continuous 10-ft samples were collected. Where circulation could not be maintained, an air-mist drilling medium was used and no samples were collected. Samples were logged by a geologist in the field and then bagged and sent to the USGS storage facilities in Casper, Wyo. Field logs were completed for each test hole and are on file in Casper.

The Geophysical logging procedure was to run a multiconductor probe equipped with gamma-ray, resistance, and spontaneous-potential detectors. Where problems existed with drill-hole instability, the drill pipe was used to temporarily case the hole, and a gamma-ray casing-collar locator log was

run through the drill pipe.

The log records were photographically reduced to a vertical scale of 1 inch to 50 ft for convenience in reproducing this report, and the originals are on file at the Casper office.

Twelve core samples (table 2) were obtained from three core holes: CD-78034, CD-78038, and CD-78041. A core hole was drilled adjacent to a logged test hole to obtain a sample of the coal interval (or intervals) indicated on the logs of the test hole. The core samples were measured, described, packaged, and sent for analysis to the USGS laboratory, Lakewood, Colo. USGS coal sample number, depth intervals, and bed designation for the 12 core samples of coal from the three core holes are listed in table 2. The preliminary results of the analyses for these samples are in table 3. Major-, minor-, and trace-element analyses have not been received.

Great care was exercised in obtaining and preserving the coal cores; nevertheless, changes in moisture content and some contamination from drilling fluid additives are possible. Each core sample was approximately 2-1/8 in. in diameter and as much as 21.3 ft in length, and the analysis of a sample this small may not be typical of the coal bed(s) in the surrounding area. Discretion is therefore urged in the use and interpretation of the coal analysis data.

#### ACKNOWLEDGMENTS

Fieldwork was carried out by the following USGS personnel: Frank B. Kistner and Edmund L. Fivas, geologists; Gregg A. Hollomon, technician; Harry R. Cireton, driller. Lithologic detail was added to the field descriptions by Alex J. Donatich, Gregg A. Hollomon, Harry E. Corely, and Kenton C.

Bowen. Supervision and technical guidance were provided by Frank B. Kistner and Elmer M. Schell.

Chemists of Forrest E. Walker's Coal Analysis Section (formerly a part of the U.S. Bureau of Mines) of the Department of Energy, Pittsburgh, Pa., provided the data for table 3. Joseph R. Hatch, USGS geologist, coordinated the analyses of coal samples.

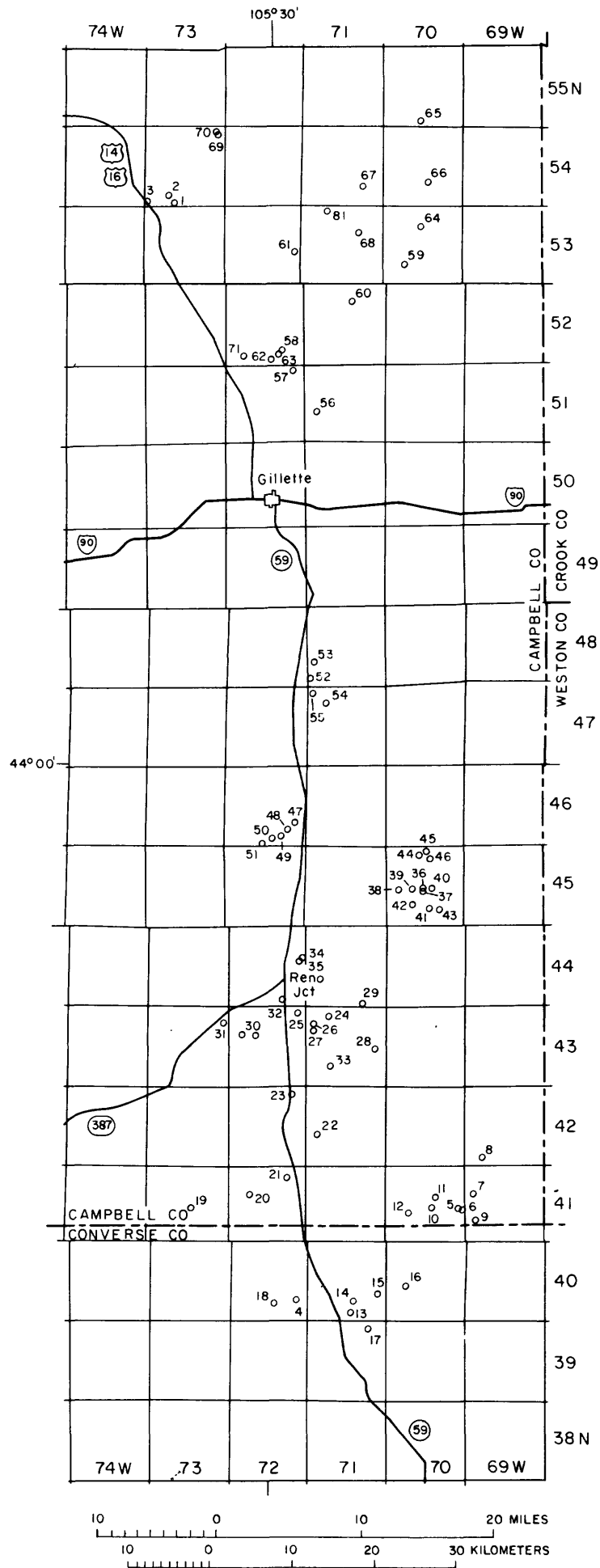


Figure 1. - Coal test holes drilled during 1978 in Campbell and Converse Counties, Wyoming. (In table 1 these holes numbers are preceded by CD-780 .)



Table 1.--Summary of information for 72 coal test holes in  
Campbell and Converse Counties, Wyoming

Test-hole Number	Location				Depth (feet)	
	T.N.	R.W.	Sec.	1/4	Drilled	Logged
CD-78001	54	73	33	SW	600	595
CD-78002	54	73	32	NE	620	610(?)
CD-78003	54	73	31	SW	600	590
CD-78004	40	72	25	NW	560	550
CD-78005	41	70	24	NE	260	255
CD-78006	41	70	24	NE	260	255
CD-78007	41	69	18	NE	260	255
CD-78008	42	69	32	NW	60	38
CD-78009	41	69	30	SE	400	399
CD-78010	41	70	22	NE	500	500
CD-78011	41	70	15	SE	500	490
CD-78012	41	70	20	SE	560	550
CD-78013	40	71	34	NW	540	540
CD-78014	40	71	27	NE	340	340
CD-78015	40	71	24	SW	280	280
CD-78016	40	70	20	NW	880	870
CD-78017	39	71	2	SE	860	860
CD-78018	40	72	27	SW	560	560
CD-78019	41	73	22	NW	760	759
CD-78020	41	72	17	SE	740	728
CD-78021	41	72	11	NE	180	180
CD-78022	42	71	19	NE	180	180
CD-78023	42	72	2	SE	800	800
CD-78024	43	71	5	SE	720	710
CD-78025	43	72	1	SW	840	830
CD-78026	43	71	7	NE	740	730
CD-78027	43	71	7	SE	660	650
CD-78028	43	71	24	NW	460	460
CD-78029	44	71	35	SW	460	460
CD-78030	43	72	17	NE	200	199
CD-78031	43	73	12	NE	300	300
CD-78032	44	72	35	SW	200	200
CD-78033	43	71	29	NE	700	690
CD-78034	44	72	13	NE	200	200
CD-78035	44	72	13	NE	140	140
CD-78036	45	70	21	NE	320	320
CD-78037	45	70	21	NE	380	380
CD-78038	45	70	20	NW	400	400
CD-78039	45	70	21	NW	300	300
CD-78040	45	70	22	NE	340	340
CD-78041	45	70	27	SW	380	380
CD-78042	45	70	28	NW	380	380
CD-78043	45	70	26	SW	320	320

Table 1.--Summary of information for 72 coal test holes in  
Campbell and Converse Counties, Wyoming -- continued

Test-hole Number	Location				Depth (feet)	
	T.N.	R.W.	Sec.	1/4	Drilled	Logged
CD-78044	45	70	4	SE	200	195
CD-78045	45	70	3	NW	260	250
CD-78046	45	70	3	SE	260	260
CD-78047	46	72	25	NW	660	650
CD-78048	46	72	26	SE	700	690
CD-78049	46	72	35	NW	740	730
CD-78050	46	72	34	NE	720	711
CD-78051	46	72	33	SE	680	680
CD-78052	48	71	31	NW	500	490
CD-78053	48	71	30	NE	400	400
CD-78054	47	71	8	NW	340	330
CD-78055	47	71	6	SW	360	360
CD-78056	51	71	19	SE	340	340
CD-78057	51	72	1	SW	360	360
CD-78058	52	72	26	SW	35	NR
CD-78059	53	70	29	SE	300	300
CD-78060	52	71	10	NE	420	420
CD-78061	53	72	24	SW	340	340
CD-78062	52	72	34	SW	600	590
CD-78063	52	72	35	NW	360	360
CD-78064	53	70	9	SE	200	200
CD-78065	55	70	33	SE	520	520
CD-78066	54	70	27	NW	260	260
CD-78067	54	71	26	SW	520	520
CD-78068	53	71	14	NW	440	440
CD-78069	54	73	1	SE	80	NR
CD-78070	54	73	1	NW	440	430
CD-78071	52	72	32	NW	640	640
CD-78081	53	71	5	NE	400	390

Table 2.--Summary of information for 12 coal samples from  
the Tertiary Wasatch and Fort Union Formations,  
Campbell County, Wyoming

Core- hole No.	USGS sample No.	Depth interval (feet)
Wasatch Formation, Felix coal zone		
CD-78034	D205243	102.3-114.4
	D205244	114.4-126.5
	D205245	126.5-138.7
Fort Union Formation, Wyodak coal zone		
CD-78038	D205246	193.0-205.1
	D205247	227.3-240.3
	D205248	240.3-253.7
	D205249	288.0-297.4
	D205250	320.1-332.1
CD-78041	K93606	97.0-102.6
	K93607	102.9-108.0
	K93608	128.0-149.3
	K93609	203.5-205.8

Table 3.--Coal analyses for 12 samples from the Felix and Wyodak coal beds,  
Wasatch and Fort Union Formations, Campbell County, Wyoming.

[All analyses by U.S. Department of Energy, Pittsburgh, Pa. Type of analysis: A, as received; B, moisture free; C, moisture and ash free; ---, no data]

Sample number	Type of analysis	Proximate analysis (percent)				Ultimate analysis (percent)				Heating value (Btu/lb)	Air-dried loss (percent)	Forms of sulfur (percent)		Ash-fusion Temp. (°F)
		Moisture	Volatile matter	Fixed carbon	Ash	Hydrogen	Carbon	Nitrogen	Oxygen			Sulfate	Pyritic	
D205243	A	32.0	29.4	29.7	8.9	6.9	42.8	0.7	39.2	1.4	7,524	0.01	0.74	2,100
	B	---	43.3	43.5	13.2	4.9	63.0	1.0	15.8	2.1	11,071	.02	1.08	2,210
	C	---	49.8	50.2	---	5.6	72.5	1.2	18.2	2.4	12,749	.02	1.25	2,300
D205244	A	30.6	29.4	28.7	11.3	6.6	41.7	.7	38.5	1.1	7,359	.03	.45	2,310
	B	---	42.4	41.3	16.3	4.7	60.0	1.1	16.4	1.6	10,598	.04	.65	2,400
	C	---	50.6	49.4	---	5.6	71.7	1.3	19.5	2.0	12,656	.05	.78	2,500
D205245	A	31.0	32.0	31.1	5.9	7.0	46.2	.8	39.5	.5	8,101	.01	.12	2,360
	B	---	46.3	45.1	8.6	5.1	67.0	1.2	17.3	.7	11,742	.01	.17	2,450
	C	---	50.7	49.3	---	5.6	73.3	1.3	19.0	.8	12,849	.01	.19	2,560
D205246	A	29.5	35.0	27.8	7.7	7.0	47.5	.7	36.2	1.0	8,267	.01	.35	2,100
	B	---	49.6	39.5	10.9	5.3	67.3	1.0	14.1	1.4	11,728	.01	.50	2,190
	C	---	55.7	44.3	---	5.9	75.6	1.1	15.8	1.6	13,164	.01	.56	2,300
D205247	A	30.2	31.1	33.4	5.3	6.9	48.1	.7	38.6	.5	8,292	.01	.07	2,120
	B	---	44.6	47.9	7.5	5.1	69.0	1.0	16.8	.7	11,884	.02	.11	2,210
	C	---	48.3	51.7	---	5.5	74.6	1.0	18.2	.7	12,853	.02	.12	2,320
D205248	A	28.2	34.0	32.2	5.6	6.7	50.5	.8	36.2	.2	8,636	.01	.05	2,060
	B	---	47.4	44.9	7.7	5.0	70.4	1.0	15.4	.3	12,031	.01	.06	2,150
	C	---	51.4	48.6	---	5.4	76.3	1.1	16.7	.4	13,040	.01	.07	2,260
D205249	A	28.1	31.3	33.1	7.5	6.8	48.2	.9	36.2	.4	8,469	.01	.04	2,060
	B	---	43.6	45.9	10.5	5.1	67.1	1.2	15.6	.6	11,777	.01	.05	2,170
	C	---	48.7	51.3	---	5.6	74.9	1.4	17.4	.6	13,158	.01	.06	2,250
D205250	A	29.9	30.8	34.8	4.5	6.8	49.2	.8	38.3	.3	8,461	.01	.04	2,100
	B	---	44.0	49.6	6.4	5.0	70.2	1.2	16.8	.5	12,061	.01	.06	2,210
	C	---	47.0	53.0	---	5.3	75.0	1.3	17.9	.5	12,888	.01	.07	2,300
K93606	A	28.5	31.6	29.3	10.6	6.9	44.9	.8	35.4	1.4	7,940	.02	.64	2,140
	B	---	44.2	41.0	14.8	5.2	62.8	1.2	14.0	2.0	11,103	.02	.89	2,240
	C	---	51.9	48.1	---	6.1	73.7	1.4	16.5	2.4	13,029	.03	1.05	2,320
K93607	A	27.9	32.1	31.1	8.9	6.9	46.7	.8	35.6	1.2	8,177	.02	.42	1,960
	B	---	44.5	43.2	12.3	5.2	64.8	1.1	14.9	1.7	11,347	.02	.58	2,100
	C	---	50.8	49.2	---	5.9	73.9	1.2	17.0	1.9	12,940	.03	.67	2,190
K93608	A	30.4	30.6	34.3	4.7	6.6	48.5	.9	39.0	.4	8,314	.02	.07	2,070
	B	---	43.9	49.4	6.7	4.6	69.7	1.2	17.3	.5	11,937	.02	.10	2,165
	C	---	47.1	52.9	---	4.9	74.7	1.3	18.5	.6	12,794	.02	.11	2,255
K93609	A	32.0	55.7	4.1	8.2	6.7	44.7	.8	39.3	.3	7,576	.01	.01	2,080
	B	---	81.9	6.0	12.1	4.7	65.7	1.2	16.0	.4	11,149	.01	.01	2,160
	C	---	93.2	6.8	---	5.3	74.7	1.3	18.1	.4	12,677	.01	.01	2,250

#### REFERENCES CITED

- Kistner, F. B., 1977, Preliminary report of coal drill-hole data in the southern Powder River Basin, Converse County, Wyoming: U.S. Geological Survey Open-File Report 77-774, 25 p.
- \_\_\_\_\_ 1980, Geophysical and lithologic logs of 35 wells in Converse and Campbell Counties, Wyoming: U.S. Geological Survey Open-File Report 80-125, 67 p.
- Kistner, F. B., Hollomon, G. A., and Coppock, D. G., 1979, Lithologic and geophysical logs and coal analyses from test holes drilled during 1977 in Converse and Campbell Counties, Wyoming: U.S. Geological Survey Open-File Report 79-1173, 88 p.
- U.S. Geological Survey and Montana Bureau of Mines and Geology, 1973, Preliminary report of coal drill-hole data and chemical analyses of coal beds in Sheridan and Campbell Counties, Wyoming, and Big Horn County, Montana: U.S. Geological Survey Open-File Report, 57 p.
- \_\_\_\_\_ 1974, Preliminary report of coal drill-hole data and chemical analyses of coal beds in Campbell County, Wyoming: U.S. Geological Survey Open-File Report 74-97, 241 p.
- \_\_\_\_\_ 1976a, Preliminary report of coal drill-hole data and chemical analyses of coal beds in Campbell and Sheridan Counties, Wyoming, Custer, Prairie, and Garfield, Counties, Montana, and Mercer County, North Dakota: U.S. Geological Survey Open-File Report 76-319, 377 p.
- \_\_\_\_\_ 1976b, Preliminary report of coal drill-hole data and chemical analyses of coal beds in Campbell, Converse, and Sheridan Counties, Wyoming, and Big Horn, Richland, and Dawson Counties, Montana: U.S. Geological Survey Open-File Report 76-450, 382 p.

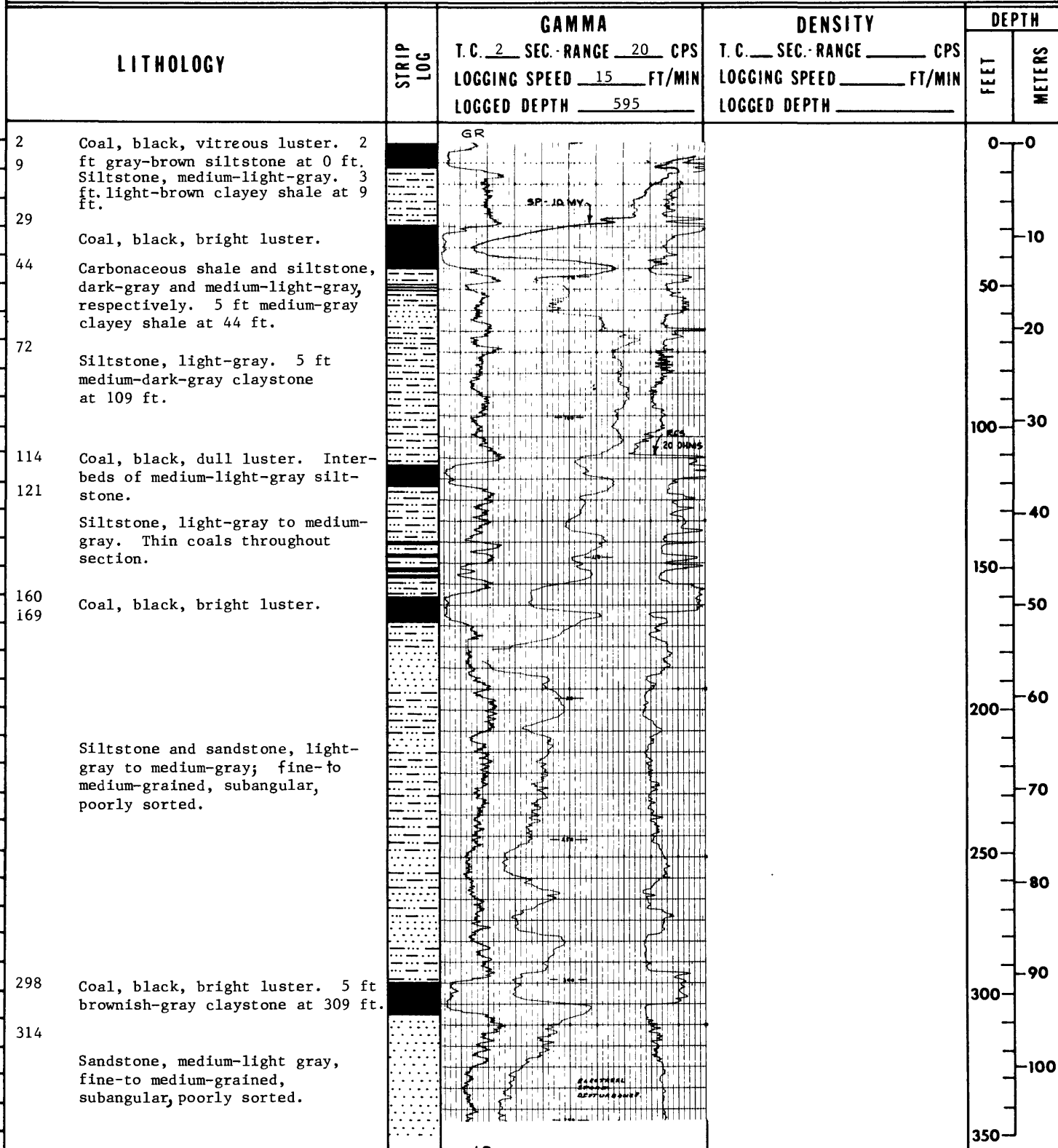
U.S. Geological Survey and Montana Bureau of Mines and Geology, 1977,  
Preliminary report of 1976 drilling of coals in Campbell and  
Sheridan Counties, Wyoming, and Big Horn, Dawson, McCone, Richland,  
Roosevelt, Rosebud, Sheridan, and Wibaux Counties, Montana: U.S.  
Geological Survey Open-File Report 77-283, 403 p.

\_\_\_\_\_ 1978, Geophysical logs for Campbell and Converse Counties,  
Wyoming, chapter E of Preliminary report of 1977 coal drilling  
in eastern Montana and northeastern Wyoming: U.S. Geological Survey  
Open-File Report 77-721-E, 202 p.

## UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78001  
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Wildcat	
DATE STARTED 6-7-1978	DATE COMP. 6-7-1978	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 33 T. 54 N., R. 73 W., FOOTAGE LOC. 500		FWL 1300	GROUND ELEV 4230
SIZE AND BIT TYPE: 5-in drag		FOOTAGE ROTARY 600 CORING 0	TOTAL DEPTH 600
DRILLING AGENCY: USGS/CD/NRMA		DRILL TYPE: Portadrill 524	DEPTH TO WATER NR
LITHOLOGY RECORDED BY A. Donatich; E. Fivas		GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon	
REMARKS: Composite gamma ray log SP = 10 MV RES = 20 OHMS			

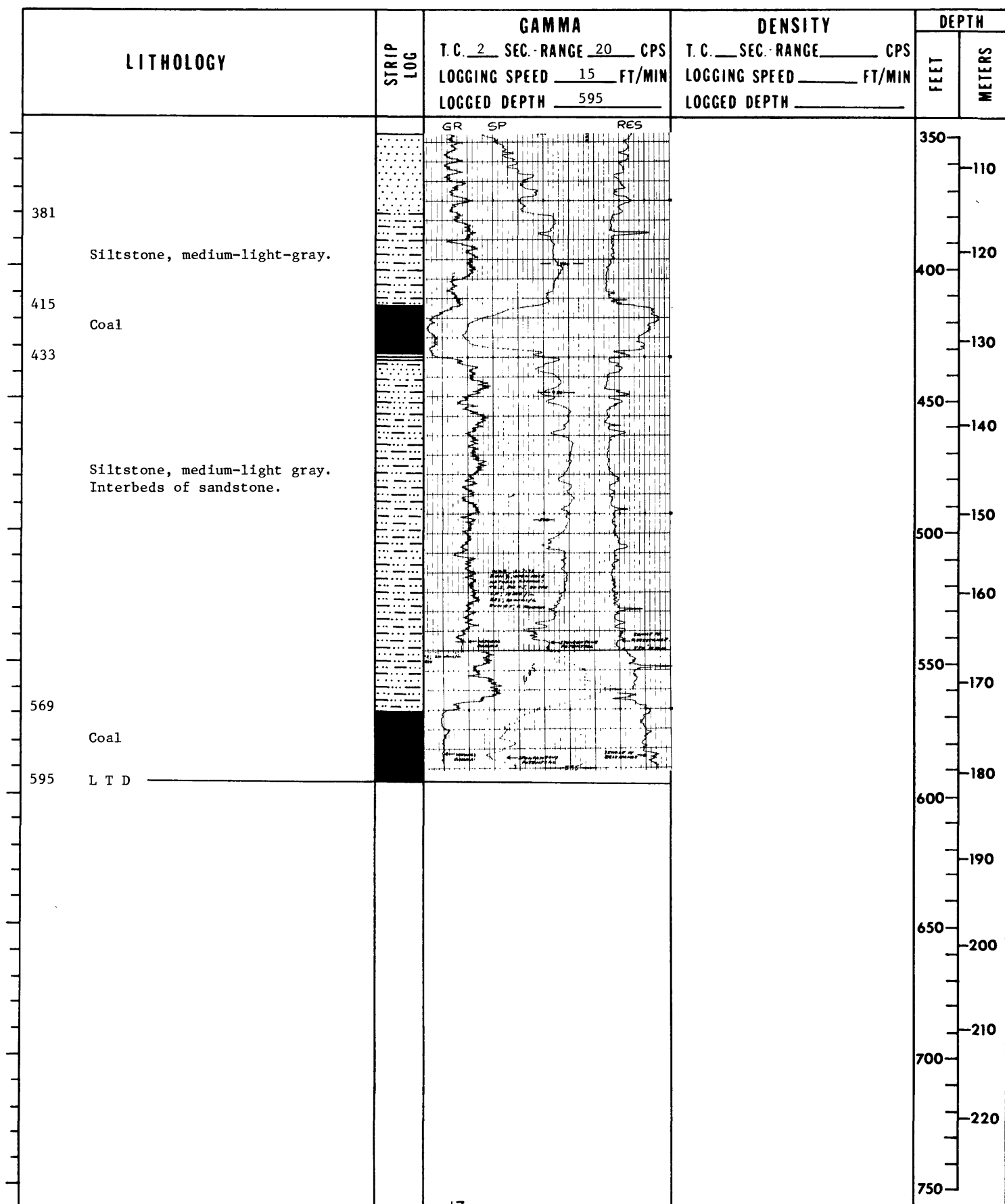


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78001  
SHEET 2 OF 2

## REMARKS:

SP = 10 MV  
RES = 20 OHMS

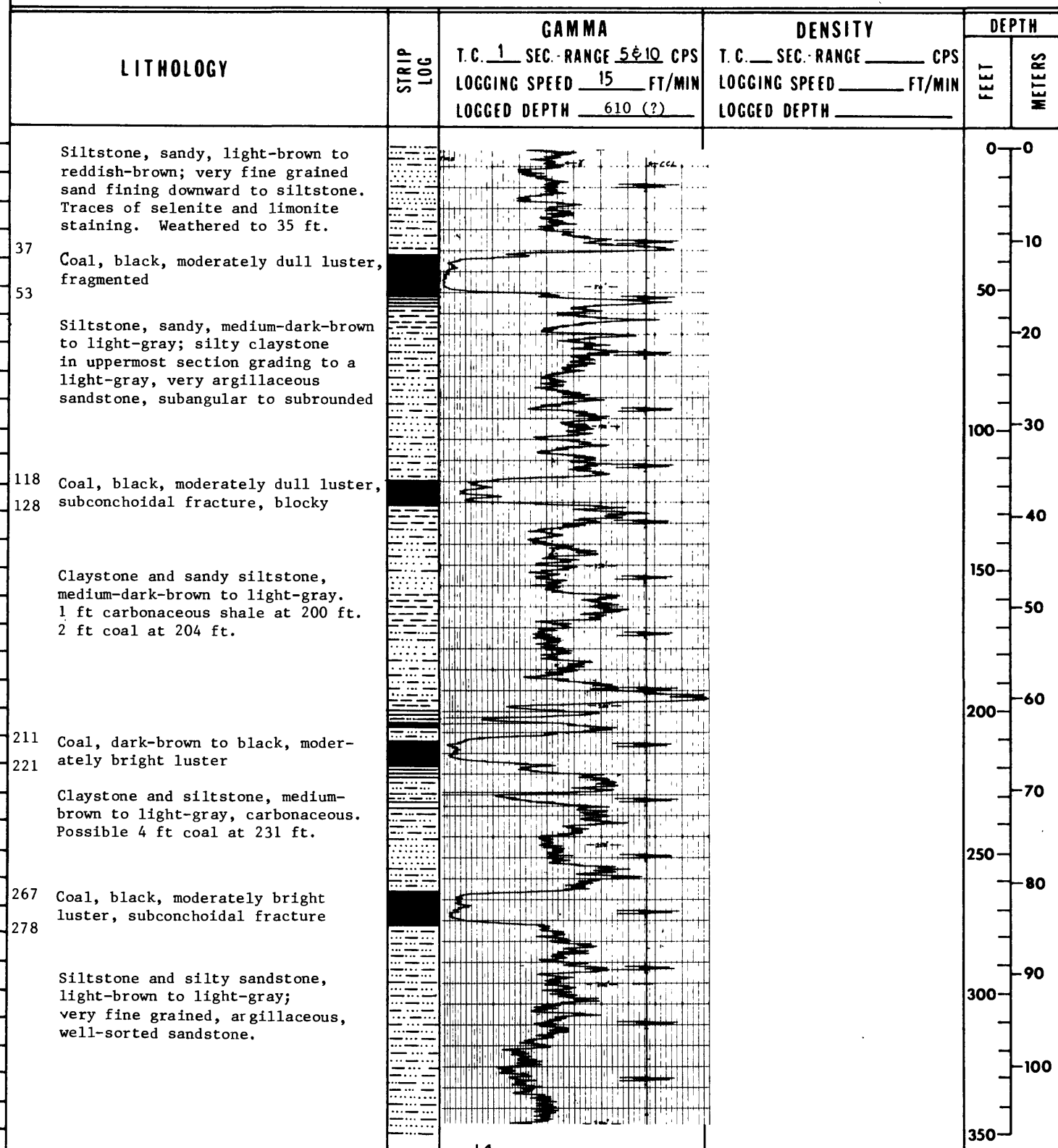




# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78002  
SHEET 1 OF 2

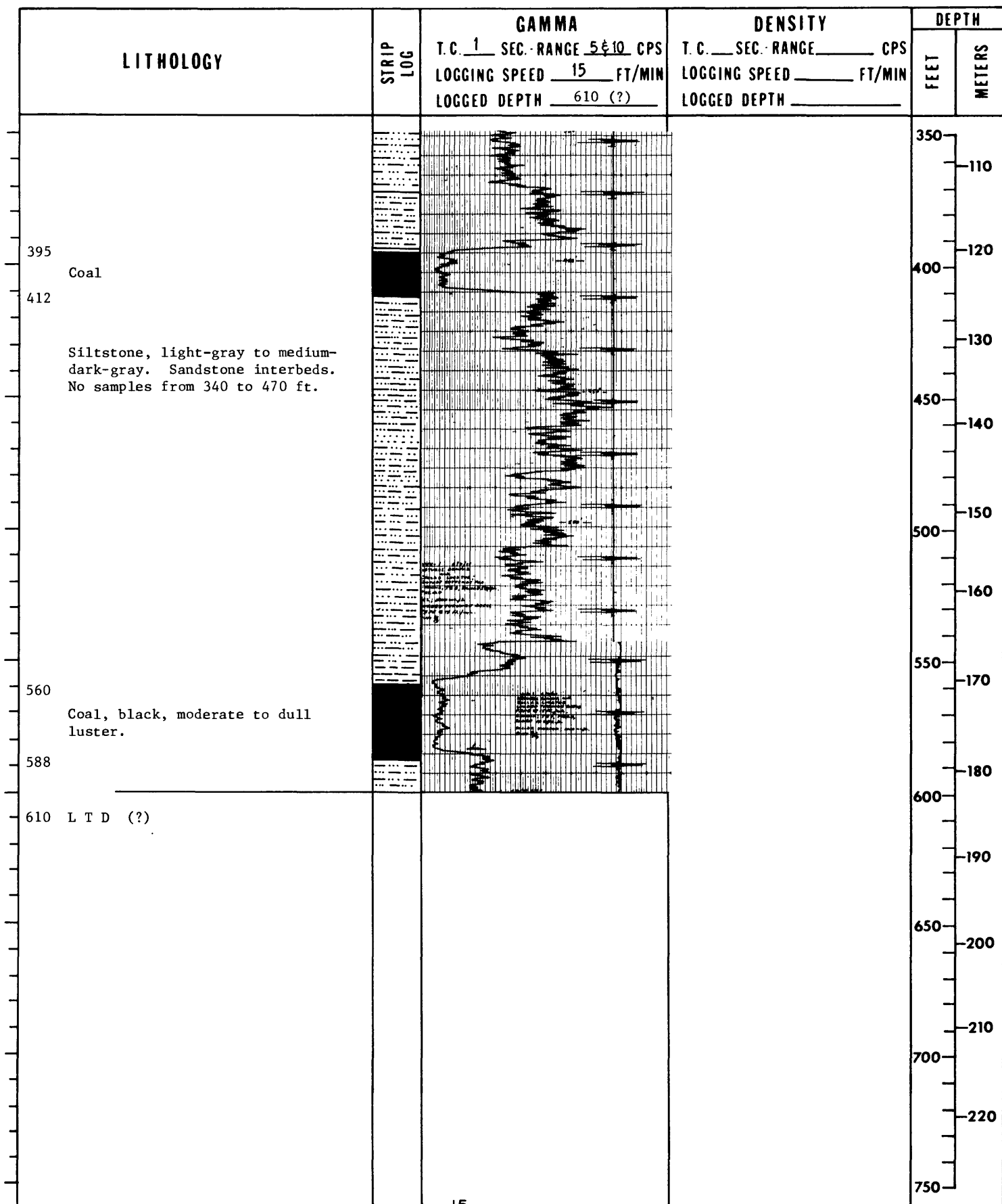
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Wildcat	
<b>DATE STARTED</b> 6-8-1978	<b>DATE COMP.</b> 6-9-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 32 <b>T.</b> 54 N., <b>R.</b> 73 W., <b>FOOTAGE LOC.</b> 700		<b>FNL</b> <del>1000</del> 1000	<b>FEL</b> <del>1000</del> 1000
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 620	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> G. Hollomon; H. Corley; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Lost circulation 340-470 ft; at 615 ft.; gamma ray logged through drill pipe; scale change to 10 cps below 560 ft.			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78002  
SHEET 2 OF 2

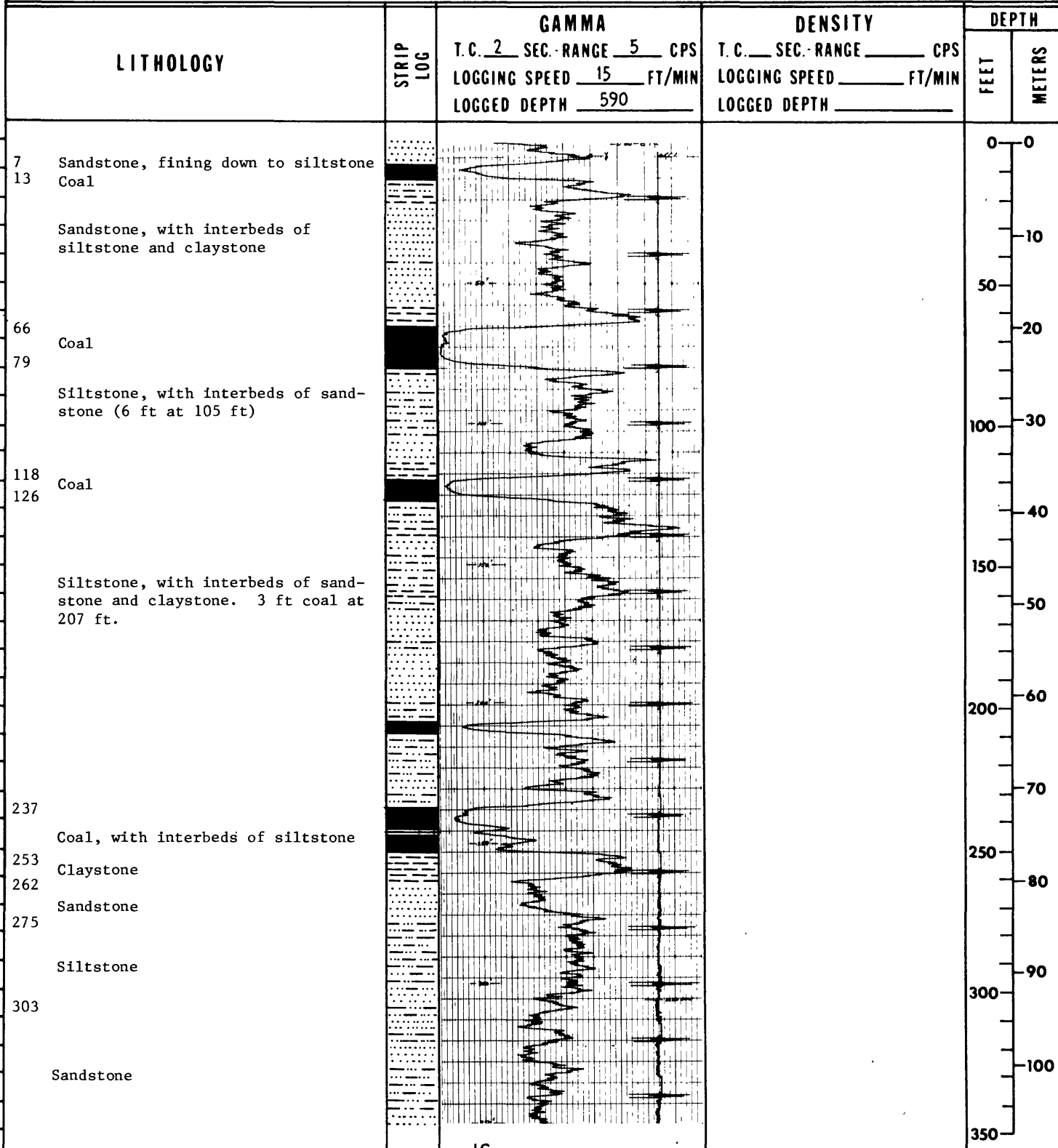
REMARKS:



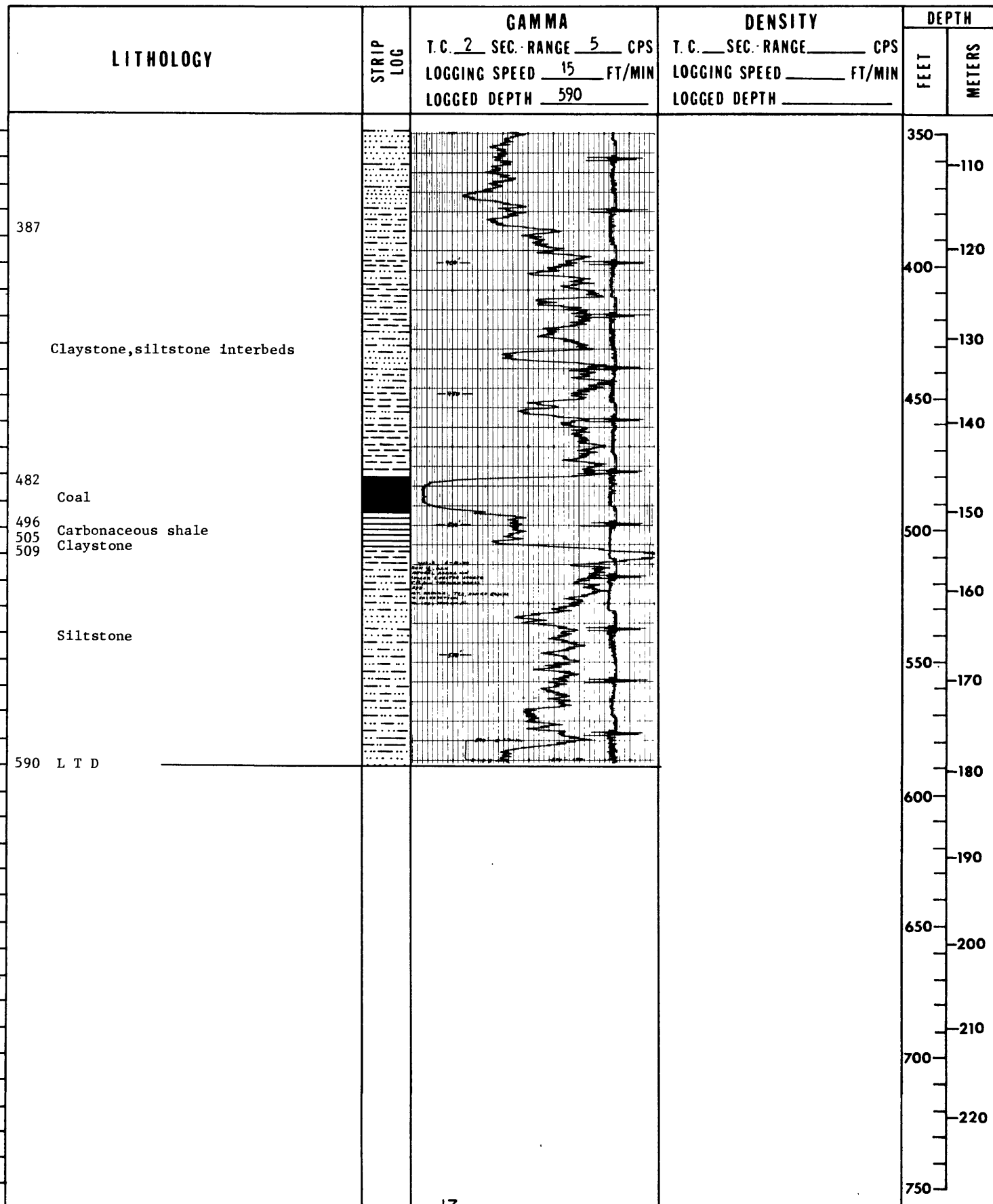
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78003  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Wildcat	
<b>DATE STARTED</b> 6-10-1978	<b>DATE COMP.</b> 6-10-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 31 <b>T.</b> 54 N. , <b>R.</b> 73 W. , <b>FOOTAGE LOC.</b> 2400		<b>INK FSL</b> 200	<b>*** FWL</b>
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b> <b>ROTARY</b> 600 <b>CORING</b> 0	<b>GROUND ELEV</b> 4205
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Lost circulation at 8 ft. Lithology interpreted from geophysical logs. Gamma ray logged through drill pipe			



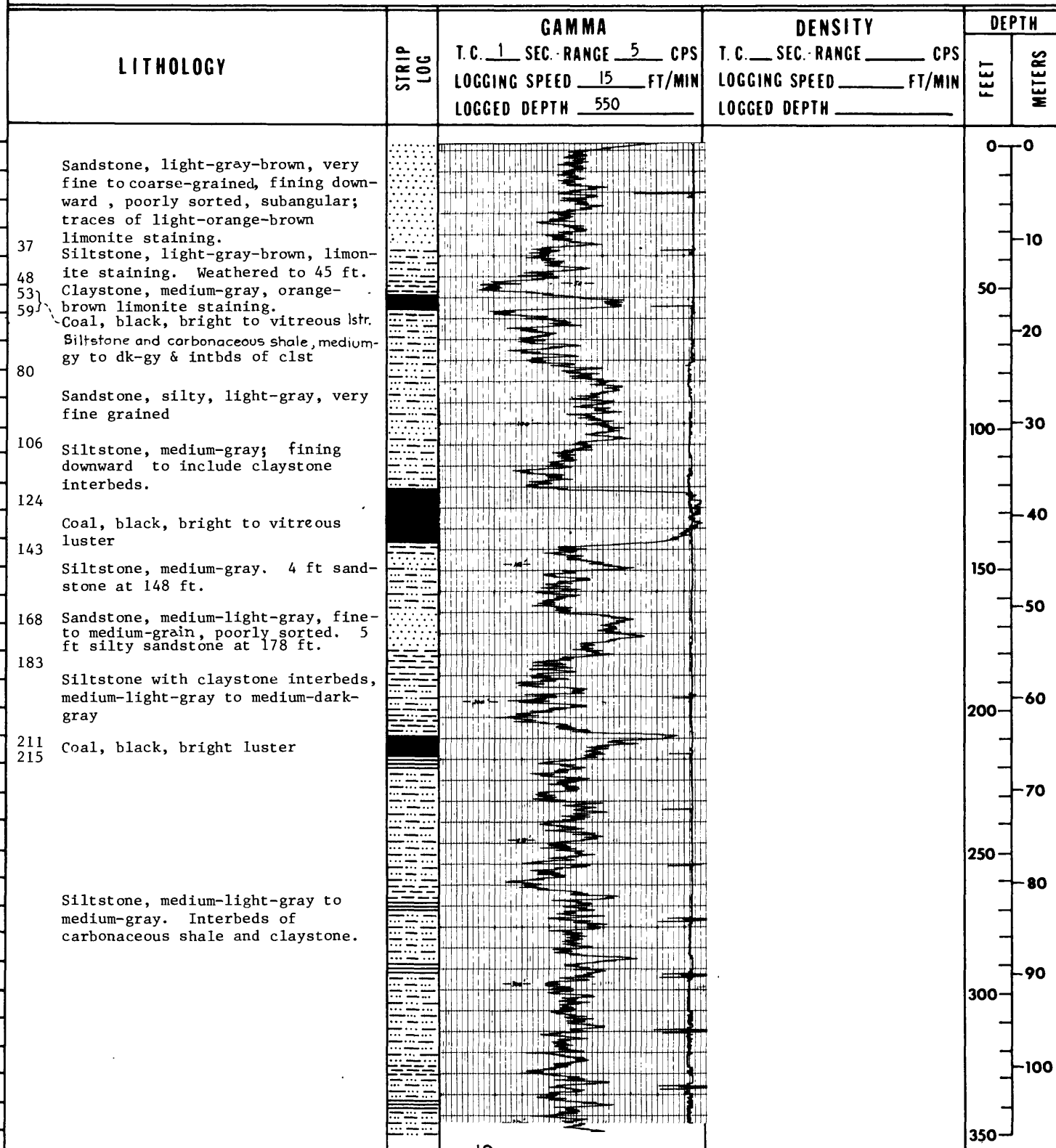
REMARKS:



## UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78004  
SHEET 1 OF 3

AREA Powder River Basin		QUAD NAME Betty Reservoir (NW¼)	
DATE STARTED 6-13-1978	DATE COMP. 6-13-1978	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 25 T. 40 N., R. 72 W., FOOTAGE LOC. 2200		FNL <del>1250</del> 1250	GROUND ELEV 4750
SIZE AND BIT TYPE: 5-in drag		FOOTAGE ROTARY 560 CORING 0	TOTAL DEPTH 560
DRILLING AGENCY: USGS/CD/NRMA		DRILL TYPE: Portadrill 524	DEPTH TO WATER NR
LITHOLOGY RECORDED BY A. Donatich; H. Corley;		GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon	
REMARKS: E. Fivas Gamma ray logged through drill pipe Gamma ray reversed			



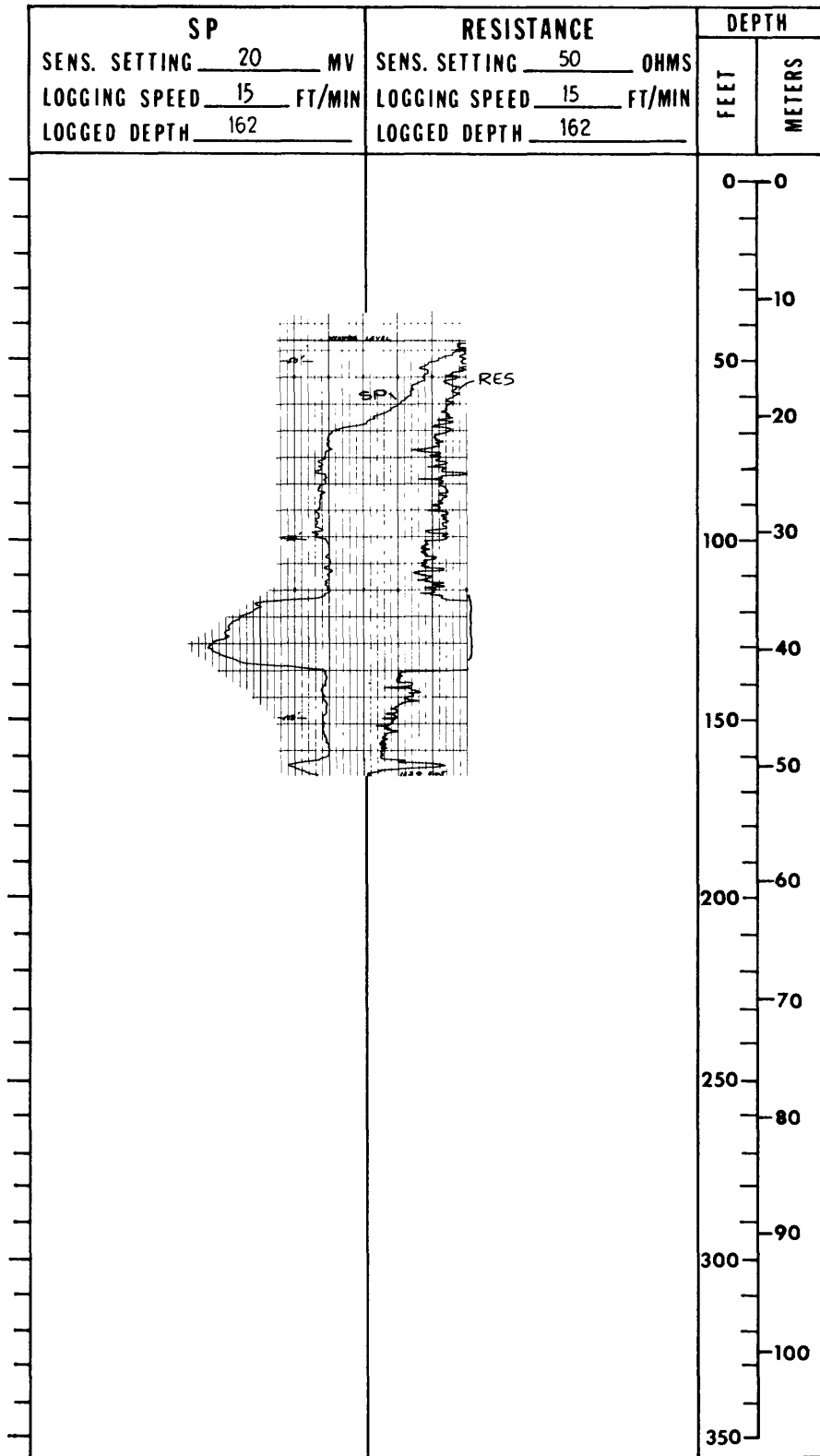
## REMARKS:

LITHOLOGY	STRIP LOG	GAMMA		DENSITY		DEPTH	
		T.C. 1	SEC. RANGE 5 CPS	T.C. SEC. RANGE	CPS	FEET	METERS
		LOGGING SPEED 15	FT/MIN	LOGGING SPEED	FT/MIN		
		LOGGED DEPTH 550		LOGGED DEPTH			
367 Siltstone, medium-light-gray. Interbeds of sandy siltstone and medium-gray claystone and carbonaceous shale.						350	
							110
							120
411 Coal, black, bright luster						400	
416 Siltstone, medium-light-gray. Interbeds of very fine grained sandstone and sandy siltstone. 2 ft claystone at 426 ft.							130
							140
471 Sandstone, medium-light-gray, fine-to medium-grained, well- sorted, subangular.						450	
							150
522 Siltstone and claystone, medium- light-gray.						500	
537 Siltstone, sandy, medium-light-gray.							160
550 L T D						550	
							170
							180
						600	
							190
						650	
							200
							210
						700	
							220
						750	

# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78004  
SHEET 3 OF 3

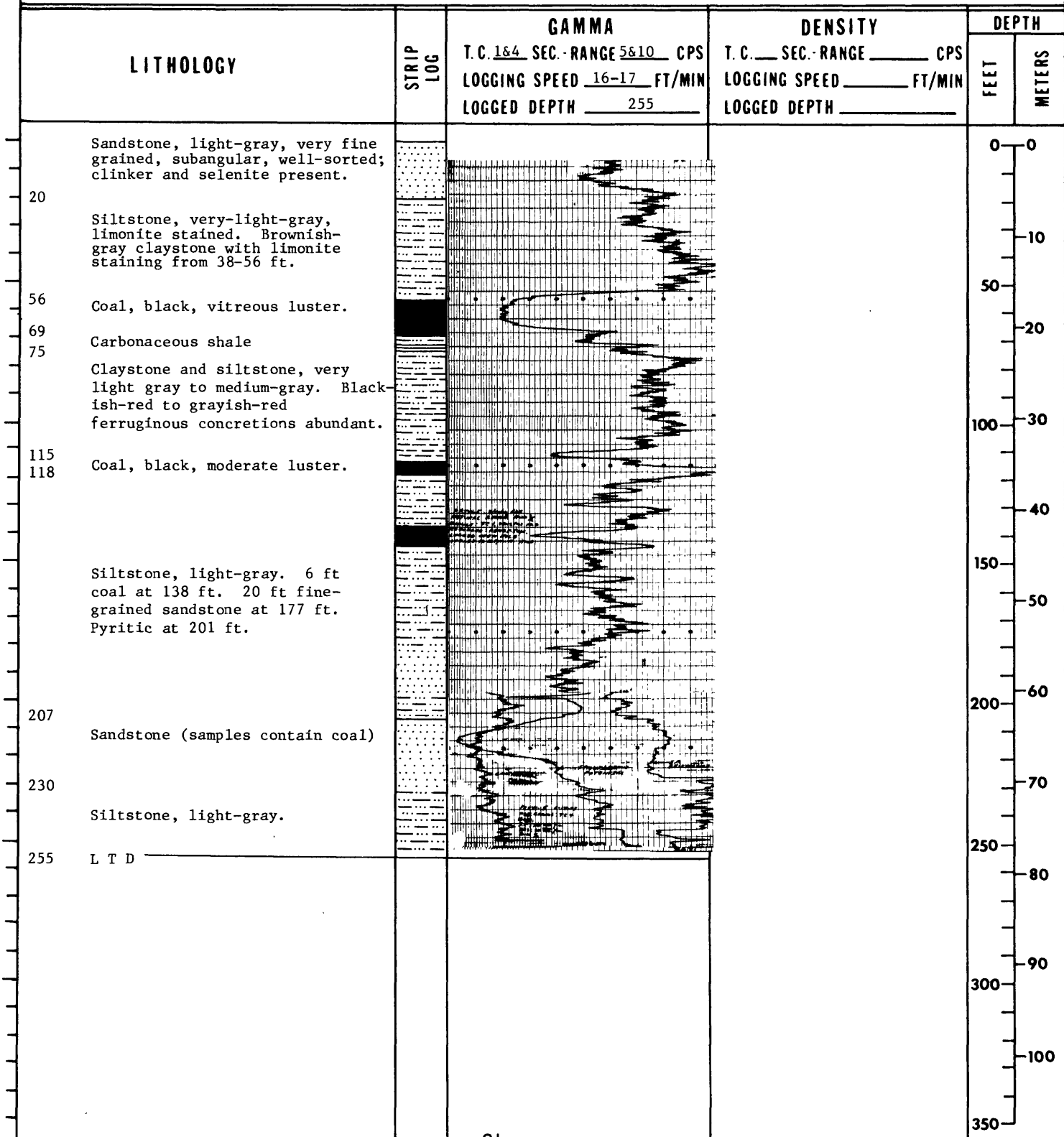
REMARKS:



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-7800  
SHEET 1 OF 1

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Piney Canyon SW	
<b>DATE STARTED</b> 6-14-1978	<b>DATE COMP.</b> 6-14-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 24 <b>T.</b> 41 N. <b>R.</b> 70 W. <b>FOOTAGE LOC.</b> 1450		<b>FNL</b> 2450 <b>FEL</b> 2450	<b>GROUND ELEV</b> 4835
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 260	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Lost circulation at 240 ft. Gamma ray scale changes (TC 4 sec; Range 10 cps) below 200 ft/splice Erratic electric log due to foam in hole			

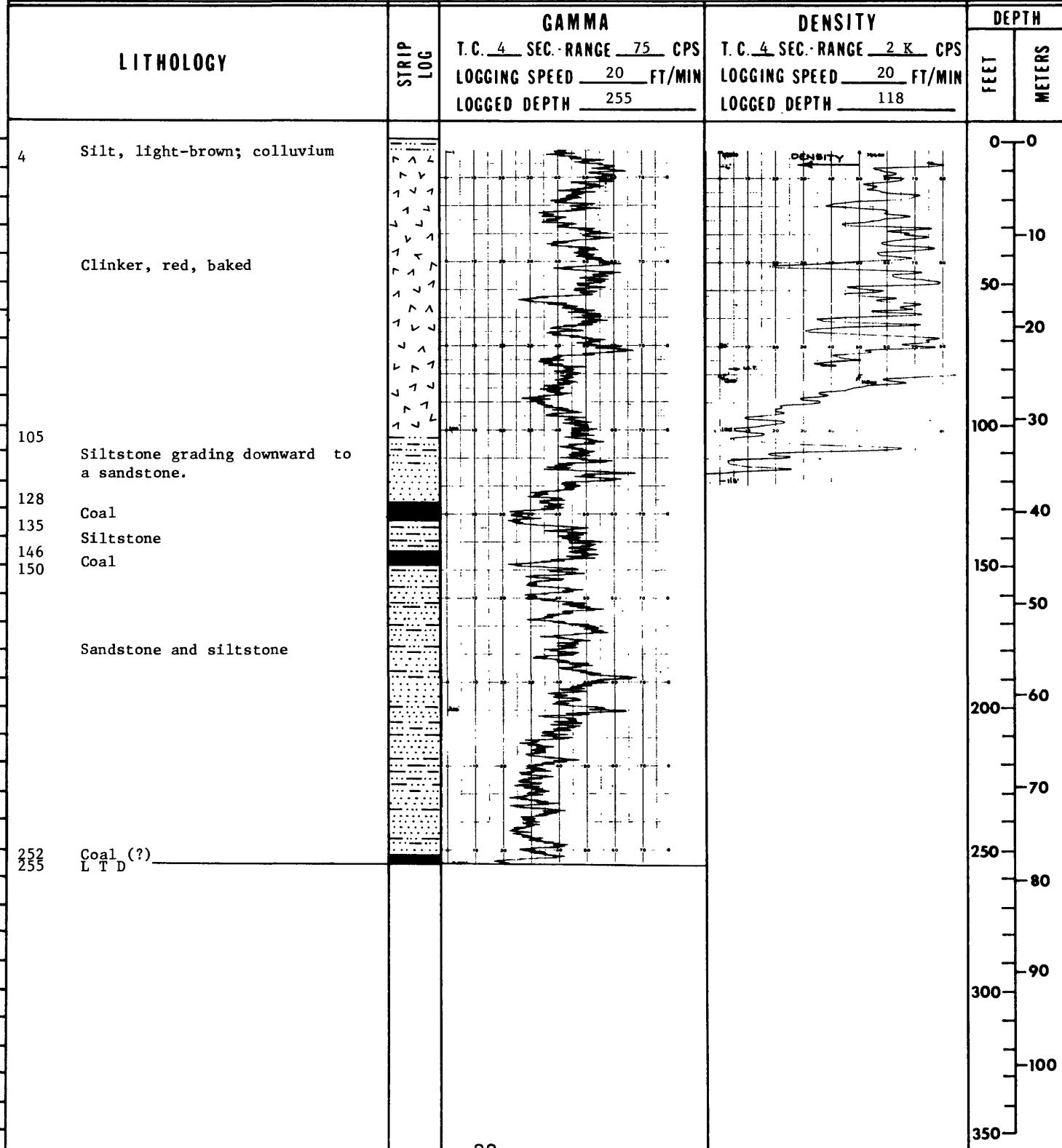




# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78006  
SHEET 1 OF 1

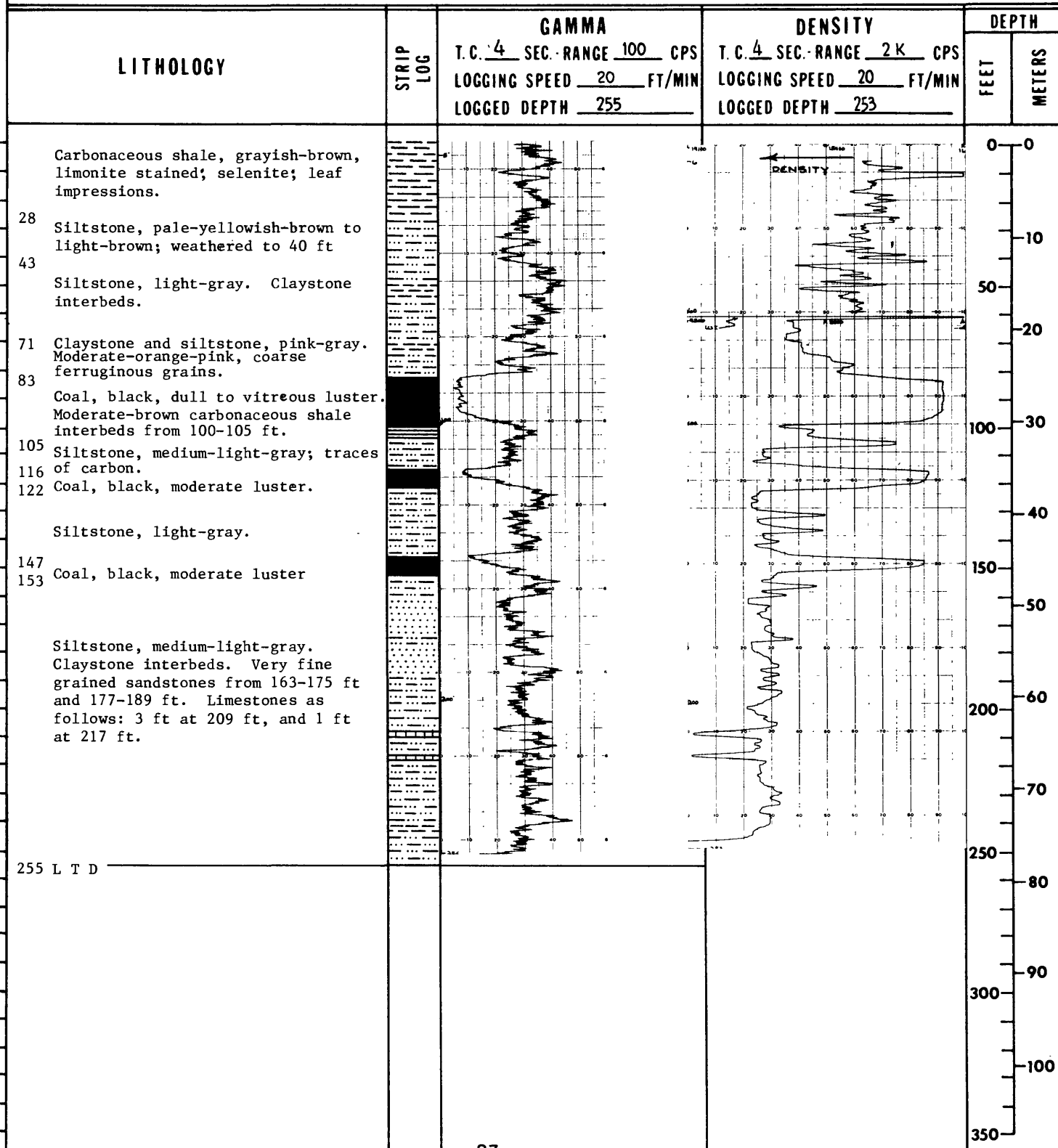
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Piney Canyon SW	
<b>DATE STARTED</b> 6-15-1978	<b>DATE COMP.</b> 6-20-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 24 <b>T.</b> 41 N., <b>R.</b> 70 W., <b>FOOTAGE LOC.</b> 2400		<b>FNL</b> 1300	<b>FEL</b> 4855
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 260	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> J. Jones USGS/WRD	
<b>REMARKS:</b> Lost circulation at 35 ft. Gamma ray logged through drill pipe.			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78007  
SHEET 1 OF 2

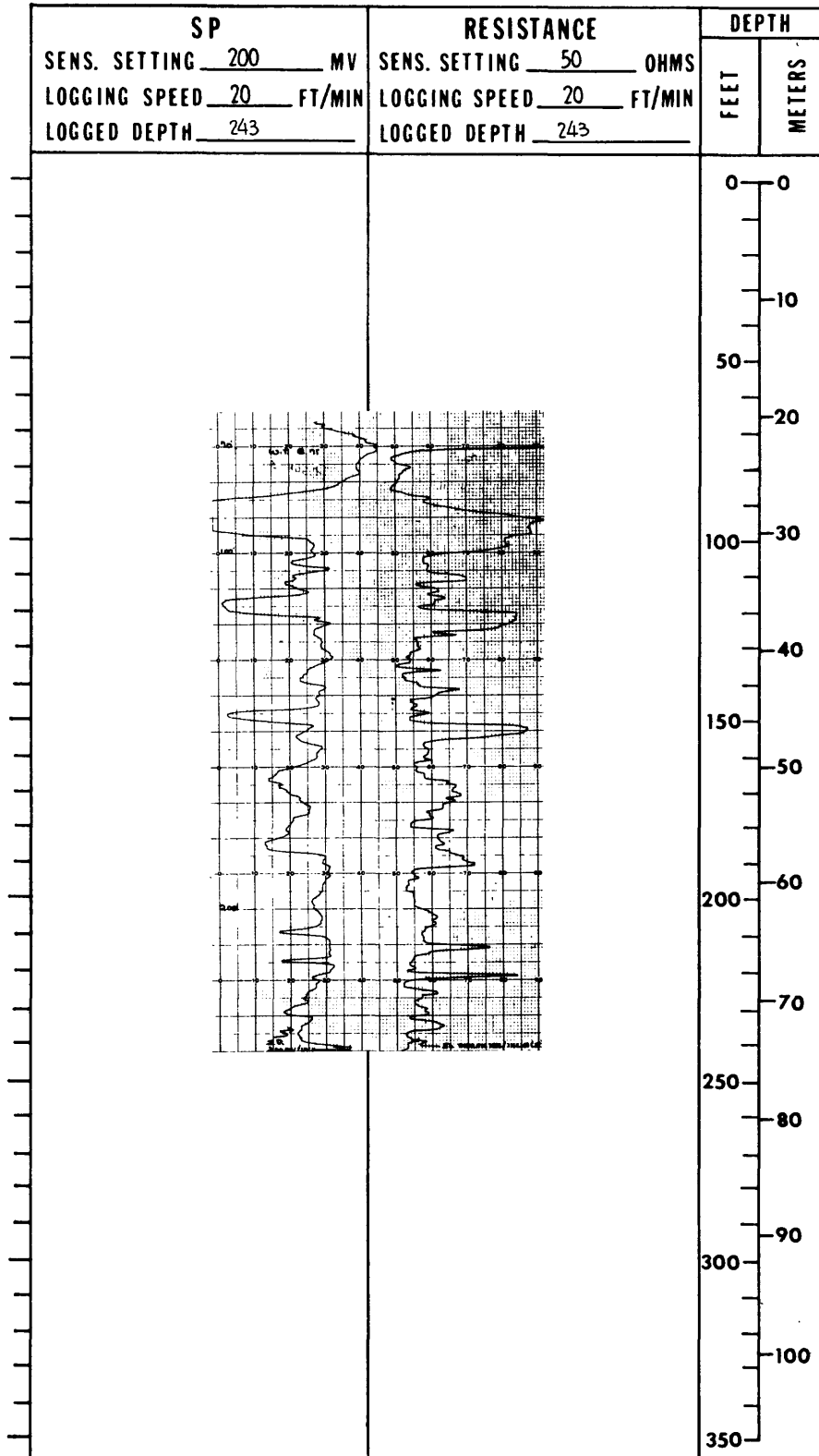
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Piney Canyon SW	
<b>DATE STARTED</b> 6-21-1978	<b>DATE COMP.</b> 6-21-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 18 <b>T.</b> 41 N., <b>R.</b> 69 W., <b>FOOTAGE LOC.</b> 2500		<b>FNL</b> <del>###</del> 1500	<b>FEL</b> <del>###</del> 4870
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b> ROTARY 260 CORING 0	
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> J. Jones USGS/WRD	
<b>REMARKS:</b> Gamma ray logged through drill pipe			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78007  
SHEET 2 OF 2

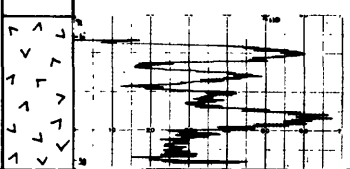
REMARKS:



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78008  
SHEET 1 OF 1

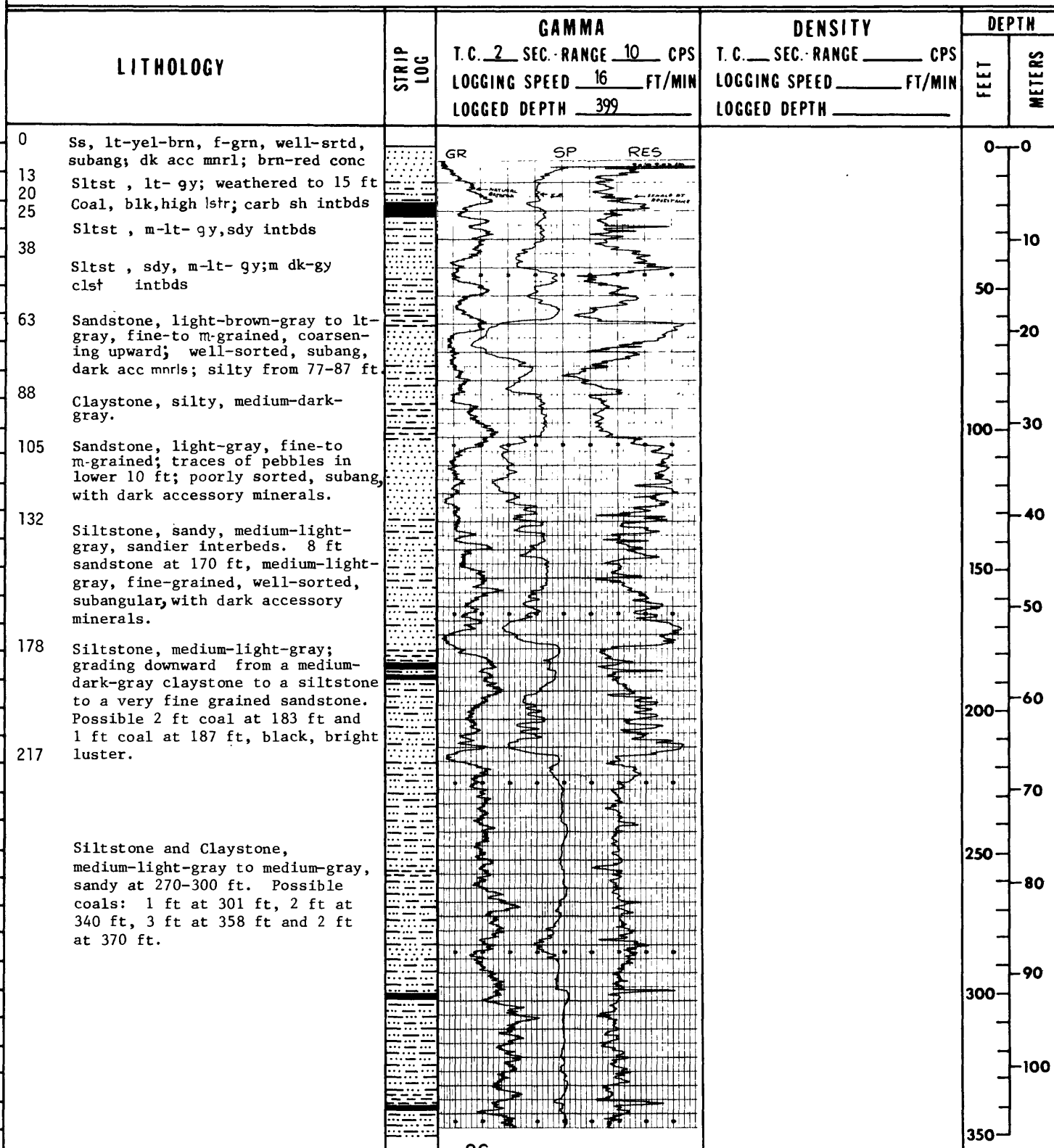
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Piney Canyon SW	
<b>DATE STARTED</b> 6-21-1978	<b>DATE COMP.</b> 6-21-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 32 <b>T.</b> 42 N. , <b>R.</b> 69 W. , <b>FOOTAGE LOC.</b> 1800		<b>FNL</b> 2250 <del>XXX</del>	<b>XXX</b> <del>FWL</del>
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b> <b>ROTARY</b> 60 <b>CORING</b> 0	<b>GROUND ELEV</b> 4910
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>TOTAL DEPTH</b> 60
<b>LITHOLOGY RECORDED BY</b> E. L. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> J. Jones USGS/WRD	
<b>REMARKS:</b> Lost circulation at 8 ft. Abandoned hole due to severe caving conditions.			

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH	
		T.C. 4 SEC. RANGE 75 CPS LOGGING SPEED 20 FT/MIN LOGGED DEPTH 38 ft	T.C. SEC. RANGE CPS LOGGING SPEED FT/MIN LOGGED DEPTH	FEET	METERS
<div style="display: flex; justify-content: space-between;"> <span>Clinker</span> <span>38 L T D</span> </div>				0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350	

# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78009  
SHEET 1 OF 2

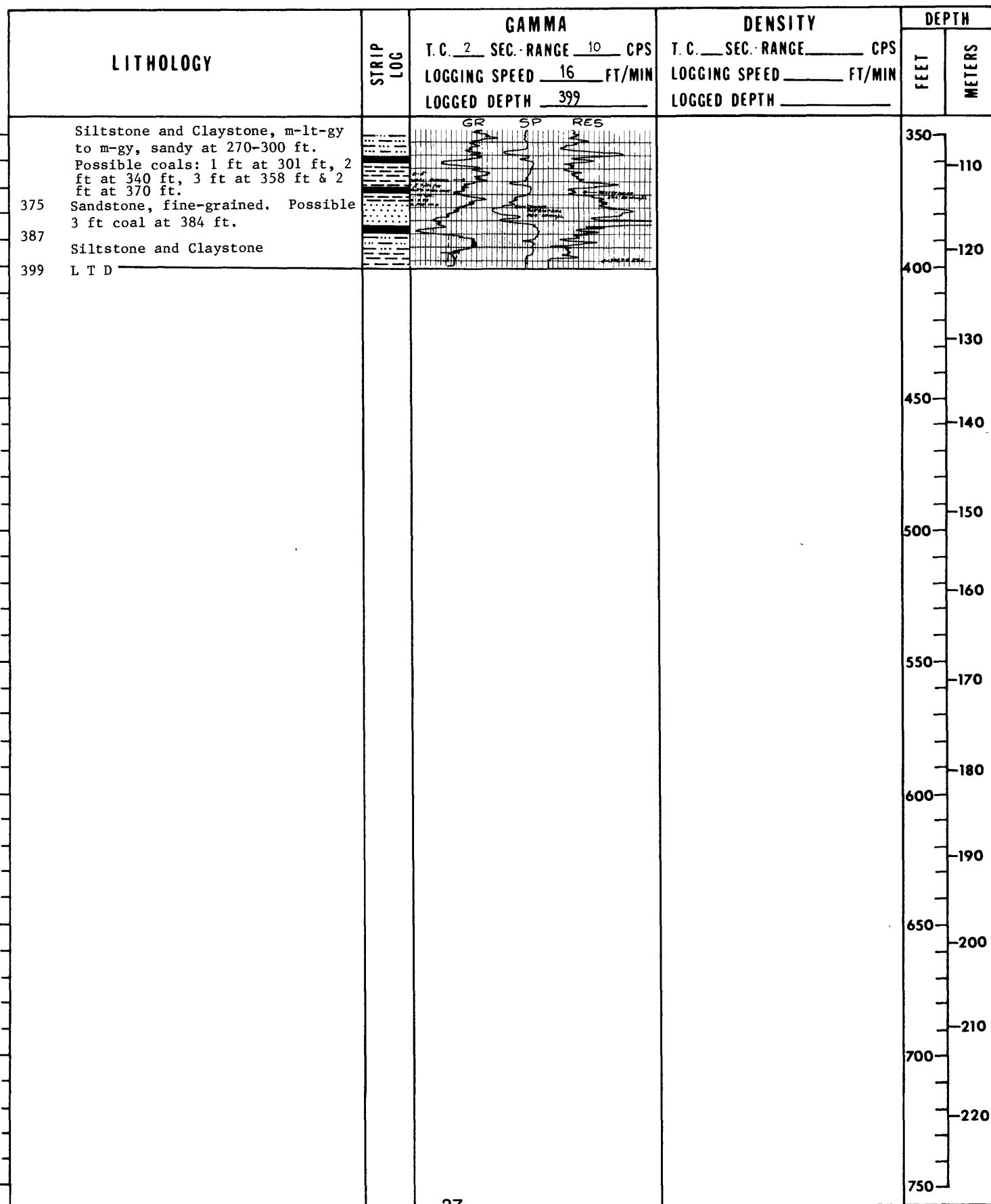
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Coal Bank Draw	
<b>DATE STARTED</b> 6-22-1978	<b>DATE COMP.</b> 6-22-1978	<b>COUNTY</b> Converse	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 30 <b>T.</b> 41 N., <b>R.</b> 69 W., <b>FOOTAGE LOC.</b>		1400 <del>###</del> FSL	700 <del>###</del> FEL
<b>SIZE AND BIT TYPE:</b> 5 in. drag		<b>FOOTAGE</b>	
		ROTARY 400	CORING 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b> SP=20 MV RES=20 OHMS			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78009  
SHEET 2 OF 2

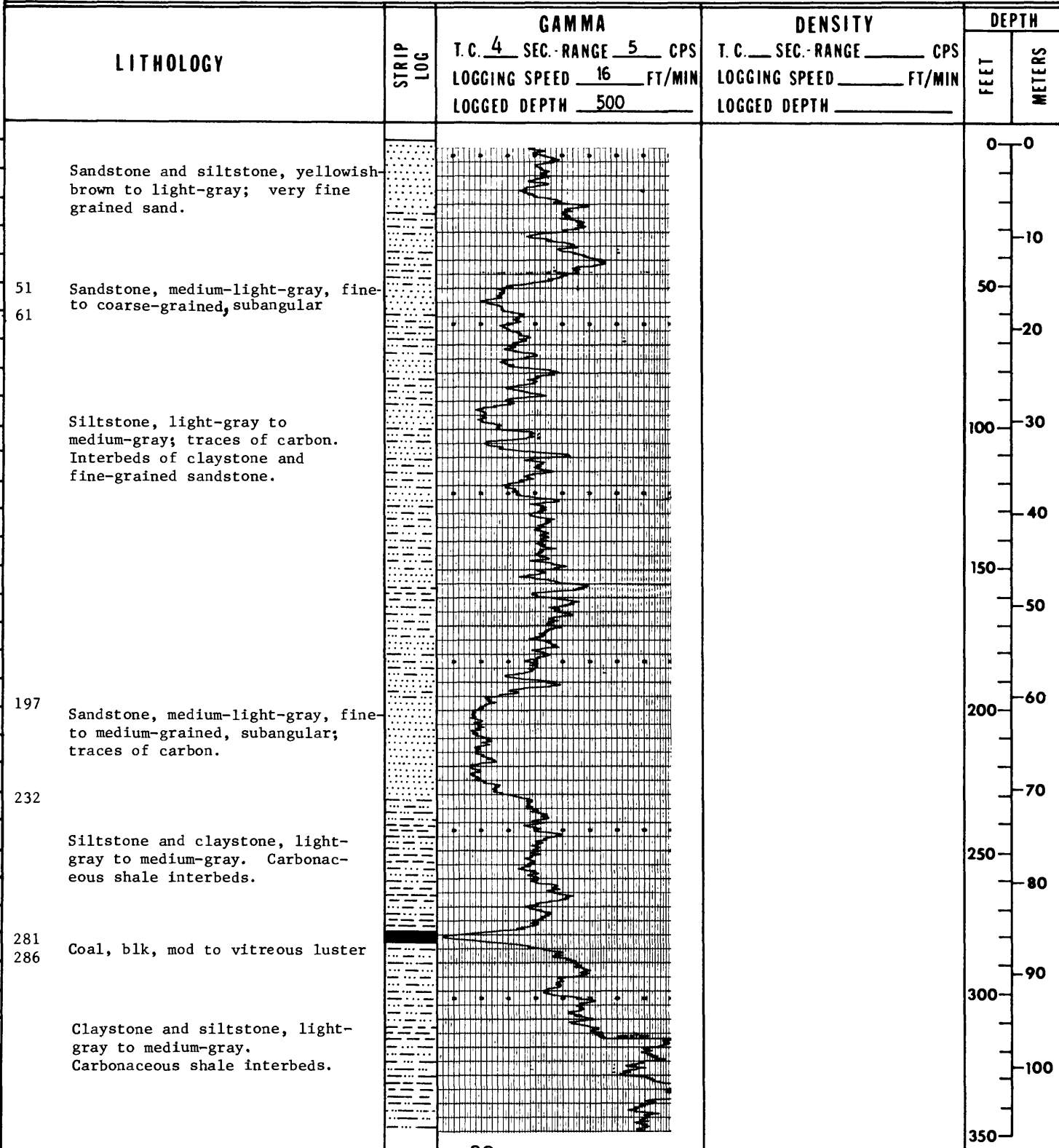
REMARKS: SP = 20 MV  
RES = 20 OHMS



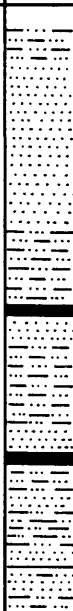
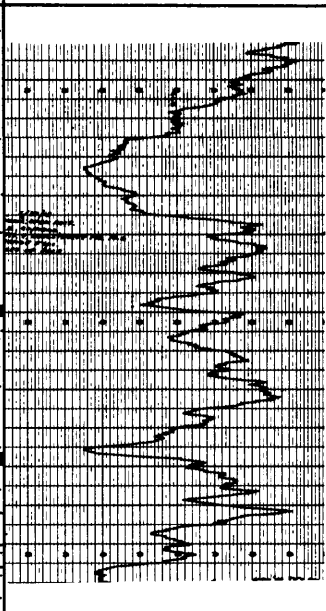
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78010  
SHEET 1 OF 4

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Piney Canyon SW	
<b>DATE STARTED</b> 6-24-1978	<b>DATE COMP.</b> 6-24-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 22 <b>T.</b> 41 N., <b>R.</b> 70 W., <b>FOOTAGE LOC.</b> 2000		<b>FNL</b> <del>1700</del> 1700	<b>FEL</b> <del>1700</del> 1700
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b>	<b>GROUND ELEV</b> 4590
		<b>ROTARY</b> 500 <b>CORING</b> 0	<b>TOTAL DEPTH</b> 500
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b>			



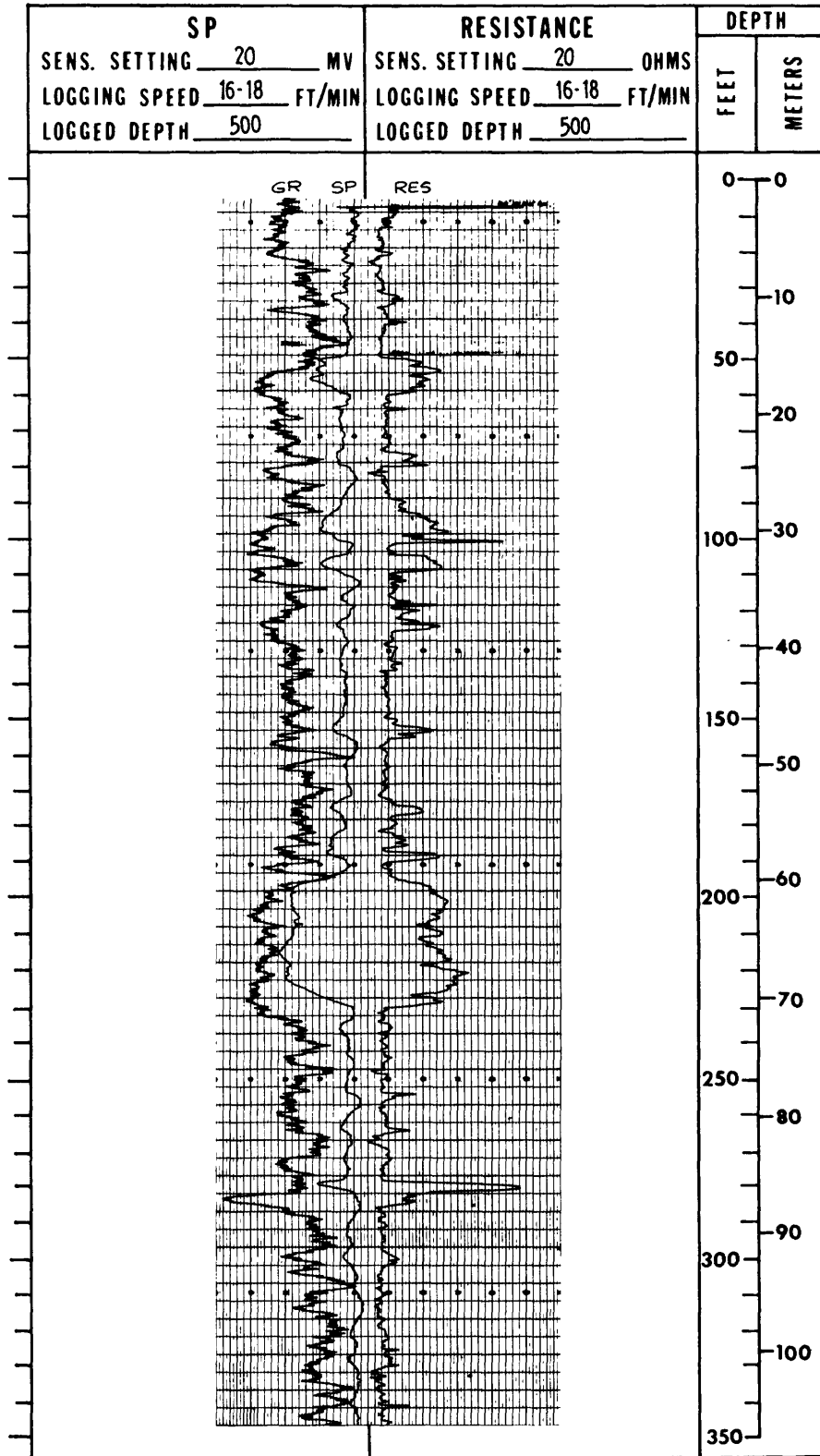
## REMARKS:

LITHOLOGY	STRIP LOG	GAMMA T.C. <u>4</u> SEC. RANGE <u>5</u> CPS LOGGING SPEED <u>16</u> FT/MIN LOGGED DEPTH <u>500</u>	DENSITY T.C. ____ SEC. RANGE ____ CPS LOGGING SPEED ____ FT/MIN LOGGED DEPTH ____	DEPTH	
				FEET	METERS
358  Sandstone, medium-light-gray, fine-to medium-grained (fining upward).				350	110
399  Siltstone and sandstone, medium-light-gray to medium-gray; fine-grained sand. Interbeds of dark-gray claystone. Possible 3 ft coal at 419 ft. 4 ft coal at 456 ft.				400	120
				450	130
				500	140
500 L T D				550	150
				600	160
				650	170
				700	180
				750	190
					200
					210
					220



REMARKS:

TC 1 Sec. Range 10 CPS

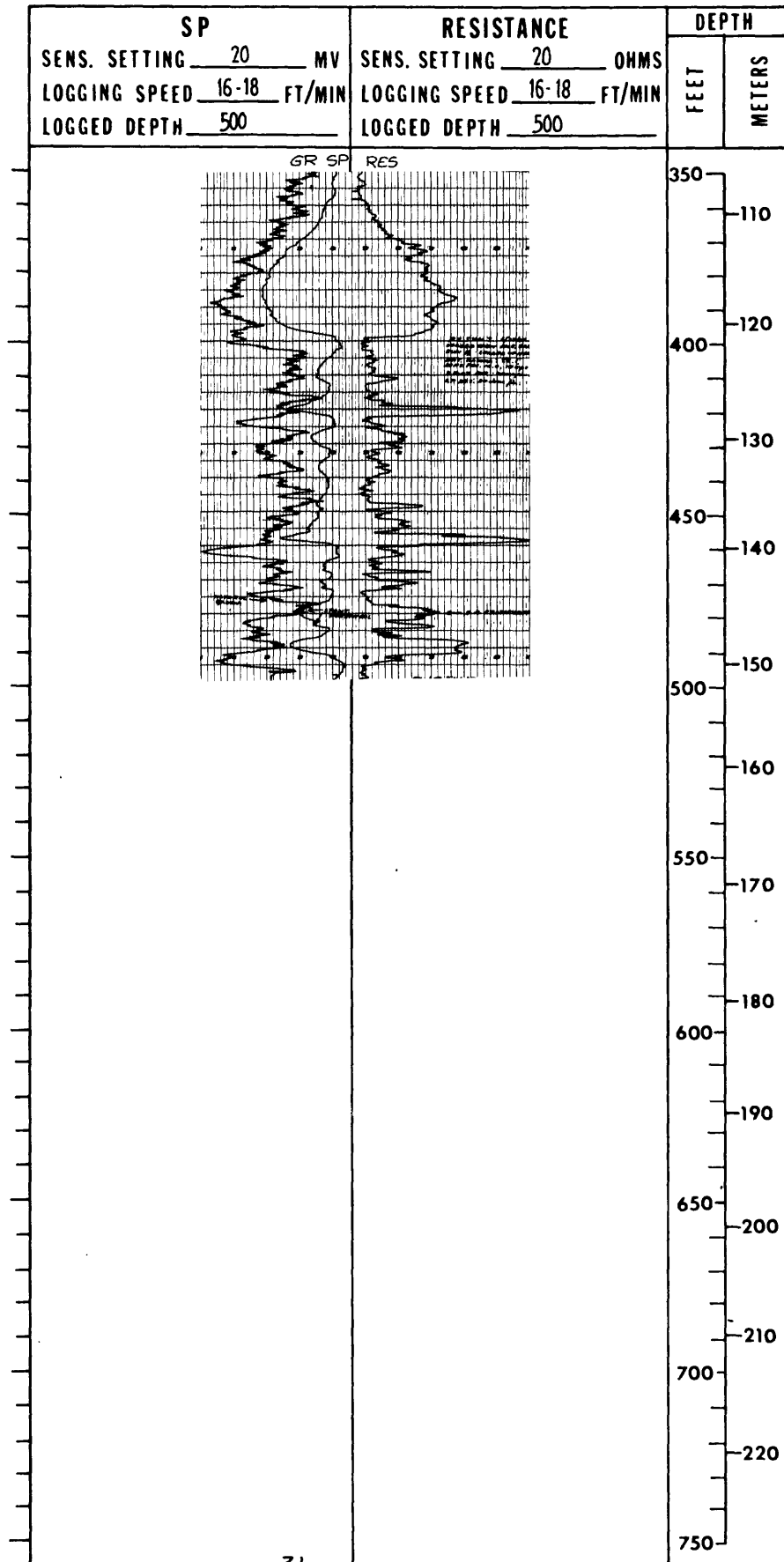


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78010  
SHEET 4 OF 4

## REMARKS:

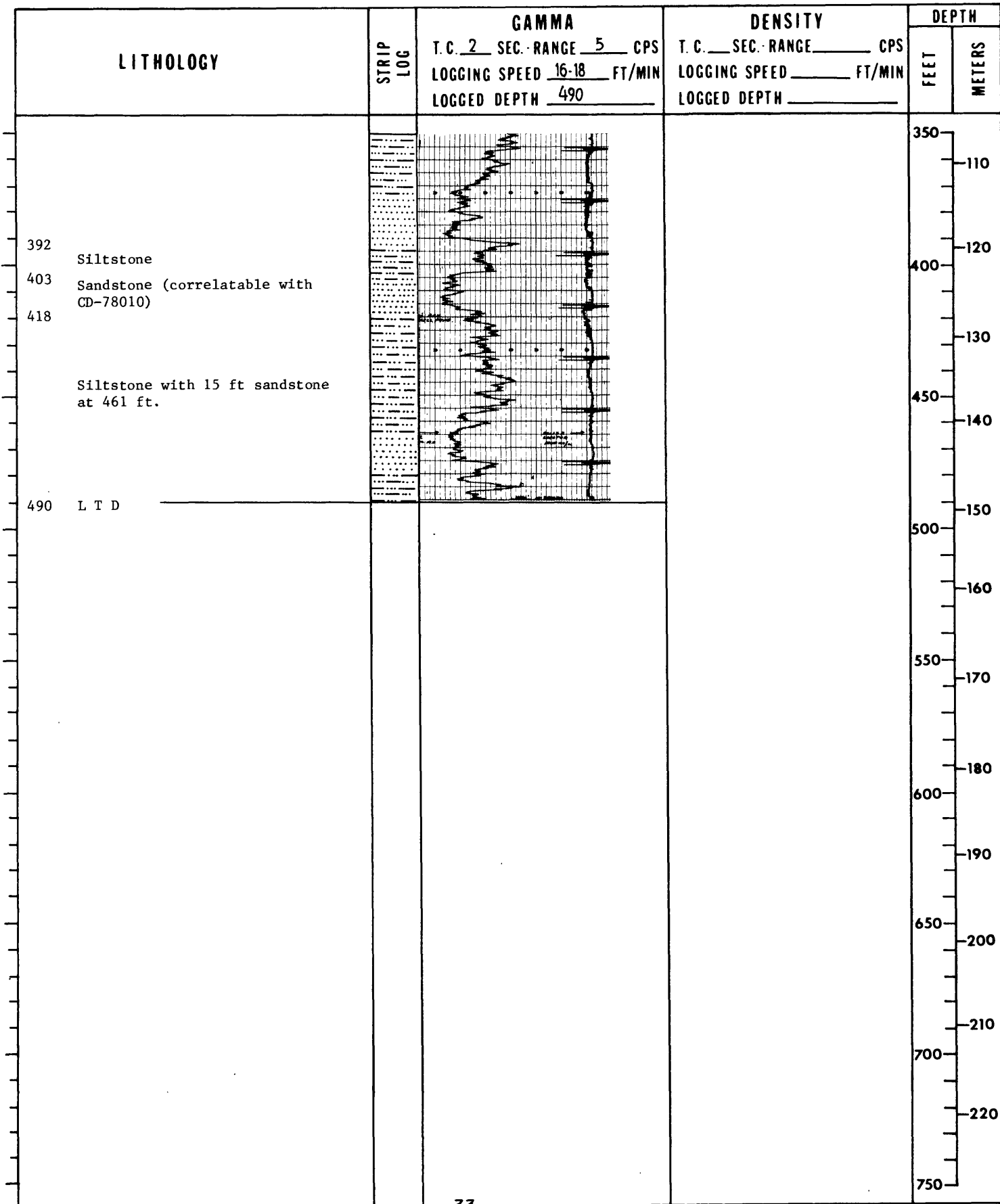
TC 1 Sec. Range 10 CPS



HOLE NO. CD-78011  
SHEET 1 OF 2

LITHOLOGY	STRIP LOG	GAMMA		DENSITY		DEPTH	
		T.C. <u>2</u> SEC. RANGE <u>5</u> CPS	LOGGING SPEED <u>16-18</u> FT/MIN	T.C. <u>    </u> SEC. RANGE <u>    </u> CPS	LOGGING SPEED <u>    </u> FT/MIN	FEET	METERS
			LOGGED DEPTH <u>490</u>				
						0	0
						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	
						330	
						340	
						350	

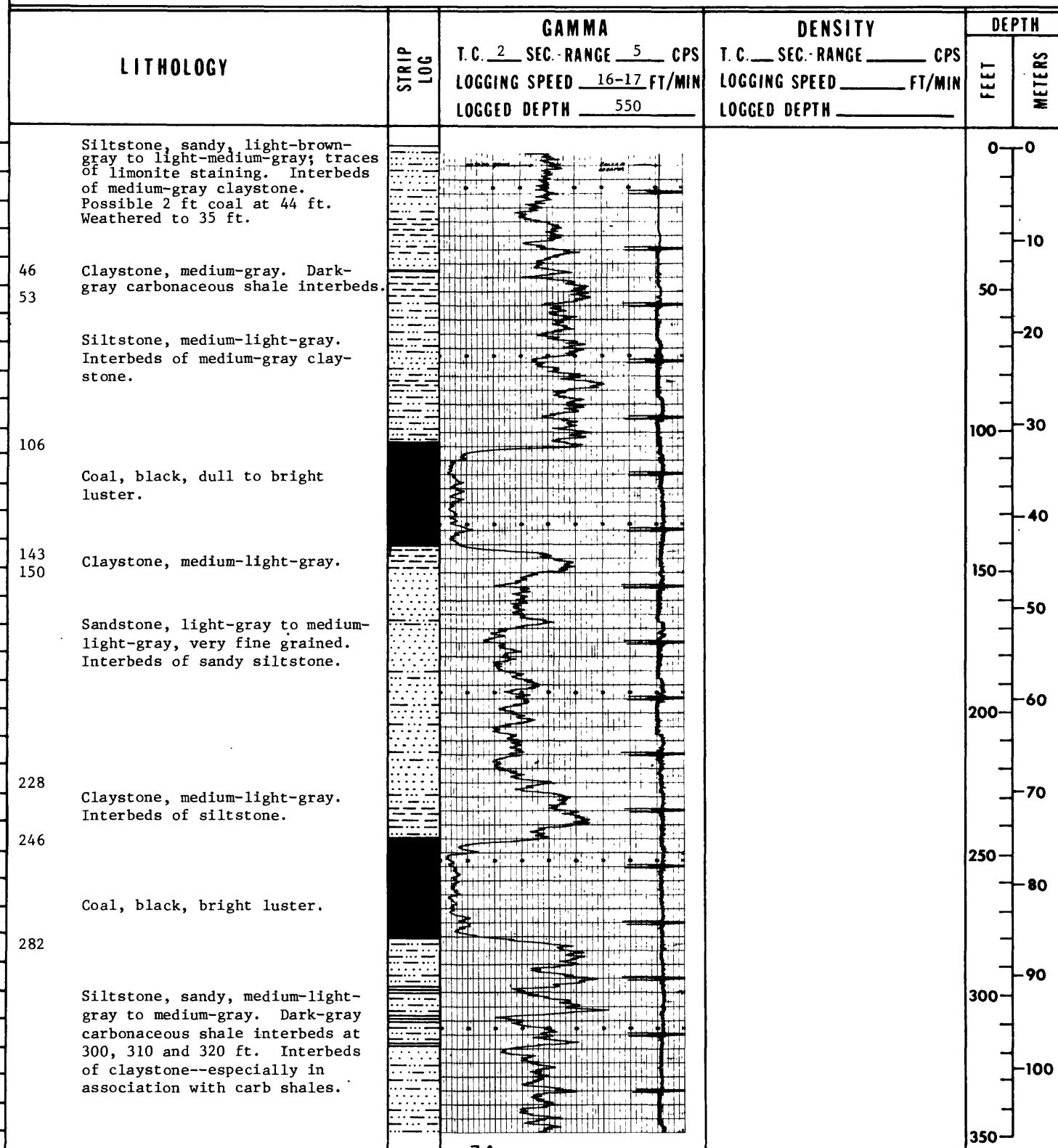
REMARKS:



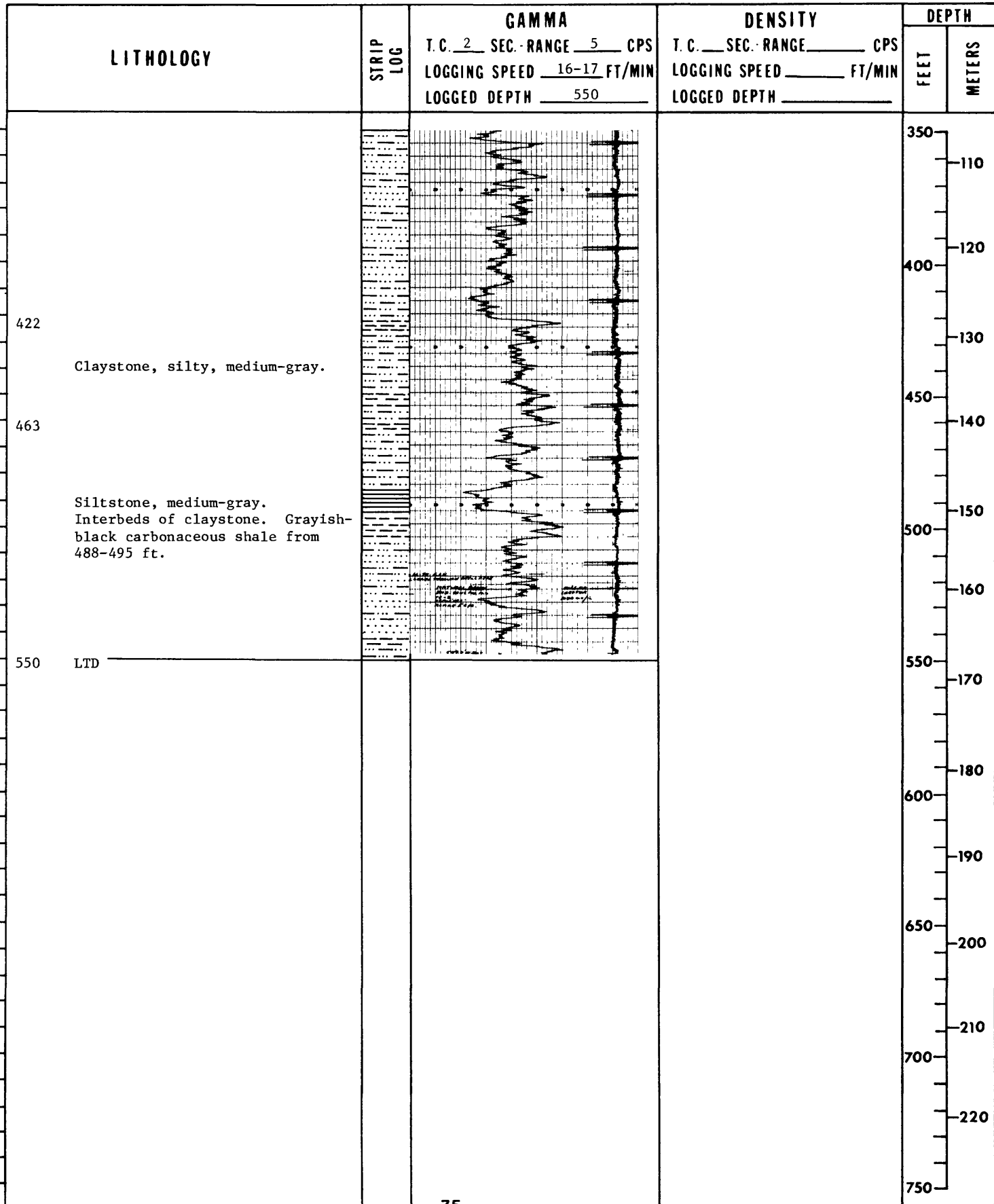
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78012  
SHEET 1 OF 3

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Teckla	
<b>DATE STARTED</b> 6-26-1978	<b>DATE COMP.</b> 6-26-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 20 <b>T.</b> 41 N. <b>R.</b> 70 W. <b>FOOTAGE LOC.</b> 700		<b>XMK FSL</b> 650	<b>FEL XMK</b> 650
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b>	<b>GROUND ELEV</b> 4780
		<b>ROTARY</b> 560	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>TOTAL DEPTH</b> 560
<b>LITHOLOGY RECORDED BY</b> A. Donatich; H. Corley;		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> E. Fivas Gamma ray logged through drill pipe Resistance scale changes to 20 ohms/in below 160			

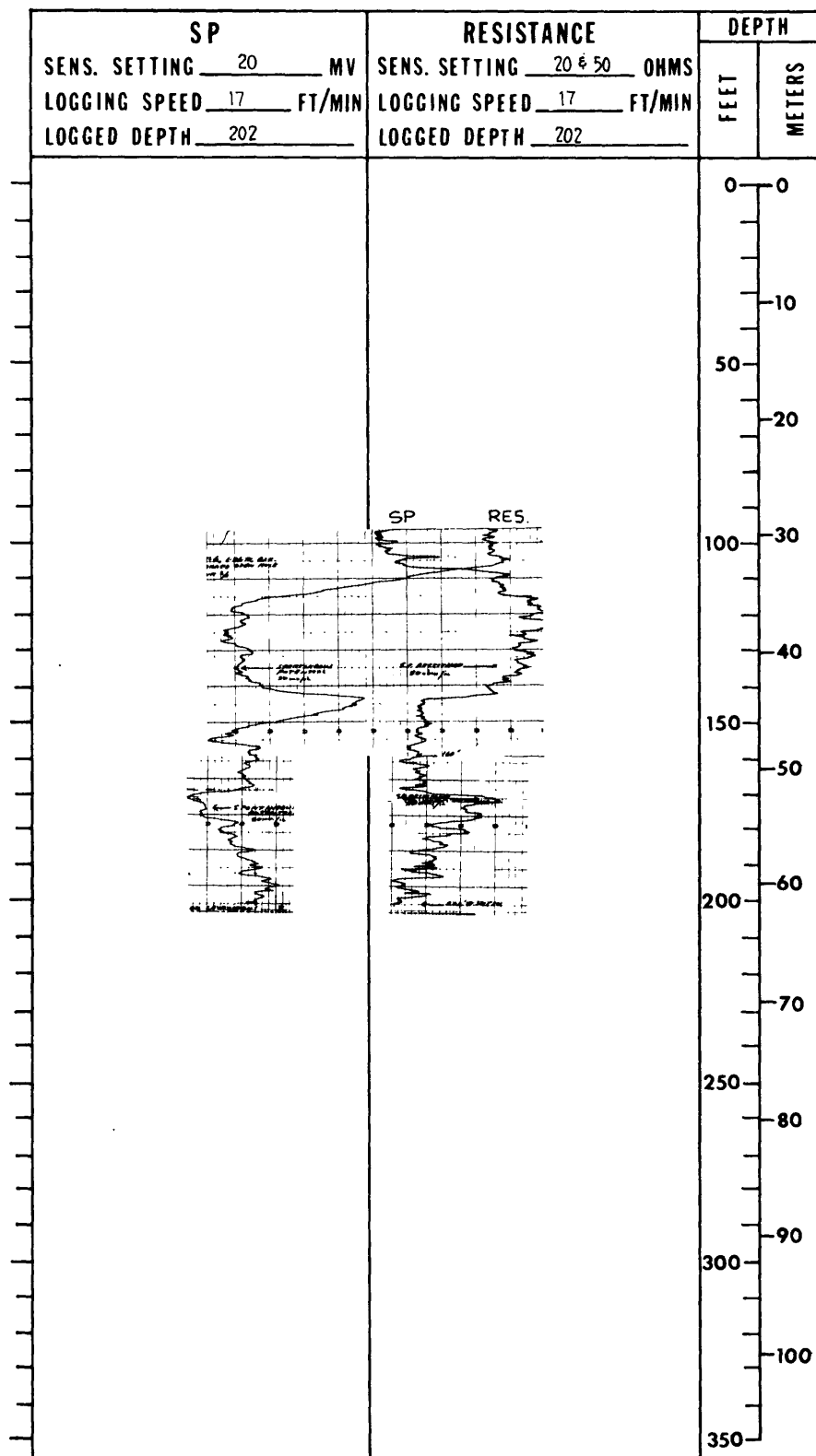


## REMARKS:



## REMARKS:

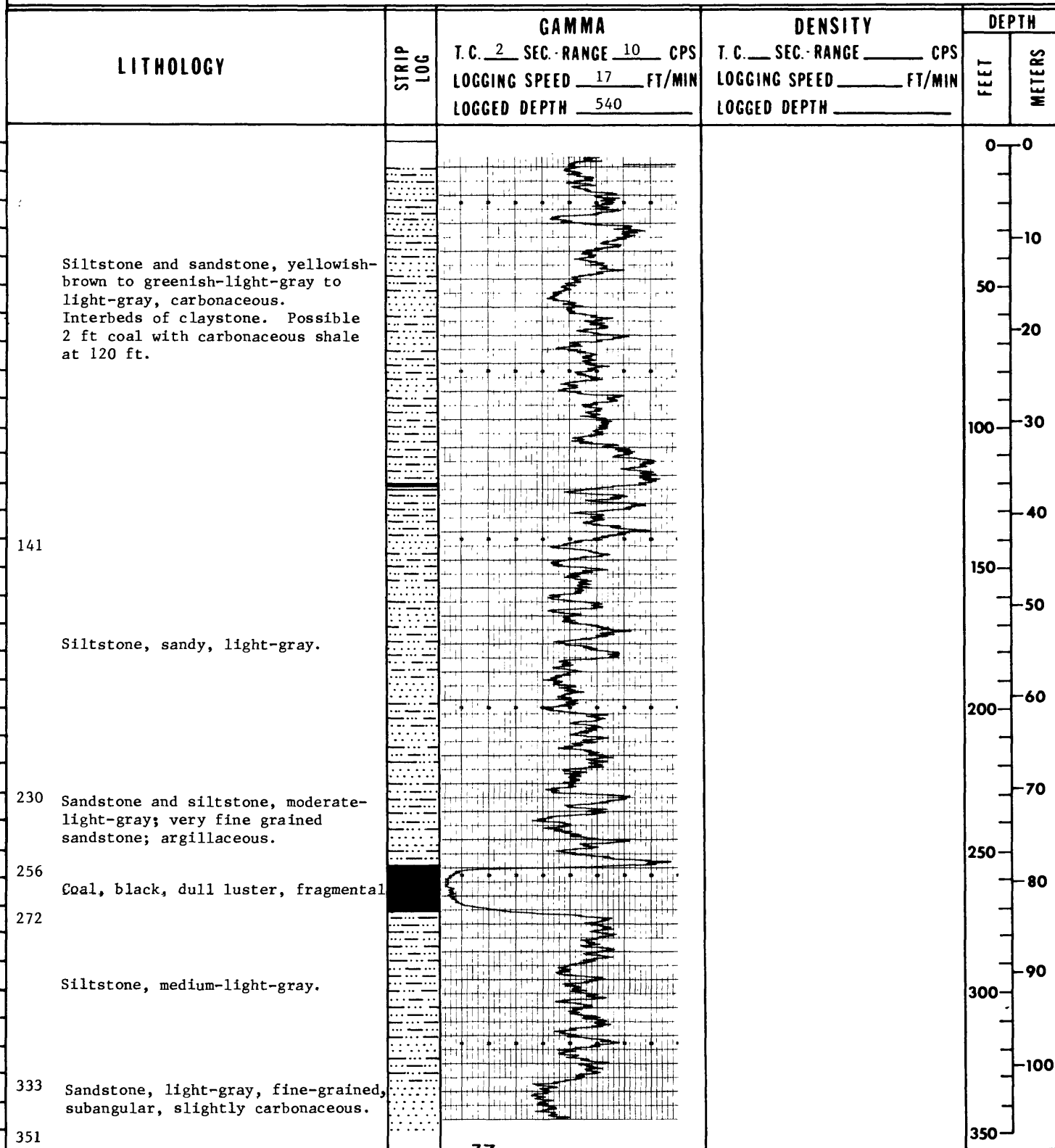
Composite resistance log. Scale change at 160 ft.



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78013  
SHEET 1 OF 4

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Betty Reservoir (NW¼)	
<b>DATE STARTED</b> 6-27-1978	<b>DATE COMP.</b> 6-27-1978	<b>COUNTY</b> Converse	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 34 <b>T.</b> 40 N., <b>R.</b> 71 W., <b>FOOTAGE LOC.</b> 2300		<b>FNL</b> 1400 <b>FWL</b> 5030	<b>GROUND ELEV</b> 5030
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b> 540	<b>TOTAL DEPTH</b> 540
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> G. Hollomon; K. Bowen;		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> E. Fivas			

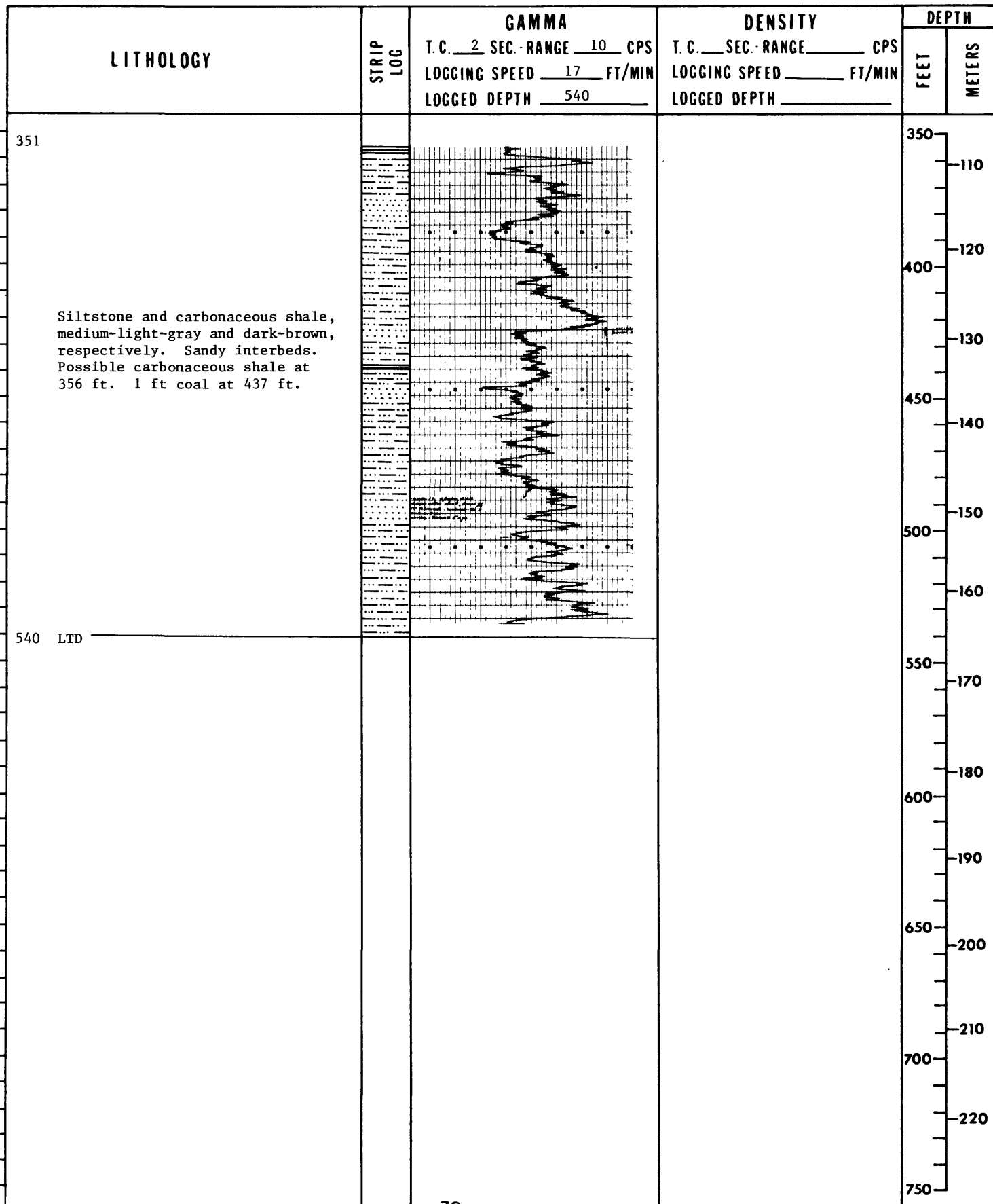




# UNITED STATES GEOLOGICAL SURVEY

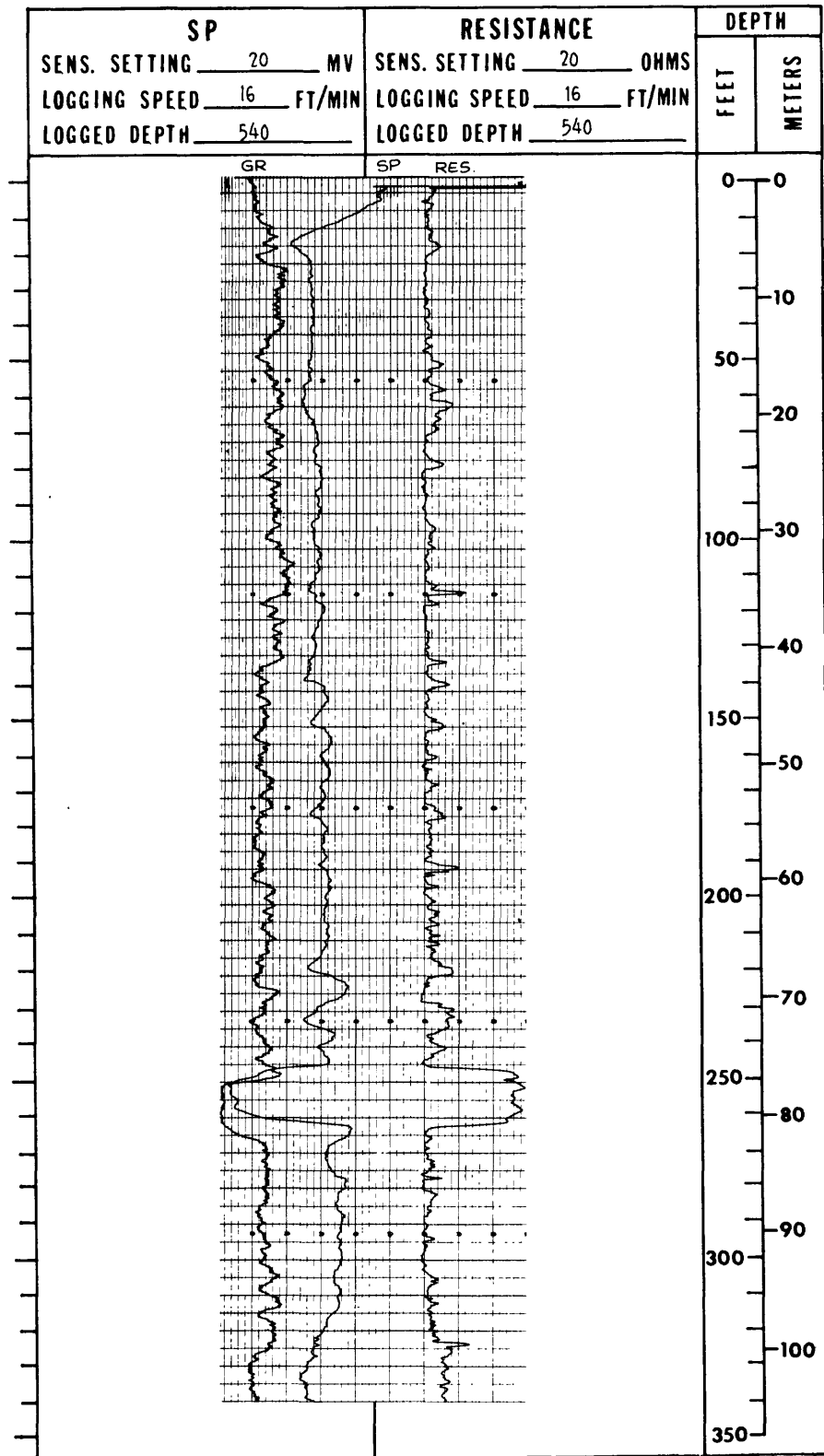
HOLE NO CD-78013  
SHEET 2 OF 4

REMARKS:



REMARKS:

TC 2 Sec. Range 20 CPS

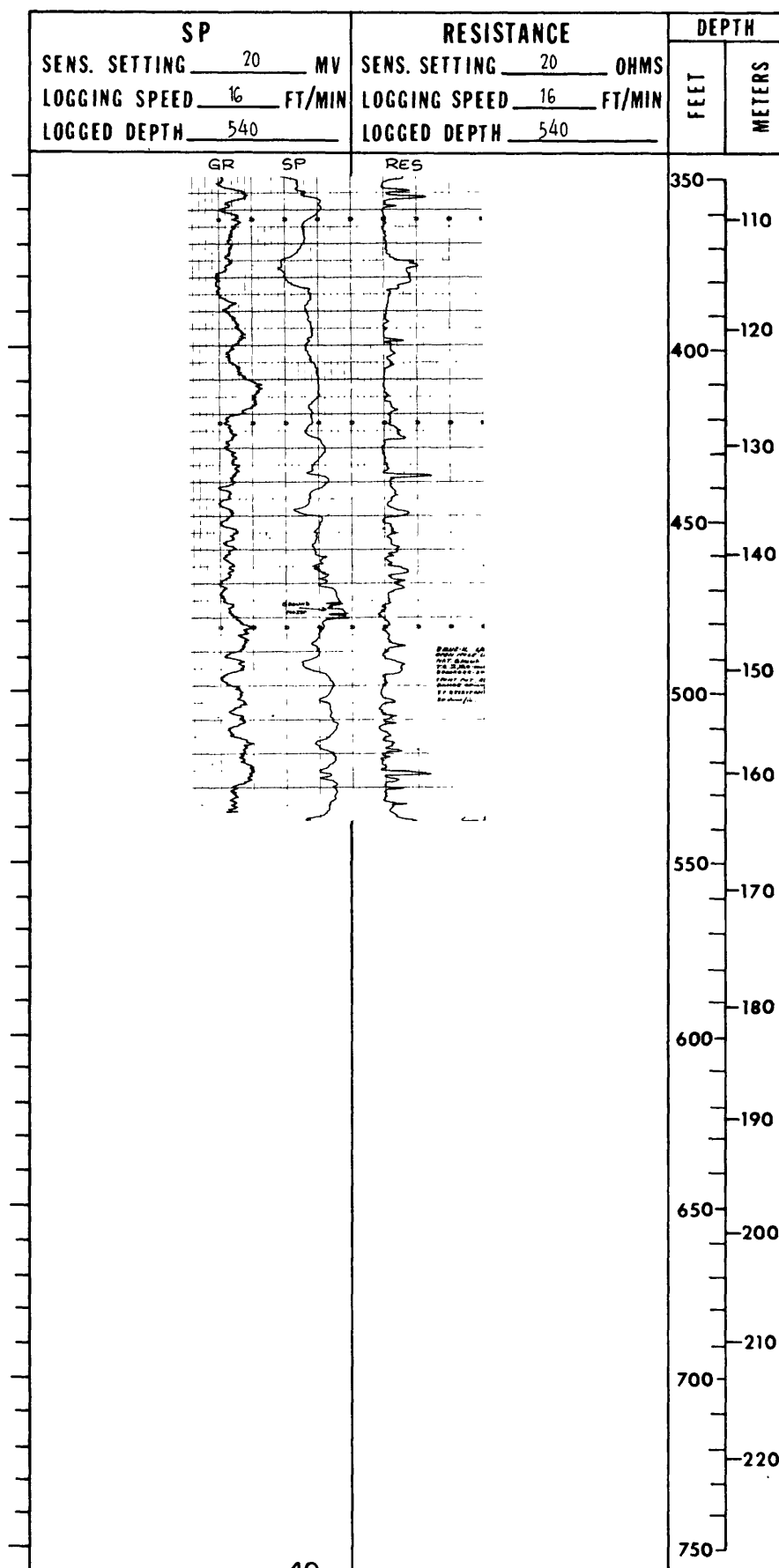


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78013  
SHEET 4 OF 4

## REMARKS:

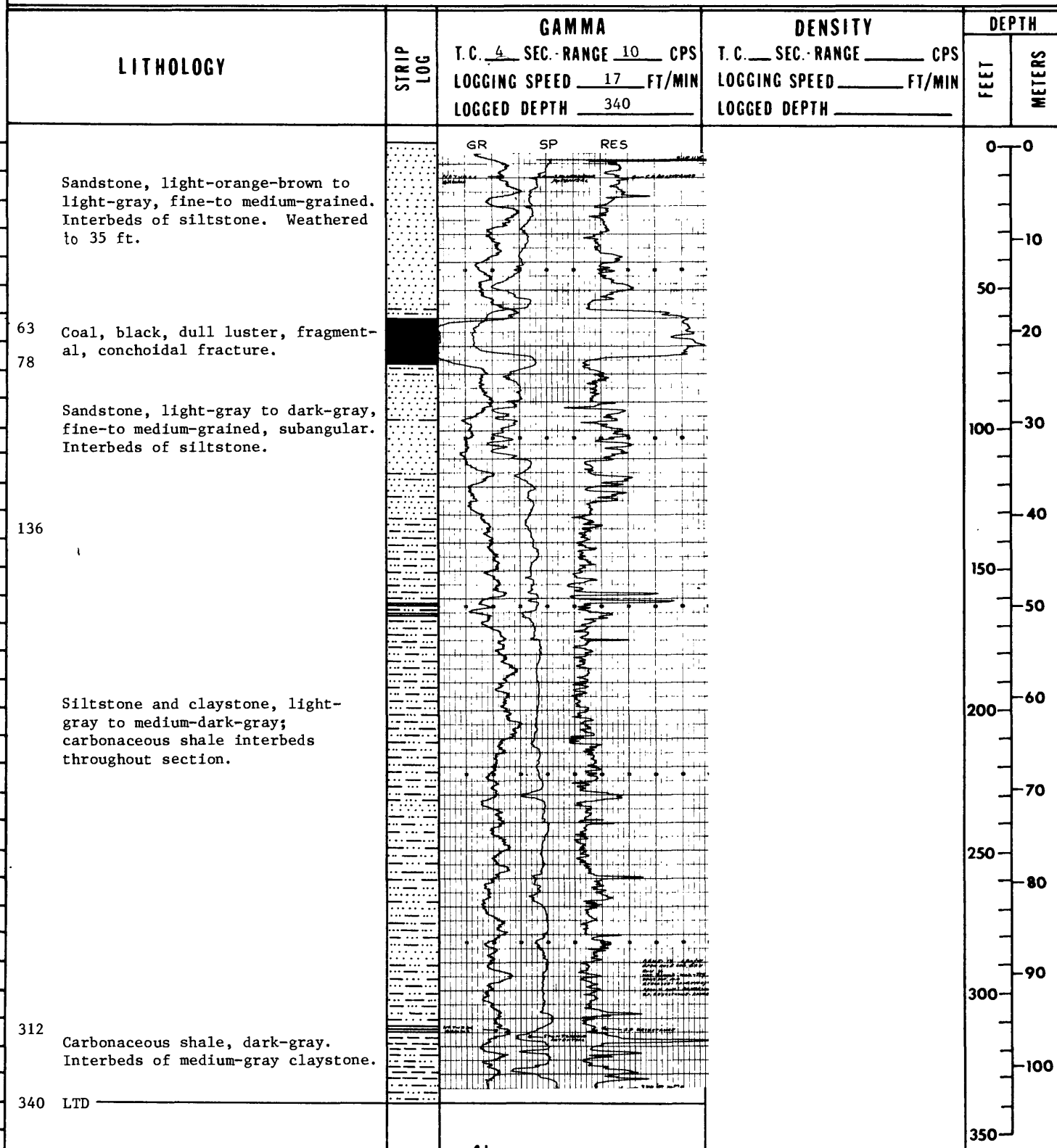
T C 2 Sec. Range 20 CPS



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78014  
SHEET 1 OF 1

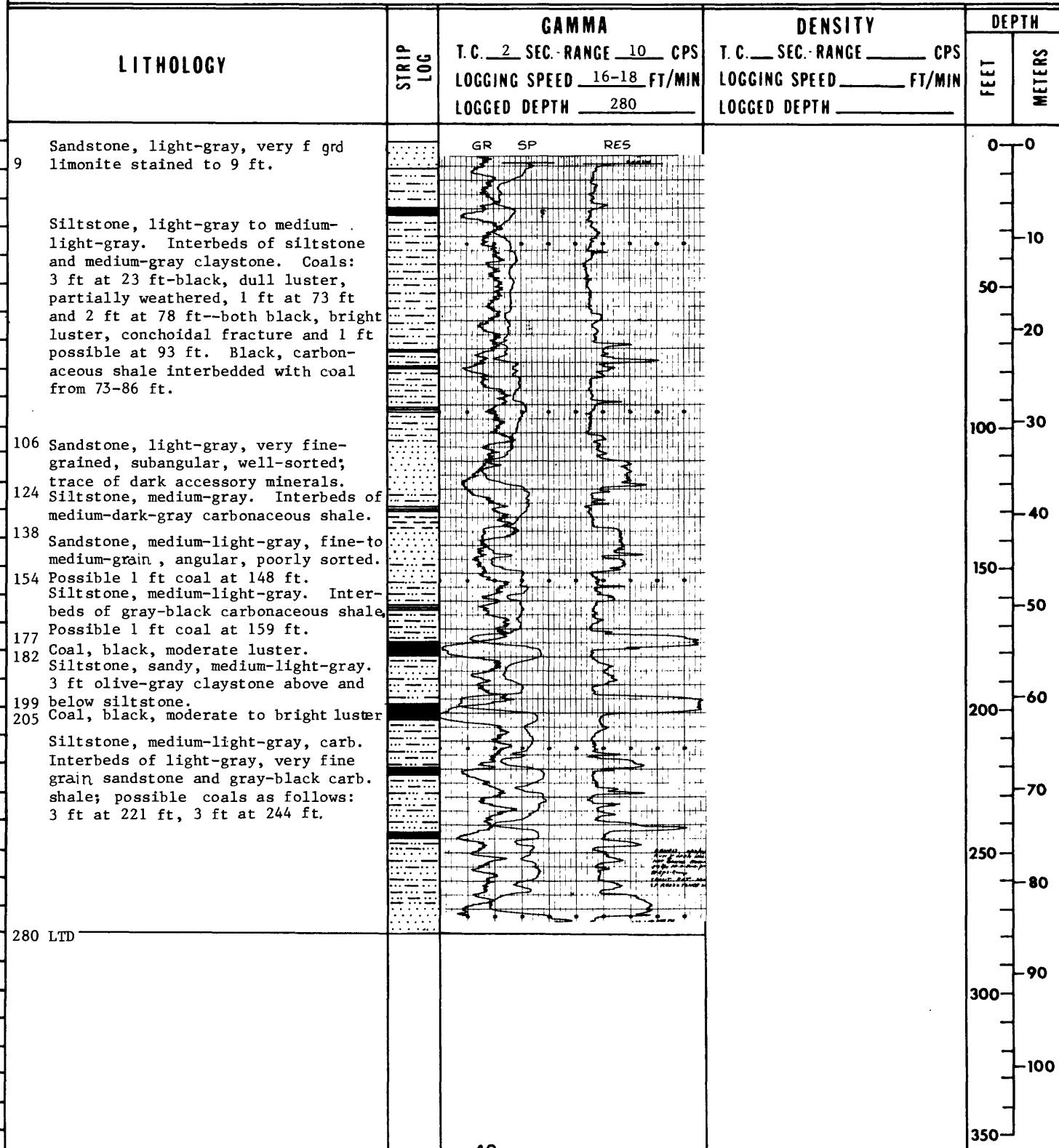
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Betty Reservoir (NE $\frac{1}{4}$ )	
<b>DATE STARTED</b> 6-27-1978	<b>DATE COMP.</b> 6-28-1978	<b>COUNTY</b> Converse	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 27 <b>T.</b> 40 N., <b>R.</b> 71 W., <b>FOOTAGE LOC.</b> 2250		<b>FNL</b> 1400 <del>XXX</del>	<b>FEL</b> 4850 <del>RXX</del>
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b> <b>ROTARY</b> 340 <b>CORING</b> 0	
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; K. Bowen;		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> SP = 20 MV RES = 20 OHMS E. Fivas			



# UNITED STATES GEOLOGICAL SURVEY

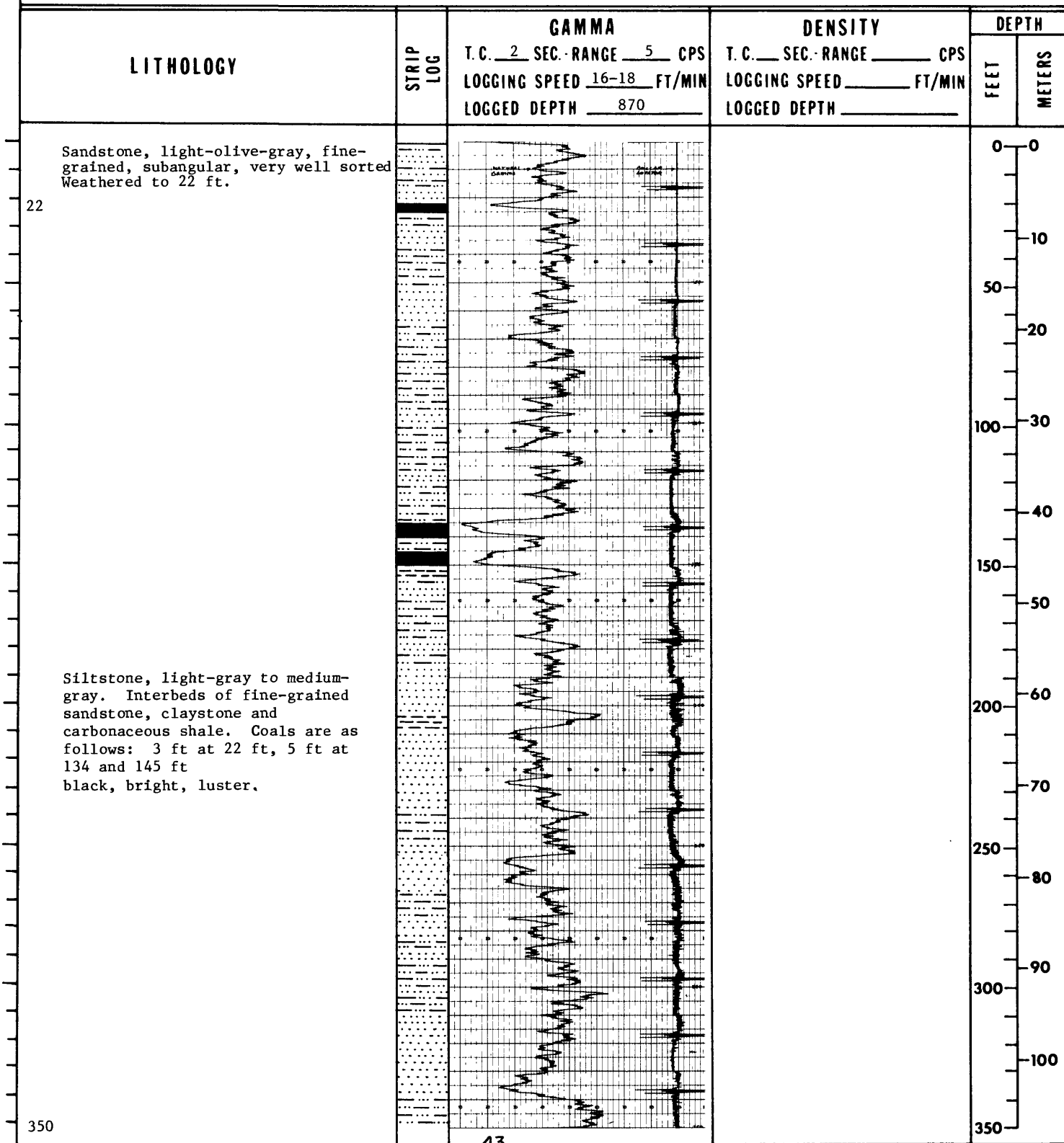
HOLE NOCD-78015  
SHEET 1 OF 1

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Betty Reservoir (NE $\frac{1}{4}$ )	
<b>DATE STARTED</b> 6-28-1978	<b>DATE COMP.</b> 6-28-1978	<b>COUNTY</b> Converse	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 24 T.40 N., R. 71 W., FOOTAGE LOC.</b> 1150		<del>XXX</del> FSL 2500	<del>XXX</del> FWL
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b>	
		ROTARY 280	CORING 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; K. Bowen;		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> <div style="display: flex; justify-content: space-between;"> <span>SP = 20 MV RES = 20 OHMS</span> <span>E. Fivas</span> </div>			

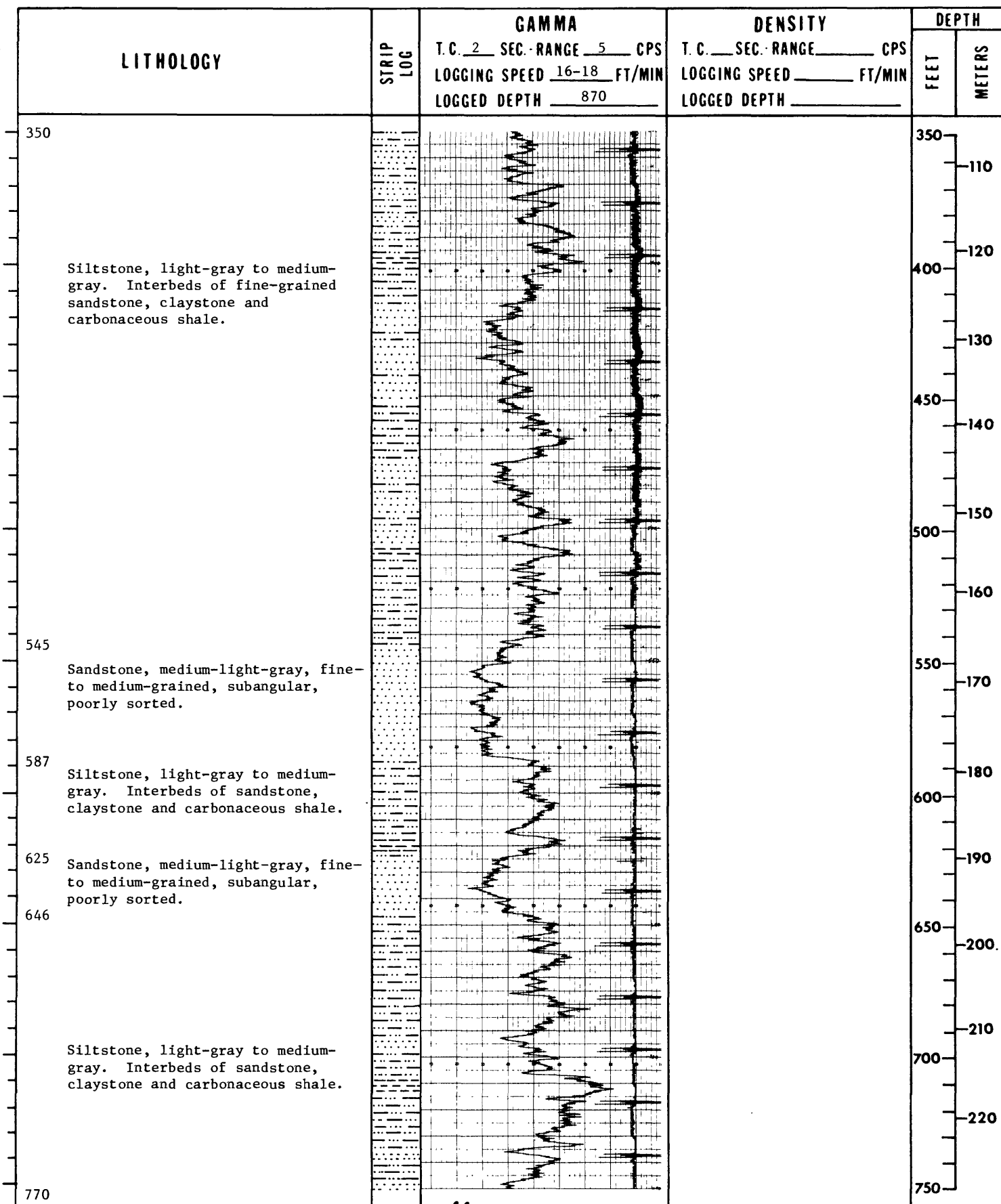


**HOLE NO** CD-78016  
**SHEET** 1 **OF** 4

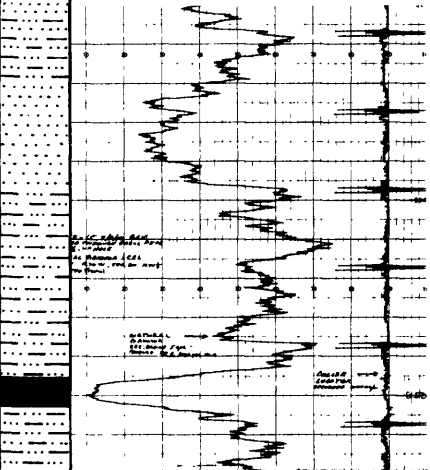
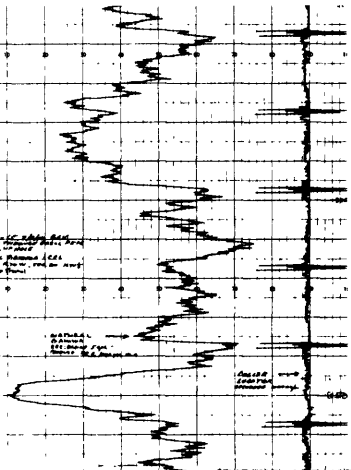
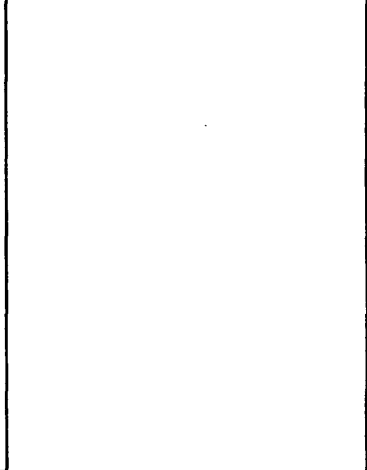
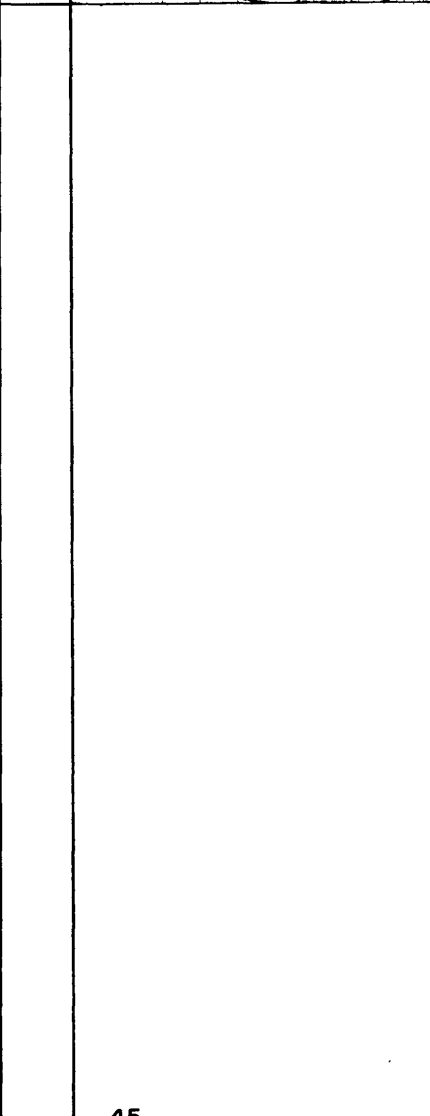

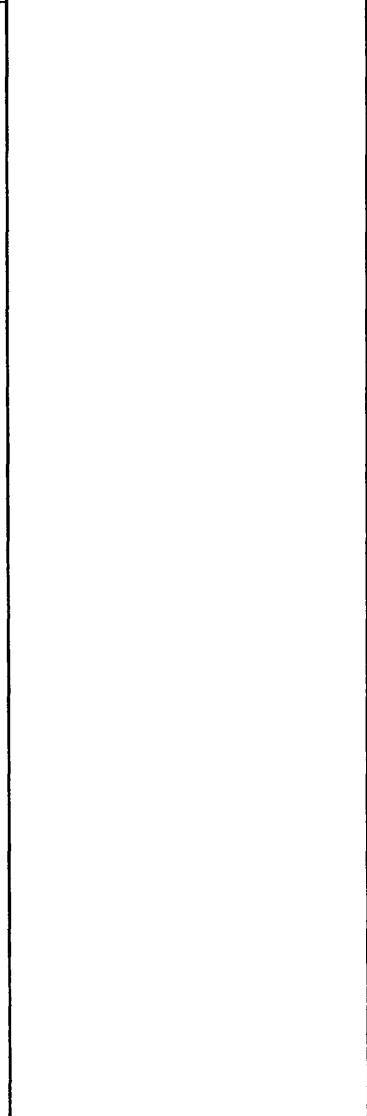
AREA Powder River Basin		QUAD NAME Betty Reservoir (NE $\frac{1}{4}$ )	
DATE STARTED 7-6-1978		DATE COMP. 7-8-1978	
COUNTY Converse		STATE Wyoming	
LOCATION: SEC. 20 T. 40 N., R. 70 W.,		FOOTAGE LOC. 2500	
SIZE AND BIT TYPE: 5 1/8-in and 5-in drag		FOOTAGE	
DRILLING AGENCY: USGS/CD/NRMA		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY A. Donatich; E. Fivas		GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon	
REMARKS: Gamma ray logged through drill pipe			



## REMARKS:



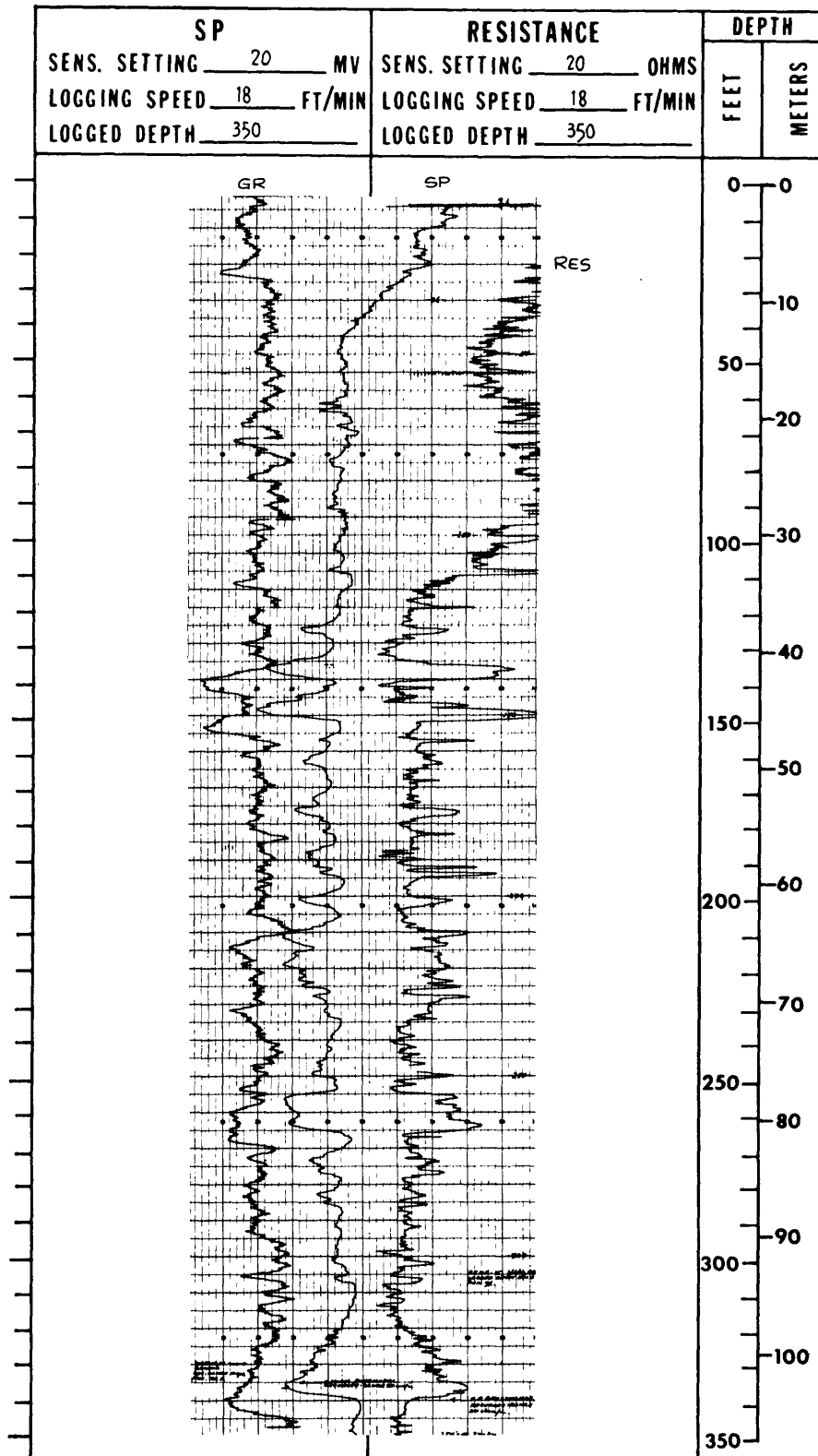
## REMARKS:

LITHOLOGY	STRIP LOG	GAMMA T.C. <u>2</u> SEC. RANGE <u>5</u> CPS LOGGING SPEED <u>16-18</u> FT/MIN LOGGED DEPTH <u>870</u>	DENSITY T.C. <u>   </u> SEC. RANGE <u>   </u> CPS LOGGING SPEED <u>   </u> FT/MIN LOGGED DEPTH <u>   </u>	DEPTH	
				FEET	METERS
770 Sandstone, medium-light-gray, fine- to medium-grained, subangular, poorly sorted.				750	230
796 Siltstone, light-gray to medium- gray. Interbeds of sandstone, claystone and carbonaceous shale.				800	240
845 Coal				850	260
853 Siltstone, light-gray to medium-gray. Interbeds of sandstone, claystone, and carbonaceous shale.				870	260
LTD				900	270
				950	290
				1000	310
				1050	320
				1100	340
				1150	350



**REMARKS:**

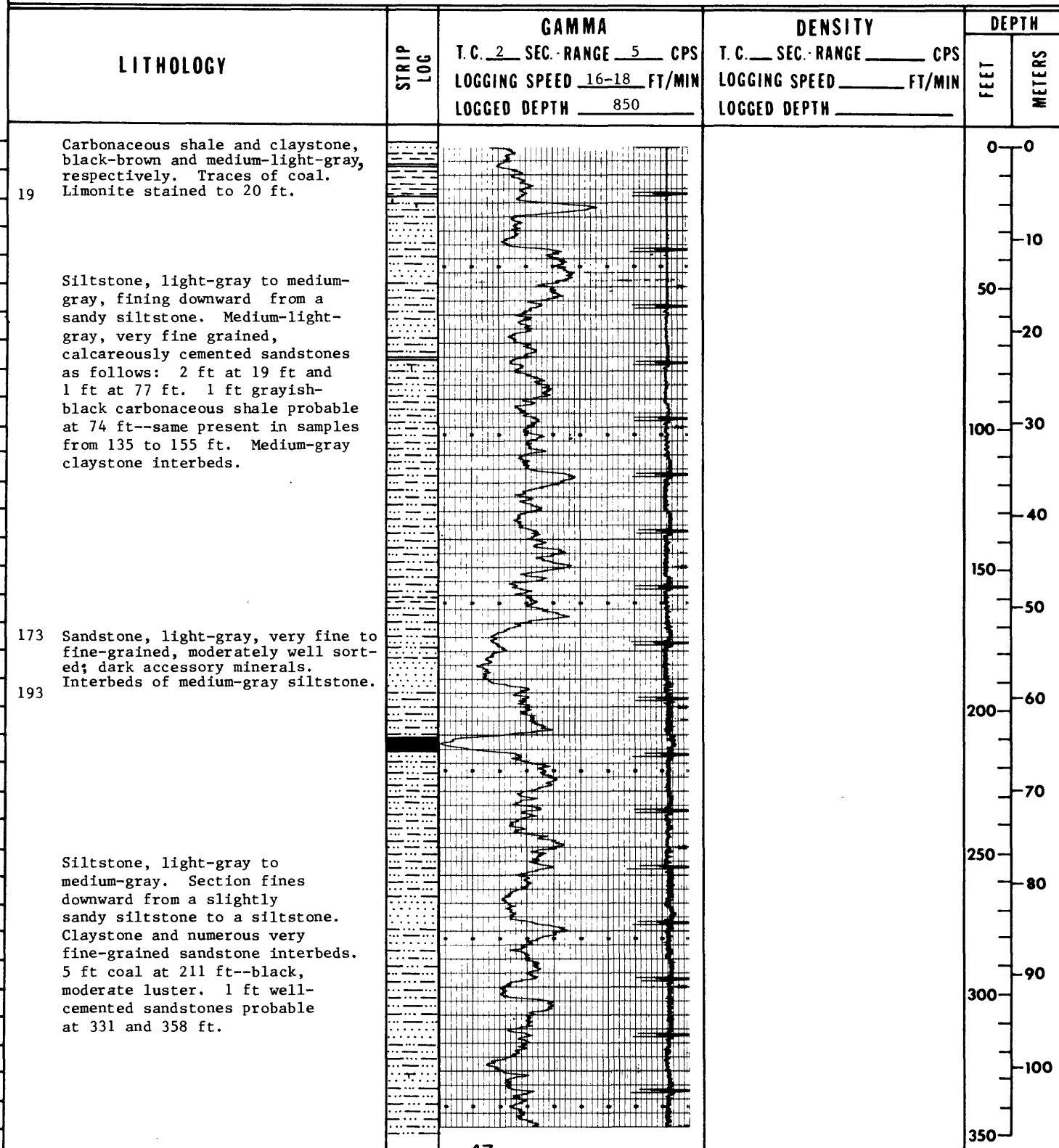
Splice at 120 ft.  
TC 2 Sec. Range 10 CPS



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78017  
SHEET 1 OF 6

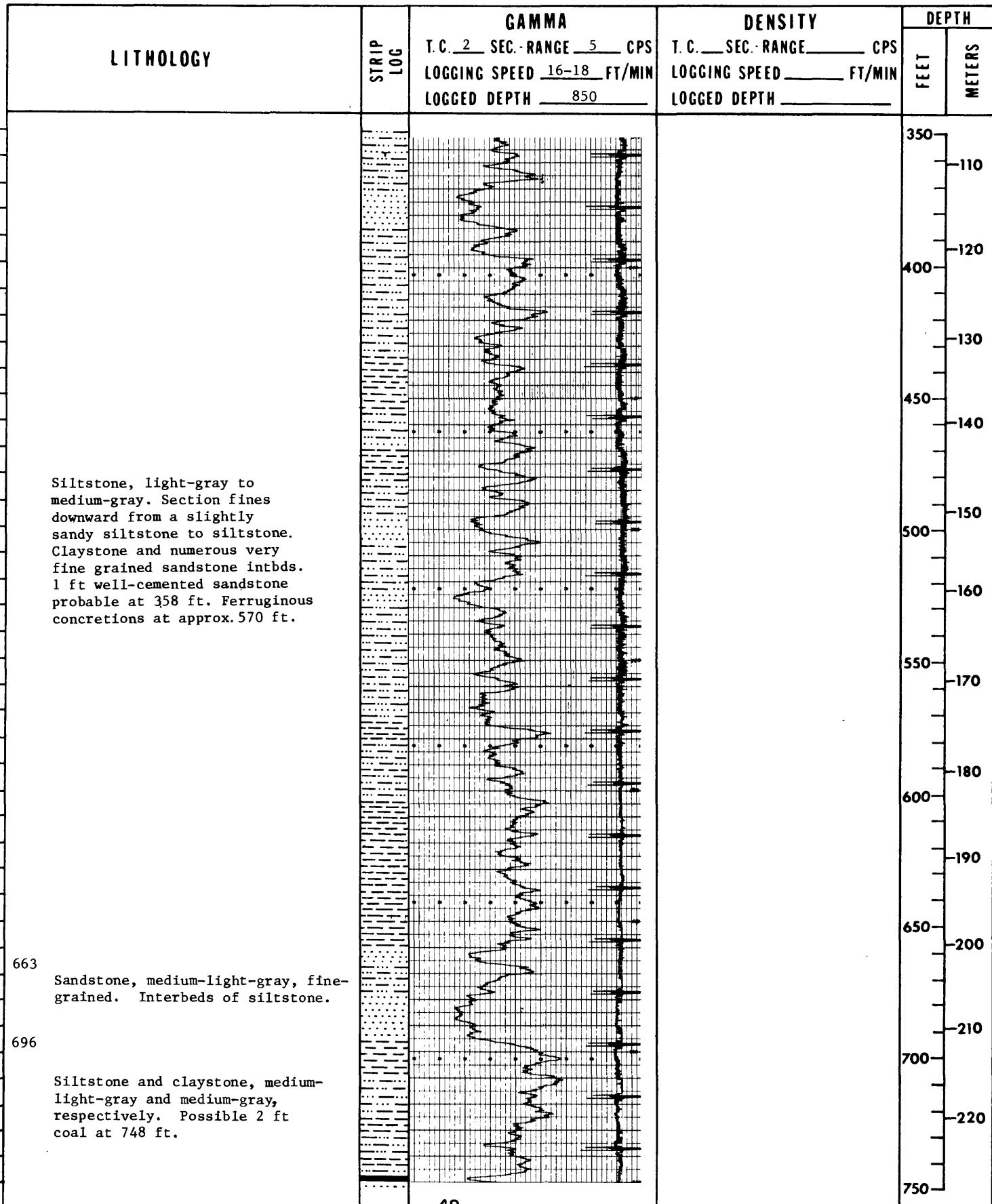
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Betty Reservoir NE 1/4	
<b>DATE STARTED</b> 7-11-1978	<b>DATE COMP.</b> 7-11-1978	<b>COUNTY</b> Converse	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 2 T. 39 N., R. 71 W., <b>FOOTAGE LOC.</b> 2350		<b>XNK FSL</b> 2500	<b>FEL FSL</b> 4790
<b>SIZE AND BIT TYPE:</b> 5 1/8-in drag		<b>FOOTAGE</b> <b>ROTARY</b> 860 <b>CDRNG</b> 0	
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; H. Corley;		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> E. Fivas Gamma ray logged through drill pipe			



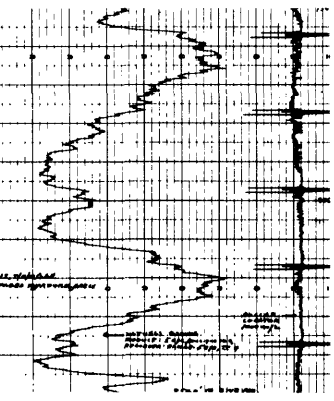
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78017  
SHEET 2 OF 6

REMARKS:



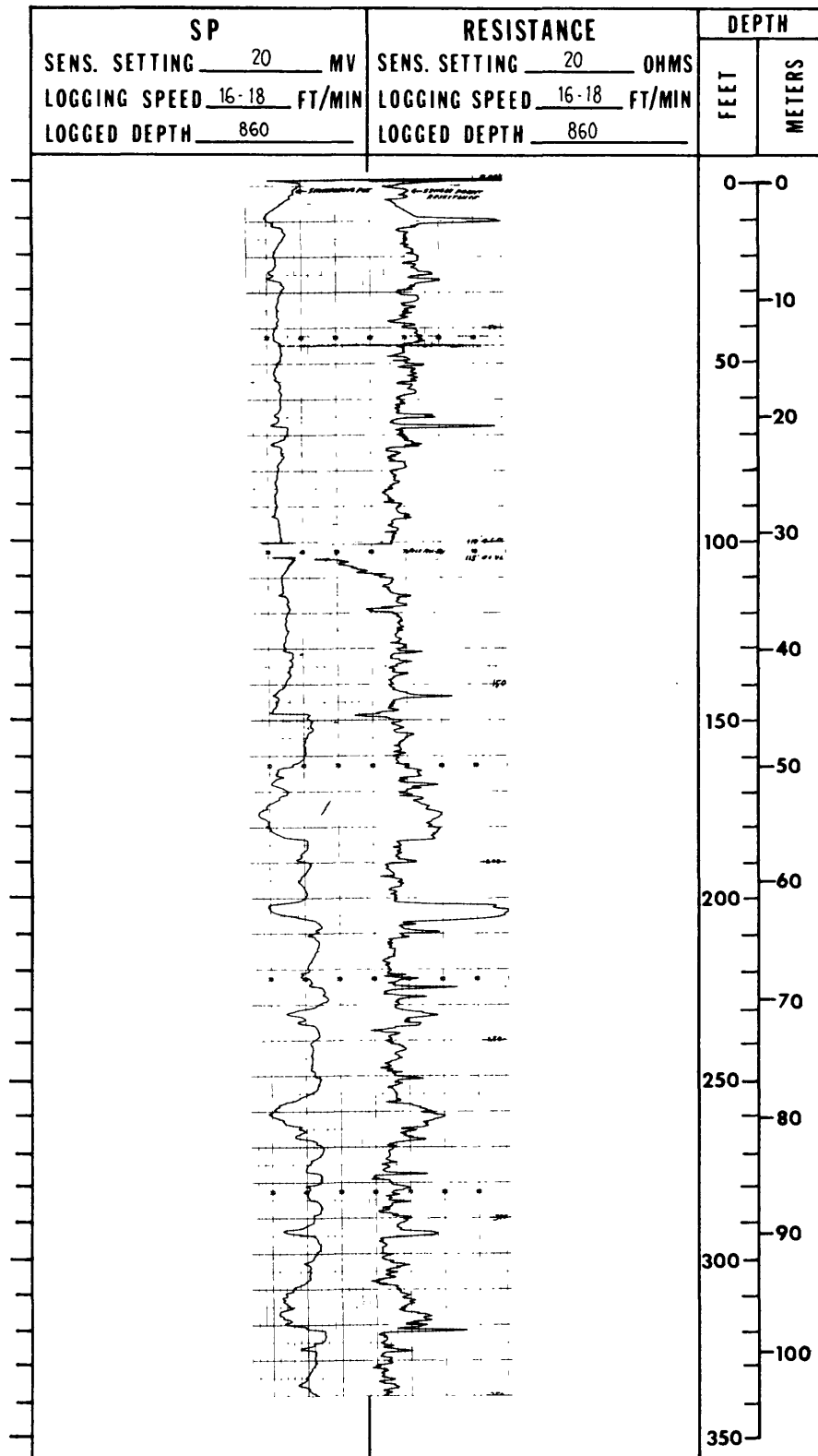
## REMARKS:

LITHOLOGY	STRIP LOG	GAMMA T. C. <u>2</u> SEC. RANGE <u>5</u> CPS LOGGING SPEED <u>16-18</u> FT/MIN LOGGED DEPTH <u>850</u>	DENSITY T. C. <u>  </u> SEC. RANGE <u>  </u> CPS LOGGING SPEED <u>  </u> FT/MIN LOGGED DEPTH <u>  </u>	DEPTH	
				FEET	METERS
Siltstone and claystone, m — lt-gray. 4 ft ss at 752 ft.				750	230
780 Sandstone, light-gray to medium- light-gray, well-sorted, subround; dark accessory minerals; siltstone interbed. Fining upward above 787 ft.					240
813 Siltstone, coarsening downward to a sandstone.				800	250
846 Siltstone. Possible carbonaceous shale interbeds.				850	260
860 LTD					270
				900	280
				950	290
				1000	300
				1050	310
				1100	320
					330
					340
				1150	350

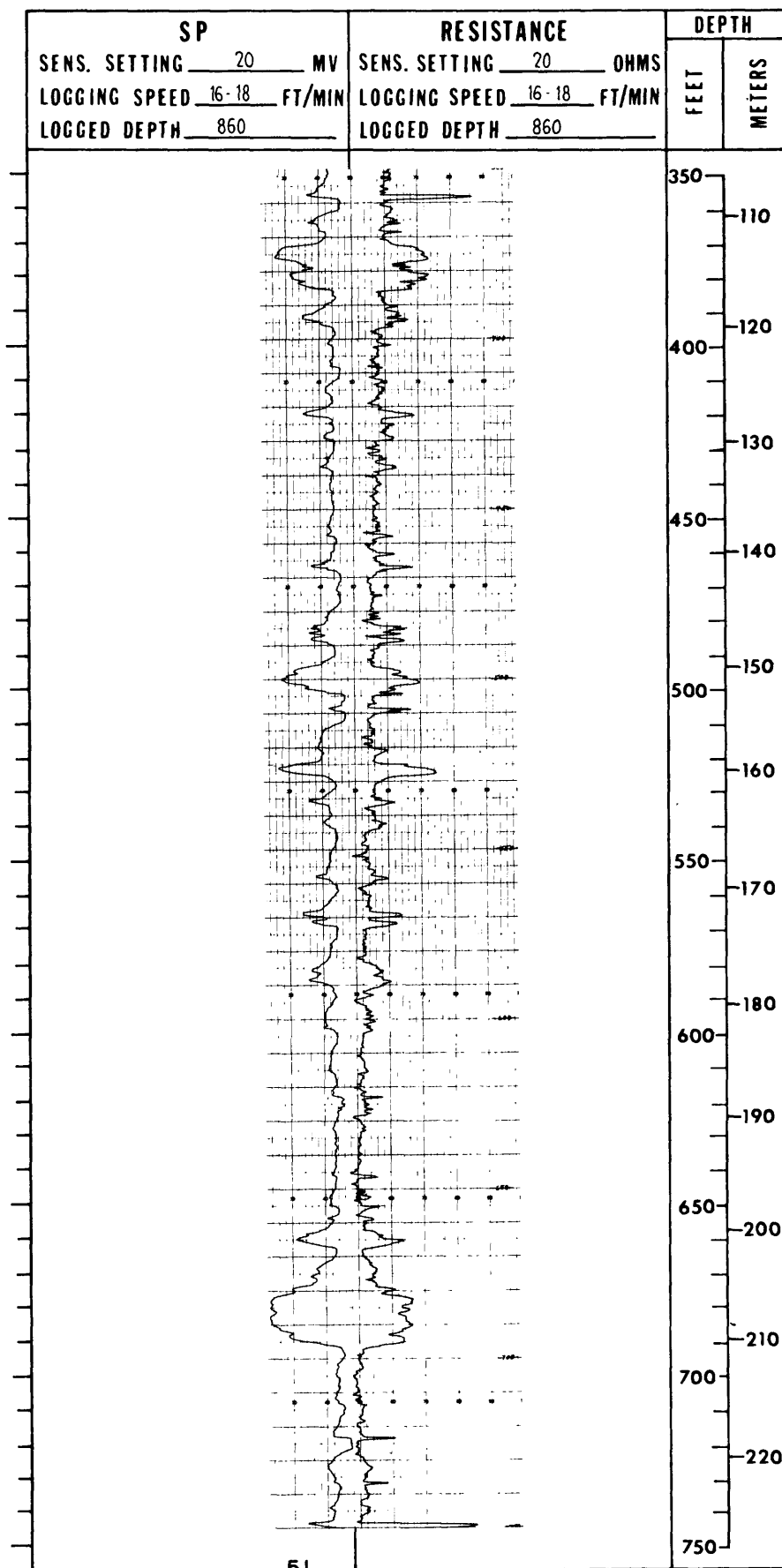
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78017  
SHEET 4 OF 6

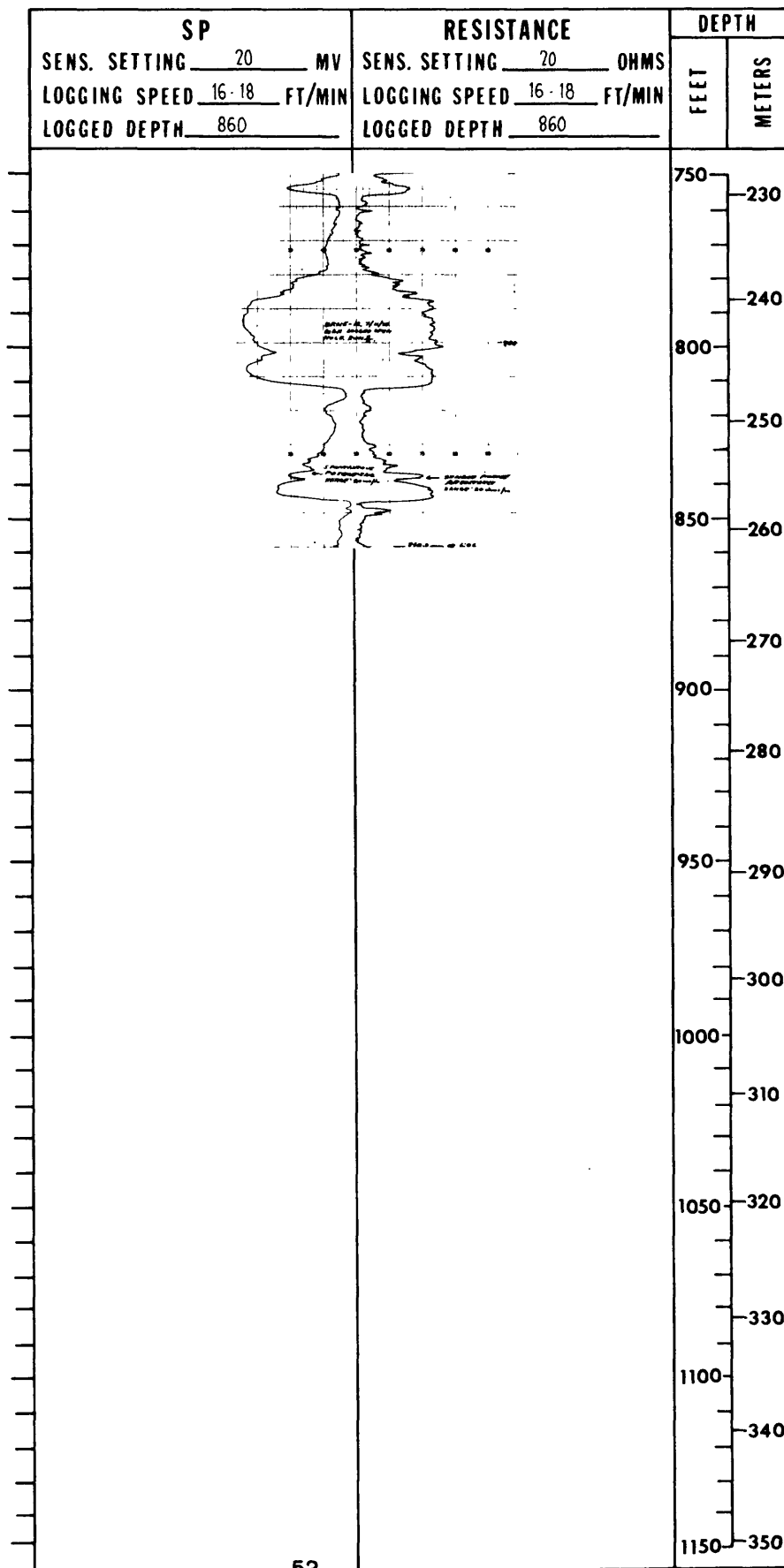
REMARKS: Not recorded 110-115 ft



REMARKS:



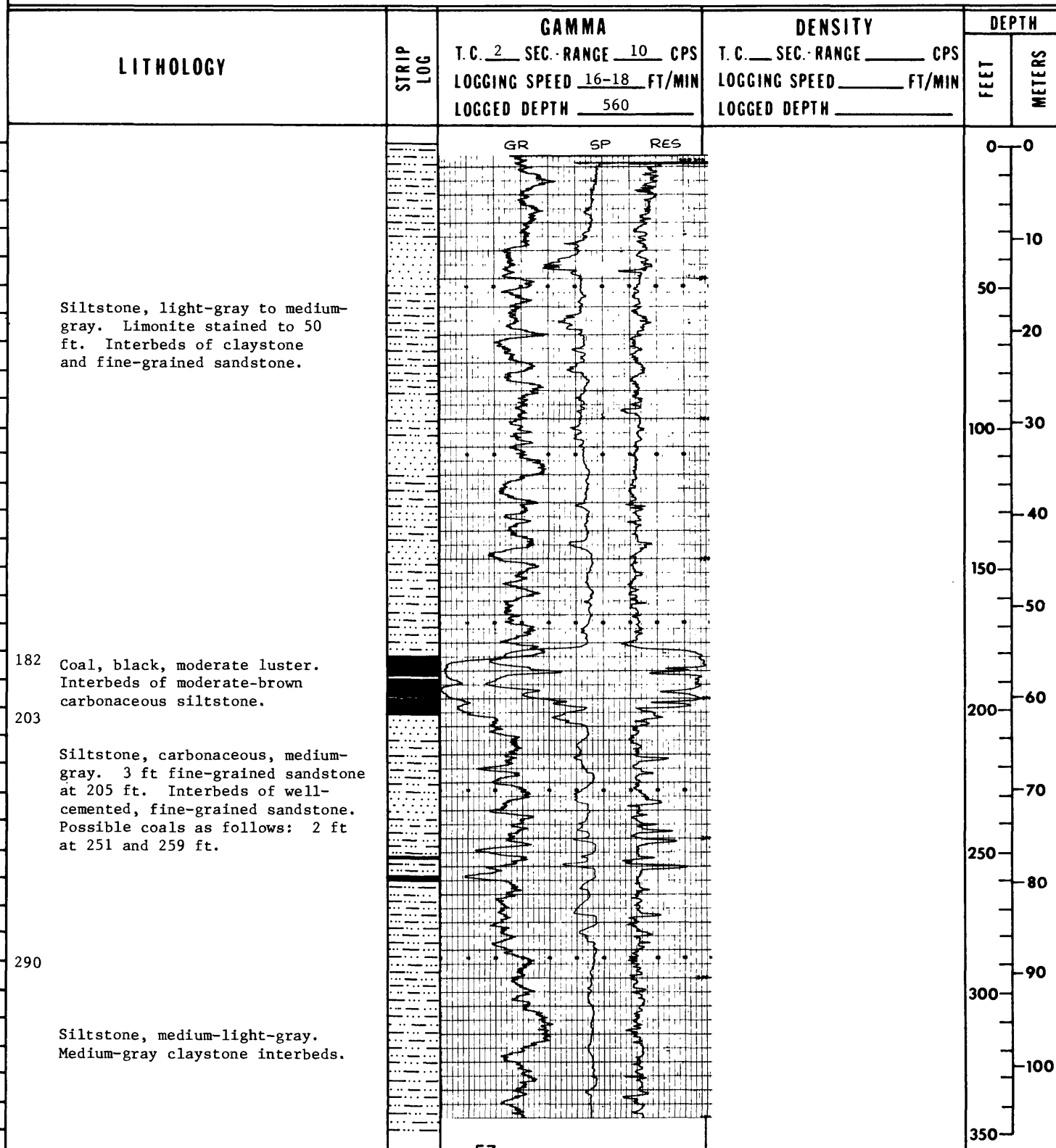
REMARKS:



# UNITED STATES GEOLOGICAL SURVEY

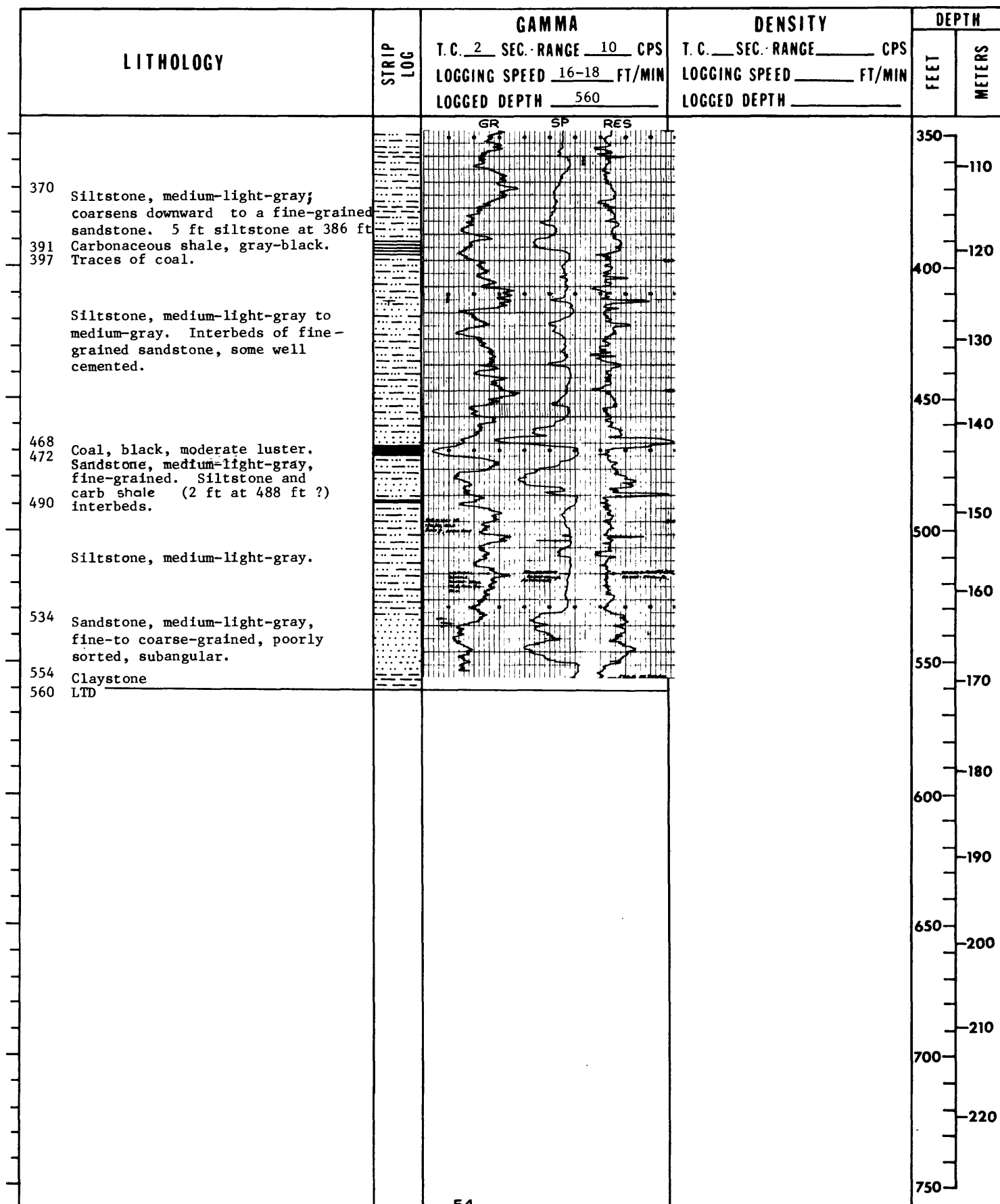
HOLE NO CD-78018  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Betty Reservoir (NW¼)	
<b>DATE STARTED</b> 7-12-1978	<b>DATE COMP.</b> 7-12-1978	<b>COUNTY</b> Converse	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 27 <b>T.</b> 40 N., <b>R.</b> 72 W., <b>FOOTAGE LOC.</b> 2250		<b>XMK FSL</b> 1750	<b>FEF FWL</b> 4800
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b> <b>ROTARY</b> 560 <b>CORING</b> 0	<b>TOTAL DEPTH</b> 560
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A. Donatich; K. Bowen;		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> SP=20 MV RES=20 OHMS E. Fivas			





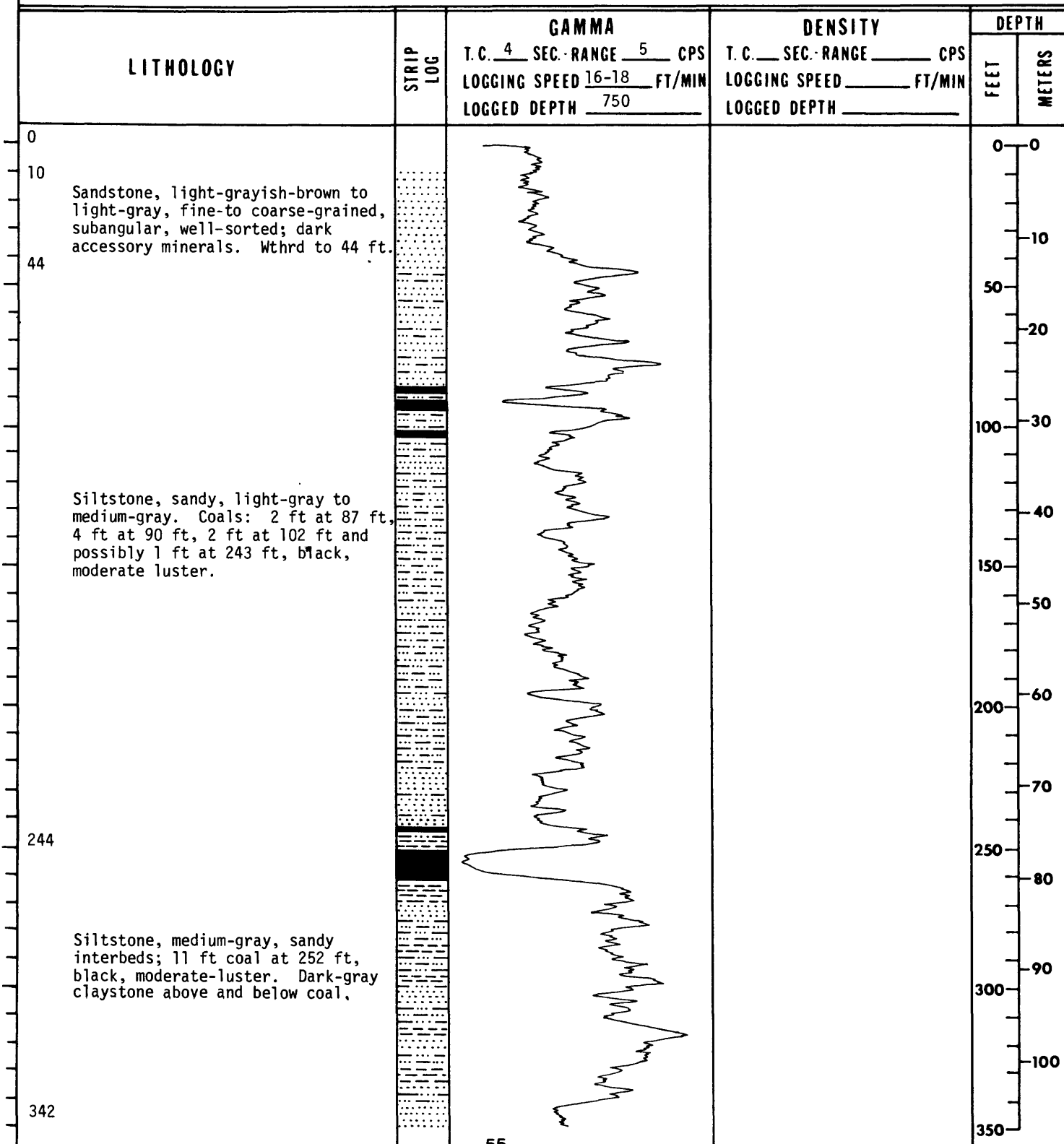
## REMARKS:

SP = 20 MV  
RES = 20 OHMS

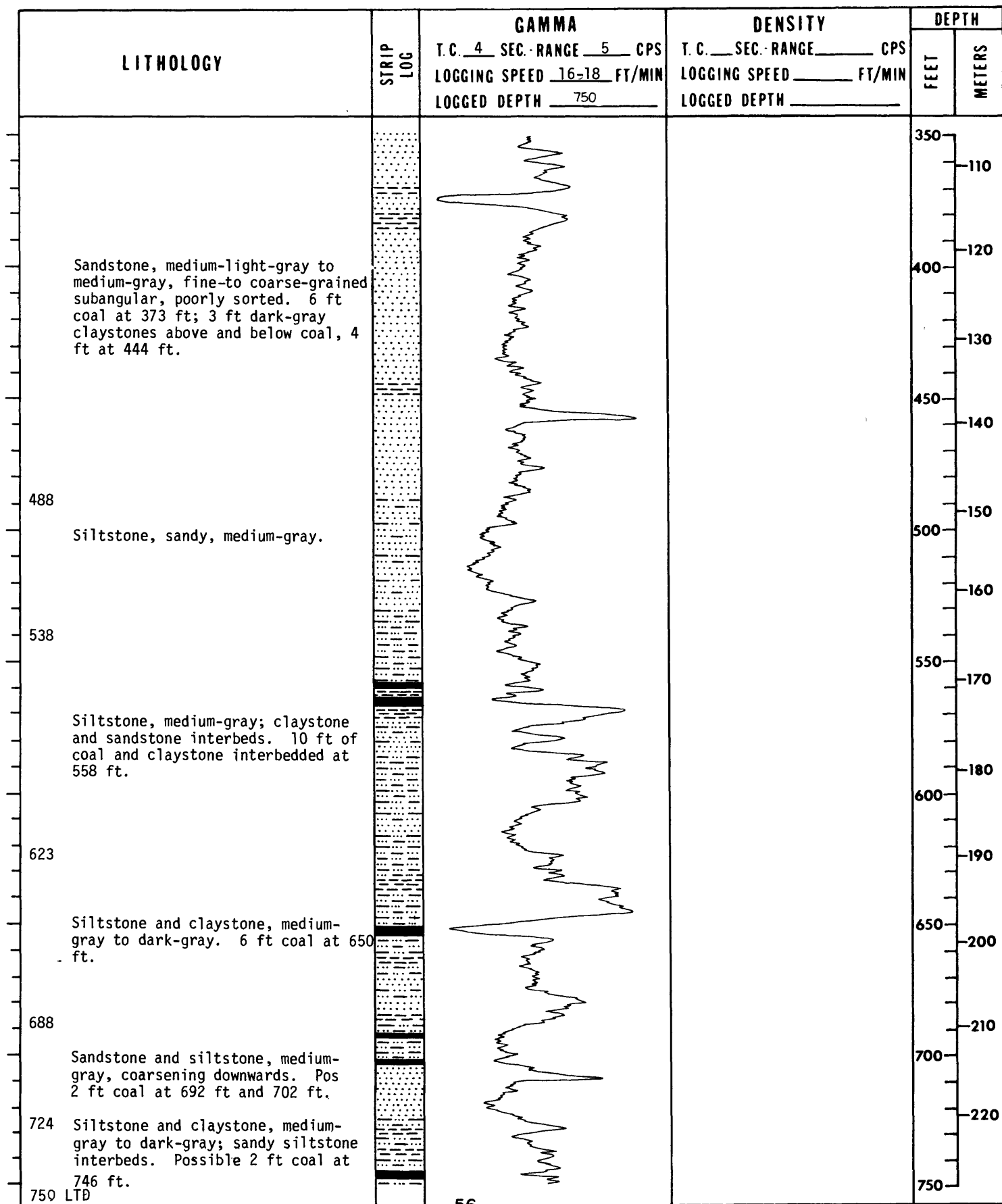
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78019  
SHEET 1 OF 4

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Turnercrest (SE $\frac{1}{4}$ )	
<b>DATE STARTED</b> 7-18-1978	<b>DATE COMP.</b> 7-19-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 22 <b>T.</b> 41 N., <b>R.</b> 73 W., <b>FOOTAGE LOC.</b>		1600 <del>FWL</del> 1400 <del>FWL</del>	<b>GROUND ELEV</b> 4970
<b>SIZE AND BIT TYPE:</b> 5 in. drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 760	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b> Gamma ray logged through drill pipe.			

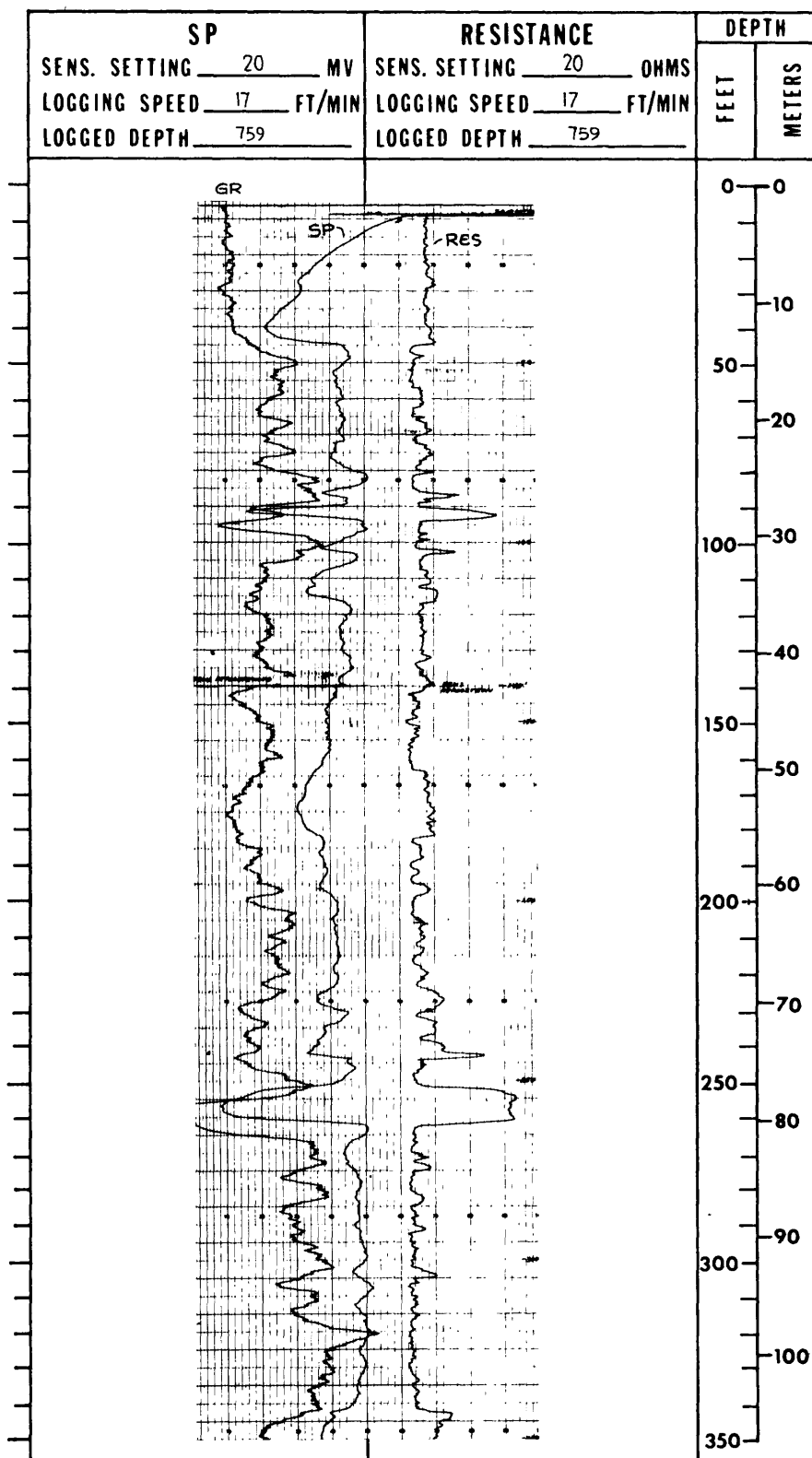


## REMARKS:



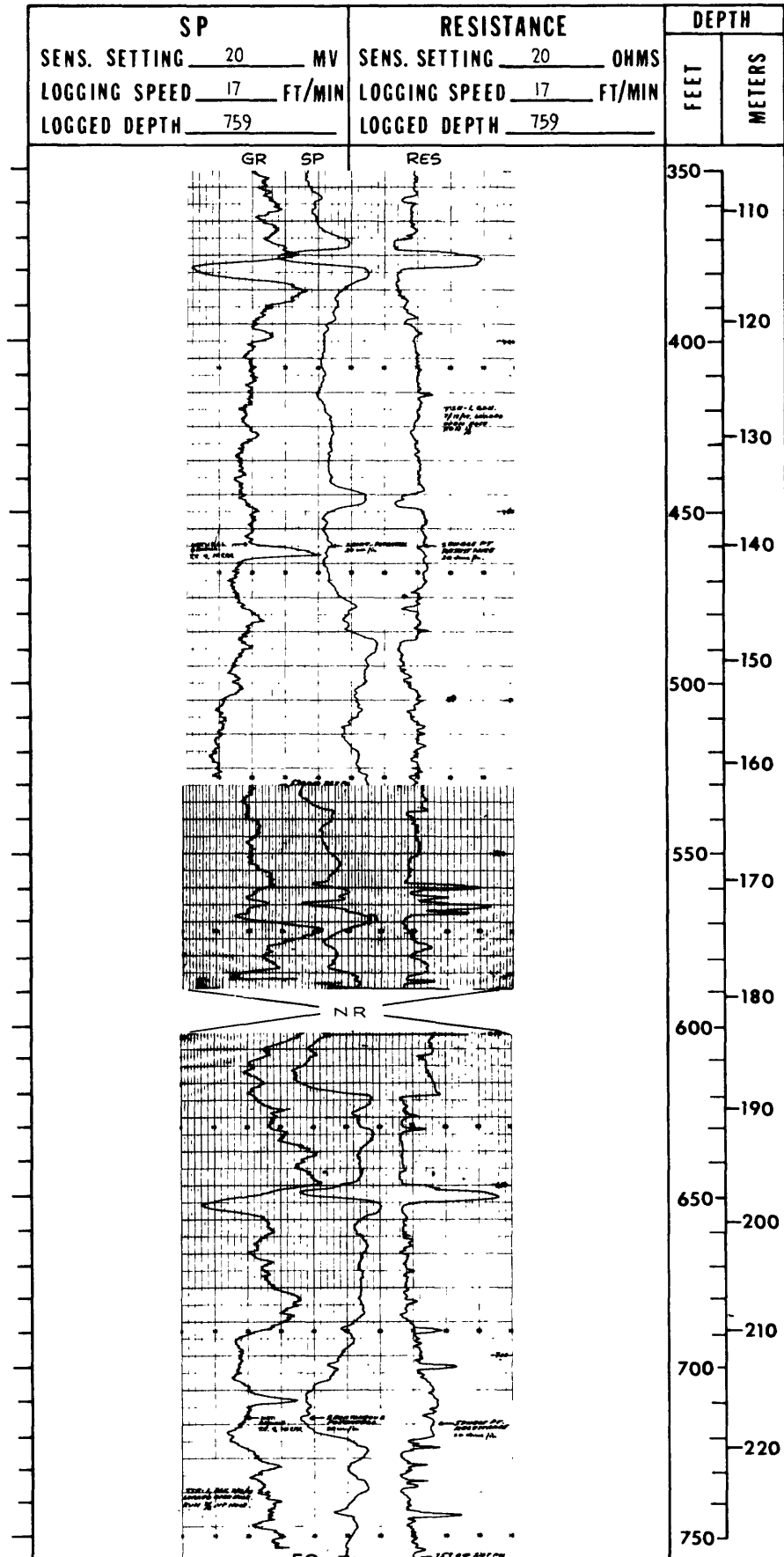
## REMARKS:

TC 4 Sec. Range 10 CPS

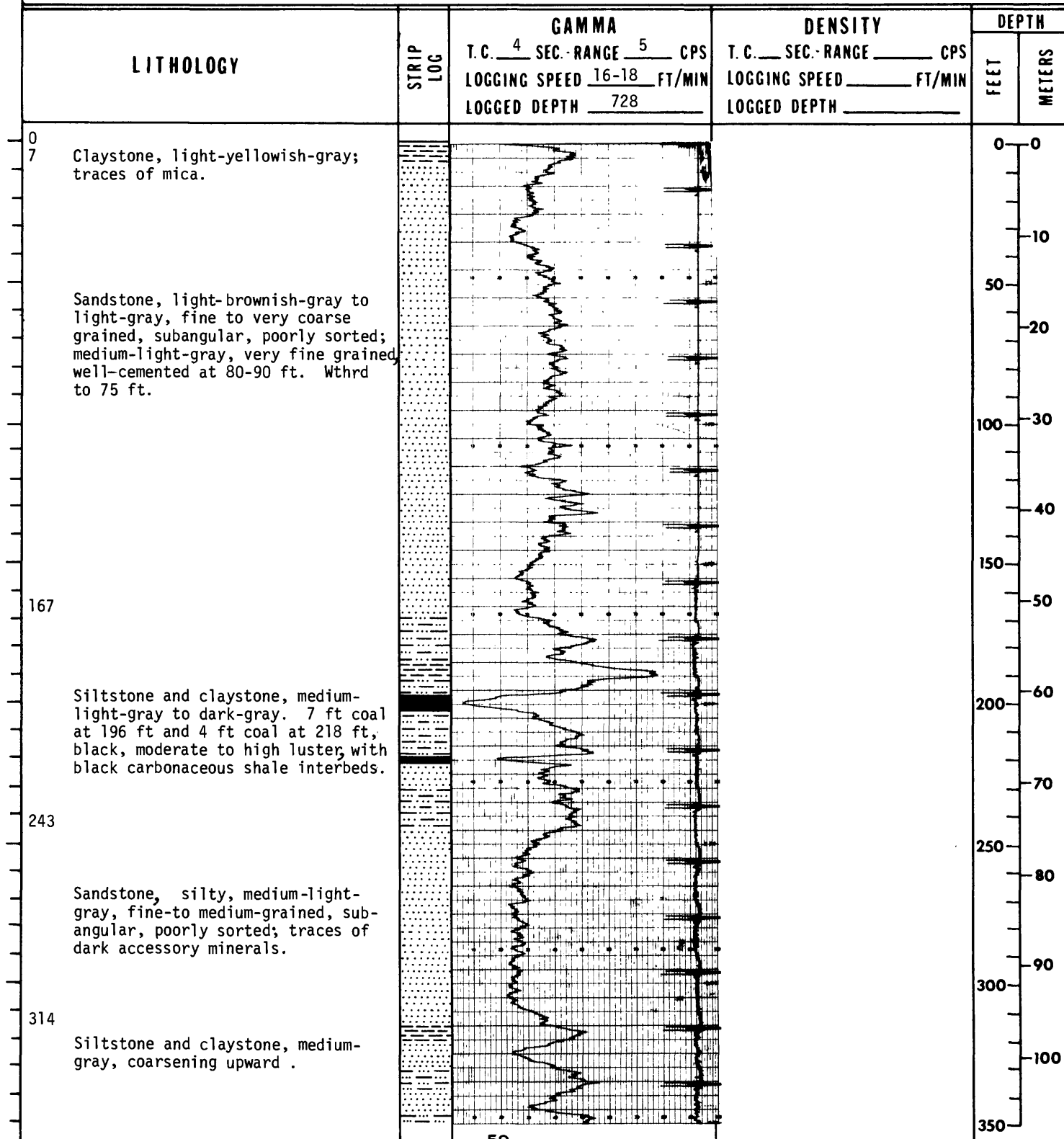


## REMARKS:

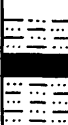
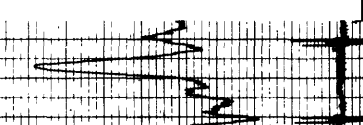


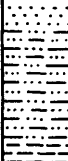
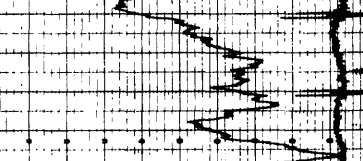


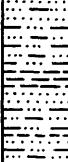
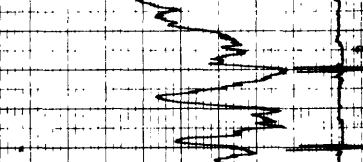

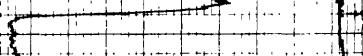
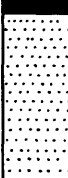
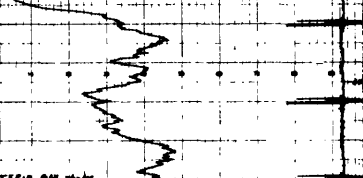
TC 4 Sec. Range 10 CPS  
Splice at 530 ft  
No electric log from 590 to 606 ft. due to  
poor hole condition.



AREA Powder River Basin		QUAD NAME Turnercrest (SE $\frac{1}{4}$ )	
DATE STARTED 7-20-1978	DATE COMP. 7-20-1978	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 17 T. 41 N., R. 72 W., FOOTAGE LOC.		1550 <del>FSL</del> 600 <del>FEL</del>	GROUND ELEV 5030
SIZE AND BIT TYPE: 5 in. drag		FOOTAGE ROTARY 740 CORING 0	TOTAL DEPTH 740
DRILLING AGENCY: USGS/CD/NRMA		DRILL TYPE: Portadrill 524	DEPTH TO WATER NR
LITHOLOGY RECORDED BY A. Donatich; E. Fivas		GEOPHYSICAL LOGS RECORDED BY G.A. Hollomon	
REMARKS: 1) Lost circulation at 635 ft 2) Gamma ray logged thru drill pipe			



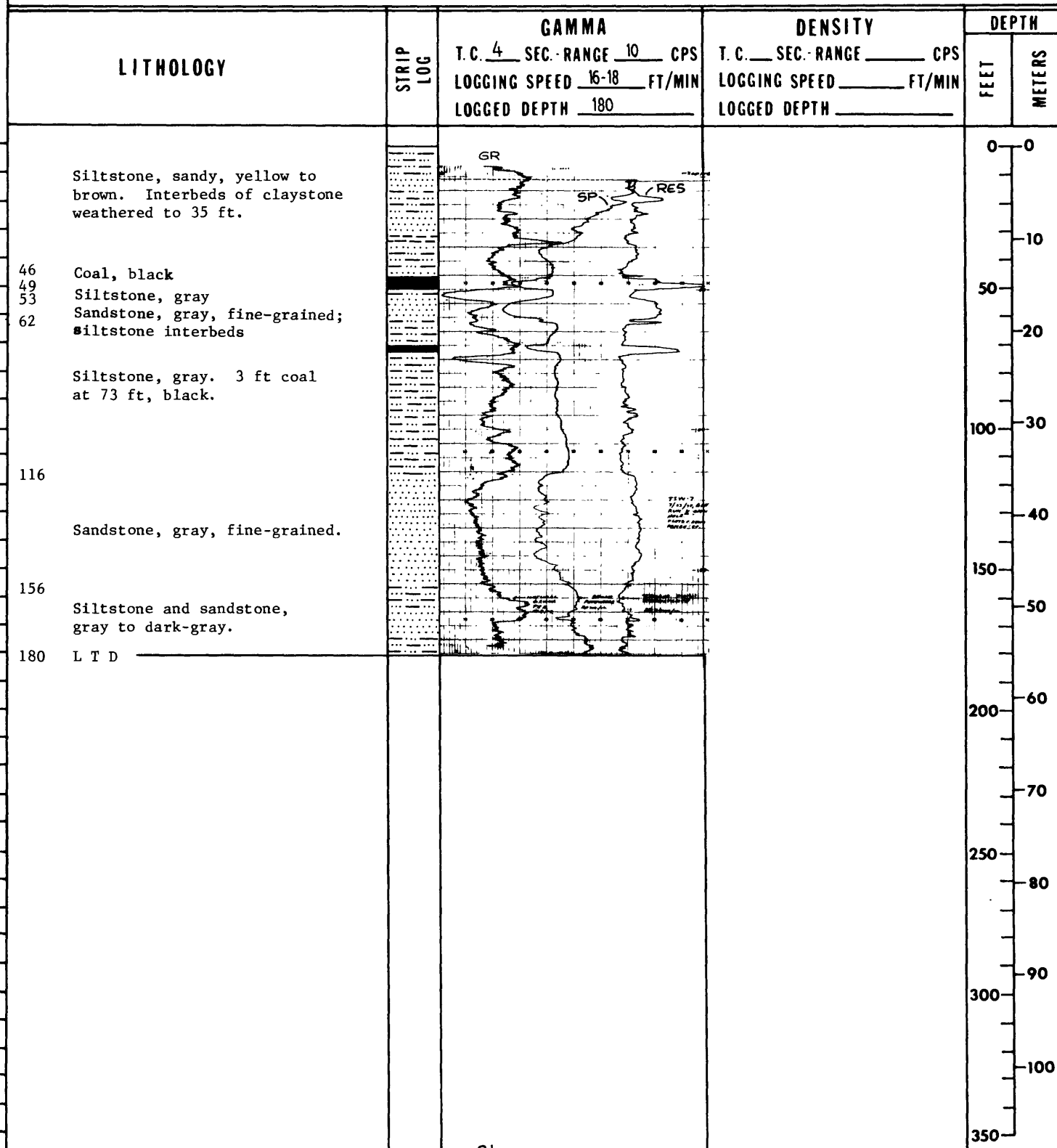
HOLE NO CD-78020  
SHEET 2 OF 2

LITHOLOGY	STRIP LOG	GAMMA		DENSITY		DEPTH	
		T.C. <u>4</u> SEC. RANGE <u>5</u> CPS LOGGING SPEED <u>16-18</u> FT/MIN LOGGED DEPTH <u>728</u>	T.C. _____ SEC. RANGE _____ CPS LOGGING SPEED _____ FT/MIN LOGGED DEPTH _____	FEET	METERS		
Siltstone and claystone, medium-gray, coarsening upward . 5 ft coal at 359 ft.						350	-110
404 Sandstone, medium-gray, fine-to coarse-grained, poorly sorted.						400	-120
437 Siltstone and claystone, medium-gray to medium-dark-gray; carb shale interbeds.						450	-140
512 Sandstone, medium-gray, fine-to medium-grained.						500	-150
544 Siltstone and claystone, medium-gray.						550	-170
599 Coal, black, moderate luster.						600	-180
632 Sandstone						650	-200
728 LTD						700	-210
						750	-220

# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD 78021  
SHEET 1 OF 1

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Teckla SW	
<b>DATE STARTED</b> 7-23-1978	<b>DATE COMP.</b> 7-23-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 11 <b>T.</b> 41 N. <b>R.</b> 72 W. , <b>FOOTAGE LOC.</b> 100		<b>FNL</b> 1600	<b>FEL</b> 4875
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b> <b>ROTARY</b> 180 <b>CORING</b> 0	<b>TOTAL DEPTH</b> 180
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A. Donatich; H. Corley; E.		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> SP=20 MV RES=20 OHMS Fivas			

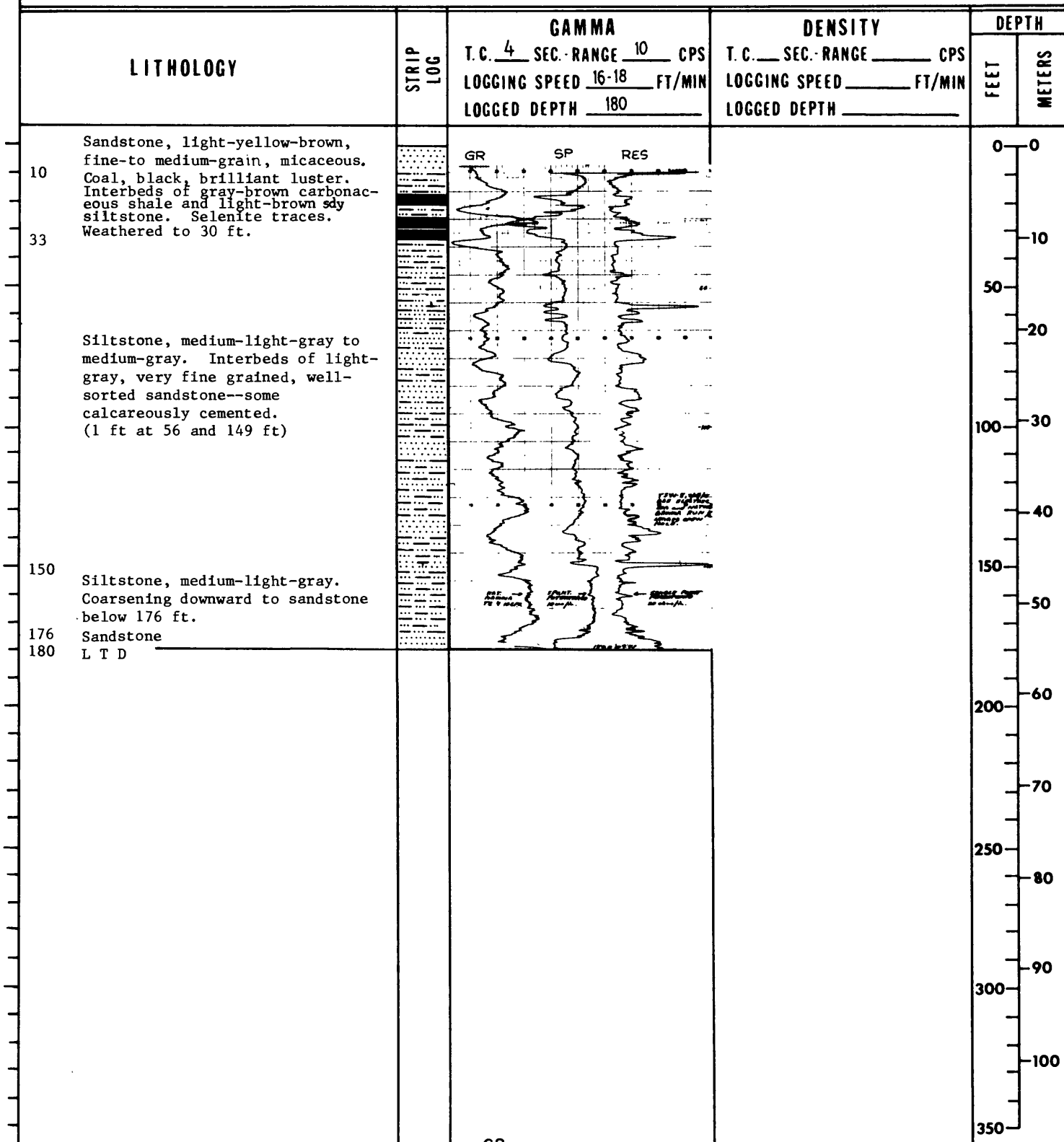




## UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD 78022  
SHEET 1 OF 1

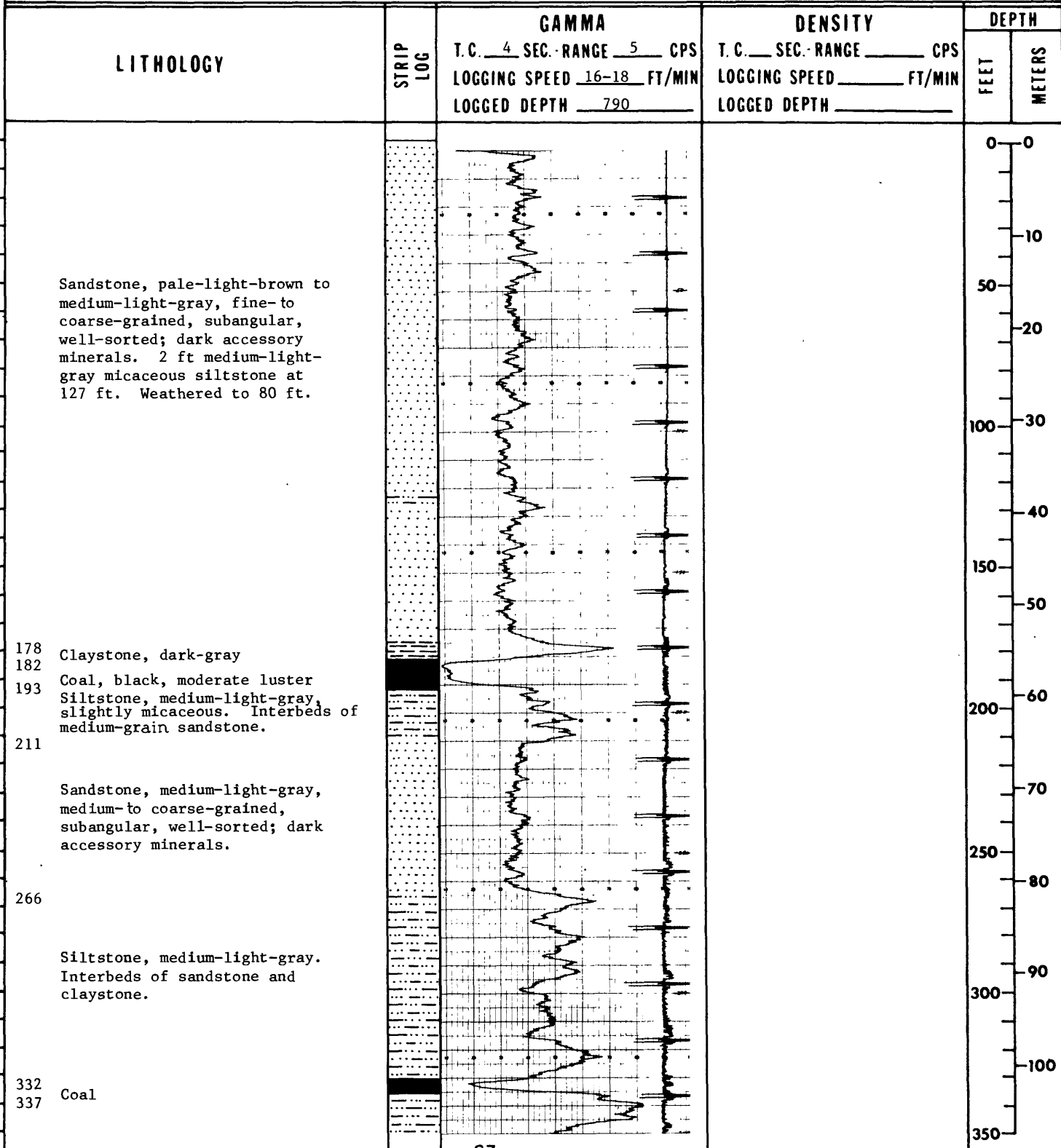
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Teckla SW	
<b>DATE STARTED</b> 7-24-1978	<b>DATE COMP.</b> 7-24-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 19 T. 42 N., R. 71 W., FOOTAGE LOC.</b> 2250		<b>FNL</b> 200	<b>FEL</b> 4840
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 180	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; K. Bowen;		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> SP = 10 MV RES = 20 OHMS E. Fivas			



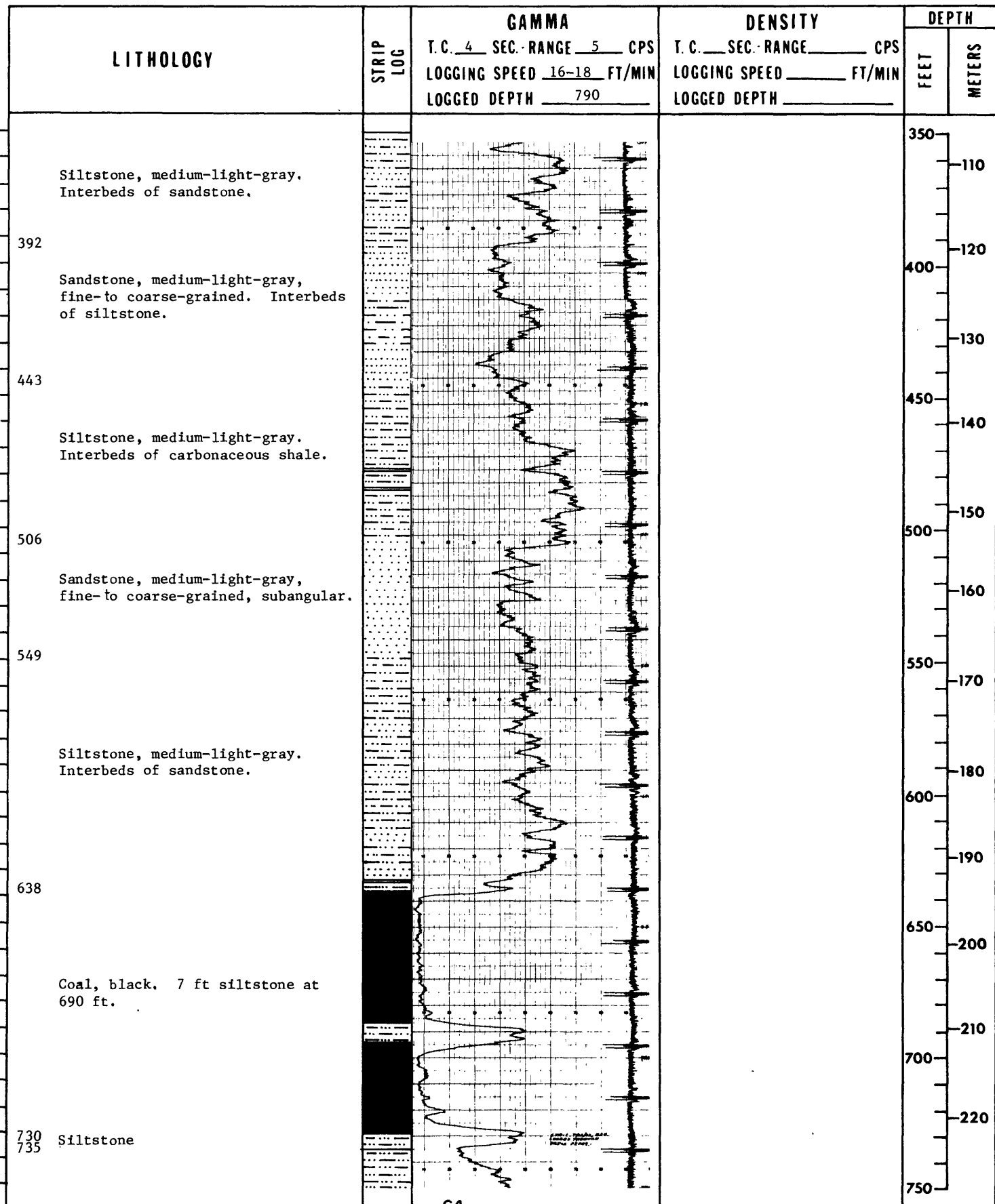
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78023  
SHEET 1 OF 6

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Little Thunder Reservoir	
<b>DATE STARTED</b> 7-24-1978	<b>DATE COMP.</b> 7-25-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 2 <b>T.</b> 42 N., <b>R.</b> 72 W., <b>FOOTAGE LOC.</b> 1650		<b>XXX FSL</b> 1050	<b>FEL RXX</b> <b>GROUND ELEV</b> 4915
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 800	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Gamma ray logged through drill pipe			



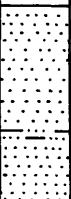
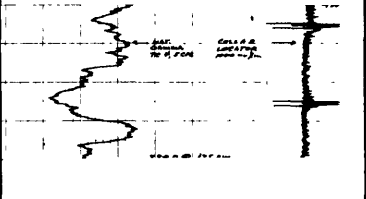
REMARKS:



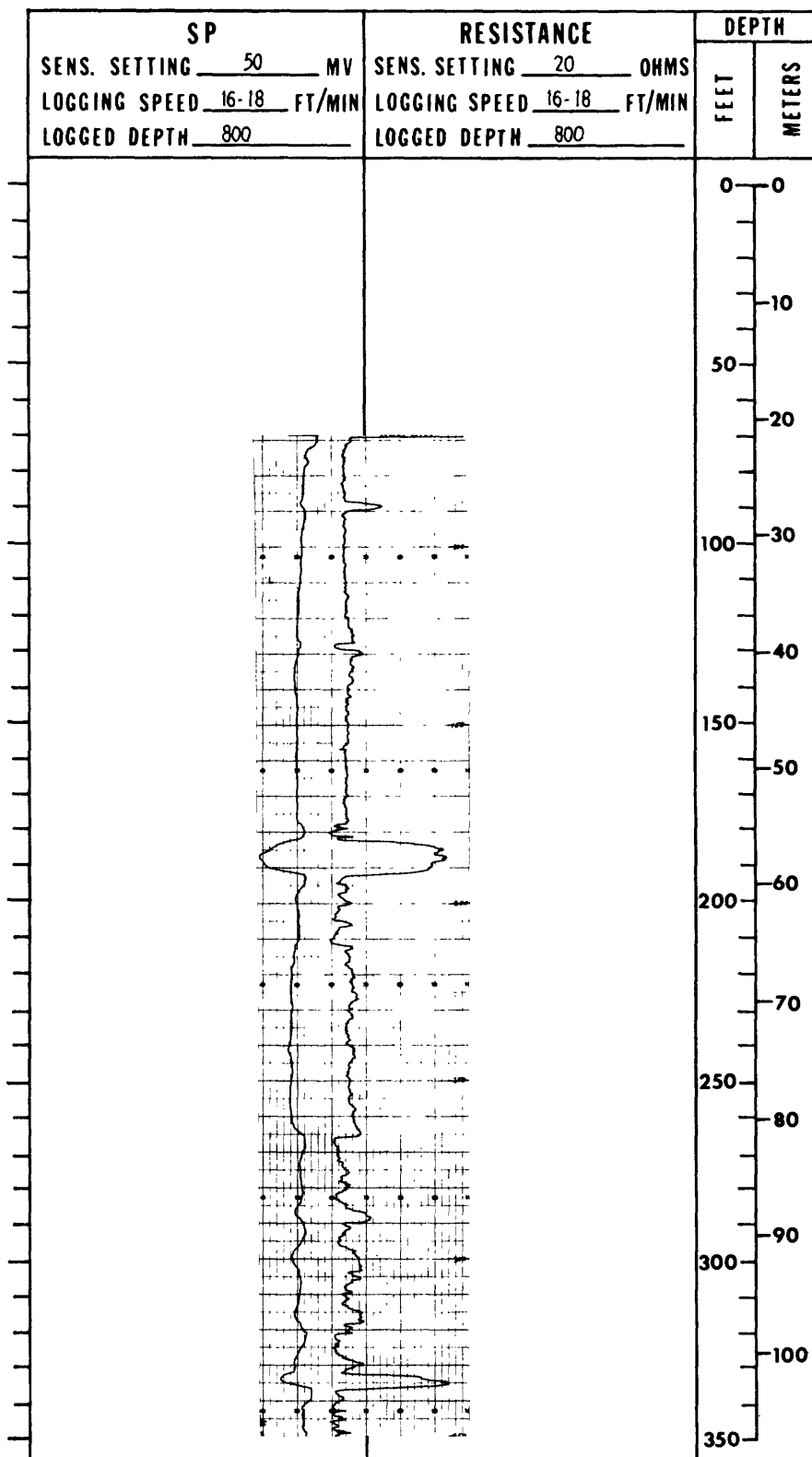
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78023  
SHEET 3 OF 6

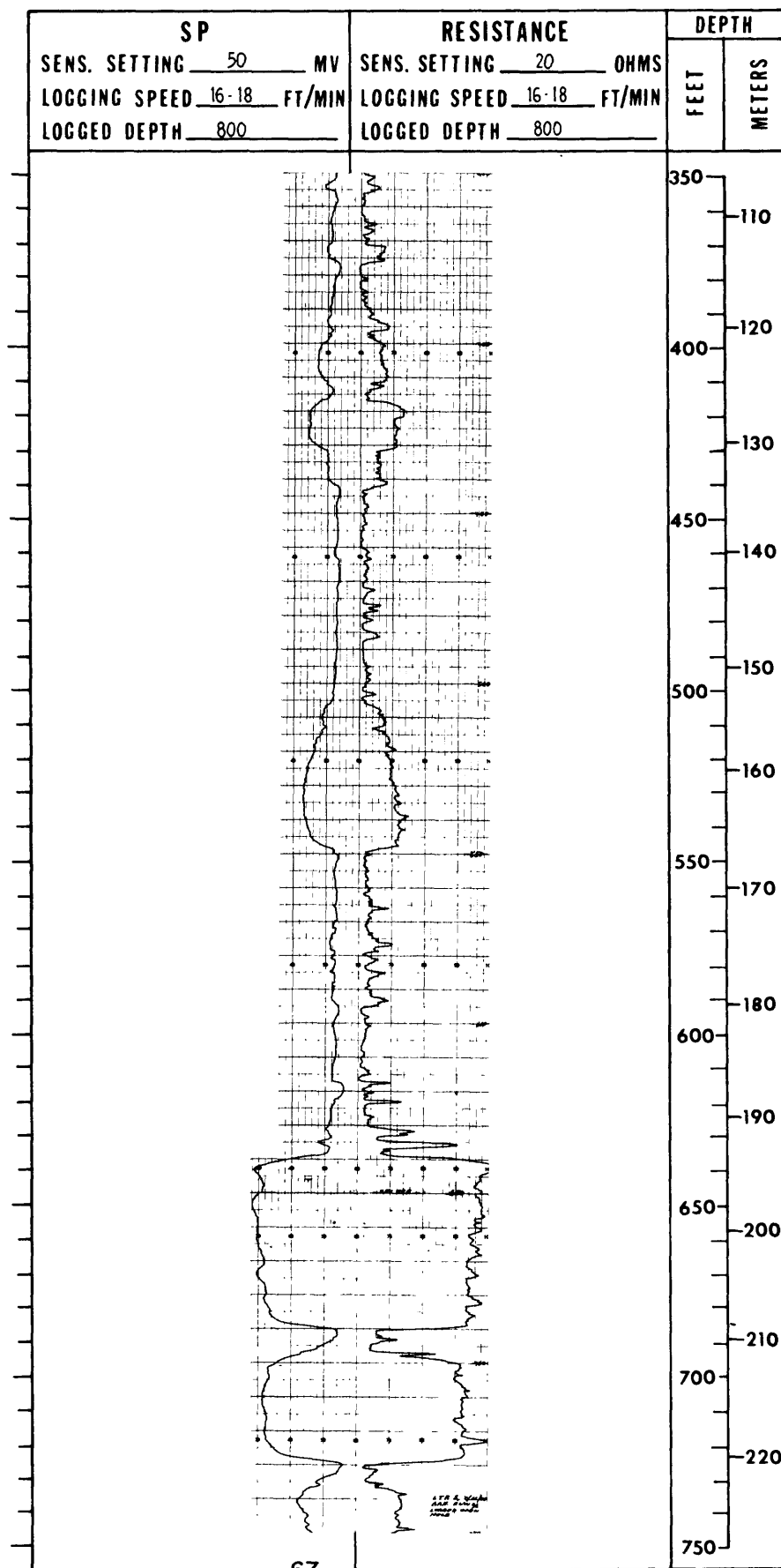
REMARKS:

LITHOLOGY	STRIP LOG	GAMMA T. C. <u>4</u> SEC. RANGE <u>5</u> CPS LOGGING SPEED <u>16-18</u> FT/MIN LOGGED DEPTH <u>790</u>	DENSITY T. C. <u>   </u> SEC. RANGE <u>   </u> CPS LOGGING SPEED <u>   </u> FT/MIN LOGGED DEPTH <u>   </u>	DEPTH	
				FEET	METERS
Sandstone				750	230
				800	240
800 LTD					250
					260
					270
					280
					290
					300
					310
					320
					330
					340
					350

REMARKS:



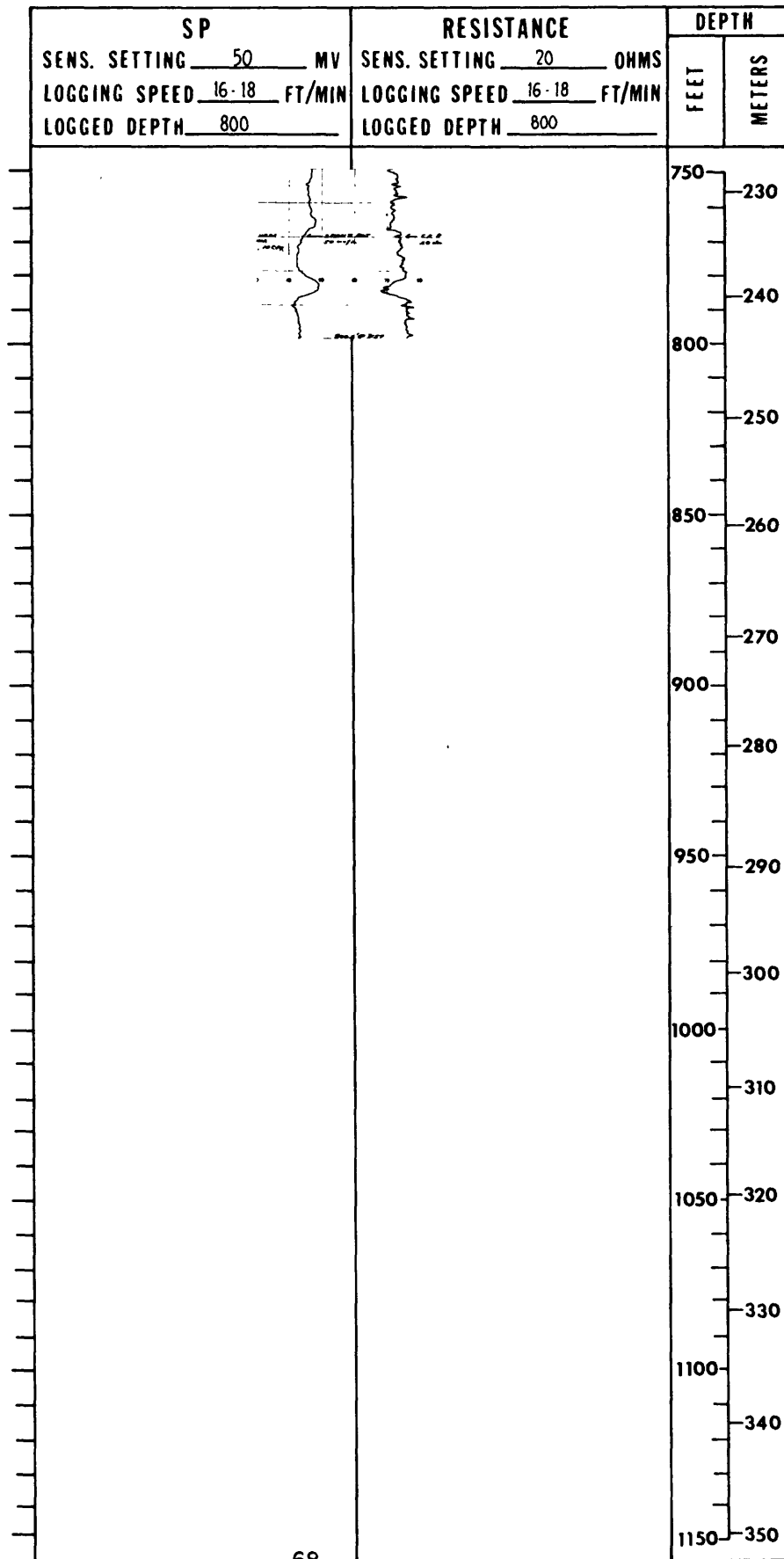
REMARKS:



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78023  
SHEET 6 OF 6

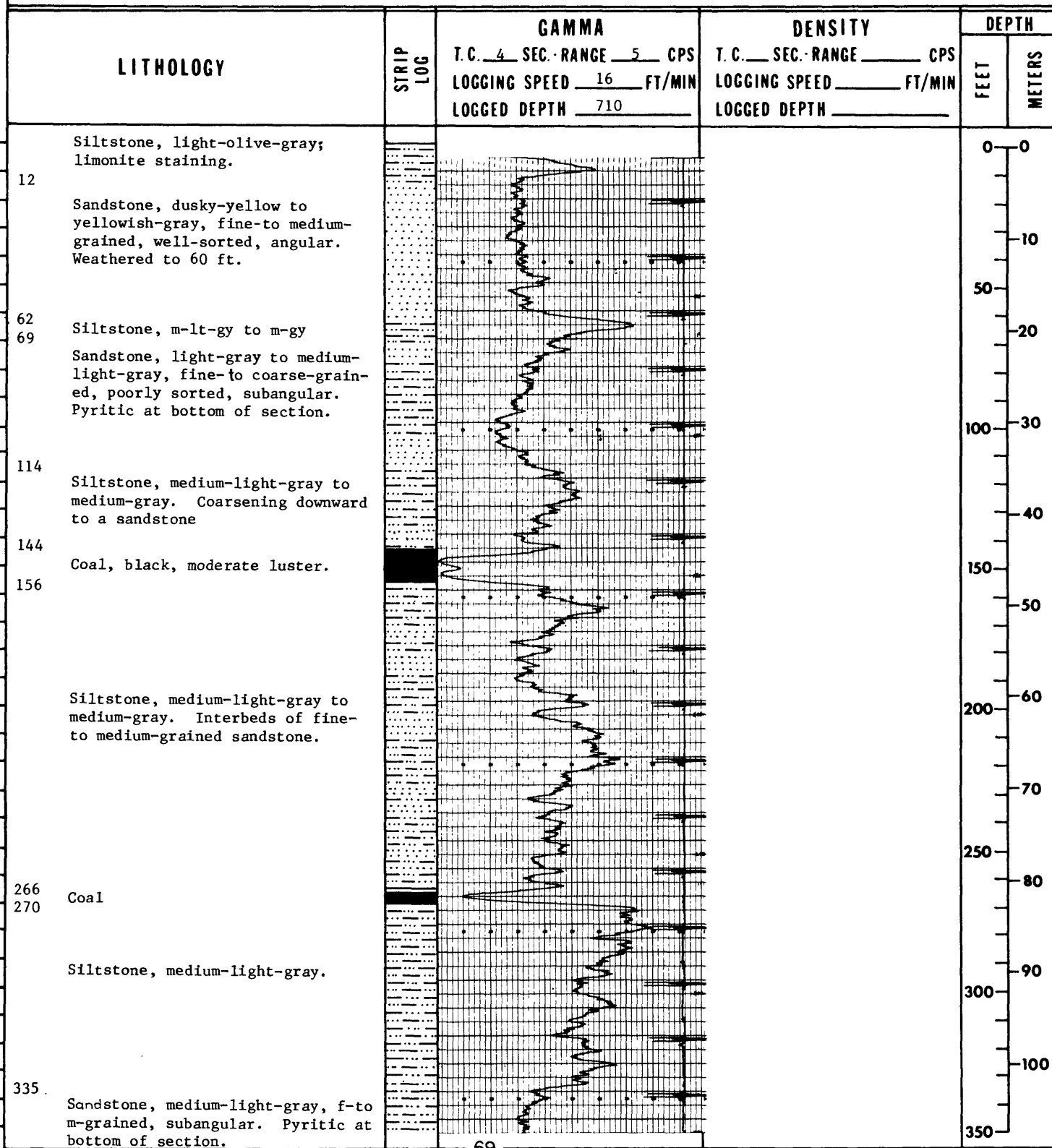
REMARKS:



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-7802  
SHEET 1 OF 4

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Little Thunder Reservoir	
<b>DATE STARTED</b> 7-26-1978	<b>DATE COMP.</b> 7-27-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 5 <b>T.</b> 43 N., <b>R.</b> 71 W., <b>FOOTAGE LOC.</b> 123		<b>FSL</b> 2615	<b>FEL</b> 4845
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 720	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Lost circulation at 600 ft. 2-in observation well installed to 593 ft on 7-27-1978 Gamma ray logged through drill pipe			

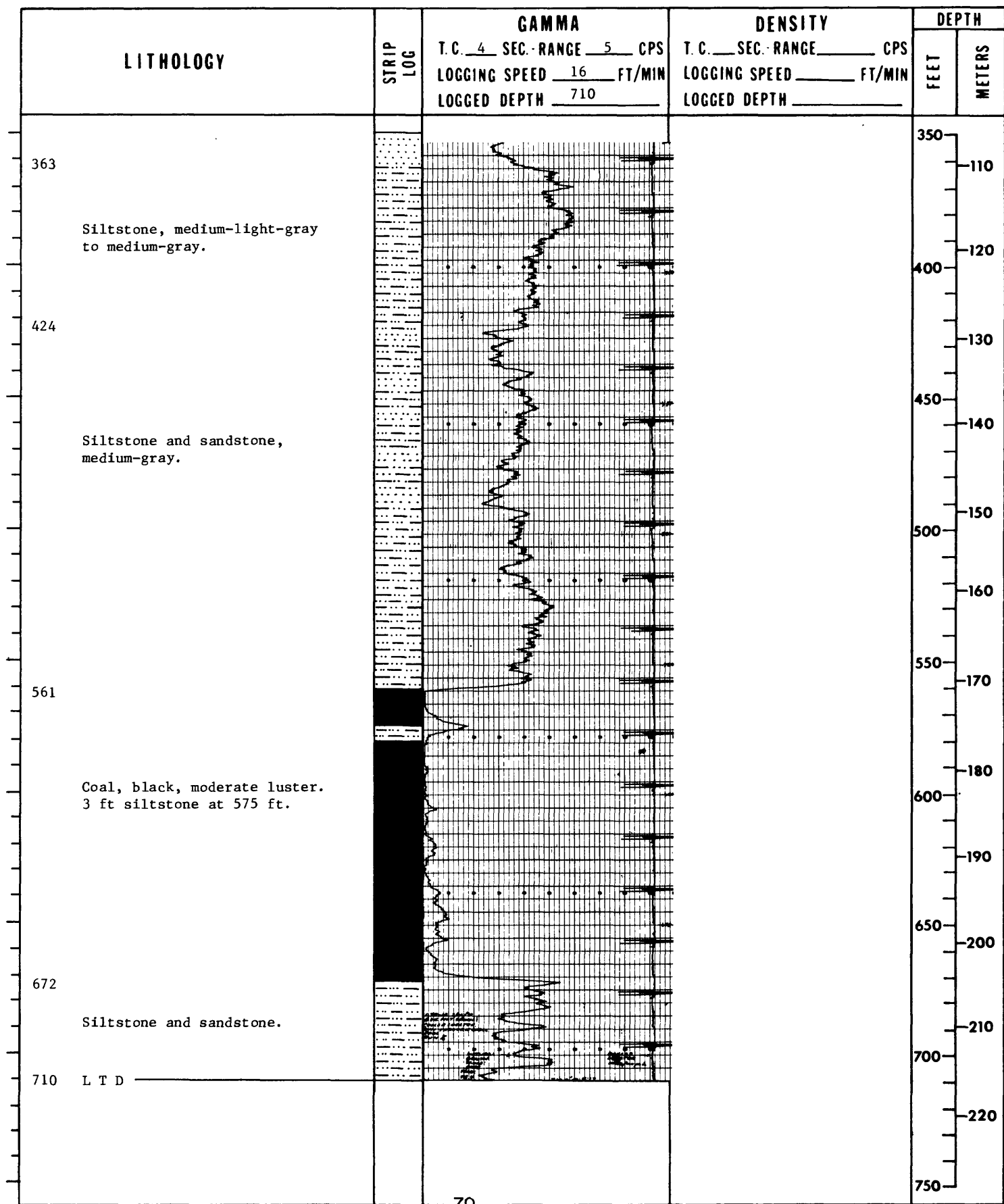




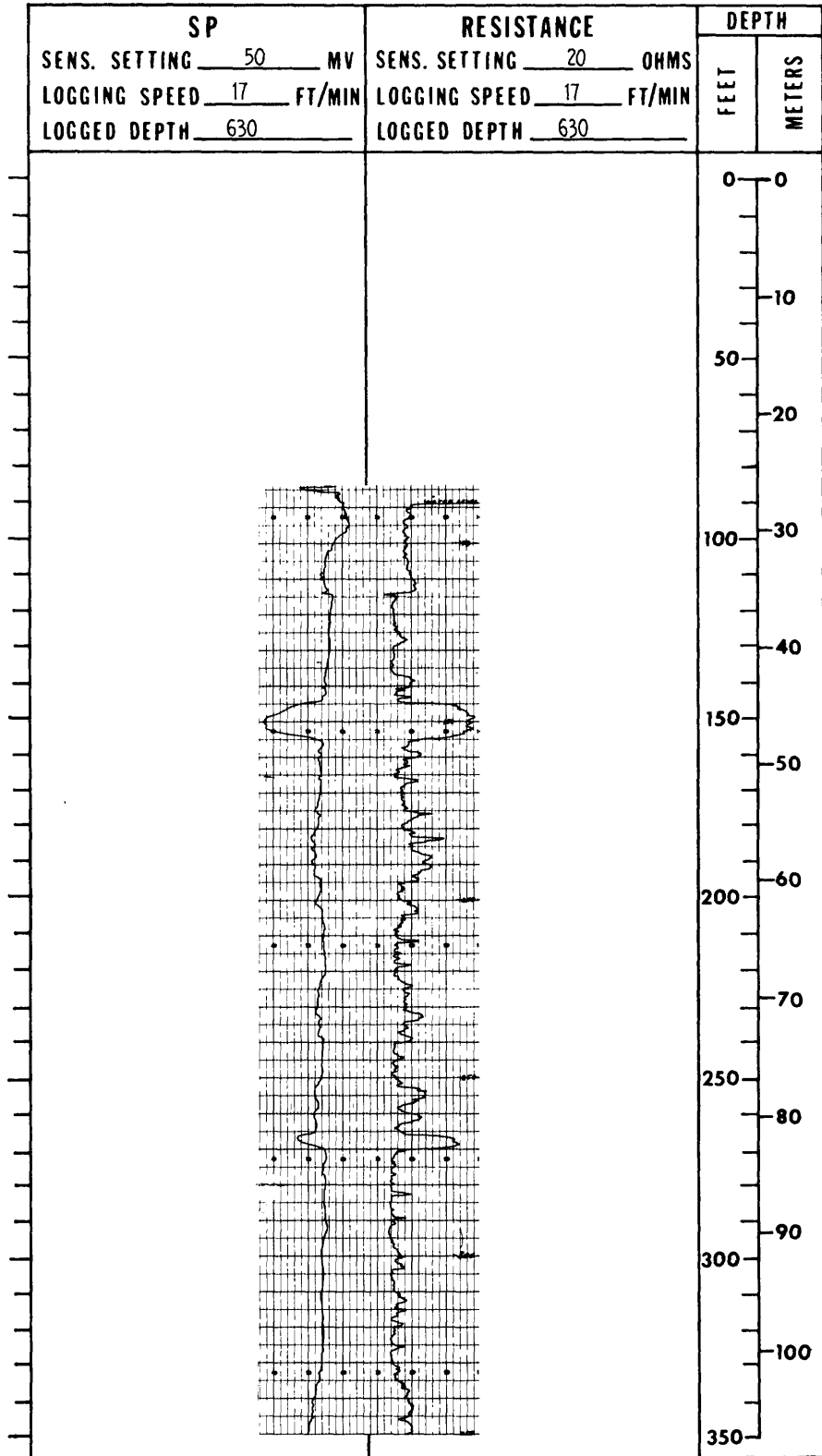
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78024  
SHEET 2 OF 4

REMARKS:



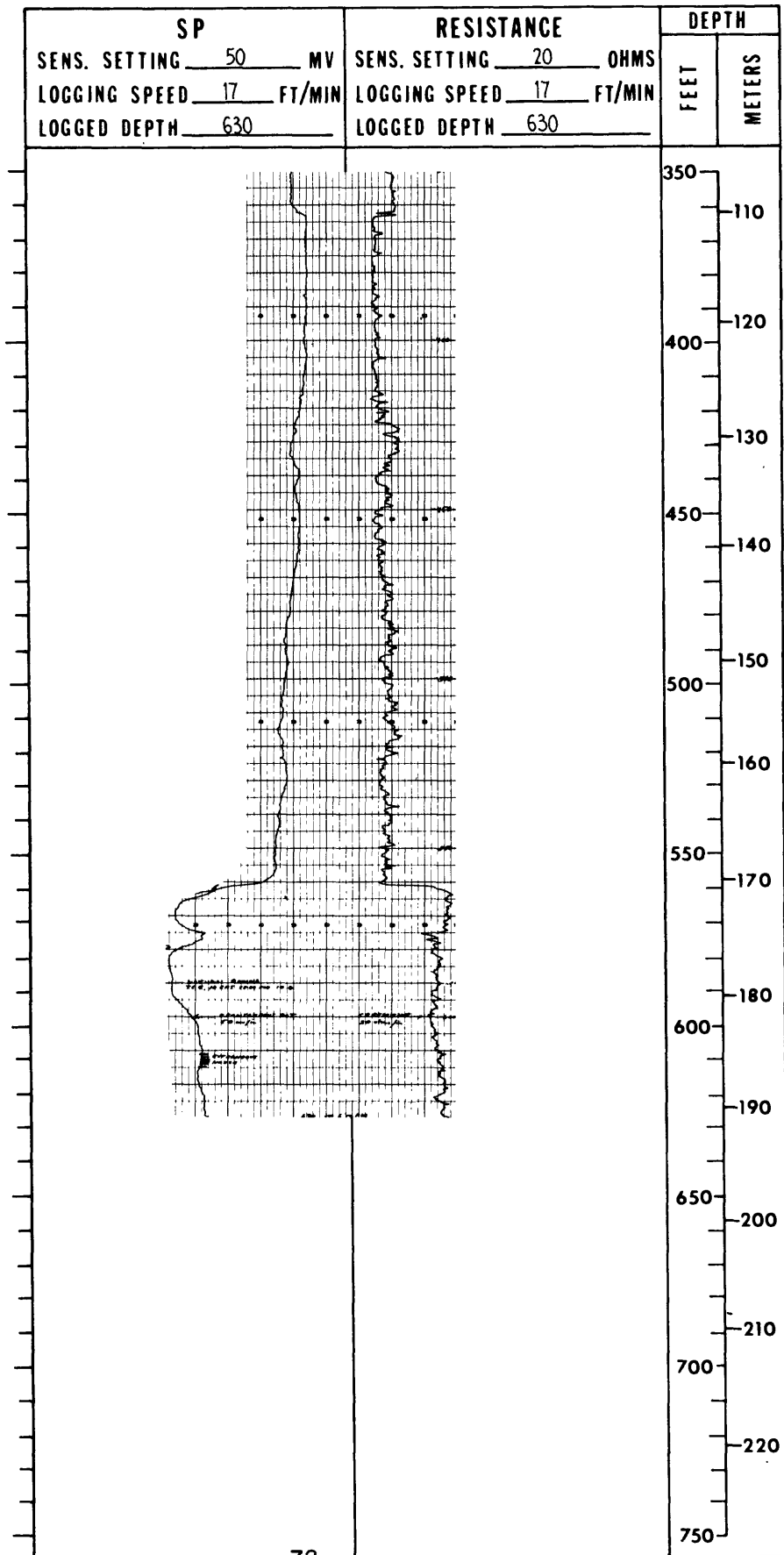
REMARKS:



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78024  
SHEET 4 OF 4

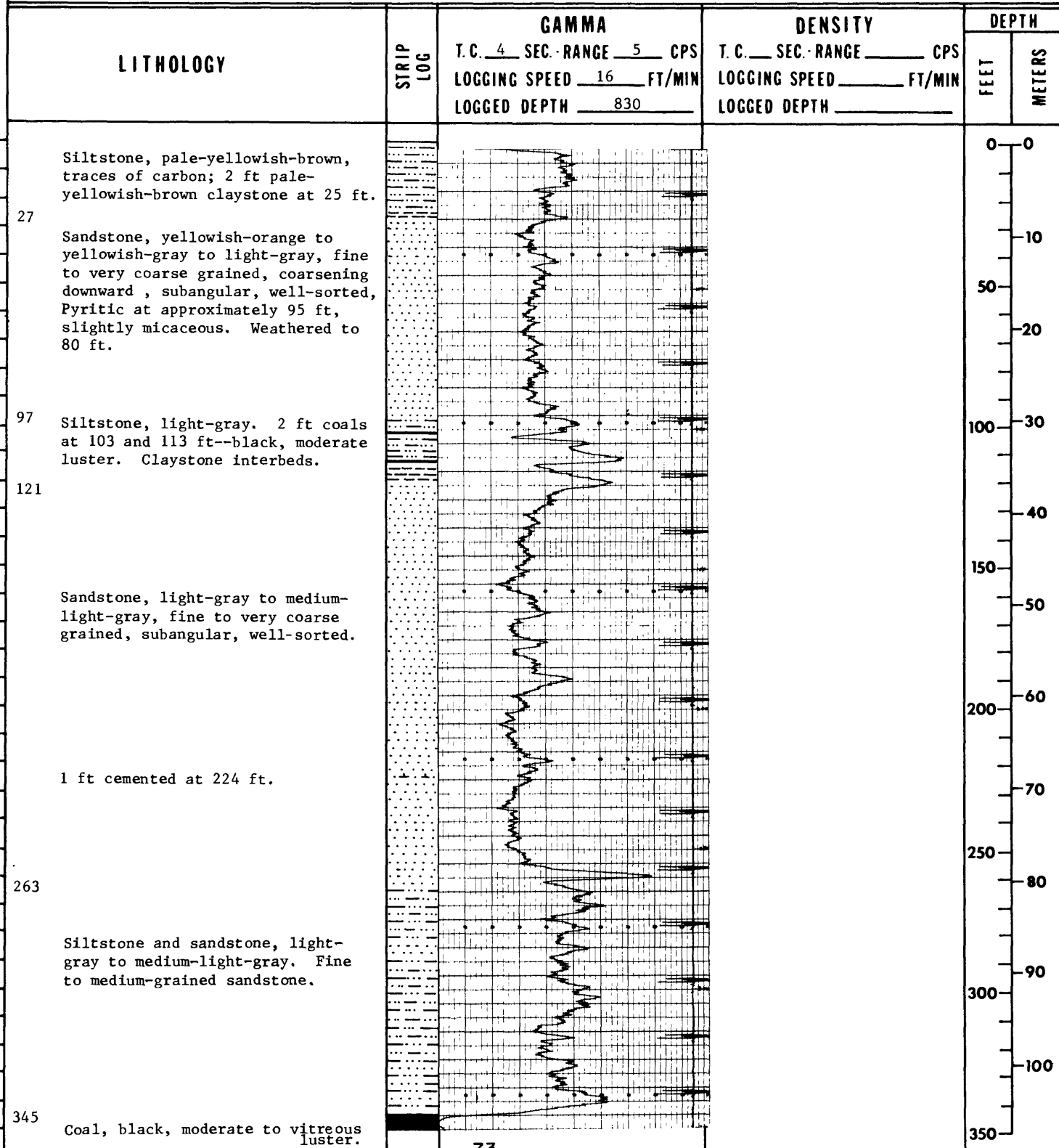
REMARKS:



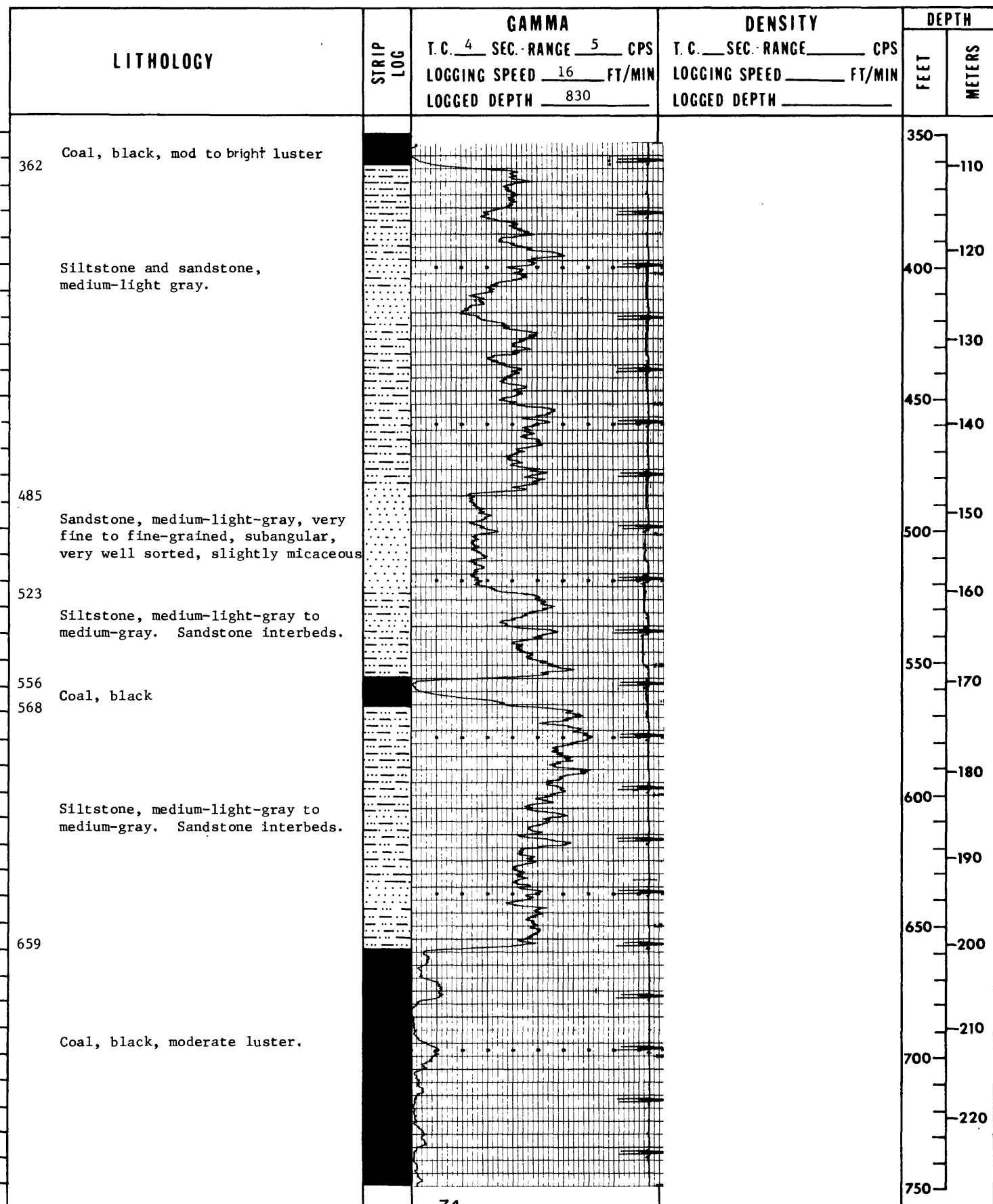
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78025  
SHEET 1 OF 5

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Little Thunder Reservoir	
<b>DATE STARTED</b> 8-1-1978	<b>DATE COMP.</b> 8-2-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 1 T. 43 N., R. 72 W., FOOTAGE LOC.</b> 1900		<b>XMM FSL</b> 2300	<b>XMM FWL</b>
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b>	<b>GROUND ELEV</b> 4925
		<b>ROTARY</b> 840	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>TOTAL DEPTH</b> 840
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Lost circulation at 680 ft. gamma ray logged through drill pipe.			



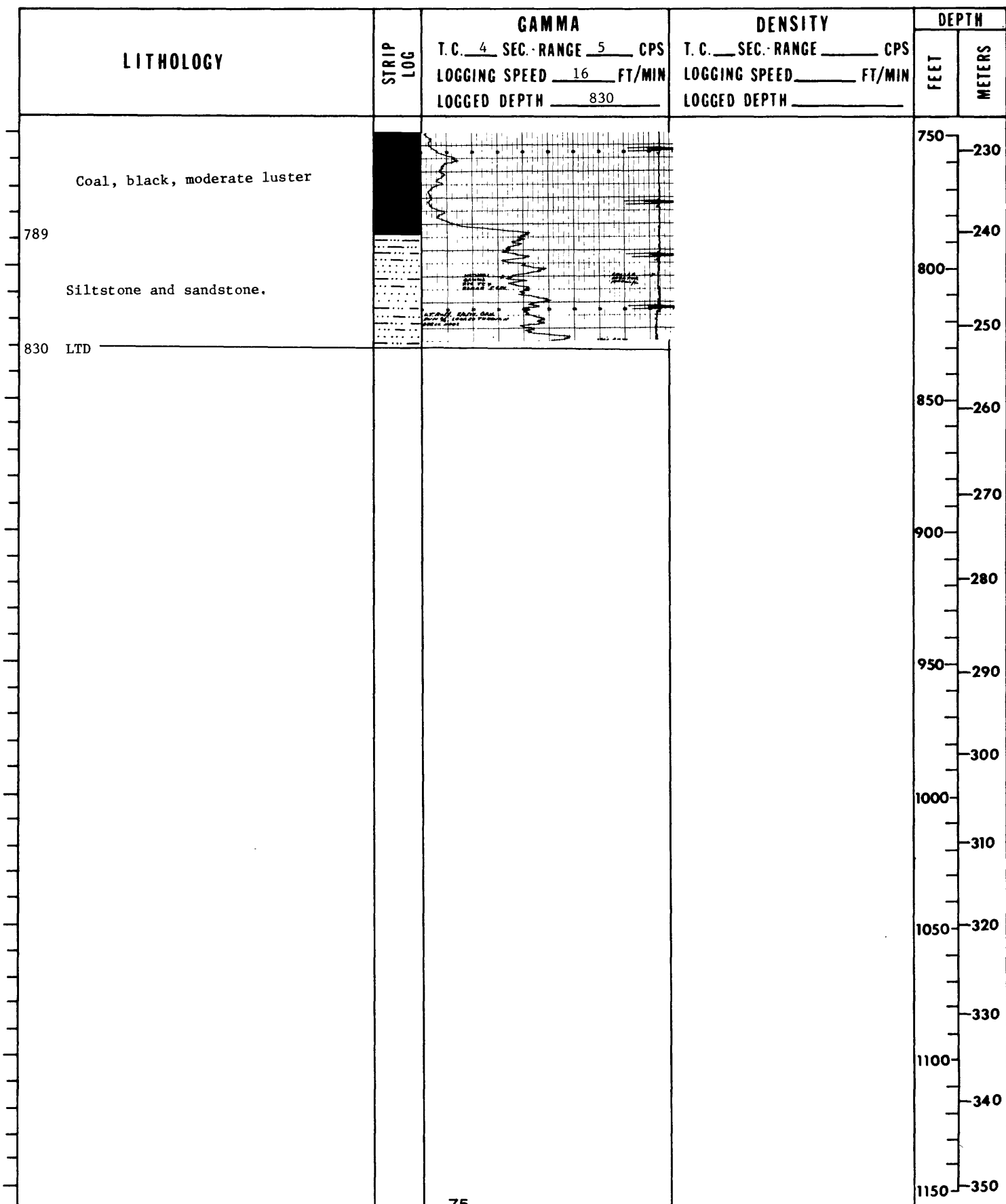
## REMARKS:



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78025  
SHEET 3 OF 5

REMARKS:

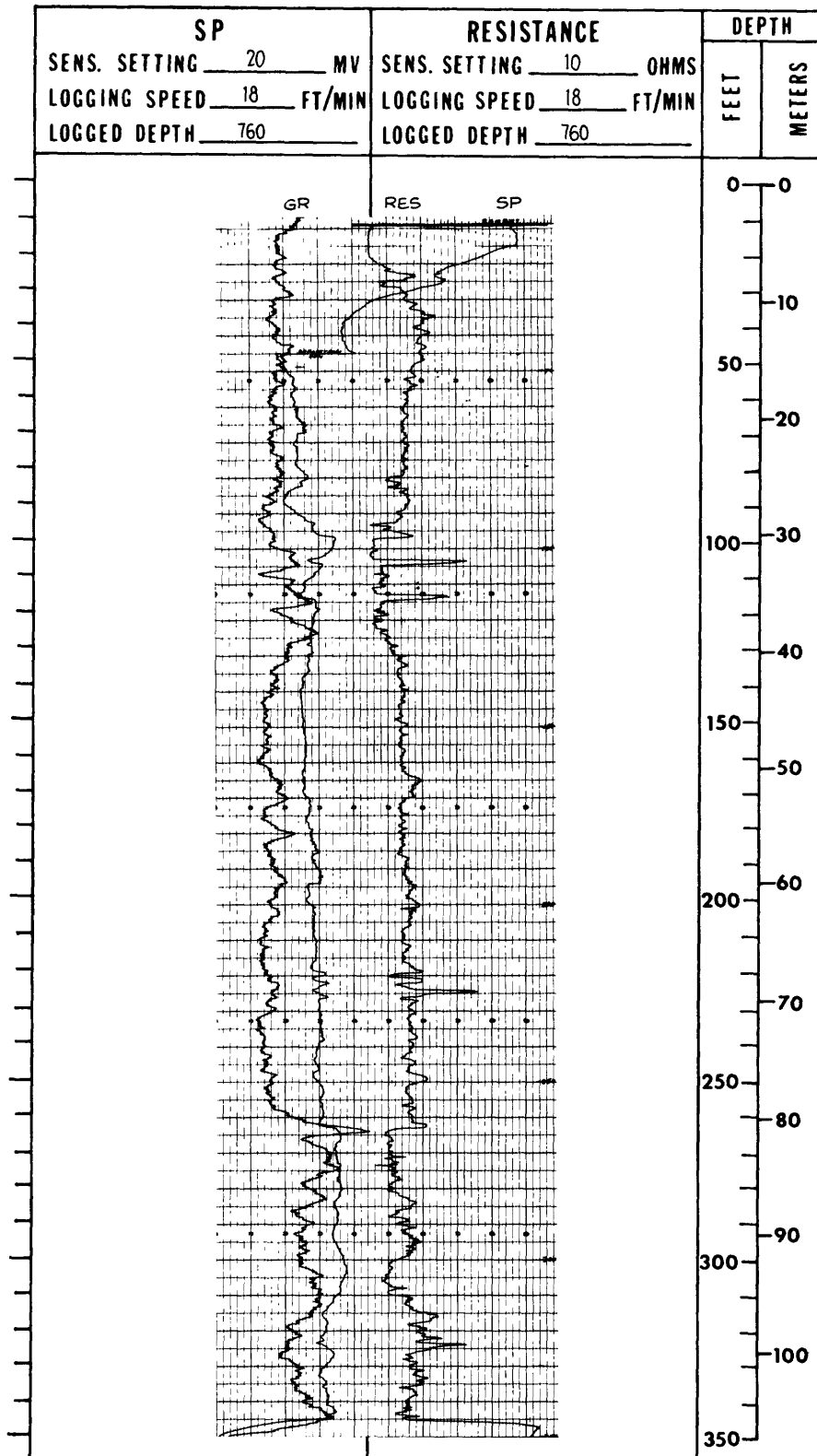


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78025  
SHEET 4 OF 5

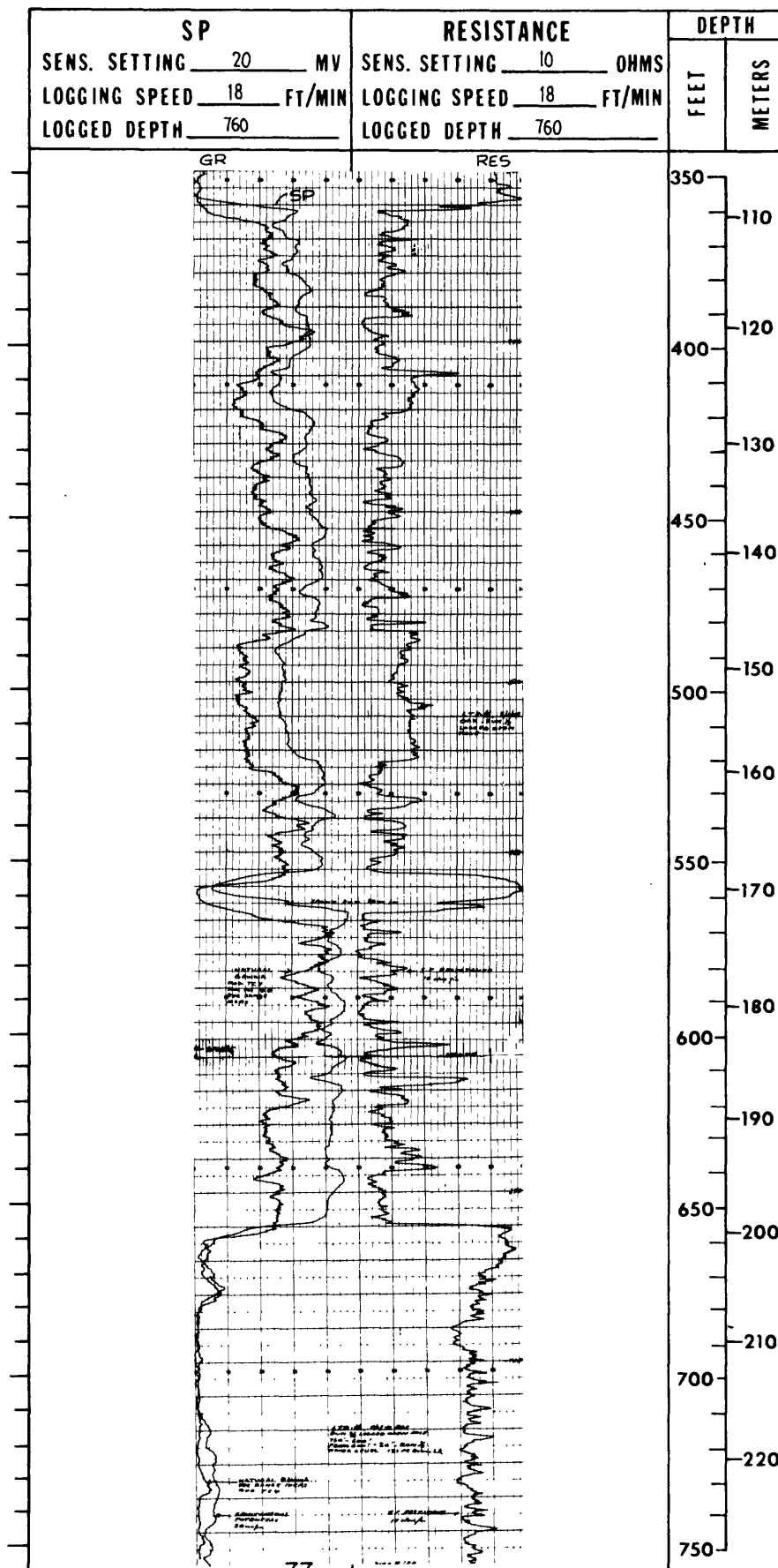
## REMARKS:

TC 4 Sec Range 10 CPS



## REMARKS:

T C 4 Sec. Range 10 CPS

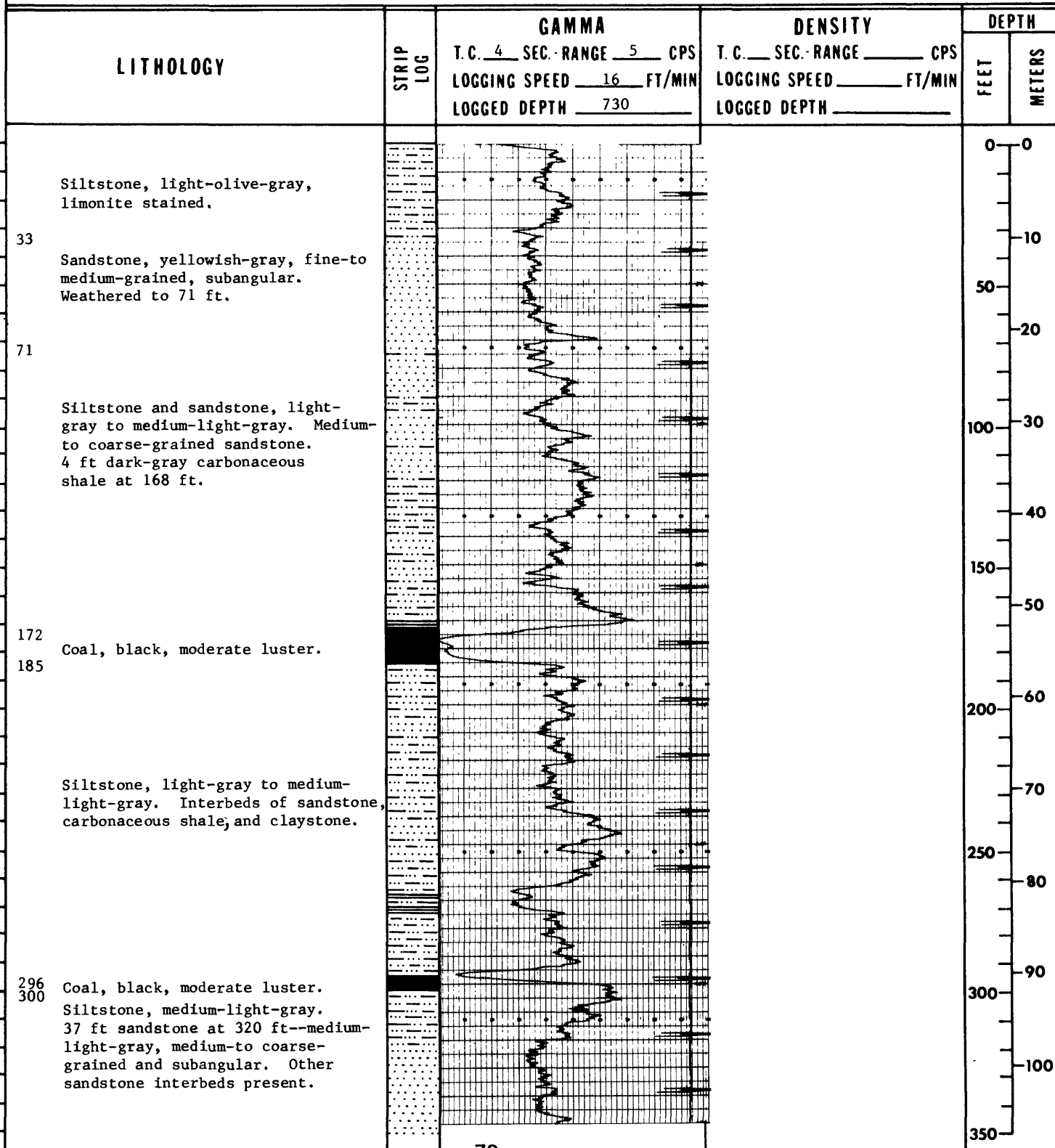




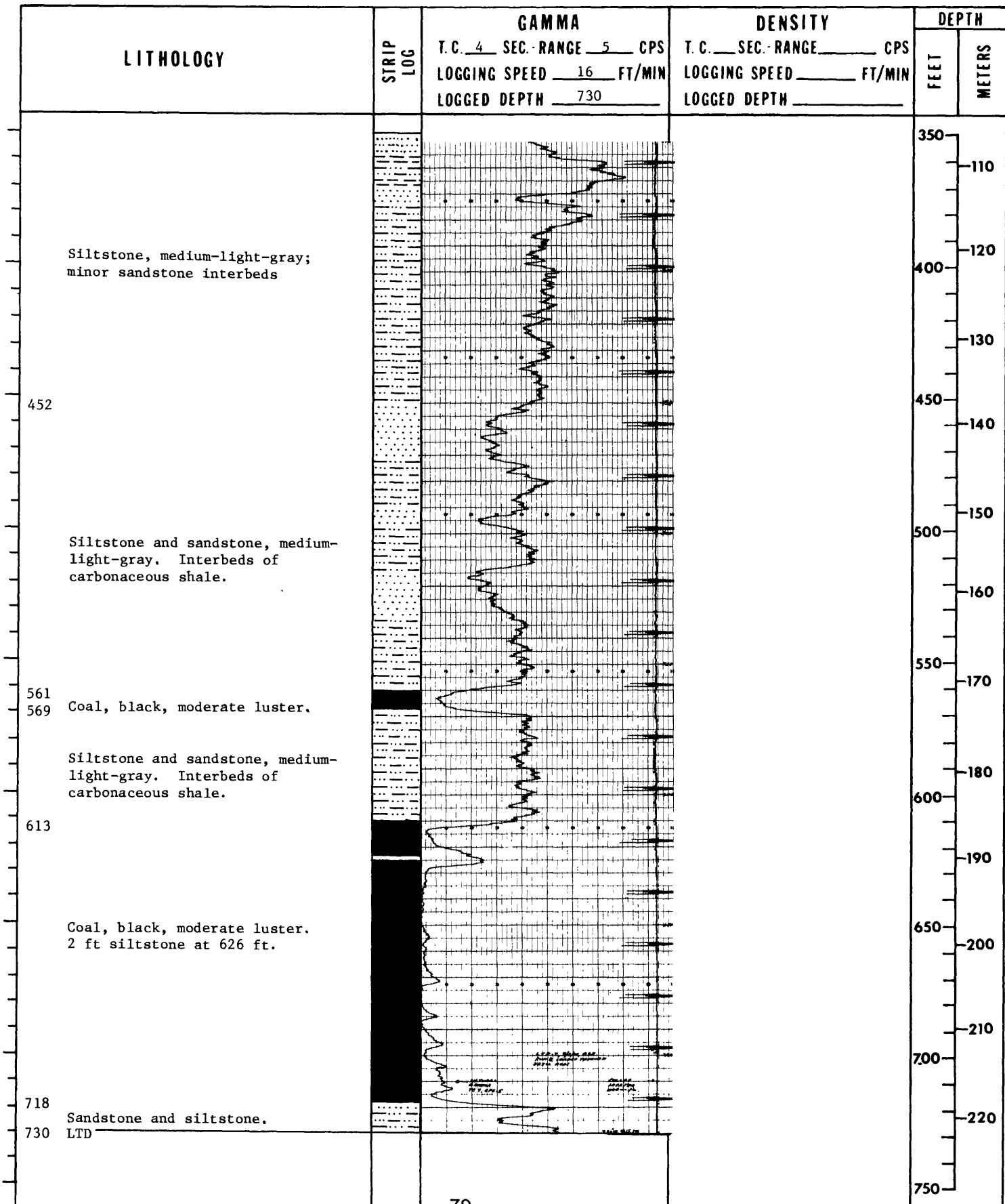
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78026  
SHEET 1 OF 4

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Little Thunder Reservoir	
<b>DATE STARTED</b> 8-2-1978	<b>DATE COMP.</b> 8-3-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 7 <b>T.</b> 43 N., <b>R.</b> 71 W., <b>FOOTAGE LOC.</b> 1950		<b>FNL</b> 1950	<b>FEL</b> 1950
<b>SIZE AND BIT TYPE:</b> 5-in and 4 3/4-in drag; 4 3/4-in		<b>FOOTAGE</b> 740	<b>GROUND ELEV</b> 4860
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>TOTAL DEPTH</b> 740
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Lost circulation at 700 ft. gamma ray logged through drill pipe			



## REMARKS:

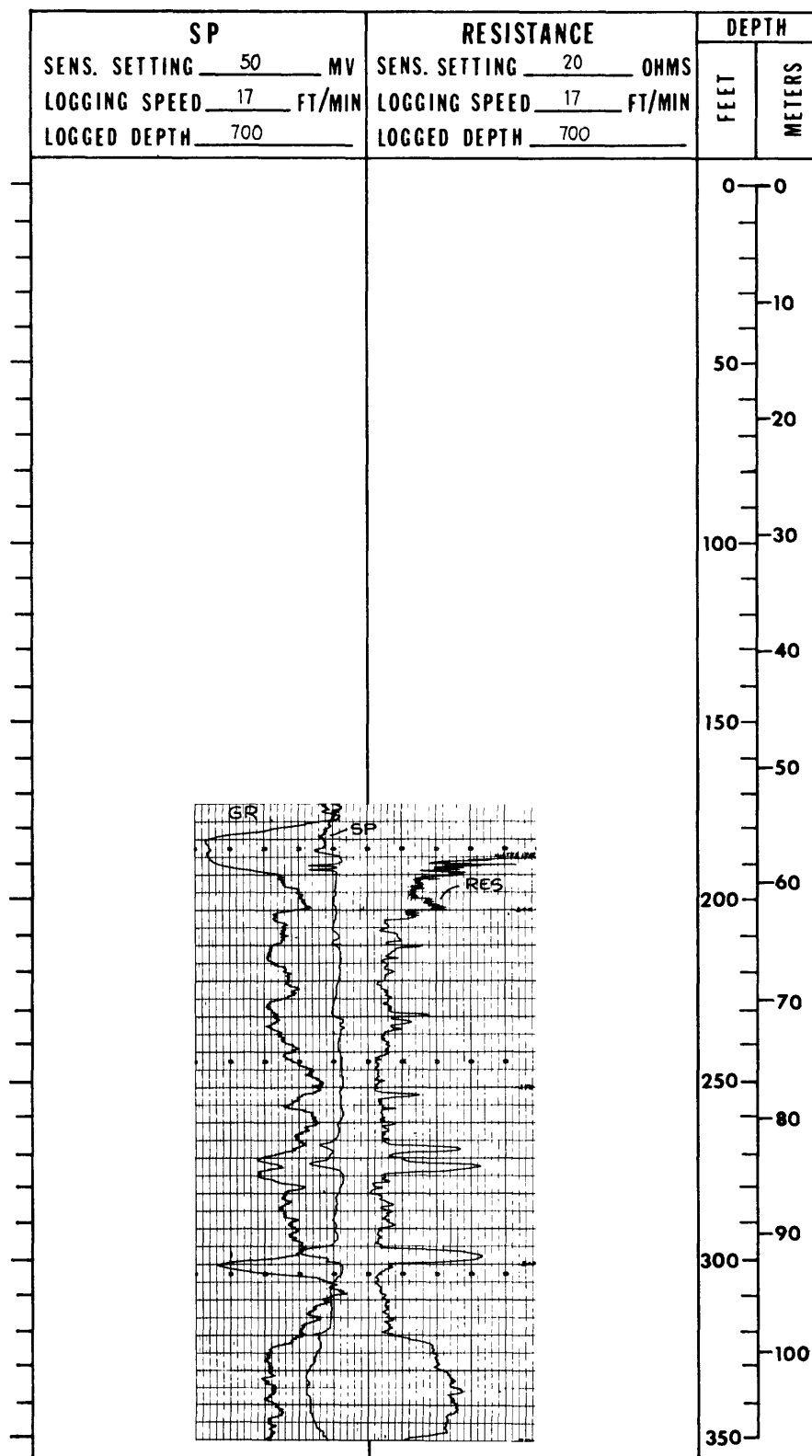


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78026  
SHEET 3 OF 4

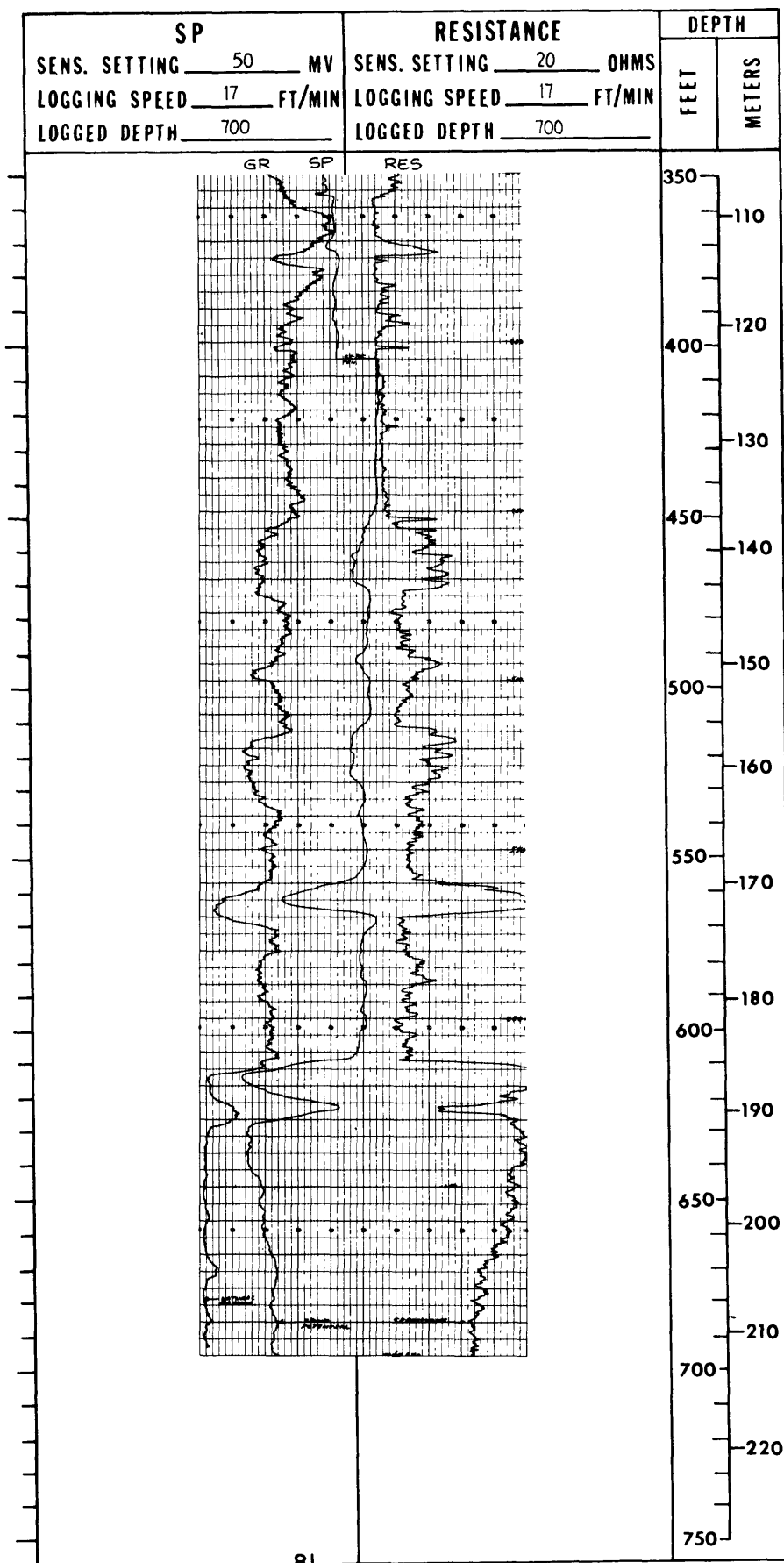
## REMARKS:

Tc 4 Sec. Range 10 CPS



## REMARKS:

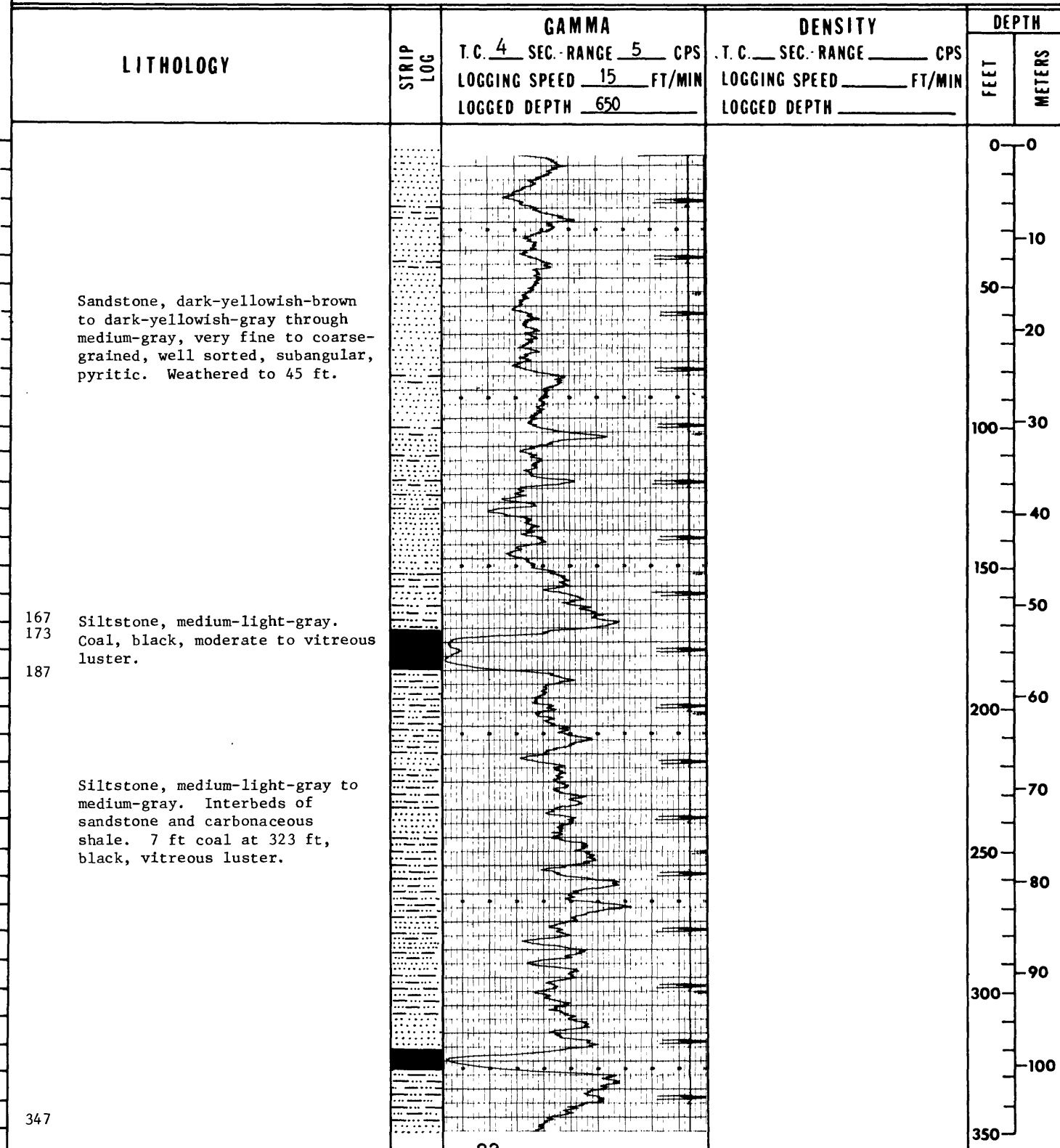
T C 4 Sec. Range 10 CPS



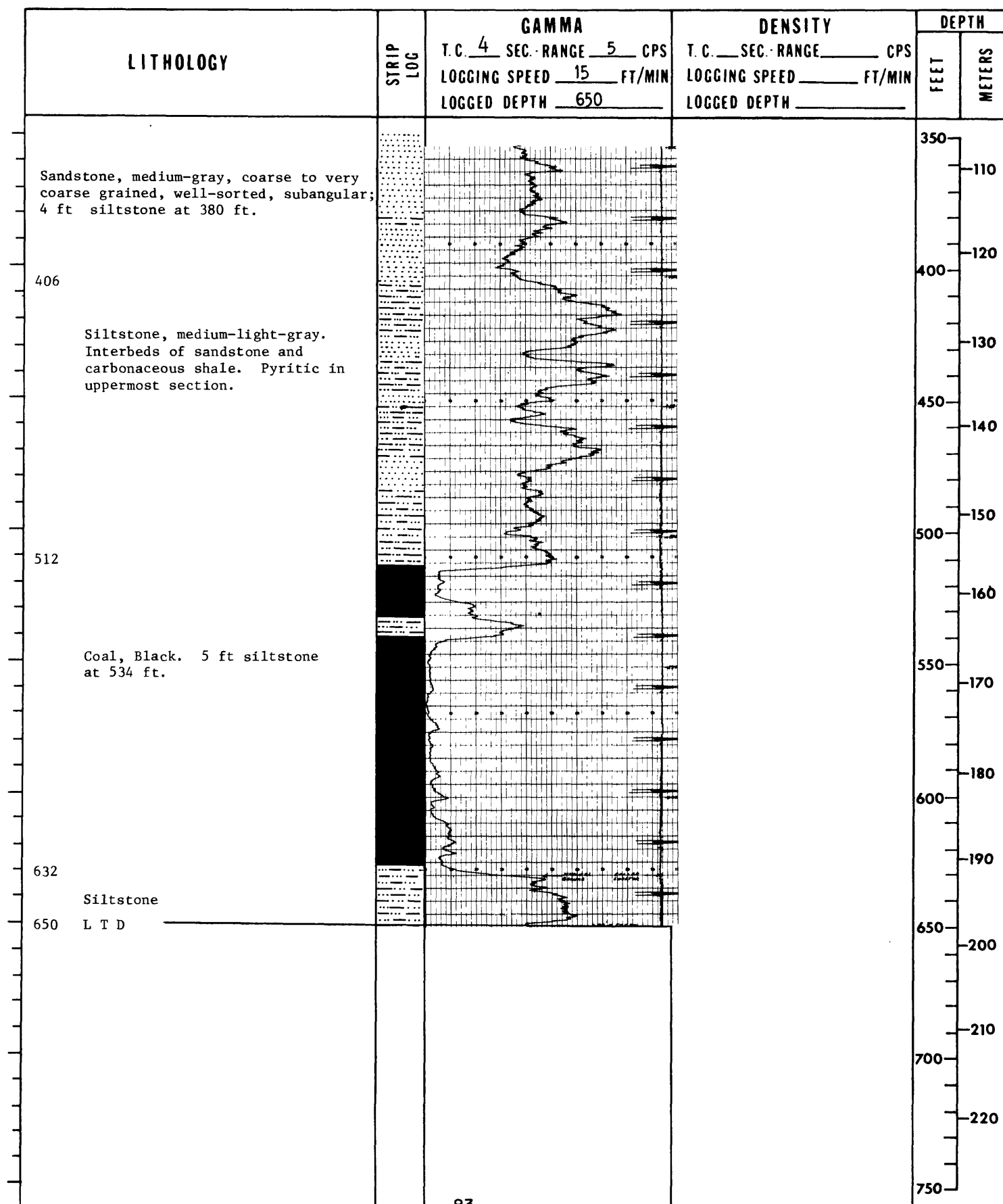
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78027  
SHEET 1 OF 4

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Little Thunder Reservoir	
<b>DATE STARTED</b> 8-4-1978	<b>DATE COMP.</b> 8-4-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 7 T. 43 N., R. 71 W.,</b>		<b>FOOTAGE LOC.</b> 650	<b>GROUND ELEV</b> 4840
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b> 660	<b>TOTAL DEPTH</b> 660
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Lost circulation 520 to 560 ft; 640 ft. Gamma ray logged through drill pipe			

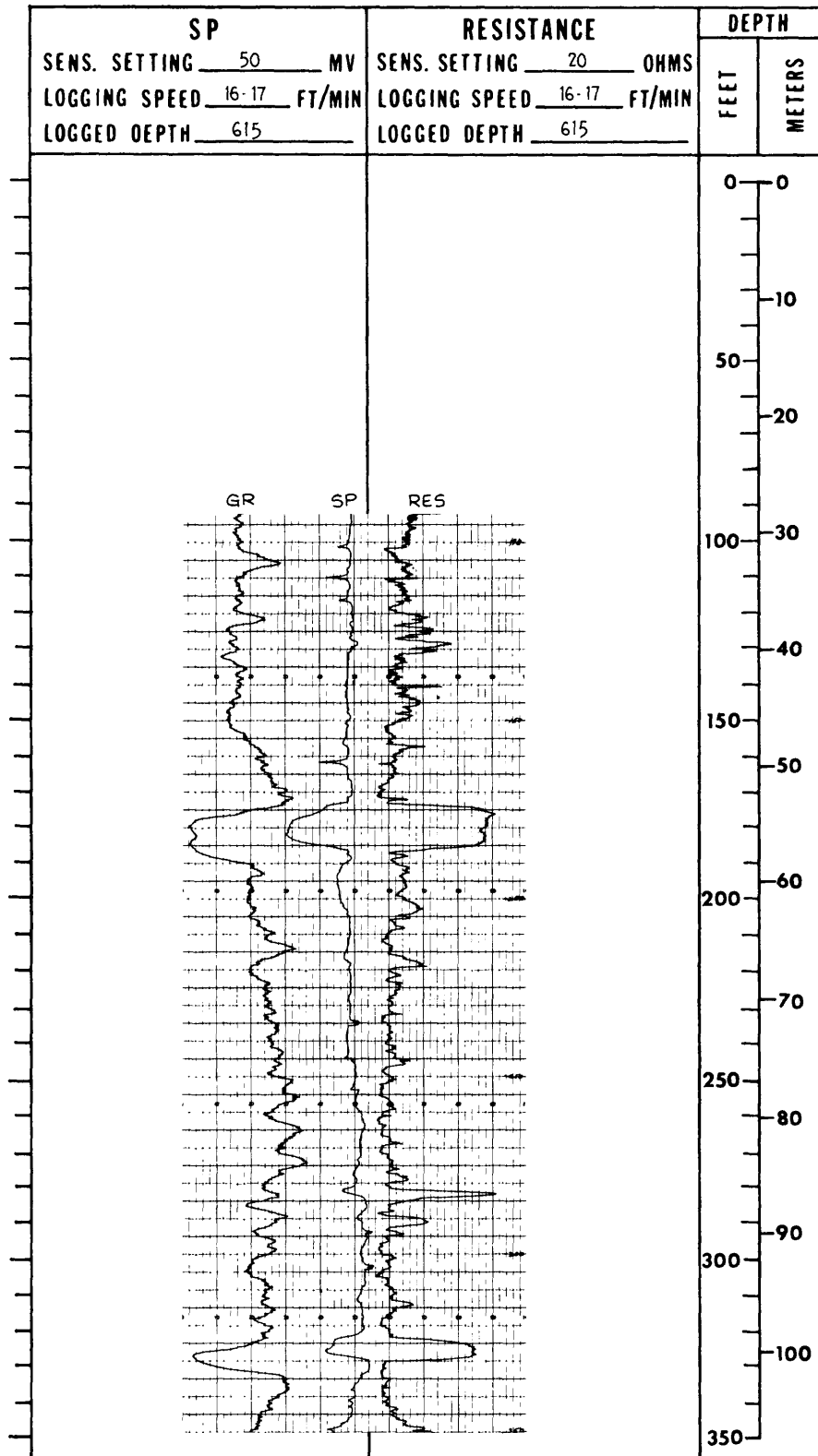


## REMARKS:



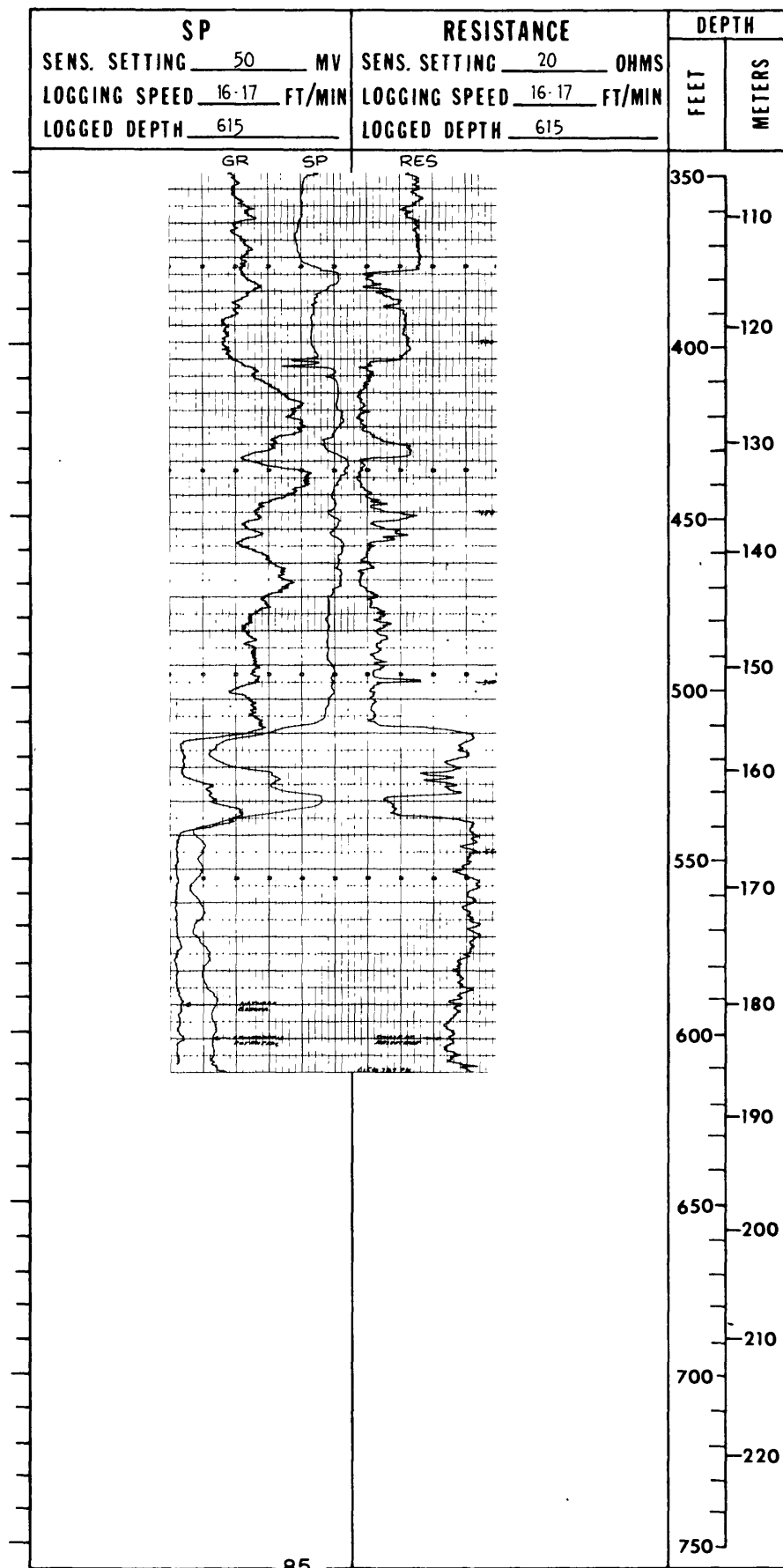
REMARKS:

T C 4 Sec. Range 10 CPS



## REMARKS:

TC 4 Sec. Range 10 CPS

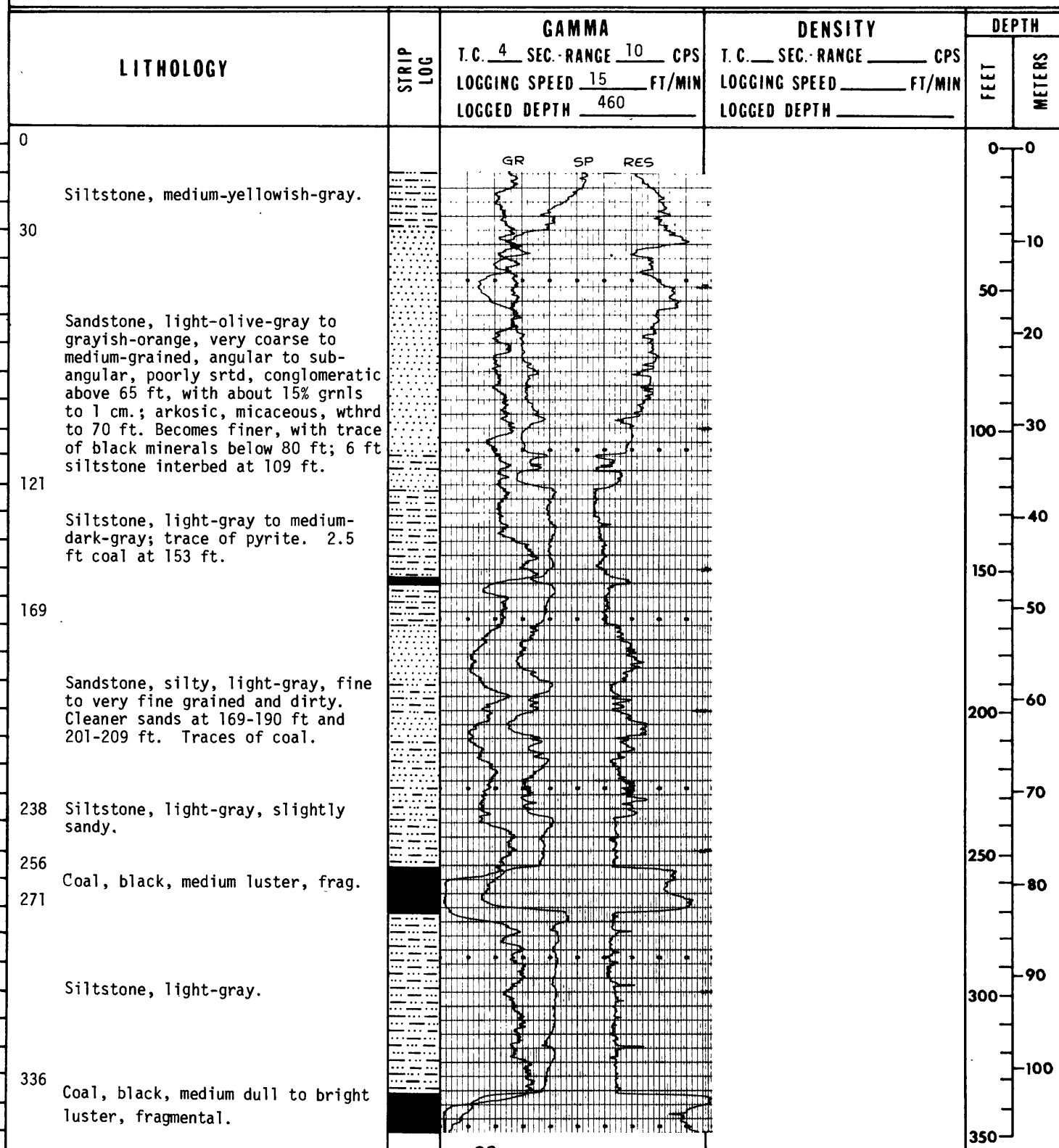




# UNITED STATES GEOLOGICAL SURVEY

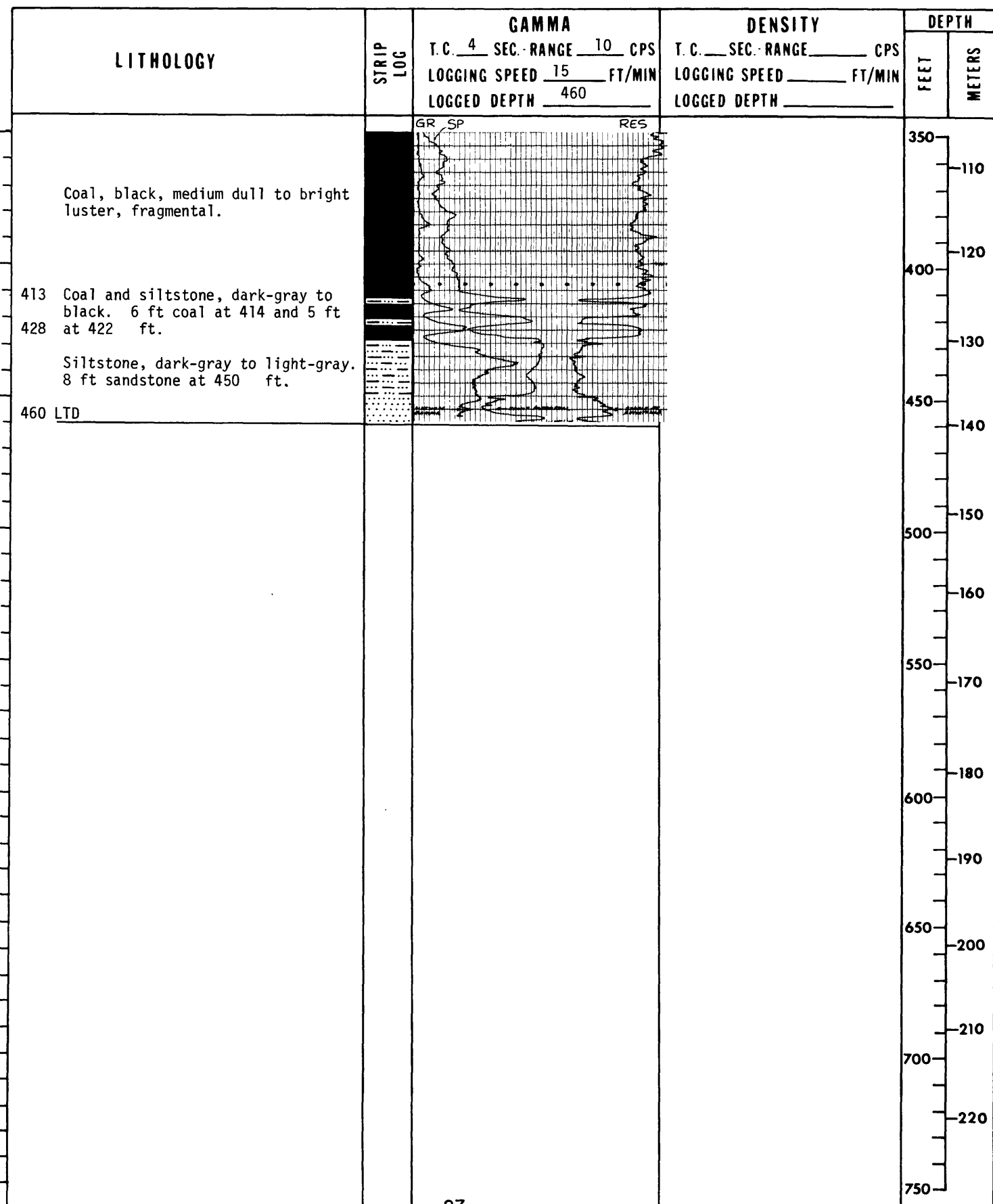
HOLE NO CD-78028  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Reno Reservoir	
<b>DATE STARTED</b> 8-5-1978	<b>DATE COMP.</b> 8-5-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 24 <b>T.</b> 43 N., <b>R.</b> 71 W., <b>FOOTAGE LOC.</b>		100 <del>FWL</del> 100 <del>FWL</del>	<b>GROUND ELEV</b> 4770
<b>SIZE AND BIT TYPE:</b> 4 3/4 in. Kenclaw		<b>FOOTAGE</b> ROTARY 460 CORING 0	
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> G. Hollomon; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b> SP = 20 MV RES = 50 OHMS			



**REMARKS:**

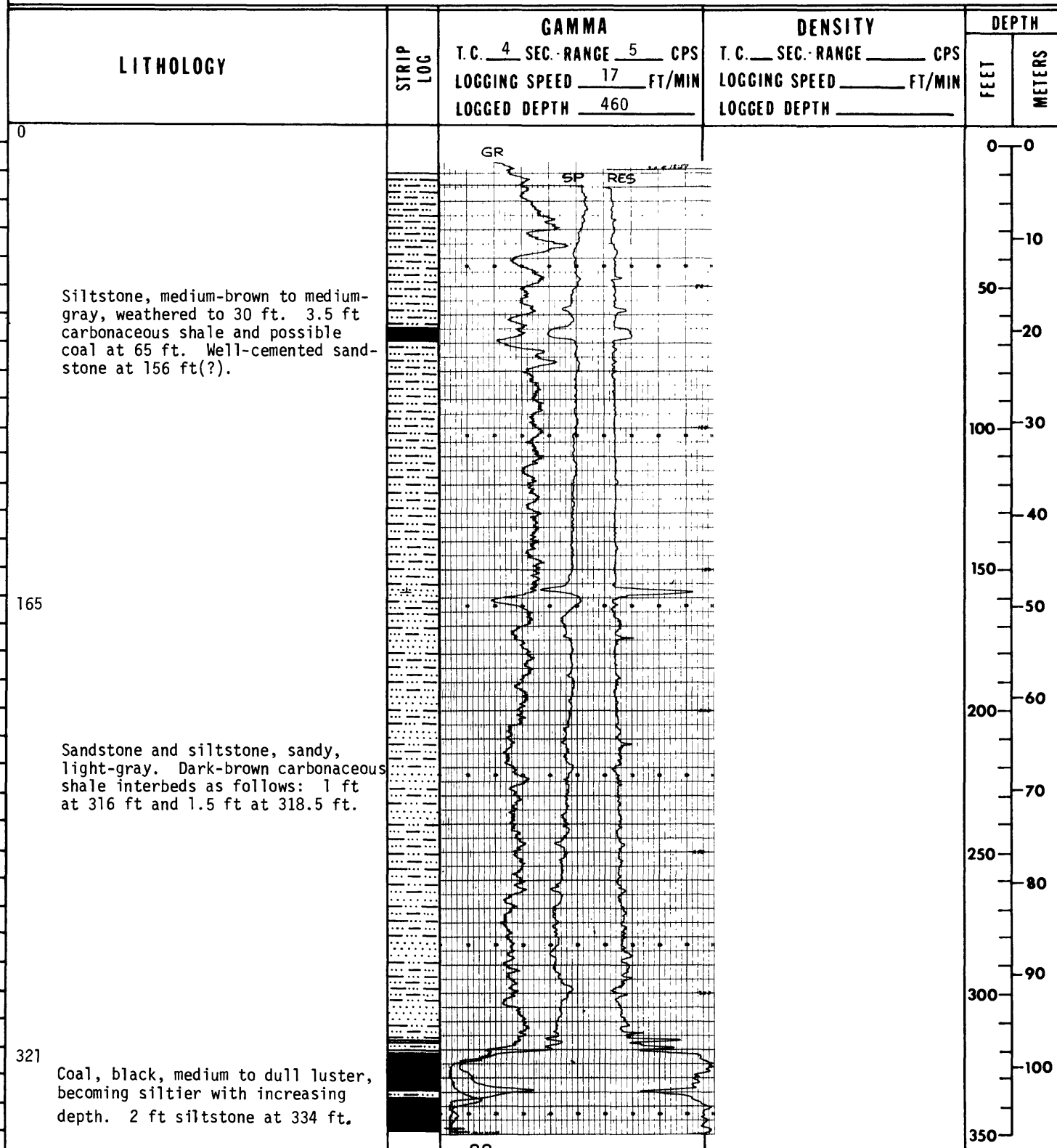
SP = 20 MV  
RES = 50 OHMS



# UNITED STATES GEOLOGICAL SURVEY

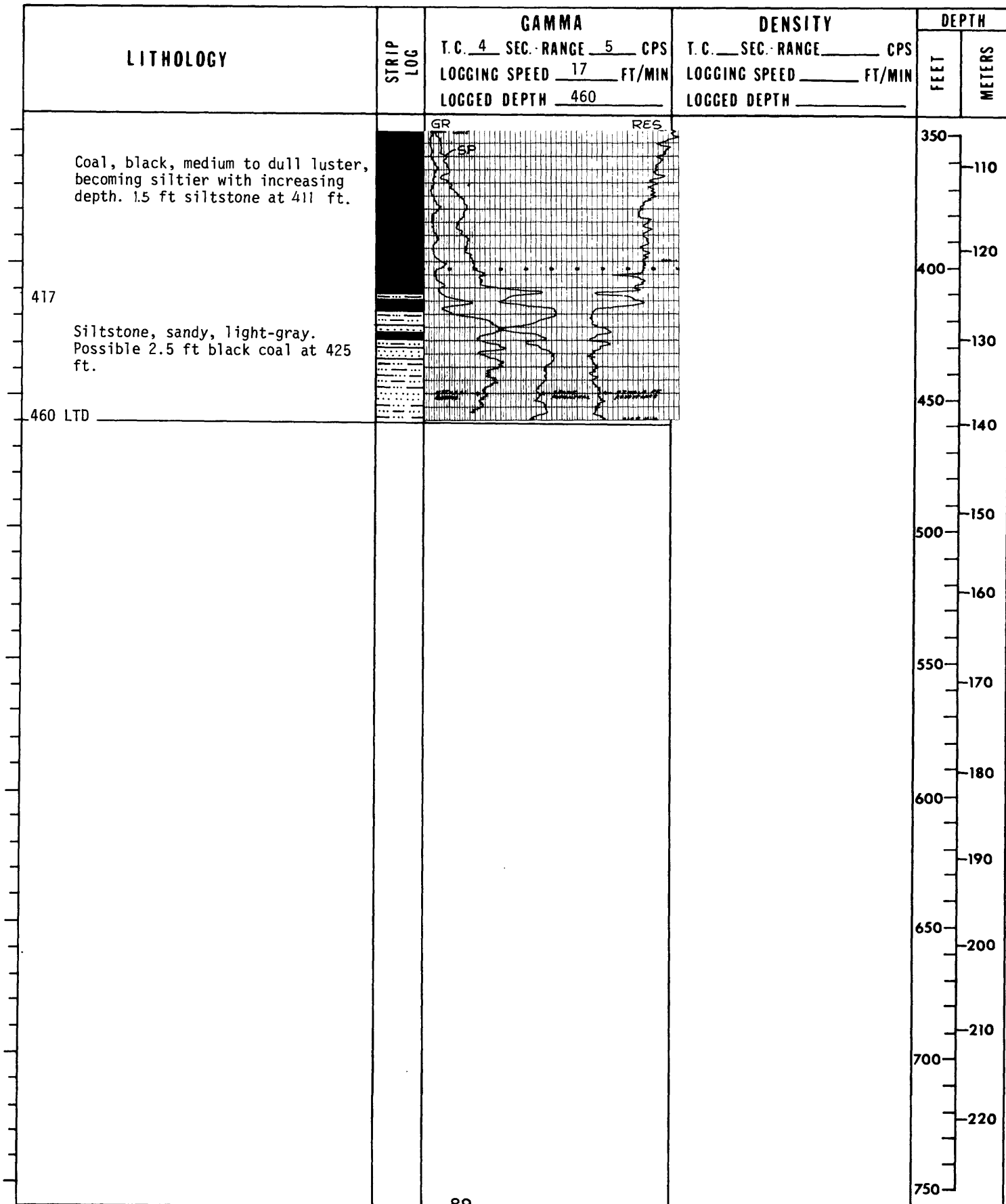
HOLE NO CD-78029  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Reno Reservoir	
<b>DATE STARTED</b> 8-6-1978	<b>DATE COMP.</b> 8-6-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 35 <b>T.</b> 44 N., <b>R.</b> 71 W., <b>FOOTAGE LOC.</b>		150 <del>##</del> FSL	143 <del>##</del> FWL
<b>SIZE AND BIT TYPE:</b> 4 3/4 in. drag		<b>FOOTAGE</b> ROTARY 460 CORING 0	<b>GROUND ELEV</b> 4745
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>TOTAL DEPTH</b> 460
<b>LITHOLOGY RECORDED BY</b> G. Hollomon; E. Fivas		<b>DEPTH TO WATER</b> NR	
<b>REMARKS:</b> SP = 20 MV RES = 50 OHMS		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	



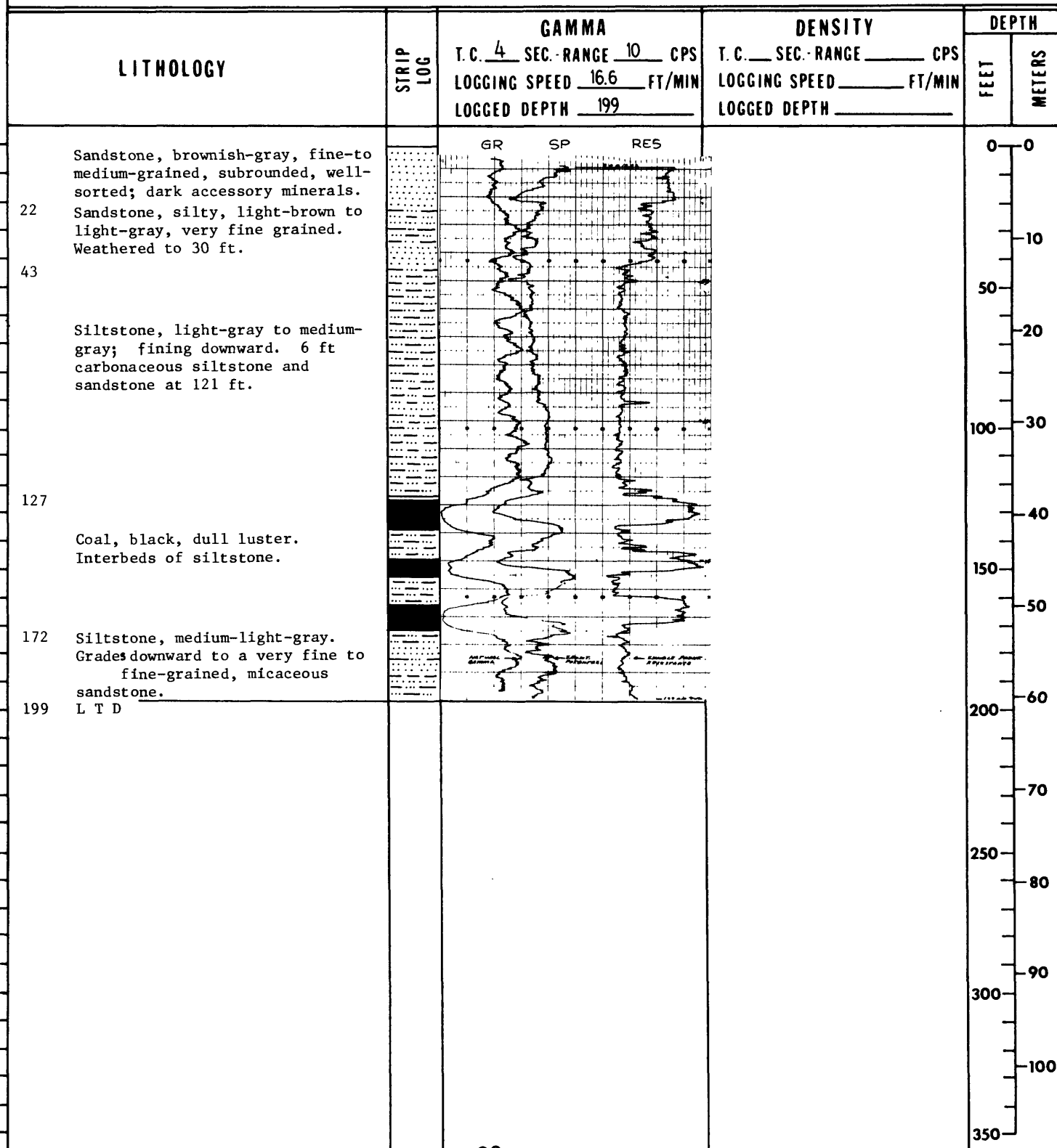
## REMARKS:

SP = 20 MV  
RES = 50 OHMS

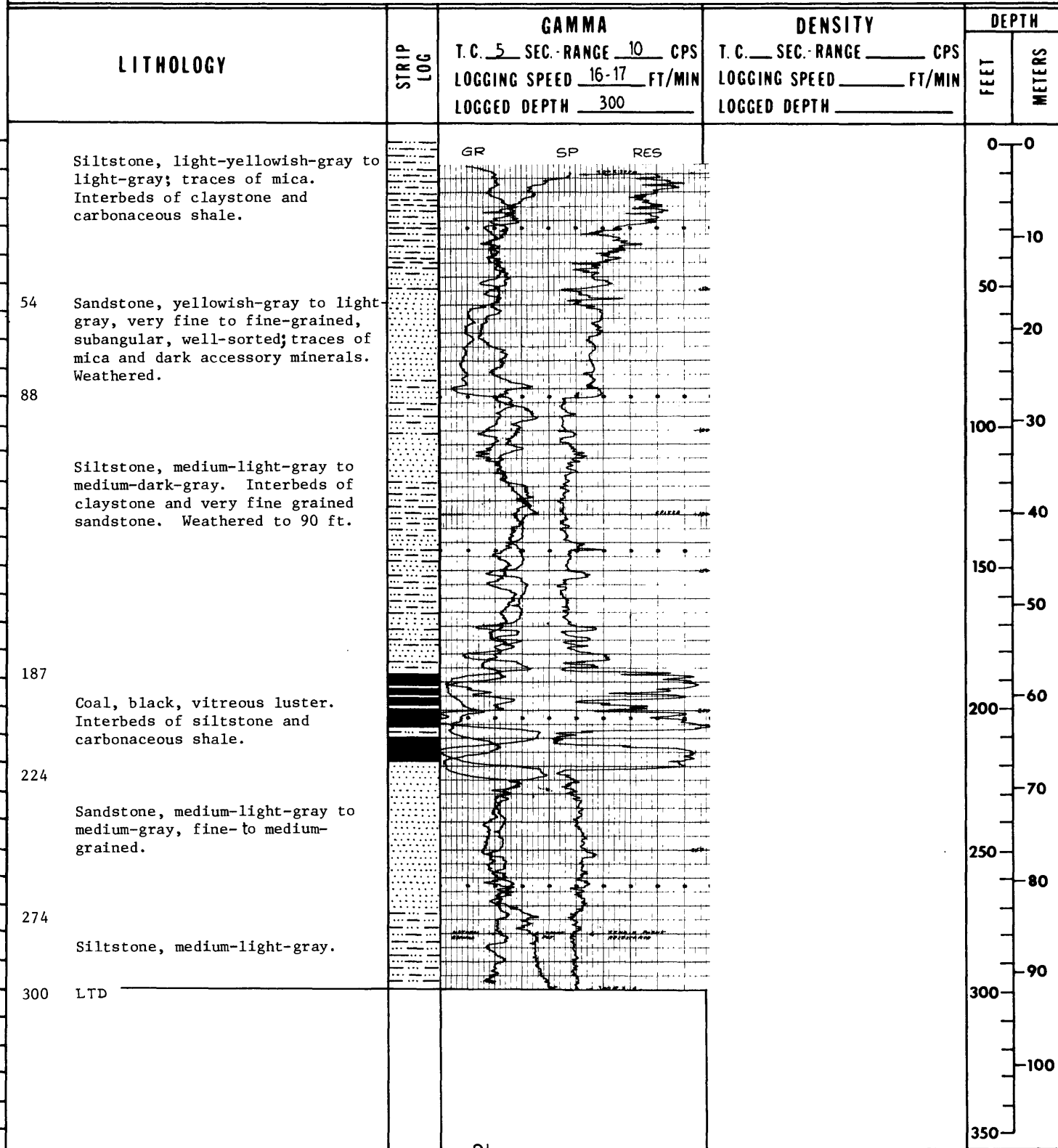


AREA Powder River Basin		QUAD NAME Turnercrest (NE $\frac{1}{4}$ )	
DATE STARTED 8-7-1978	DATE COMP. 8-7-1978	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 17 T. 43 N., R. 72 W., FOOTAGE LOC. 71		FNL <del>XXXX</del> 71	FEL <del>XXXX</del>
SIZE AND BIT TYPE: 4 3/4-in drag		FOOTAGE ROTARY 200 CORING 0	
DRILLING AGENCY: USGS/CD/NRMA		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY A. Donatich; K. Bowen;		GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon	

REMARKS: SP = 20 MV  
RES = 50 OHMS E. Fivas



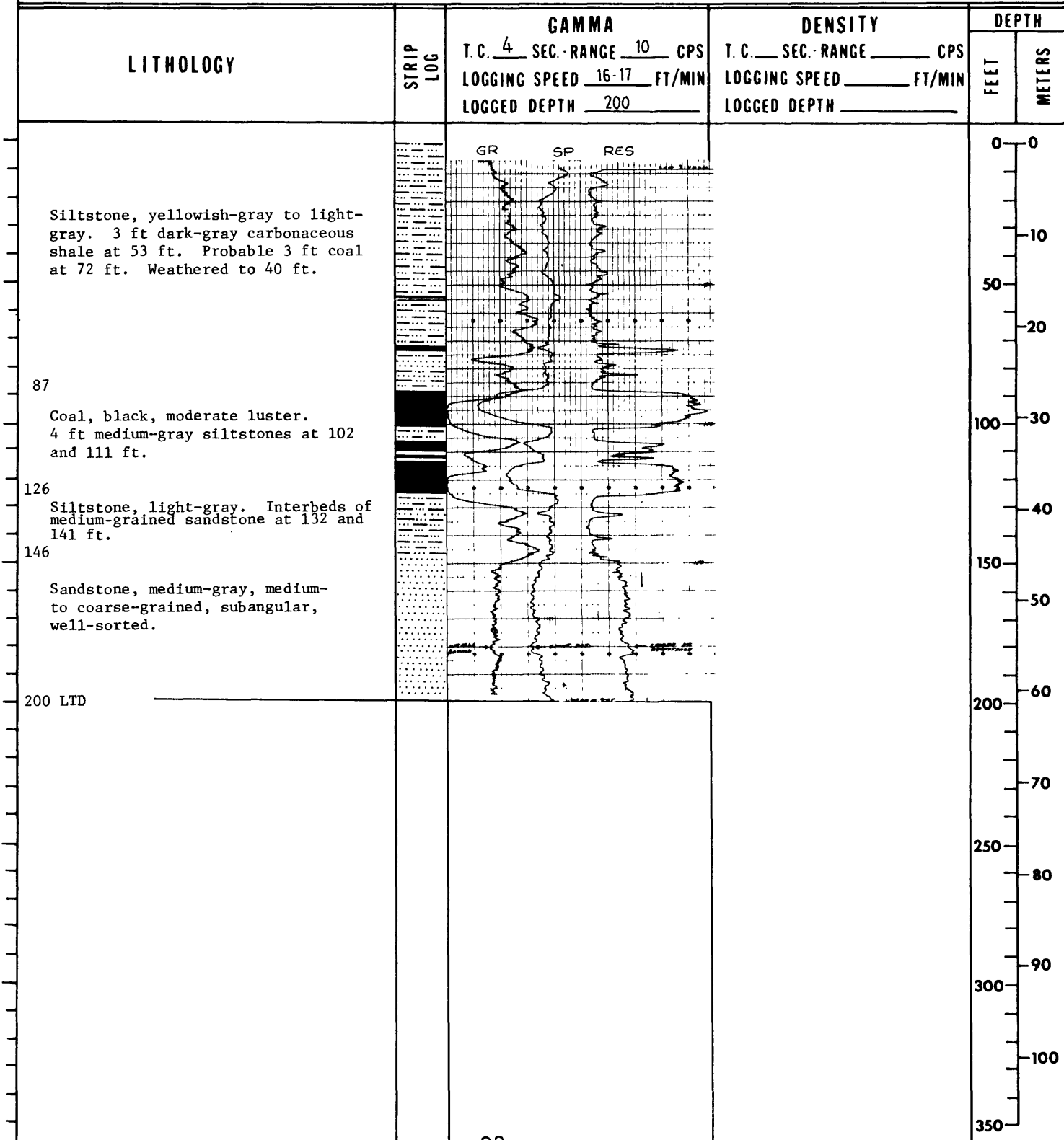
AREA Powder River Basin		QUAD NAME Turnercrest (NE $\frac{1}{4}$ )	
DATE STARTED 8-7-1978	DATE COMP. 8-7-1978	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 12 T. 43 N., R. 73 W., FOOTAGE LOC. 750		FNL 2100	FEL 5140
SIZE AND BIT TYPE: 4 3/4-in Ken-claw		FOOTAGE ROTARY 300 CORING 0	
DRILLING AGENCY: USGS/CD/NRMA		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY A. Donatich; G. Hollomon		GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon	
REMARKS: SP = 10 MV RES = 20 OHMS			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78032  
SHEET 1 OF 1

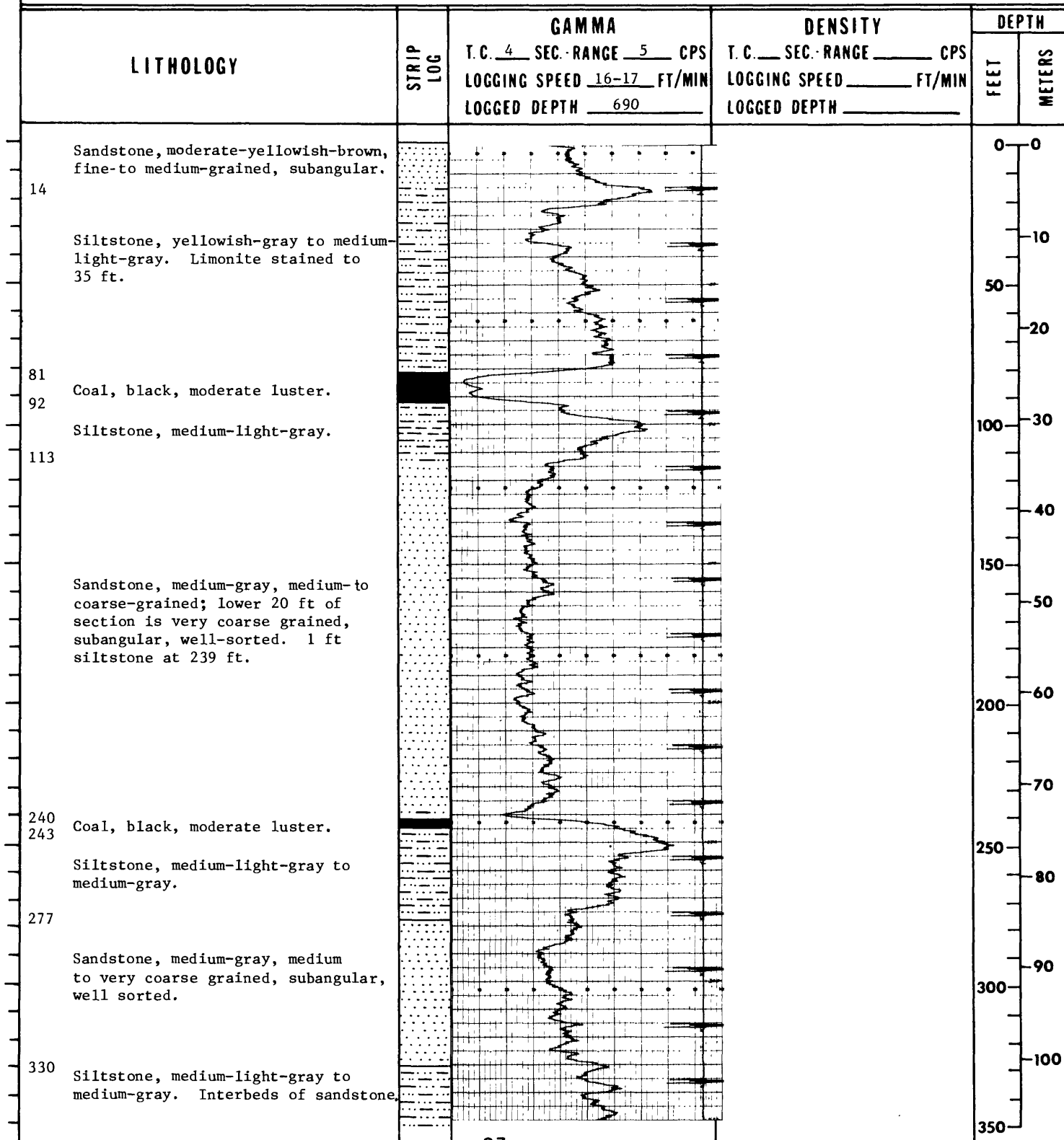
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Little Thunder Reservoir	
<b>DATE STARTED</b> 8-8-1978	<b>DATE COMP.</b> 8-8-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 35 <b>T.</b> 44 N., <b>R.</b> 72 W., <b>FOOTAGE LOC.</b>		2000 <del>XFWL</del> <b>FSL</b>	1900 <del>XFWL</del> <b>FWL</b>
<b>SIZE AND BIT TYPE:</b> 4 3/4-in. Ken-Claw		<b>FOOTAGE</b> ROTARY 200 CORING 0	
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> SP = 20 MV RES = 20 OHMS			



# UNITED STATES GEOLOGICAL SURVEY

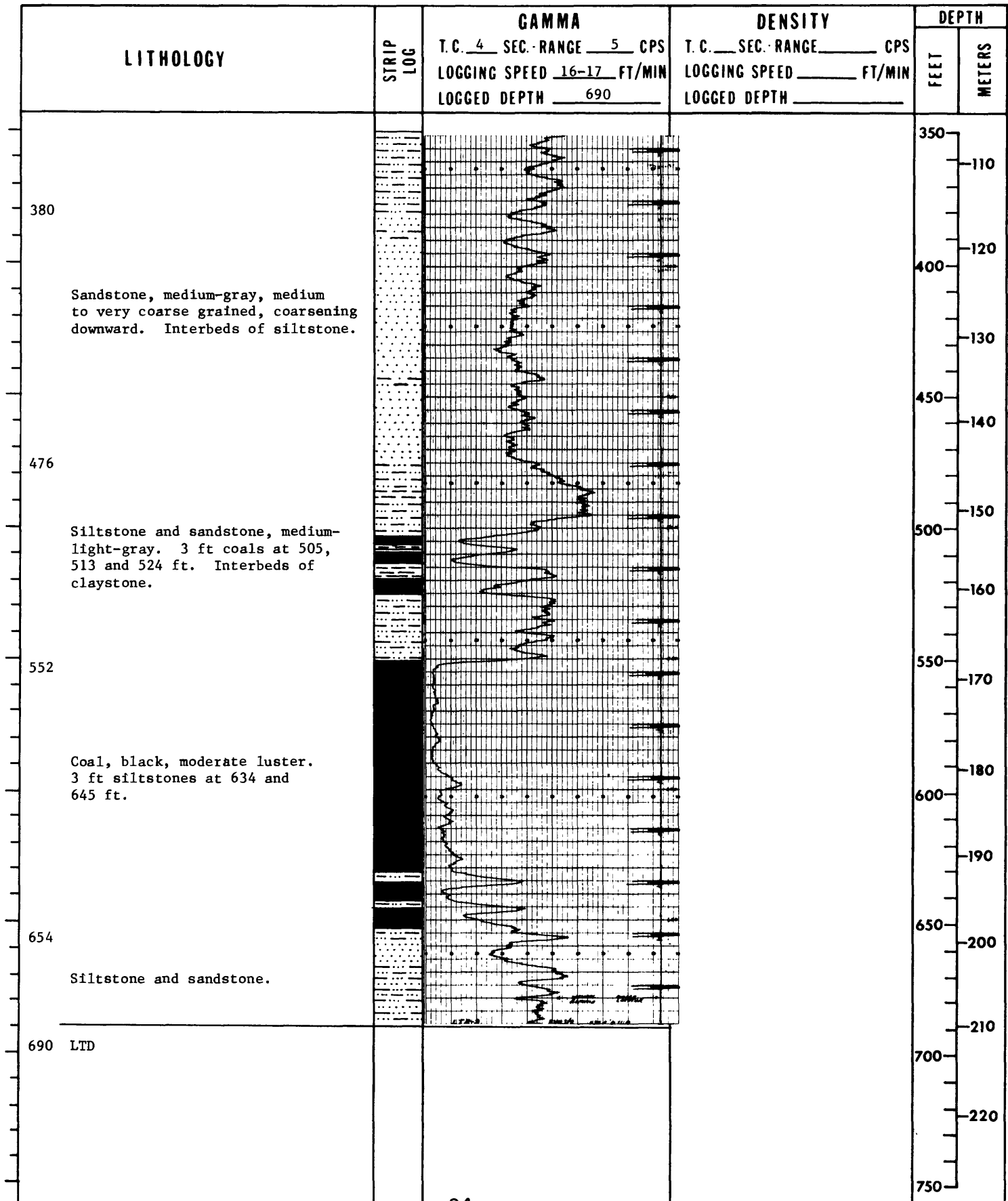
HOLE NO CD-78033  
SHEET 1 OF 4

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Little Thunder Reservoir	
<b>DATE STARTED</b> 8-8-1978	<b>DATE COMP.</b> 8-9-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 29 <b>T.</b> 43 N., <b>R.</b> 71 W., <b>FOOTAGE LOC.</b> 2000		<b>FNL</b> 100	<b>FEL</b> 100
<b>SIZE AND BIT TYPE:</b> 5 1/8-in and 4 3/4-in drag		<b>FOOTAGE</b> 700	<b>ROTARY</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Lost circulation at 600 ft. gamma ray logged through drill pipe			



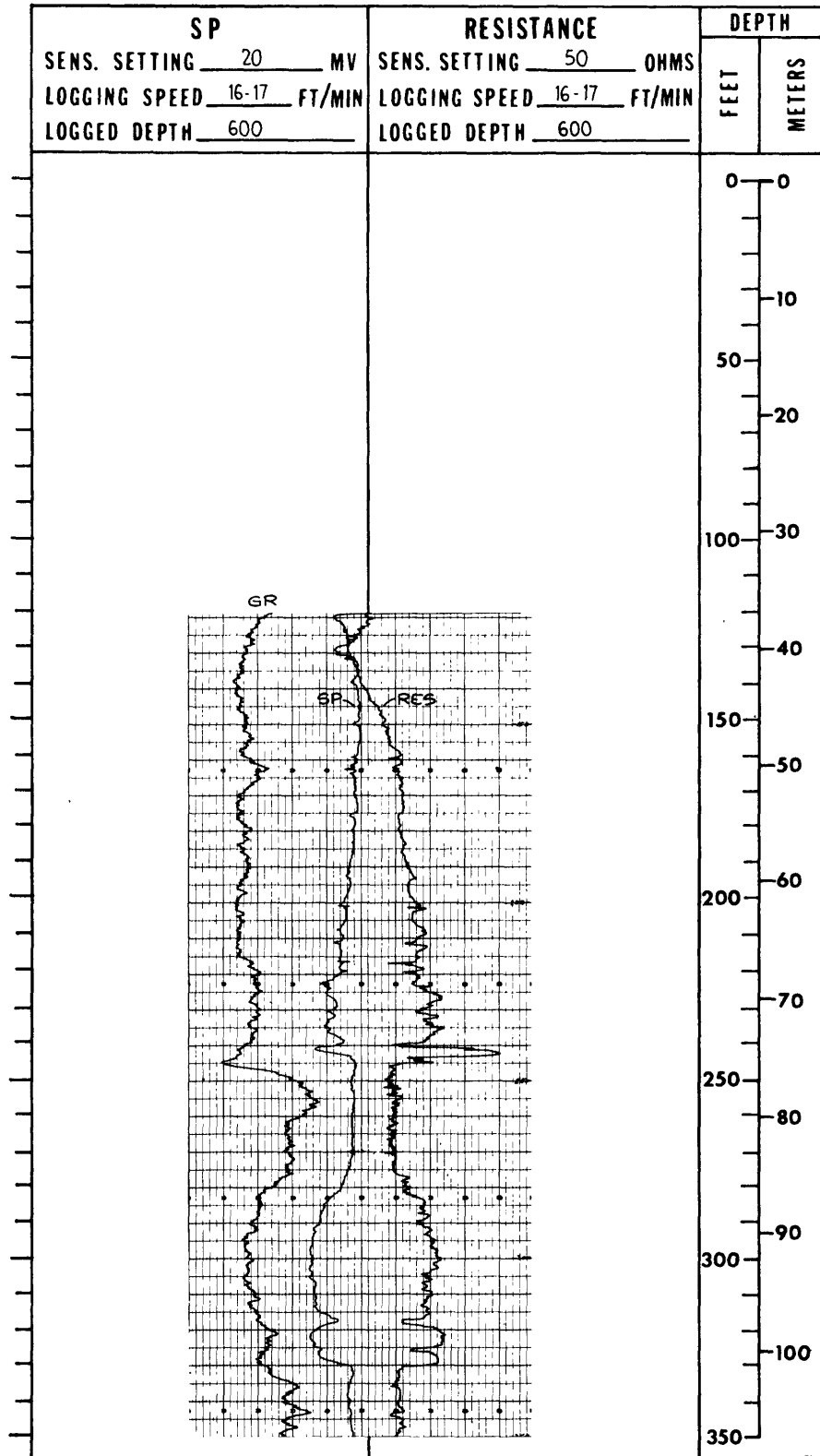


## REMARKS:



**REMARKS:**

T C 4 Sec. Range 10 CPS

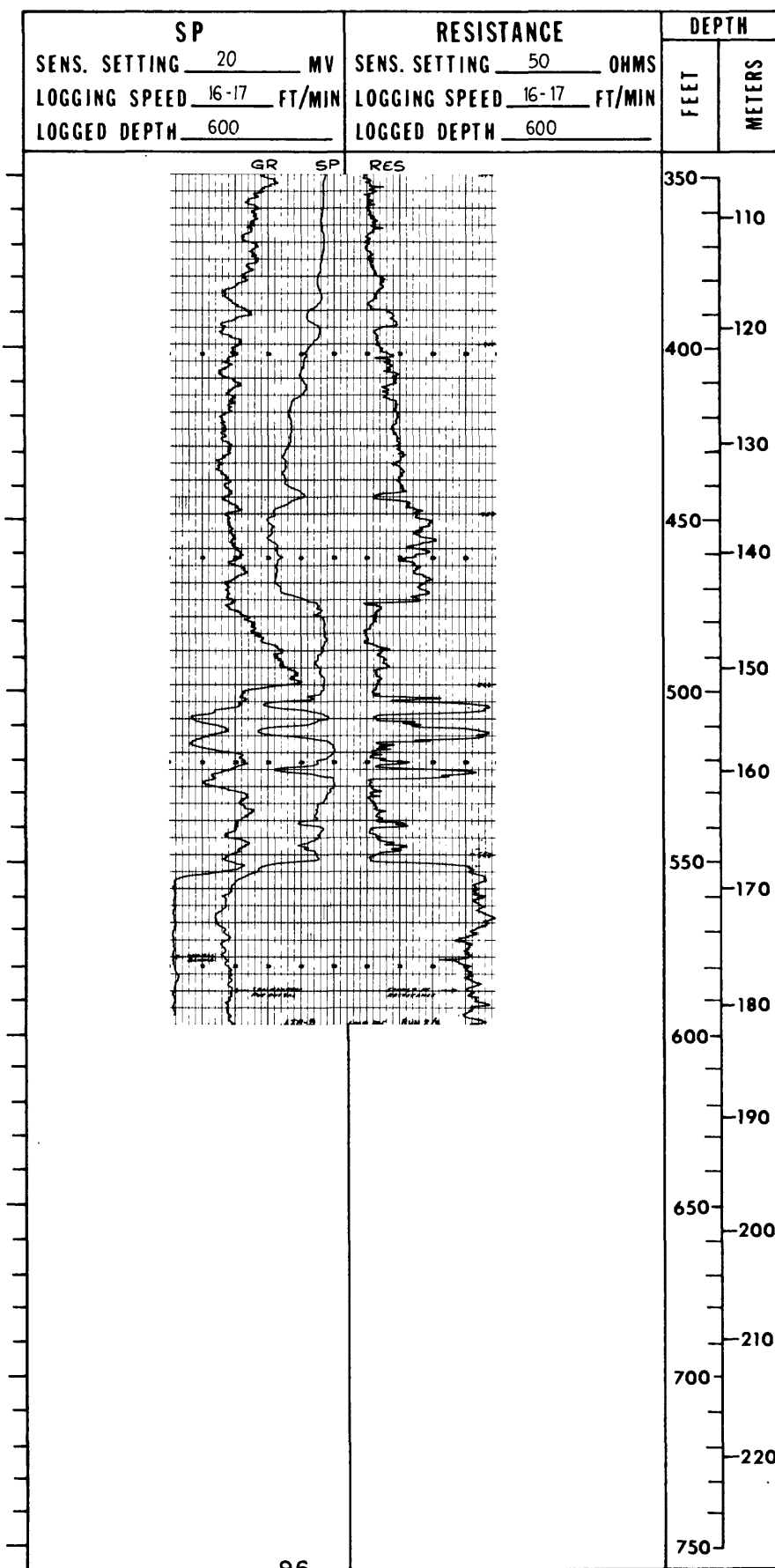


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78033  
SHEET 4 OF 4

## REMARKS:

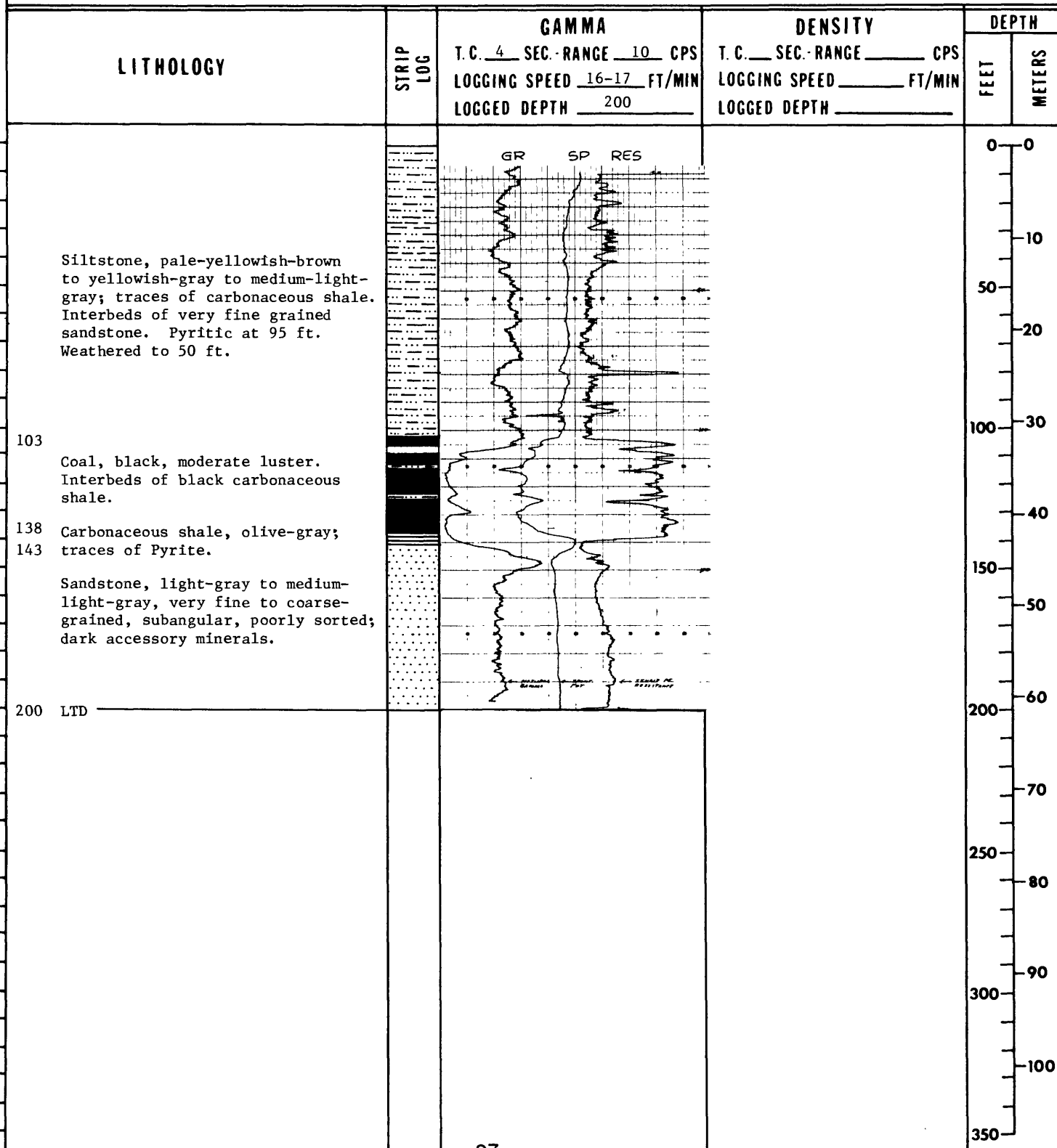
TC 4 Sec. Range 10 CPS



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78034  
SHEET 1 OF 1

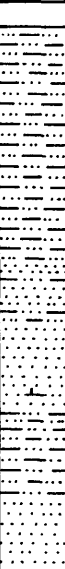
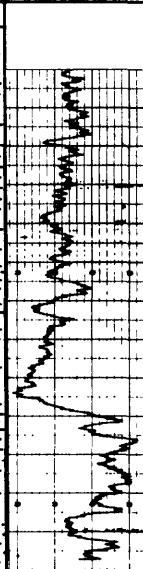

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Reno Junction	
<b>DATE STARTED</b> 8-9-1978	<b>DATE COMP.</b> 8-16-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 13 <b>T.</b> 44 N., <b>R.</b> 72 W., <b>FOOTAGE LOC.</b> 1200		<b>FNL RSK</b> 250	<b>FEL RSK</b> 5065
<b>SIZE AND BIT TYPE:</b> 4 3/4-in drag, NX diamond		<b>FOOTAGE</b>	
		<b>ROTARY</b> 150	<b>CORING</b> 50
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas;		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> SP= 50 MV RES= 20 OHMS F. Kistner  Core from 90 ft to 140 ft.			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78035  
SHEET 1 OF 2

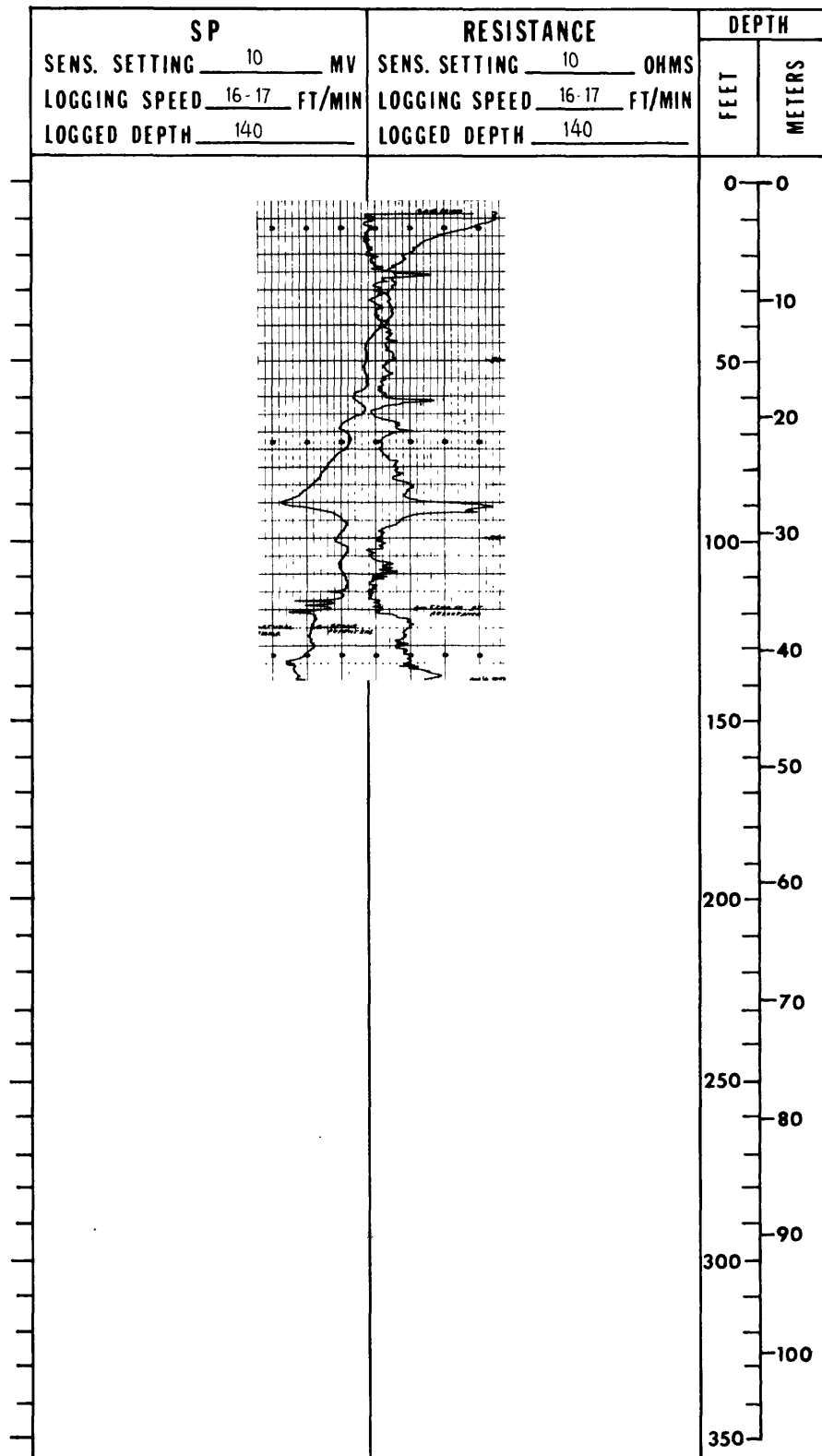
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Reno Junction	
<b>DATE STARTED</b> 8-17-1978	<b>DATE COMP.</b> 8-17-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 13 T. 44 N., R. 72 W., FOOTAGE LOC.</b> 1500		<b>FNL</b> 2450	<b>FEL</b> 5005
<b>SIZE AND BIT TYPE:</b> 5-in drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 140	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b>			

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH	
		T.C. 4 SEC. RANGE 5 CPS LOGGING SPEED 16-18 FT/MIN LOGGED DEPTH 140	T.C. SEC. RANGE CPS LOGGING SPEED FT/MIN LOGGED DEPTH	FEET	METERS
<p>Siltstone, grayish-orange to pale-yellowish-brown; trace of limonite staining. Interbeds of very fine grained sandstone. Weathered to 40 ft.</p>				0	0
<p>75 Sandstone, pale-yellowish-brown to light-gray, very fine grained; 90-93 ft calcareous cementation.</p>				10	10
<p>97 Siltstone, light-olive-gray to medium-light-gray, micaceous.</p>				20	20
<p>121 Sandstone, light-gray, medium-to coarse-grained, moderately well sorted, subangular; dark accessory LTD minerals.</p>				30	30
				40	40
				50	50
				60	60
				70	70
				80	80
				90	90
				100	100
				110	110
				120	120
				130	130
				140	140

# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-7803  
SHEET 2 OF 2

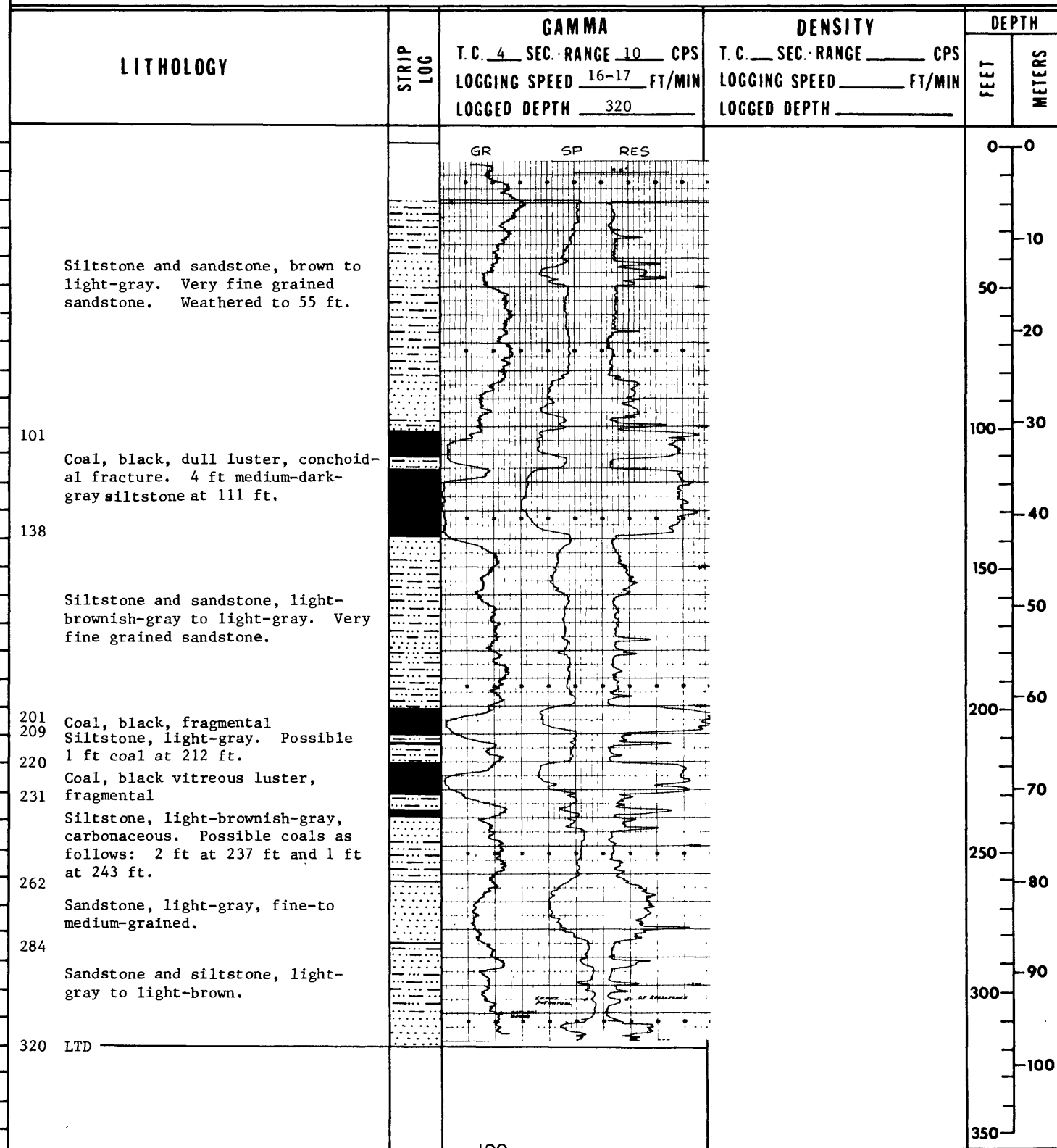
REMARKS:



## UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78036  
SHEET 1 OF 1

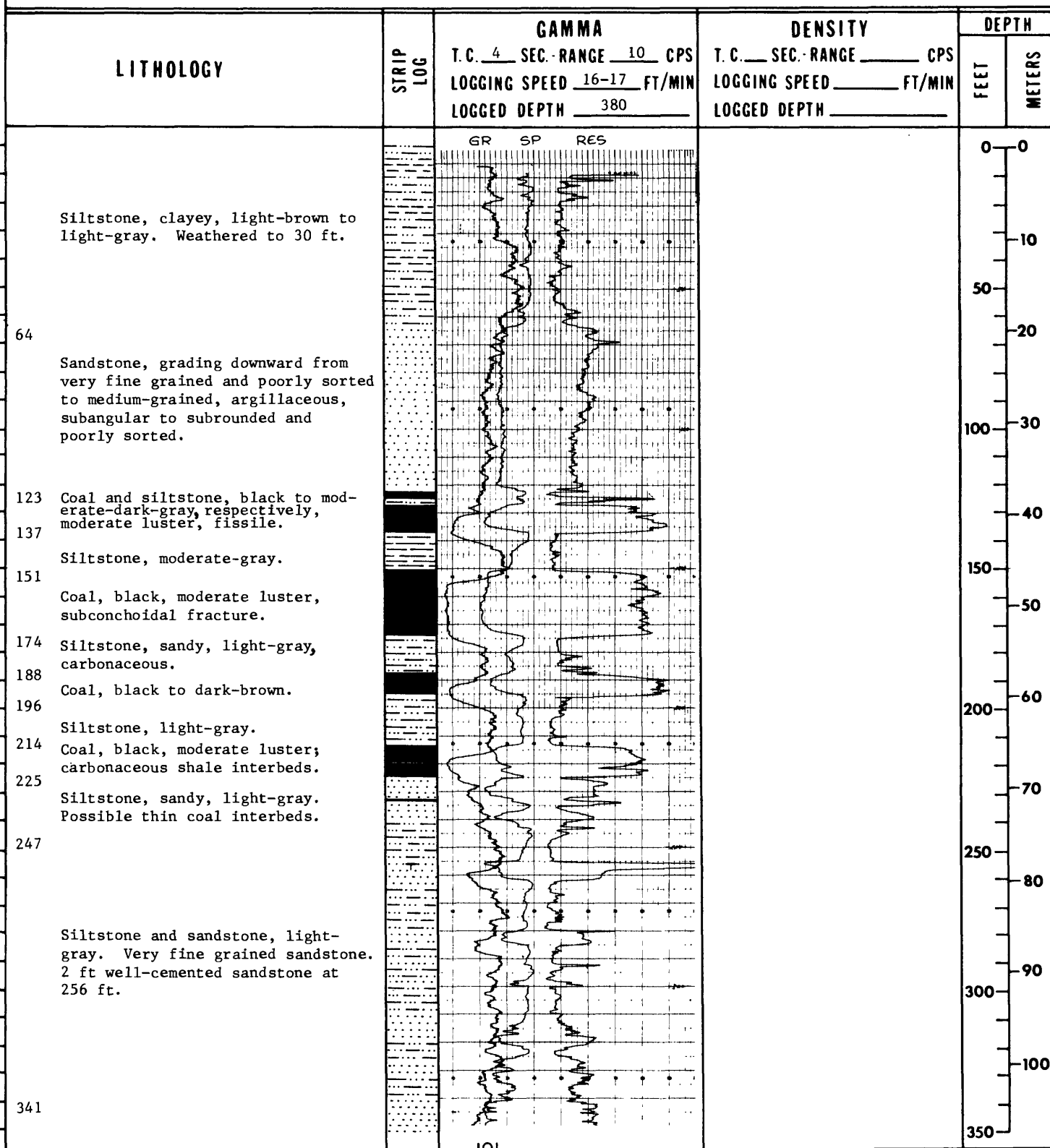
AREA Powder River Basin		QUAD NAME Hilight	
DATE STARTED 8-17-1978	DATE COMP. 8-17-1978	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 21 T. 45 N., R. 70 W., FOOTAGE LOC. 20		FNL X&K 20	FEL RMK
SIZE AND BIT TYPE: 5-in drag		FOOTAGE ROTARY 320 CORING 0	
DRILLING AGENCY: USGS/CD/NRMA	DRILL TYPE: Portadrill 524		GROUND ELEV 4865
LITHOLOGY RECORDED BY G. Hollomon; K. Bowen;		GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon	
REMARKS: SP = 20 MV RES = 20 OHMS E. Fivas			



## UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78037  
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Hilight	
DATE STARTED 8-18-1978	DATE COMP. 8-18-1978	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 21 T. 45 N., R. 70 W., FOOTAGE LOC. 1200		FNL RSK 20	FEL RSK
SIZE AND BIT TYPE: 5-in drag		FOOTAGE	
		ROTARY 380	CORING 0
DRILLING AGENCY: USGS/CD/NRMA		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY G. Hollomon; H. Corley;		GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon	
REMARKS: SP = 10 MV RES = 20 OHMS E. Fivas			



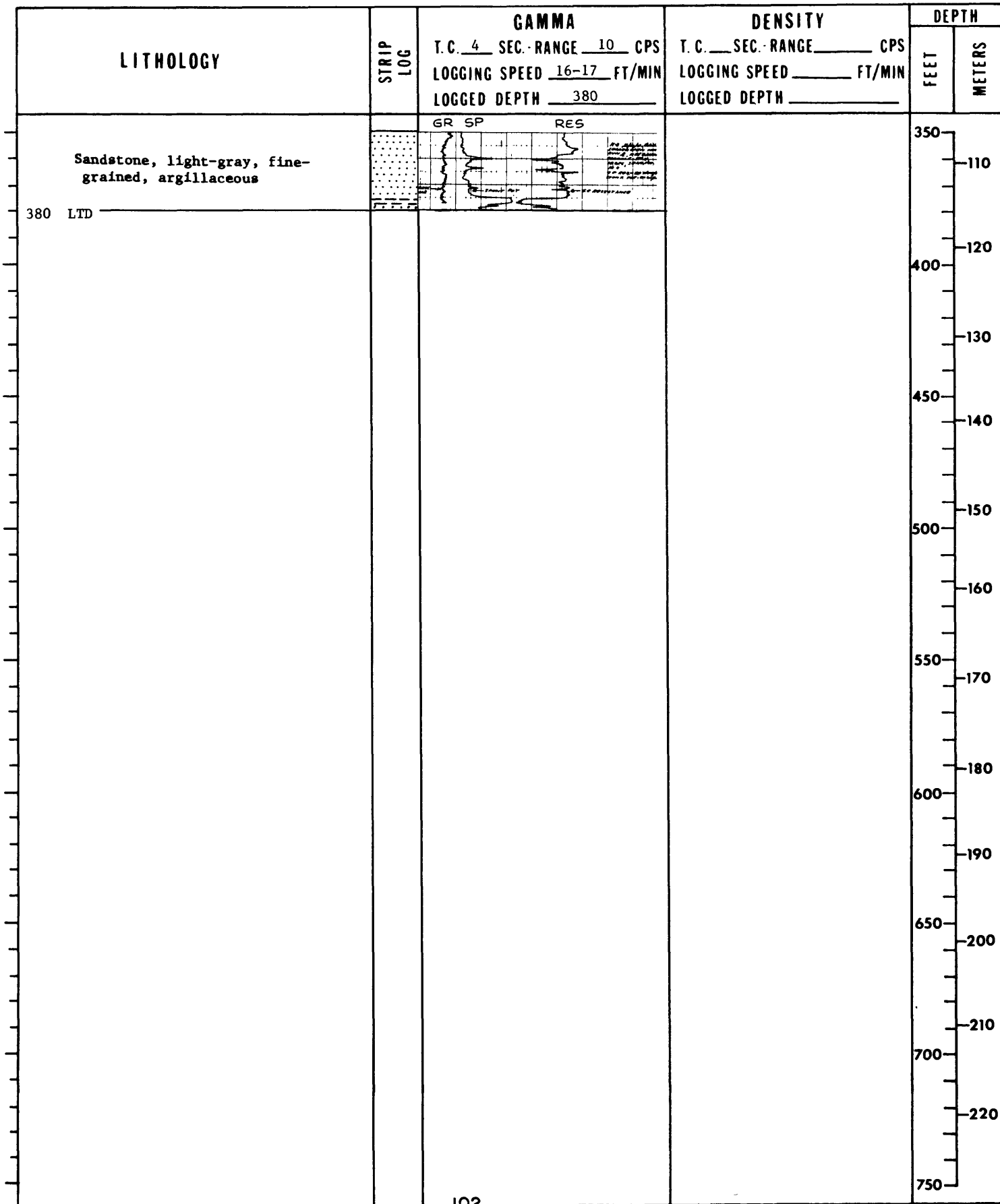


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78037  
SHEET 2 OF 2

## REMARKS:

SP = 10 MV  
RES = 20 OHMS

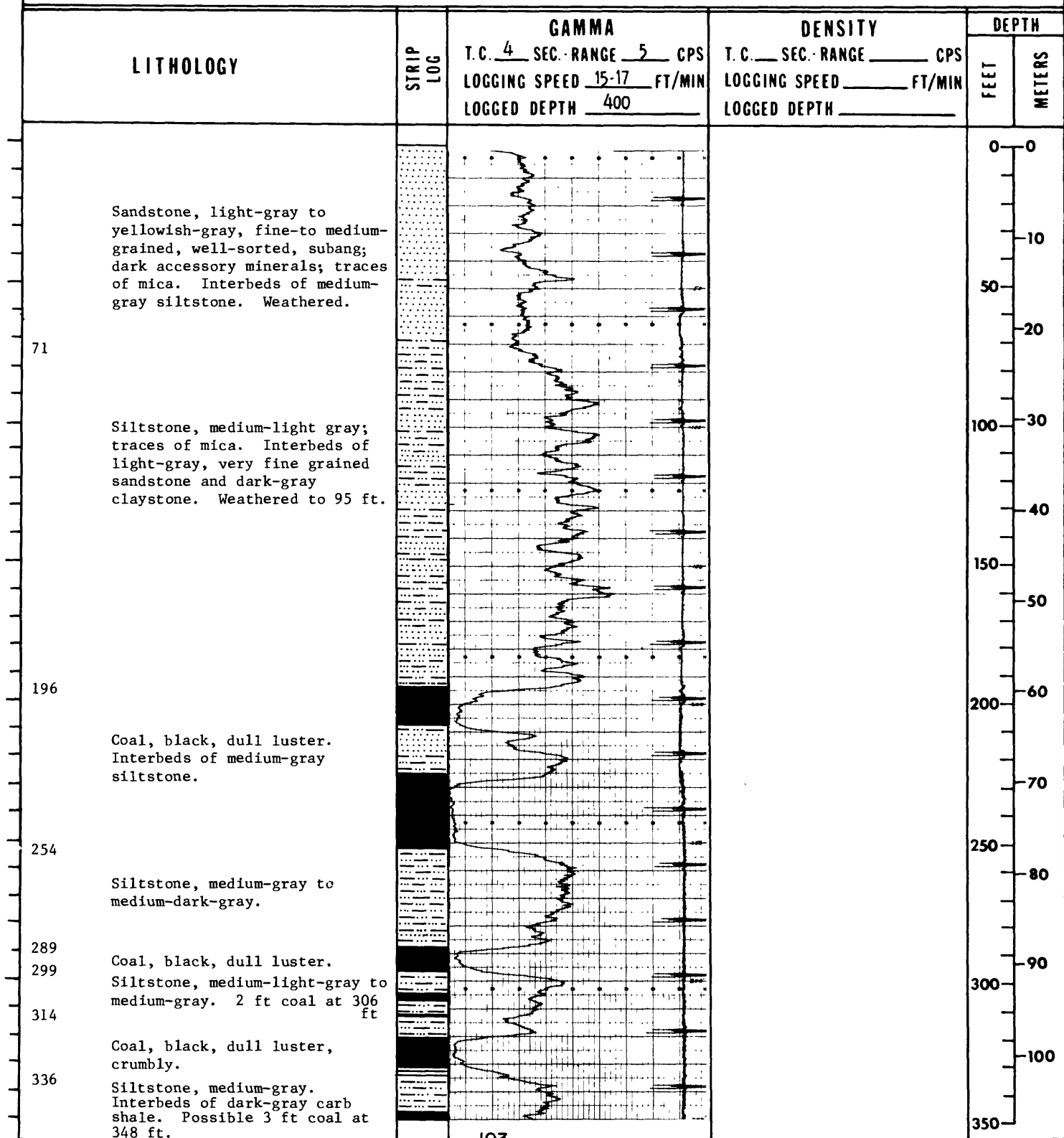


## UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD 78038

SHEET 1 OF 4

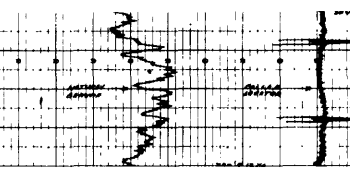
AREA Powder River Basin		QUAD NAME Hilight	
DATE STARTED 8-18-1978	DATE COMP. 8-22-1978	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 20 T. 45 N., R. 70 W., FOOTAGE LOC. 600		FNL 600 FWL	GROUND ELEV 4862
SIZE AND BIT TYPE: 5-in drag and NX diamond		FOOTAGE ROTARY 314 CORING 86	
DRILLING AGENCY: USGS/CD/NRMA		DRILL TYPE: Portadrill 524	DEPTH TO WATER 8-21-1978 189
LITHOLOGY RECORDED BY A. Donatich; H. Corley;		GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon	
REMARKS: E. Fivas Cored from 193 ft to 217 ft; from 220 ft to 254 ft; from 287 ft to 300.5 ft; from 320 ft to 334.5 ft. Gamma ray logged through drill pipe 2-in observation well installed to 251 ft on 8-19-1978. Location is 80 ft SW of Inexco Oil CHU-166 well			



# UNITED STATES GEOLOGICAL SURVEY

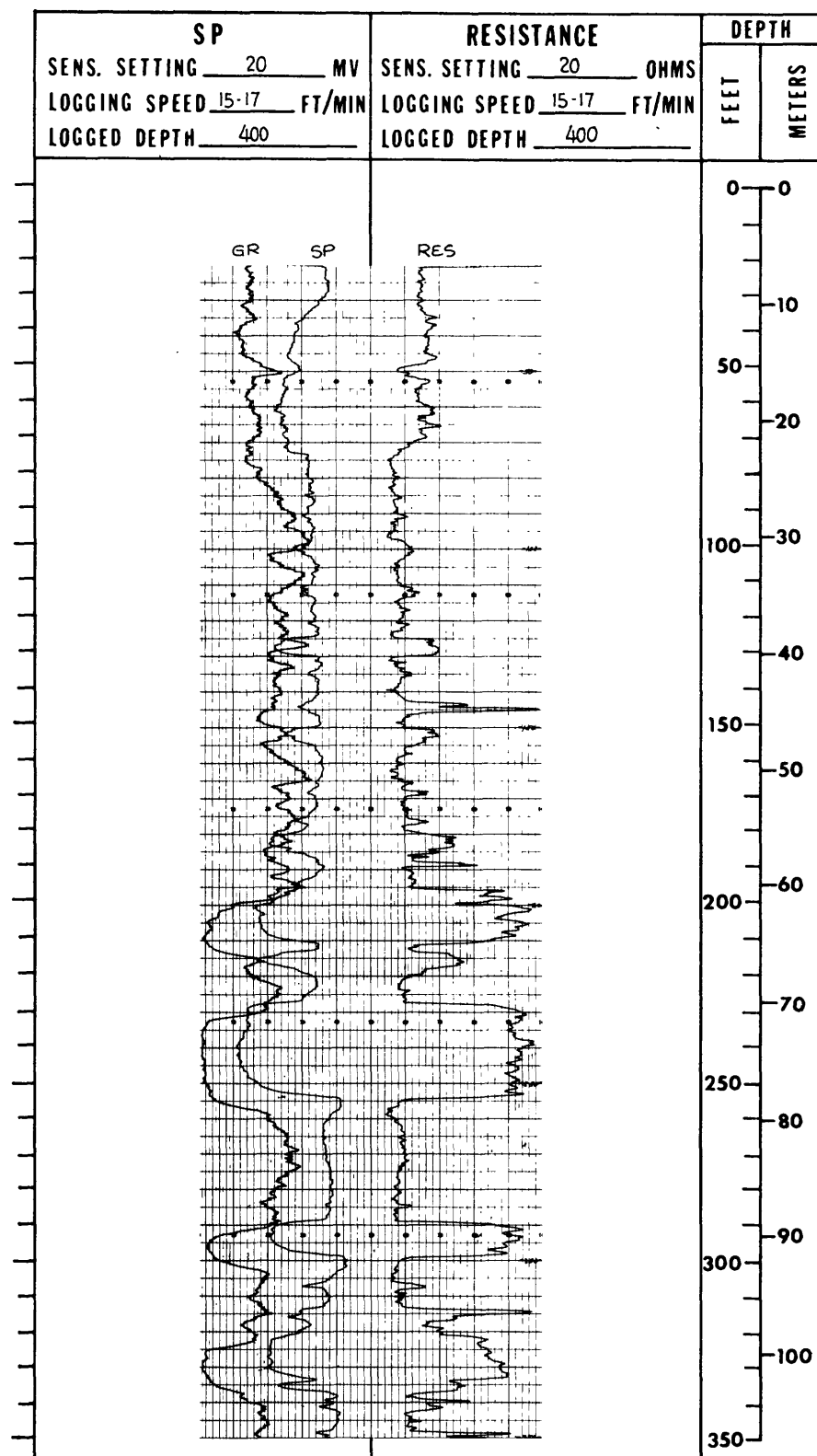
HOLE NO. CD 78038  
SHEET 2 OF 4

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA T.C. <u>4</u> SEC. RANGE <u>5</u> CPS LOGGING SPEED <u>15-17</u> FT/MIN LOGGED DEPTH <u>400</u>	DENSITY T.C. ____ SEC. RANGE ____ CPS LOGGING SPEED ____ FT/MIN LOGGED DEPTH ____	DEPTH	
				FEET	METERS
Siltstone, medium-gray. Interbeds of dark-gray carb shale. Possible 3 ft coal at 348 ft.				350	
400 L T D				400	
				450	
				500	
				550	
				600	
				650	
				700	
				750	

## REMARKS:

TC 4 Sec. Range 10 CPS

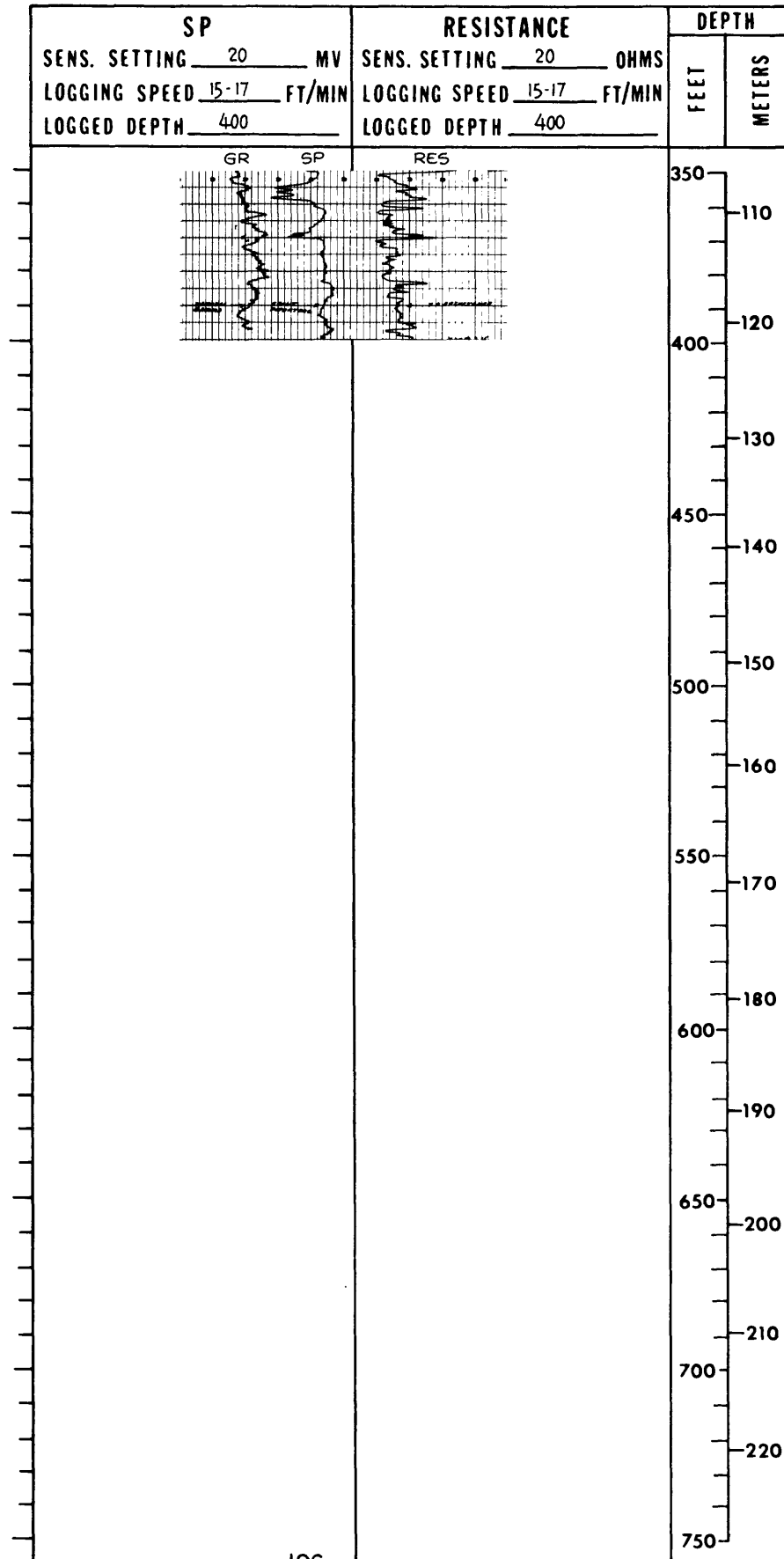


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78038  
SHEET 4 OF 4

## REMARKS:

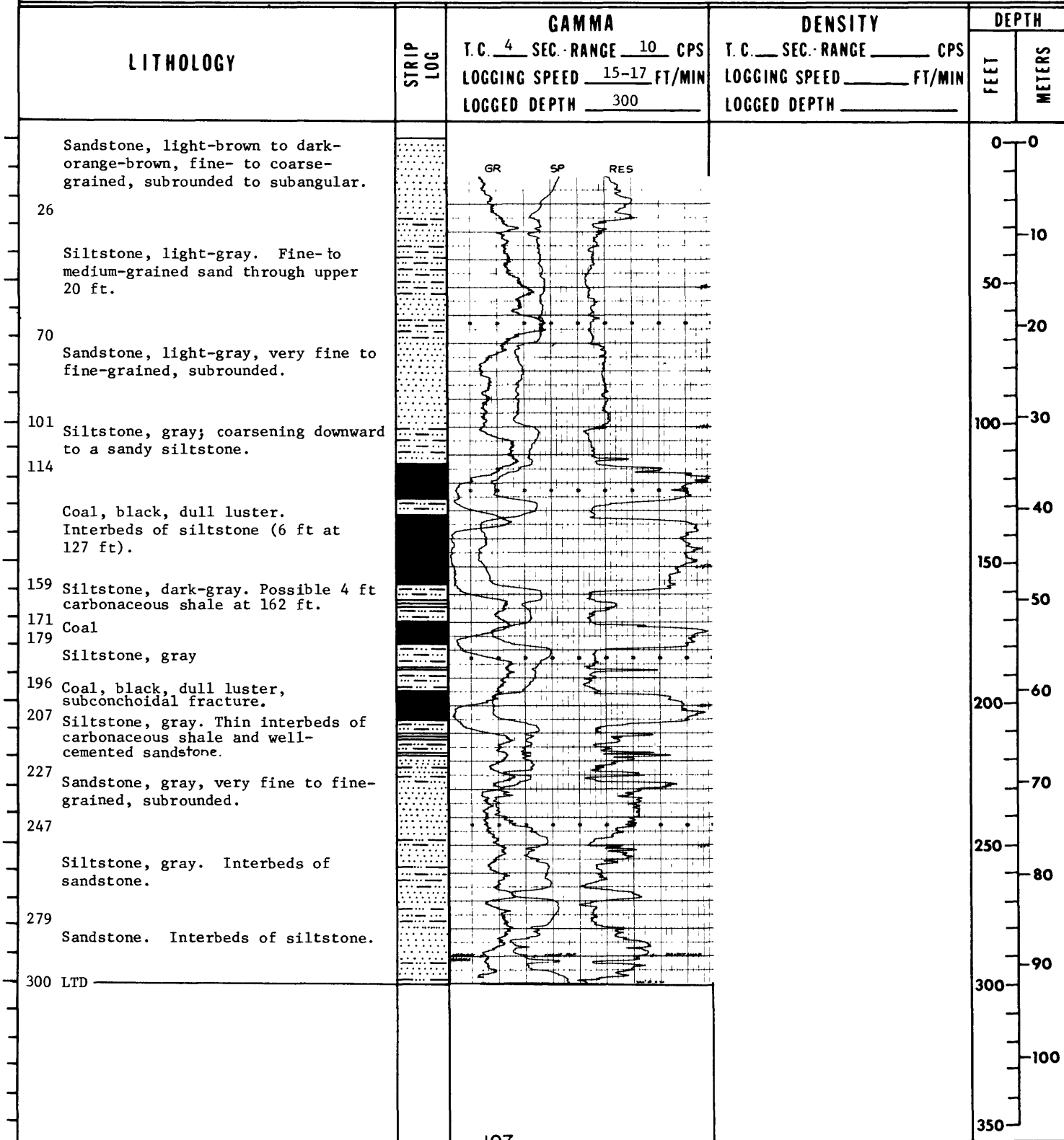
T C 4 Sec. Range 10 CPS



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78039  
SHEET 1 OF 1

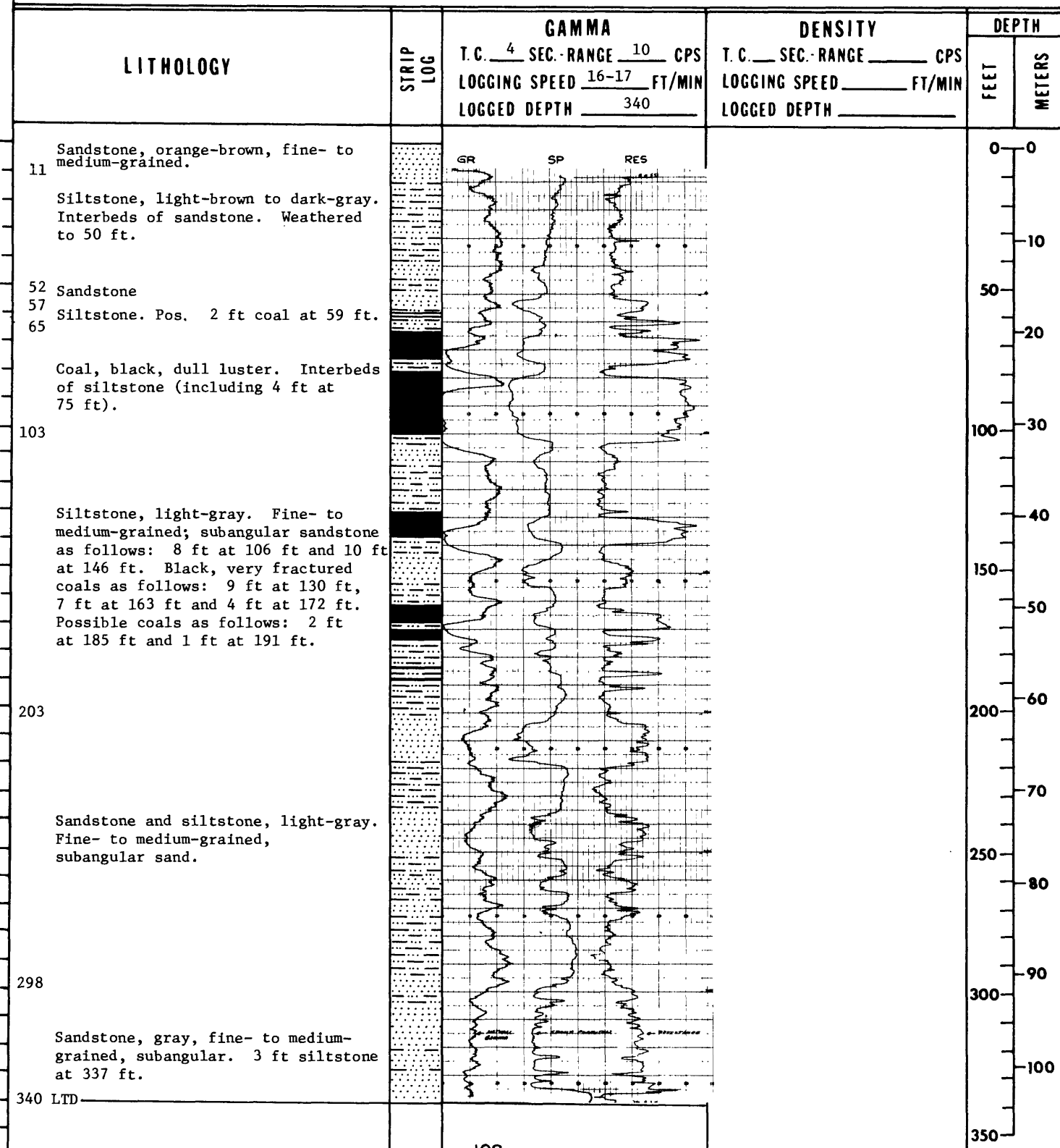
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Hilight	
<b>DATE STARTED</b> 8-23-1978	<b>DATE COMP.</b> 8-23-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 21 <b>T.</b> 45 N., <b>R.</b> 70 W., <b>FOOTAGE LOC.</b>		20 <b>FNL</b> <del>20</del>	20 <b>RXX</b> <del>FWL</del>
<b>SIZE AND BIT TYPE:</b> 5-in. drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 300	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A.Donatich;H.Corley;E.Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> SP=20 MV RESISTANCE = 20 OHMS			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78040  
SHEET 1 OF 1

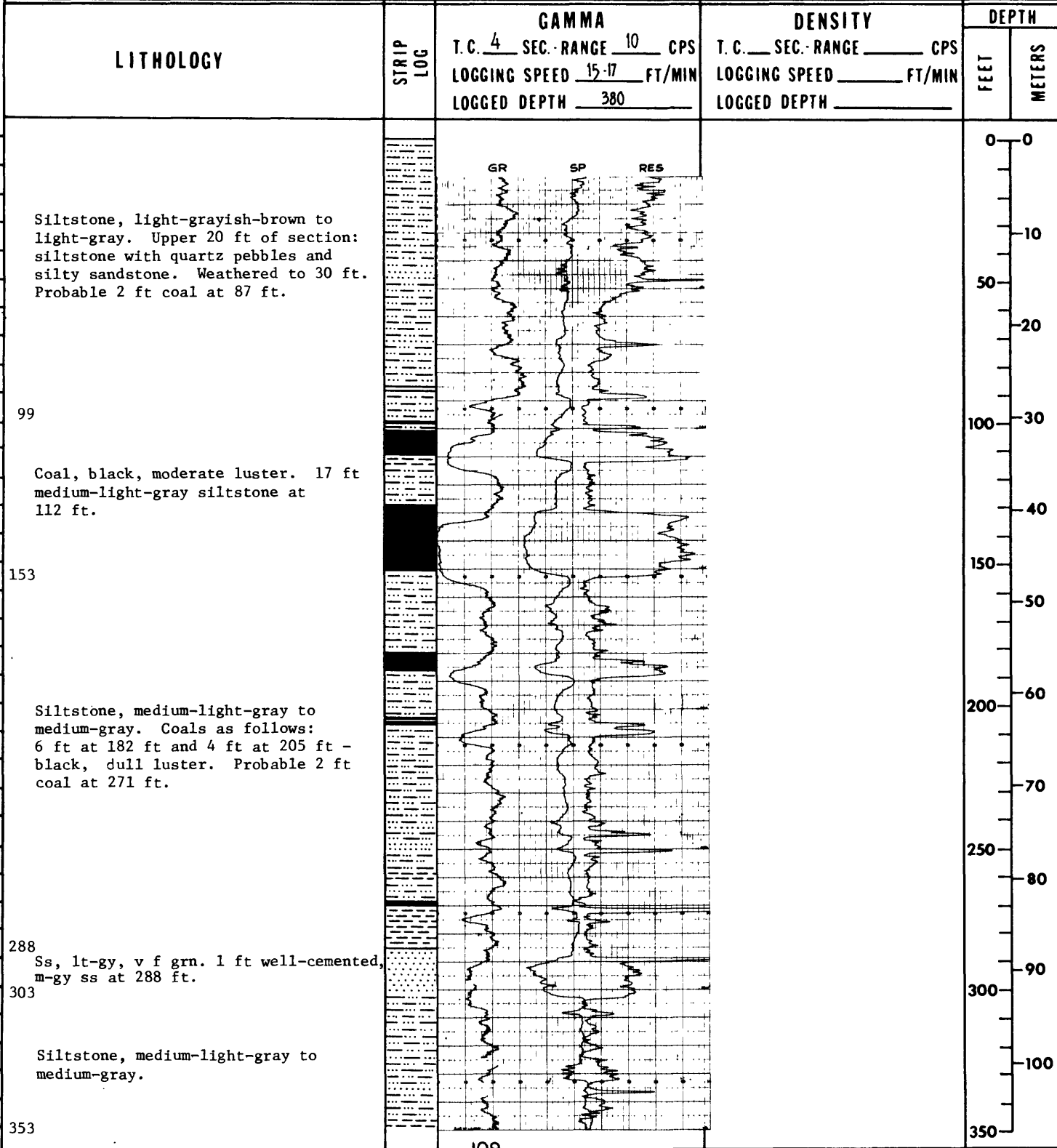
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Hilight	
<b>DATE STARTED</b> 8-23-1978	<b>DATE COMP.</b> 8-23-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 22 T. 45 N., R. 70 W., FOOTAGE LOC.</b>		750 <del>FML</del> <del>XSL</del> 2500 <del>FEL</del> <del>XML</del>	<b>GROUND ELEV</b> 4825
<b>SIZE AND BIT TYPE:</b> 5-in. drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 340	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A.Donatich;K.Bowen;E.Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> SP = 20 MV RESISTANCE = 20 OHMS			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD 78041  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Hilgait	
<b>DATE STARTED</b> 8-24-1978	<b>DATE COMP.</b> 8-31-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 27 T. 45 N., R. 70 W., FOOTAGE LOC.</b>		1300 <del>XMM</del> FSL	1500 <del>XMM</del> FWL
<b>SIZE AND BIT TYPE:</b> 5-in and 4 3/4-in drag; NX Diamond		<b>FOOTAGE</b>	
		<b>ROTARY</b> 303	<b>CORING</b> 77
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; H. Corley; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY:</b> Ken Bowen	
<b>REMARKS:</b> Cored from 85 to 87.5 ft; from 95 to 114 ft; from 128 to 156 ft; from 179 to 190 ft; from 202 to 211 ft; from 268 to 275 ft.			
SP = 20 MV RES = 20 OHMS			



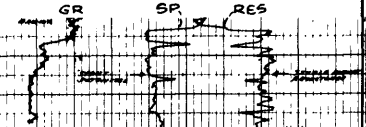
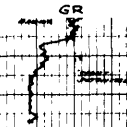
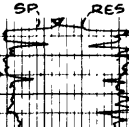
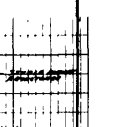


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD 78041  
SHEET 2 OF 2

## REMARKS:

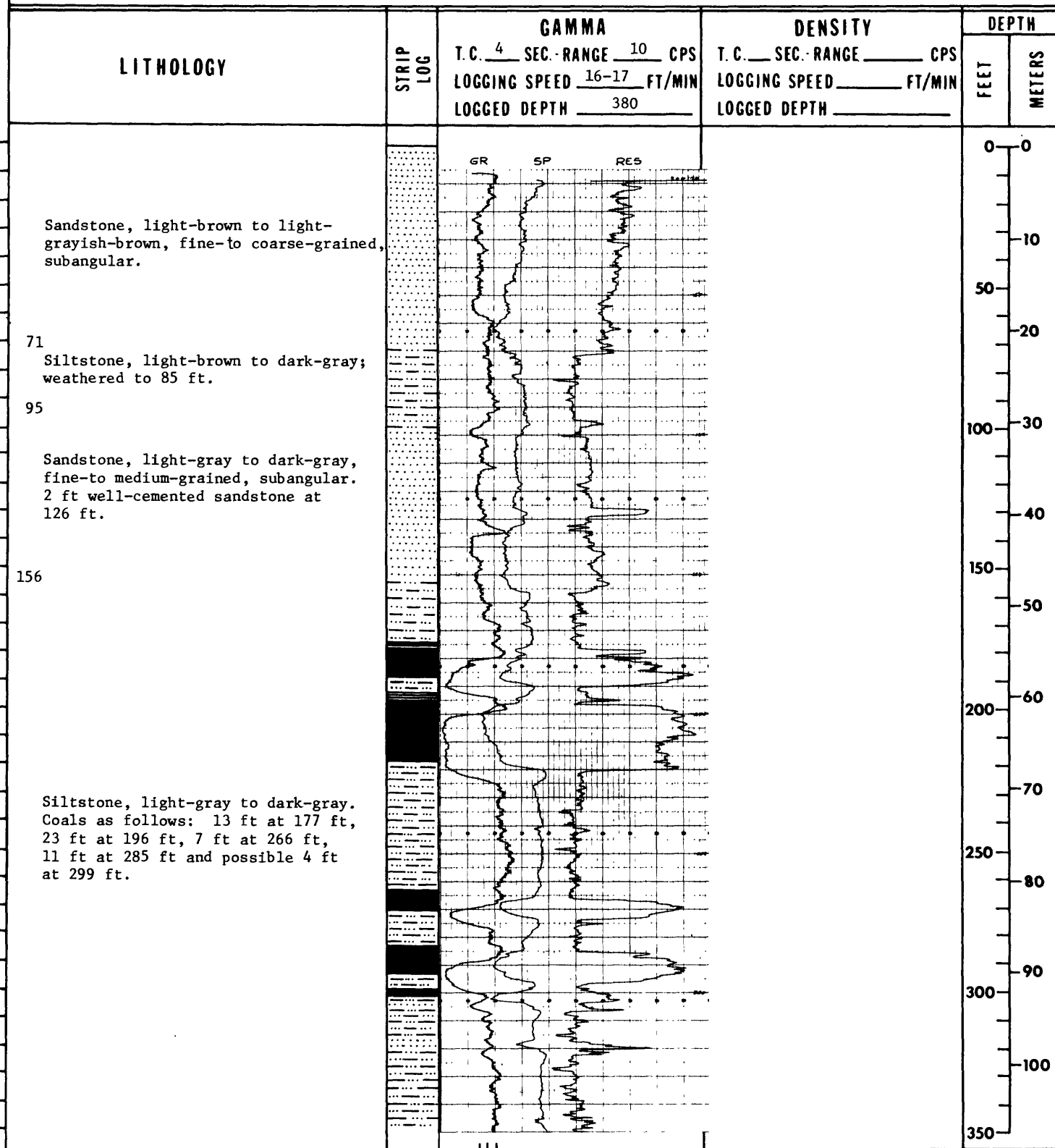
SP = 20 MV  
RES = 20 OHMS

LITHOLOGY	STRIP LOG	GAMMA T.C. <u>4</u> SEC. RANGE <u>10</u> CPS LOGGING SPEED <u>15-17</u> FT/MIN LOGGED DEPTH <u>380</u>	DENSITY T.C. ____ SEC. RANGE ____ CPS LOGGING SPEED ____ FT/MIN LOGGED DEPTH ____	DEPTH	
				FEET	METERS
353 Sandstone, light-gray, very fine grained.					350
380 LTD					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
					410
					420
					430
					440
					450
					460
					470
					480
					490
					500
					510
					520
					530
					540
					550
					560
					570
					580
					590
					600
					610
					620
					630
					640
					650
					660
					670
					680
					690
					700
					710
					720
					730
					740
					750

# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78042  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Hilight	
<b>DATE STARTED</b> 9-1-1978	<b>DATE COMP.</b> 9-1-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 28 <b>T.</b> 45 N., <b>R.</b> 70 W., <b>FOOTAGE LOC.</b>		1900 <del>FWL</del> 1100 <del>FWL</del>	<b>GROUND ELEV</b> 4875
<b>SIZE AND BIT TYPE:</b> 5 1/8-in. drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 380	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A.Donatch;K.Bowen;E.Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> : G. A. Holloman	
<b>REMARKS:</b> SP = 20 MV RES = 20 OHMS			



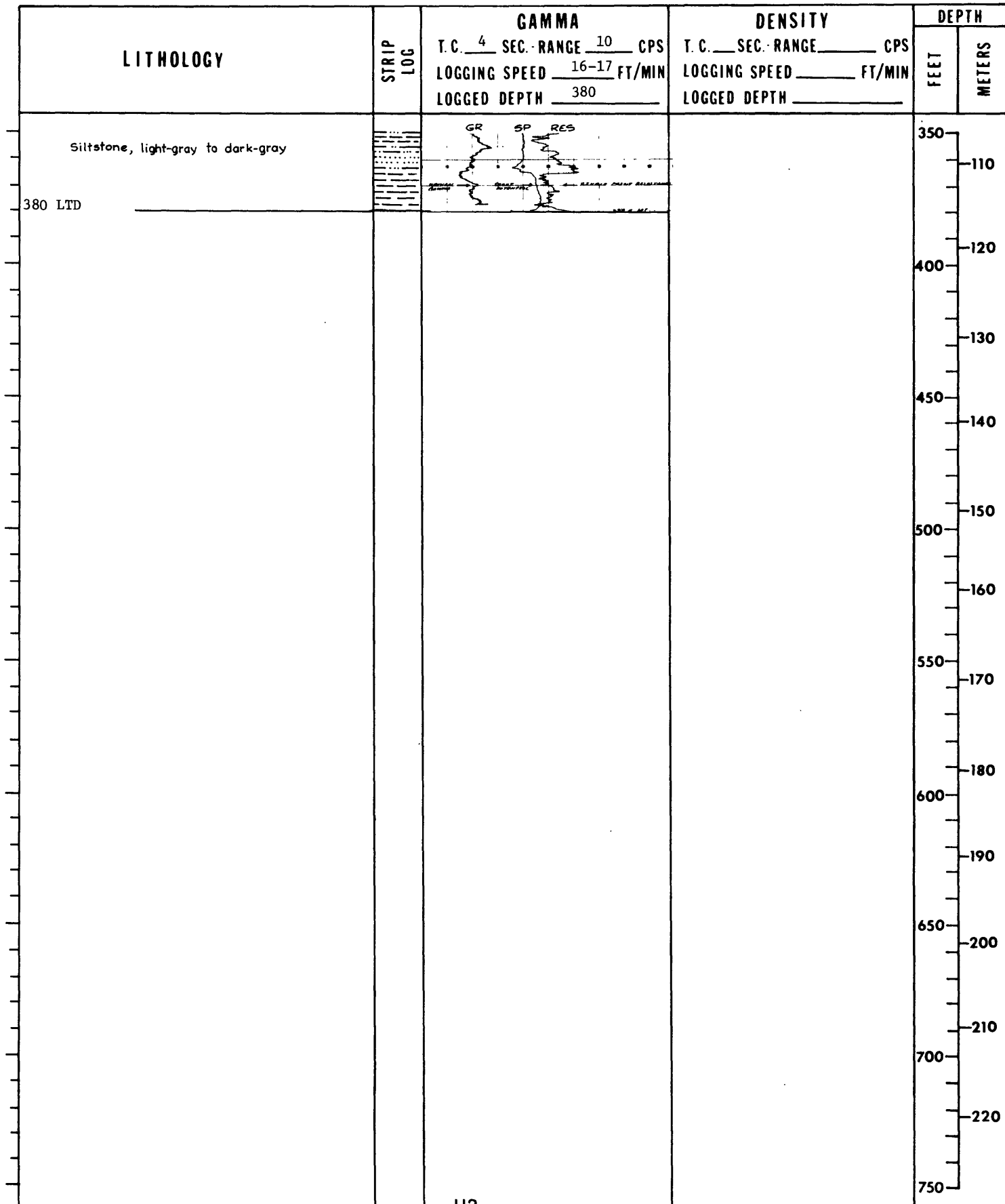
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78042

SHEET 2 OF 2

## REMARKS:

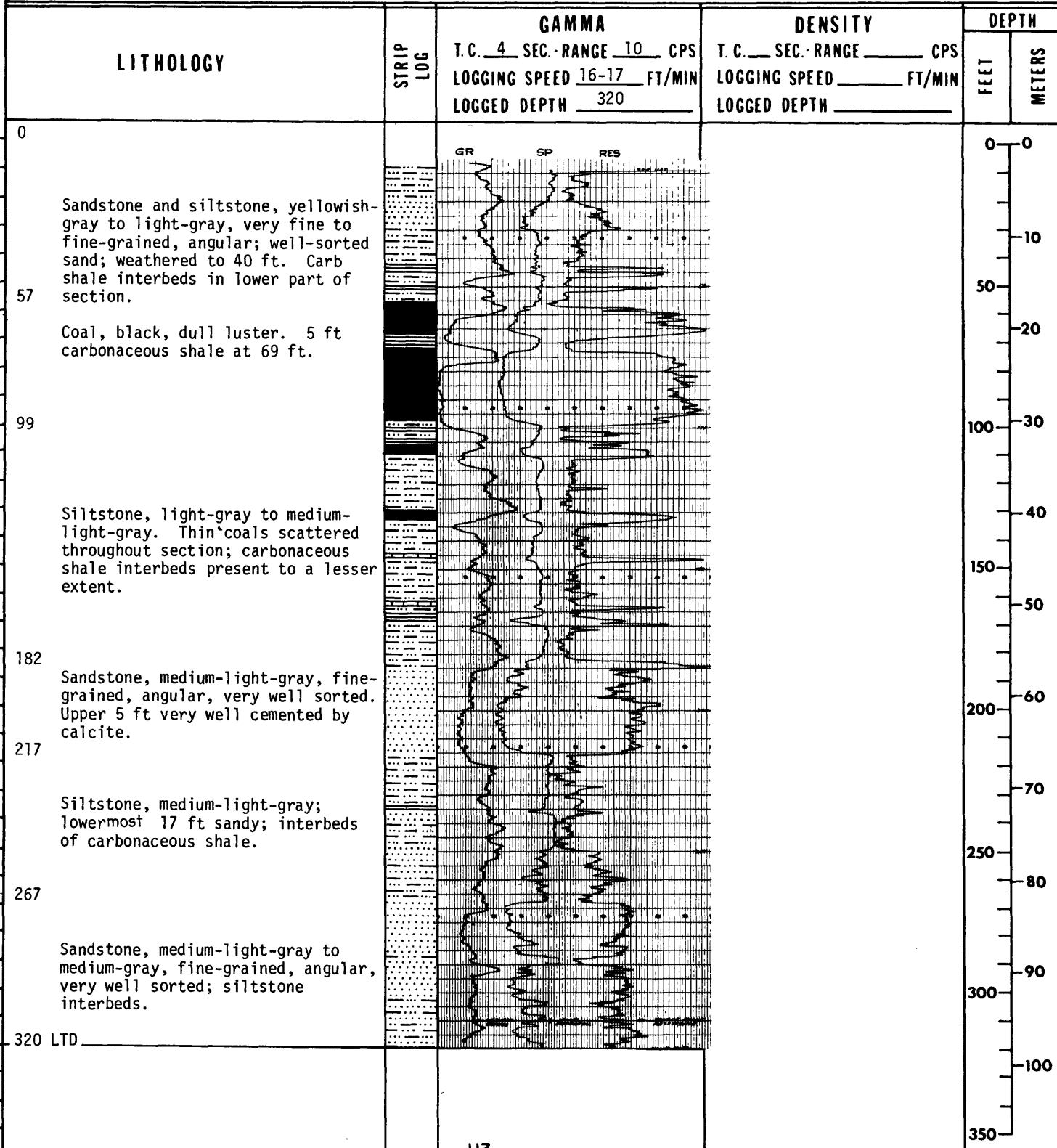
SP = 20 MV  
RES = 20 OHMS



# UNITED STATES GEOLOGICAL SURVEY

HOLE NOCD-78043  
SHEET 1 OF 1

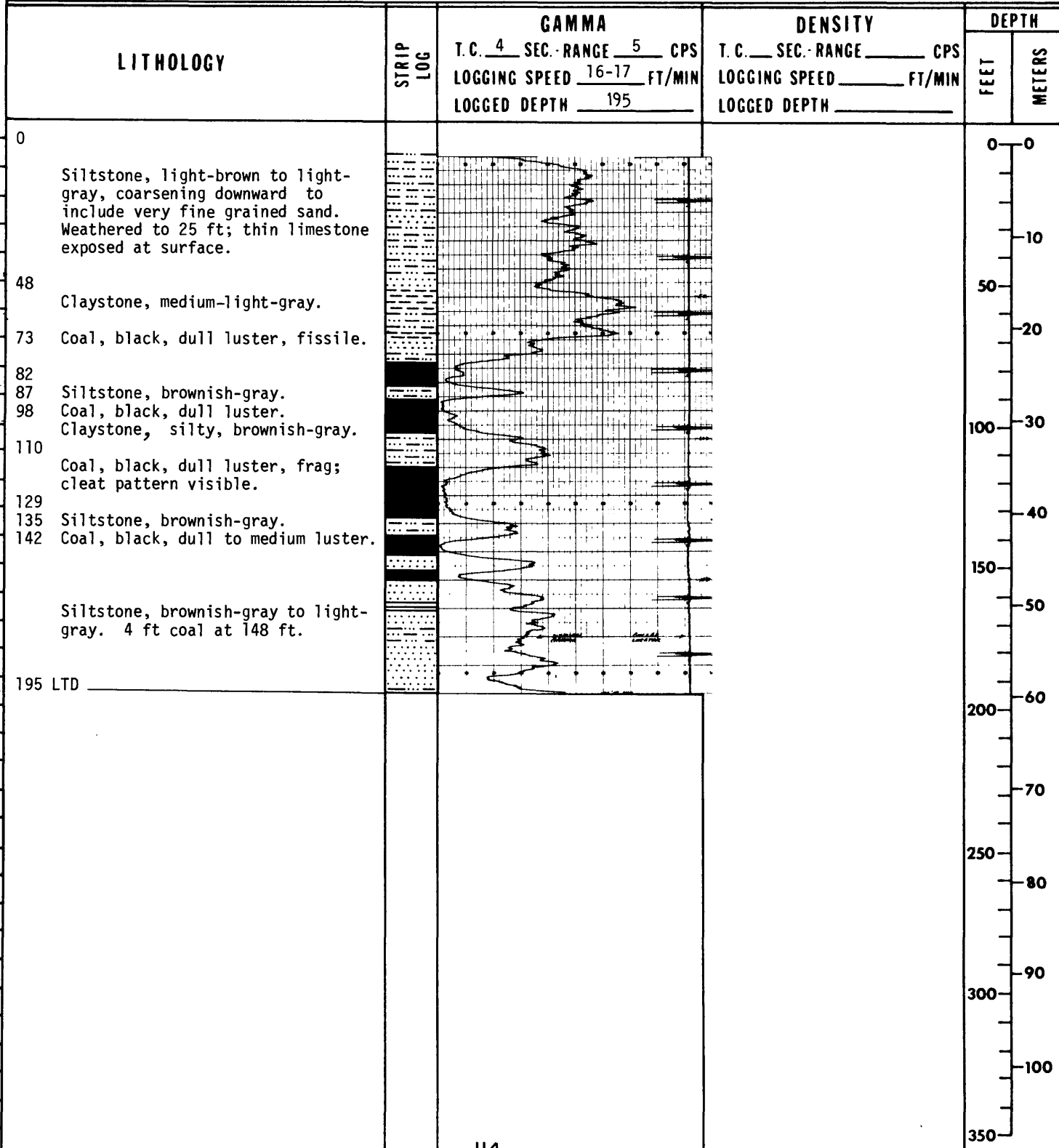
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Open A Ranch	
<b>DATE STARTED</b> 9-2-1978	<b>DATE COMP.</b> 9-2-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 26 <b>T.</b> 45 N., <b>R.</b> 70 W., <b>FOOTAGE LOC.</b>		250 <del>###</del> FSL	500 <del>###</del> FWL
<b>SIZE AND BIT TYPE:</b> 5 1/8 in. drag		<b>FOOTAGE</b> ROTARY 320 CORING 0	
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>GROUND ELEV</b> 4840
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	<b>TOTAL DEPTH</b> 320
<b>REMARKS:</b> SP=20 MV RES=20 OHMS			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78044  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Neil Butte	
<b>DATE STARTED</b> 9-2-1978	<b>DATE COMP.</b> 9-2-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 4 T. 45 N., R. 70 W., FOOTAGE LOC.</b>		2500 <del>FNL</del> FSL	1400 <del>FEL</del> FWE
<b>SIZE AND BIT TYPE:</b> 4 3/4 in. drag		<b>FOOTAGE</b>	
		ROTARY 200	CORING 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> G. Hollomon; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b>			
Lost circulation at 160 ft. Gamma Ray logged thru drill pipe			

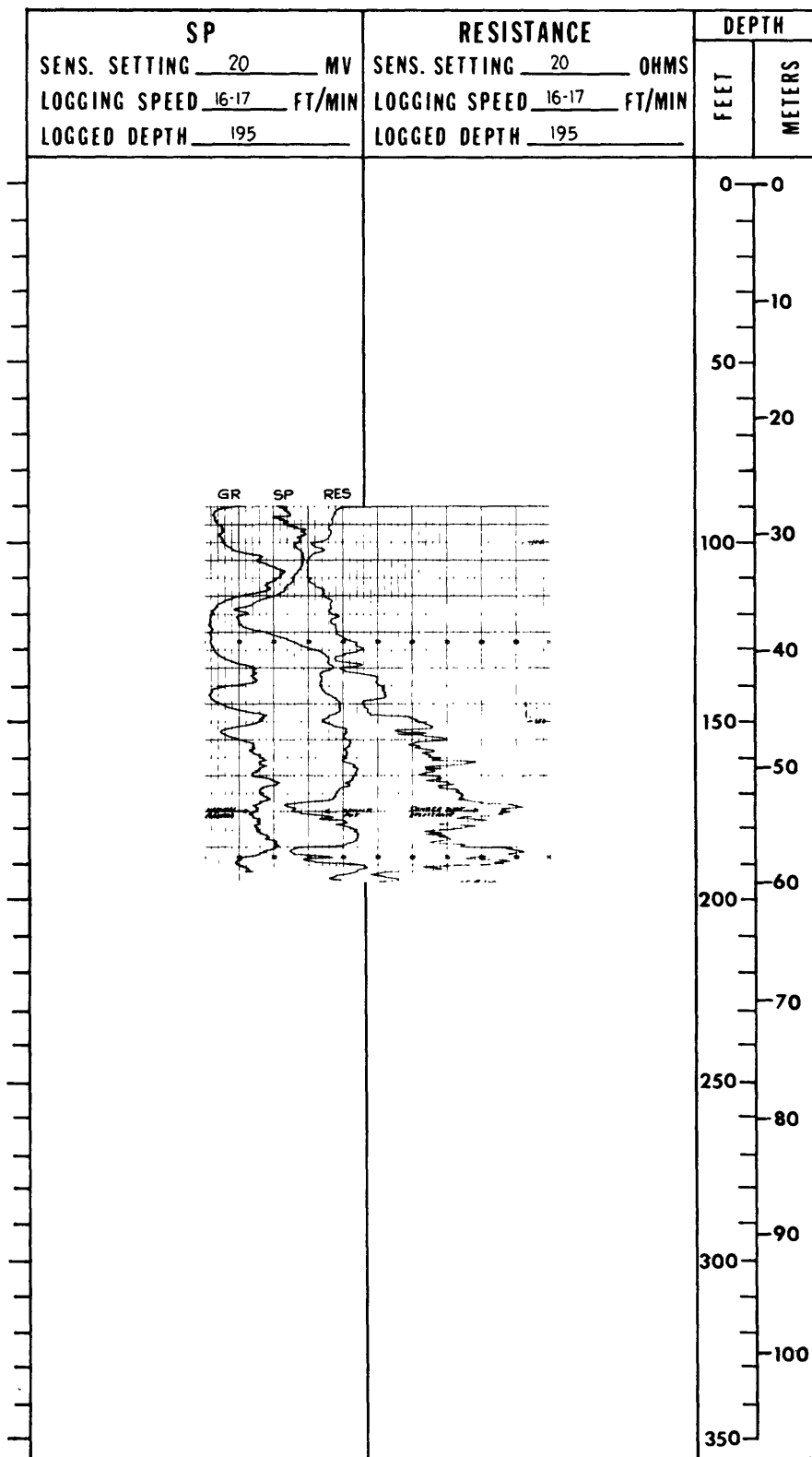


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78044  
SHEET 2 OF 2

## REMARKS:

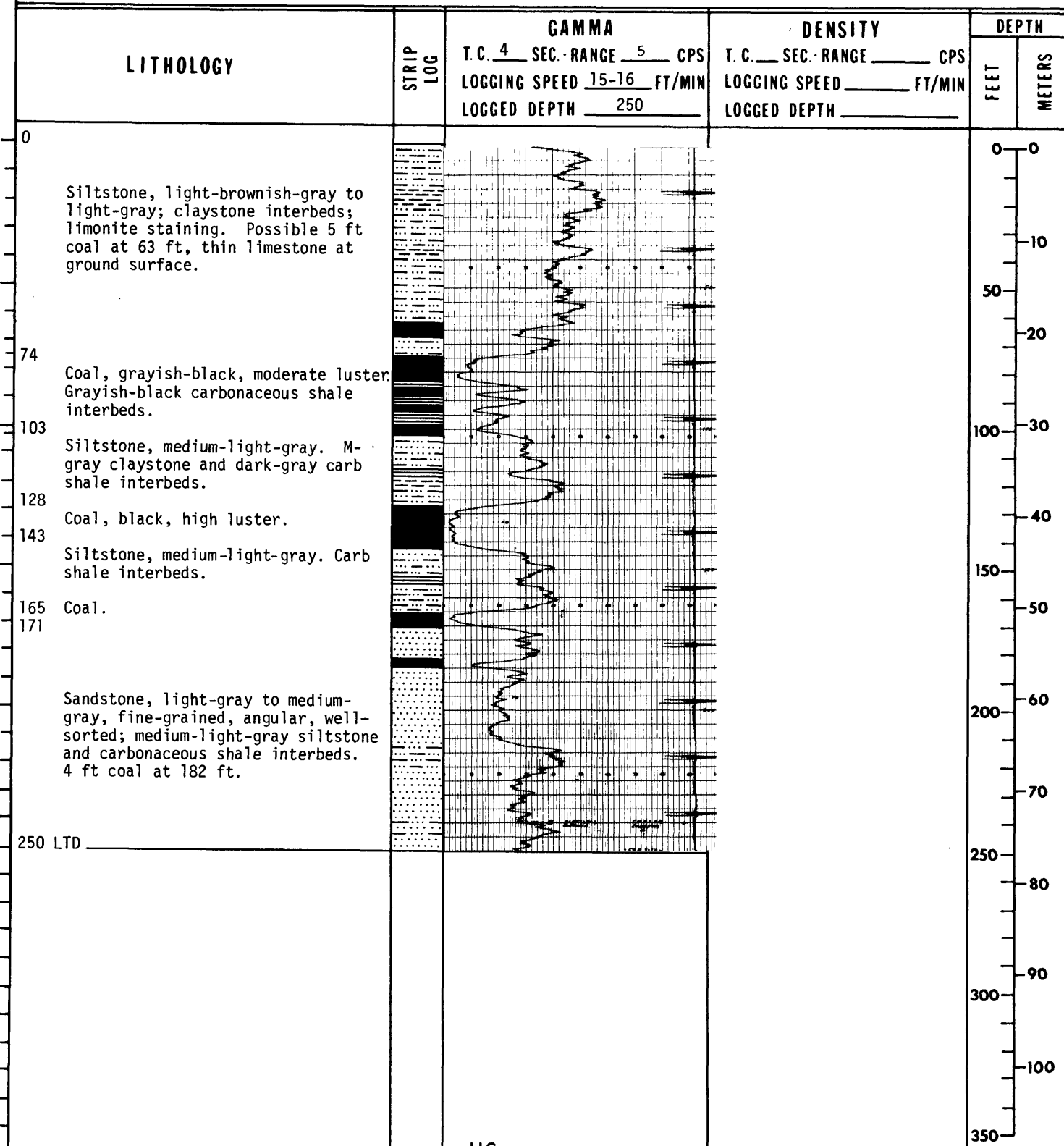
T C 4 Sec. Range 10 CPS



# UNITED STATES GEOLOGICAL SURVEY

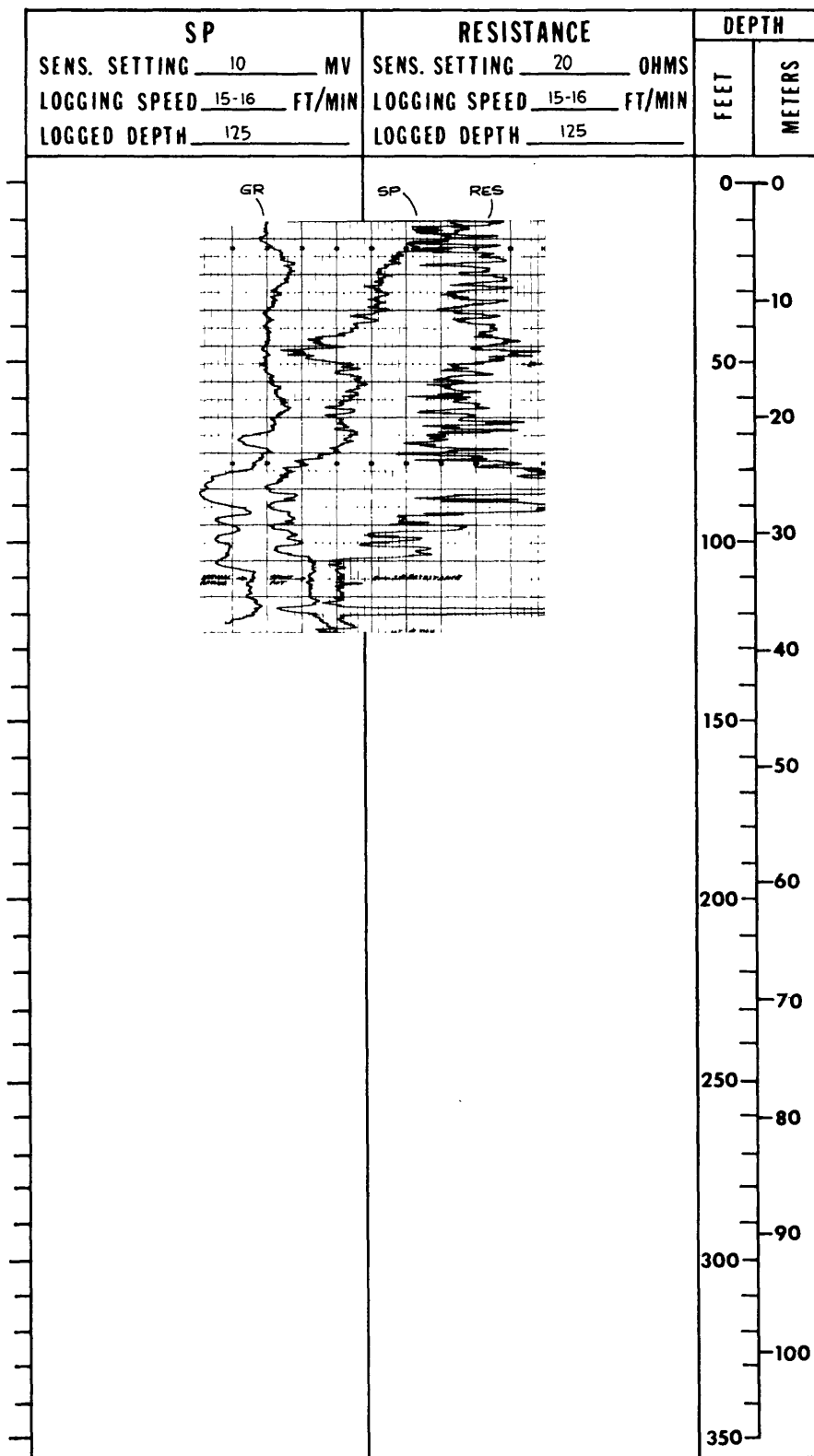
HOLE NO CD-78045  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Neil Butte	
<b>DATE STARTED</b> 9-2-1978	<b>DATE COMP.</b> 9-3-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 3 T. 45 N., R. 70 W., FOOTAGE LOC.</b>		2500 <del>FWL</del>	1200 <del>FWL</del>
<b>SIZE AND BIT TYPE:</b> 4 3/4 in. drag		<b>FOOTAGE</b>	
		ROTARY 260	CORING 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b> Gamma ray logged thru drill pipe.			



REMARKS:

T C 4 Sec. Range 10 CPS

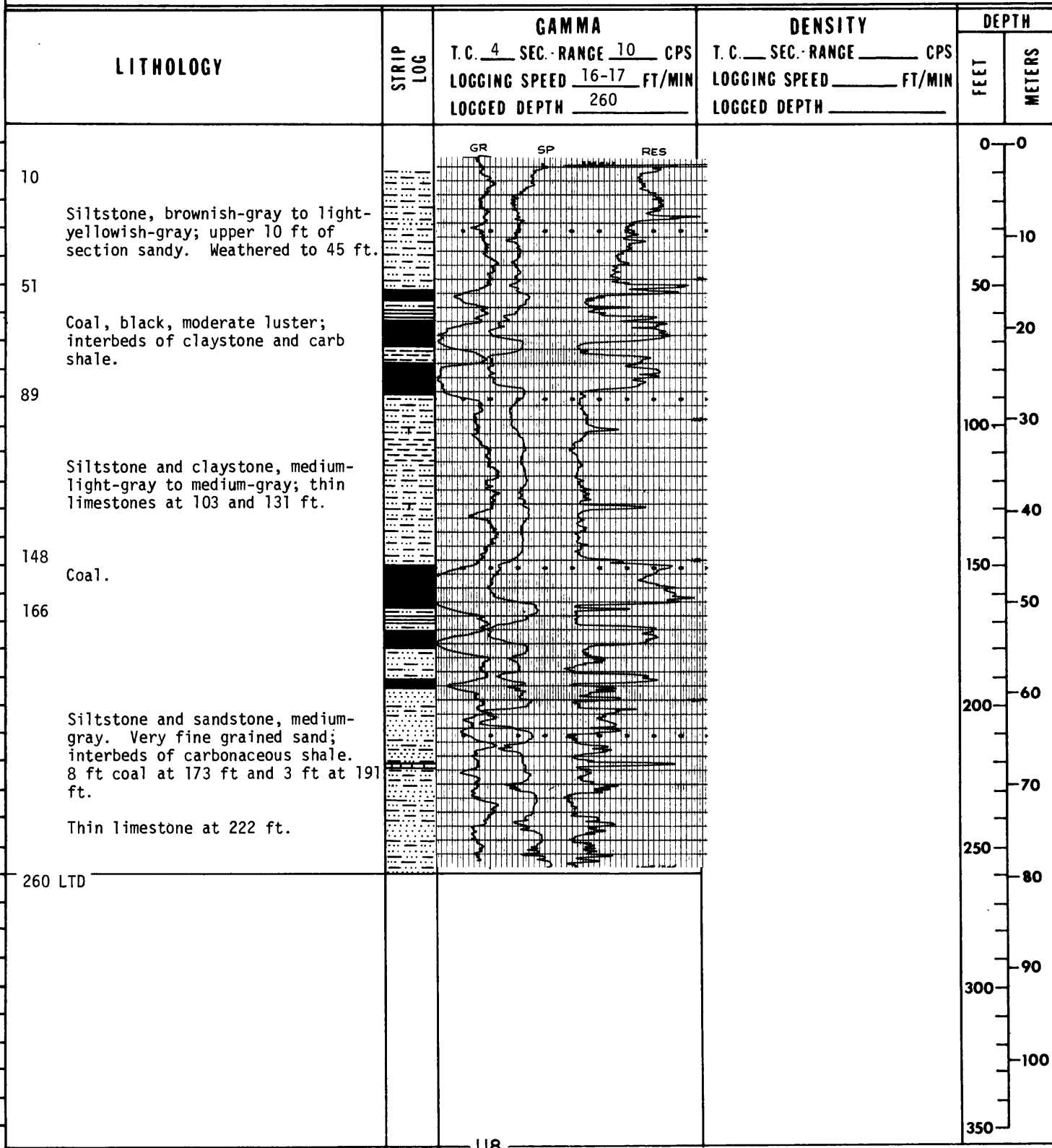




# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78046  
SHEET 1 OF 1

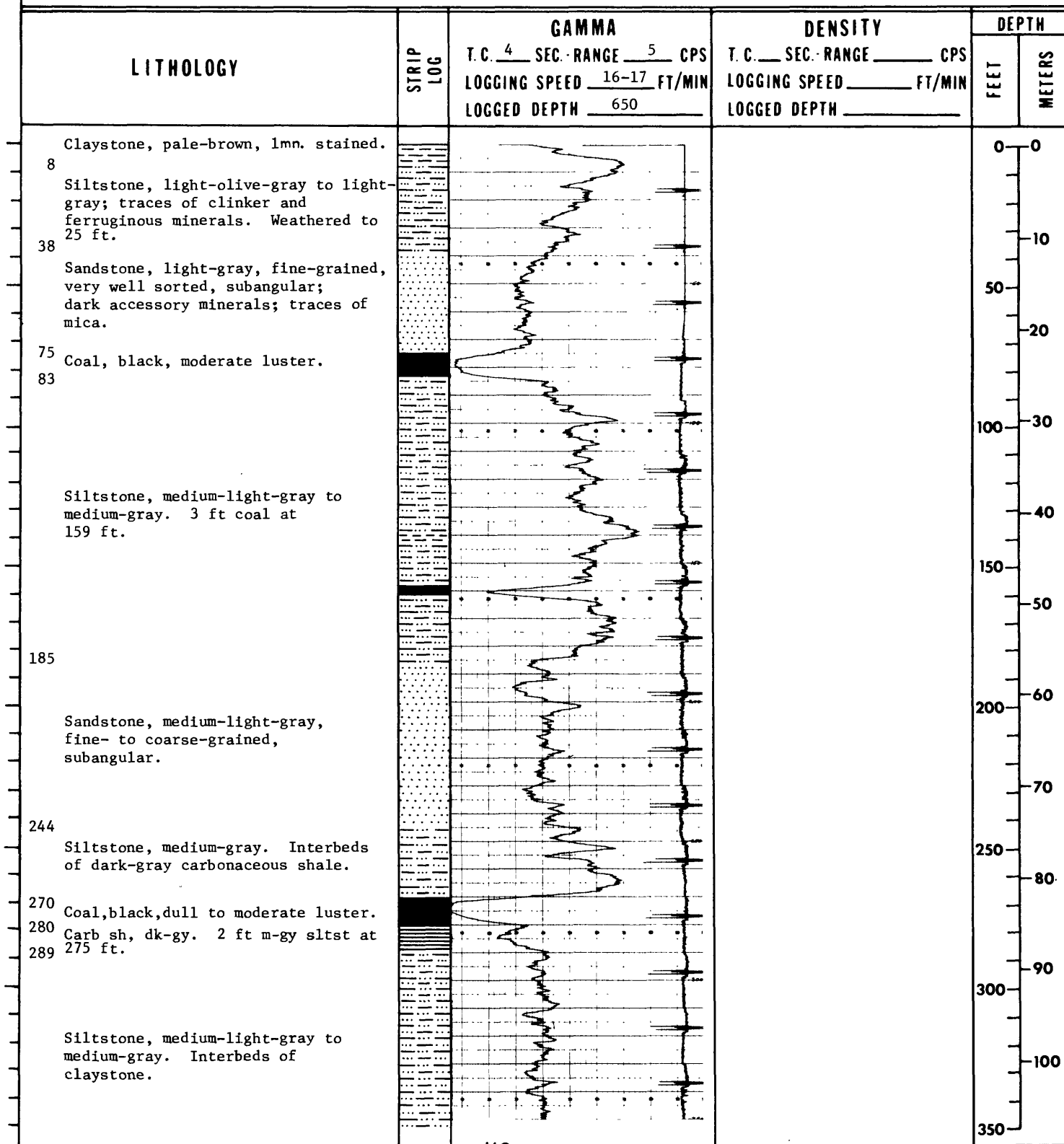
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Neil Butte	
<b>DATE STARTED</b> 9-3-1978	<b>DATE COMP.</b> 9-3-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 3 <b>T.</b> 45 N., <b>R.</b> 70 W., <b>FOOTAGE LOC.</b>		10 <del>###</del> <b>FSL</b> 2200 <del>###</del> <b>FEL</b>	<b>GROUND ELEV</b> 4880
<b>SIZE AND BIT TYPE:</b> 4 3/4 in. drag		<b>FOOTAGE</b> ROTARY 260 CORING 0	<b>TOTAL DEPTH</b> 260
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b> SP = 20 MV RES = 20 OHMS			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78047  
SHEET 1 OF 3

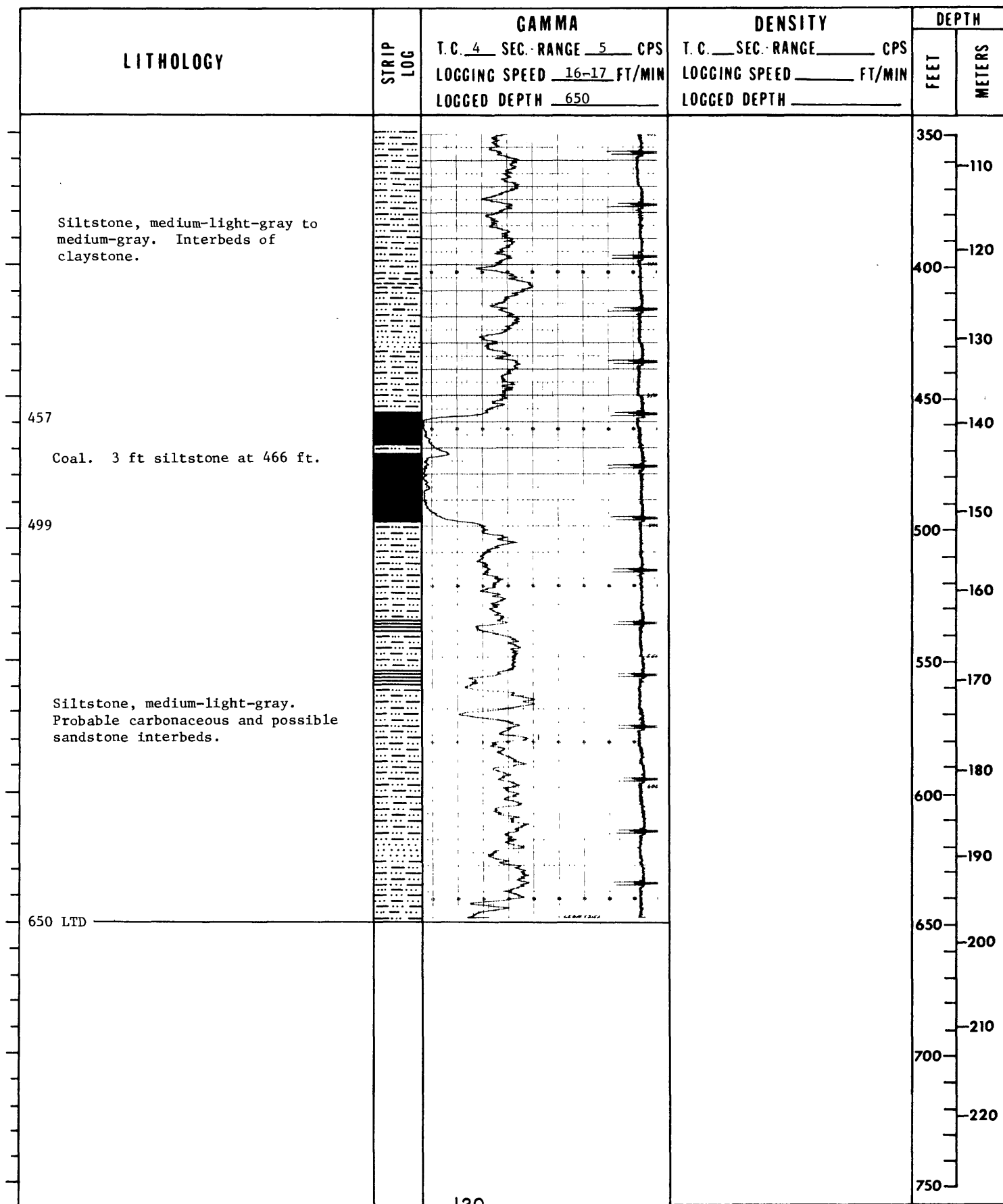
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Eagle Rock	
<b>DATE STARTED</b> 9-3-1978	<b>DATE COMP.</b> 9-4-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 25 <b>T.</b> 46 N., <b>R.</b> 72 W., <b>FOOTAGE LOC.</b> 500		<b>FNL</b> 1000 <b>FWL</b> XXX	<b>GROUND ELEV</b> 4675
<b>SIZE AND BIT TYPE:</b> 5-in. and 5 1/8-in. drag		<b>FOOTAGE</b> <b>ROTARY</b> 660 <b>CORING</b> 0	
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> 9-4-78 48
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Lost circulation at 520 ft. Gamma ray logged through drill pipe. 2-in observation well installed to 88 ft on 9-4-78.			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78047  
SHEET 2 OF 3

REMARKS:

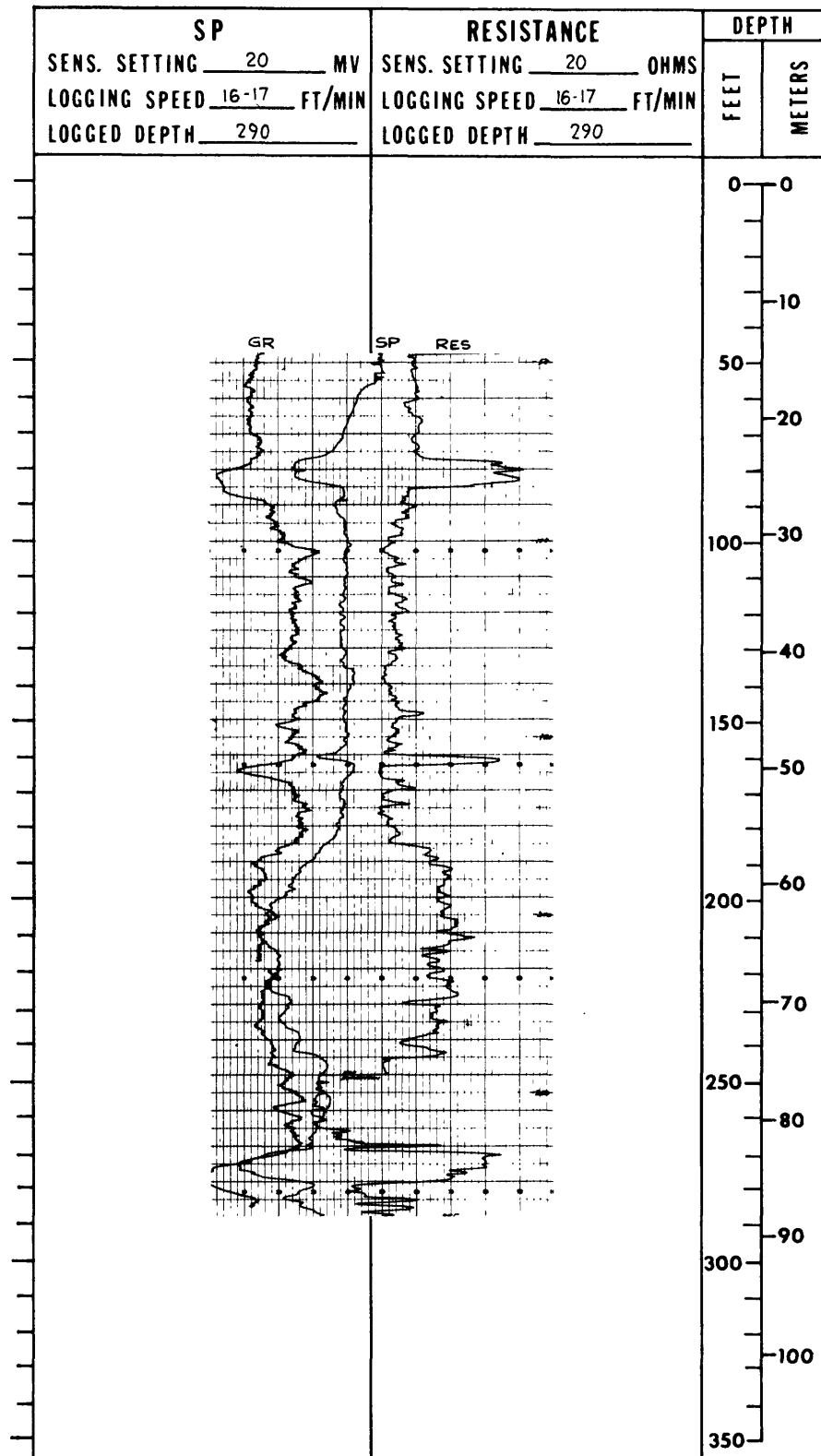


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78047  
SHEET 3 OF 3

## REMARKS:

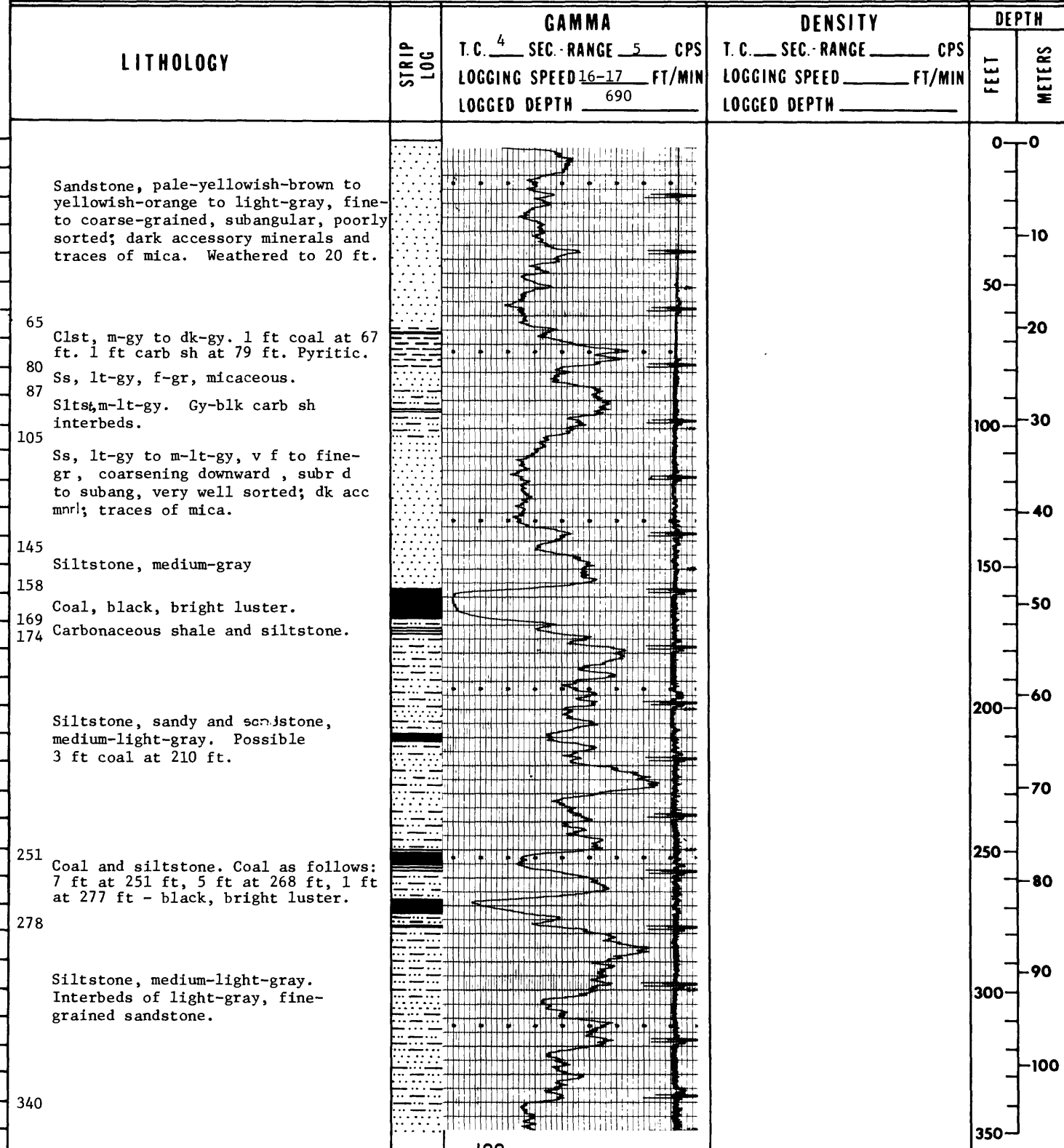
TC 4 Sec. Range 10 CPS



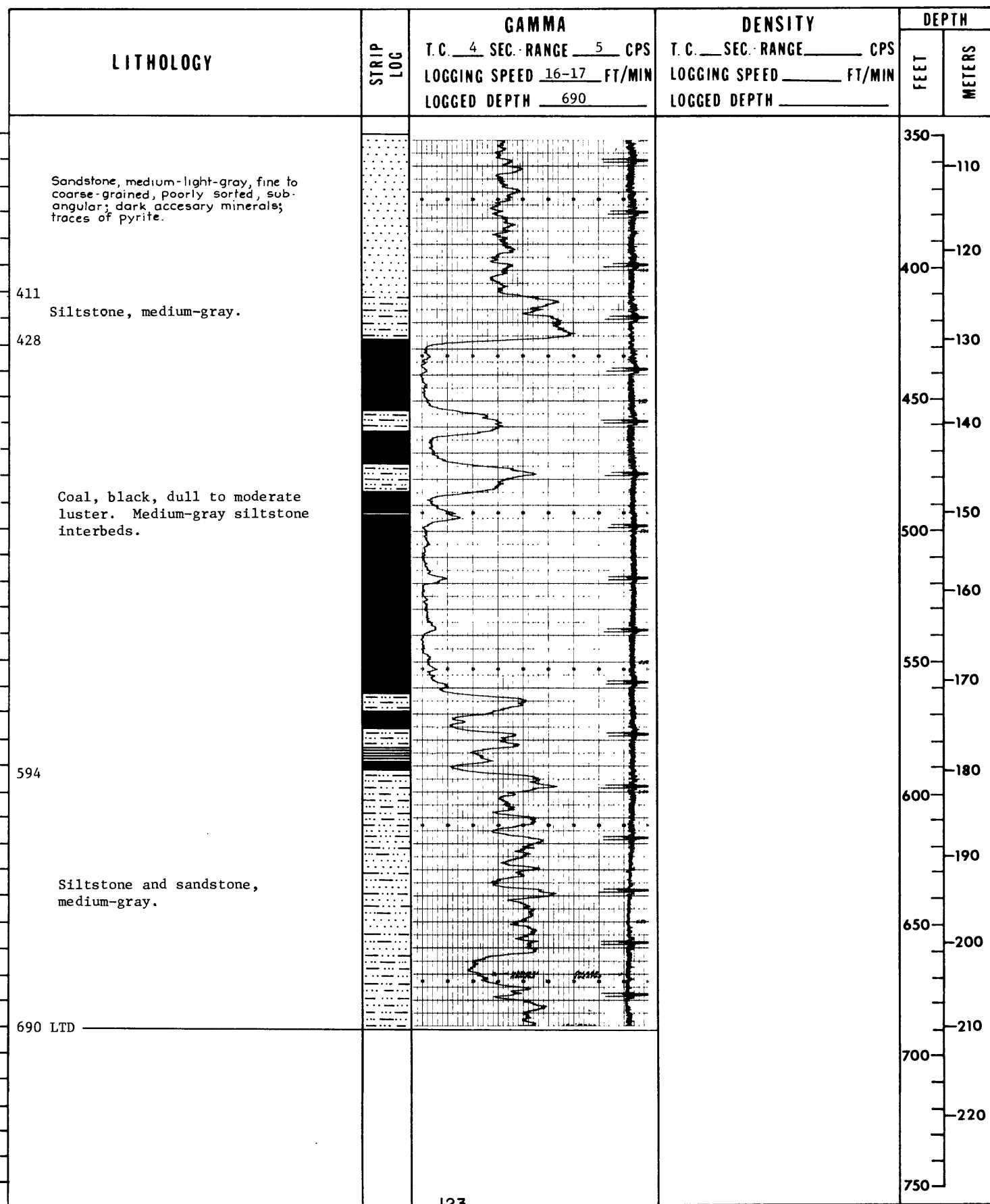
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78048  
SHEET 1 OF 4

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Eagle Rock	
<b>DATE STARTED</b> 9-5-1978	<b>DATE COMP.</b> 9-5-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 26 <b>T.</b> 46 N., <b>R.</b> 72 W., <b>FOOTAGE LOC.</b>		1000 <del>XXX</del> FSL 2000 <del>FSL</del>	<b>GROUND ELEV</b> 4660
<b>SIZE AND BIT TYPE:</b> 4 3/4-in. and 5-in. drag		<b>FOOTAGE</b> ROTARY 700 CORING 0	<b>TOTAL DEPTH</b> 700
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A.Donatich;H.Corley;E.Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Gamma ray logged through drill pipe.			

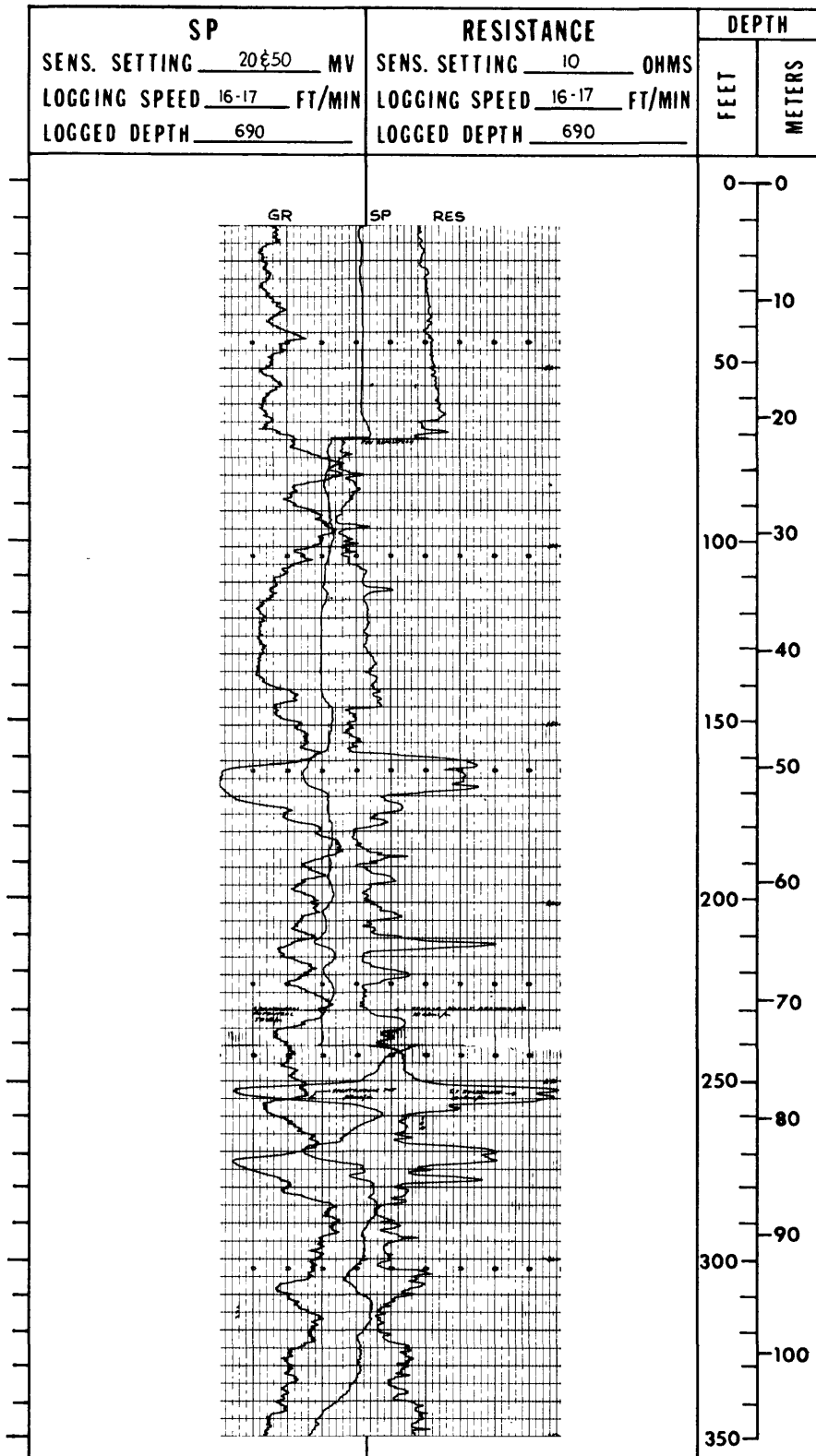


## REMARKS:



## REMARKS:

Splice and SP sensitivity change at 240 ft.  
TC 4 Sec. Range 10 CPS

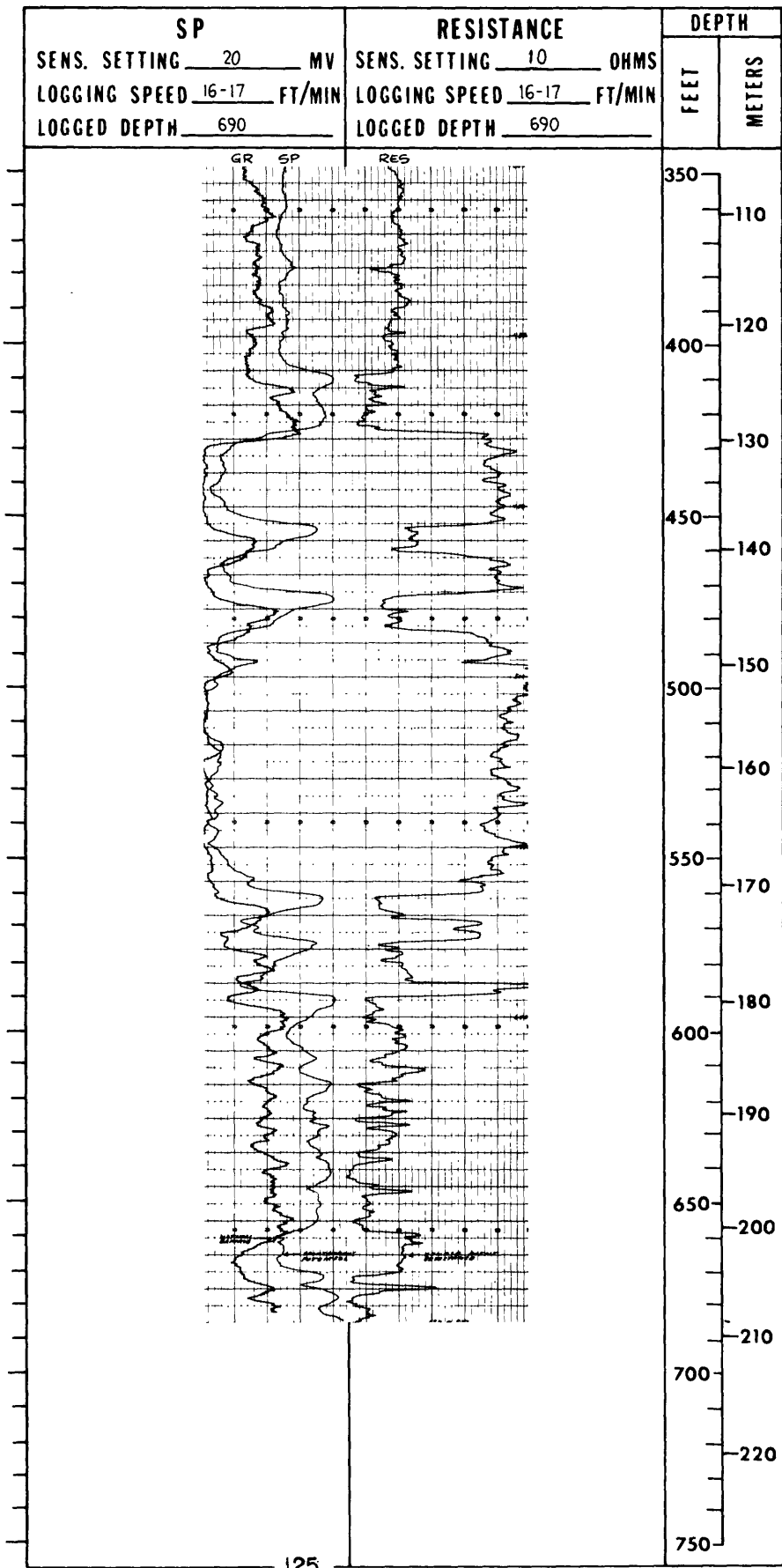


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78048  
SHEET 4 OF 4

## REMARKS:

TC 4 Sec. Range 10 CPS

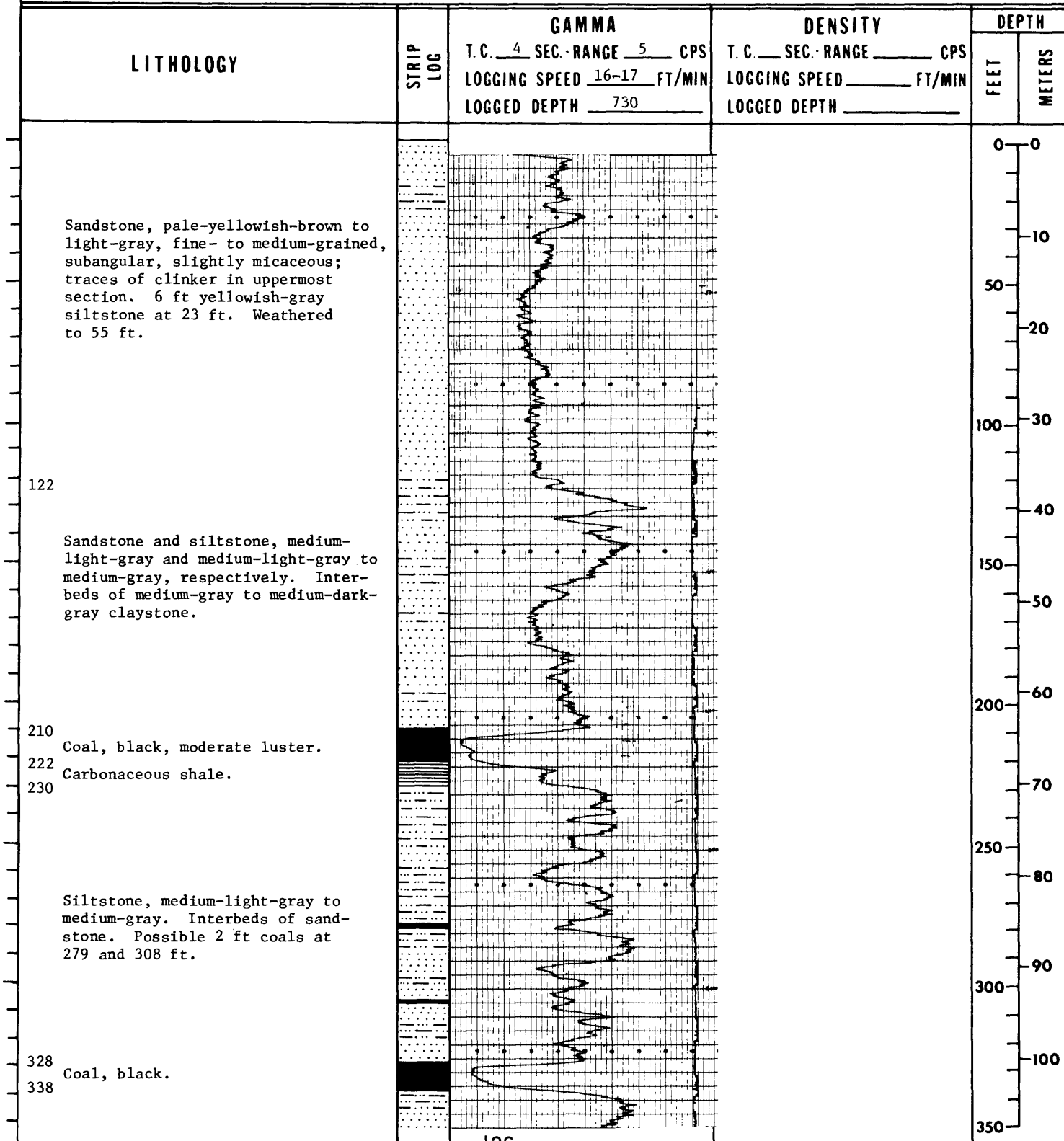




# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78049  
SHEET 1 OF 4

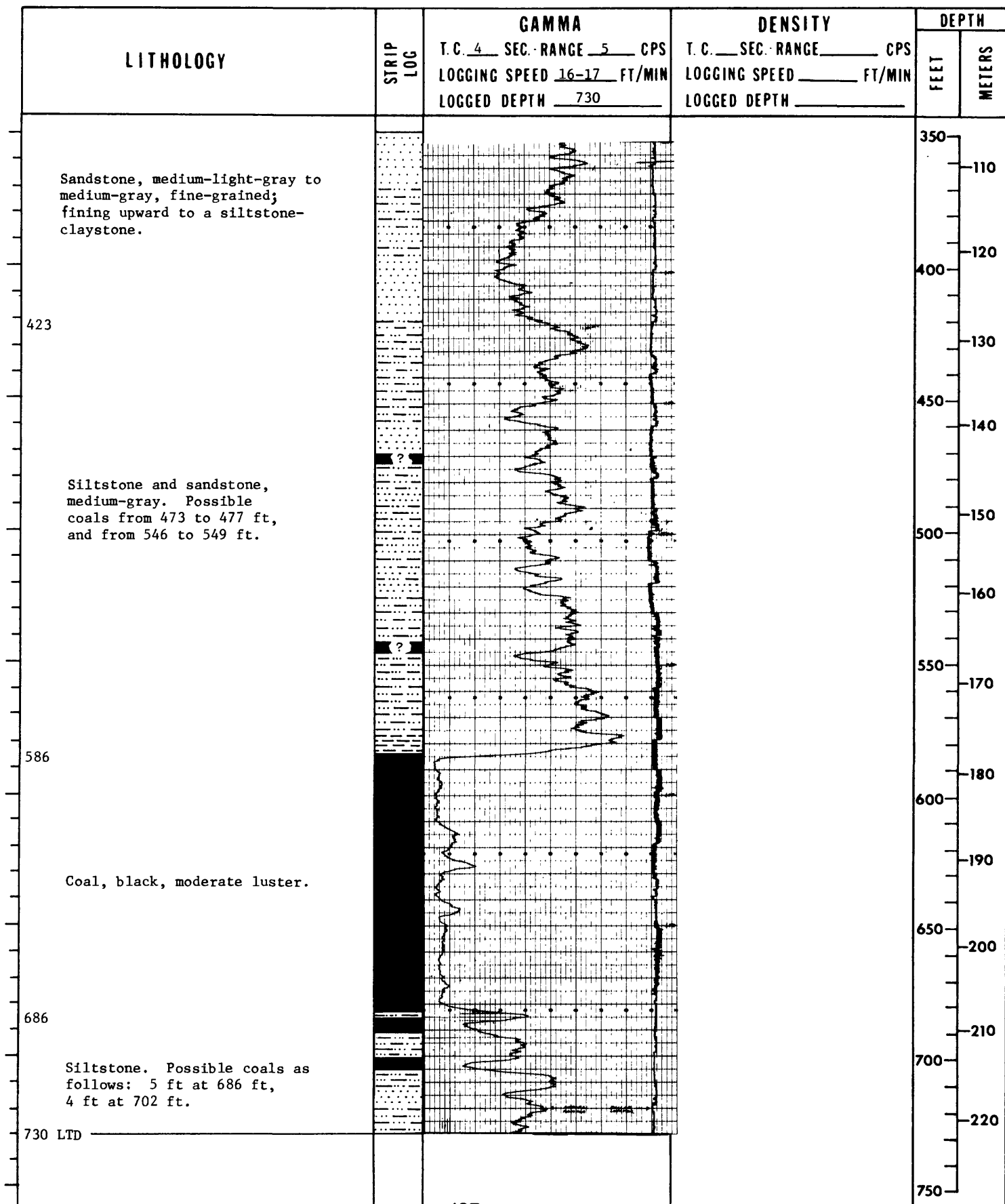
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Eagle Rock	
<b>DATE STARTED</b> 9-6-1978	<b>DATE COMP.</b> 9-7-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 35</b> T. 46 N., R. 72 W., <b>FOOTAGE LOC.</b> 350		<b>FNL</b> <del>XXX</del> 450 <del>FWL</del>	<b>GROUND ELEV</b> 4710
<b>SIZE AND BIT TYPE:</b> 5-in. and 5 1/8-in. drag		<b>FOOTAGE</b> ROTARY 740 CORING 0	<b>TOTAL DEPTH</b> 740
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Lost circulation at 700 ft. Gamma ray logged through drill pipe			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78049  
SHEET 2 OF 4

REMARKS:

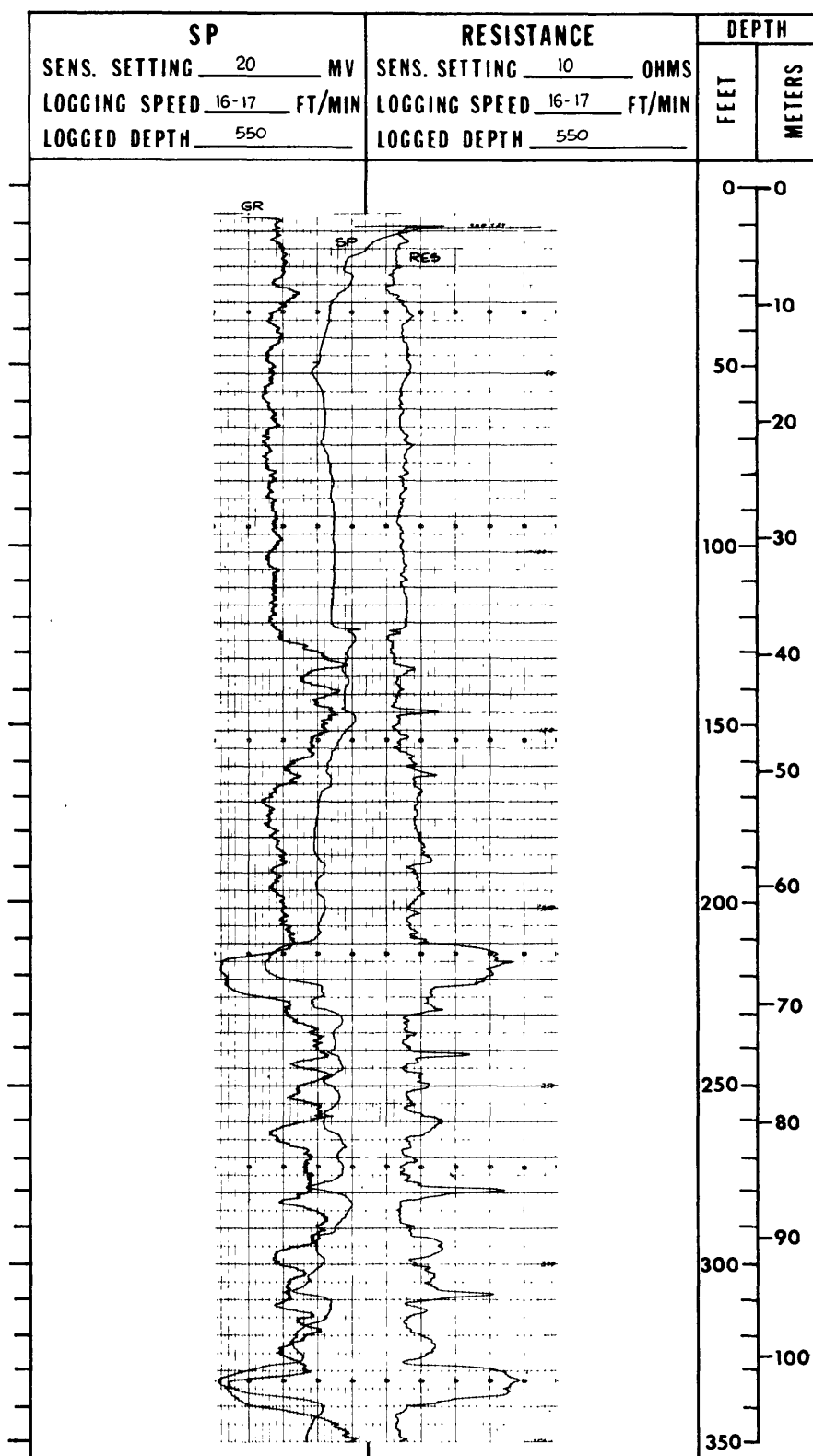


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78049  
SHEET 3 OF 4

## REMARKS:

T C 4 Sec. Range 10 CPS

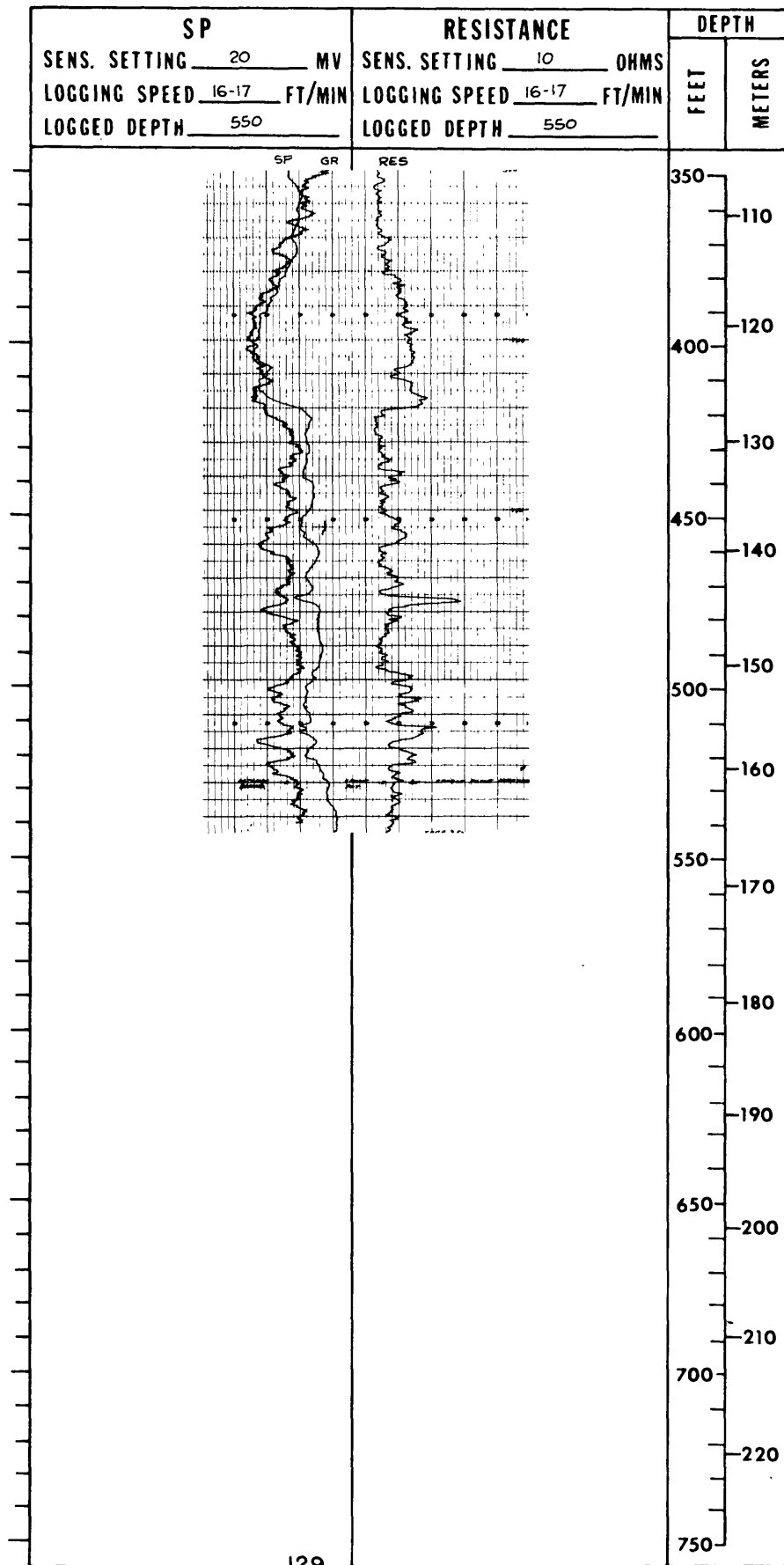


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78049  
SHEET 4 OF 4

## REMARKS:

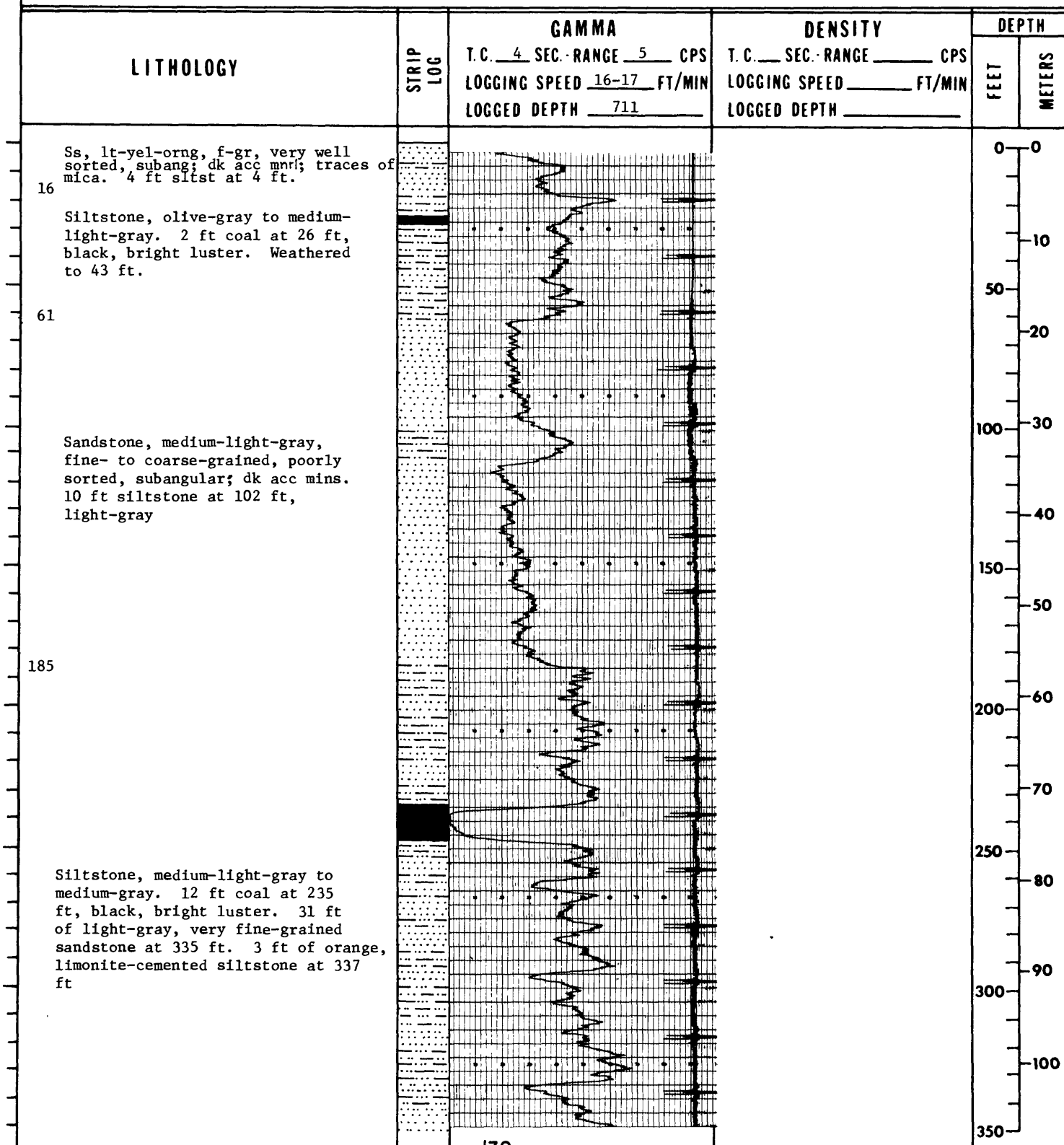
T C 4 Sec. Range 10 CPS



## UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-7805  
SHEET 1 OF 4

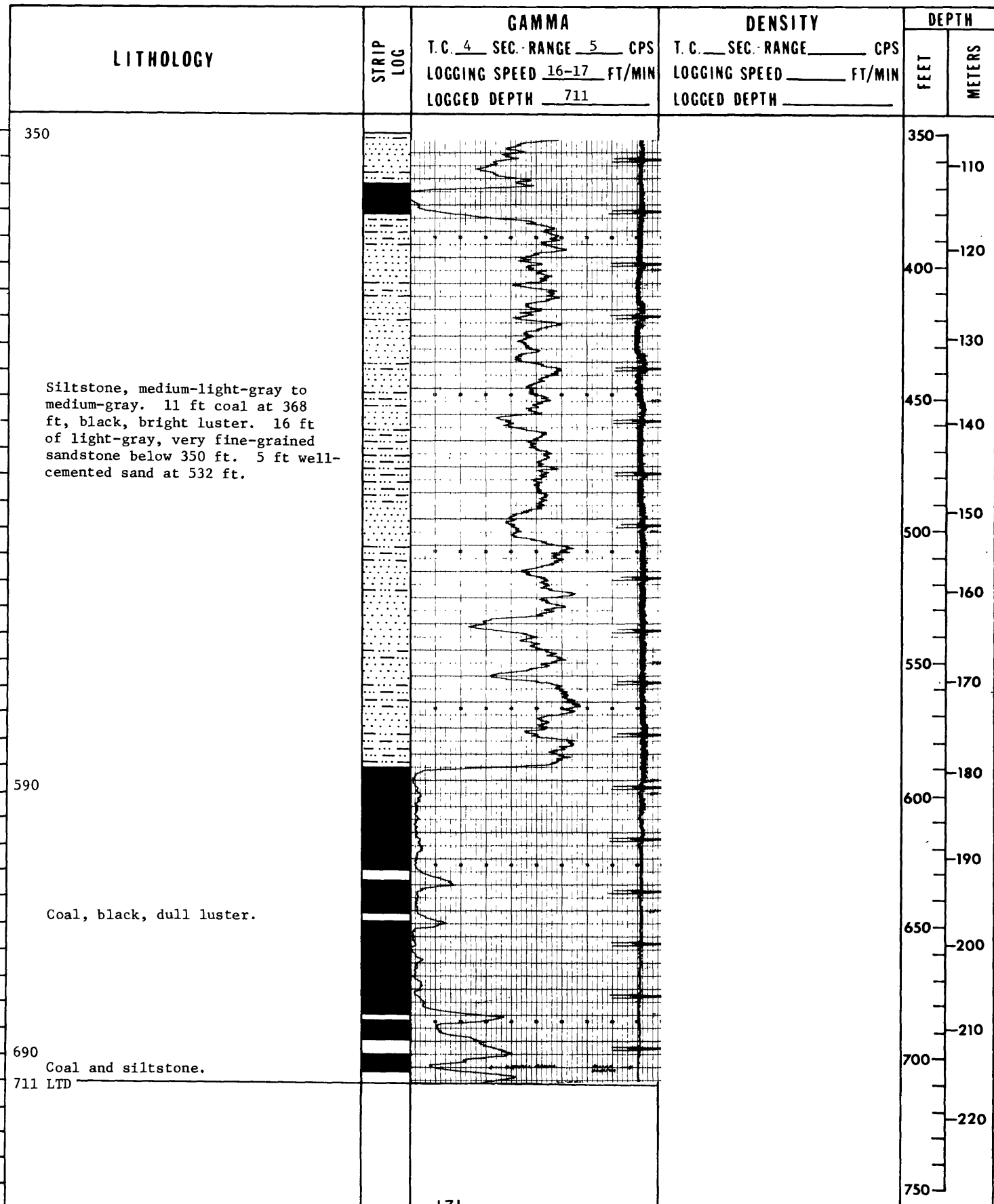
AREA Powder River Basin		QUAD NAME Eagle Rock	
DATE STARTED 9-12-1978	DATE COMP. 9-12-1978	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 34 T.46 N., R.72 W., FOOTAGE LOC.		2300 FNL FSL	2250 FEL FWL
SIZE AND BIT TYPE: 5-in. drag		FOOTAGE ROTARY 720 CORING 0	
DRILLING AGENCY: USGS/CD/NRMA		DRILL TYPE: Portadrill 524	DEPTH TO WATER NR
LITHOLOGY RECORDED BY A.Donatich;H.Corley;E.Fivas		GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon	
REMARKS: Lost circulation at 710 ft. Gamma ray logged through drill pipe			



# UNITED STATES GEOLOGICAL SURVEY

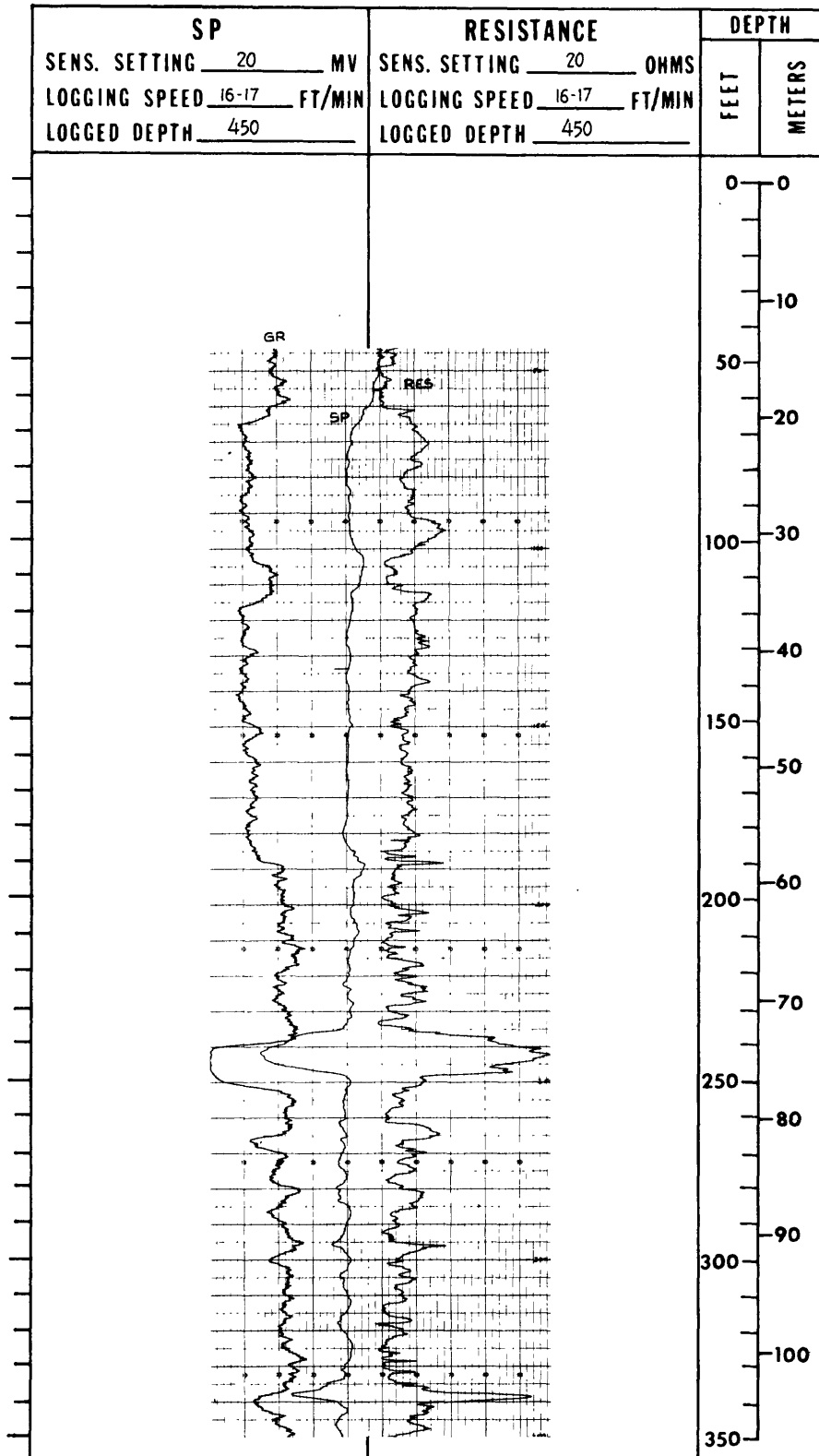
HOLE NO CD-78050  
SHEET 2 OF 4

REMARKS:



REMARKS:

TC 4 Sec. Range 10 CPS

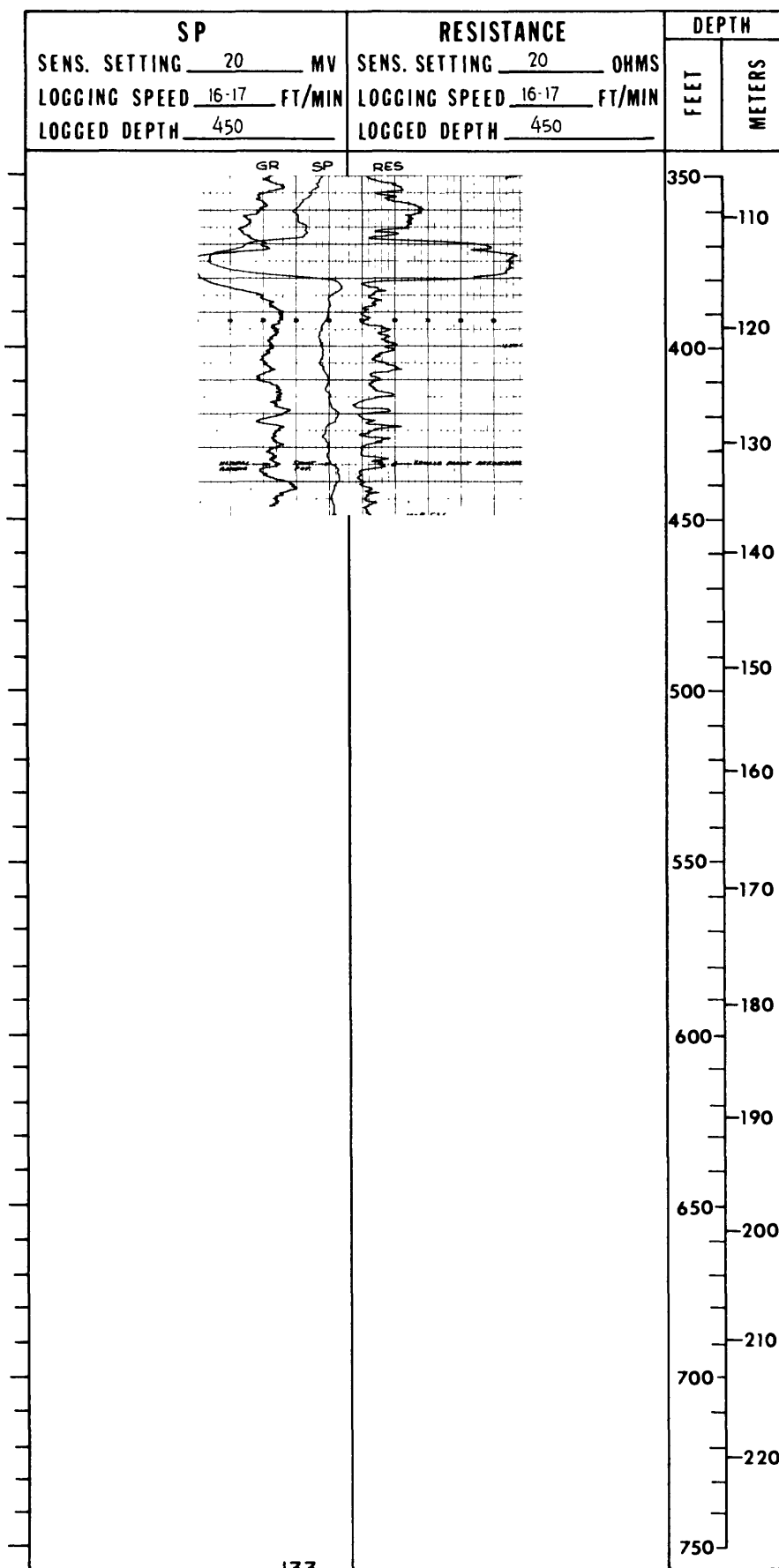


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78050  
SHEET 4 OF 4

## REMARKS:

T C 4 Sec. Range 10 CPS

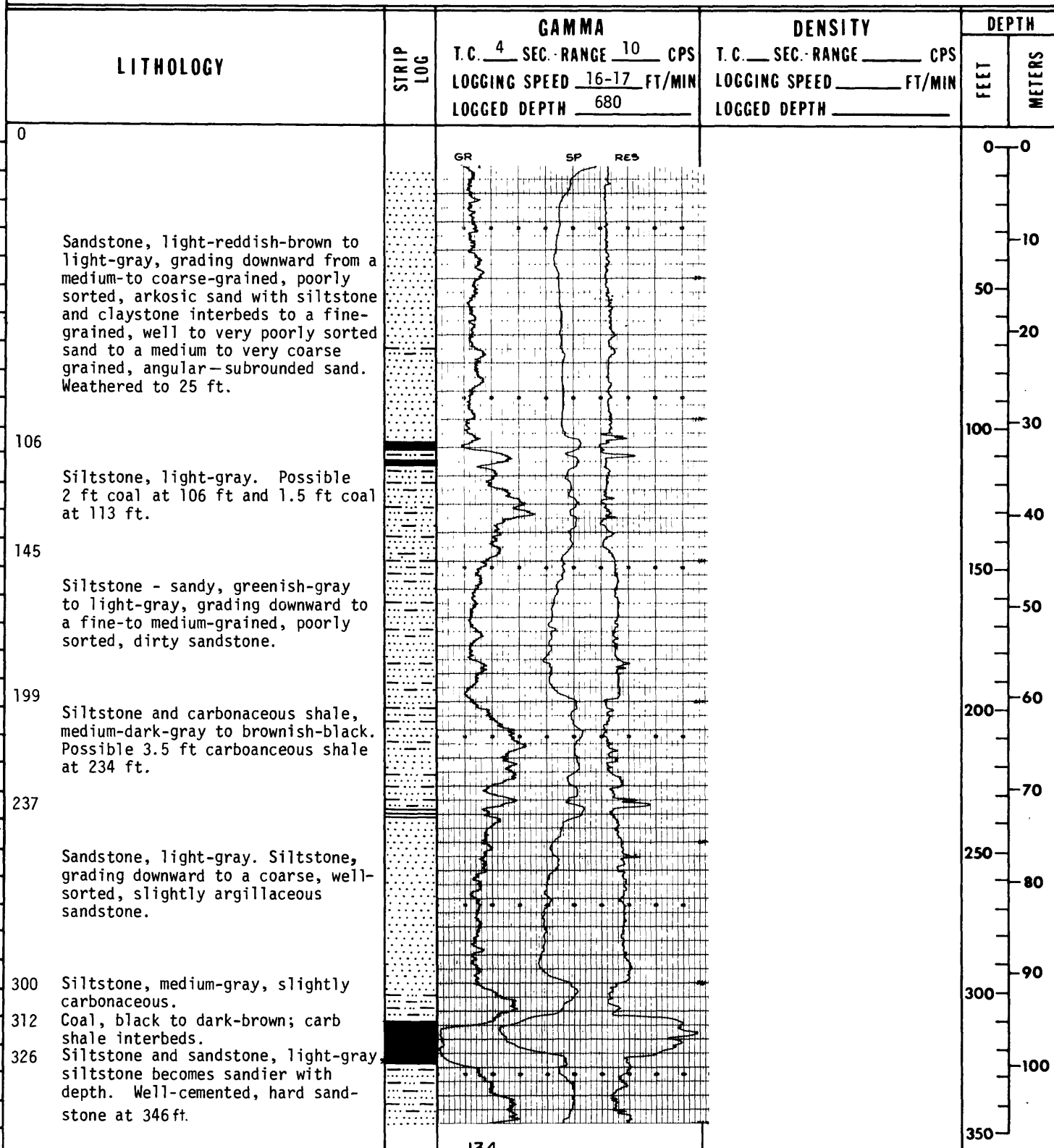




# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78051  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> North Star School (NE¼)	
<b>DATE STARTED</b> 9-13-1978	<b>DATE COMP.</b> 9-13-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 33 T. 46 N., R. 72 W., FOOTAGE LOC.</b>		1000 <del>FT</del> FSL 50 <del>FEET</del> FEL	<b>GROUND ELEV</b> 4695
<b>SIZE AND BIT TYPE:</b> 5 in. drag		<b>FOOTAGE</b>	
		ROTARY 680	CORING 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> G. Hollomon; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b> SP = 20 MV RES = 20 OHMS			

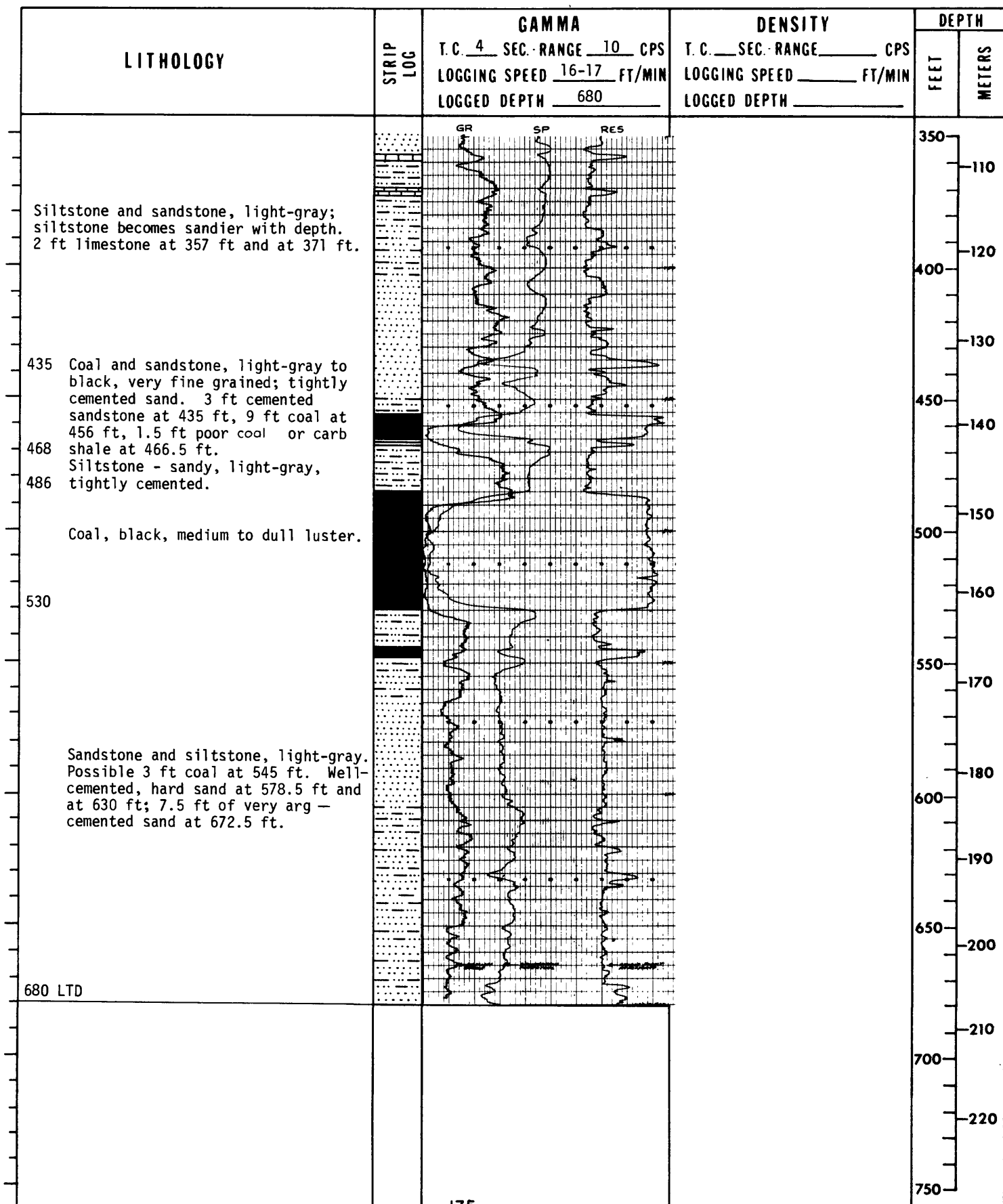


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78051  
SHEET 2 OF 2

## REMARKS:

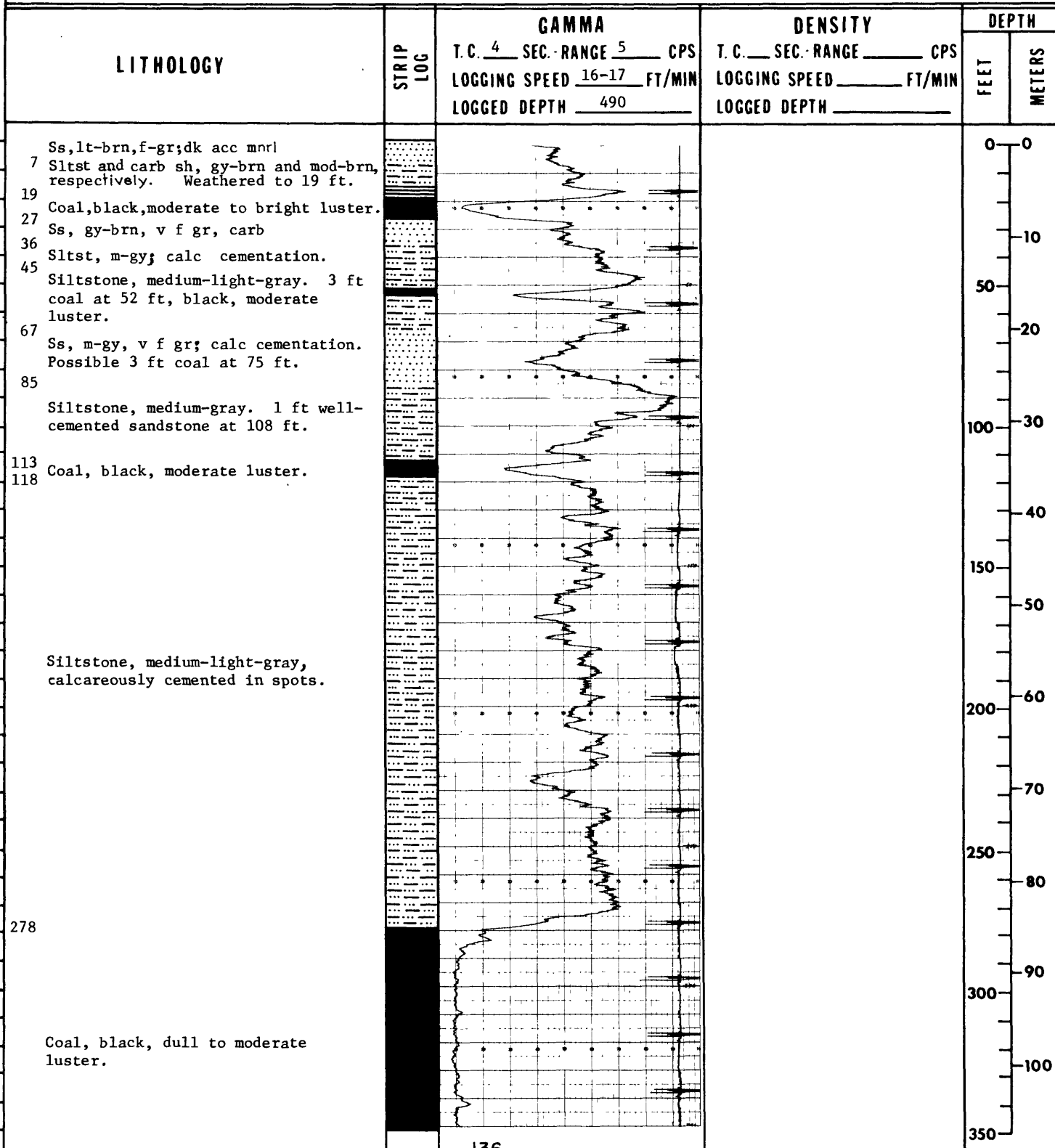
SP = 20 MV  
RES = 20 OHMS



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78052  
SHEET 1 OF 3

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> The Gap SW	
<b>DATE STARTED</b> 9-15-1978	<b>DATE COMP.</b> 9-15-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 31 <b>T.</b> 48 N. <b>R.</b> 71 W. <b>FOOTAGE LOC.</b>		1390 <b>FNL</b> <del>XXX</del> 1370 <b>FWL</b> <del>XXX</del>	<b>GROUND ELEV</b> 4560
<b>SIZE AND BIT TYPE:</b> 5-in. drag		<b>FOOTAGE</b> ROTARY 500 CORING 0	<b>TOTAL DEPTH</b> 500
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> Donatich; Corley; Kistner; Hollomon		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Lost circulation at 420 ft. Gamma ray logged through drill pipe			



**HOLE NO** CD-78052  
**SHEET 2 OF 3**

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH	
		T.C. <u>4</u> SEC. RANGE <u>5</u> CPS LOGGING SPEED <u>16-17</u> FT/MIN LOGGED DEPTH <u>490</u>	T.C. _____ SEC. RANGE _____ CPS LOGGING SPEED _____ FT/MIN LOGGED DEPTH _____	FEET	METERS
Coal, black, dull to moderate luster 361				350	
Siltstone and sandstone. Calcareous cementation probable through section.				110	
				400	
				120	
				130	
				450	
				140	
490 LTD				150	
				500	
				160	
				550	
				170	
				180	
				600	
				190	
				650	
				200	
				210	
				700	
				220	
				750	

HOLE NO. CD-78052  
SHEET 3 OF 3

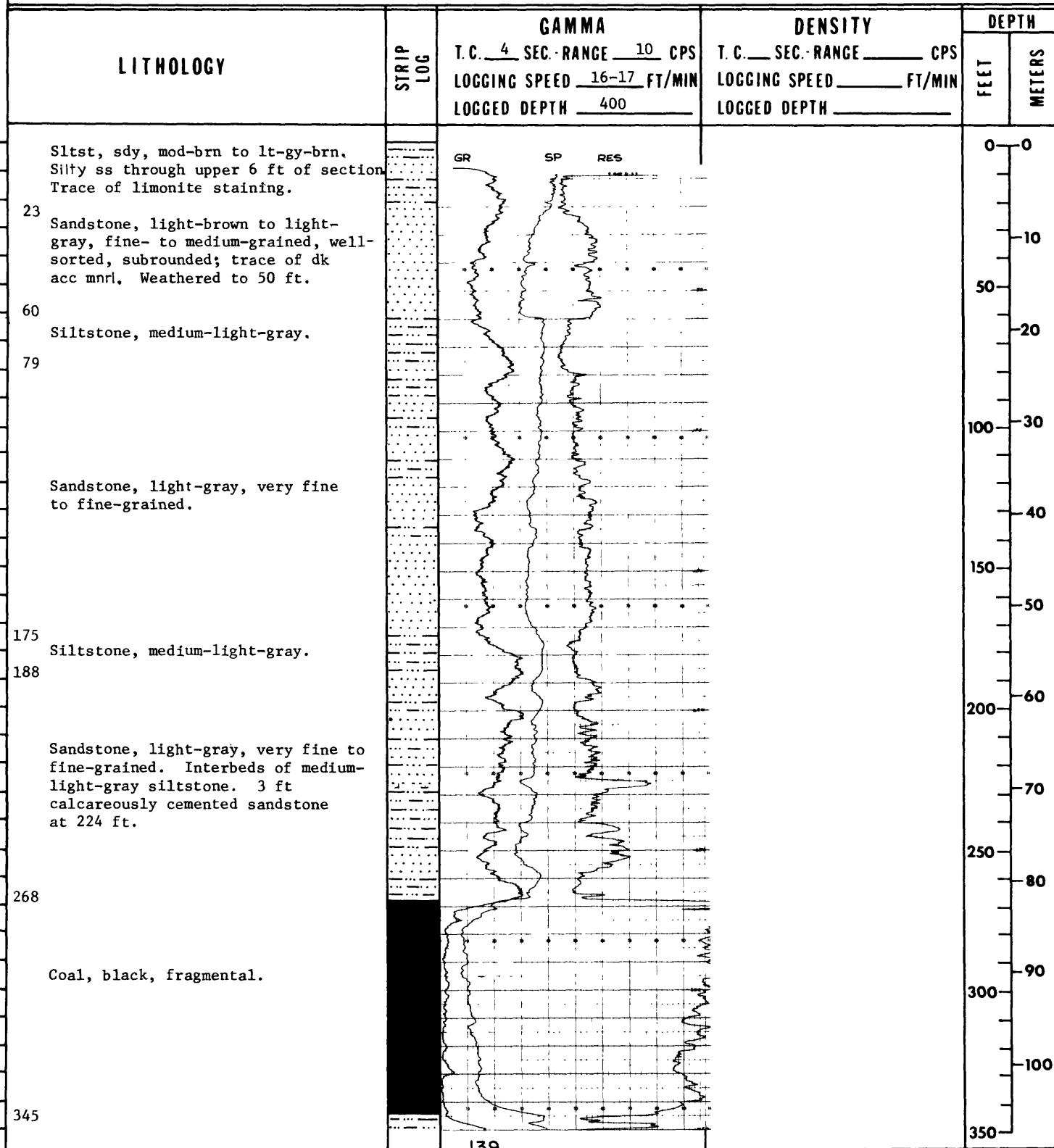
T C 4 Sec. Range 10 CPS

138

# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78053  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> The Gap SW	
<b>DATE STARTED</b> 9-15-1978	<b>DATE COMP.</b> 9-16-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 30 <b>T.</b> 48 N. <b>R.</b> 71 W. , <b>FOOTAGE LOC.</b>		1300 <b>FNL</b> <del>1300</del>	1600 <b>FEL</b> <del>1600</del>
<b>SIZE AND BIT TYPE:</b> 5-in. drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 400	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A.Donatich;H.Corley;E.Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> SP=20 MV RES=20 OHMS			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78053  
SHEET 2 OF 2

## REMARKS:

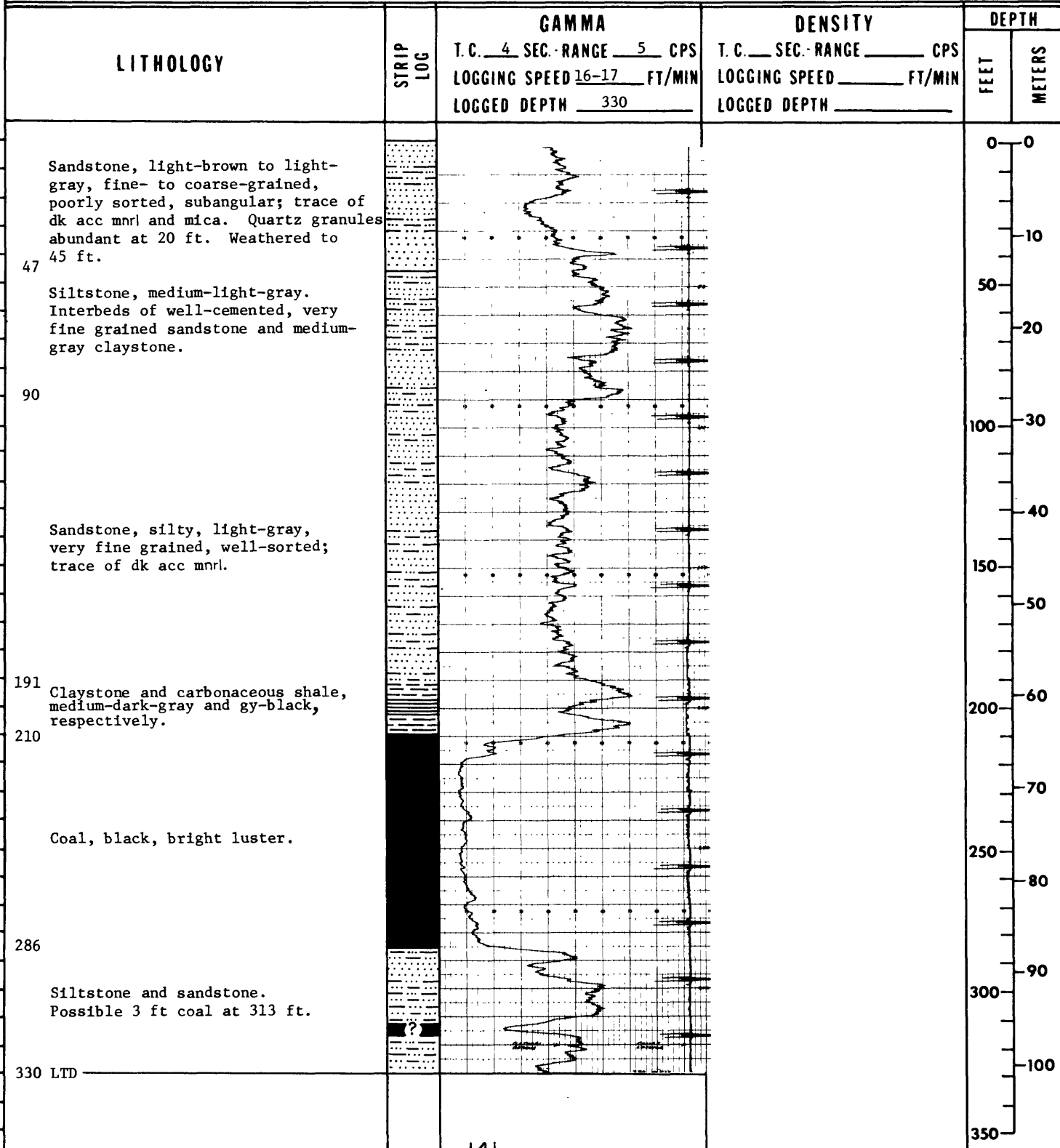
SP = 20 MV  
RES = 20 OHMS

LITHOLOGY	STRIP LOG	GAMMA			DENSITY			DEPTH	
		T.C. 4	SEC. RANGE 10	CPS	T.C. SEC. RANGE	CPS		FEET	METERS
		LOGGING SPEED 16-17 FT/MIN			LOGGING SPEED FT/MIN				
		LOGGED DEPTH 400			LOGGED DEPTH				
345		GR SP RES						350	
Sandstone, medium-gray, fine grained. Interbeds of siltstone and calcar- eous cemented sandstone (2 ft at 348 ft).								110	
400 LTD								120	
								130	
								140	
								150	
								160	
								170	
								180	
								190	
								200	
								210	
								220	
								750	

# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78054  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> The Gap SW	
<b>DATE STARTED</b> 9-16-1978	<b>DATE COMP.</b> 9-16-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 8 <b>T.</b> 47 N., <b>R.</b> 71 W., <b>FOOTAGE LOC.</b>		500 <b>FNL</b> 2600 <b>XXX FWL</b>	<b>GROUND ELEV</b> 4590
<b>SIZE AND BIT TYPE:</b> 4 3/4-in. drag		<b>FOOTAGE</b> ROTARY 340 CORING 0	
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A. Donatich; H. Corley; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Lost circulation at 320 ft. Gamma ray logged through drill pipe			



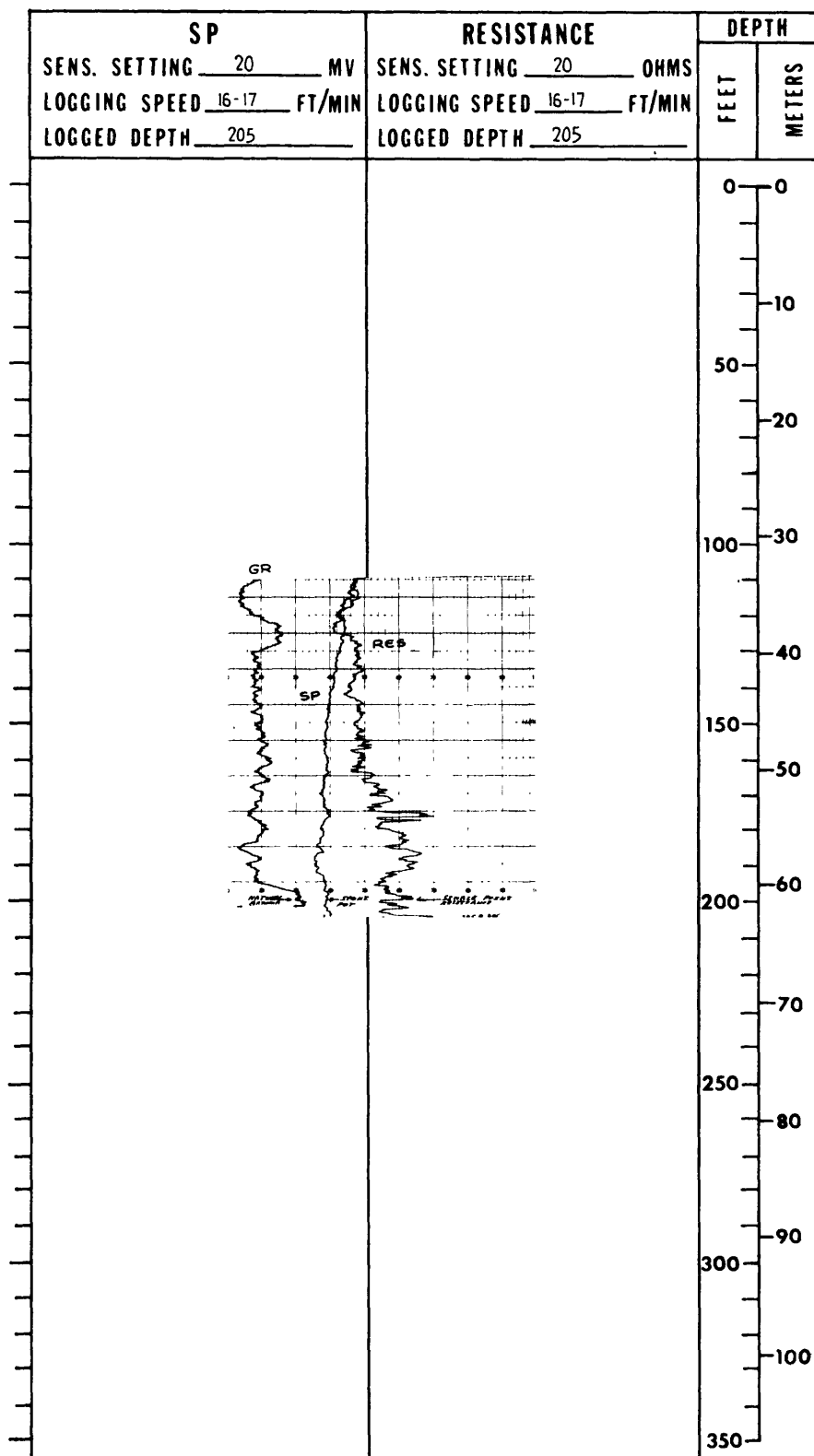


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78054  
SHEET 2 OF 2

## REMARKS:

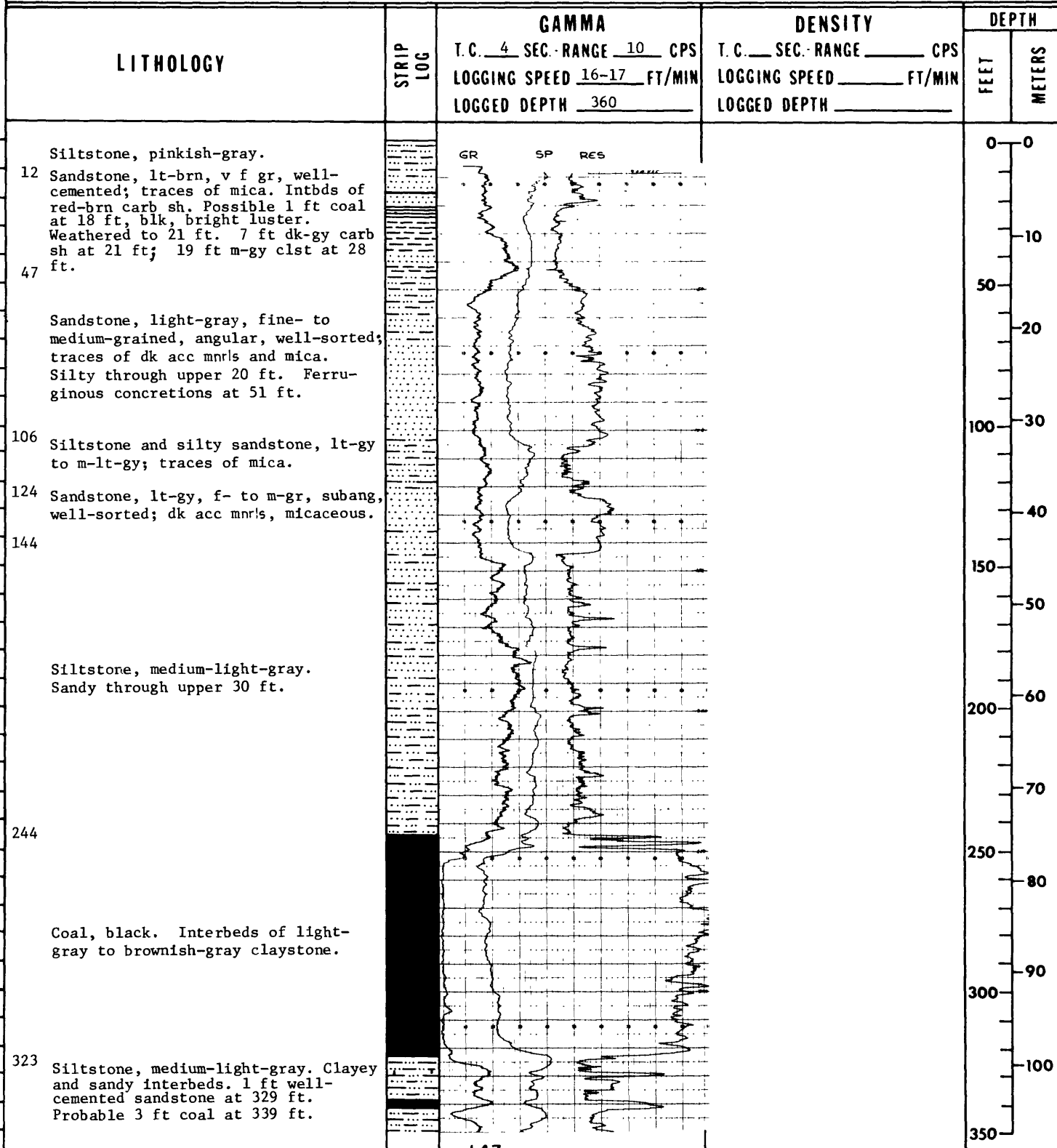
TC 4 Sec Range 10 CP5



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78055  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> The Gap SW	
<b>DATE STARTED</b> 9-17-1978	<b>DATE COMP.</b> 9-17-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 6 T. 47 N., R. 71 W., FOOTAGE LOC.</b>		2450 <del>XXX</del> FSL 1350 <del>XXX</del> FWL	<b>GROUND ELEV</b> 4560
<b>SIZE AND BIT TYPE:</b> 4 3/4-in. drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 360	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A.Donatich;H.Corley;E.Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> SP = 20 MV RES = 20 OHMS			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78055  
SHEET 2 OF 2

## REMARKS:

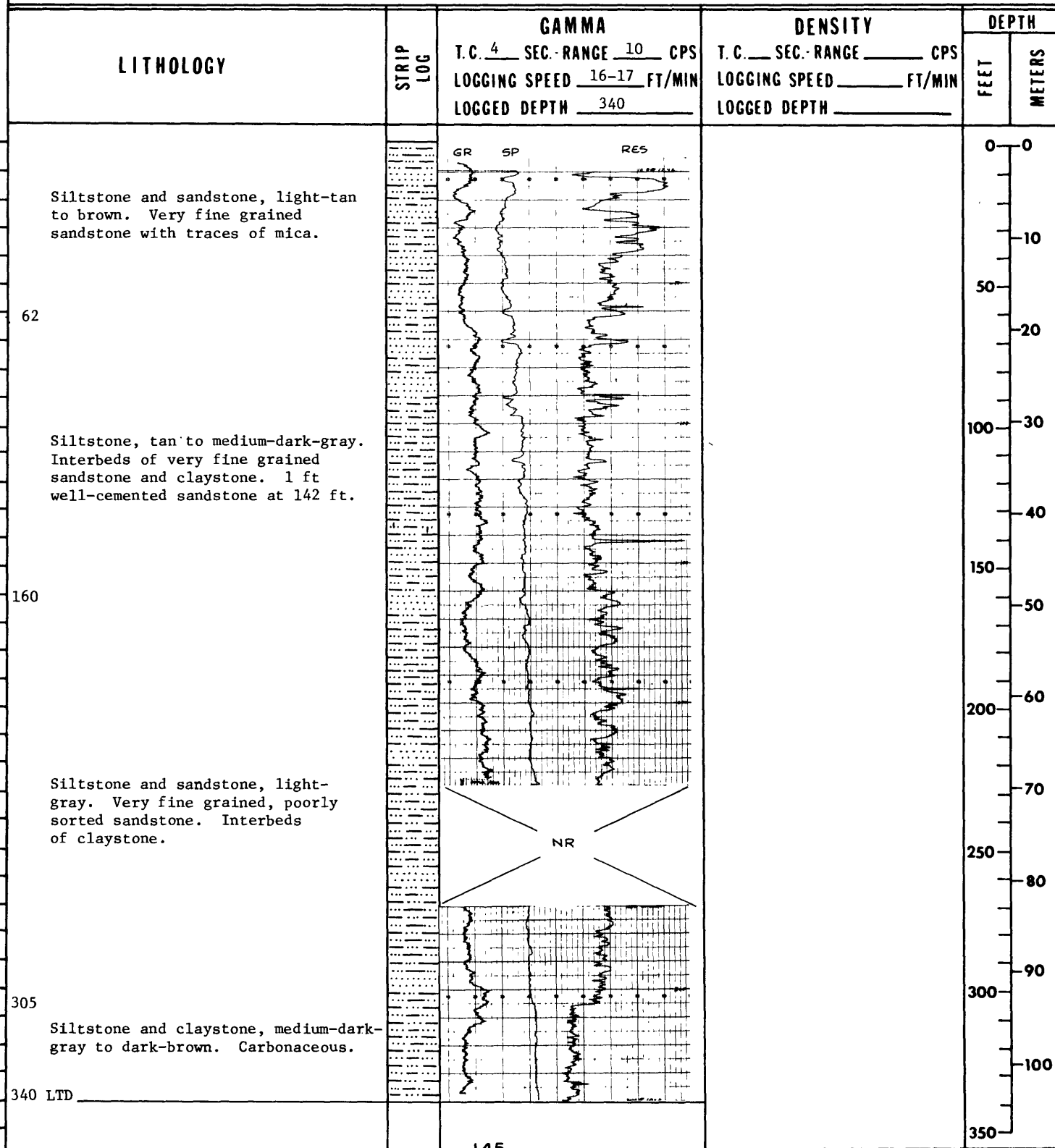
SP = 20 MV  
RES = 20 OHMS

LITHOLOGY	STRIP LOG	GAMMA			DENSITY		DEPTH	
		T. C. 4	SEC. RANGE 10	CPS	T. C. SEC. RANGE	CPS	FEET	METERS
		LOGGING SPEED 16-17	FT/MIN		LOGGING SPEED	FT/MIN		
		LOGGED DEPTH 360			LOGGED DEPTH			
Siltstone, med-lt-gry. Clayey and sdy interbeds. 360 LTD		GR	SP	RES			350	
							110	
							120	
							400	
							130	
							450	
							140	
							150	
							500	
							160	
							550	
							170	
							180	
							600	
							190	
							650	
							200	
							210	
							700	
							220	
							750	

# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78056  
SHEET 1 OF 1

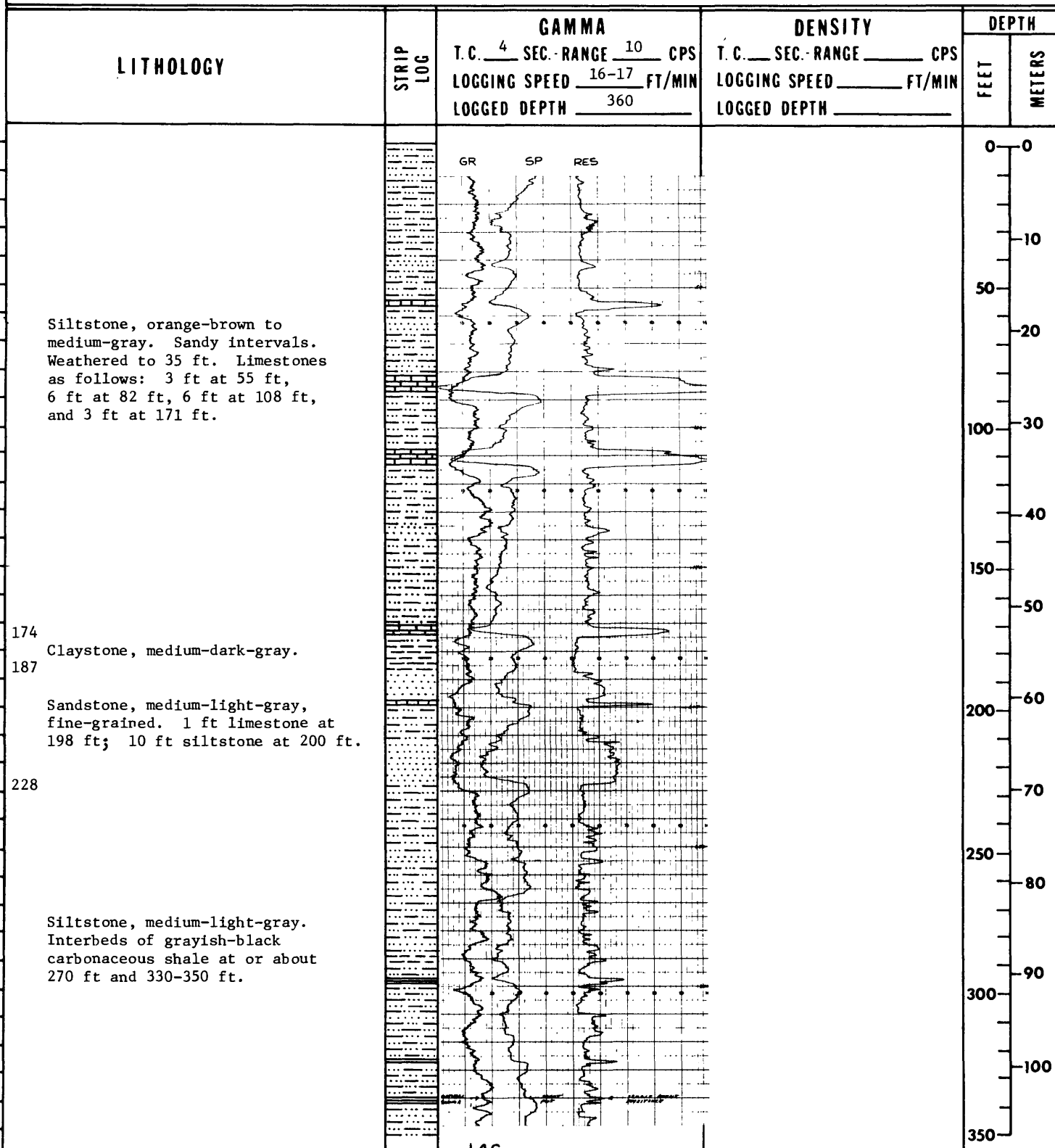
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Moyer Springs	
<b>DATE STARTED</b> 9-19-1978	<b>DATE COMP.</b> 9-19-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 19 T. 51 N., R. 71 W., FOOTAGE LOC.</b>		1800 <del>FSL</del> 750 <del>FEL</del>	<b>GROUND ELEV</b> 4490
<b>SIZE AND BIT TYPE:</b> 4 3/4-in. drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 340	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> G. Hollomon; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> No record from 230-270 SP = 20 MV RES = 10 OHMS			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NOCD-78057  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Moyer Springs	
<b>DATE STARTED</b> 9-19-1978	<b>DATE COMP.</b> 9-20-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 1 <b>T.</b> 51 N., <b>R.</b> 72 W., <b>FOOTAGE LOC.</b>		1850 <del>NEW</del> FSL	3050 <del>NEW</del> FEL
<b>SIZE AND BIT TYPE:</b> 5 1/8-in. drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 360	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A.Donatich;K.Bowen;E.Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Irregular section, footage scaled from east line; location in SW $\frac{1}{4}$ . SP = 20 MV RES = 20 OHMS			






# UNITED STATES GEOLOGICAL SURVEY


HOLE NO CD-78057  
SHEET 2 OF 2

## REMARKS:

SP = 20 MV  
RES = 20 OHMS

LITHOLOGY	STRIP LOG	GAMMA			DENSITY			DEPTH	
		T. C. <u>4</u>	SEC. RANGE <u>10</u>	CPS	T. C. <u>   </u>	SEC. RANGE <u>   </u>	CPS	FEET	METERS
		LOGGING SPEED <u>16-17</u> FT/MIN			LOGGING SPEED <u>   </u> FT/MIN				
		LOGGED DEPTH <u>360</u>			LOGGED DEPTH <u>   </u>				
Siltstone, medium - light-gray	360 LTD	GR	SP	RES				350	
								110	
								120	
								130	
								140	
								150	
								160	
								170	
								180	
								190	
								200	
								210	
								220	
								230	
								240	
								250	
								260	
								270	
								280	
								290	
								300	
								310	
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								330	
								340	
								350	
								360	
								370	
								380	
								390	
								400	
								410	
								420	
								430	
								440	
								450	
								460	
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								490	
								500	
								510	
								520	
								530	
								540	
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								580	
								590	
								600	
								610	
								620	
								630	
								640	
								650	
								660	
								670	
								680	
								690	
								700	
								710	
								720	
								730	
								740	
								750	

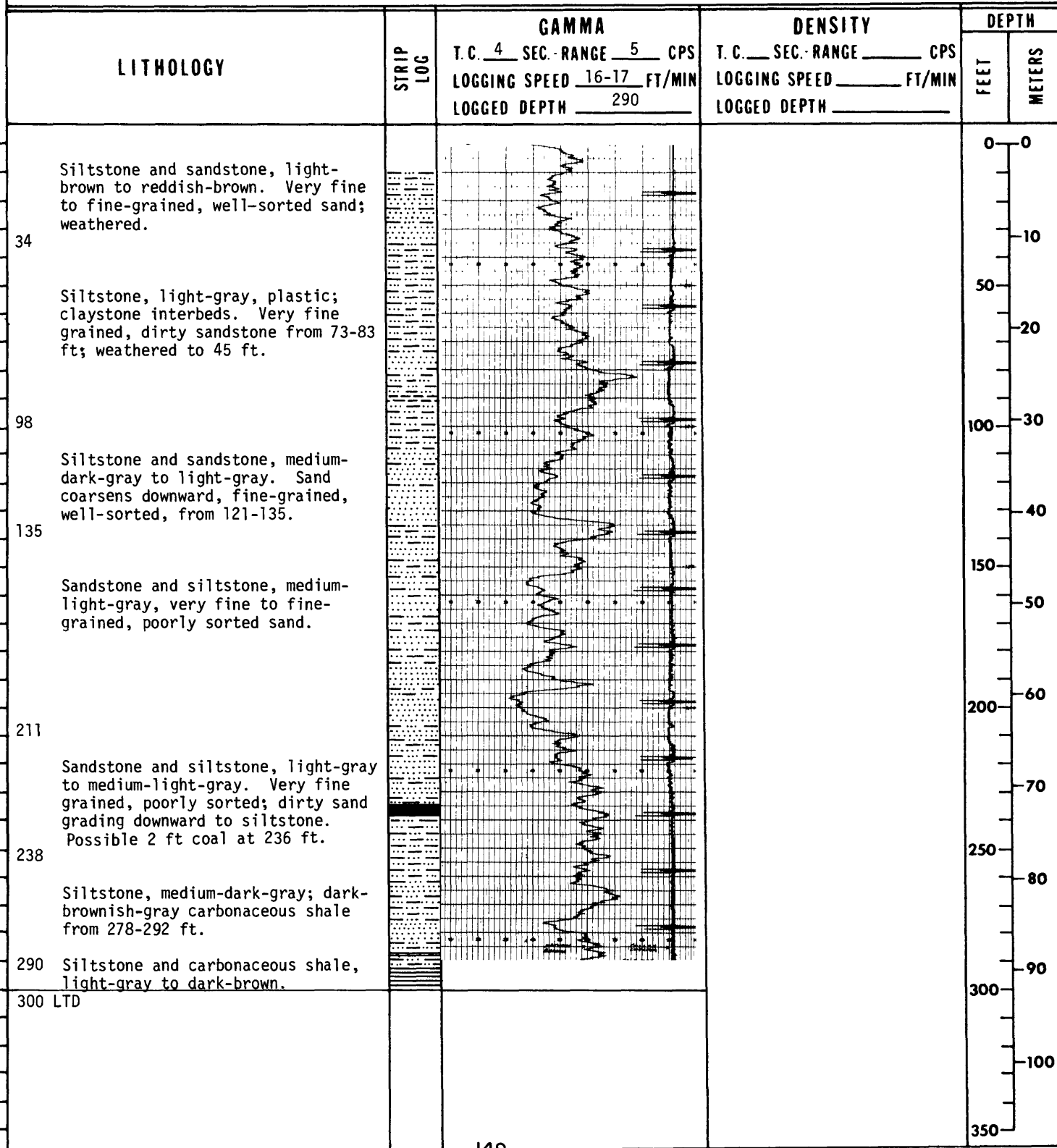
HOLE NO CD-78058  
SHEET 1 OF 1

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH	
		T.C. ____ SEC. RANGE ____ CPS LOGGING SPEED ____ FT/MIN LOGGED DEPTH ____	T.C. ____ SEC. RANGE ____ CPS LOGGING SPEED ____ FT/MIN LOGGED DEPTH ____	FEET	METERS
Clinker, red, baked.				0	0
35 TD _____				10	
				50	
				20	
				100	30
				40	
				150	
				50	
				200	60
				70	
				250	
				80	
				90	
				300	90
				100	
				350	100

# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78059  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Lone Tree Creek	
<b>DATE STARTED</b> 9-28-1978	<b>DATE COMP.</b> 9-28-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 29 <b>T.</b> 53 N., <b>R.</b> 70 W., <b>FOOTAGE LOC.</b>		1850 <del>###</del> <b>FSL</b>	1400 <del>###</del> <b>FEL</b>
<b>SIZE AND BIT TYPE:</b> 4 3/4 in. drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 300	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> G.A. Hollomon		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b>			
Gamma ray logged thru drill pipe			



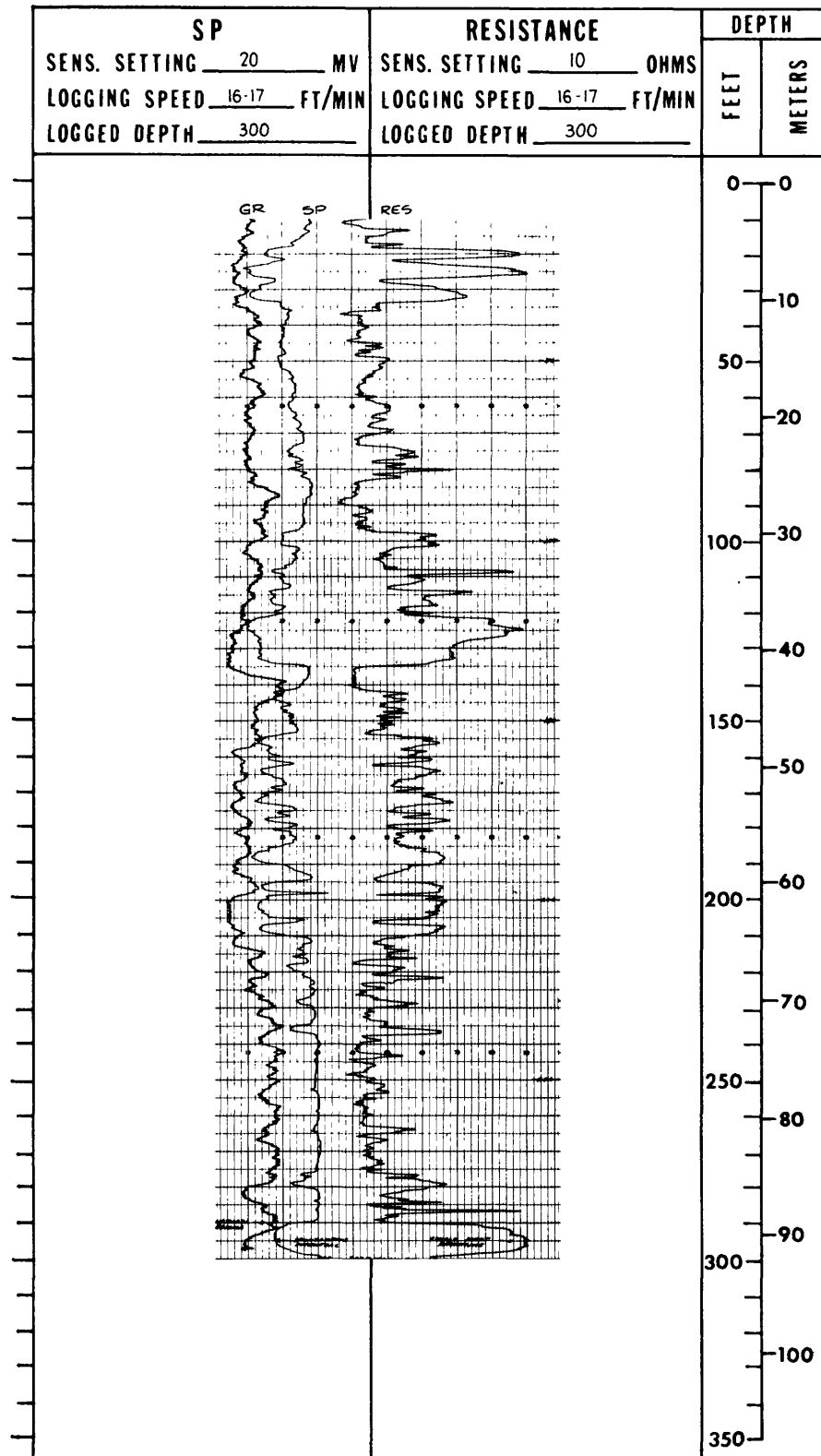


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78059  
SHEET 2 OF 2

## REMARKS:

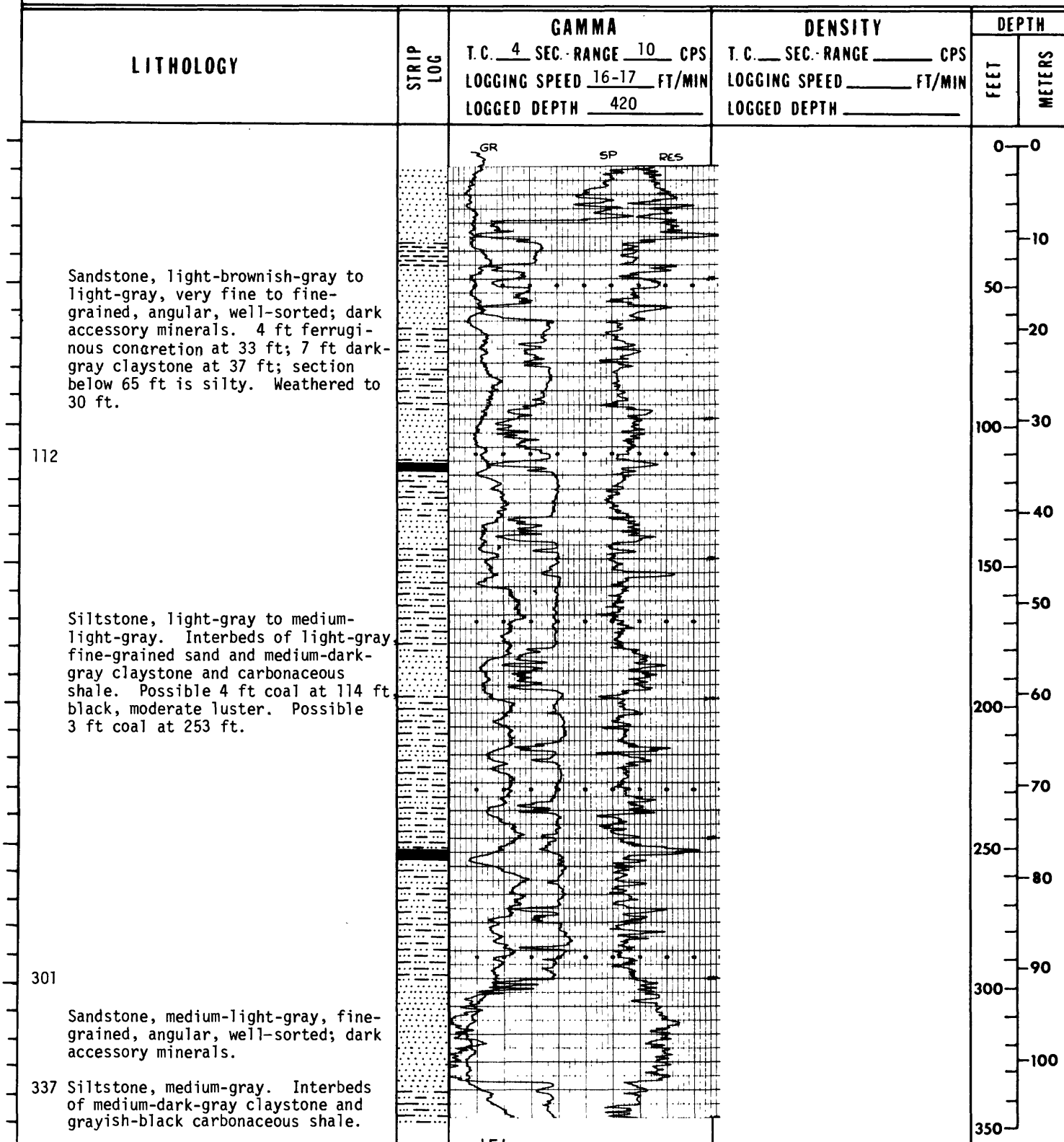
TC 4 Sec. Range 10 CPS



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78060  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Lone Tree Creek	
<b>DATE STARTED</b> 9-29-1978	<b>DATE COMP.</b> 9-29-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 10 T. 52 N., R. 71 W., FOOTAGE LOC.</b>		550 <del>FNL</del> 1850 <del>FEL</del>	<b>GROUND ELEV</b> 4115
<b>SIZE AND BIT TYPE:</b> 4 3/4 in. drag		<b>FOOTAGE</b>	
		ROTARY 420	CORING 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b> SP = 10 MV RES = 20 OHMS			

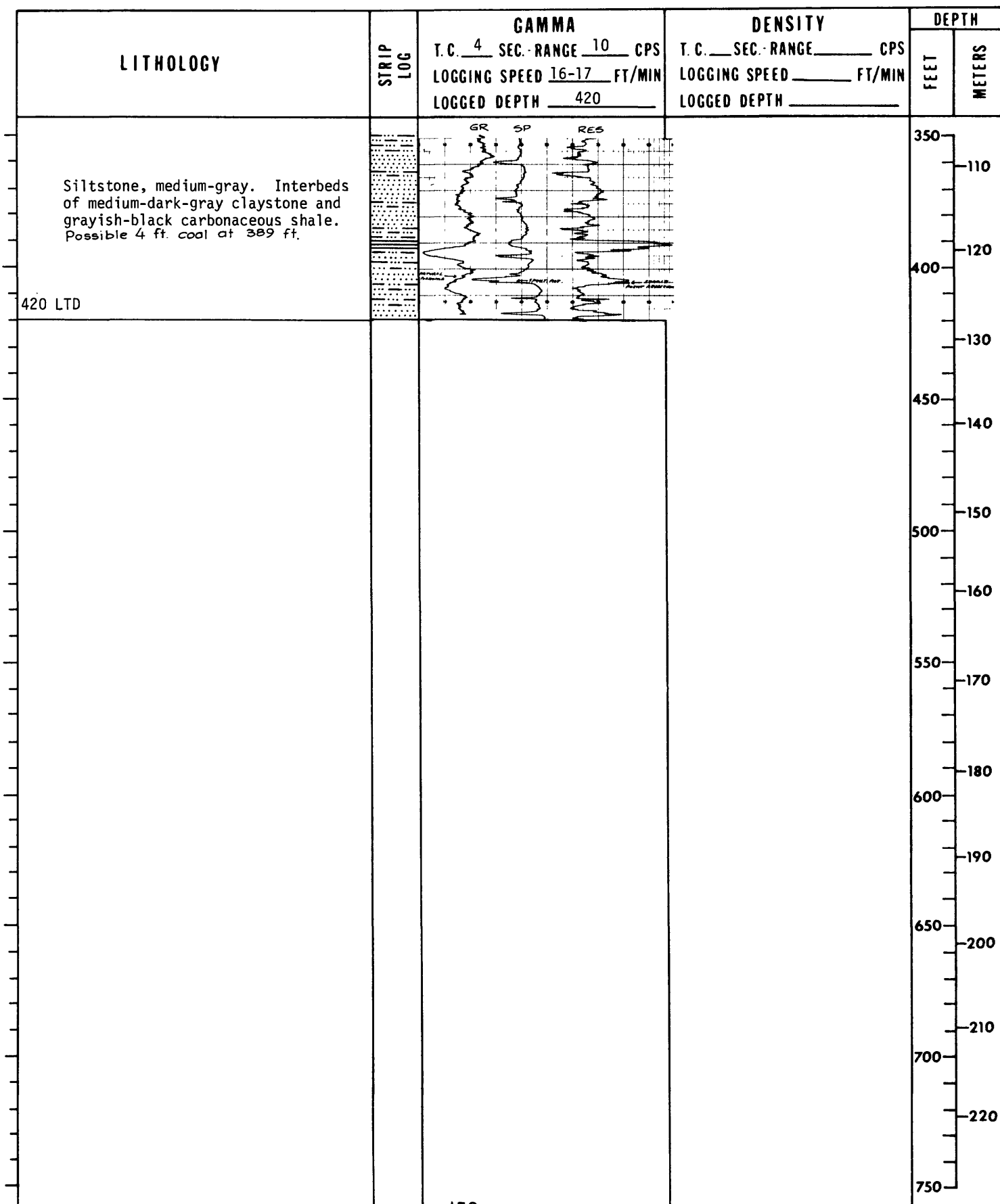


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78060  
SHEET 2 OF 2

## REMARKS:

SP = 10 MV  
RES = 20 OHMS



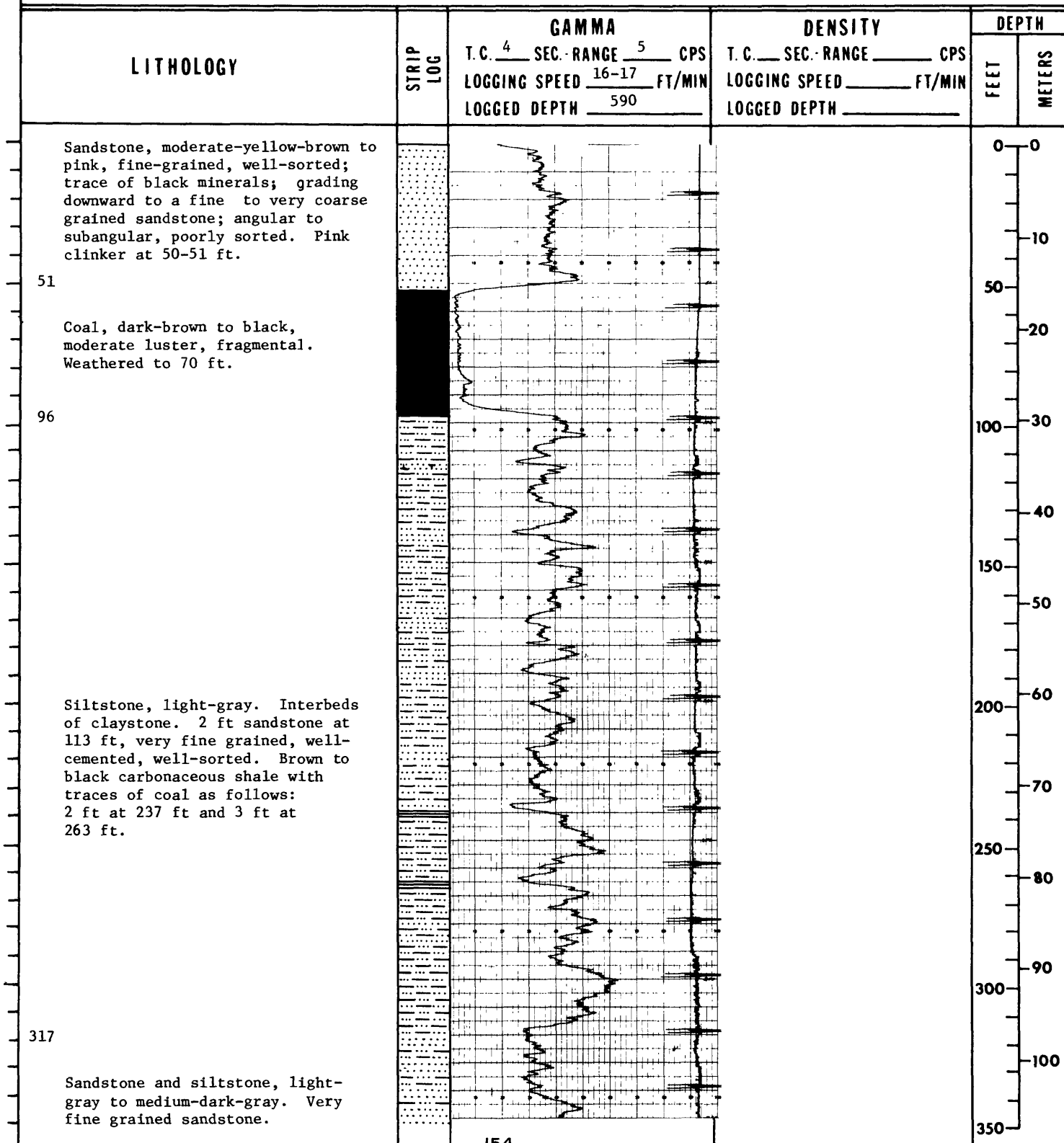
**HOLE NO** CD-78061  
**SHEET** 1 **OF** 1

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH	
		T.C. <u>4</u> SEC. RANGE <u>5</u> CPS LOGGING SPEED <u>16-17</u> FT/MIN LOGGED DEPTH <u>340</u>	T.C. _____ SEC. RANGE _____ CPS LOGGING SPEED _____ FT/MIN LOGGED DEPTH _____	FEET	METERS
<p>Sandy soil, light-brown.</p> <p>10</p> <p>Siltstone, light-gray to gray; clinker in upper few feet of section. Probable coals as follows: 2 ft at 16 ft; 2 ft at 42 ft; 2 ft at 58 ft; 2 ft at 61 ft; 1 ft at 66 ft; and 2 ft at 106 ft. 1 ft dark-gray carbonaceous siltstone at 140 ft. 4 ft well-cemented sandstone at 205 ft. Probable coals as follows: 5 ft at 289 ft and 13 ft at 327 ft. Carbonaceous shale interbeds throughout section.</p>				0	0
				10	
				50	
				20	
				100	30
				40	
				150	50
				50	
				200	60
				70	
				250	80
				90	
				300	90
				100	
				350	100

# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78062  
SHEET 1 OF 3

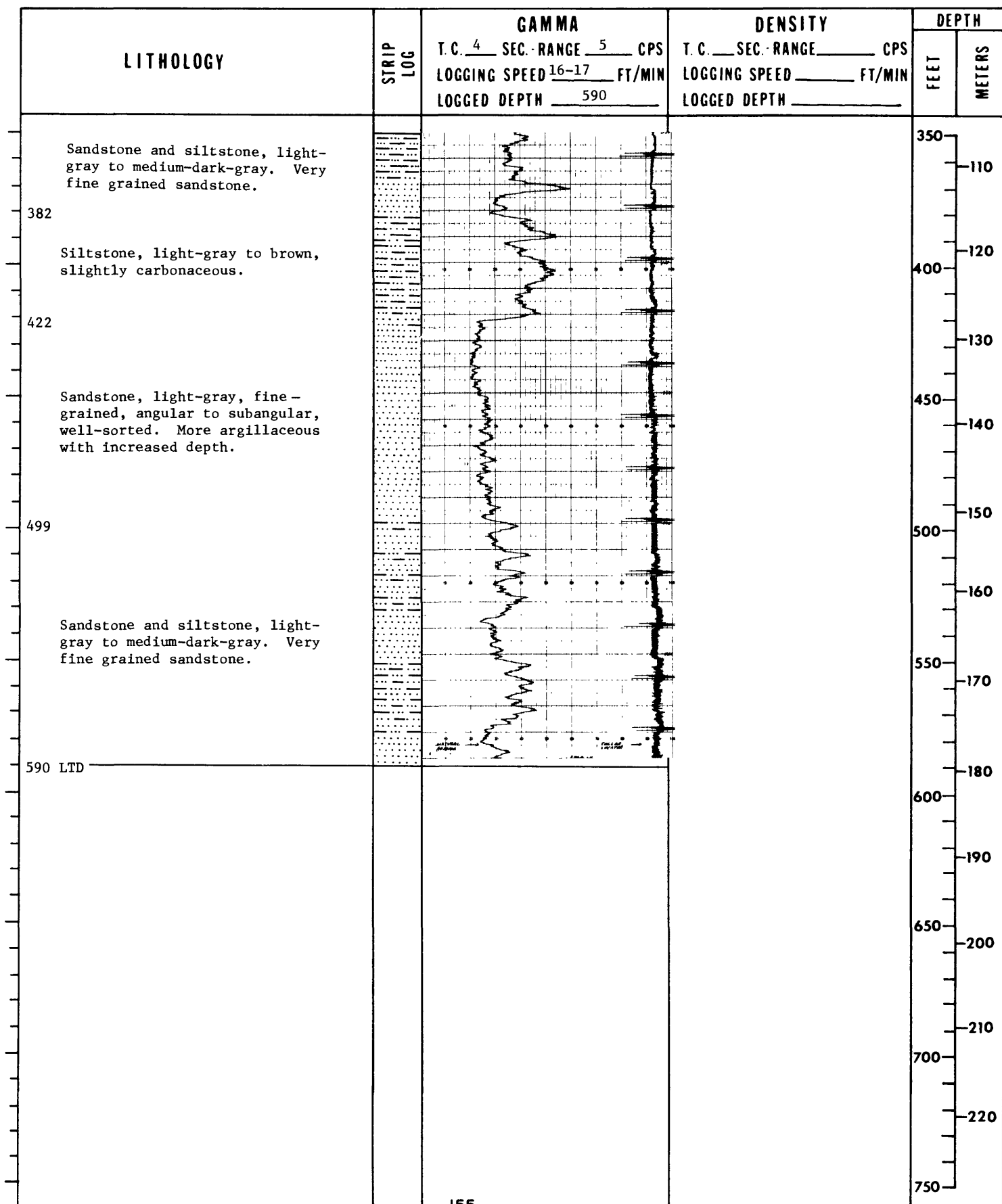
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Moyer Springs	
<b>DATE STARTED</b> 10-1-1978	<b>DATE COMP.</b> 10-2-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 34 <b>T.</b> 52 N., <b>R.</b> 72 W., <b>FOOTAGE LOC.</b>		2350 <del>XXX</del> FSL 1650 <del>XXX</del> FWL	<b>GROUND ELEV</b> 4130
<b>SIZE AND BIT TYPE:</b> 5-in. and 5 1/8-in. drag		<b>FOOTAGE</b> <b>ROTARY</b> 600 <b>CORING</b> 0 <b>TOTAL DEPTH</b> 600	
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> G. Hollomon; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Gamma ray logged through drill pipe.			



# UNITED STATES GEOLOGICAL SURVEY

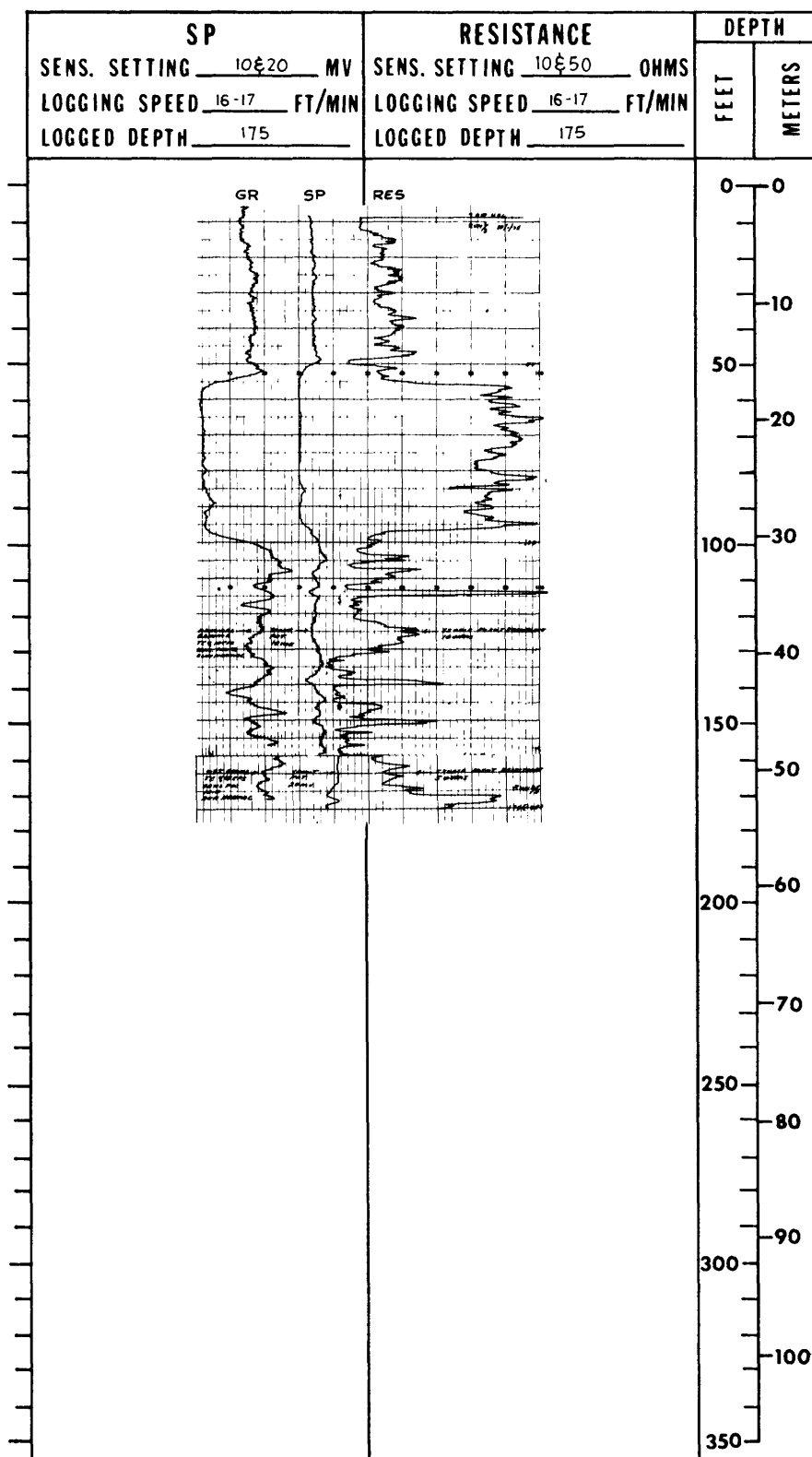
HOLE NO CD-78062  
SHEET 2 OF 3

## REMARKS:



## REMARKS:

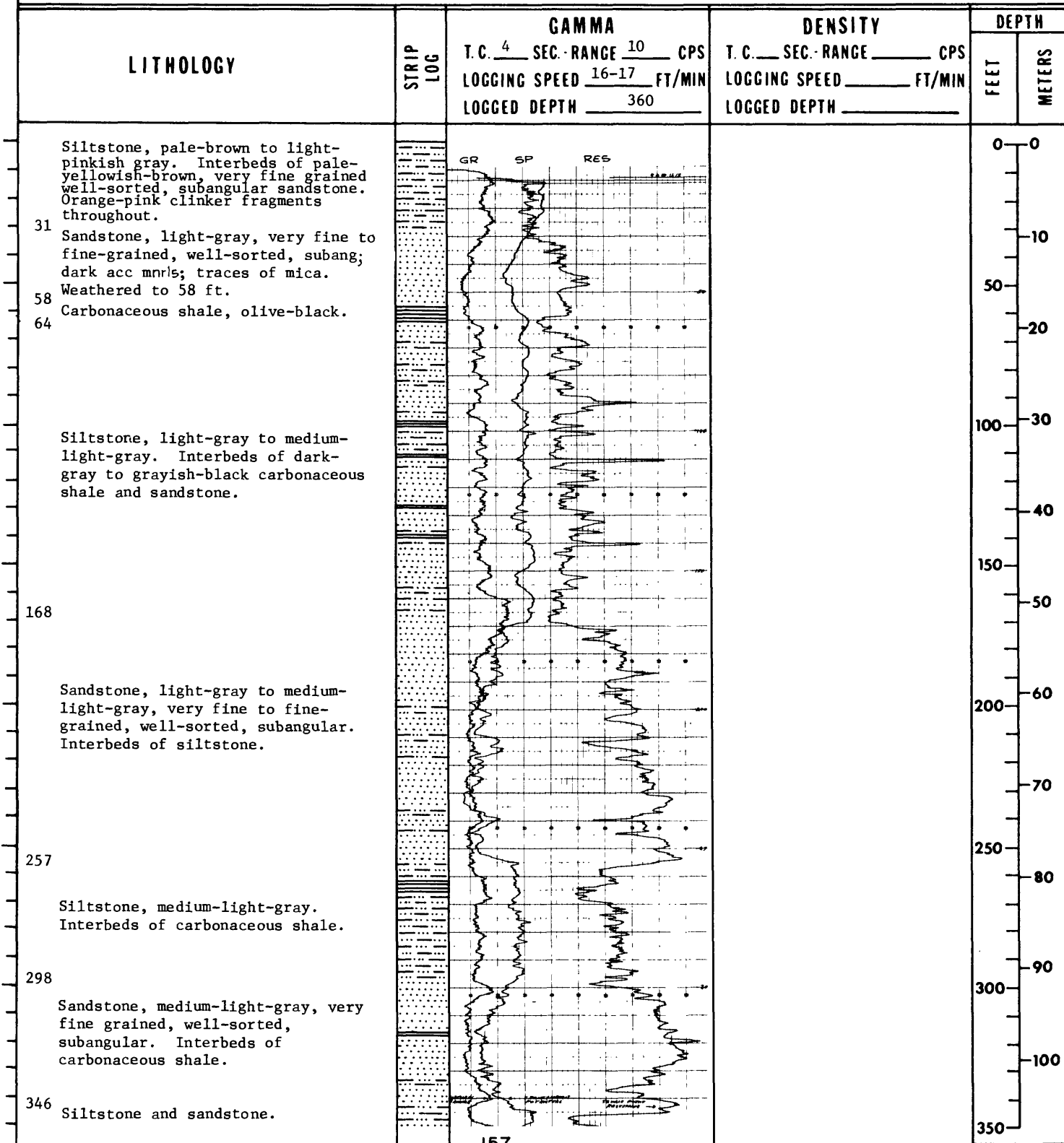
SP and Resistance settings change at 160 ft.  
TC 4 Sec Range 10 CPS



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78063  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Moyer Springs	
<b>DATE STARTED</b> 10-2-1978	<b>DATE COMP.</b> 10-3-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 35 <b>T.</b> 52 N. <b>R.</b> 72 W. <b>FOOTAGE LOC.</b>		100 <b>FNL</b> 150 <b>FEET FWL</b>	<b>GROUND ELEV</b> 4090
<b>SIZE AND BIT TYPE:</b> 5 1/8-in. drag		<b>FOOTAGE</b> ROTARY 360 CORING 0	
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>TOTAL DEPTH</b> 360
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> SP = 10 MV RES = 5 OHMS			





# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78063  
SHEET 2 OF 2

## REMARKS:

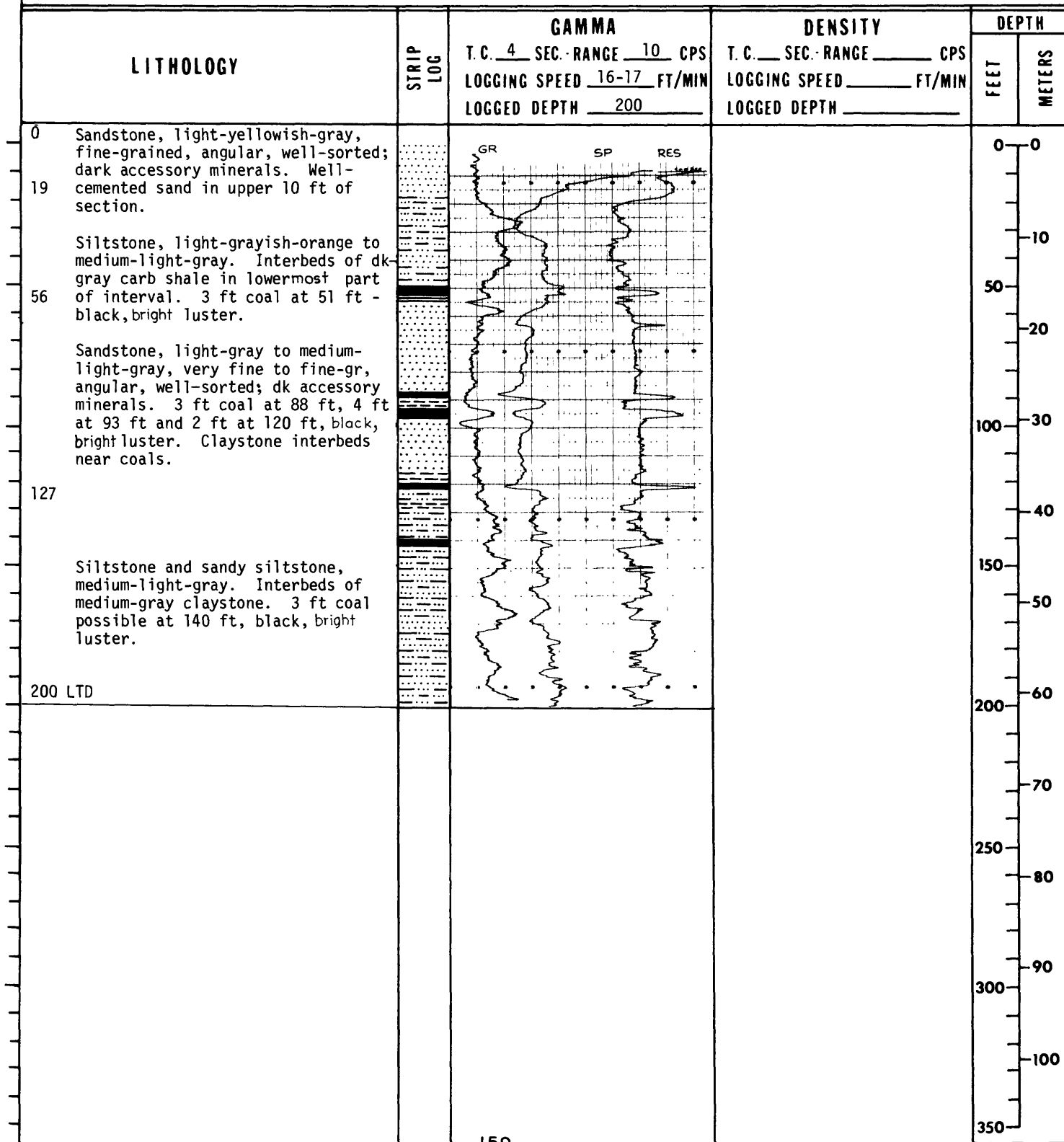
SP = 10 MV  
RES = 5 OHMS

LITHOLOGY	STRIP LOG	GAMMA		DENSITY		DEPTH	
		T.C. <u>4</u> SEC. RANGE <u>10</u> CPS	LOGGING SPEED <u>16-17</u> FT/MIN	T.C. <u>    </u> SEC. RANGE <u>    </u> CPS	LOGGING SPEED <u>    </u> FT/MIN	FEET	METERS
Siltstone and sandstone		GR	SP	RES		350	
360 LTD						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	
						410	
						420	
						430	
						440	
						450	
						460	
						470	
						480	
						490	
						500	
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						520	
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						590	
						600	
						610	
						620	
						630	
						640	
						650	
						660	
						670	
						680	
						690	
						700	
						710	
						720	
						730	
						740	
						750	

# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78064  
SHEET 1 OF 1

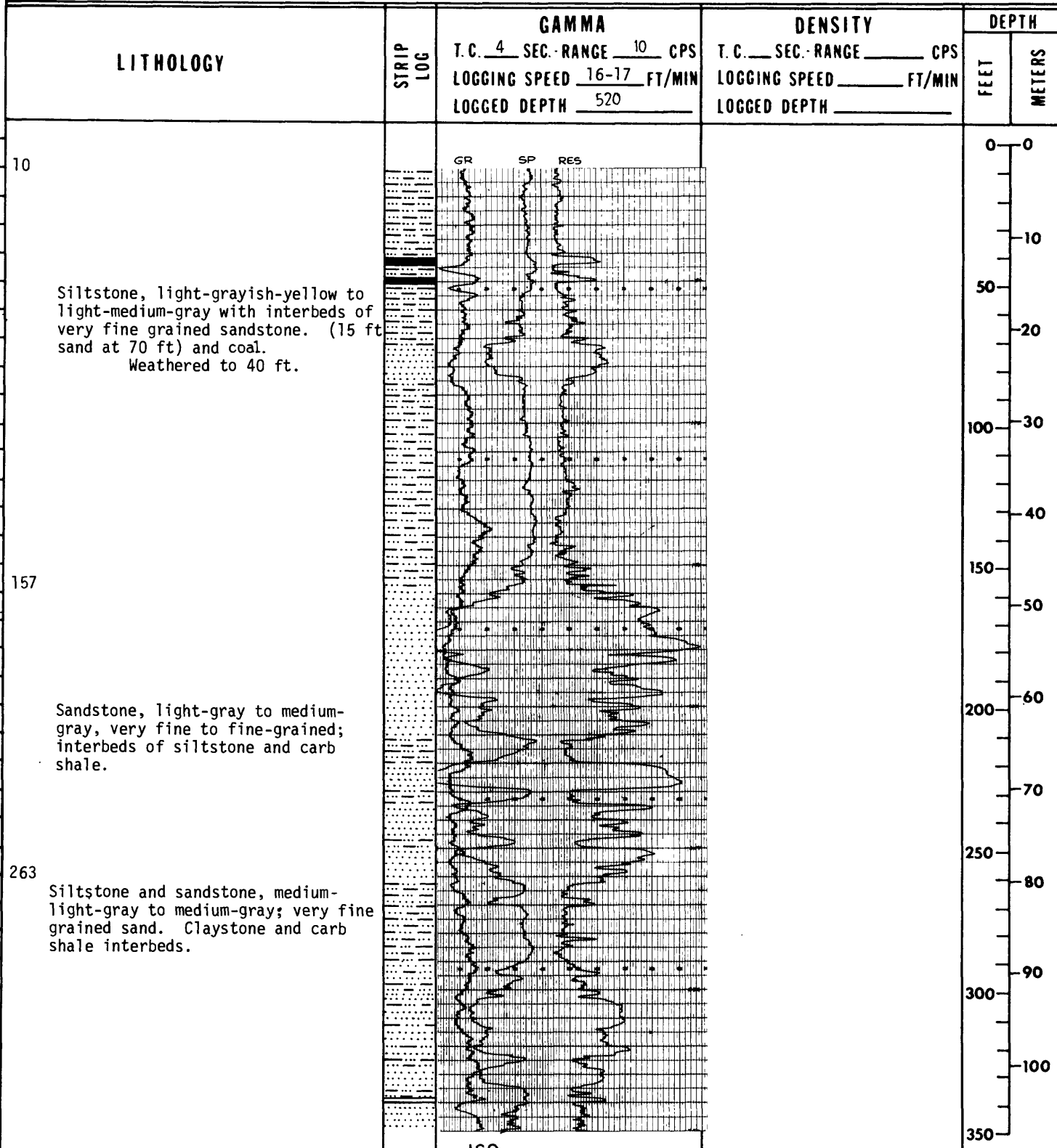
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Lone Tree Creek	
<b>DATE STARTED</b> 10-3-1978	<b>DATE COMP.</b> 10-3-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 9 <b>T.</b> 53 N., <b>R.</b> 70 W., <b>FOOTAGE LOC.</b>		750 <del>###</del> <b>FSL</b>	550 <del>###</del> <b>FEL</b>
<b>SIZE AND BIT TYPE:</b> 4 3/4 in. drag		<b>FOOTAGE</b> ROTARY 200 CORING 0	
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b> SP = 10 MV RES = 10 OHMS			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78065  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Weston	
<b>DATE STARTED</b> 10-4-1978	<b>DATE COMP.</b> 10-4-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 33 <b>T.</b> 55 N., <b>R.</b> 70 W., <b>FOOTAGE LOC.</b>		1550 <del>FSL</del>	300 <del>FEL</del>
<b>SIZE AND BIT TYPE:</b> 4 3/4 in. drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 520	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; E. Fivas		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b> SP = 20 MV RES = 20 OHMS			

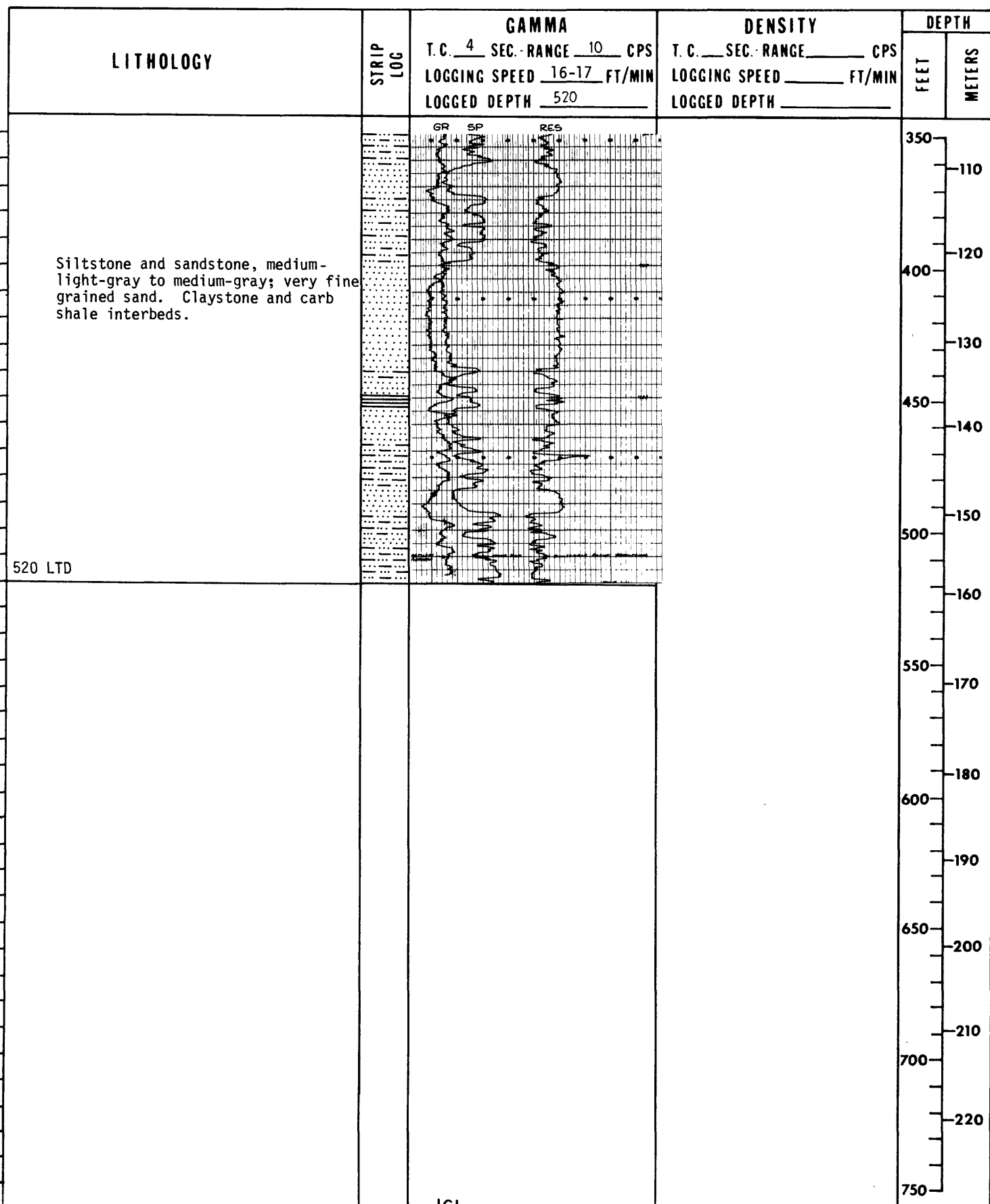


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78065  
SHEET 2 OF 2

## REMARKS:

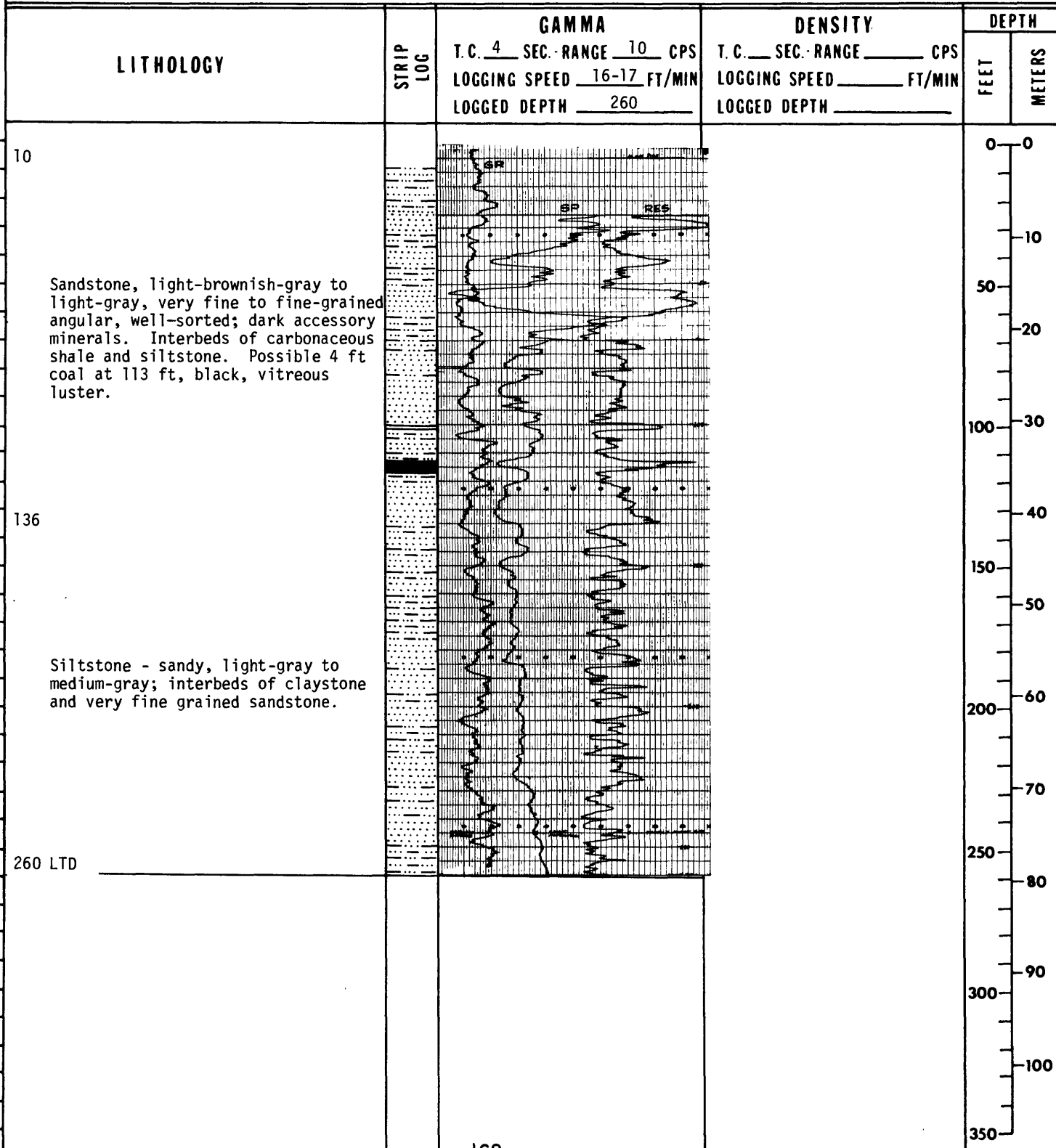
SP = 20 MV  
RES = 20 OHMS



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78066  
SHEET 1 OF 1

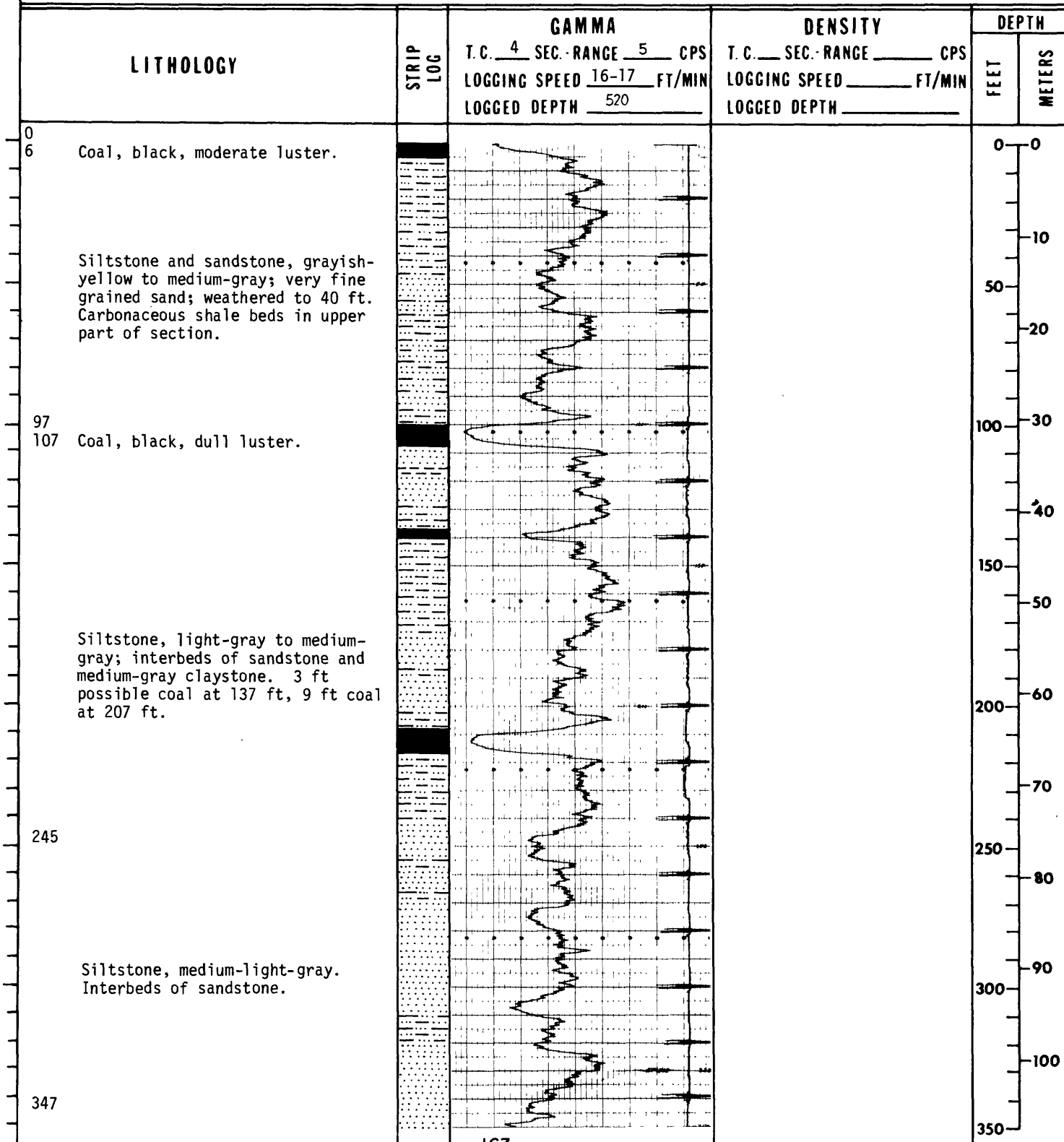
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Weston	
<b>DATE STARTED</b> 10-5-1978	<b>DATE COMP.</b> 10-5-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 27 T. 54 N., R. 70 W., FOOTAGE LOC.</b>		800 <del>FWL</del> 1800 <del>FWL</del>	<b>GROUND ELEV</b> 3825
<b>SIZE AND BIT TYPE:</b> 4 3/4 in. drag		<b>FOOTAGE</b>	
		ROTARY 260	CORING 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A. Donatich; G. Hollomon		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b> SP = 10 MV RES = 10 OHMS Electric log composite 26-70 feet			



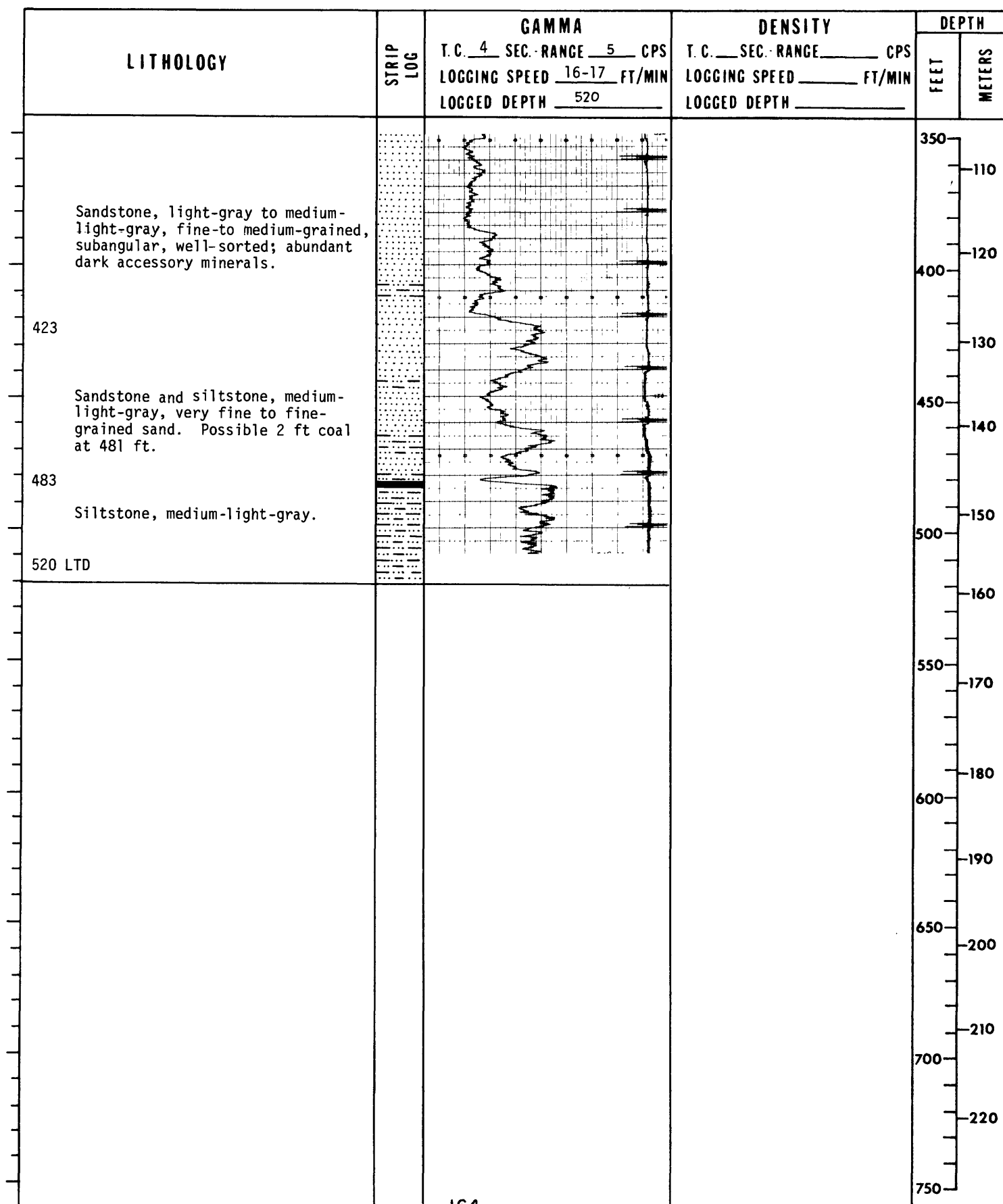
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78067  
SHEET 1 OF 4

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Weston	
<b>DATE STARTED</b> 10-6-1978	<b>DATE COMP.</b> 10-6-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 26 T. 54 N., R. 71 W., FOOTAGE LOC.</b>		1550 <del>FWL</del> FSL	2250 <del>FWL</del> FSL
<b>SIZE AND BIT TYPE:</b> 4 3/4 in. drag		<b>FOOTAGE</b>	
		ROTARY 520	CORING 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	
<b>LITHOLOGY RECORDED BY</b> A. Donatich; G. Hollomon		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b> Gamma ray logged thru drill pipe			

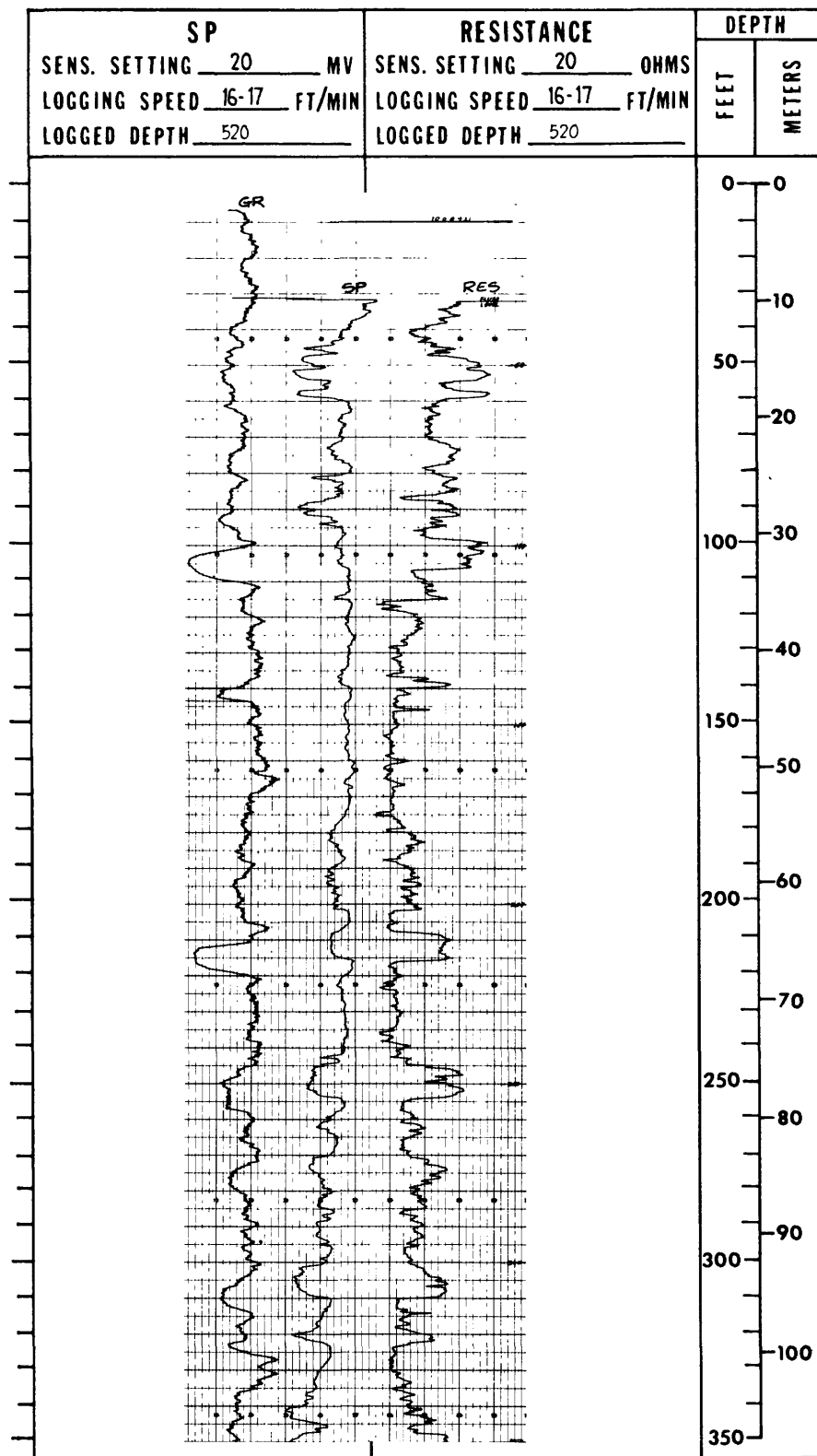


## REMARKS:



## REMARKS:

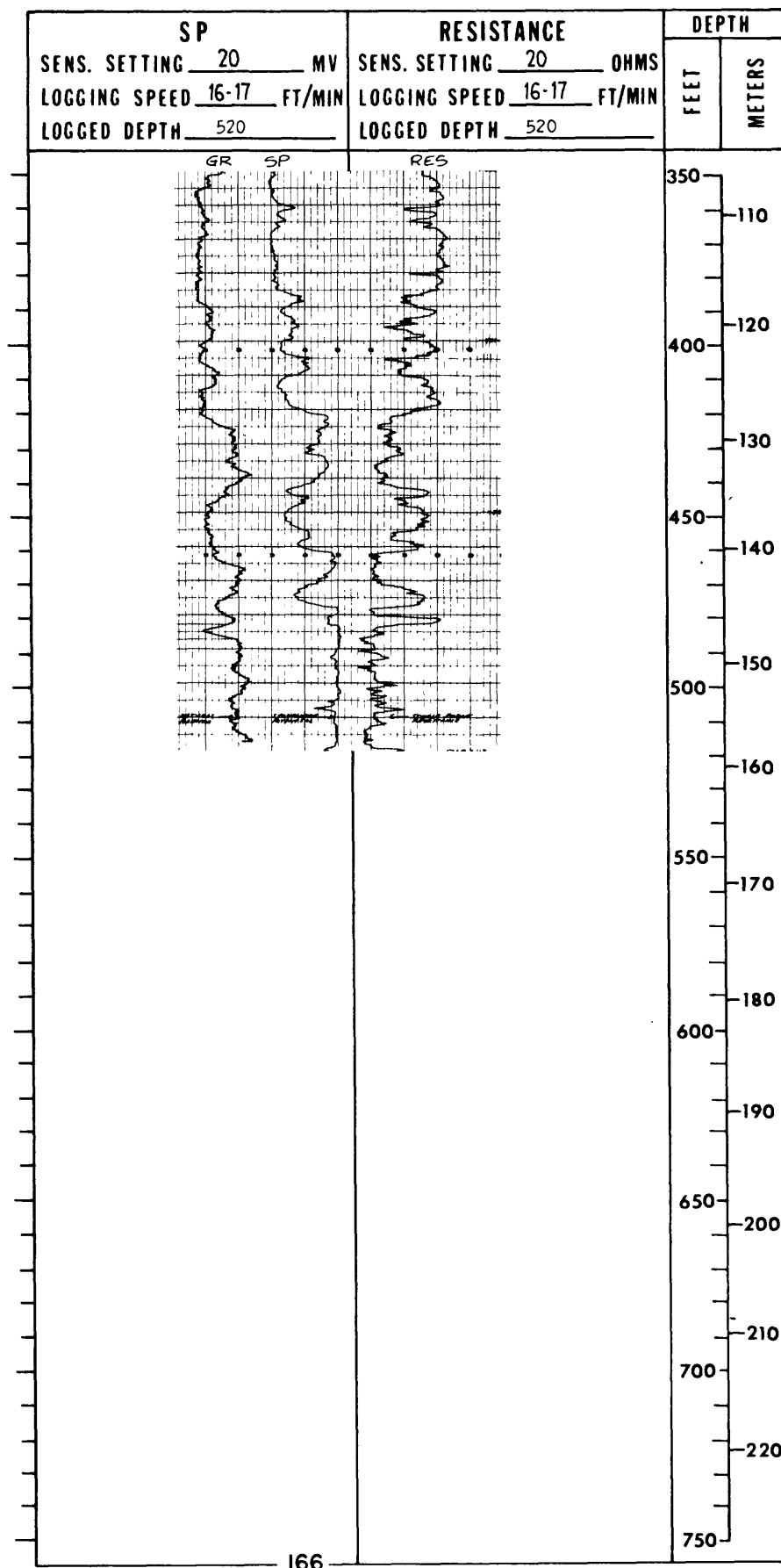
TC 4 Secs. Range 10 CPS





## REMARKS:

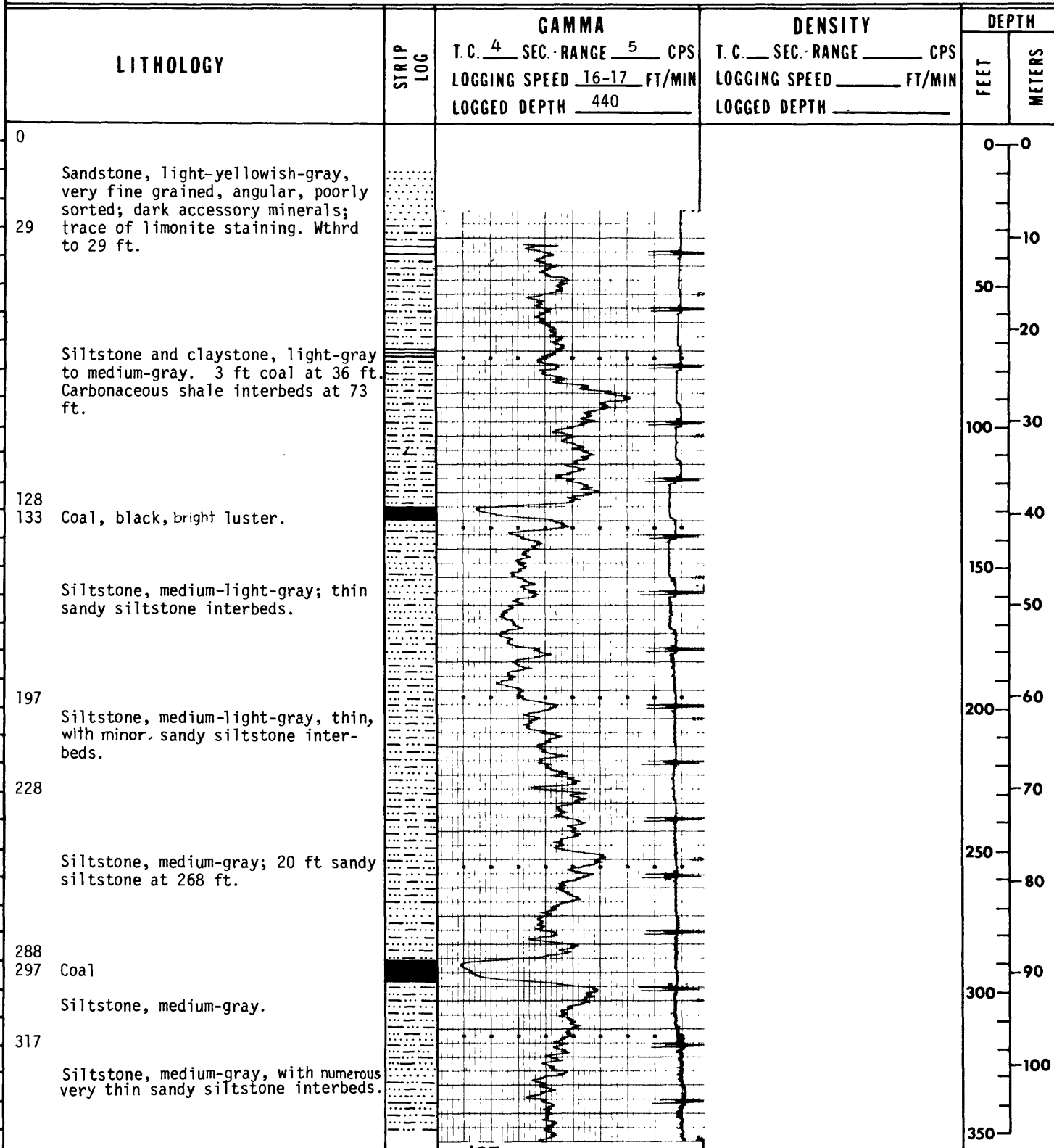
TC 4 Secs. Range 10 CPS



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78068  
SHEET 1 OF 4

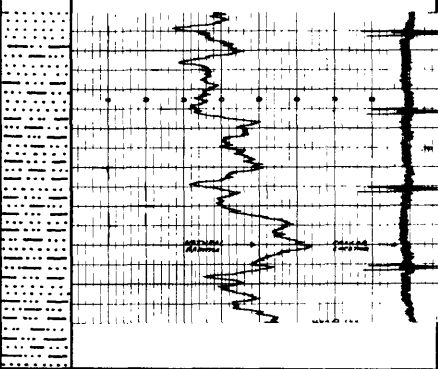
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Lone Tree Creek	
<b>DATE STARTED</b> 10-7-1978	<b>DATE COMP.</b> 10-14-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 14 T. 53 N., R. 71 W., FOOTAGE LOC.</b>		900 <del>FWL</del> 700 <del>FWL</del>	<b>GROUND ELEV</b> 4025
<b>SIZE AND BIT TYPE:</b> 4 3/4 in. drag		<b>FOOTAGE</b> ROTARY 440 CORING 0	
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A. Donatich; K. Bowen		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b> Gamma ray logged thru drill pipe.			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78068  
SHEET 2 OF 4

REMARKS:

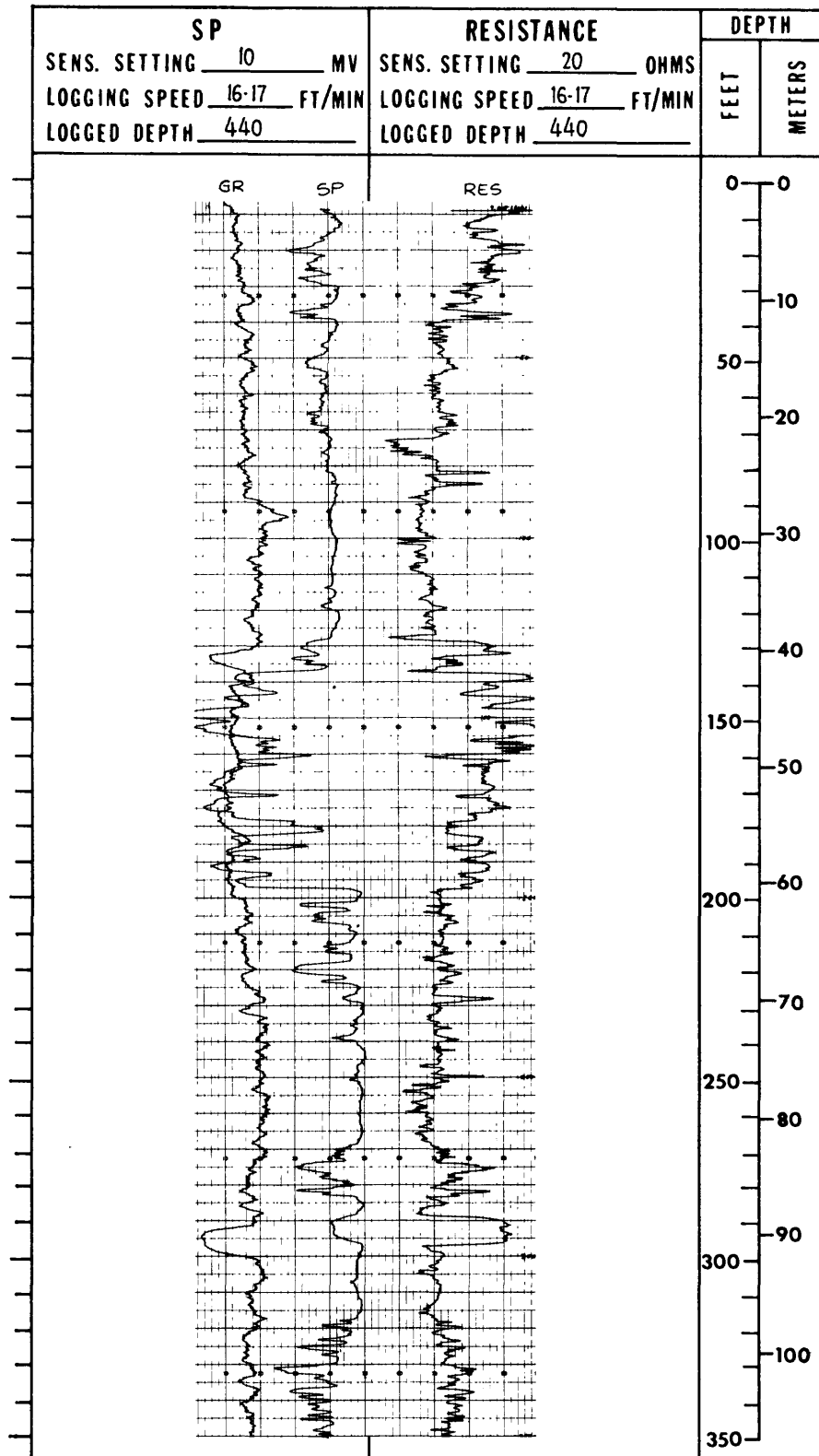
LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH	
		T.C. <u>4</u> SEC. RANGE <u>5</u> CPS LOGGING SPEED <u>16-17</u> FT/MIN LOGGED DEPTH <u>440</u>	T.C. <u>    </u> SEC. RANGE <u>    </u> CPS LOGGING SPEED <u>    </u> FT/MIN LOGGED DEPTH <u>    </u>	FEET	METERS
<p>382</p> <p>Siltstone, medium-gray, with numerous very thin sandy siltstone interbeds.</p> <p>440 LTD</p>				<p>350</p> <p>110</p> <p>120</p> <p>400</p> <p>130</p> <p>450</p> <p>140</p> <p>500</p> <p>150</p> <p>550</p> <p>160</p> <p>600</p> <p>170</p> <p>650</p> <p>180</p> <p>700</p> <p>190</p> <p>750</p> <p>200</p> <p>210</p> <p>220</p>	

# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78068  
SHEET 3 OF 4

## REMARKS:

TC 4 Secs. Range 10 CPS

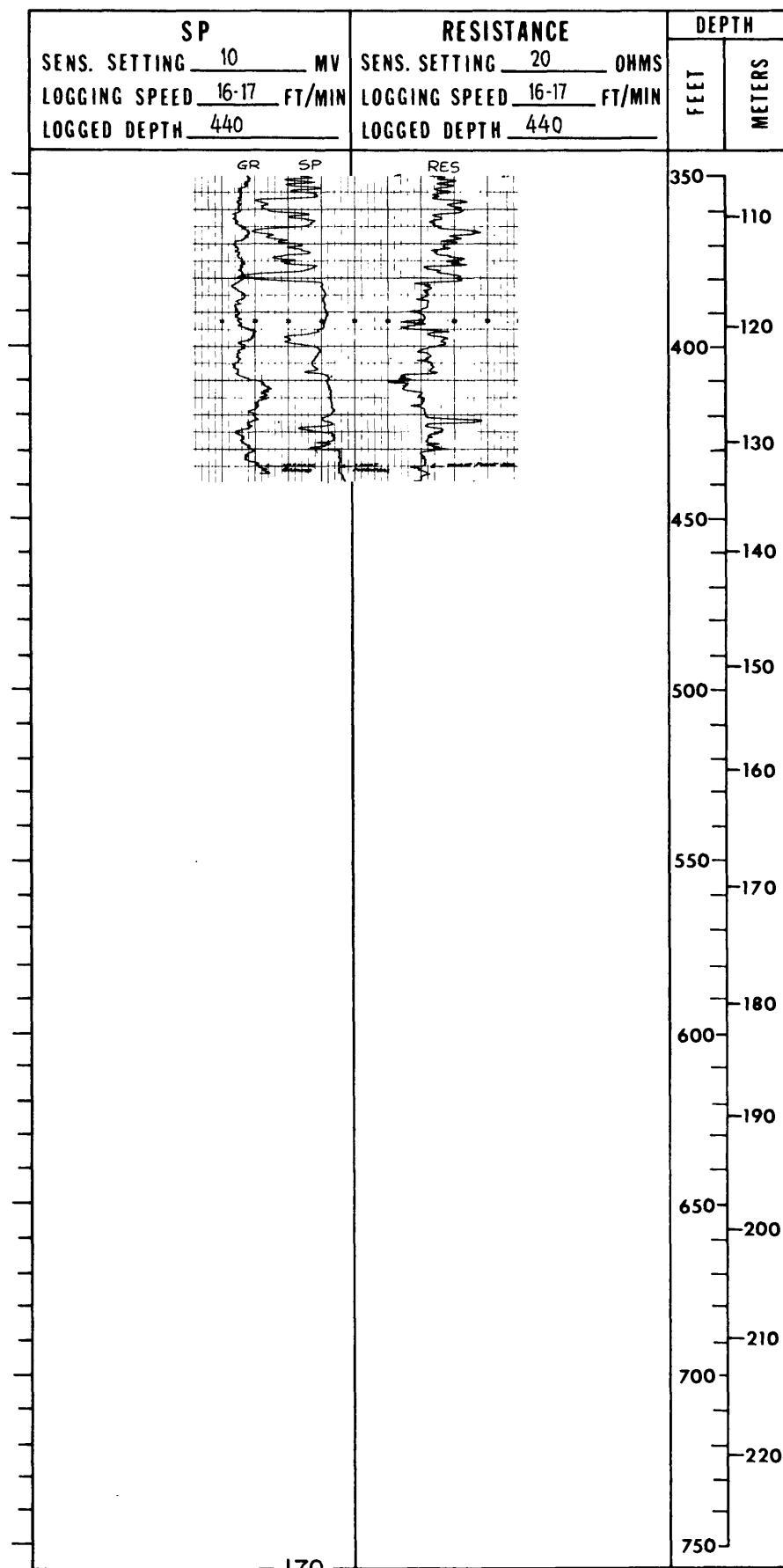


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78068  
SHEET 4 OF 4

## REMARKS:

TC 4 Secs. Range 10 CPS



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78069  
SHEET 1 OF 1

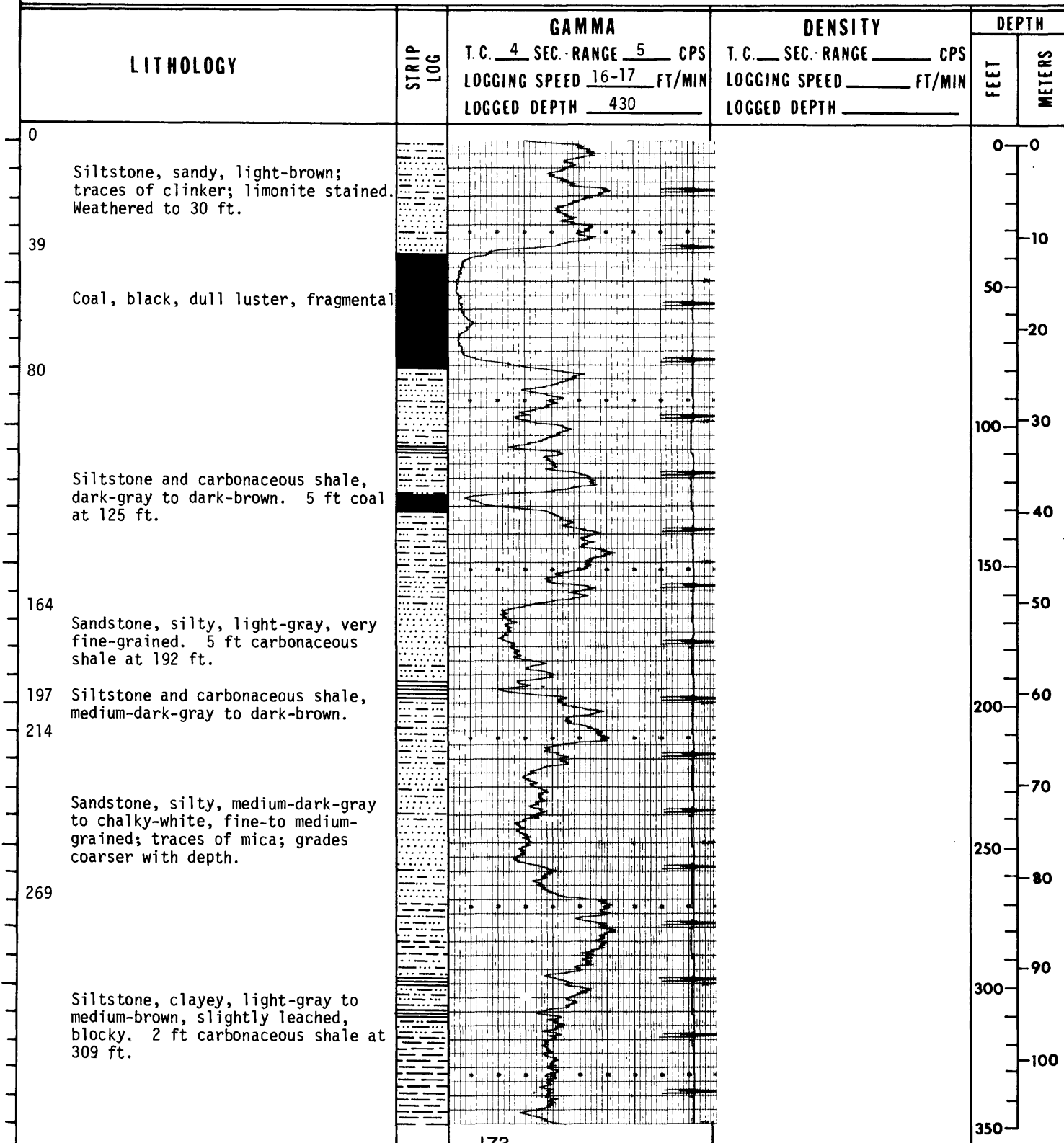
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Pitch Draw	
<b>DATE STARTED</b> 10-14-1978	<b>DATE COMP.</b> 10-15-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 1 T. 54 N., R. 73 W., FOOTAGE LOC.</b>		2320 <del>XXX</del> FSL 2000	<b>FEL</b> <del>FSL</del> <b>GROUND ELEV</b> 3930
<b>SIZE AND BIT TYPE:</b> 5-in. drag		<b>FOOTAGE</b> ROTARY 80 CORING 0	<b>TOTAL DEPTH</b> 80
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> F. B. Kistner		<b>GEOPHYSICAL LOGS RECORDED BY</b> None recorded	
<b>REMARKS:</b> Lost circulation from 45 ft to 70 ft; at 80 ft abandoned hole due to severe caving conditions.			

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH	
		T.C. --- SEC. RANGE --- CPS LOGGING SPEED --- FT/MIN LOGGED DEPTH ---	T.C. --- SEC. RANGE --- CPS LOGGING SPEED --- FT/MIN LOGGED DEPTH ---	FEET	METERS
<p>Clinker, pink to red; baked to below 45 ft; red to light-gray, porcelaneous above 65 ft.</p> <p>65? Coal, black, with minor carbonaceous shale.</p> <p>80 TD</p>				0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350	


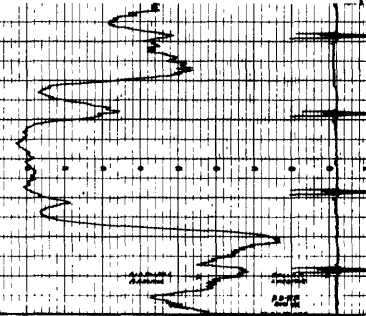
# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78070  
SHEET 1 OF 2

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Pitch Draw	
<b>DATE STARTED</b> 10-16-1978	<b>DATE COMP.</b> 10-16-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC.</b> 1 <b>T.</b> 54 N., <b>R.</b> 73 W., <b>FOOTAGE LOC.</b>		2570 <del>FWL</del>	1390 <del>FWL</del>
<b>SIZE AND BIT TYPE:</b> 4 3/4 in drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 440	<b>CORING</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>GROUND ELEV</b> 3895
<b>LITHOLOGY RECORDED BY</b> G.A. Hollomon		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b>			
1) Lost circulation at 435 ft			
2) Gamma-ray logged thru drill pipe			



## REMARKS:

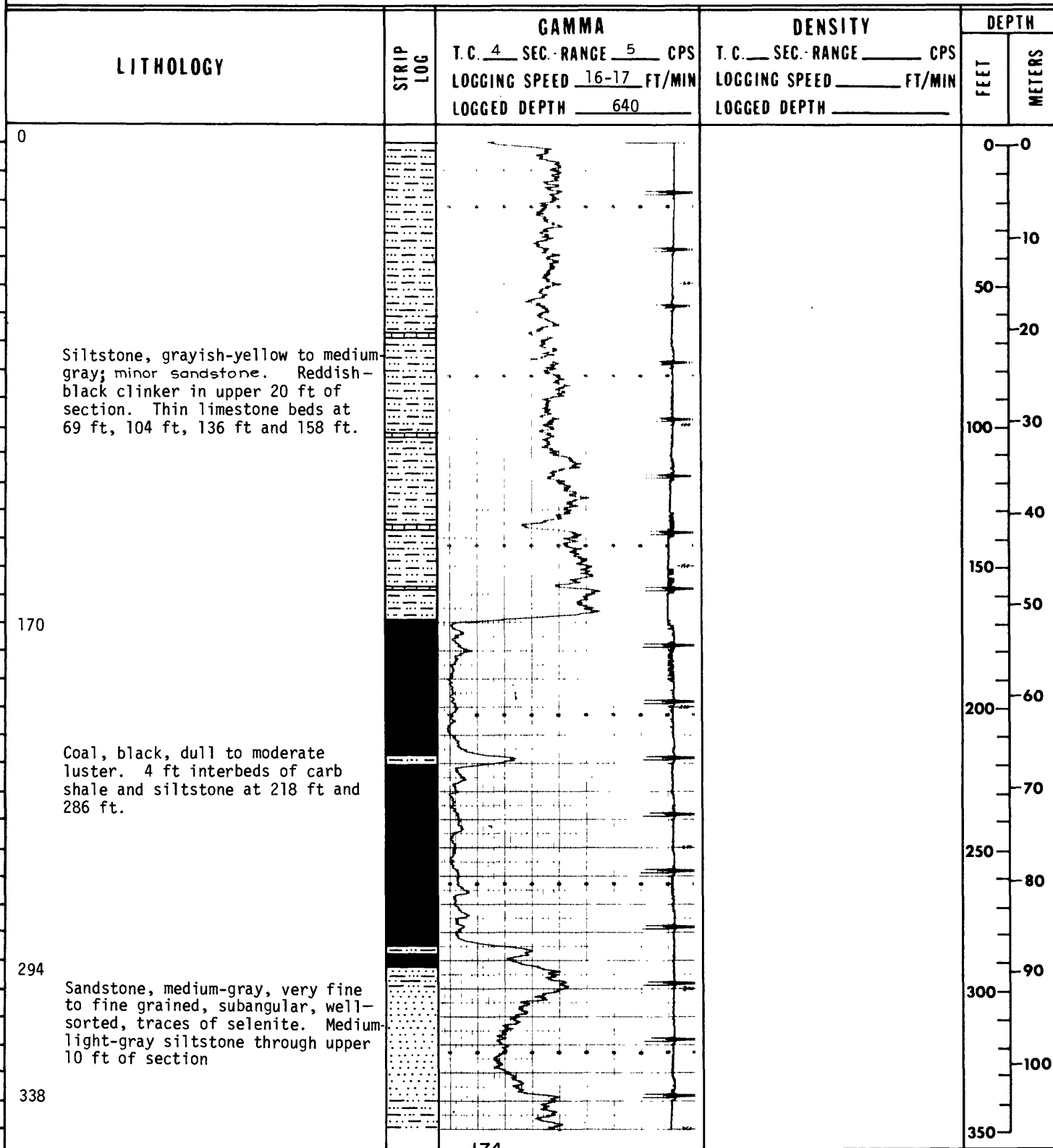
LITHOLOGY	STRIP LOG	GAMMA T.C. <u>4</u> SEC. RANGE <u>5</u> CPS LOGGING SPEED <u>16-17</u> FT/MIN LOGGED DEPTH <u>430</u>	DENSITY T.C. <u>    </u> SEC. RANGE <u>    </u> CPS LOGGING SPEED <u>    </u> FT/MIN LOGGED DEPTH <u>    </u>	DEPTH	
				FEET	METERS
370 Siltstone, clayey, light-gray to medium-brown, slightly leached, blocky. 2 ft carbonaceous shale at 309 ft.				350	110
Coal, black, dull luster. 5 ft siltstone at 376 ft.				400	120
408 Siltstone, medium-gray. Possible 4 ft carbonaceous shale at 424 ft, dark-brown to black.				450	130
430 LTD				500	140
				550	150
				600	160
				650	170
				700	180
				750	190
					200
					210
					220



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78071  
SHEET 1 OF 4

<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Rawhide School	
<b>DATE STARTED</b> 10-17-1978	<b>DATE COMP.</b> 10-18-1978	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 32 T. 52 N., R. 72 W., FOOTAGE LOC.</b>		660 <del>FNL</del> 1880 <del>FWL</del>	<b>GROUND ELEV</b> 4182
<b>SIZE AND BIT TYPE:</b> 5 in. drag		<b>FOOTAGE</b> RDINARY 640 CORING 0	<b>TOTAL DEPTH</b> 640
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> NR
<b>LITHOLOGY RECORDED BY</b> A. Donatich; G. Hollomon		<b>GEOPHYSICAL LOGS RECORDED BY</b> G.A. Hollomon	
<b>REMARKS:</b> Gamma ray logged thru drill pipe Location is 100 ft west of Anschutz 1-32 Gov't 24 dry hole marker			



HOLE NO CD-78071  
SHEET 2 OF 4

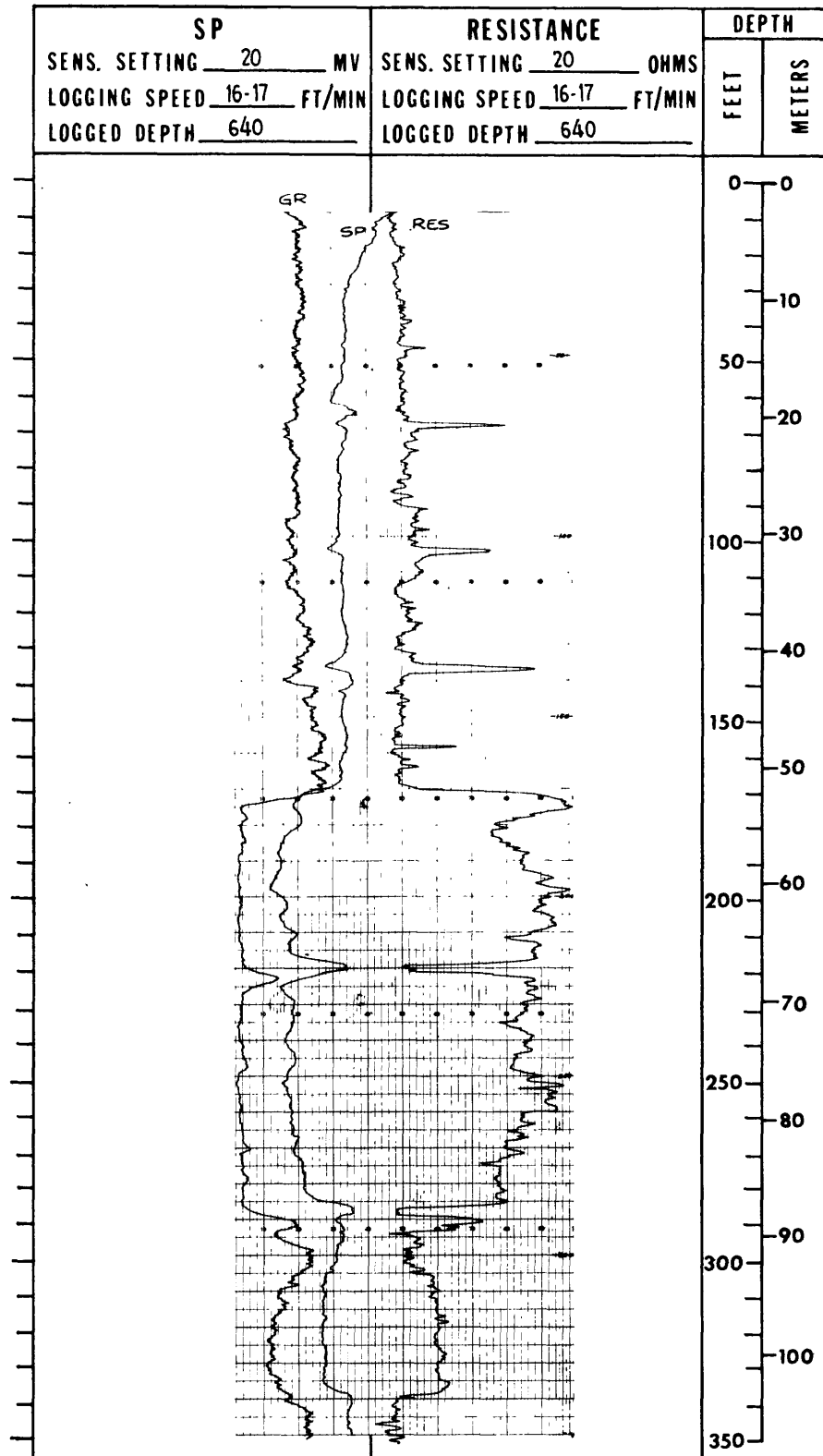
LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH	
		T.C. <u>4</u> SEC. RANGE <u>5</u> CPS LOGGING SPEED <u>16-17</u> FT/MIN LOGGED DEPTH <u>640</u>	T.C. _____ SEC. RANGE _____ CPS LOGGING SPEED _____ FT/MIN LOGGED DEPTH _____	FEET	METERS
Siltstone, light-gray to medium-gray. Interbeds of sandstone and carbonaceous shale throughout section. Fine-grained sands at 387-398 ft, 439-467 ft and 567-579 ft. 8 ft coal at 537 ft.				350	110
				400	120
				450	130
				500	140
				550	150
				600	160
				650	170
				700	180
				750	190
				800	200
				850	210
				900	220
				950	
				1000	

# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-7807  
SHEET 3 OF 4

## REMARKS:

TC 4 Sec. Range 10 CPS

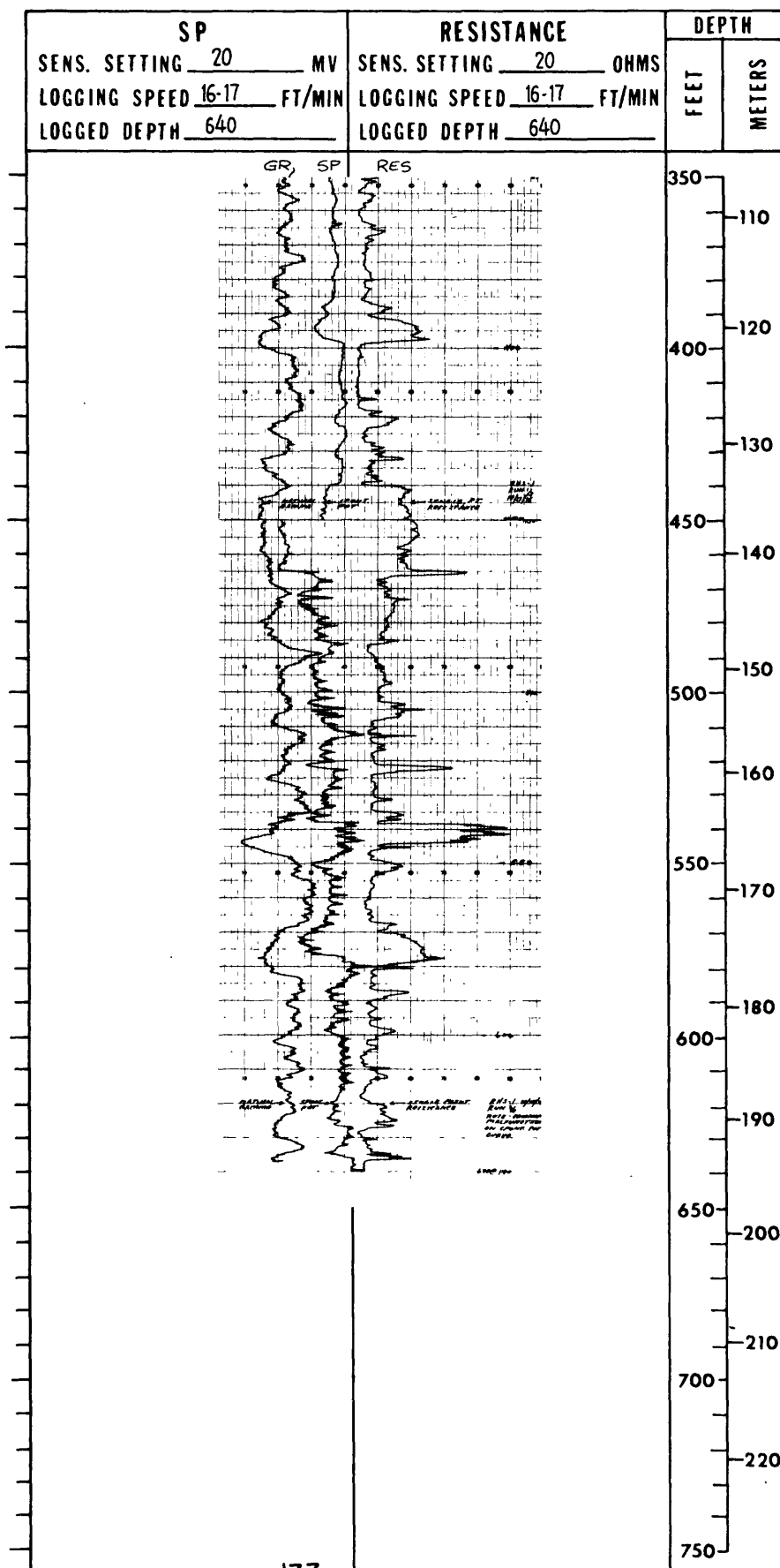


# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78071  
SHEET 4 OF 4

## REMARKS:

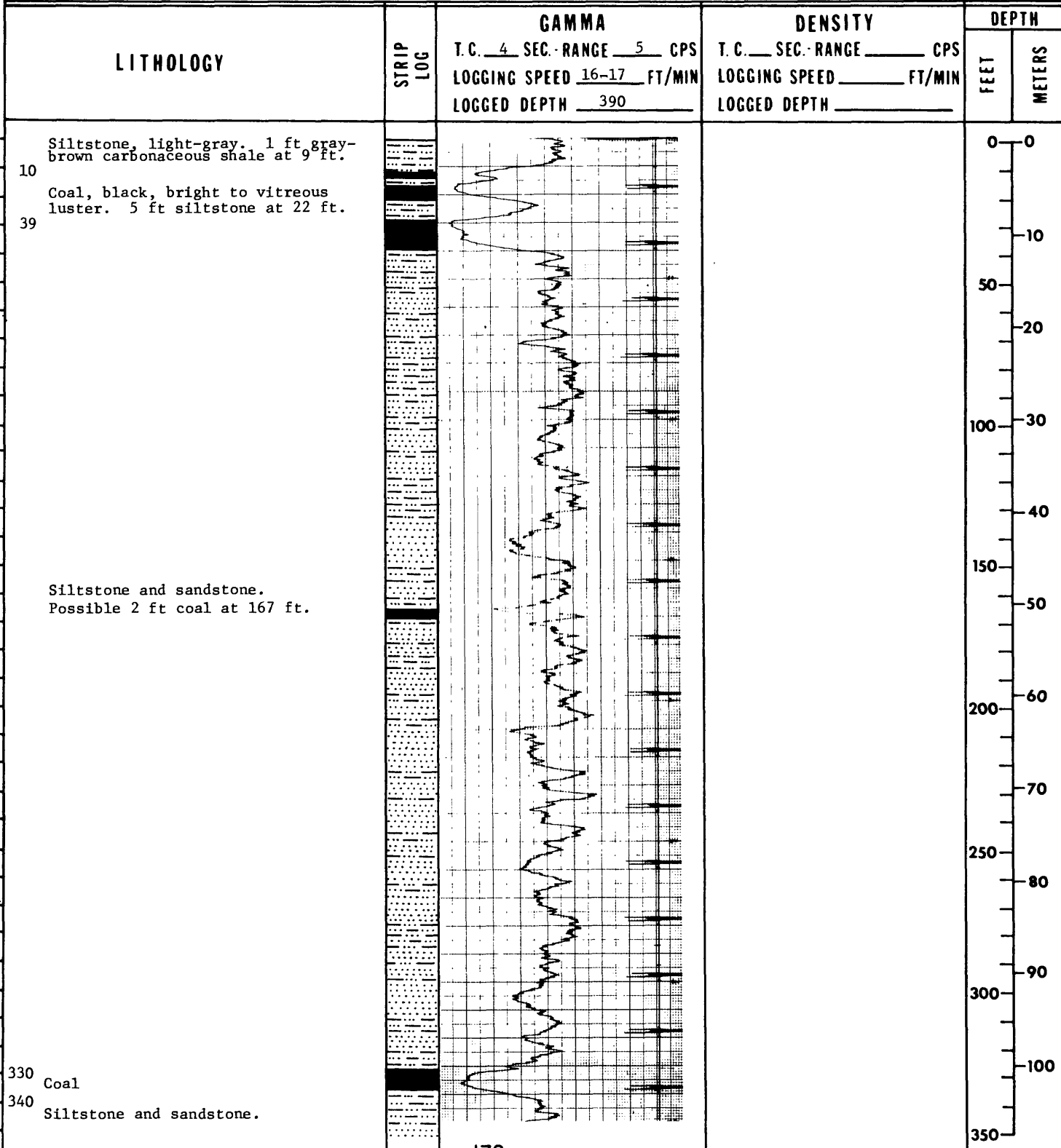
TC 4 Sec Range 10 CPS  
Electric log composite 450 - 640 ft,  
extraneous SP noise below 450 ft.



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-78081  
SHEET 1 OF 3

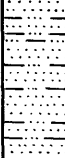
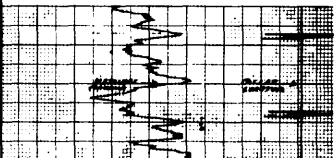
<b>AREA</b> Powder River Basin		<b>QUAD NAME</b> Weston SW	
<b>DATE STARTED</b> 11-7-1978	<b>DATE COMP.</b> 11-8-78	<b>COUNTY</b> Campbell	<b>STATE</b> Wyoming
<b>LOCATION: SEC. 5 T. 53 N., R. 71 W., FOOTAGE LOC.</b>		2640 <b>FNL</b> 10 <b>FEL</b>	<b>GROUND ELEV</b> 4310
<b>SIZE AND BIT TYPE:</b> 5-in. drag		<b>FOOTAGE</b>	
		<b>ROTARY</b> 400	<b>CDRNG</b> 0
<b>DRILLING AGENCY:</b> USGS/CD/NRMA		<b>DRILL TYPE:</b> Portadrill 524	<b>DEPTH TO WATER</b> 54
<b>LITHOLOGY RECORDED BY</b> A. Donatich; H. Corley; F. Kistner		<b>GEOPHYSICAL LOGS RECORDED BY</b> G. A. Hollomon	
<b>REMARKS:</b> Lost circulation at 80 ft. Gamma ray logged through drill pipe			



# UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-78081  
SHEET 2 OF 3

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA T.C. <u>4</u> SEC. RANGE <u>5</u> CPS LOGGING SPEED <u>16-17</u> FT/MIN LOGGED DEPTH <u>390</u>	DENSITY T.C. <u>    </u> SEC. RANGE <u>    </u> CPS LOGGING SPEED <u>    </u> FT/MIN LOGGED DEPTH <u>    </u>	DEPTH	
				FEET	METERS
Siltstone and sandstone				350	110
390 L.T.D.				400	120
				450	130
				500	140
				550	150
				600	160
				650	170
				700	180
				750	190
					200
					210
					220

## REMARKS:

E-log composite 80-150 ft.  
TC 4 Sec. Range 10 CPS

