

UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

GEOPHYSICAL AND LITHOLOGIC LOGS FROM COAL TEST HOLES
DRILLED DURING 1980 IN CAMPBELL COUNTY, WYOMING

By

Thomas P. Lonnie and Rodney J. Noah

Open-File Report 81-714

1981

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

CONTENTS

	Page
Introduction-----	1
Acknowledgments-----	2
References-----	2
Geophysical and lithologic logs-----	5

ILLUSTRATION

Figure 1. Location map of coal test holes drilled during 1980 in Campbell County, Wyoming-----	4
---	---

CONVERSION TABLE

To convert ENGLISH UNITS	Multiply by	To obtain METRIC UNITS
Inches	2.54	Centimeters
Feet	.3048	Meters

ABBREVIATIONS

blk	black
brn	brown
calc	calcareous
carb	carbonaceous
cps	counts per second
f	fine
frac	fracture
gr	grained
gy	gray
irreg	irregular
LTD	logged total depth
lstr	luster
m	medium
modly	moderately
mV	millivolt
NCR	North Central Region
NR	not recorded
orng	orange
rd	rounded
Sens	sensitivity
SP	spontaneous potential
sbang	subangular
sbrd	subrounded
T.C.	time constant

GEOPHYSICAL AND LITHOLOGIC LOGS FROM COAL TEST HOLES
DRILLED DURING 1980 IN CAMPBELL COUNTY, WYOMING

By Thomas P. Lonnie and Rodney J. Noah

INTRODUCTION

Ninety-seven coal test holes were drilled in Campbell County, Wyo., from May 21 to November 13, 1980 (fig. 1). The drilling was done as part of the U.S. Geological Survey's (USGS) program to evaluate and classify mineral lands in the public domain. The purpose of the program is to gather data on the thickness, quality, extent, and recoverability of coal and the lithologic characteristics of the associated rocks in the Tertiary Fort Union and Wasatch Formations of the Powder River Basin, Wyo. Similar information 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; Kistner and others, 1980; Lonnie and others, 1980).

Figure 1 shows the location and test-hole number for each hole drilled during the 1980 field season. Test-hole locations appear on the log headings scaled, in feet, from section lines as they appear on topographic quadrangle sheets, with the exceptions of CD-80036, CD-80037, CD-80038, and CD-80046, which are located by latitude and longitude. Elevations are approximated from topographic contours for all test holes.

This report presents the lithologic logs (depth intervals corrected to match the geophysical logs) and the geophysical logs of the test holes. A conventional rotary drill was used; circulating water was the usual drilling fluid. Continuous 10-foot samples were logged by a geologist in the field. Natural gamma-ray, resistance, density, and in some instances, spontaneous-potential logs were recorded for each test hole unless there were problems with the hole stability. In those instances, gamma-ray, neutron, and collar locator logs were recorded through the drill pipe. The logs were photographically reduced to a scale of 1 inch equals 50 ft for convenience in reproducing this report, and the originals are on file at the USGS office, Casper, Wyo. Core samples were taken from four offset core holes: CD-80008, CD-80014, CD-80015, and CD-80066. The analyses of these core samples are not yet available.

ACKNOWLEDGMENTS

Fieldwork was done by the following USGS personnel: Thomas P. Lonnie, Glenn W. Kepler, Sr., Rodney J. Noah, and Harold E. Corley, geologists; Harry R. Cureton, driller; Randy M. Howell, assistant driller. Log compilations were prepared by Rodney J. Noah.

REFERENCES

- Kistner, F. B., 1977, Preliminary report on five coal drill holes in 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, 69 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.
- Kistner, F. B., Donatich, A. J., and Hollomon, G. A., 1980, Geophysical and lithologic logs and coal analyses from test holes drilled during 1978 in Campbell and Converse Counties, Wyoming: U.S. Geological Survey Open-File Report 80-851, 183 p.
- Lonnie, T. P., Corley, H. E., and Noah, R. J., 1980, Geophysical and lithologic logs from coal test holes drilled during 1979 in Converse and Campbell Counties, Wyoming: U.S. Geological Survey Open-File Report 80-1041, 102 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, 383 p.

U.S. Geological Survey and Montana Bureau of Mines and Geology, 1977,
Preliminary report on 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.

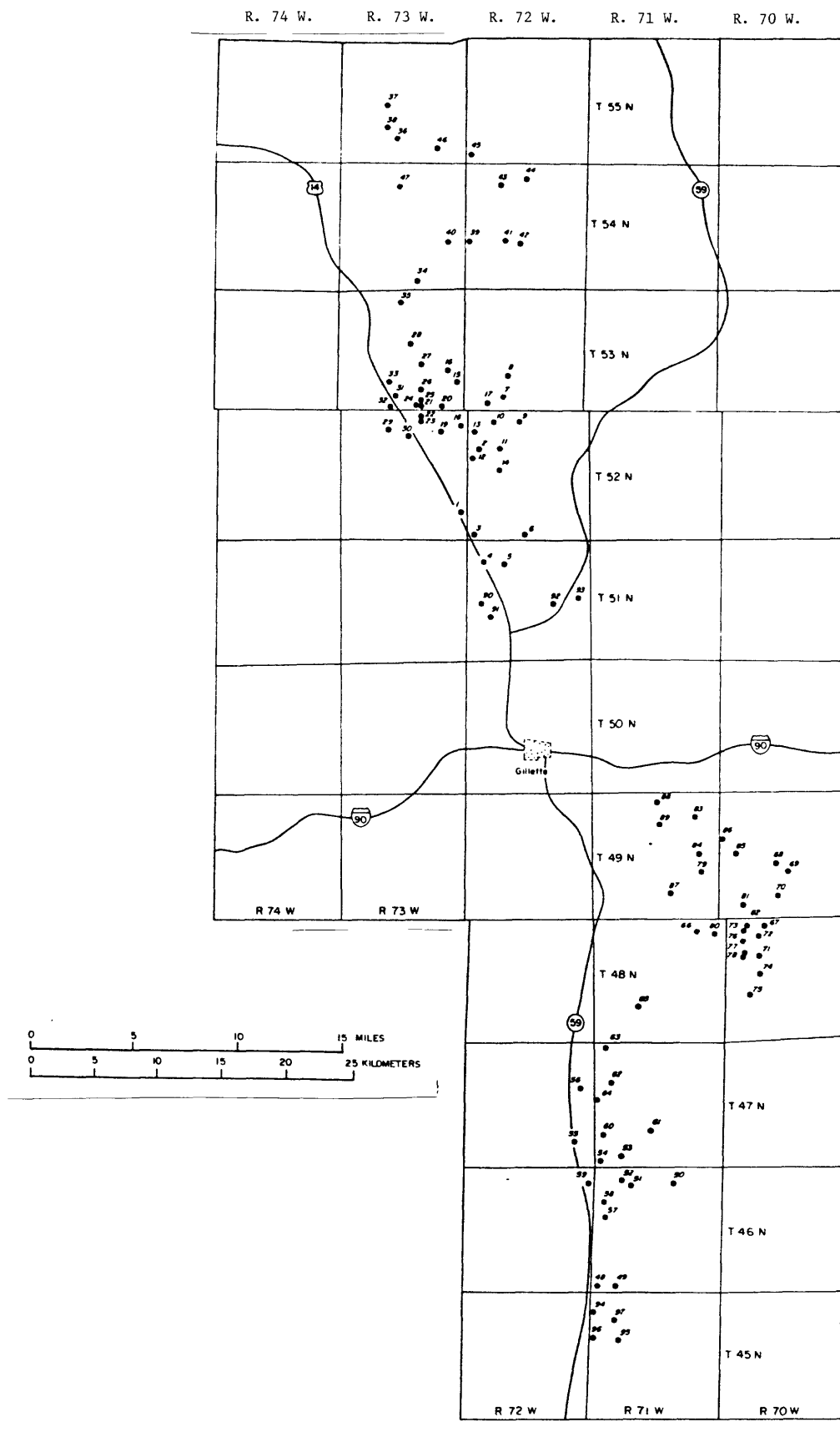
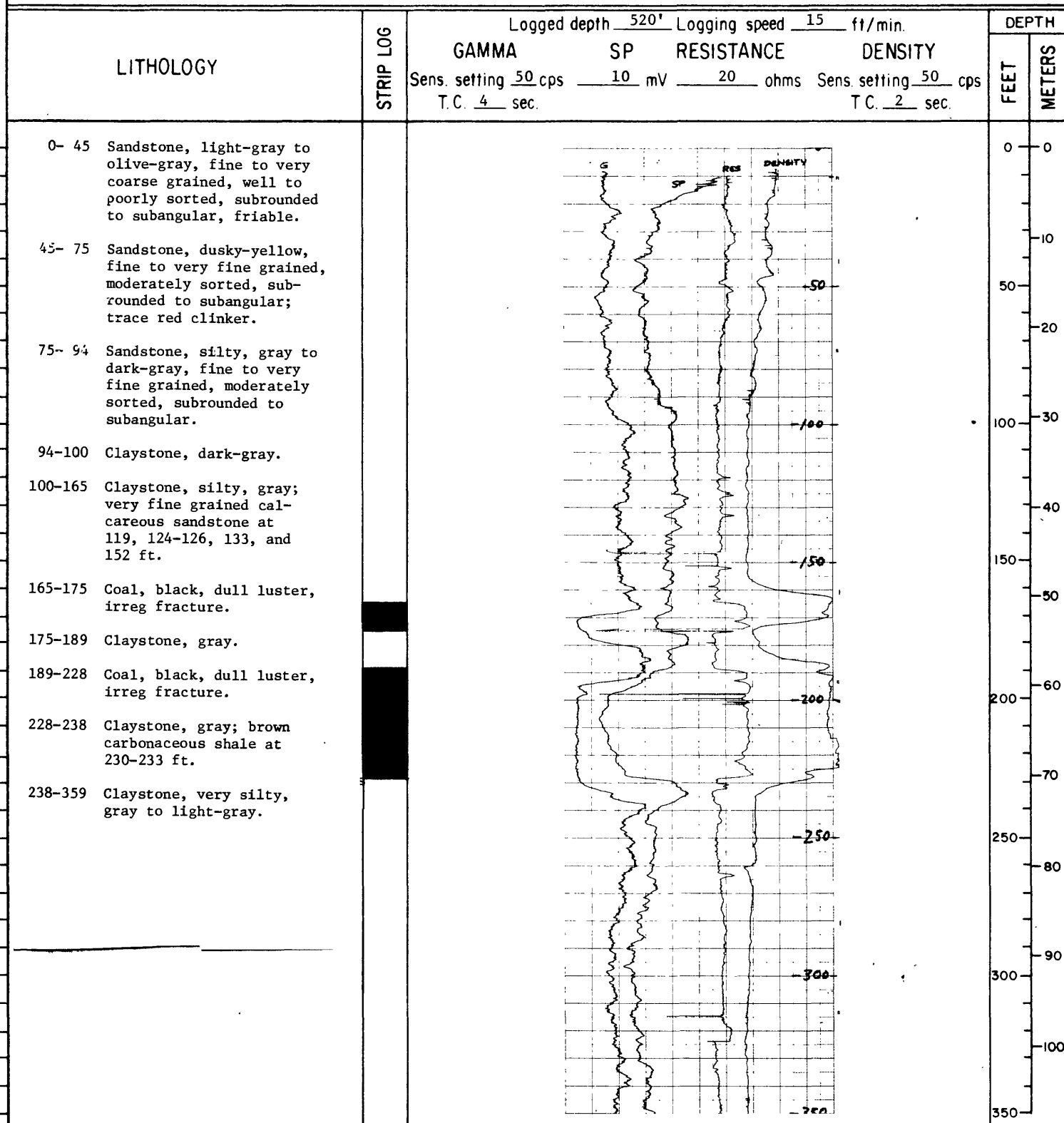


Figure 1.--Locations of coal test holes drilled during 1980 in Campbell County, Wyo. Individual test-hole number (22), used on map above, is expanded on accompanying logs to identify driller (CD, Conservation Division, U.S. Geological Survey) and year (80): CD-80022.

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80001
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Rawhide School	
DATE STARTED: 5-21-80	DATE COMP: 5-22-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 25 T. 52 N., R. 73 W. FOOTAGE LOC.		2600' FSL	2050' FEL
SIZE AND BIT TYPE: 5" Drag		GROUND ELEV. 4295'	
		TOTAL DEPTH 520'	
DRILLING AGENCY: USGS/CD/ NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: R.J. Noah		DEPTH TO FLUID NR	
GEOPHYSICAL LOGS RECORDED BY: H.E. Corley			
REMARKS:			

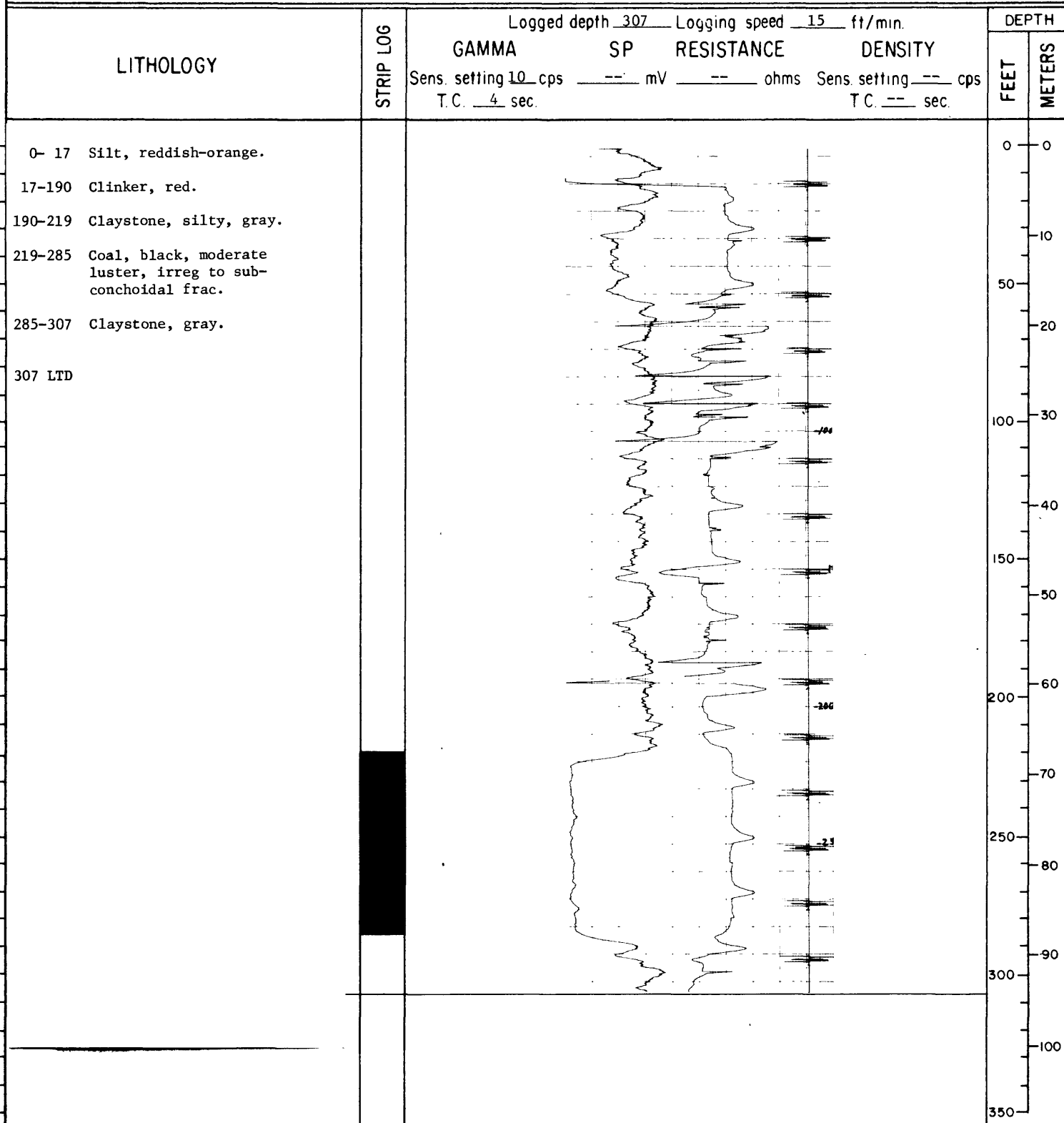


HOLE NO. CD-80001
SHEET 2 OF 2

LITHOLOGY	STRIP LOG	Logged depth <u>520'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	SP <u>10</u> mV	RESISTANCE <u>20</u> ohms	DENSITY Sens. setting <u>50</u> cps T.C. <u>2</u> sec	FEET	METERS
359-417 Claystone, gray.	[REDACTED]					350	
417-488 Coal, black, dull to moderate luster, irreg fracture.						400	
488-520 Claystone, light-gray.						450	
520 LTD					500		
					550		
					600		
					650		
					700		
					750		

HOLE NO. CD-80002
SHEET 1 OF 1

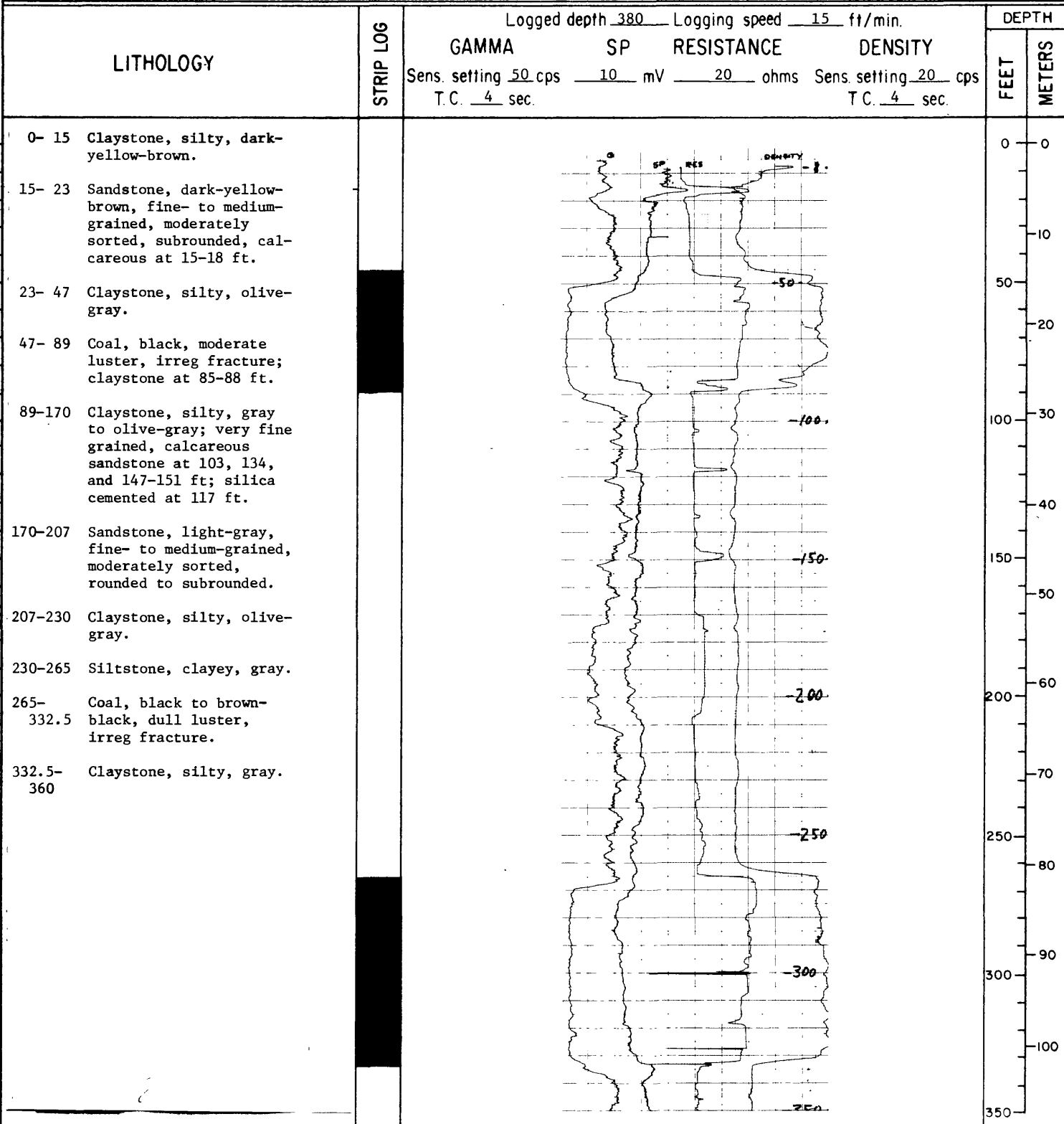
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 5-23-80	DATE COMP: 5-23-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 7 T. 52 N. R. 72 W. FOOTAGE LOC.		FNL EST 1360' FNL	GROUND ELEV. 4220'
SIZE AND BIT TYPE: 4 3/4" Rock		FOOTAGE	TOTAL DEPTH 320'
		ROTARY 320 CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	DEPTH TO FLUID NR
LITHOLOGY RECORDED BY: R.J. Noah		GEOPHYSICAL LOGS RECORDED BY: H.E. Corley	
REMARKS: Logged through drill pipe.		Neutron: Sen setting 20 T.C. 2 sec.	Collar locator: 1000 mV/in.



UNITED STATES GEOLOGICAL SURVEY

HOLE NO CD-80003
SHEET 1 OF 2

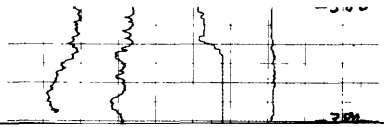
AREA Powder River Basin		QUAD NAME Rawhide School	
DATE STARTED: 5-24-80	DATE COMP: 5-24-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 31 T. 52 N., R. 72 W. FOOTAGE LOC.		1100' FSL	2600' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 380 CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	GROUND ELEV. 4210'
LITHOLOGY RECORDED BY: G.W. Kepler		TOTAL DEPTH 380'	
		DEPTH TO FLUID 0	
REMARKS:		GEOPHYSICAL LOGS RECORDED BY: H.E. Corley	



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80003
SHEET 2 OF 2

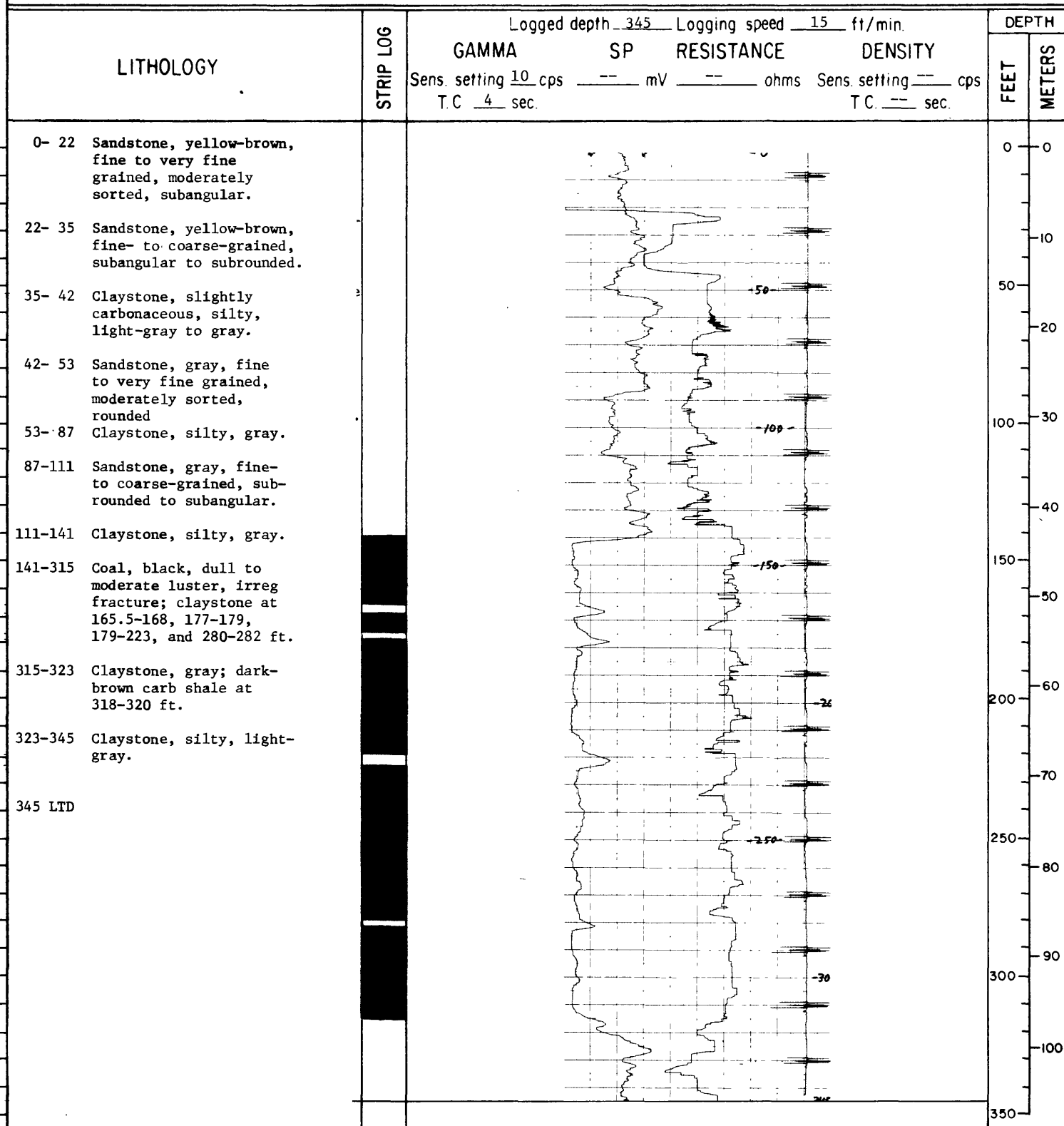
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>380</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
360-380 Siltstone, clayey, gray.		Sens. setting <u>50</u> cps <u>10</u> mV <u>20</u> ohms Sens. setting <u>20</u> cps T.C. <u>4</u> sec. T.C. <u>4</u> sec.					
380 LTD						350	
						110	
						120	
						400	
						130	
						450	
						140	
						500	
						150	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80004
SHEET 1 OF 1

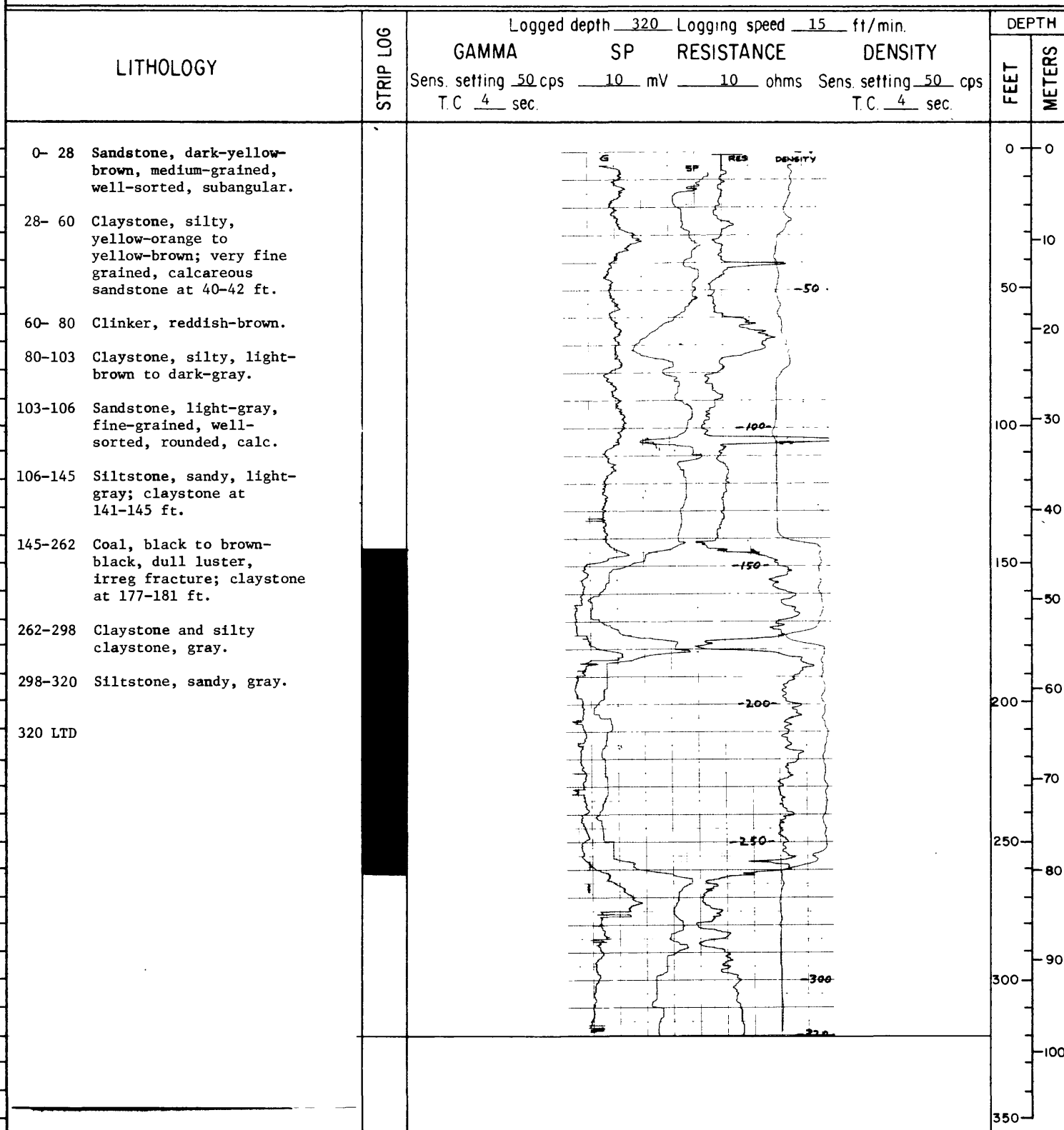
AREA Powder River Basin		QUAD NAME Rawhide School	
DATE STARTED: 5-26-80	DATE COMP: 5-26-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 7 T. 51 N., R. 72 W. FOOTAGE LOC.		FNL 610' FSL	FEL 240' FWE
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 360 CORING 0	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV 4235'
LITHOLOGY RECORDED BY: R.J. Noah	GEOPHYSICAL LOGS RECORDED BY: H.E. Corley		TOTAL DEPTH 360'
REMARKS: Logged through drill pipe.		Neutron: Sens. setting 10 T.C. 2 sec.	Collar Locator 1000 mV/in



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80005
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Rawhide School	
DATE STARTED: 5-27-80	DATE COMP: 5-27-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 8 T.51 N., R. 72 W. FOOTAGE LOC.		760' FNL FSL	760' FEL FNL
SIZE AND BIT TYPE: 5" Drag		GROUND ELEV. 4220'	
		TOTAL DEPTH 320'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler Sr.		DEPTH TO FLUID 0	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler Sr.			
REMARKS:			

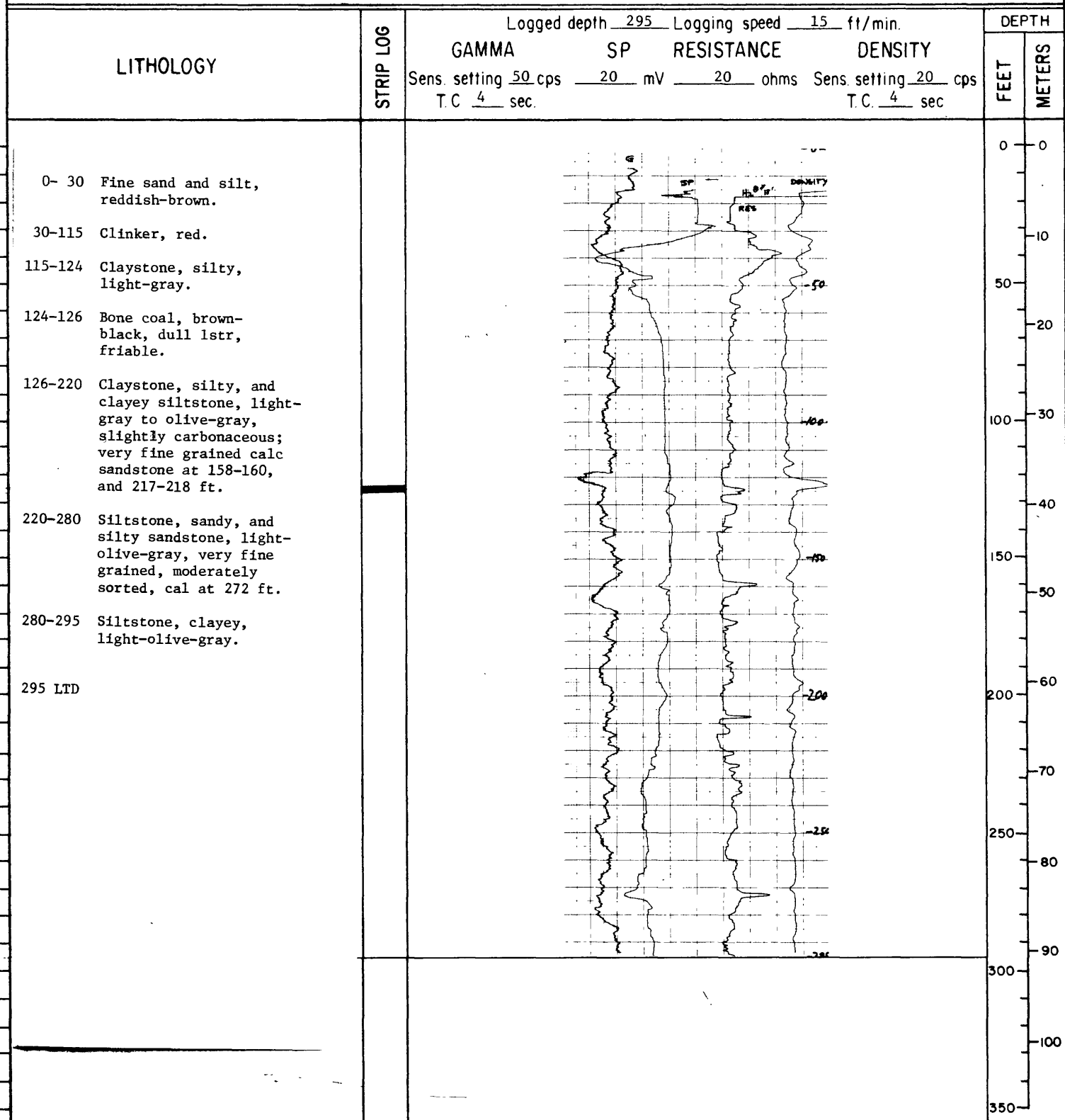


UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80006

SHEET 1 OF 1

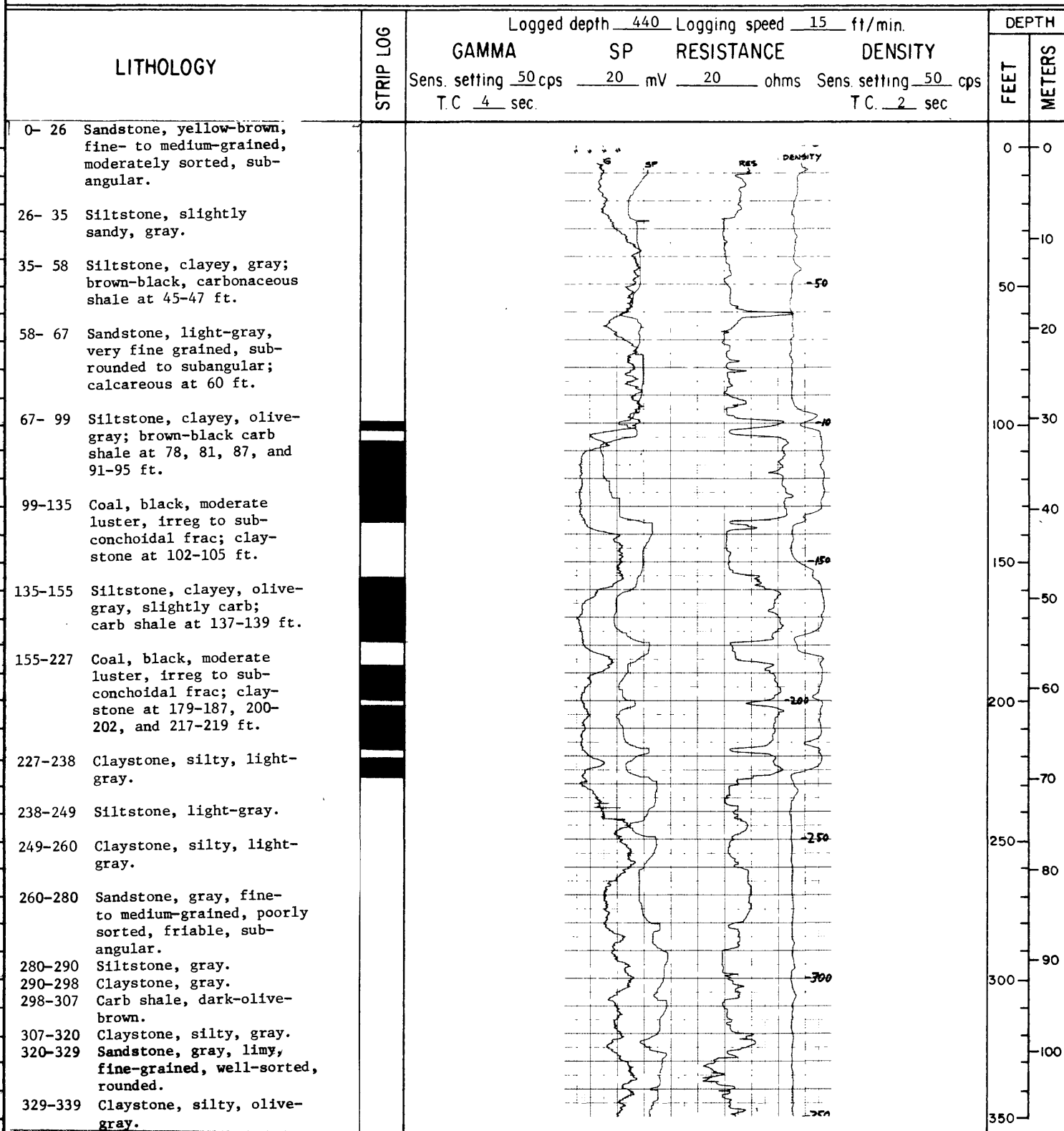
AREA Powder River Basin		QUAD NAME Rawhide School	
DATE STARTED: 5-27-80	DATE COMP: 5-28-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 33 T. 52 N., R. 72 W. FOOTAGE LOC.		175' FSL	1200' FEL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 300 CORING 0	GROUND ELEV 4122'
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	TOTAL DEPTH 300'
LITHOLOGY RECORDED BY: R.J. Noah		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler Sr.	
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80007
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 5-29-80	DATE COMP: 5-29-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 33 T. 53 N., R. 72 W. FOOTAGE LOC.		1660' FNL FSL	140' FE FWL
SIZE AND BIT TYPE: 5" Drag		FOOTAGE ROTARY 440 CORING 0	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV 4250'
LITHOLOGY RECORDED BY: R.J. Noah	GEOPHYSICAL LOGS RECORDED BY: R.J. Noah		TOTAL DEPTH 440'
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80007
SHEET 2 OF 2

REMARKS:

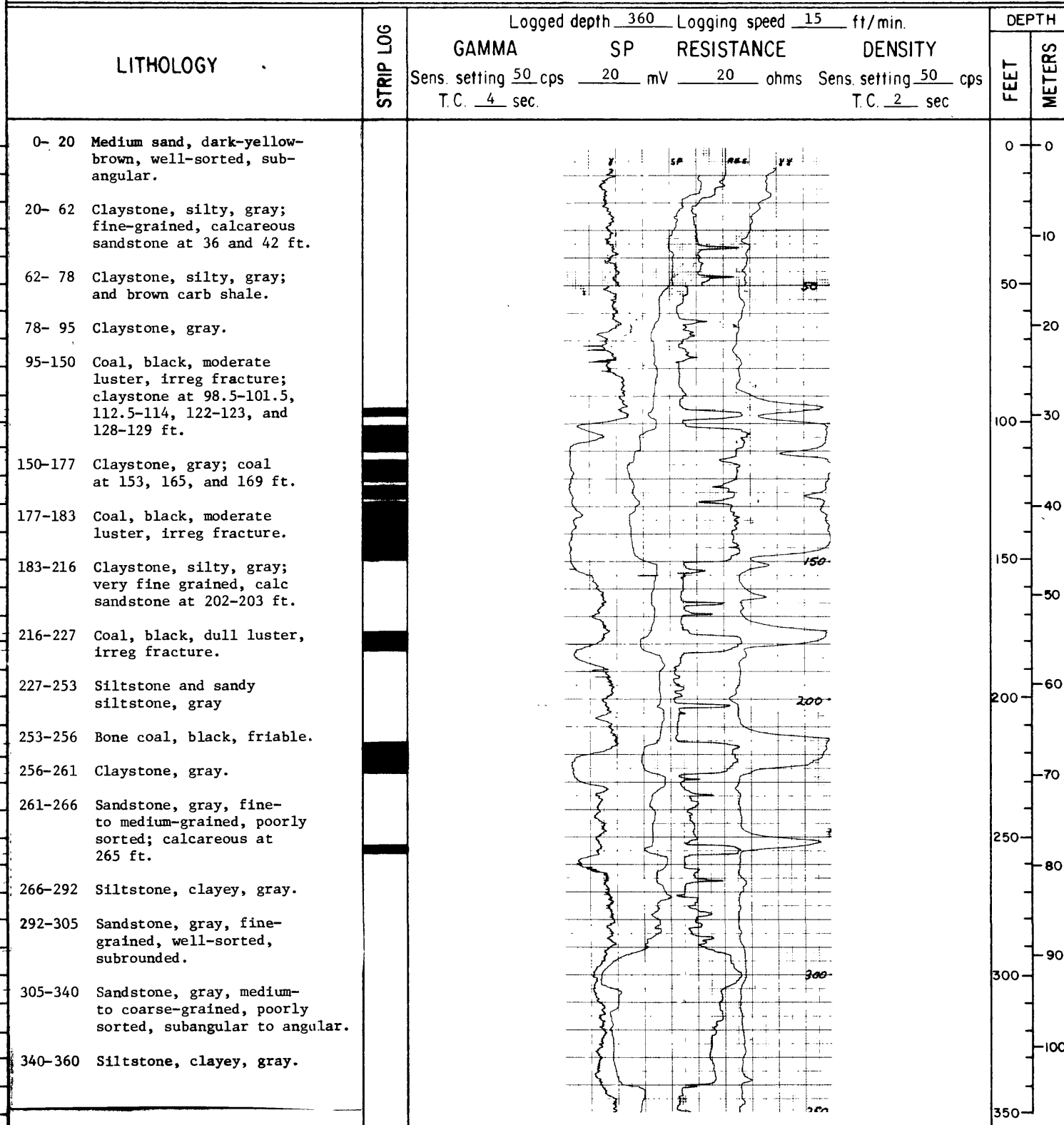
LITHOLOGY	STRIP LOG	Logged depth <u>440</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps		
		T.C. <u>4</u> sec.			T.C. <u>2</u> sec.		
339-352 Siltstone, clayey, gray.						350	
352-374 Sandstone, gray, medium- to coarse-grained, poorly sorted, friable, angular.						110	
374-403 Claystone, silty, gray; bone coal at 391-394 and 397-399 ft.						120	
403-421 Sandstone, gray, medium- to coarse-grained, poorly sorted, friable, angular.						400	
421-432 Siltstone, gray.						130	
432-440 Sandstone.						450	
440 LTD						140	
						150	
						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80008

SHEET 1 OF 2

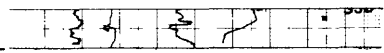
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 6-4-80	DATE COMP: 6-4-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 28 T. 53 N., R. 72 W. FOOTAGE LOC.		1900' FNL #36	2150' FEET FWL
SIZE AND BIT TYPE: 5" Drag		FOOTAGE ROTARY 360 CORING 86	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4285'
LITHOLOGY RECORDED BY: G.W. Kepler Sr.		DEPTH TO FLUID 10'	
REMARKS: Rerun 0-50'		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler Sr.	



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-
SHEET 2 OF 2

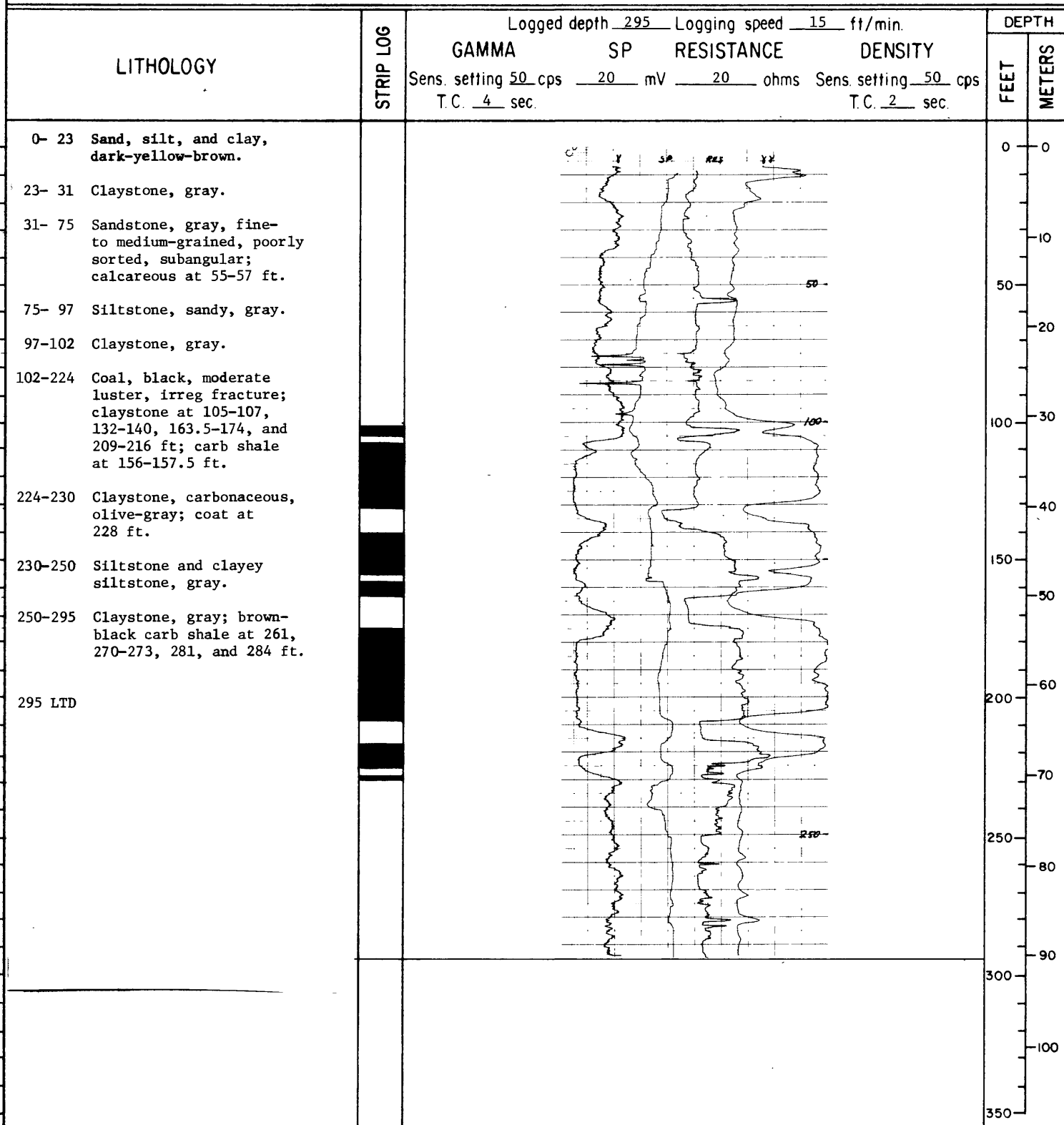
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>360</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	SP <u>20</u> mV	RESISTANCE <u>20</u> ohms	DENSITY Sens. setting <u>50</u> cps T.C. <u>2</u> sec.	FEET	METERS
360 LTD						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-80009
SHEET 1 OF 1

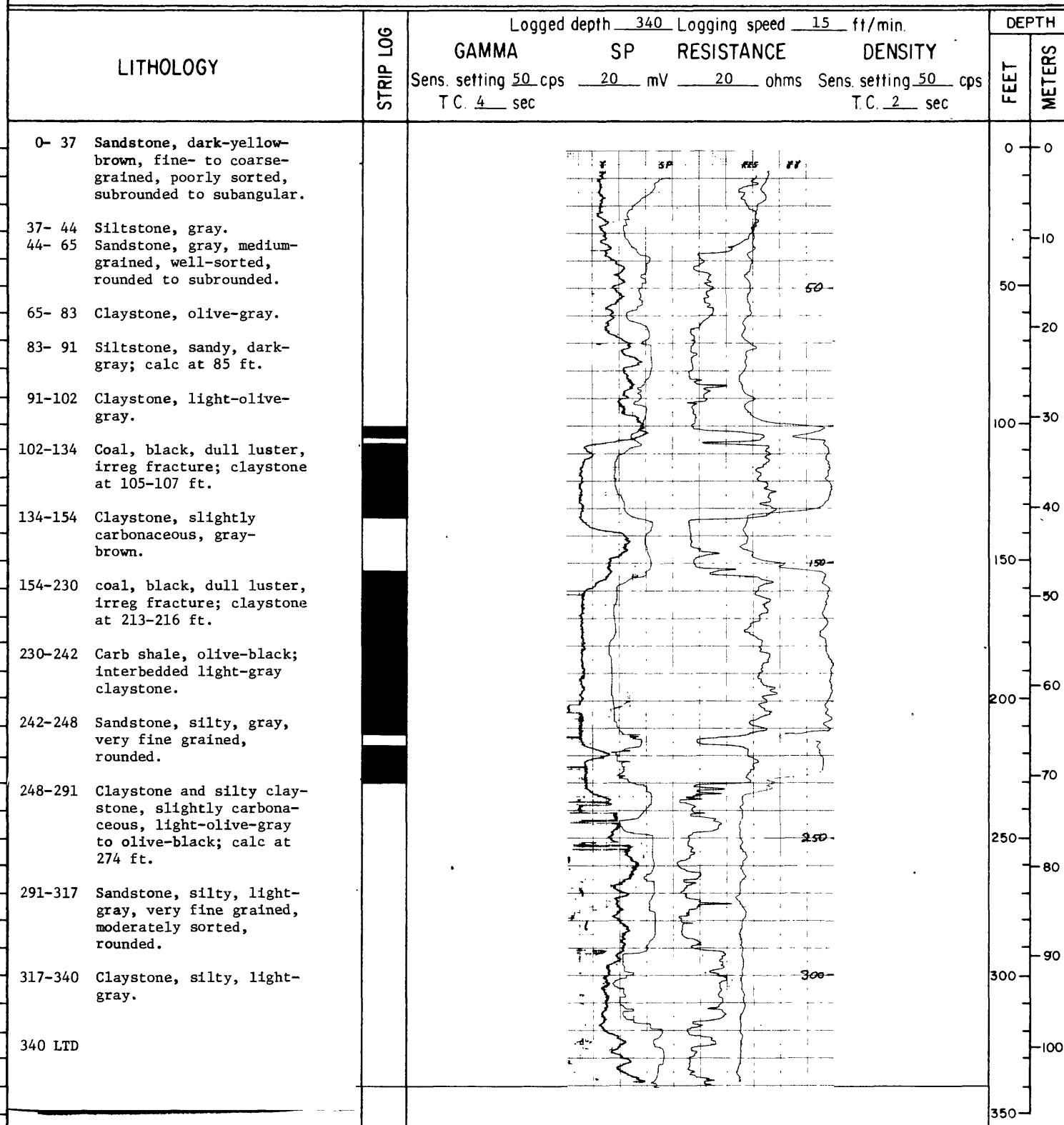
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 6-7-80	DATE COMP: 6-7-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 4 T. 52 N., R. 72 W. FOOTAGE LOC.		2070' FNL	2240' FEL
SIZE AND BIT TYPE: 5" Drag		FOOTAGE ROTARY 300 CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler Sr.	
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80010
SHEET 1 OF 1

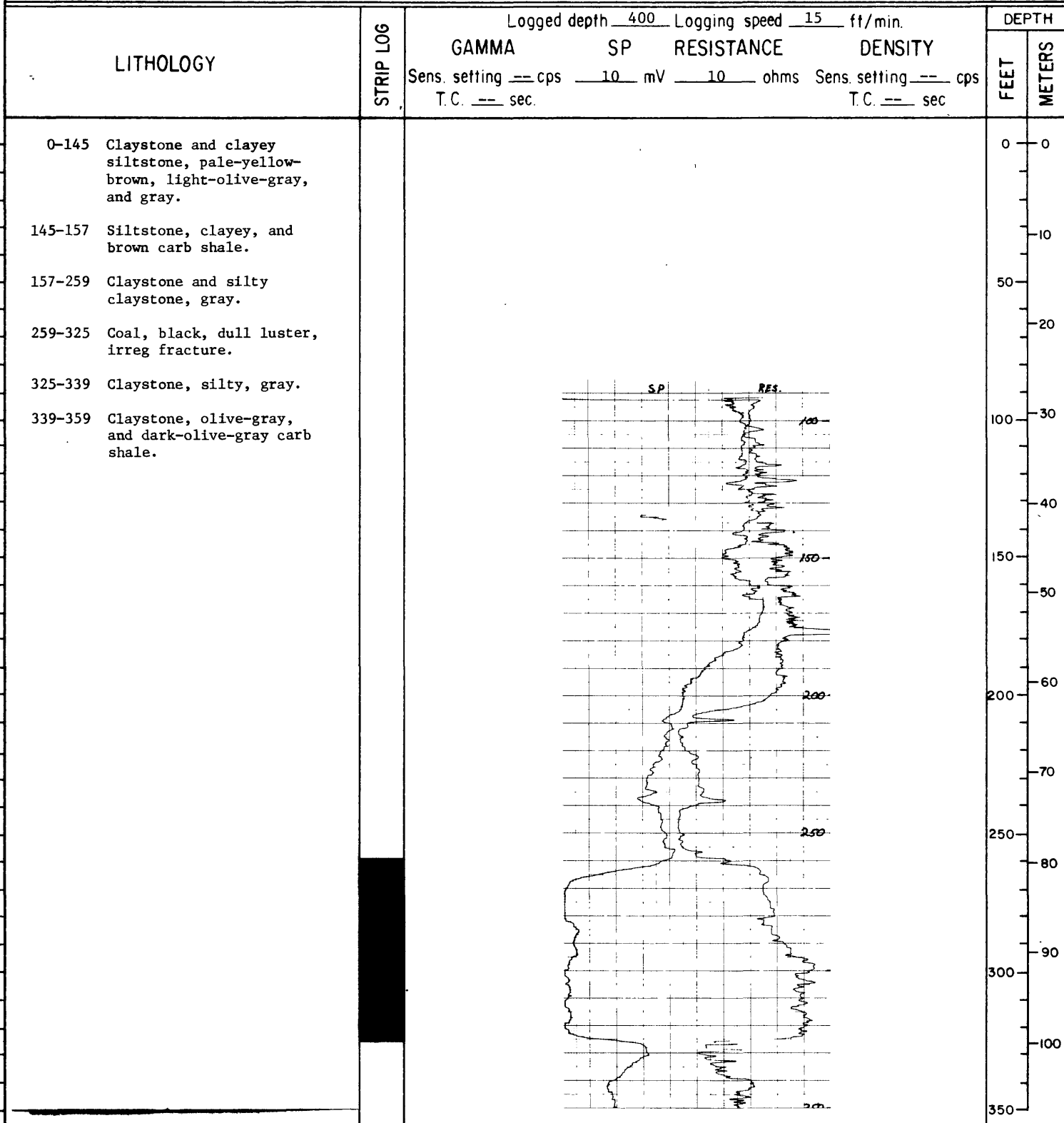
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 6-8-80	DATE COMP: 6-8-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 5 T. 52 N., R. 72 W. FOOTAGE LOC.		FNL 1550' FSL	FEEL 2160' FWL
SIZE AND BIT TYPE: 5" Drag		FOOTAGE ROTARY 340 CORING 0	GROUND ELEV. 4215'
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		TOTAL DEPTH 340'
LITHOLOGY RECORDED BY: G.W. Kepler Sr.	GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler Sr.		
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80011
SHEET 1 OF 2

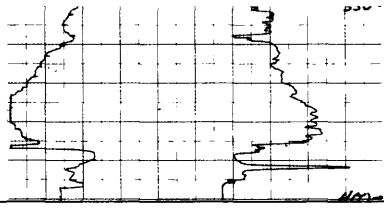
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 6-8-80	DATE COMP: 6-9-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 8 T. 52 N., R. 72 W. FOOTAGE LOC.		FNL 2860' 2860'	FEL 2230' 2230'
SIZE AND BIT TYPE: 5" Drag		FOOTAGE ROTARY 400 CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	GROUND ELEV. 4270'
LITHOLOGY RECORDED BY: G.W. Kepler Sr.		DEPTH TO FLUID 92'	
REMARKS: Fresh water affecting SP and Resistance 92-210'			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80011
SHEET 2 OF 2

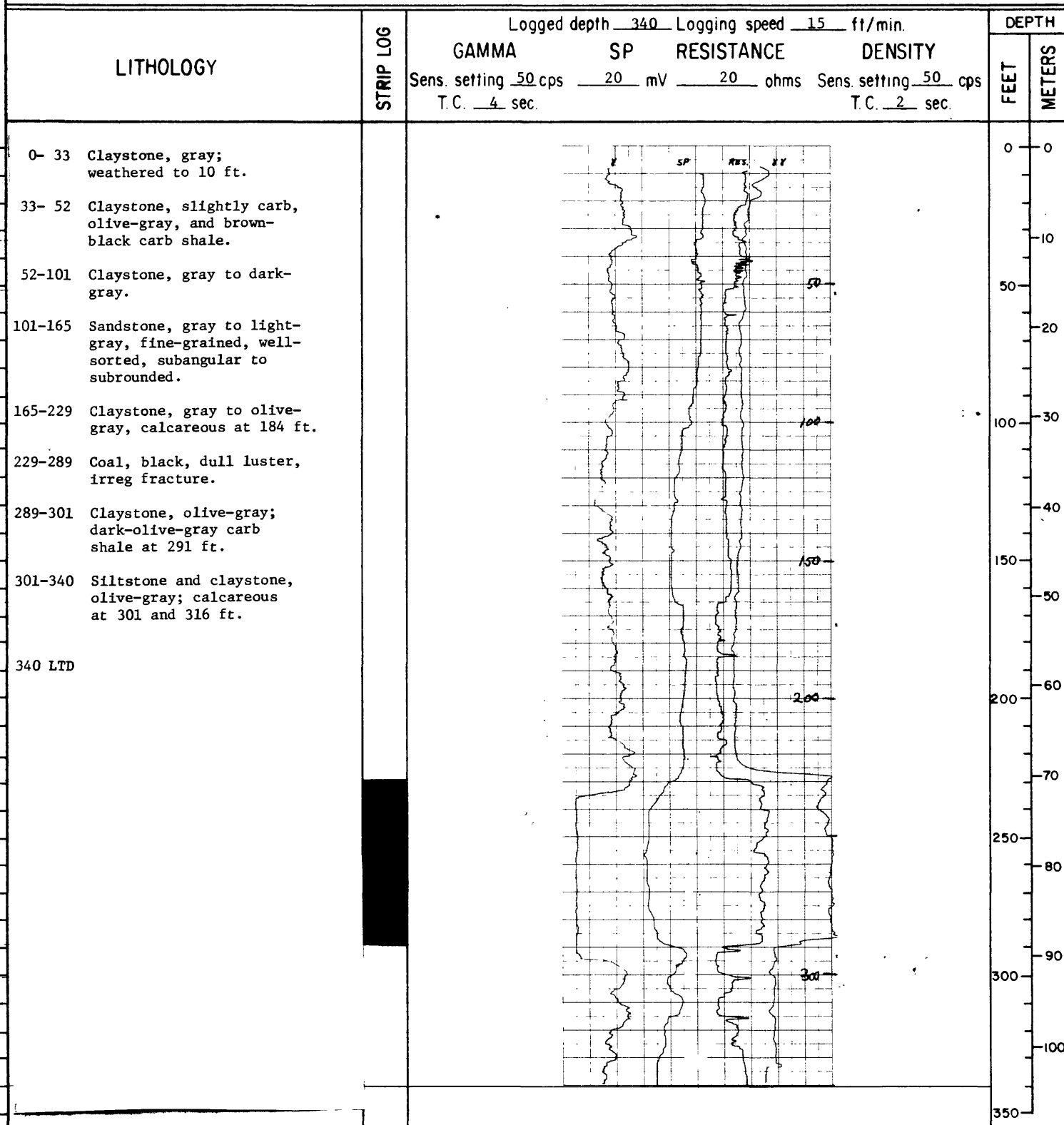
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>400</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>--</u> cps <u>10</u>	mV <u>10</u>	ohms <u>10</u>	Sens. setting <u>--</u> cps		
		T.C. <u>--</u> sec.			T.C. <u>--</u> sec.		
359-385 Sandstone, gray, fine-grained, well-sorted, subrounded.						350	
385-400 Siltstone, olive-gray; calcareous at 392 ft.						110	
400 LTD						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-80012
SHEET 1 OF 1

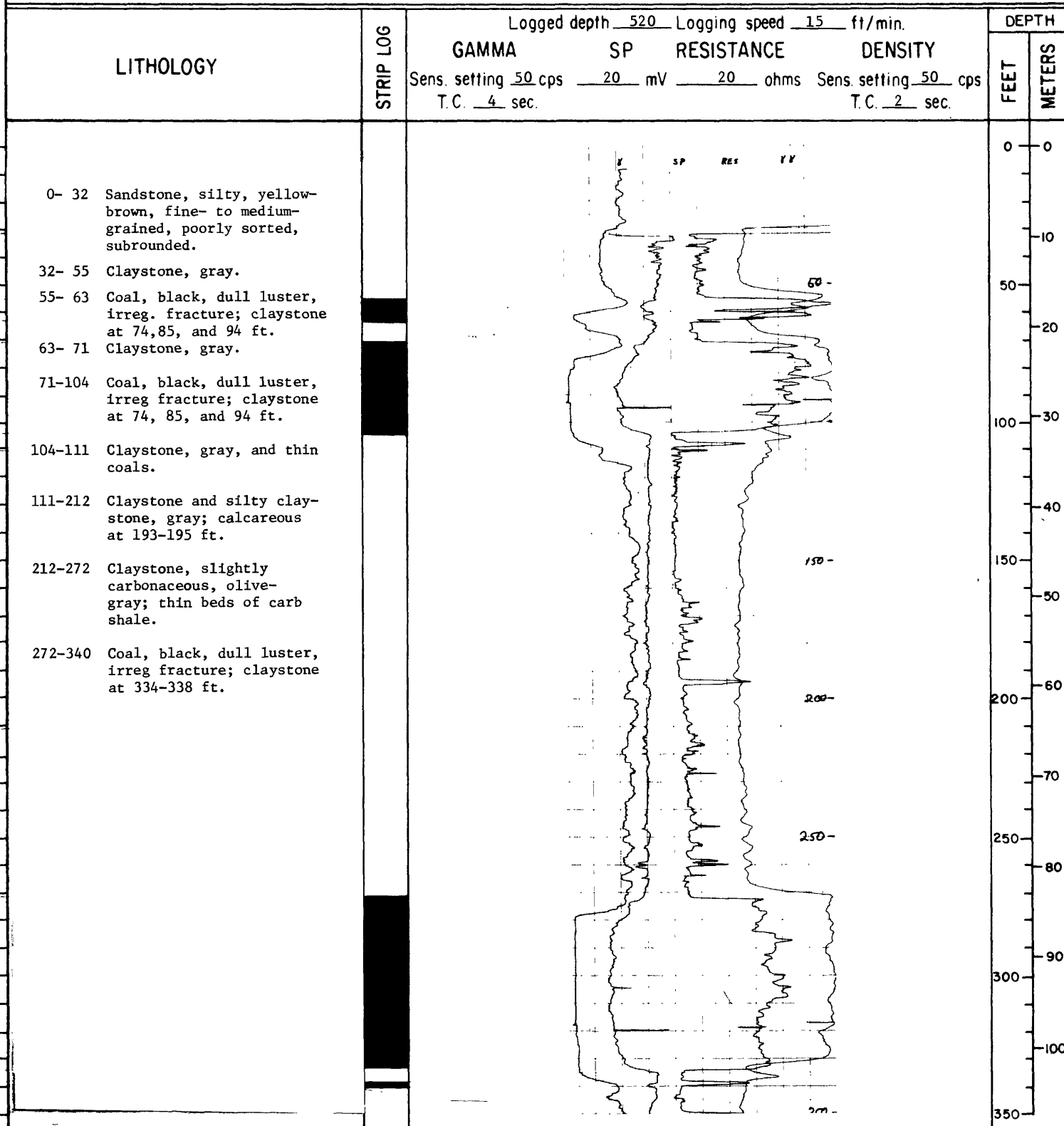
AREA Powder River Basin		QUAD NAME Rawhide School	
DATE STARTED: 6-9-80	DATE COMP: 6-10-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 18 T. 52 N., R. 72 W. FOOTAGE LOC.		300' FNL 300'	1210' FWL 1210'
SIZE AND BIT TYPE: 5" Drag		FOOTAGE ROTARY 340 CORING 0	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4175'
LITHOLOGY RECORDED BY: G.W. Kepler Sr.	GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler Sr.		TOTAL DEPTH 4175'
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80013
SHEET 1 OF 2

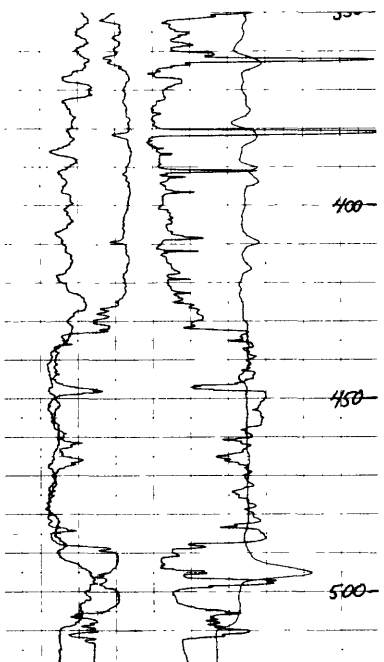
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 6-10-80	DATE COMP: 6-11-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 6 T. 52 N., R. 72 W. FOOTAGE LOC.		330' FSL	2060' FWL
SIZE AND BIT TYPE: 5" Drag		FOOTAGE ROTARY 520 CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	GROUND ELEV. 4255'
LITHOLOGY RECORDED BY: G.W. Kepler Sr.		TOTAL DEPTH 520'	
		DEPTH TO FLUID 32'	
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80013
SHEET 2 OF 2

REMARKS:

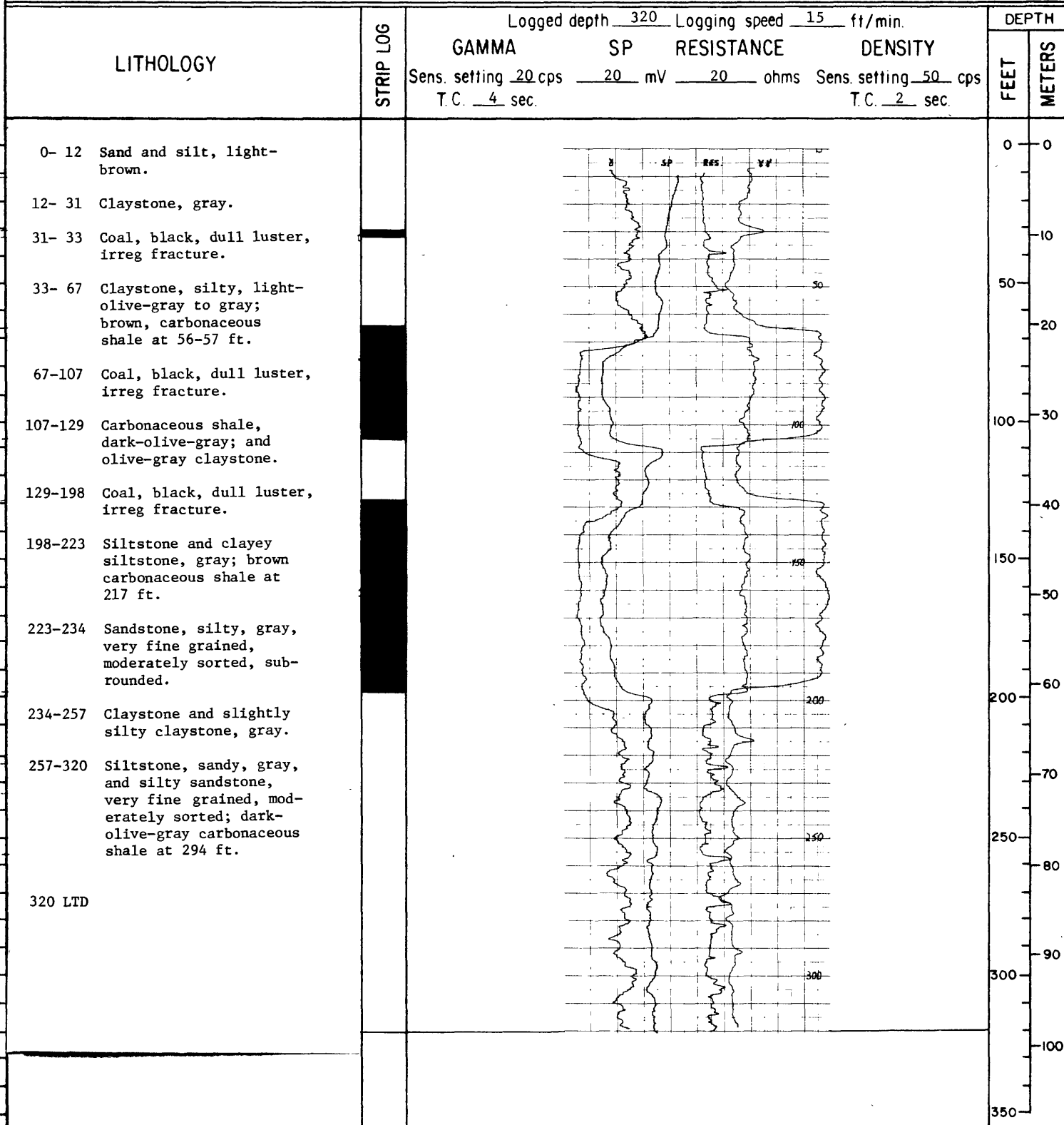
LITHOLOGY	STRIP LOG	Logged depth <u>520</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec		
340-432 Claystone, slightly carbonaceous, olive-gray; calcareous, sandy siltstone at 350, 362, 381-382, and 391 ft.						350	
						400	
432-489 Sandstone, gray, fine to coarse-grained, moderately to poorly sorted, subrounded to angular.						450	
489-505 Claystone, gray; brown-black bone coal at 496-499 ft.						500	
505-513 Sandstone, fine to medium-grained, poorly sorted, subangular.						520	
513-520 Claystone, gray.						550	
520 LTD						600	
						650	
						700	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80014

SHEET 1 OF 1

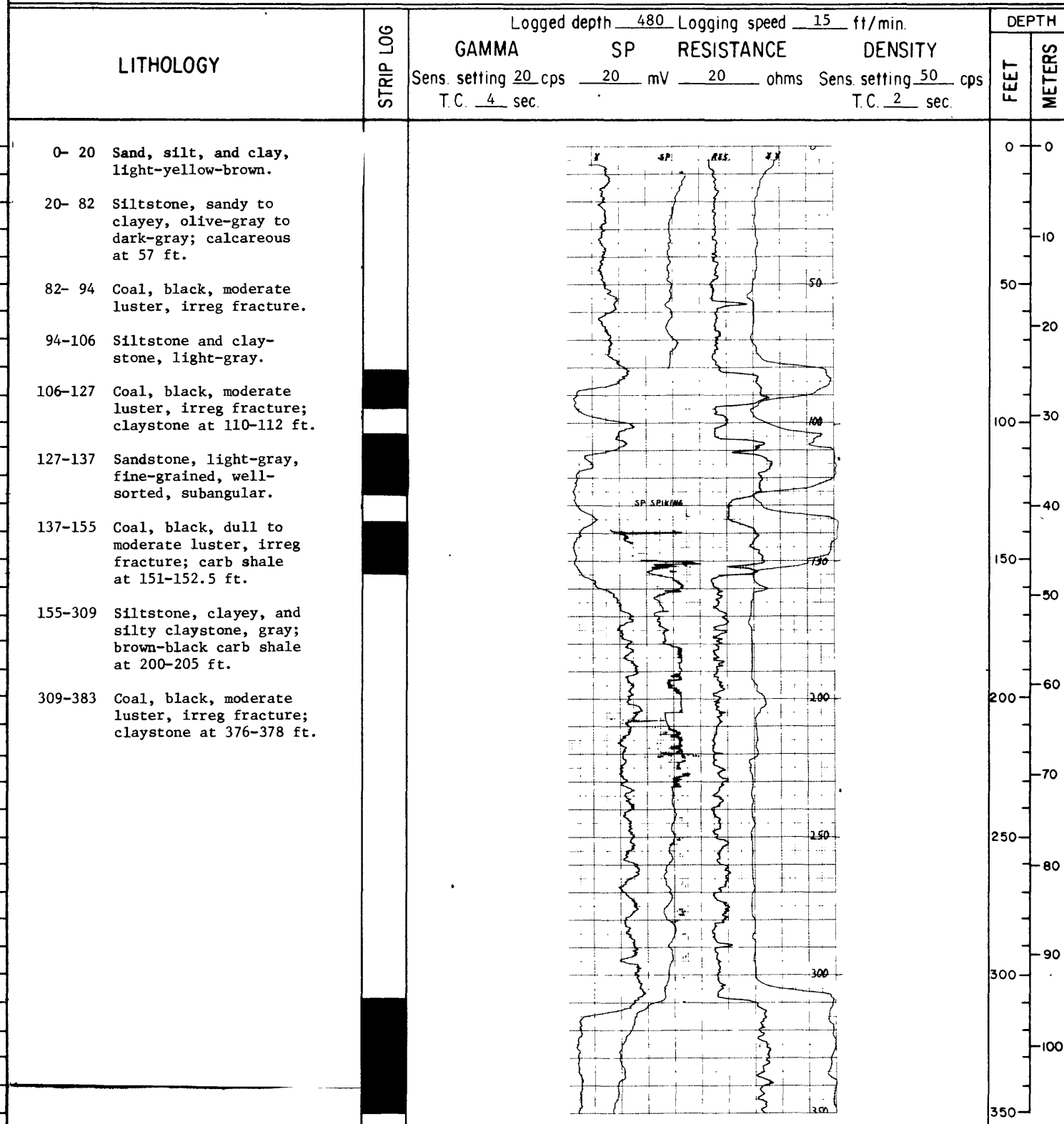
AREA Powder River Basin		QUAD NAME Rawhide School	
DATE STARTED: 6-11-80	DATE COMP: 6-12-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 17 T. 52 N., R. 72 W. FOOTAGE LOC.		2110' FSL	FEL 1500' FSL
SIZE AND BIT TYPE: 5" Drag		FOOTAGE ROTARY 320 CORING 112.3	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	GROUND ELEV. 4120'
LITHOLOGY RECORDED BY: G.W. Kepler Sr.		TOTAL DEPTH 320'	
		DEPTH TO FLUID 0'	
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80015
SHEET 1 OF 2

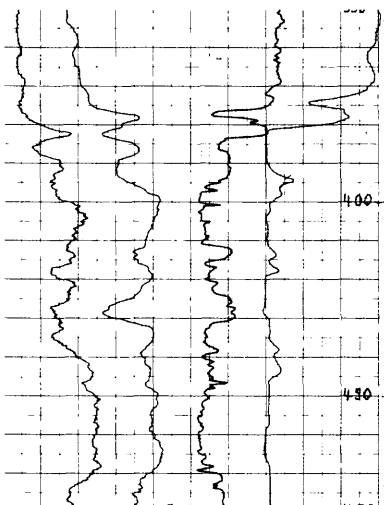
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 6-19-80	DATE COMP: 6-20-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 25 T. 53 N., R. 73 W. FOOTAGE LOC.		2250' FSL	1610' FSL GROUND ELEV. 4155'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 480 CORING 78.8	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	TOTAL DEPTH 480'
LITHOLOGY RECORDED BY: R.J. Noah		GEOPHYSICAL LOGS RECORDED BY: R.J. Noah	
REMARKS: SP spiking 80-150'			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80015
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>480</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>20</u> cps	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps		
		T.C. <u>4</u> sec.			T.C. <u>2</u> sec.		
383-480 Claystone and siltstone, light-gray.						350	
480 LTD						400	
						450	
						500	
						550	
						600	
						650	
						700	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80016
SHEET 1 OF 2

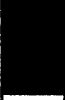

AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 6-22-80	DATE COMP: 6-23-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 25 T. 53 N., R. 73 W. FOOTAGE LOC.		980' FNL FSL	810' FEL FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 380 CORING 0	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4090'
LITHOLOGY RECORDED BY: R.J. Noah	GEOPHYSICAL LOGS RECORDED BY: R.J. Noah		TOTAL DEPTH 380'
REMARKS: SP repositioned to right at 0-50 and 293 ft.			

LITHOLOGY	STRIP LOG	Logged depth 380' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 20 cps T.C. 4 sec.	20 mV	50 ohms	Sens. setting 50 cps T.C. 2 sec.		
0- 11 Sand and silt, yellow-brown.						0	0
11- 39 Clinker, red; black ash at 38-39 ft.							10
39- 72 Siltstone, sandy, light-gray and brown.						50	50
72- 86 Coal, black, dull luster, irreg fracture; claystone at 82-84 ft.						20	20
86-112 Siltstone, dark-gray; coal at 91-92 ft.							30
112-134 Sandstone, silty, and sandy siltstone, light-gray, very fine grained, well-sorted, subrounded.						100	100
134-230 Siltstone, clayey, gray to light-gray.							40
230-252 Sandstone, light-gray, fine- to very fine grained, moderately sorted, subrounded.						150	150
252-296 Siltstone, slightly carbonaceous, light-gray to brownish-gray; brown-black bone coal at 276-280 ft.						200	200
296-373 Coal, black, dull luster, irreg fracture; claystone at 363-367 ft.						250	250
						300	300
						350	350

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80016
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>380</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>20</u> cps	<u>20</u> mV	<u>50</u> ohms	Sens. setting <u>50</u> cps		
		T.C. <u>4</u> sec.			T.C. <u>2</u> sec.		
373-380 Siltstone, clayey, gray.						350	
380 LTD						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-80017

SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 6-24-80	DATE COMP: 6-24-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 32 T. 53 N., R. 72 W. FOOTAGE LOC.		2350' FSL	1400' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 320' CORING 0	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4190'
LITHOLOGY RECORDED BY: R.J. Noah		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: R.J. Noah			
REMARKS:			

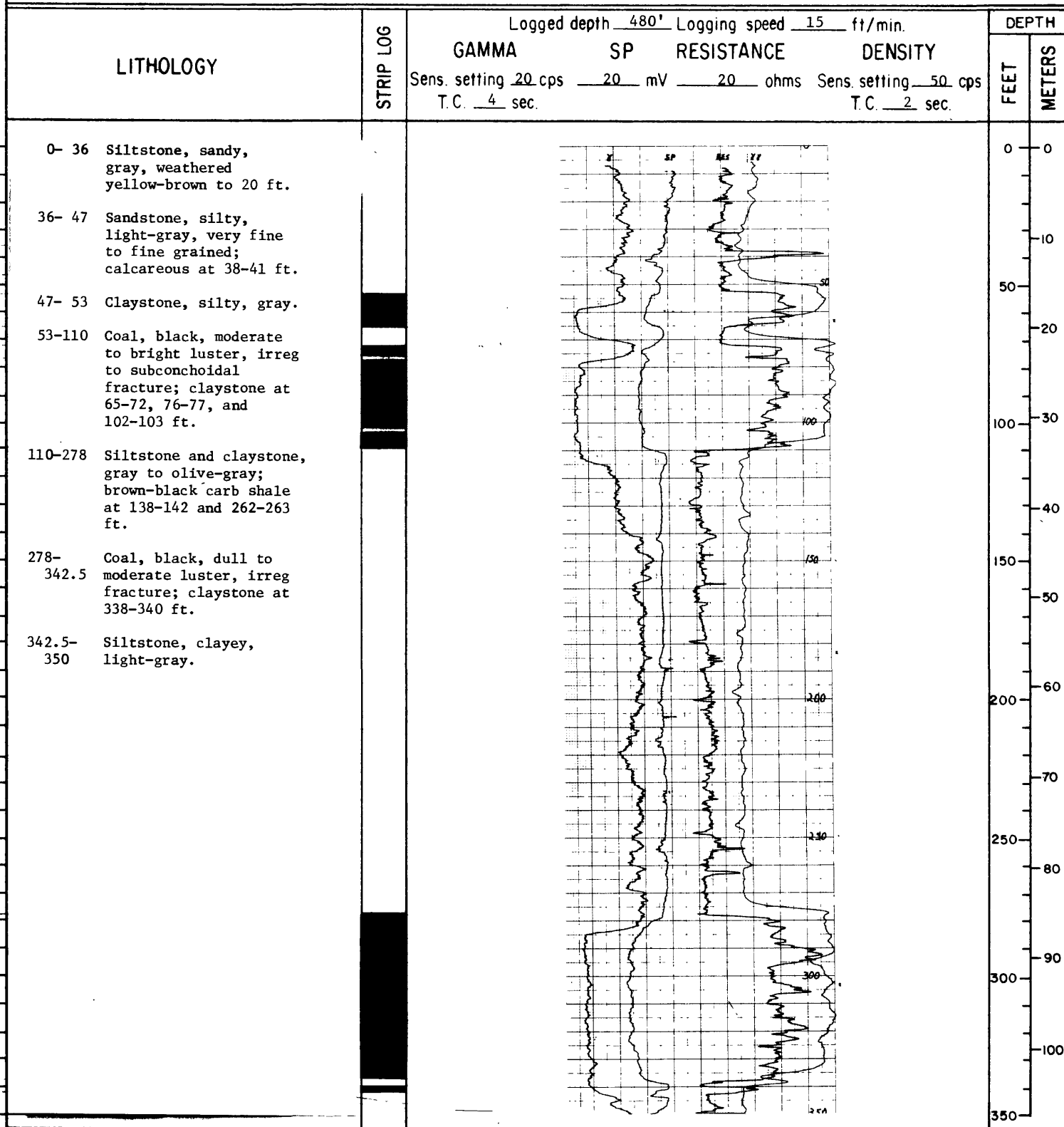
LITHOLOGY	STRIP LOG	Logged depth 320' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps	20 mV	20 ohms	Sens. setting 50 cps		
		T.C. 4 sec.			T.C. 2 sec.		
0- 12 Sand, silt, and clay, yellow-brown.						0	0
12- 28 Siltstone, carbonaceous, light-brown, and brown carbonaceous shale.							
28- 38 Coal, black, moderate luster, subconchoidal fracture; siltstone at 33-37 ft.						10	
38- 78 Sandstone and silty sandstone, light-gray, very fine grained, moderately sorted, sub-rounded, calcareous at 50-52 ft.						50	
78- 89.5 Siltstone, carbonaceous, dark-olive-gray, and olive-brown carb shale.						20	
89.5- 133 Coal, black, moderate luster, irreg fracture; claystone at 93-95 and 129-131 ft.						100	30
133-163 Siltstone, clayey, carbonaceous, olive-gray.						150	50
163-172 Siltstone, sandy, gray.						200	60
172-189 Claystone, silty, calcareous at 178 and 184 ft.						250	80
189-198 Carbonaceous shale, brown-black.						300	90
198-266 Coal, black, moderate to dull luster, irreg fracture; claystone at 249-255 ft.						350	100
266-296 Claystone, silty, slightly carb, olive-gray.							
296-320 Siltstone and silty claystone, light-gray; calcareous at 296, 310, and 316 ft.							
320 LTD							

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80018

SHEET 1 OF 2

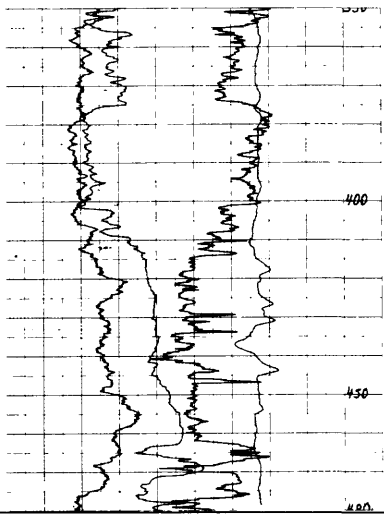
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 6-25-80	DATE COMP: 6-25-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 1 T.52 N., R. 73 W. FOOTAGE LOC.		2300' FSL	1600' FEL
SIZE AND BIT TYPE: 5" Drag		FOOTAGE	
DRILLING AGENCY: USGS/CD/NCR		ROTARY 480'	CORING 0
LITHOLOGY RECORDED BY: R.J. Noah		DRILL TYPE: Portadrill 524	DEPTH TO FLUID 0'
REMARKS:		GEOPHYSICAL LOGS RECORDED BY: R.J. Noah	



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80018
SHEET 2 OF 2

REMARKS:

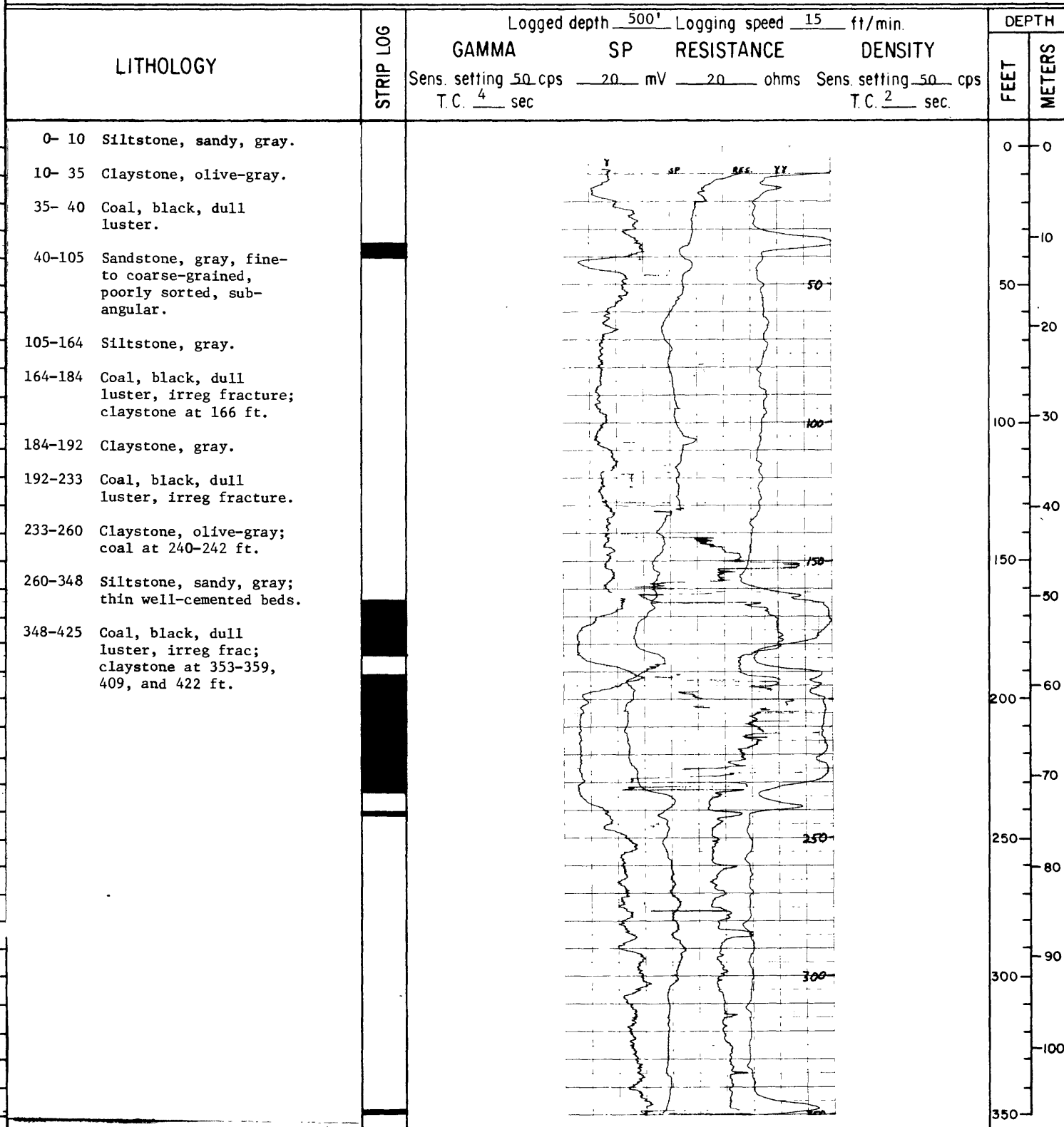
LITHOLOGY	STRIP LOG	Logged depth <u>480'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>20</u> cps	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps		
		T.C. <u>4</u> sec.			T.C. <u>2</u> sec.		
350-374 Sandstone, silty, gray, very fine grained, moderately sorted, subrounded to subangular.						350	
374-401 Sandstone, gray, very fine grained, well-sorted, subrounded.						110	
401-414 Sandstone, silty, very fine grained, moderately sorted, subrounded.						120	
414-462 Siltstone, clayey, gray to olive-gray; carbonaceous shale at 429, 434, and 446 ft.						400	
462-480 Sandstone, gray, very fine grained, well-sorted, subrounded; claystone at 468-470 ft.						450	
480 LTD						480	
						500	
						150	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80019

SHEET 1 OF 2

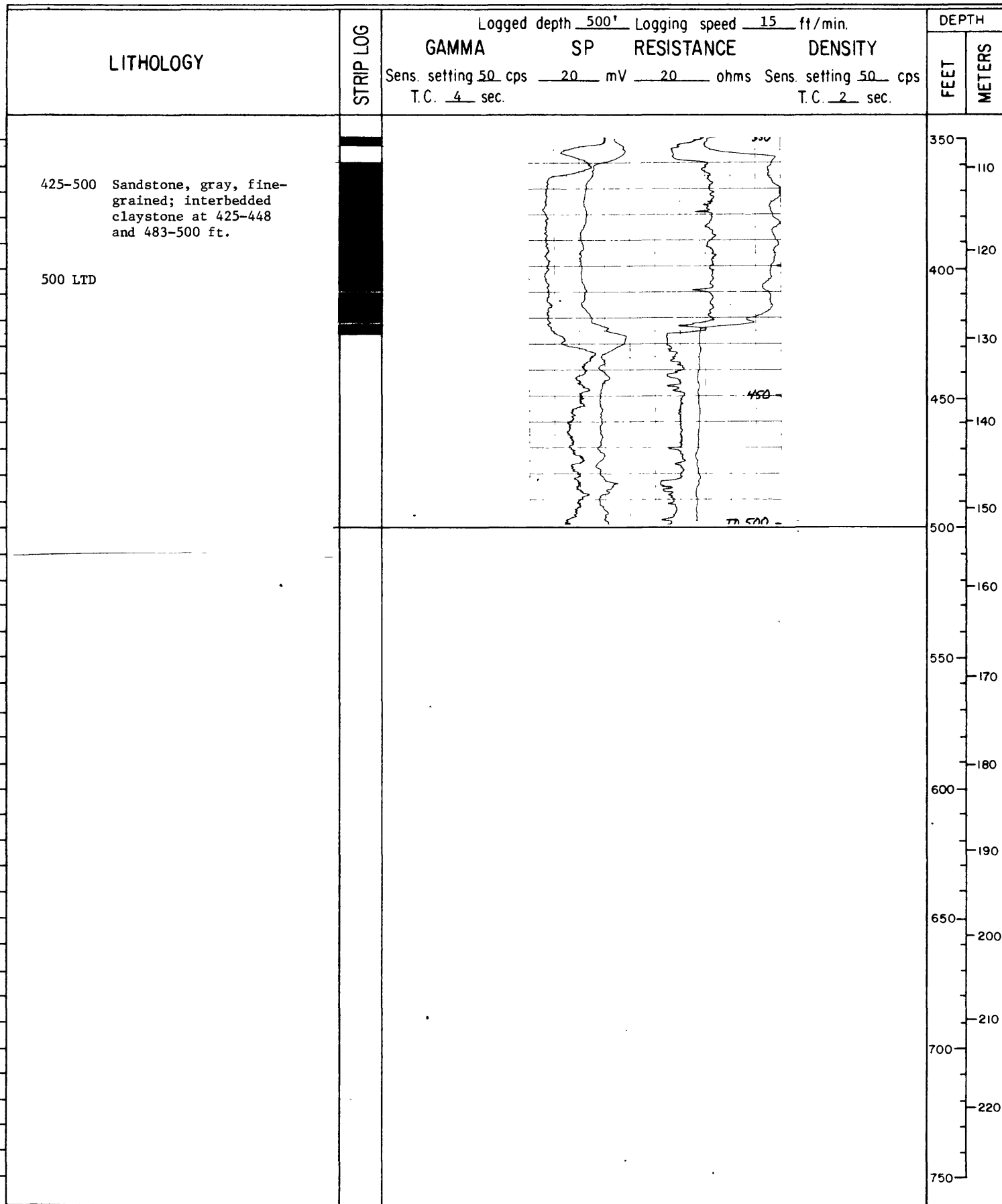
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 7-1-80	DATE COMP: 7-1-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 2 T. 52 N., R. 73 W. FOOTAGE LOC.		420' FNL FSL	1630' FEL FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 500' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4200'
LITHOLOGY RECORDED BY: R.J. Noah	GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.		TOTAL DEPTH 500'
REMARKS: No Resistance log above 142 ft Resistance log spiking.			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80019
SHEET 2 OF 2

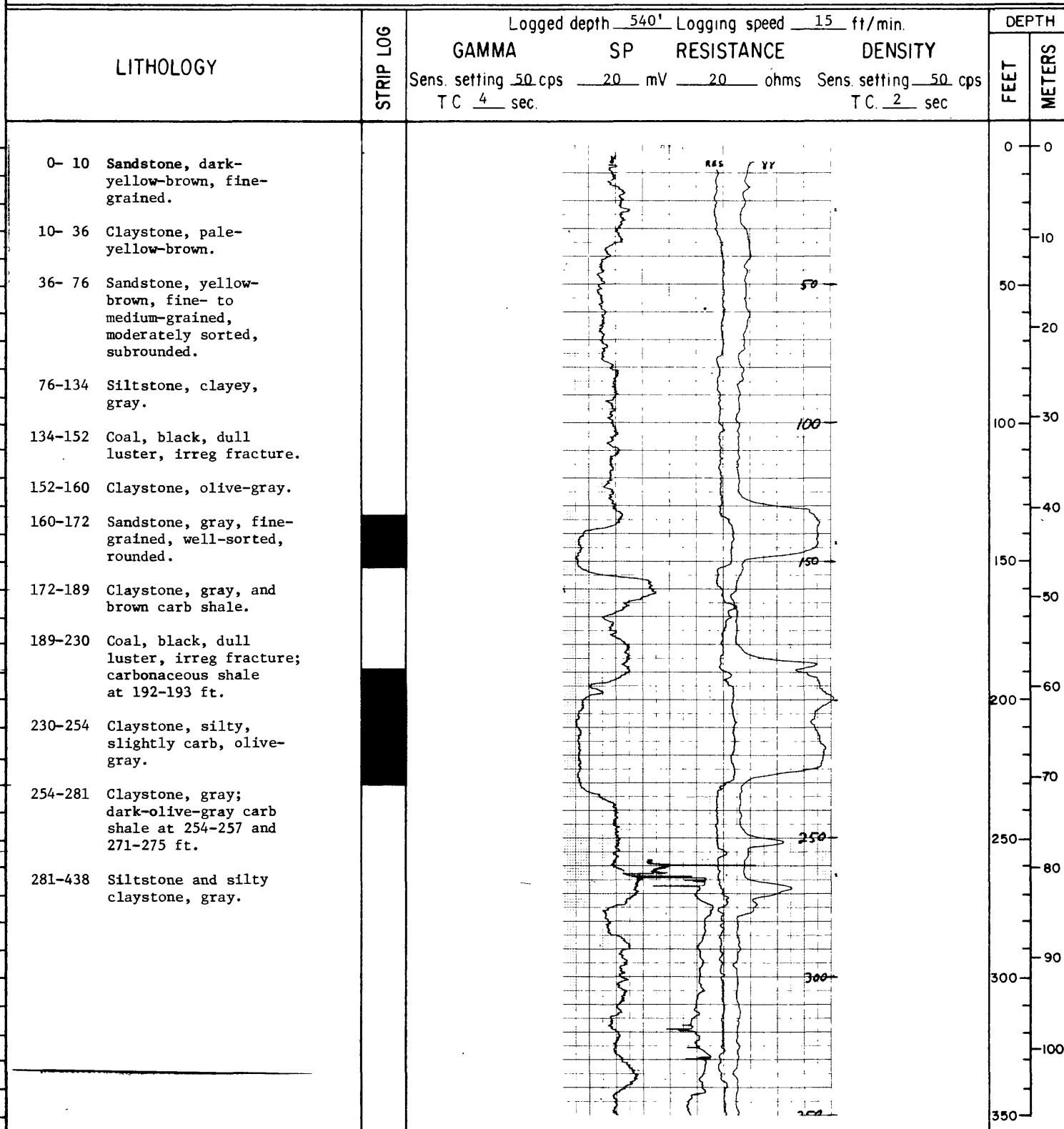
REMARKS:



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80020
SHEET 1 OF 2

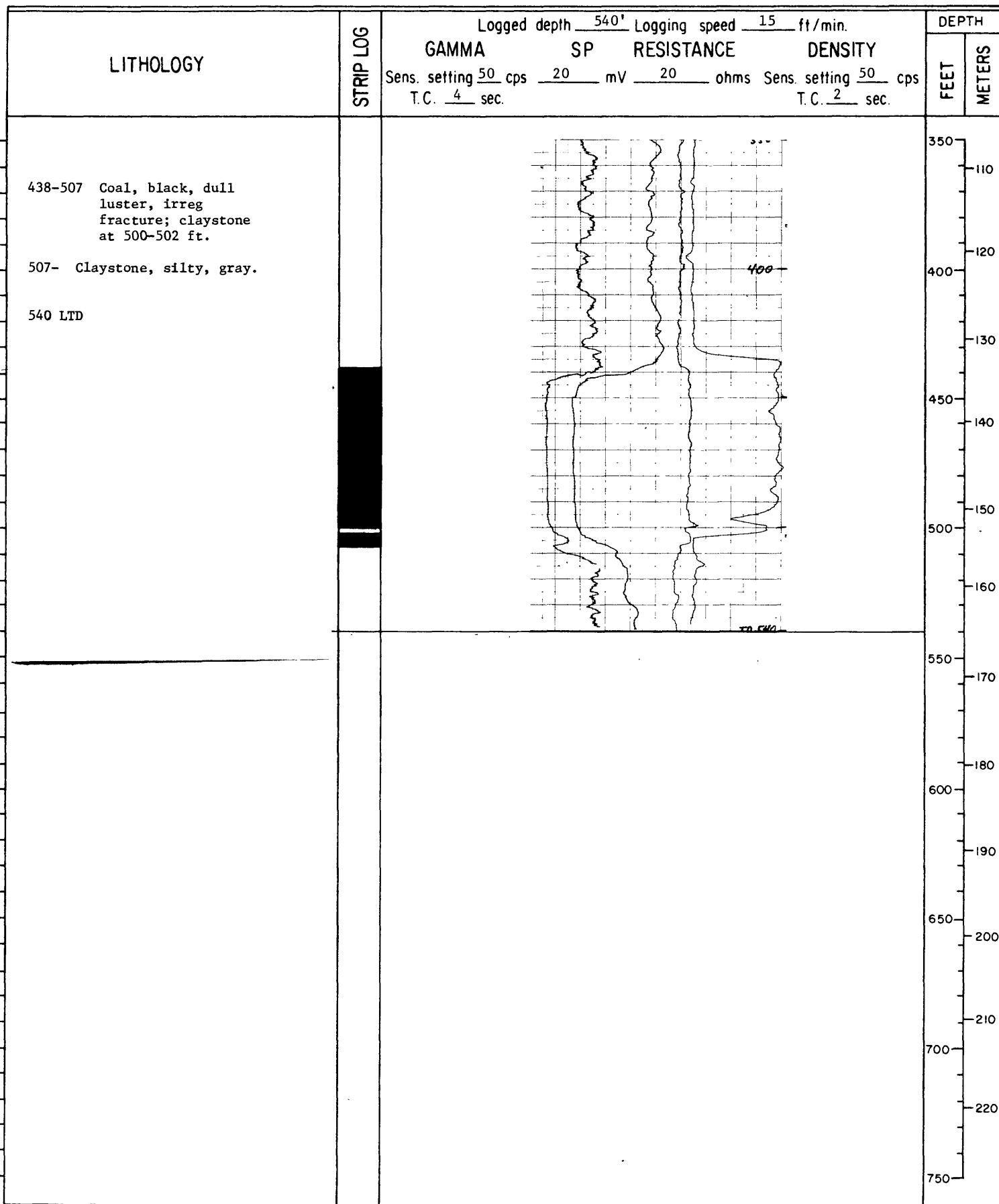
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 7-2-80	DATE COMP: 7-2-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 35 T. 53 N., R. 73 W. FOOTAGE LOC.		1250' FSL	2380' FEL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 540 CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS: SP malfunction logged interval 260-540'			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80020
SHEET 2 OF 2

REMARKS:



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80021

SHEET 1 OF 2

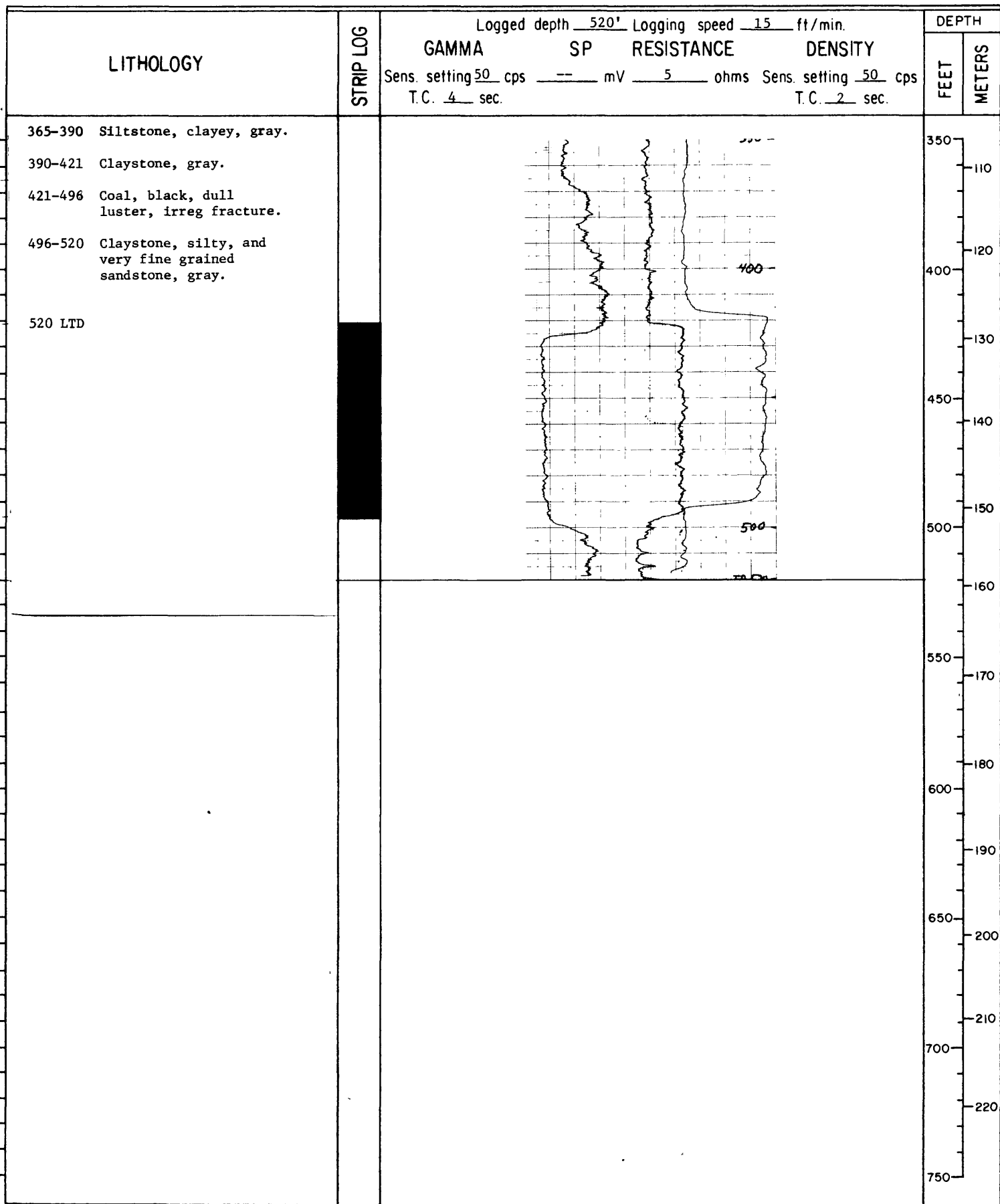
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 7-3-80		DATE COMP: 7-3-80	
COUNTY Campbell		STATE Wyoming	
LOCATION: SEC. 34 T. 53 N., R. 73 W. FOOTAGE LOC.		750' ^{FSL} 150' ^{FEL} 520' GROUND ELEV. 4170'	
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 520' CORING 0 TOTAL DEPTH 520'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS:			

LITHOLOGY	STRIP LOG	Logged depth 520' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps -- mV 5 ohms Sens. setting 50 cps T.C. 4 sec. T.C. 2 sec.					
0- 20 Sand, silt, and clay, pale-yellow-brown.						0	0
20- 40 Sandstone, yellow-brown, fine- to medium-grained, moderately sorted, subrounded.						10	
40- 47.5 Claystone, gray.						50	
47.5- 62 Coal, black, dull luster, irreg fracture.						20	
62-142 Claystone, slightly carbonaceous, gray to dark-olive-gray; very fine grained calcareous sandstone at 99-101 ft.					100 -	100	30
142-186 Coal, black, dull luster, irreg fracture; claystone at 145-149.5 and 166-170 ft.						40	
186-207 Claystone, silty, light-olive-gray.						150	
207-220 Claystone, gray; coal at 207-211 and 218-220 ft.						50	
220-230 Claystone, gray.					200 -	200	60
230-255 Sandstone and silty sandstone, gray, medium-grained, moderately sorted, subangular to angular.						70	
255-282 Claystone, slightly silty, gray.					250 -	250	80
282-294 Siltstone, slightly sandy, gray.							
294-310 Claystone, silty, gray.						90	
310-365 Sandstone, gray, fine- to medium-grained, moderately sorted, sub-rounded.					300 -	300	90
						100	
						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80021
SHEET 2 OF 2

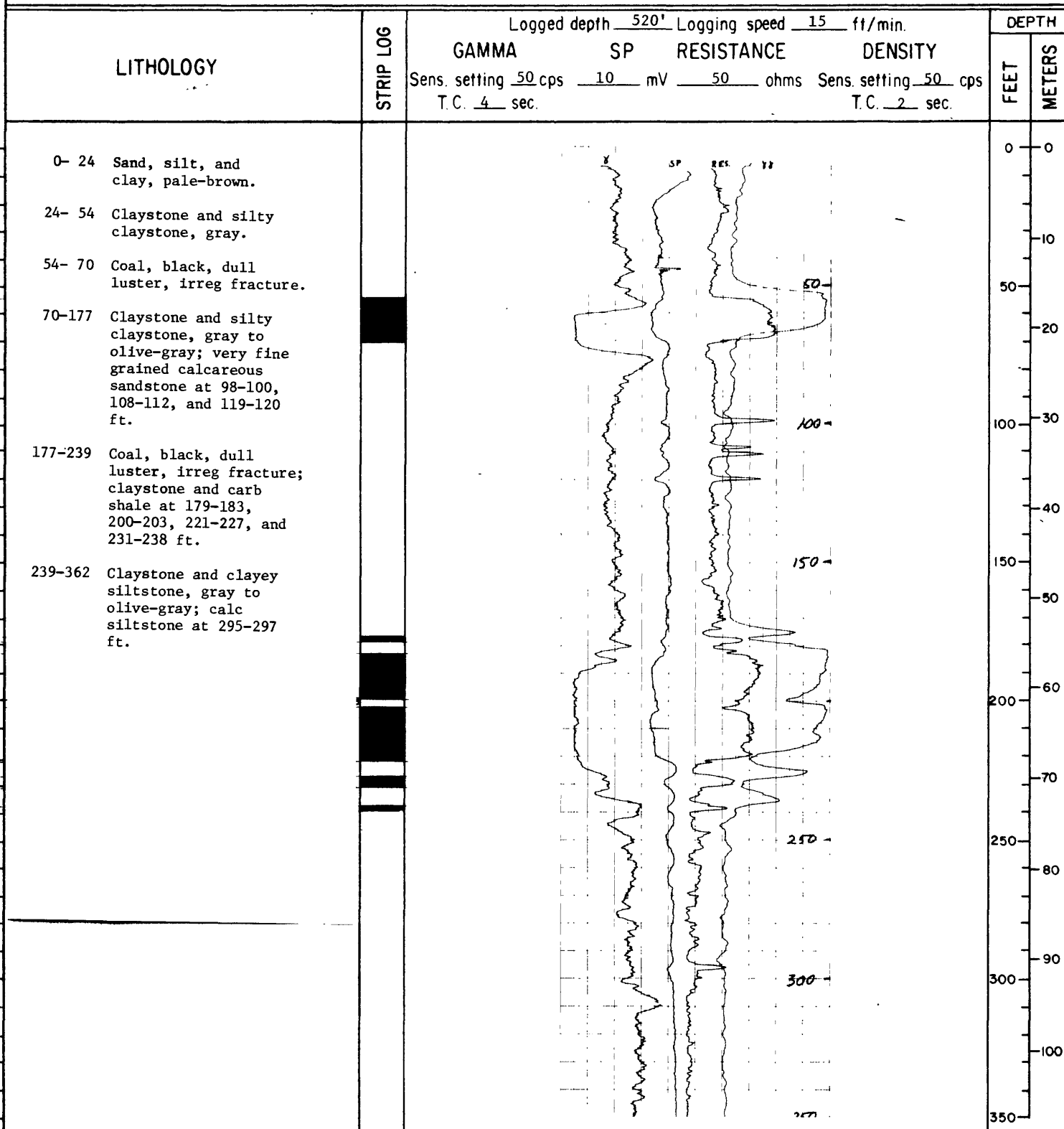
REMARKS:



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80022
SHEET 1 OF 2

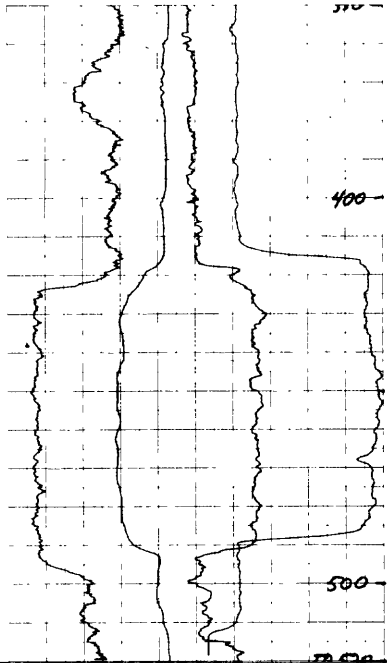
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 7-3-80	DATE COMP: 7-4-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 3 T. 52 N., R. 73 W. FOOTAGE LOC.		400' FNL	2170' FEL
SIZE AND BIT TYPE: 4 3/4" Drag		GROUND ELEV. 4140'	
		TOTAL DEPTH 520'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80022
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>520'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>10</u> mV	<u>50</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
362-376 Siltstone, gray.						350	
376-418 Claystone, gray to olive-gray.						110	
418-492 Coal, black, dull luster, irreg fracture.						120	
492-520 Claystone, gray.						400	
520 LTD						130	
						450	
						140	
						150	
						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	

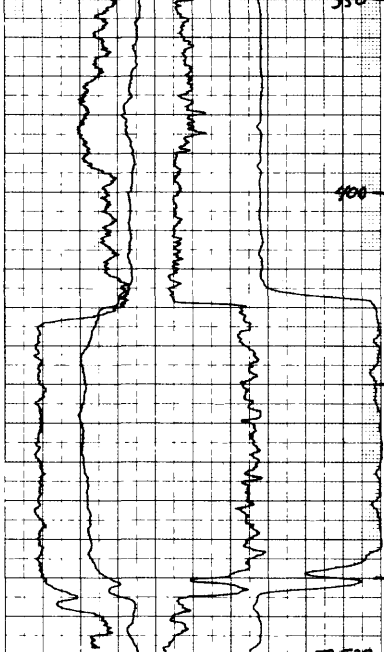
HOLE NO. CD-80023
SHEET 1 OF 2

LITHOLOGY	STRIP LOG	Logged depth <u>520'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>50</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
0- 15 Sand, silt, and clay, pale-yellow-brown.						0	0
15- 26 Claystone, pale-yellow-brown.						10	
26- 77 Sandstone, light-gray, medium- to coarse-grained, moderately to poorly sorted, angular to subangular.						50	
77- 83 Claystone, olive-gray.						20	
83- 99 Coal, black, dull luster, irreg fracture.						100	
99-106 Claystone, gray.							
106-147 Siltstone, clayey to sandy; calcareous at 109-111 ft.						40	
147-187 Coal, black, dull luster, irreg fracture; claystone at 150-152, 167-169, and 179-180 ft.						150	
187-212 Claystone, silty, gray.						50	
212-258 Claystone, gray; bone coal at 212-214 and 212-222 ft.						200	
258-276 Siltstone, sandy, gray.		70					
276-303 Sandstone, light-gray, fine- to medium-grained, moderately sorted, rounded.		250					
303-361 Claystone and silty claystone, gray to olive-gray.		300					
		350					

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80023
SHEET 2 OF 2

REMARKS:

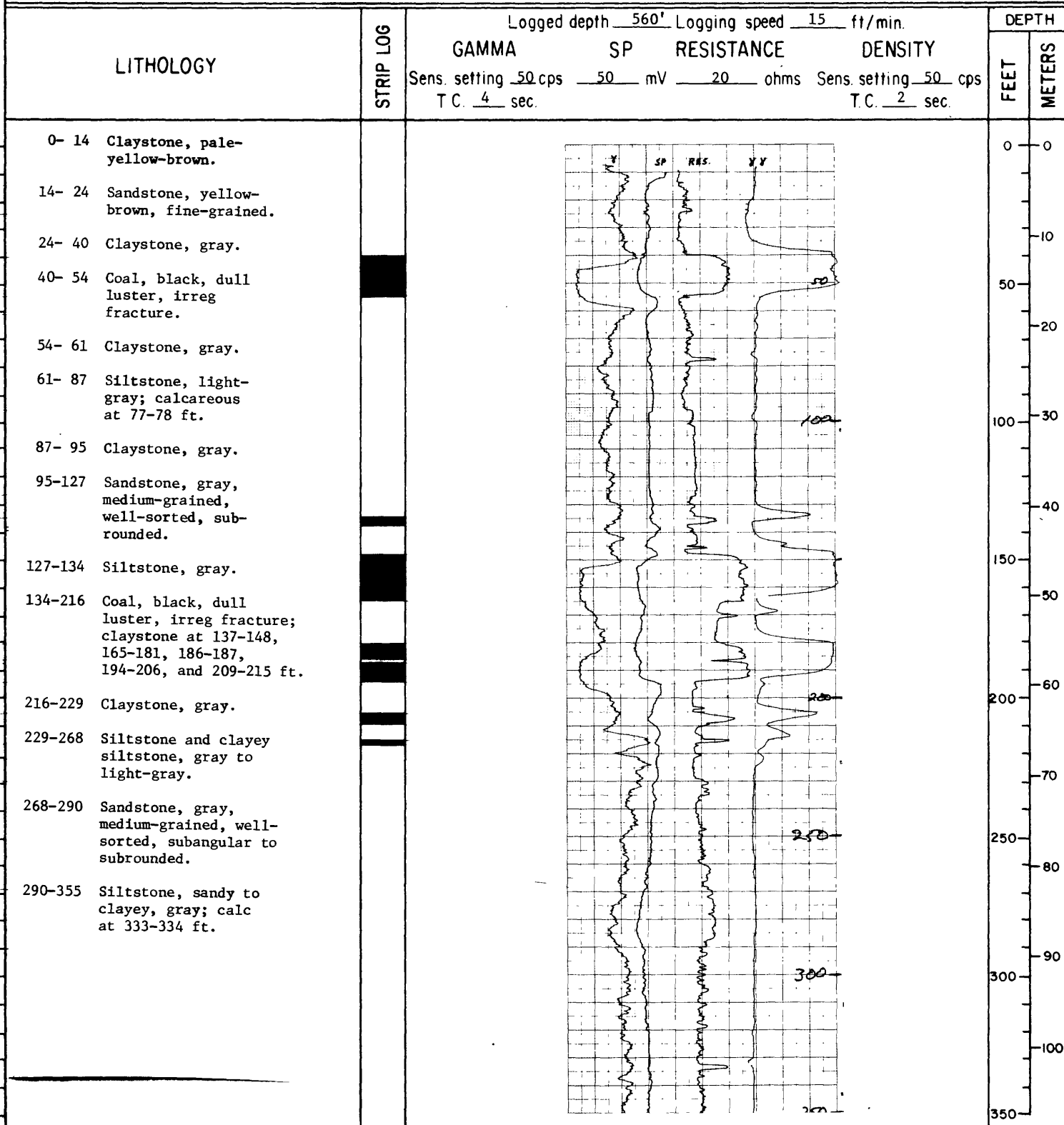
LITHOLOGY	STRIP LOG	Logged depth <u>520'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>50</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
361-390 Siltstone, gray.						350	
390-429 Claystone, gray.						110	
429-505 Coal, black, dull luster, irreg fracture; claystone at 500-501 ft.						120	
505-520 Claystone, gray to olive-gray.						400	
520 LTD						130	
						450	
						140	
						150	
						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80024

SHEET 1 OF 2

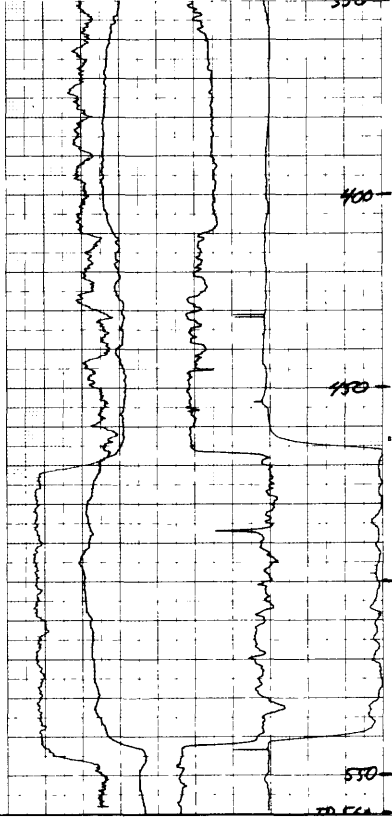
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 7-5-80	DATE COMP: 7-6-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 34 T. 53 N., R. 73 W. FOOTAGE LOC.		290' FSL	2210' FEL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 560' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4150'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.	GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.		TOTAL DEPTH 560'
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-
SHEET 2 OF 2

REMARKS:

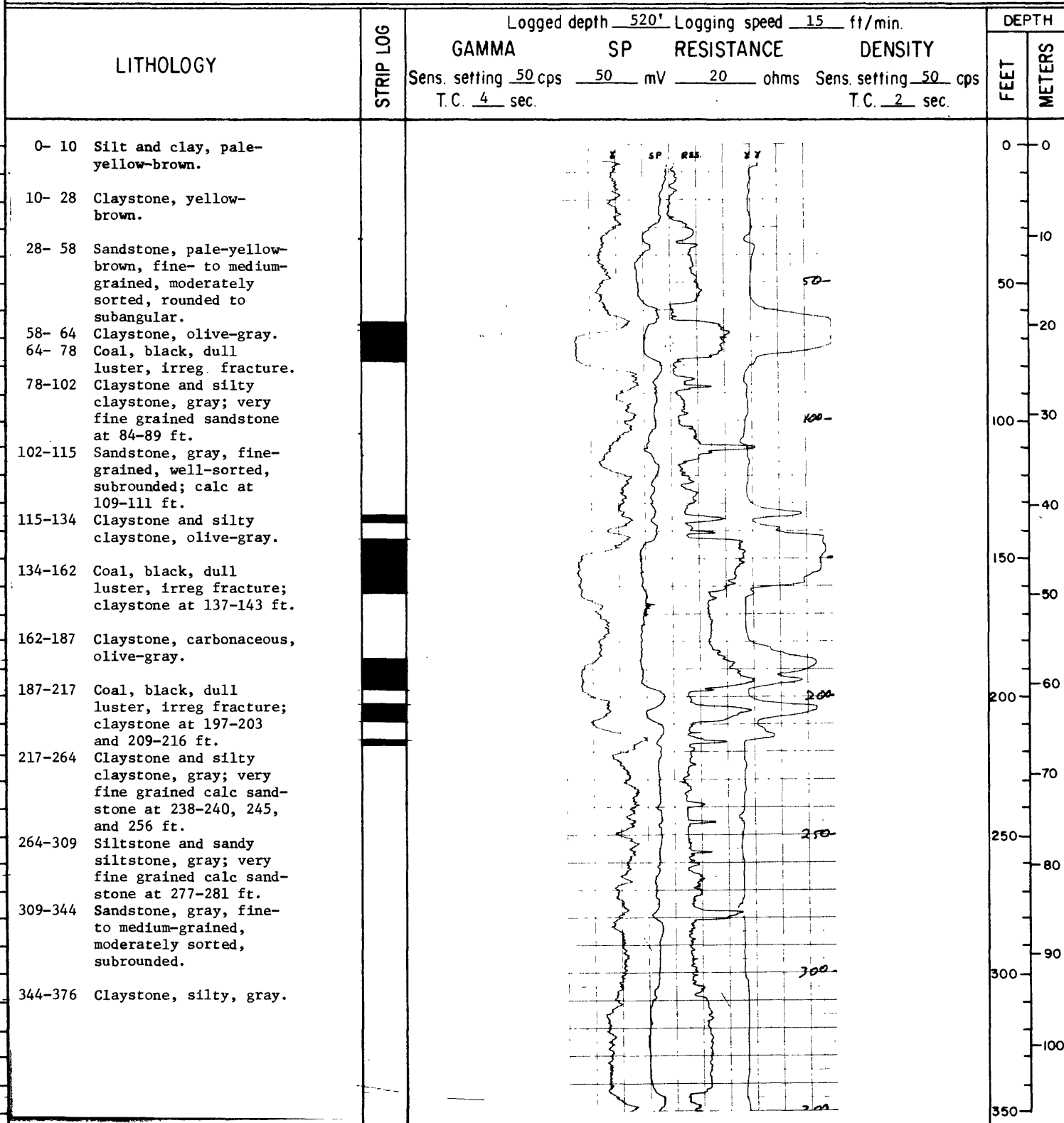
LITHOLOGY	STRIP LOG	Logged depth <u>560'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>50</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
355-410 Sandstone, silty, light-gray, very fine grained, moderately sorted, rounded.						350	
410-467 Siltstone and clayey siltstone, gray.						400	120
467-542 Coal, black, dull luster, irreg fracture; claystone at 486-487 ft.						450	130
542-560 Claystone, gray.						500	140
560 LTD						550	170
						600	180
						650	190
						700	200
						750	220

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80025

SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 7-6-80	DATE COMP: 7-7-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 34 T. 53 N., R. 73 W. FOOTAGE LOC.		2550' FSL	FEL 700' FSL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 520' CORING 0	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4170'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

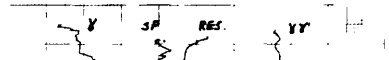
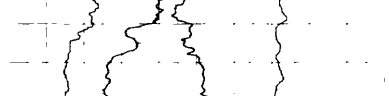
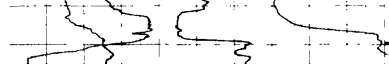
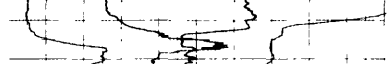

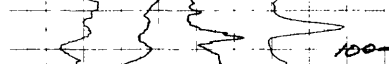
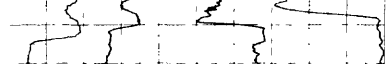
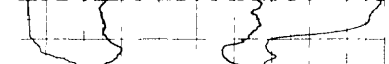
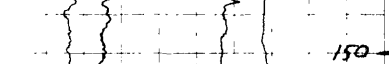
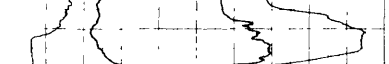
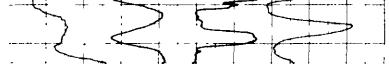


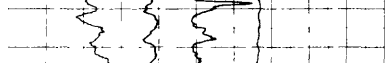
HOLE NO. CD-80025
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>520'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>50</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
376-395 Sandstone, silty, gray, very fine grained, moderately sorted, rounded						350	
395-428 Claystone, gray to olive-gray.						400	110
428-508 Coal, black, dull luster, irregular fracture.						450	120
508-520 Claystone, gray; very fine grained; calcareous sandstone at 518-519 ft.						500	130
520 LTD						550	140
						600	150
						650	160
						700	170
						750	180
							190
							200
							210
							220

HOLE NO. CD-80026
SHEET 1 OF 2

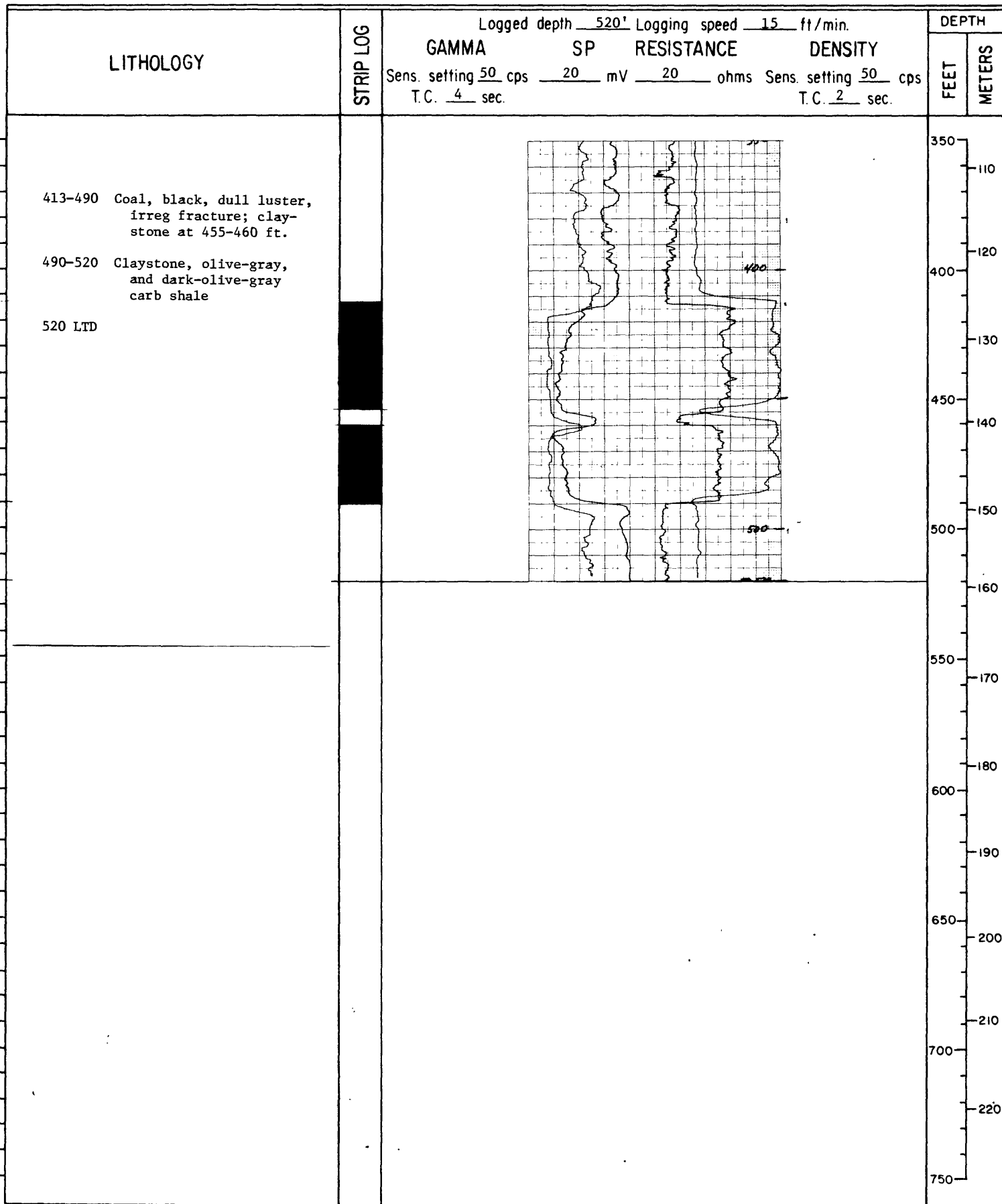
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 7-7-80	DATE COMP: 7-8-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 34 T. 53 N., R. 73 W. FOOTAGE LOC.		FNL 1050' 131	FEL 1200' 111 GROUND ELEV. 4130'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE	
		ROTARY 520'	CORING 0
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	TOTAL DEPTH 520'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			

LITHOLOGY	STRIP LOG	Logged depth <u>520'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
0- 20 Claystone, pale-yellow-brown.						0	0
20- 42 Sandstone, yellow-brown, fine- to medium-grained, moderately sorted, rounded to subangular.						10	
42- 49 Claystone, pale-brown.						50	
49- 63 Coal, black, dull luster, irregular fracture.						20	
63- 74 Claystone, gray.							
74- 84 Sandstone, gray, very fine to fine-grained; calc at 74, 78-80 ft.						100	30
84- 96 Claystone, gray, and gray-brown carb shale.						40	
96- 131.5 Coal, black, dull luster, irreg fracture; silt-stone at 98-110 ft.						150	40
131.5- 158 Siltstone, gray, and gray-brown carb shale						50	
158-189 Coal, black, dull luster, irreg fracture; clay-stone at 171-177 and 181-188 ft.						200	60
189-287 Claystone and silty claystone, gray to olive-gray; very fine grained calcareous sandstone at 193 and 219 ft.						70	
287-413 Siltstone, sandy, light-gray to olive-gray.						250	80
						300	90
						350	100

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80026
SHEET 2 OF 2

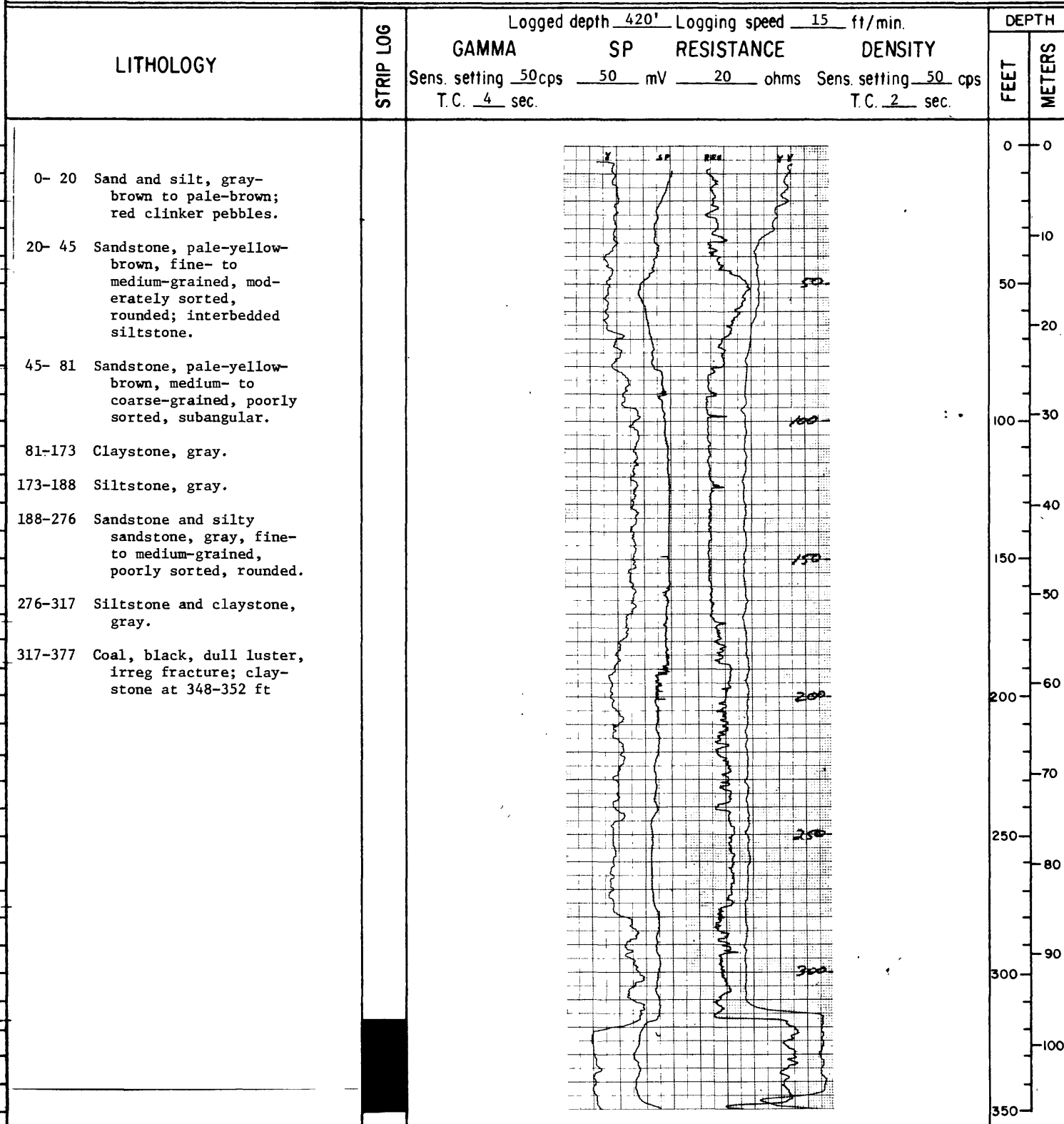
REMARKS:



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80027
SHEET 1 OF 2

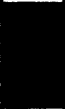

AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 7-8-80	DATE COMP: 7-9-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 22 T. 53 N., R. 73 W. FOOTAGE LOC.		1060' FSL	660' FEL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 420' CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: T.P. Lonnie	
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80027
SHEET 2 OF 2

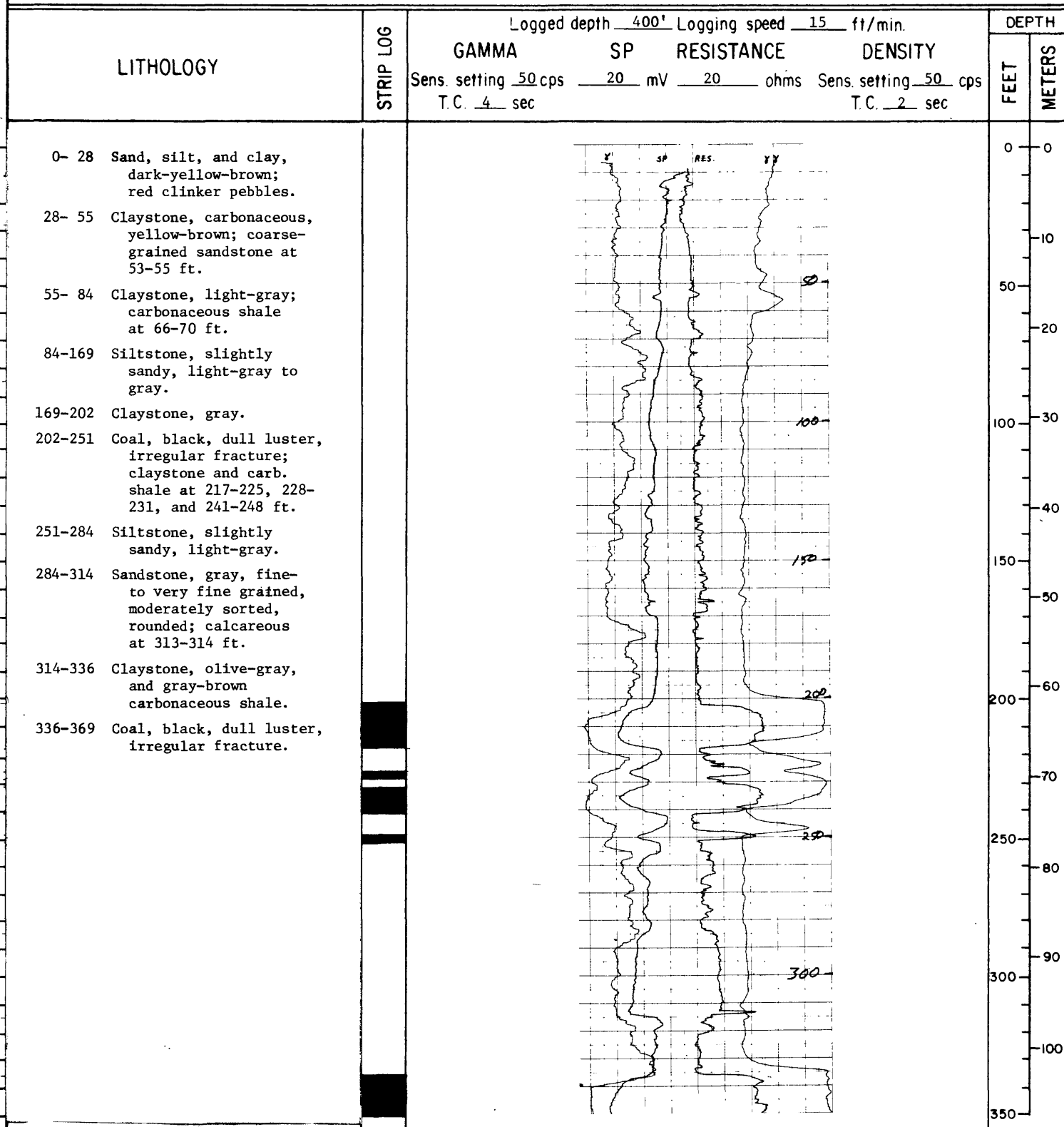
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>420'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>50</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
377-420 Claystone and clayey siltstone, gray; thin coal at 386 ft. 420 LTD						350	110
						400	120
						450	130
						500	140
						550	150
						600	160
						650	170
						700	180
						750	190
							200
							210
							220
							230
							240

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80028
SHEET 1 OF 2

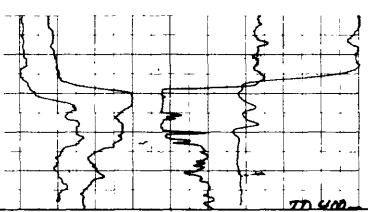
AREA Powder River Basin		QUAD NAME Wildcat	
DATE STARTED: 7-9-80	DATE COMP: 7-10-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 15 T. 53 N., R. 73 W. FOOTAGE LOC.		270' FSL FSL	2075' FWL FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 400' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 3985'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
REMARKS:		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80028
SHEET 2 OF 2

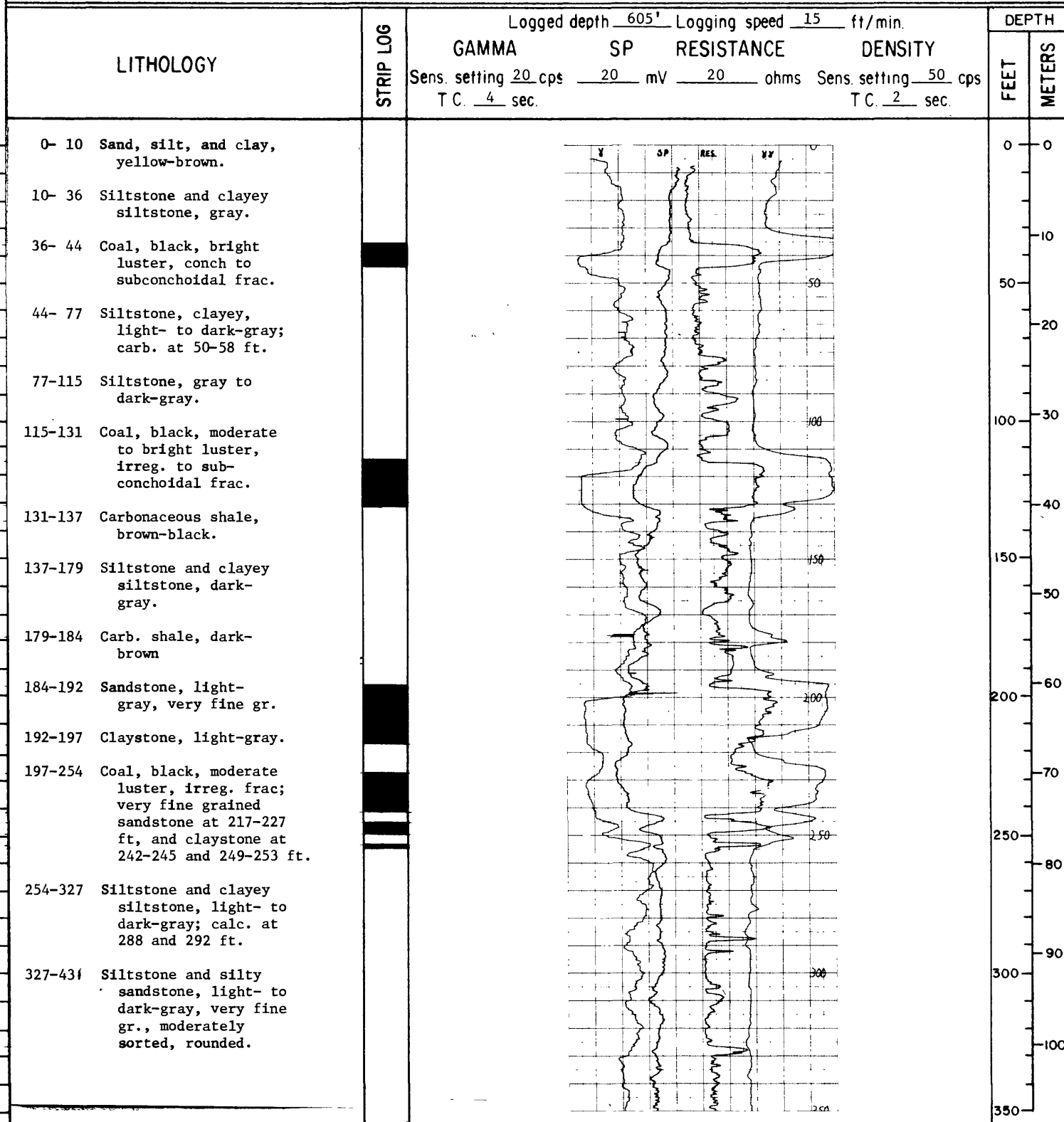
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>400'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps		
		T.C. <u>4</u> sec.			T.C. <u>2</u> sec.		
369-382 Claystone, gray; coal at 376 and 380 ft.						350	
382-400 Sandstone						110	
400 LTD						120	
						400	
						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	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80029
SHEET 1 OF 2

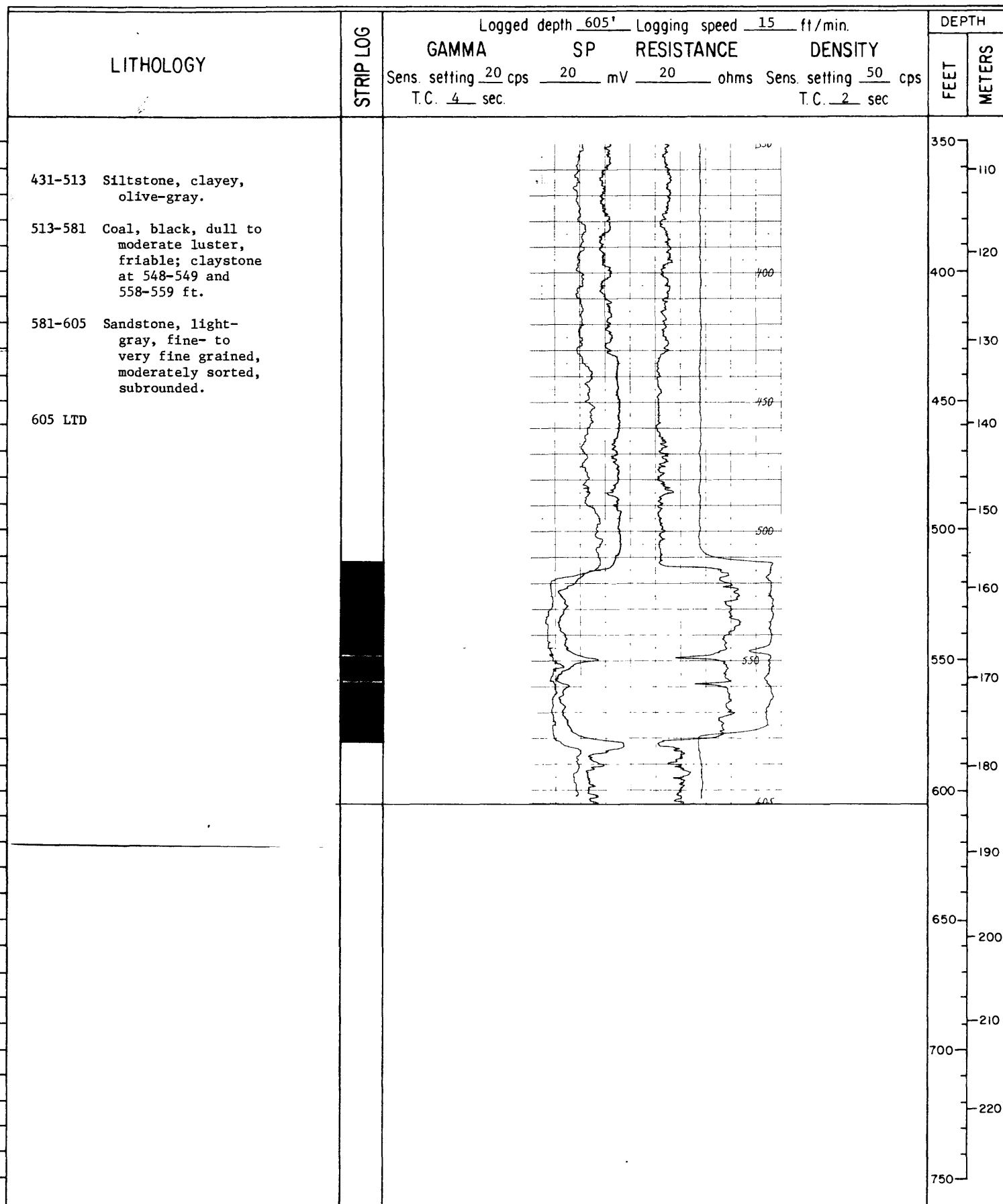
AREA Powder River Basin		QUAD NAME Wildcat	
DATE STARTED: 7-16-80	DATE COMP: 7-16-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 4 T. 52 N., R. 73 W. FOOTAGE LOC.		230' FSL FSL 250' FWL FWL	GROUND ELEV. 4165'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 605' CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	DEPTH TO FLUID 0'
LITHOLOGY RECORDED BY: R.J. Noah		GEOPHYSICAL LOGS RECORDED BY: R.J. Noah	
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80029
SHEET 2 OF 2

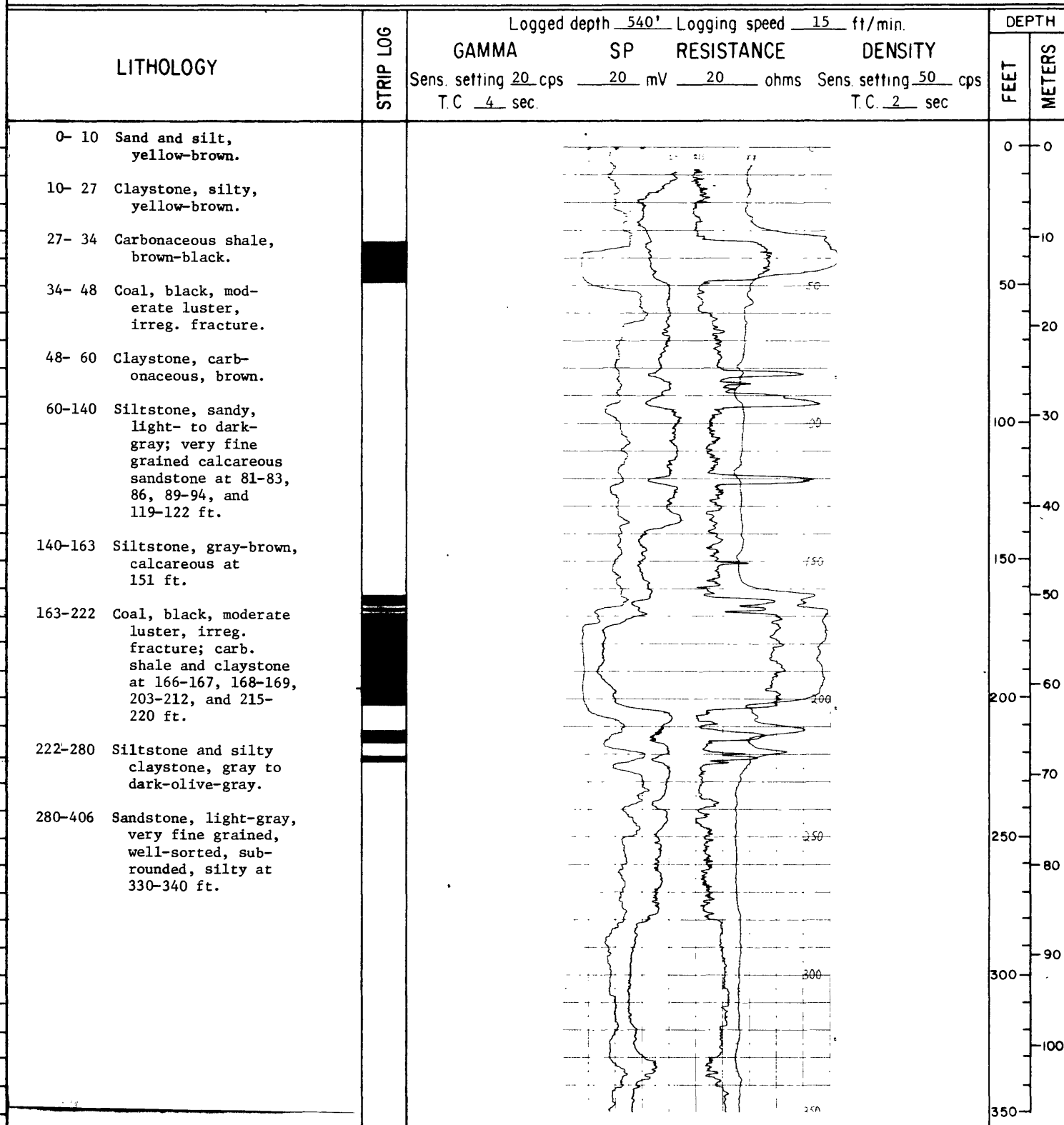
REMARKS:



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80030
SHEET 1 OF 2

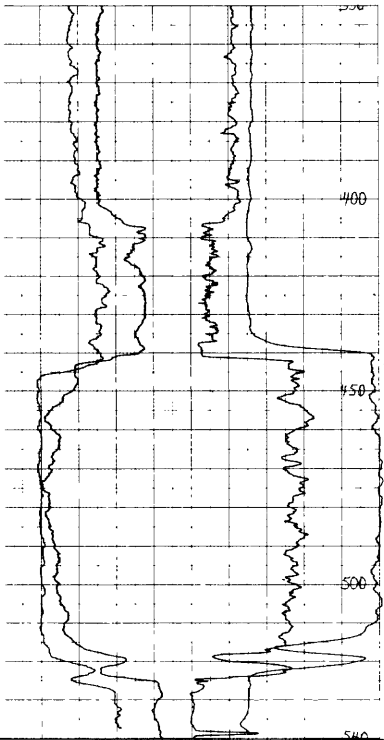
AREA Powder River Basin		QUAD NAME Wildcat	
DATE STARTED: 7-16-80	DATE COMP: 7-17-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 10 T. 52 N., R. 73 W. FOOTAGE LOC.		115' FNL FSL	1175' FNL FSL FNL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 540' CORING 0	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4145'
LITHOLOGY RECORDED BY: R.J. Noah		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: R.J. Noah			
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80030
SHEET 2 OF 2

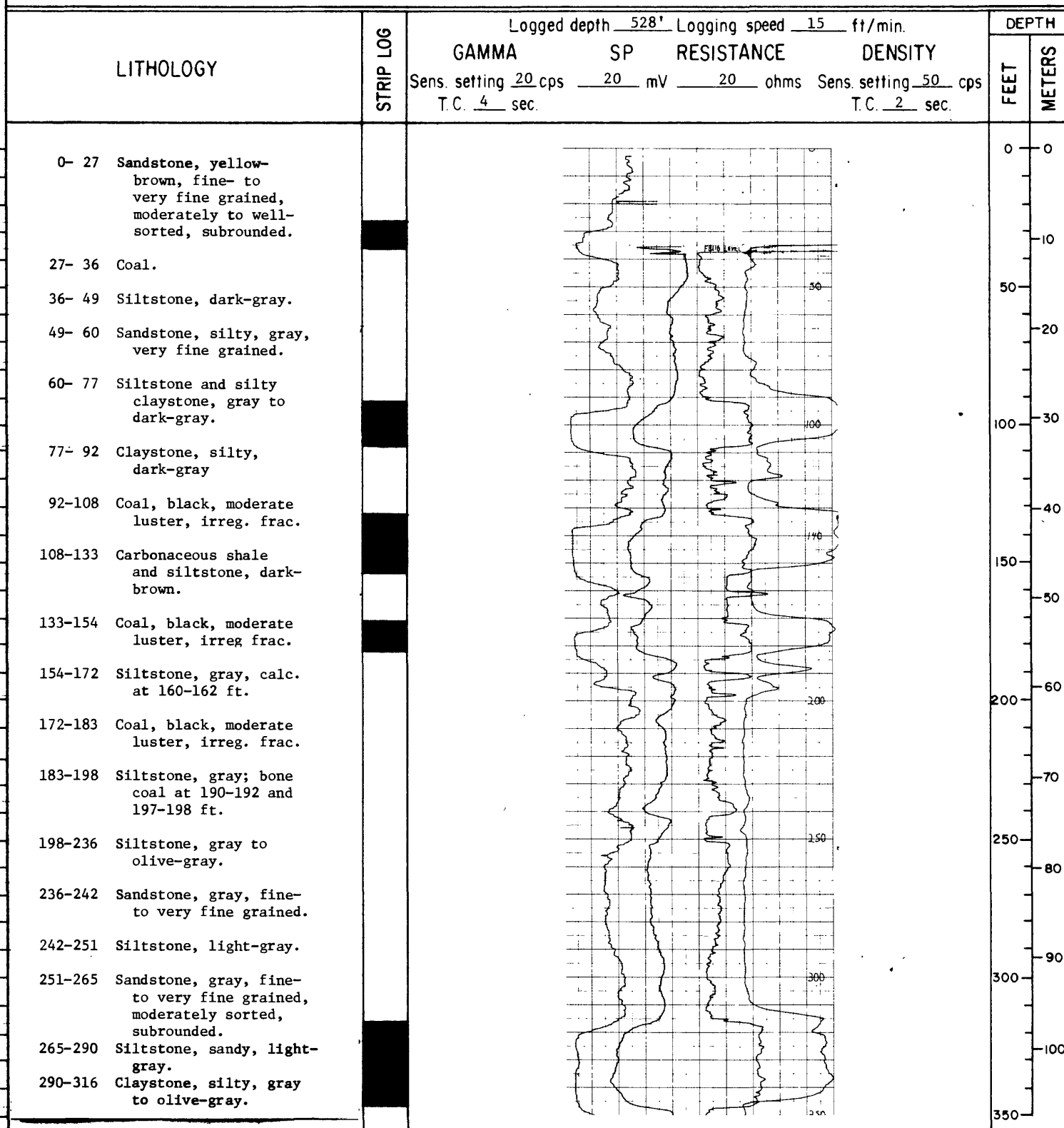
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>540'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>20</u> cps T.C. <u>4</u> sec.	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
406-441 Siltstone, olive-gray.						350	
441-524 Coal, black, moderate luster, friable; carbonaceous shale at 518-520 ft.						110	
524-540 Siltstone, clayey, light-gray, carb. at 538 ft.						120	
540 LTD						400	
						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-80031
SHEET 1 OF 2

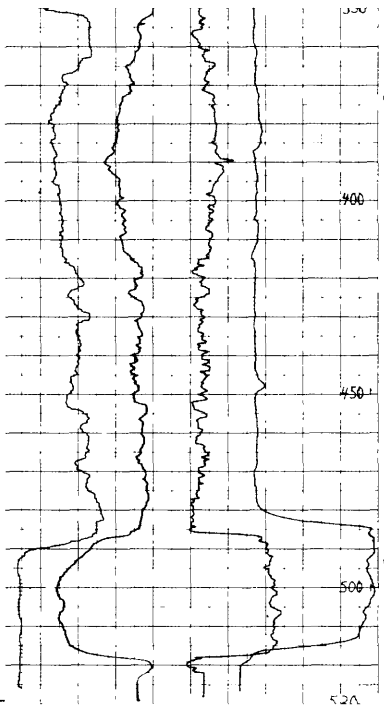
AREA Powder River Basin		QUAD NAME Wildcat	
DATE STARTED: 7-17-80	DATE COMP: 7-18-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 33 T. 53 N., R. 73 W. FOOTAGE LOC.		FNL 1450' 1450'	FEL 2500' 2500'
SIZE AND BIT TYPE: 4 3/4" Drag		GROUND ELEV. 4110'	
		TOTAL DEPTH 530'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: R.J. Noah		DEPTH TO FLUID 37'	
REMARKS:		GEOPHYSICAL LOGS RECORDED BY: R.J. Noah	



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80031
SHEET 2 OF 2

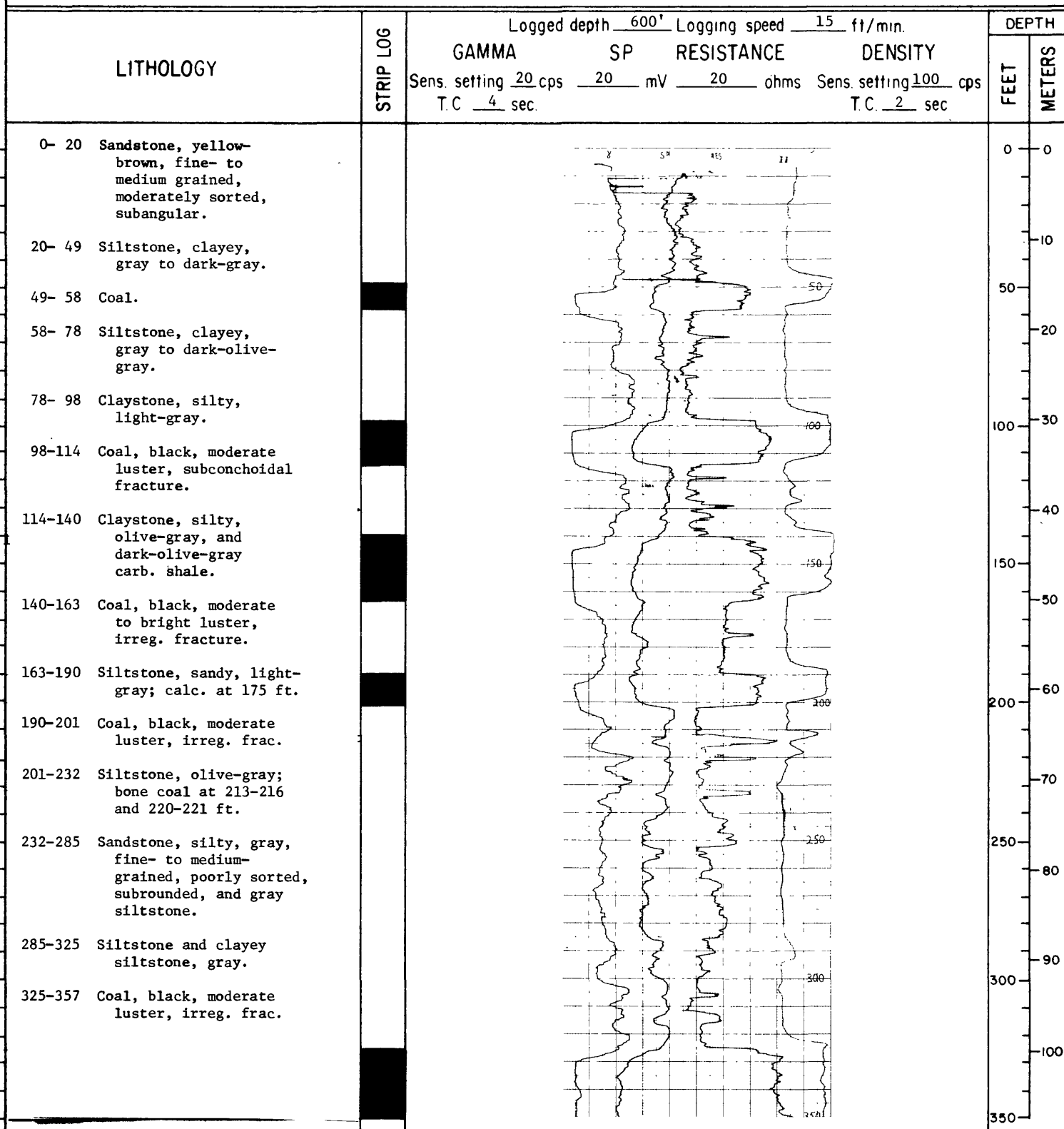
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>528'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens setting <u>20</u> cps	<u>20</u> mV	<u>20</u> ohms	Sens setting <u>50</u> cps		
		T.C. <u>4</u> sec.			T.C. <u>2</u> sec.		
316-347 Coal, black, dull to moderate luster, irreg. fracture.						350	
347-361 Claystone, silty, light-olive-gray.						110	
361-372 Siltstone, clayey, olive-gray.						120	
372-415 Sandstone, gray, fine- to very fine grained, moderately sorted, subrounded to angular.						400	
415-486 Siltstone and silty claystone, gray to olive-gray						130	
486-518 Coal, black, moderate luster, irreg. frac.						450	
518-528 Siltstone, sandy, gray.						140	
528 LTD						150	
						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80032
SHEET 1 OF 2

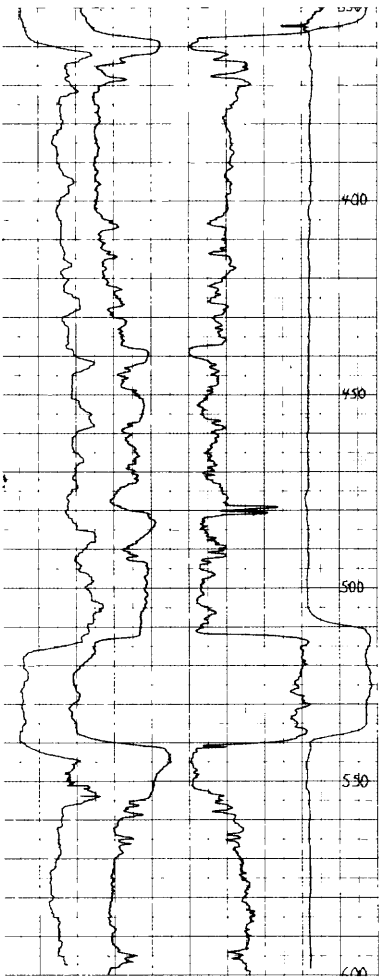
AREA Powder River Basin		QUAD NAME Wildcat	
DATE STARTED: 7-18-80	DATE COMP: 7-19-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 33 T. 53 N., R. 73 W. FOOTAGE LOC.		800' FSL	1340' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 600' CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	GROUND ELEV. 4115'
LITHOLOGY RECORDED BY: R.J. Noah		DEPTH TO FLUID 16'	
GEOPHYSICAL LOGS RECORDED BY: R.J. Noah			
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80032
SHEET 2 OF 2

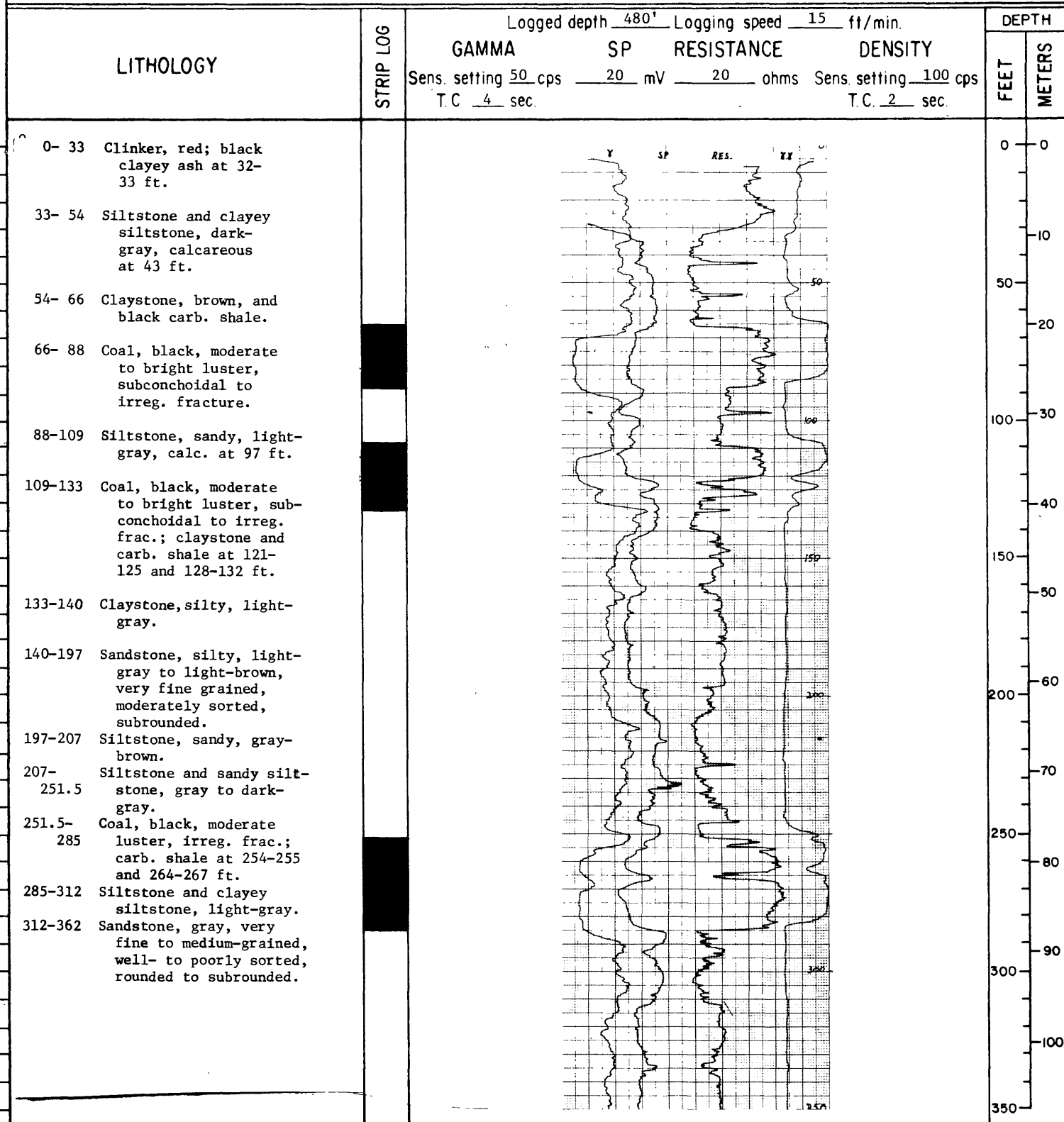
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>600'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>20</u> cps T.C. <u>4</u> sec.	<u>20</u> mV	<u>20</u> ohms	Sens setting <u>100</u> cps T.C. <u>2</u> sec.		
357-361 Claystone, gray to dark-gray.						350	
361-437 Sandstone, gray, fine- to very fine grained, moderately sorted, subrounded.						110	
437-512 Siltstone and clayey siltstone, gray.						120	
512-540 Coal, black, dull to moderate luster, irreg. frac.						400	
540-553 Siltstone, clayey, light-gray.						450	
553-600 Sandstone, slightly silty, gray to dark-gray, very fine to medium-grained, poorly sorted, subrounded.						140	
600 LTD						150	
						500	
						160	
						550	
						170	
						180	
						600	
						190	
						200	
						210	
						700	
						220	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80033
SHEET 1 OF 2

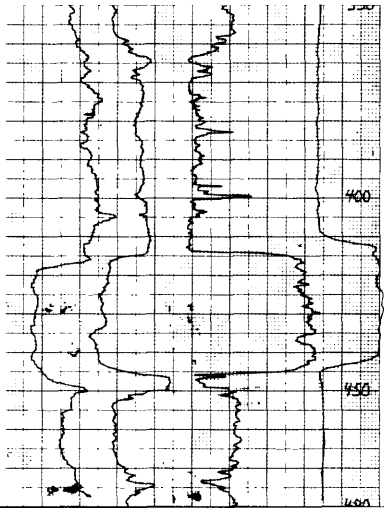
AREA Powder River Basin		QUAD NAME Wildcat	
DATE STARTED: 7-20-80	DATE COMP: 7-20-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 28 T. 53 N., R. 73 W. FOOTAGE LOC.		1740' FSL	2460' FSL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 480' CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: R.J. Noah		GEOPHYSICAL LOGS RECORDED BY: R.J. Noah	
REMARKS: No SP log above 29 ft			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80033
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>480'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>100</u> cps T.C. <u>2</u> sec.		
362-414 Siltstone and clayey siltstone, gray to dark-gray.						350	
414-445 Coal, black, moderate luster, irreg. frac.						110	
445-449 Claystone, olive-gray.						120	
449-480 Sandstone and silty sandstone, light-gray, very fine grained, well- to moderately sorted, subrounded.						400	
480 LTD						130	
						140	
						450	
						150	
						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	

HOLE NO. CD-80034
SHEET 1 OF 2

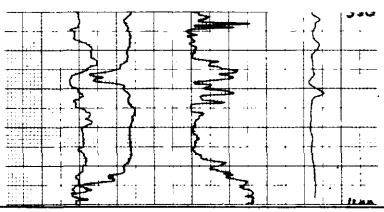
AREA Powder River Basin		QUAD NAME Calf Creek	
DATE STARTED: 7-21-80	DATE COMP: 7-21-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 34 T. 54 N., R. 73 W. FOOTAGE LOC.		1500' FSL FSL	1400' FEL FEL
SIZE AND BIT TYPE: 4 3/4" Drag		GROUND ELEV. 4090'	
		TOTAL DEPTH 400'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: T.P. Lonnie		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: T.P. Lonnie			
REMARKS:			

LITHOLOGY	STRIP LOG	Logged depth <u>400'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>100</u> cps T.C. <u>2</u> sec.		
0- 10 Siltstone, yellow-brown.						0	0
10- 30 Claystone, and clayey siltstone, olive-gray.							
30- 35 Sandstone, light-gray, medium- to coarse- grained.						10	
35-105 Claystone, and silt- stone, gray to dark- gray, calcareous at 76 ft.						50	
105-159 Coal, black, moderate to bright luster, irreg. frac.; clay- stone and carb. shale at 106-108, 120-127, and 130-138 ft.						100	30
159-164 Claystone, light-gray.							
164-190 Sandstone and silty sandstone, light- gray, very fine grained, well- to moderately sorted, calc. at 170 ft.						150	40
190-215 Siltstone, clayey, light-olive-gray; brown carb. shale at 209-215 ft.						50	
215-236 Coal, black, dull luster, irreg.; clay- stone at 221-224 ft.						200	60
236-259 Siltstone, light-gray; calc. at 249 ft.							
259-278 Coal, black, dull luster, irreg. fracture.						70	
278-304 Siltstone, sandy, olive- gray.						250	80
304-313 Siltstone, olive-gray.							
313-345 Coal, black, dull luster, irreg. frac.; claystone at 333-337 ft.							
345-363 Siltstone and sandy siltstone, light-gray; coal at 348-349, 353, and 354 ft.						300	90
						100	
						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80034
SHEET 2 OF 2

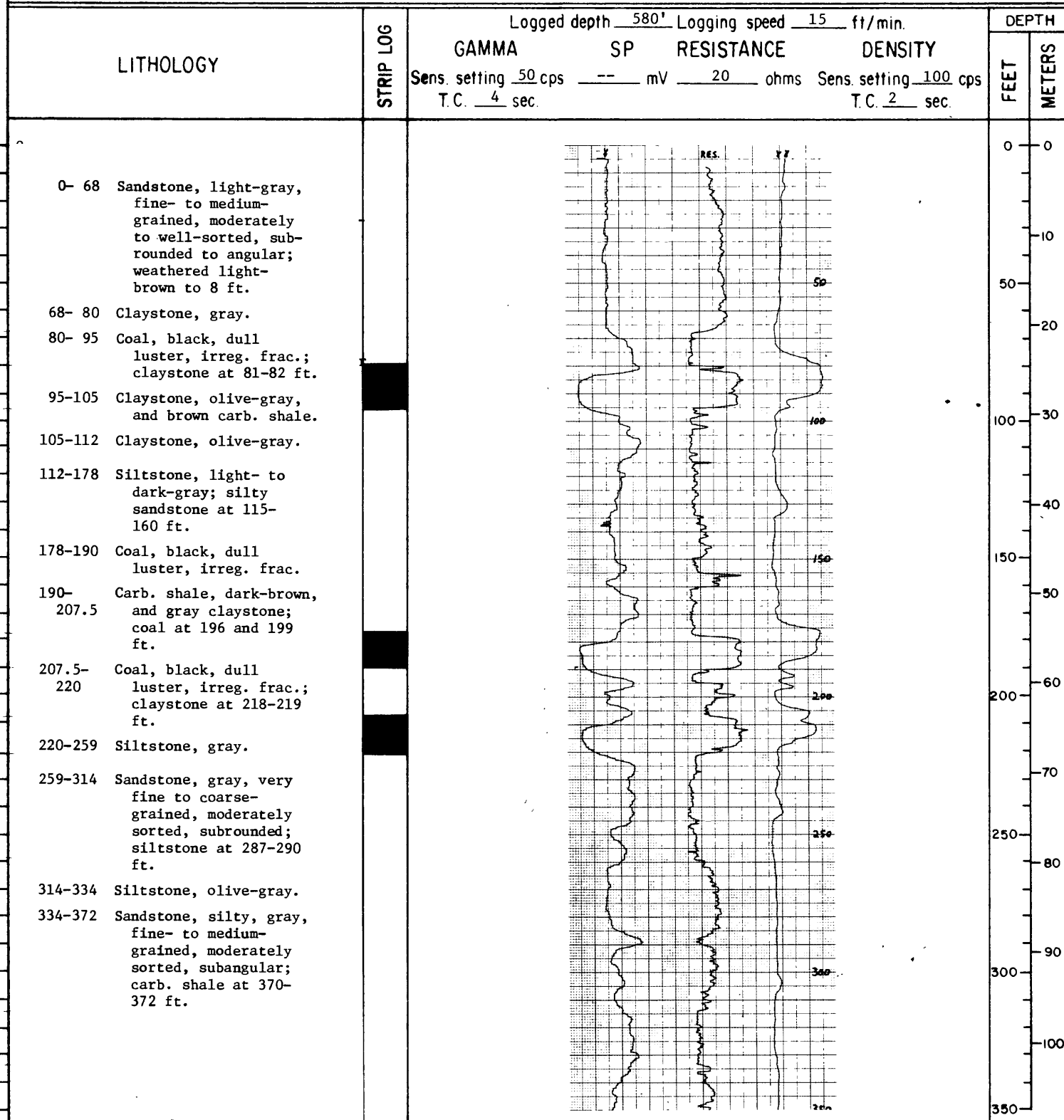
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>400'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>100</u> cps		
		T.C. <u>4</u> sec.			T.C. <u>2</u> sec.		
363-372 Sandstone, light-gray, very fine grained.						350	
372-389 Siltstone, light-gray.						110	
389-400 Sandstone.						120	
400 LTD						400	
						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-80035
SHEET 1 OF 2

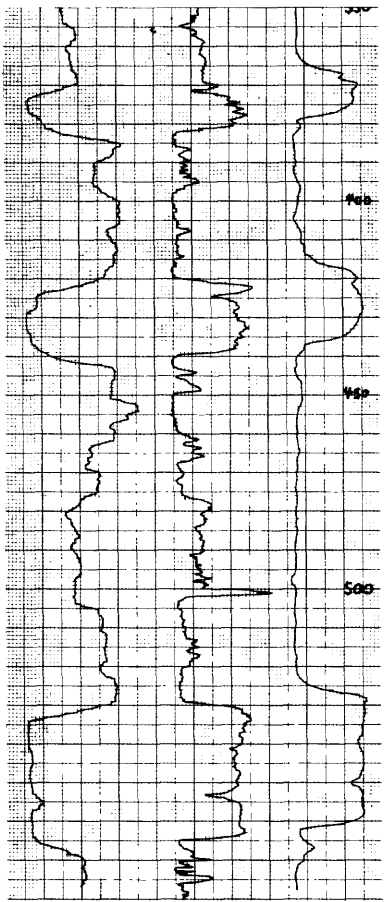
AREA Powder River Basin		QUAD NAME Wildcat	
DATE STARTED: 7-21-80	DATE COMP: 7-22-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 4 T. 53 N., R. 73 W. FOOTAGE LOC.		1160' FNE FSL	890' FNE FEL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 580' CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: T.P. Lonnie		GEOPHYSICAL LOGS RECORDED BY: T.P. Lonnie	
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80035
SHEET 2 OF 2

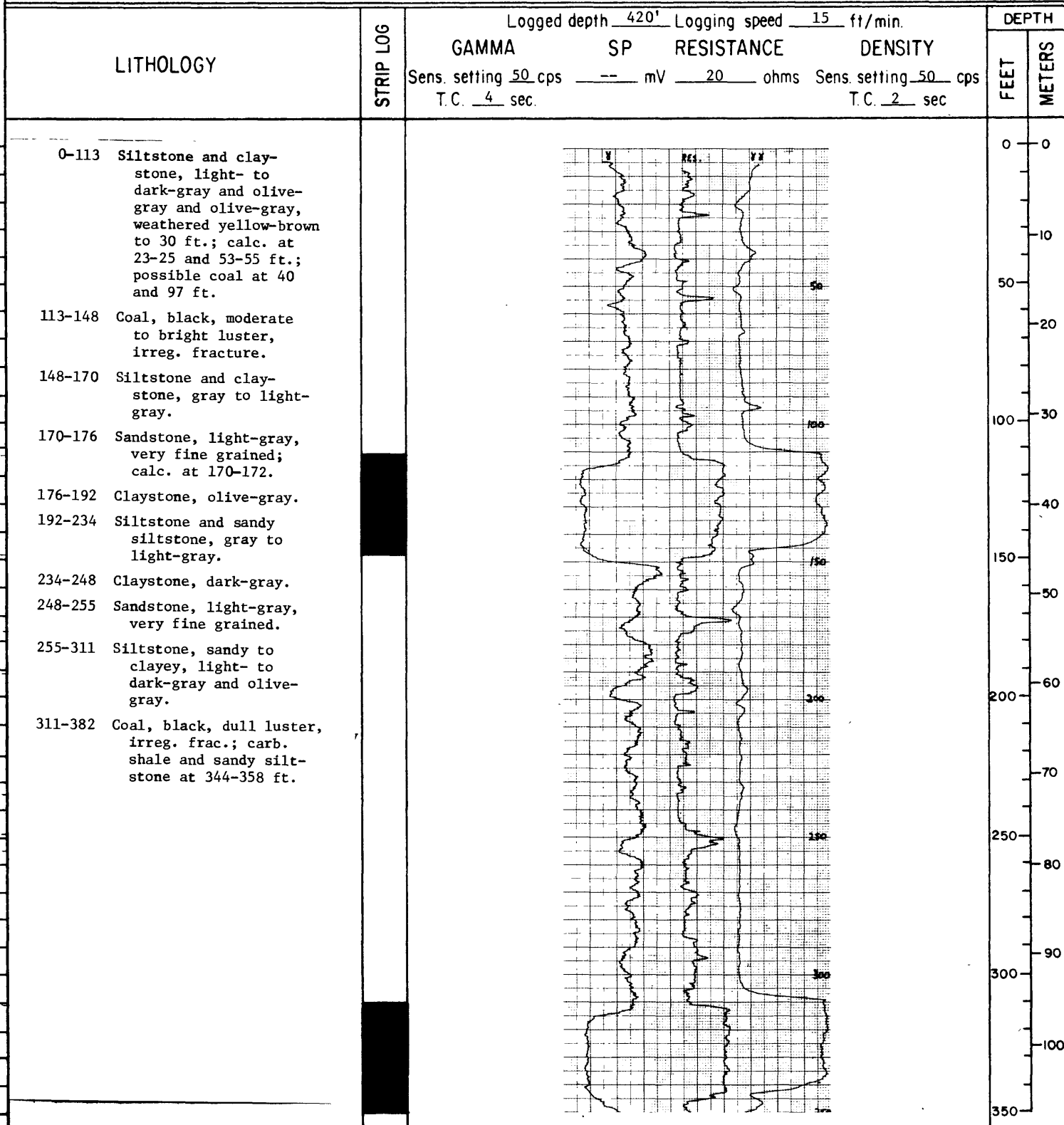
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>580'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	-- mV	<u>20</u> ohms	Sens. setting <u>100</u> cps T.C. <u>2</u> sec.		
372-381 Coal, black, moderate luster, irreg. frac.						350	
381-421 Siltstone and claystone, light-gray to olive-gray.						110	
421-439 Coal, black, dull to moderate luster, irreg. frac.; carb. shale at 424-425 ft.						400	
439-477 Siltstone and claystone, gray to light-gray.						120	
477-502 Siltstone, sandy, gray; calc. at 500-502 ft.						130	
502-530 Claystone, light-olive-gray.						450	
530-564 Coal, black, moderate luster, irreg. frac.; claystone at 553-554 ft.						140	
564-580 Claystone, light-gray; interbedded fine- to medium-grained sandstone, moderately sorted.						500	
580 LTD						150	
						500	
						160	
						550	
						170	
						600	
						180	
						190	
						650	
						200	
						210	
						700	
						220	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80036.
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Recluse	
DATE STARTED: 7-23-80	DATE COMP: 7-23-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. T. 55 N., R. 73 W.	FOOTAGE LOC. See Remarks	FNL FSL	FEL FWL
SIZE AND BIT TYPE: 4 3/4" Drag	FOOTAGE ROTARY 420' CORING 0	GROUND ELEV. 4025'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524	TOTAL DEPTH 420'	
LITHOLOGY RECORDED BY: T.P. Lonnie	GEOPHYSICAL LOGS RECORDED BY: T.P. Lonnie	DEPTH TO FLUID 0'	
REMARKS: Latitude 44° 42' 52" N. Longitude 105° 38' 59" W.			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80036
SHEET 2 OF 2

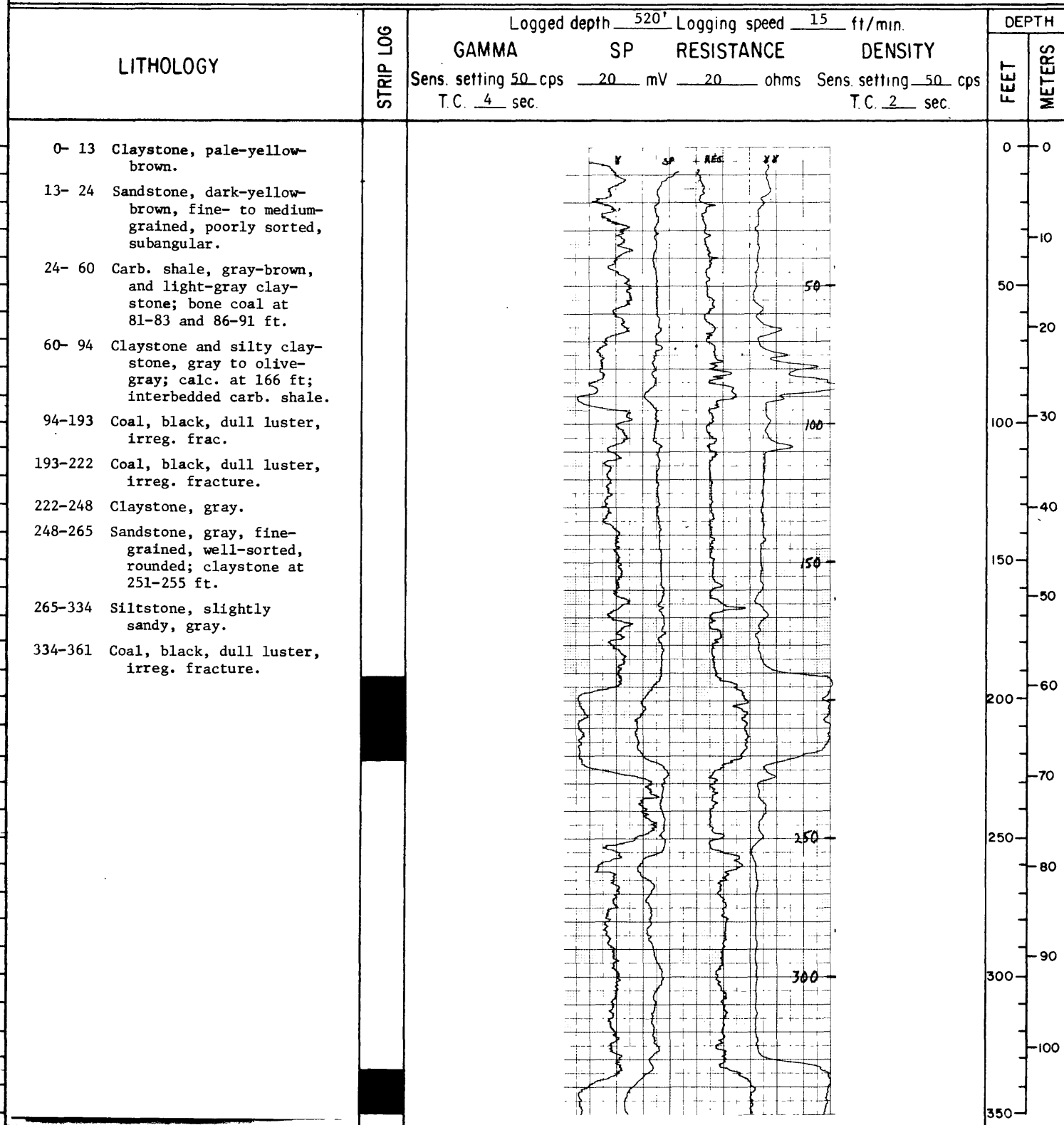
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>420'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	SP -- mV	RESISTANCE <u>20</u> ohms	DENSITY Sens. setting <u>50</u> cps T.C. <u>2</u> sec.	FEET	METERS
382-420 Siltstone and sandy siltstone, gray to light-gray. 420 LTD						350	
					400		
					450		
					500		
					550		
					600		
					650		
					700		
					750		

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80A
SHEET 1 OF 2

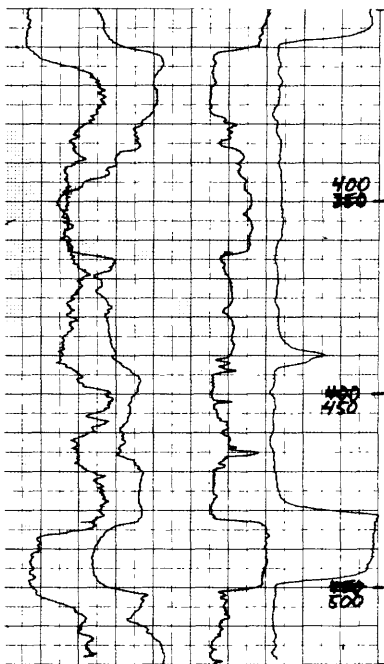
AREA Powder River Basin		QUAD NAME Recluse	
DATE STARTED: 7-29-80	DATE COMP: 7-29-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. -- T. 55 N., R. 73 W.		FOOTAGE LOC. See Remarks	FNL FSL -- FEL FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 520' CORING 0	GROUND ELEV. 4165'
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	TOTAL DEPTH 520'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS: Latitude 44° 44' 16" N. Longitude 105° 40' 39" W.			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-800
SHEET 2 OF 2

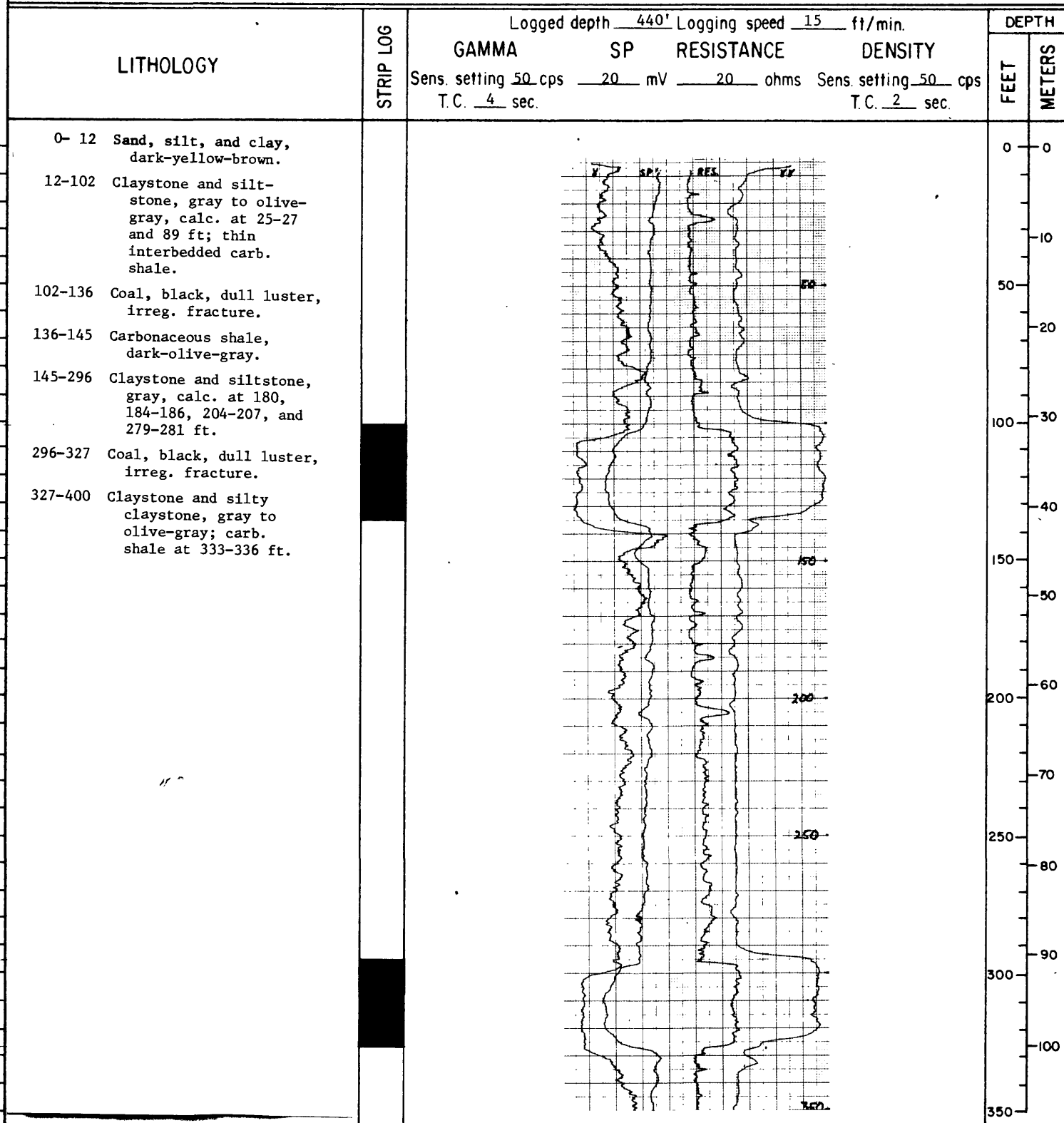
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>520'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
361-378 Claystone, olive-gray.						350	
378-386 Siltstone, light-gray.						110	
386-469 Sandstone, gray, very fine to fine-grained, moderately to well-sorted, rounded, calc. at 452 and 465 ft; silty claystone at 445-452 and 453-457 ft.						120	
469-483 Claystone, silty, gray.						400	
483-501 Coal, black, dull luster, irreg. frac.						130	
501-513 Sandstone, silty, gray, fine-grained, moderately sorted.						450	
513-520 Claystone, silty, gray.						140	
520 LTD						150	
						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80038
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Recluse	
DATE STARTED: 7-30-80	DATE COMP: 7-30-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. -- T. 55 N., R. 73 W. FOOTAGE LOC. See Remarks		FNL FSL --	FEL FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 440' CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS: Latitude 44° 43' 29" N. Longitude 105° 39' 33" W.			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80038
SHEET 2 OF 2

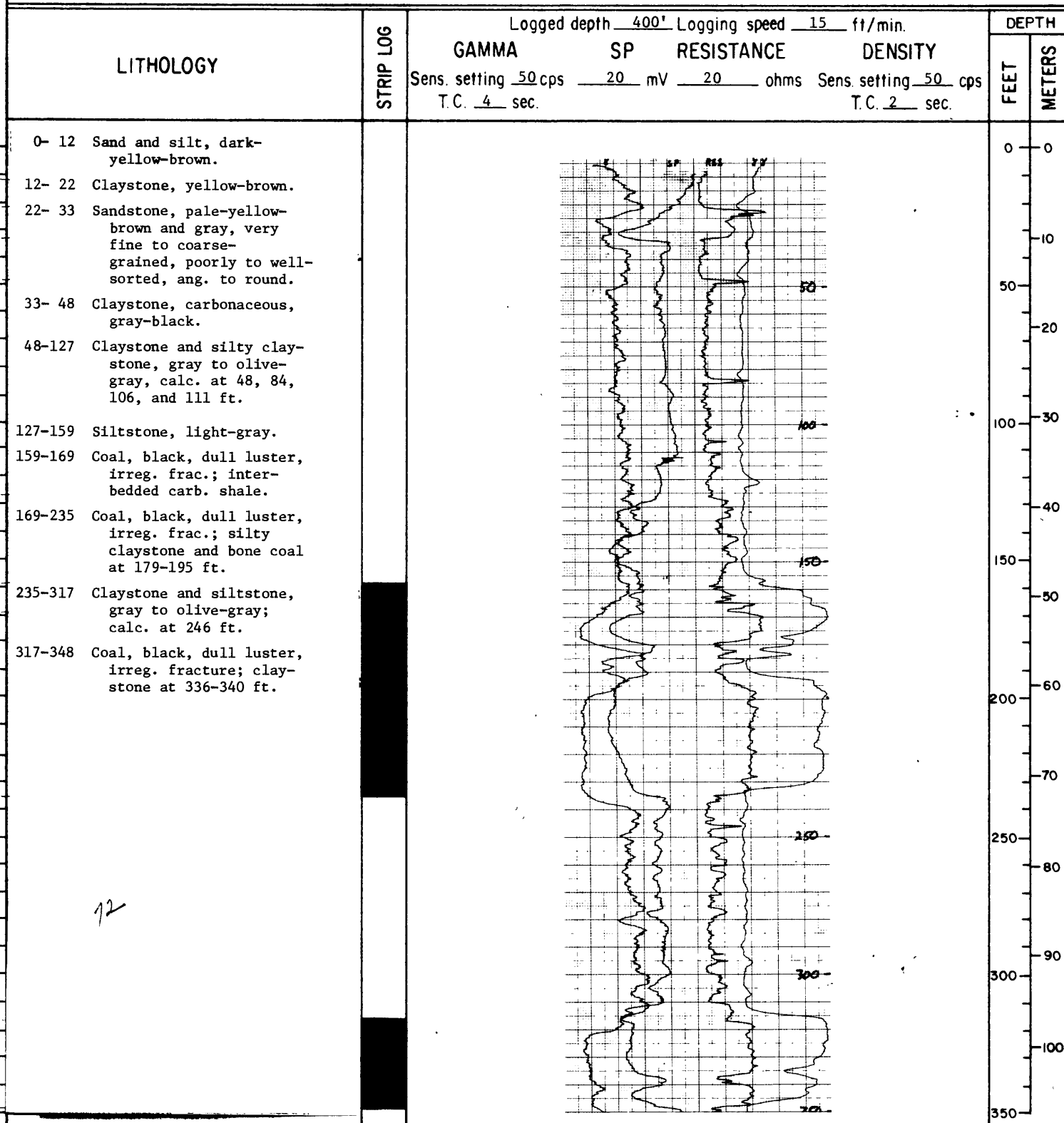
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>440'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
400-426 Coal, black, dull luster, irreg. fracture; clay- stone at 403-404 ft.						350	
426-440 Claystone, gray.						400	
440 LTD					450		
					500		
					550		
					600		
					650		
					700		
					750		

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80039
SHEET 1 OF 2

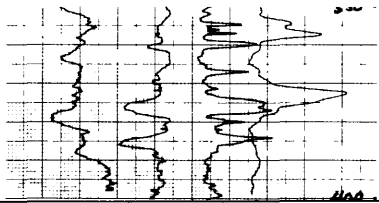
AREA Powder River Basin		QUAD NAME Pitch Draw	
DATE STARTED: 7-31-80	DATE COMP: 7-31-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 19 T. 54 N., R. 72 W. FOOTAGE LOC.		1155' FSL	945' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 400' CORING 0	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4225'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80039
SHEET 2 OF 2

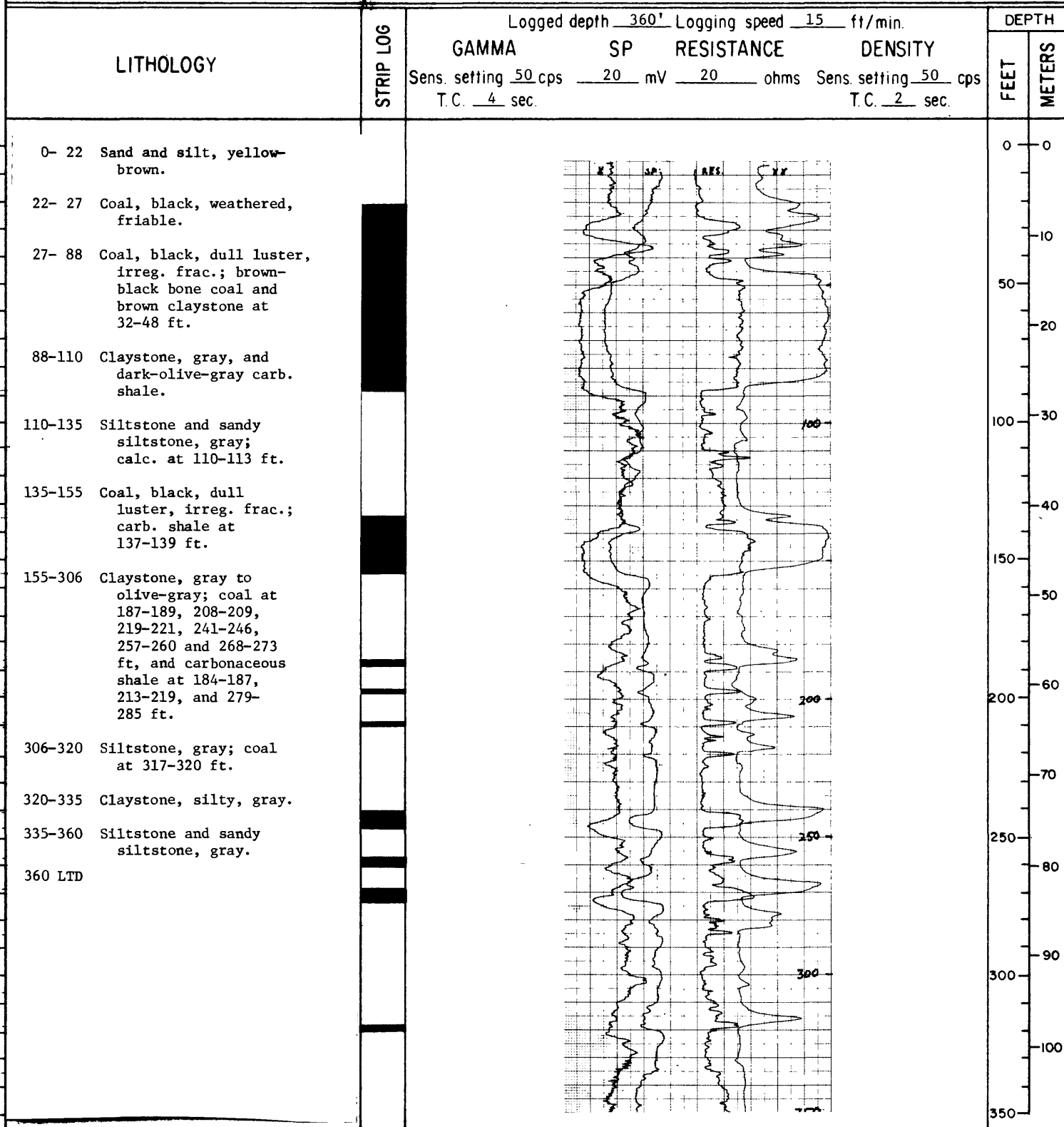
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>400'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps		
		T.C. <u>4</u> sec.			T.C. <u>2</u> sec.		
348-374 Carb. shale, dark- olive-gray, and olive-gray clay- stone, calc. at 367 ft; coal at 359-361 ft.						350	
374-378 Coal, black, dull luster, irreg. frac.						110	
378-384 Claystone, carb., olive-gray.						120	
384-400 Claystone, gray; very fine grained; calc. sandstone at 384- 386 ft.						400	
400 LTD						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	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80040
SHEET 1 OF 2


AREA Powder River Basin		QUAD NAME Pitch Draw	
DATE STARTED: 8-1-80	DATE COMP: 8-1-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 24 T. 54 N., R. 73 W. FOOTAGE LOC.		1045' FSL	390' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 360' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4045'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80040
SHEET 2 OF 2

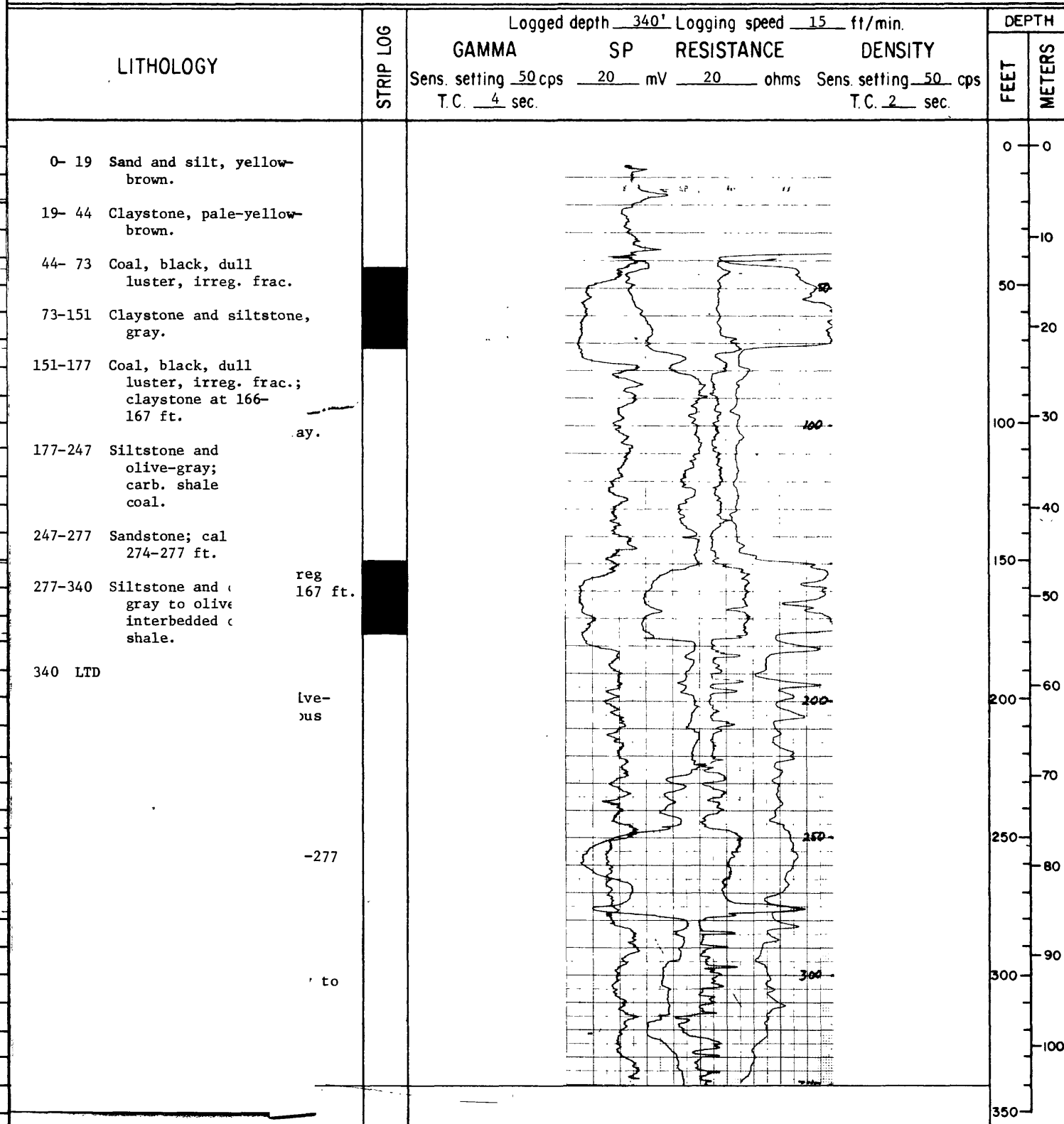
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>360'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
						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-80041
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Pitch Draw	
DATE STARTED: 8-1-80	DATE COMP: 8-2-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 21 T. 54 N., R. 72 W. FOOTAGE LOC.		1870' FSL	885' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 360' CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	GROUND ELEV. 4225'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 40'	
REMARKS:		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80042
SHEET 1 OF 1

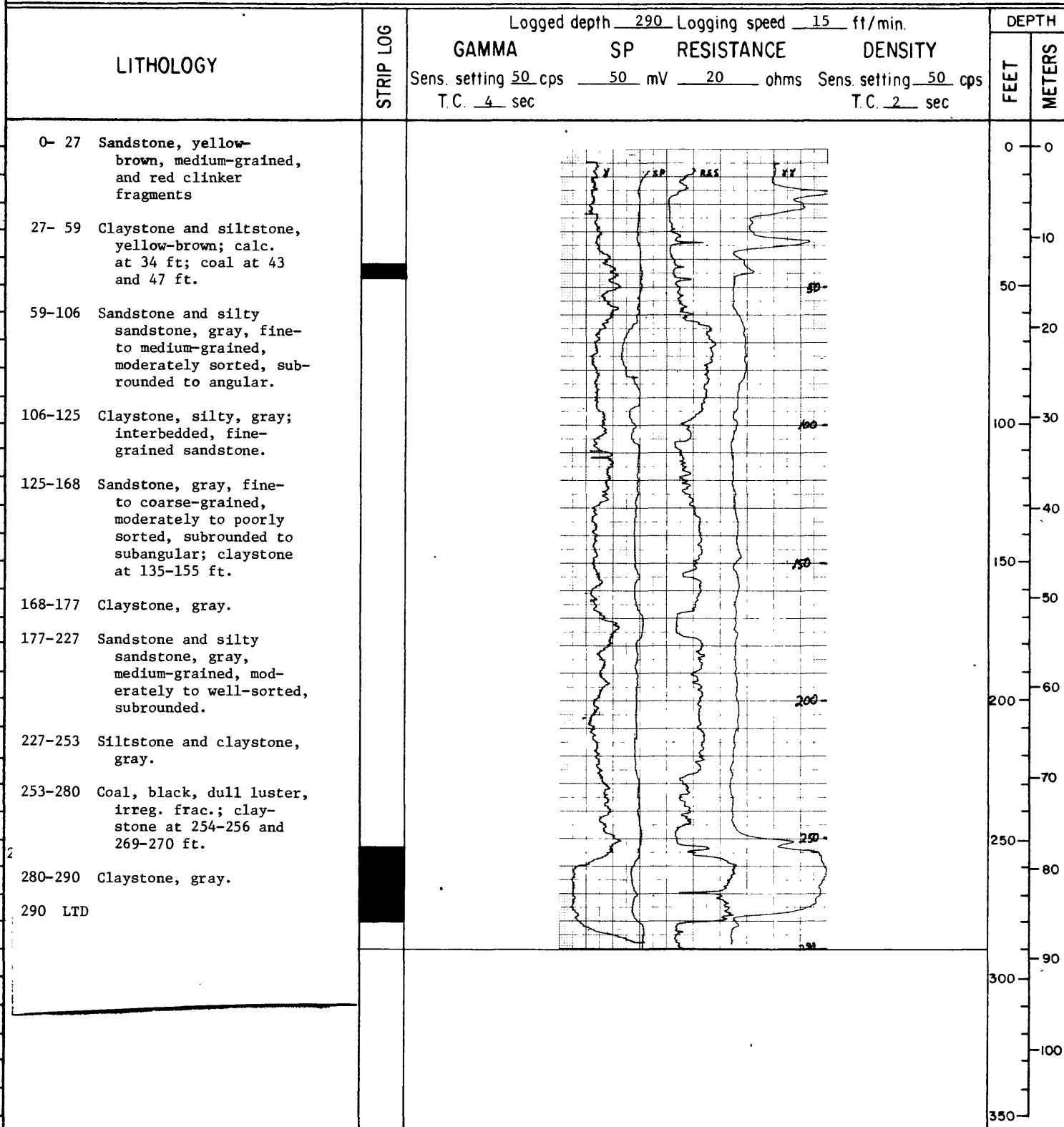
AREA Powder River Basin		QUAD NAME Pitch Draw	
DATE STARTED: 8-3-80	DATE COMP: 8-4-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 21 T. 54 N., R. 72 W. FOOTAGE LOC.		600' FSL FSL	FEL FSL 645' FSL
SIZE AND BIT TYPE: 4 3/4" Drag		GROUND ELEV. 4125'	
DRILLING AGENCY: USGS/CD/NCR		TOTAL DEPTH 300'	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DRILL TYPE: Portadrill 524	
GEOPHYSICAL LOGS RECORDED BY:		DEPTH TO FLUID NR	
REMARKS: Poor geophysical log due to drill hole instability. All formation depths and thickness estimated from grab samples and drilling breaks.			

LITHOLOGY	STRIP LOG	Logged depth -- Logging speed -- ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting -- cps	-- mV	-- ohms	Sens. setting -- cps		
		T.C. -- sec.			T.C. -- sec.		
0- 85 Clinker, red.						0	0
85- 90 Claystone, gray.						10	
90-140 Coal, black, dull luster, irreg. frac.						50	
140-300 Claystone, gray, and olive-gray; carb. shale; calc. sandstone at 145 ft.						20	
300 LTD						100	30
						40	
						150	
						50	
						200	60
						70	
						250	
						80	
						90	
						300	
						100	
						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80043
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Pitch Draw	
DATE STARTED: 8-4-80	DATE COMP: 8-5-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 8 T. 54 N., R. 72 W. FOOTAGE LOC.		100' FNL FSL	510' FEL FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 290 CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80044
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Pitch Draw	
DATE STARTED: 8-5-80	DATE COMP: 8-6-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 3 T. 54 N., R. 72 W. FOOTAGE LOC.		795' FSL	910' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 300' CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	GROUND ELEV. 3975'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		TOTAL DEPTH 300'	
		DEPTH TO FLUID 13'	
REMARKS:		G.E.P. LOGS RECORDED BY: G.W. Kepler, Sr.	

LITHOLOGY	STRIP LOG	Logged depth 300' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps	50 mV	20 ohms	Sens. setting 50 cps		
		T.C. 4 sec.			T.C. 2 sec.		
0- 10 Claystone, silty, dark-yellow-orange.						0	0
10- 17 Sandstone, light-brown, fine-grained, well-sorted, rounded.							
17- 41 Siltstone, clayey to sandy, gray.						10	
41- 49 Sandstone, gray, very fine grained, well-sorted, rounded.						50	
49- 73 Sandstone and silty sandstone, pale-yellow-brown, medium-grained, moderately to well-sorted, rounded to subangular.						20	
73-122 Siltstone and clayey siltstone, gray; coal at 74 ft.						100	30
122-185 Sandstone and silty sandstone, gray, fine to coarse-grained, moderately to poorly sorted, subangular to subrounded.						150	50
185-204 Claystone, olive-gray; coal at 203-204 ft.						200	60
204-217 Carbonaceous shale, dark-olive-gray							
217-238 Coal, black, dull luster, irreg. fracture; claystone at 32-37 ft.						250	80
238-255 Claystone, gray; carb. shale at 240 ft.							
255-265 Siltstone and clayey siltstone, gray.						300	90
265-296 Sandstone and silty sandstone, gray, fine to coarse-grained, moderately to poorly sorted, rounded to angular							
296-300 Claystone, gray.							
300 LTD							

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80045
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Pitch Draw	
DATE STARTED: 8-6-80	DATE COMP: 8-6-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 31 T. 55 N., R. 72 W. FOOTAGE LOC.		1355' FSL	640' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 300' CORING 0	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4015'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.	GEOPHYSICAL LOGS RECORDED BY: G. W. Kepler, Sr.		TOTAL DEPTH 300'
REMARKS:			

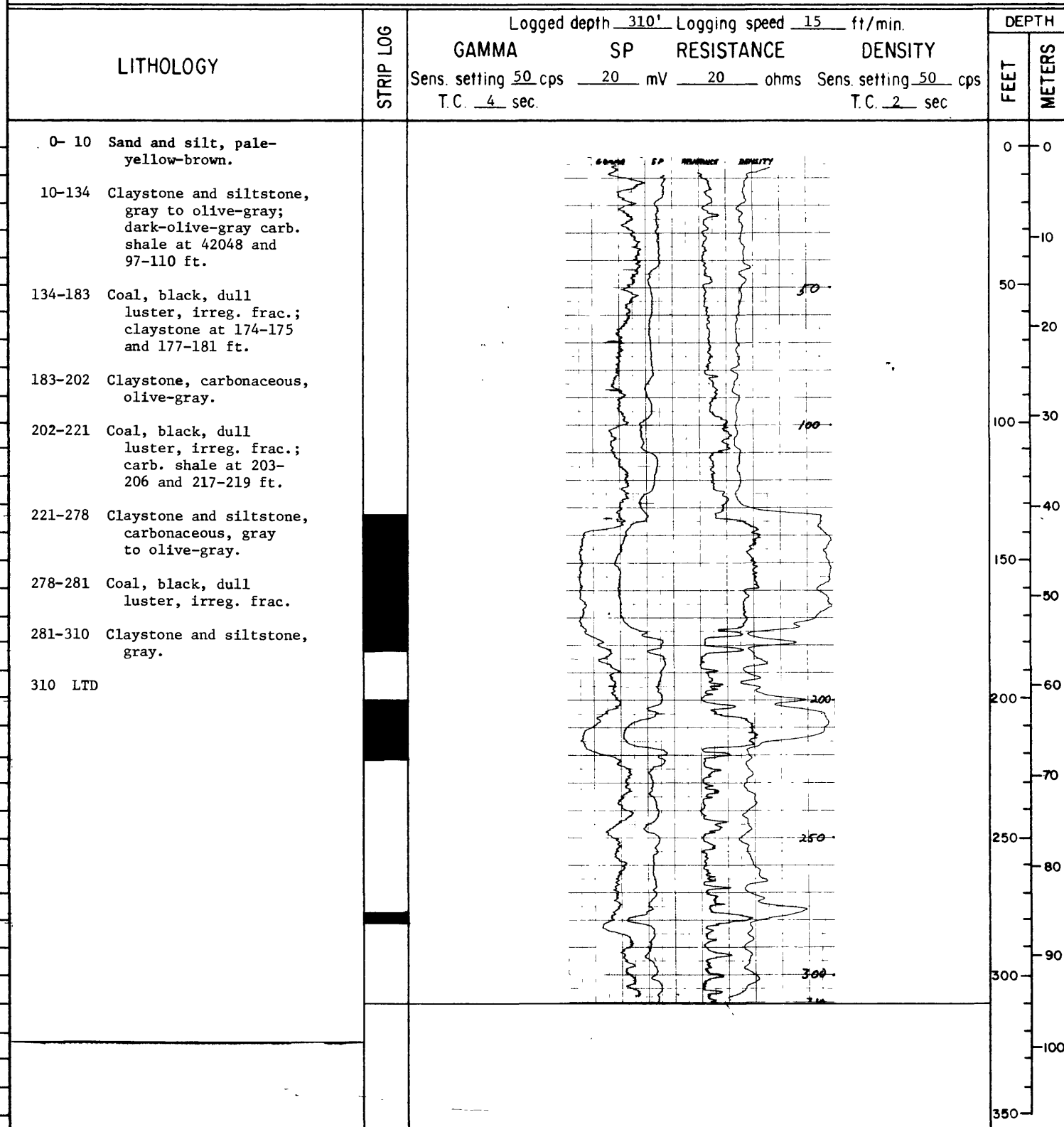
LITHOLOGY	STRIP LOG	Logged depth 300' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50cps	50 mV	20 ohms	Sens. setting 50 cps		
		T.C. 4 sec.			T.C. 2 sec.		
0- 11 Clay, silt, and sand, pale-yellow-brown; red clinker fragments.						0	0
11- 31 Claystone, silty, gray.							
31- 43 Carbonaceous shale, brown; coal at 31-33 ft.						10	
43- 81 Coal, black, dull luster, irreg. fracture; claystone at 77-79 ft.						50	
81- 93 Claystone, gray.						20	
93-101 Carb. shale, brown; coal at 95-97 and 100 ft.							
101-111 Claystone, gray.						100	30
111-152 Sandstone and sandy siltstone, gray, very fine to fine-grained, moderately sorted, rounded.						40	
152-167 Claystone, gray.						150	
167-172 Coal, black, dull luster, irreg. fracture.						50	
172-222 Claystone and siltstone, gray to olive-gray, calcareous at 193 ft; coal at 184, 197, and 202-203 ft.						200	60
222-227 Bone coal, black to brown-black.						70	
227-242 Siltstone and claystone, gray.						250	80
242-291 Sandstone, gray, very fine to medium-grained, moderately to well-sorted, rounded.						90	
291-300 Siltstone, clayey, gray.						300	90
300 LTD						100	
						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80046

SHEET 1 OF 1

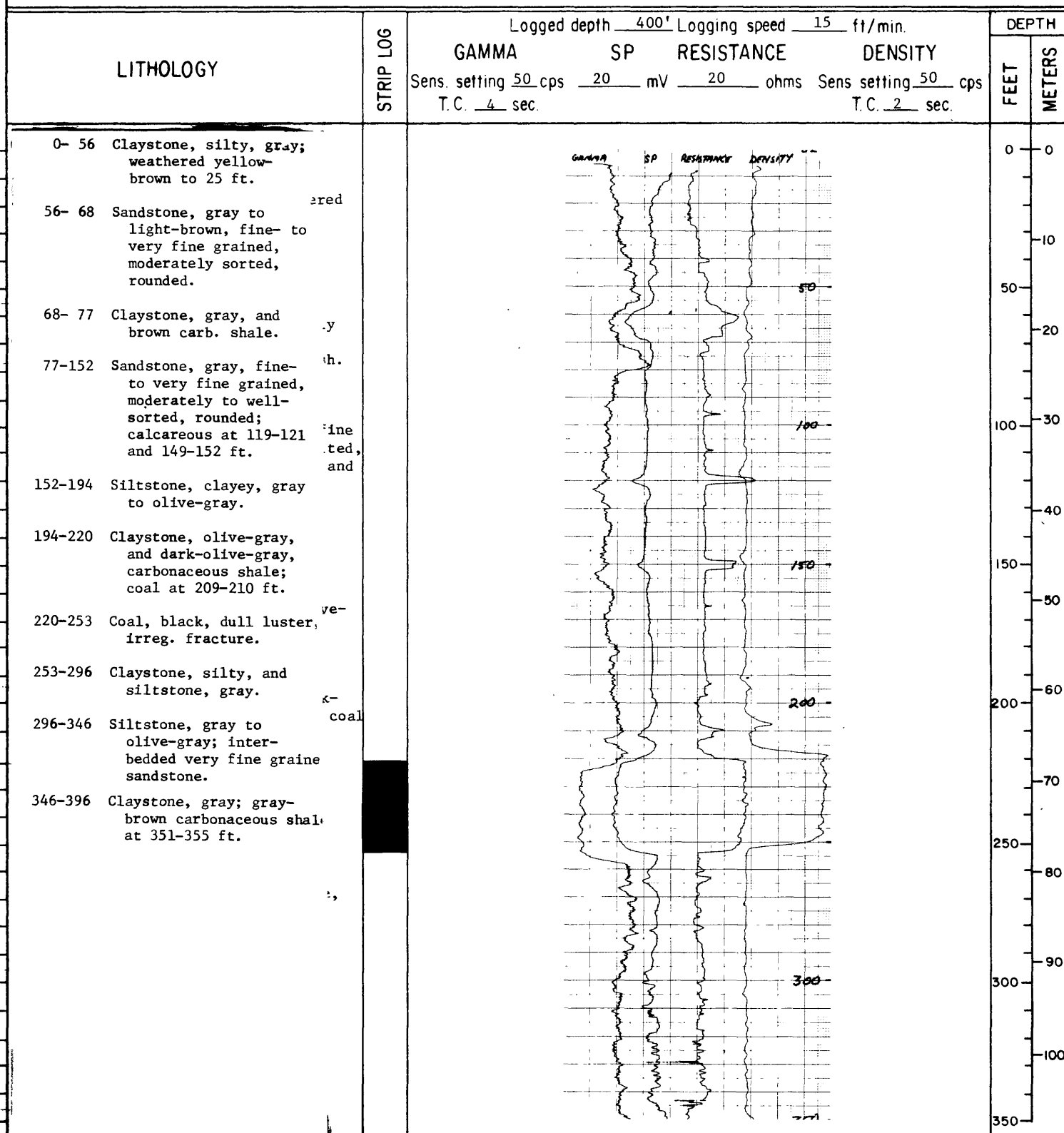
AREA Powder River Basin		QUAD NAME Pitch Draw	
DATE STARTED: 8-12-80	DATE COMP: 8-13-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. -- T. 55 N., R. 73 W. FOOTAGE LOC. See Remarks		FNL FSL --	FEL FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 320' CORING 0	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 3985'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
REMARKS: Latitude 44° 42' 30" N. Longitude 105° 36' 34" W.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80047
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Recluse	
DATE STARTED: 8-14-80	DATE COMP: 8-14-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 9 T. 54 N., R. 73 W. FOOTAGE LOC.		FNL 1175' 534'	FEL 540' 540'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 400' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4242'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80047
SHEET 2 OF 2

REMARKS:

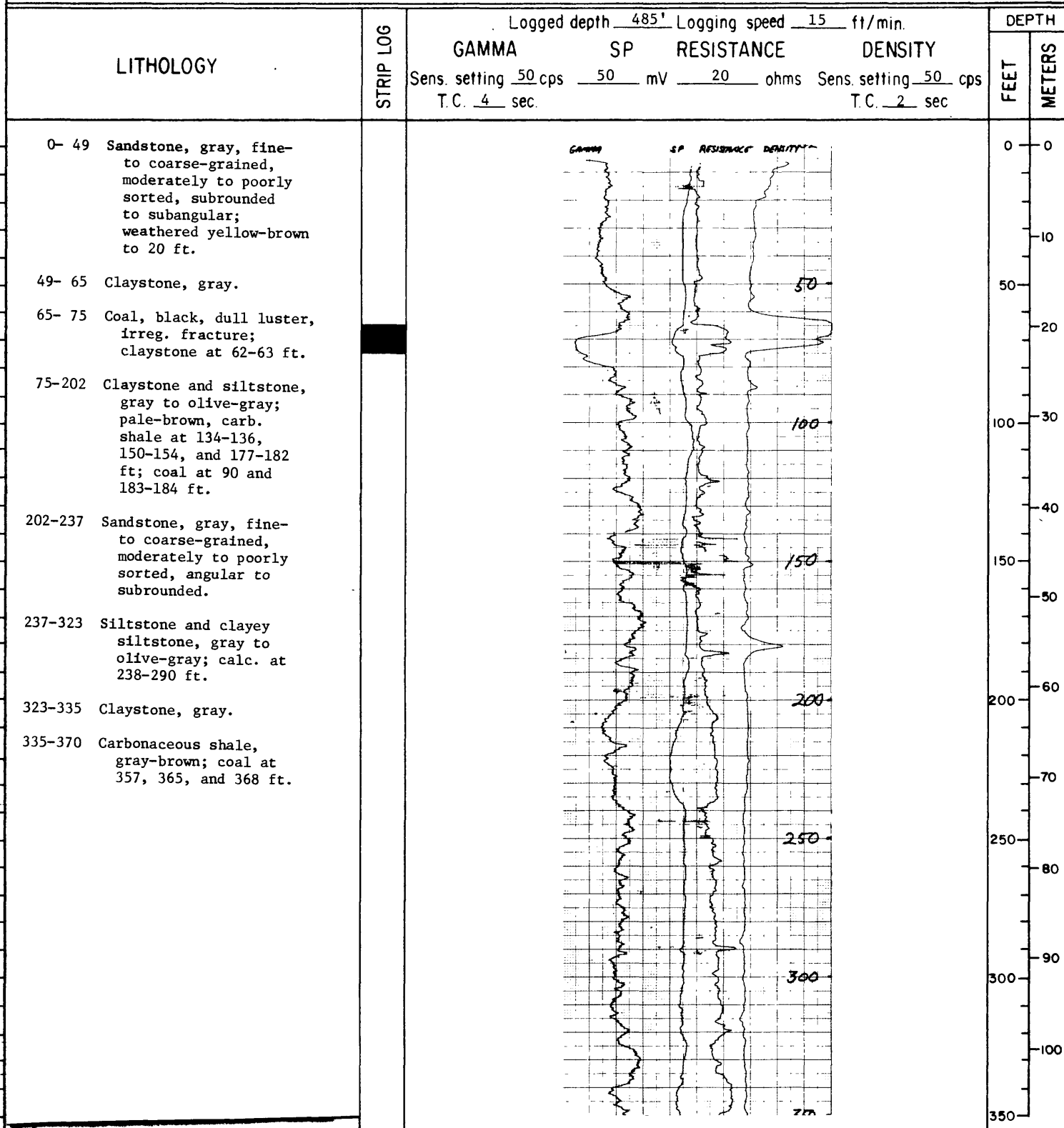
LITHOLOGY	STRIP LOG	Logged depth <u>400'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	SP <u>20</u> mV	RESISTANCE <u>20</u> ohms	DENSITY Sens. setting <u>50</u> cps T.C. <u>2</u> sec.	FEET	METERS
<p>396-400 Sandstone, gray, very fine grained, well-sorted, rounded, calcareous.</p> <p>400 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-80048

SHEET 1 OF 2

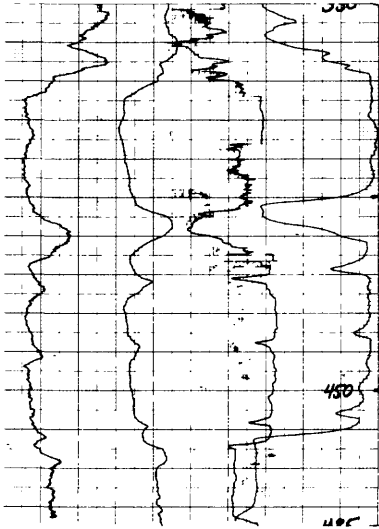
AREA Powder River Basin		QUAD NAME Eagle Rock	
DATE STARTED: 8-17-80	DATE COMP: 8-17-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 31 • T. 46 N., R. 71 W. FOOTAGE LOC.		1850' FSL 2300' FSL	GROUND ELEV. 4652'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 485' CORING 0	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		TOTAL DEPTH 485'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80048
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>485'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>50</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
370-464 Coal, black, dull luster, irreg. frac.; claystone at 403-413, 420-422, 437-438, and 457-459 ft.						350	
464-485 Siltstone, clayey, gray.						400	
485 LTD						450	
						500	
						550	
						600	
						650	
						700	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80049
SHEET 1 OF 2

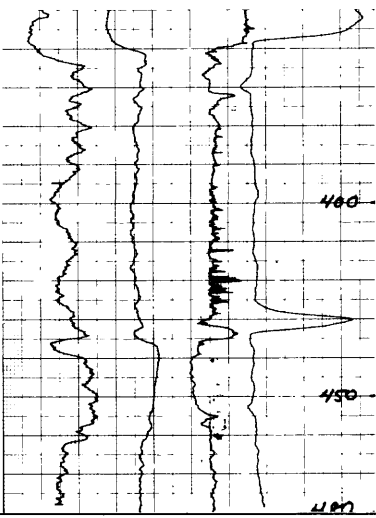
AREA Powder River Basin		QUAD NAME Eagle Rock	
DATE STARTED: 8-18-80	DATE COMP: 8-18-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 32 T. 46 N., R. 71 W. FOOTAGE LOC.		2500' FSL	750' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 480' CORING 0	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS:			

LITHOLOGY	STRIP LOG	Logged depth 480' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps T.C. 4 sec.	50 mV	20 ohms	Sens. setting 50 cps T.C. 2 sec.		
0- 28 Sandstone and silty sandstone, dark-yellow-brown, fine-grained, moderately to well-sorted, rounded.						0	0
28- 70 Siltstone and claystone, gray.						10	
70- 82 Sandstone and silty sandstone, gray, very fine grained, moderately sorted, rounded; calc. at 79-82 ft.						50	
82- 89 Claystone, gray.						20	
89-102 Siltstone and sandy siltstone, slightly carbonaceous, gray to olive-gray.						100	30
102-149 Sandstone, gray, medium-grained, well-sorted, subrounded to sub-angular.						40	
149-159 Sandstone, gray, coarse- to very coarse grained, poorly sorted, sub-angular to angular.						150	50
159-199 Sandstone, silty, gray to olive-gray, very fine grained, moderately sorted.						200	60
199-225 Siltstone, clayey, gray to olive-gray.						70	
225-232 Carbonaceous shale, dark-olive-gray.						250	80
232-249 Claystone, gray; coal at 245-247 ft.						80	
249-276 Coal, black, dull luster, irreg. fracture.						90	
276-327 Siltstone, clayey, slightly carb., olive-gray; coal at 287-288, 290-291, and 296-297 ft; carb. shale at 303-308 ft.						300	90
327-359 Coal, black, dull luster, irreg. frac.; carb. shale at 332-334 ft.						100	
						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80049
SHEET 2 OF 2

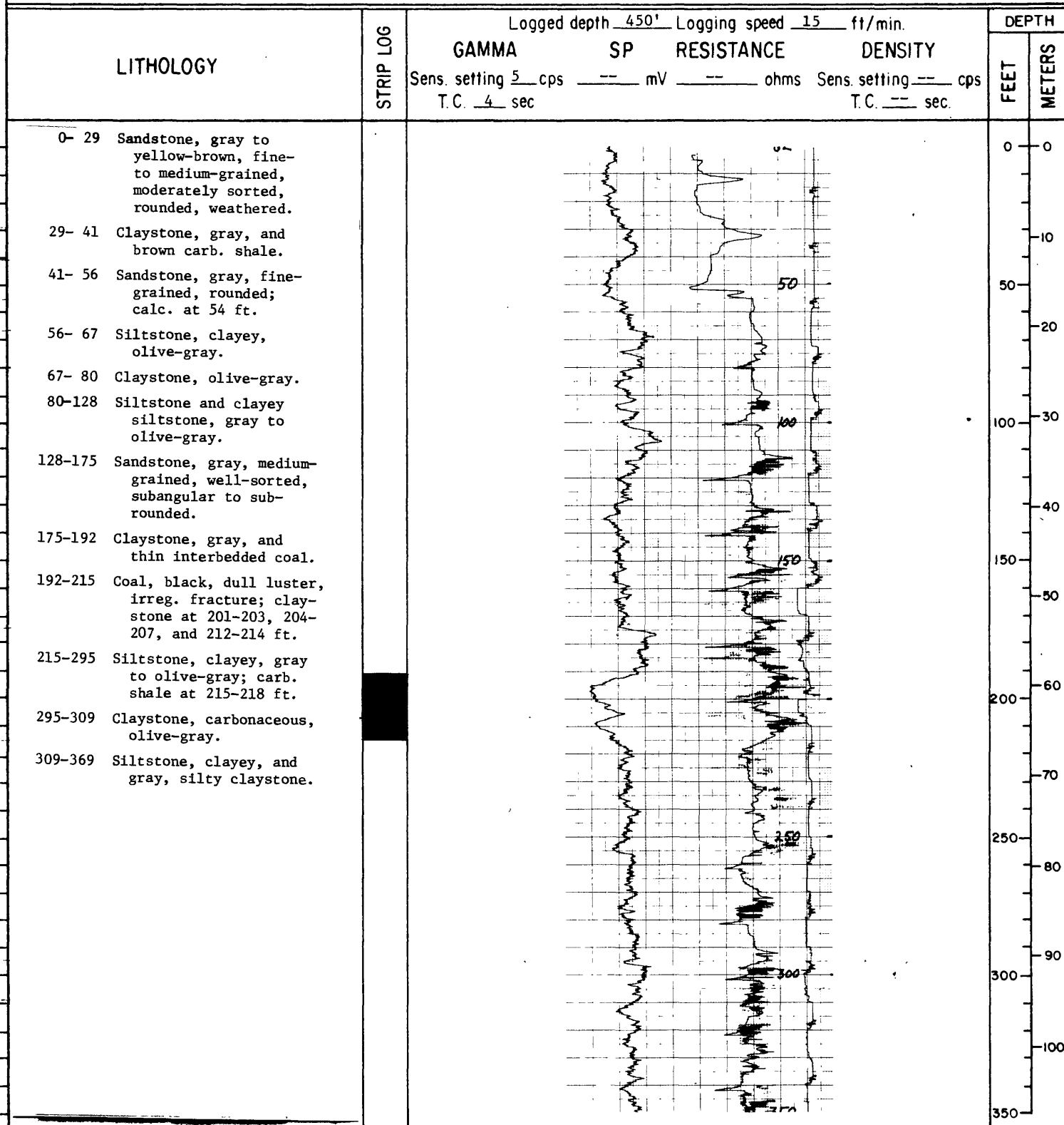
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>480'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>50</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
359-391 Siltstone and sandy siltstone, gray to olive-gray; calc. at 372 ft.						350	
391-424 Sandstone and silty sandstone, gray, fine- to very fine grained, moderately sorted, rounded.						400	
424-432 Siltstone, gray.						450	
432-435 Coal, black, dull luster, irreg. frac.						500	
435-458 Siltstone, clayey, gray.						550	
458-480 Sandstone, gray, fine-grained, well-sorted, rounded.						600	
480 LTD						650	
						700	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80050
SHEET 1 OF 2


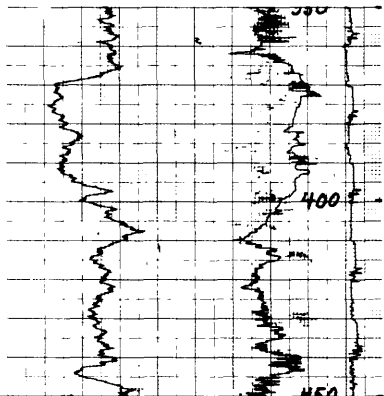
AREA Powder River Basin		QUAD NAME Eagle Rock	
DATE STARTED: 8-19-80	DATE COMP: 8-19-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 3 T. 46 N., R. 71 W. FOOTAGE LOC.		1500' FSL	400' FEL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE	
DRILLING AGENCY: USGS/CD/NCR		ROTARY 460'	CORING 0
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DRILL TYPE: Portadri11 524	
REMARKS: Logged through pipe. Neutron spiking.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
Neutron: Sens. setting 20 T.C. 2		Collar locator: 500 mV/in	



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80050
SHEET 2 OF 2

REMARKS:

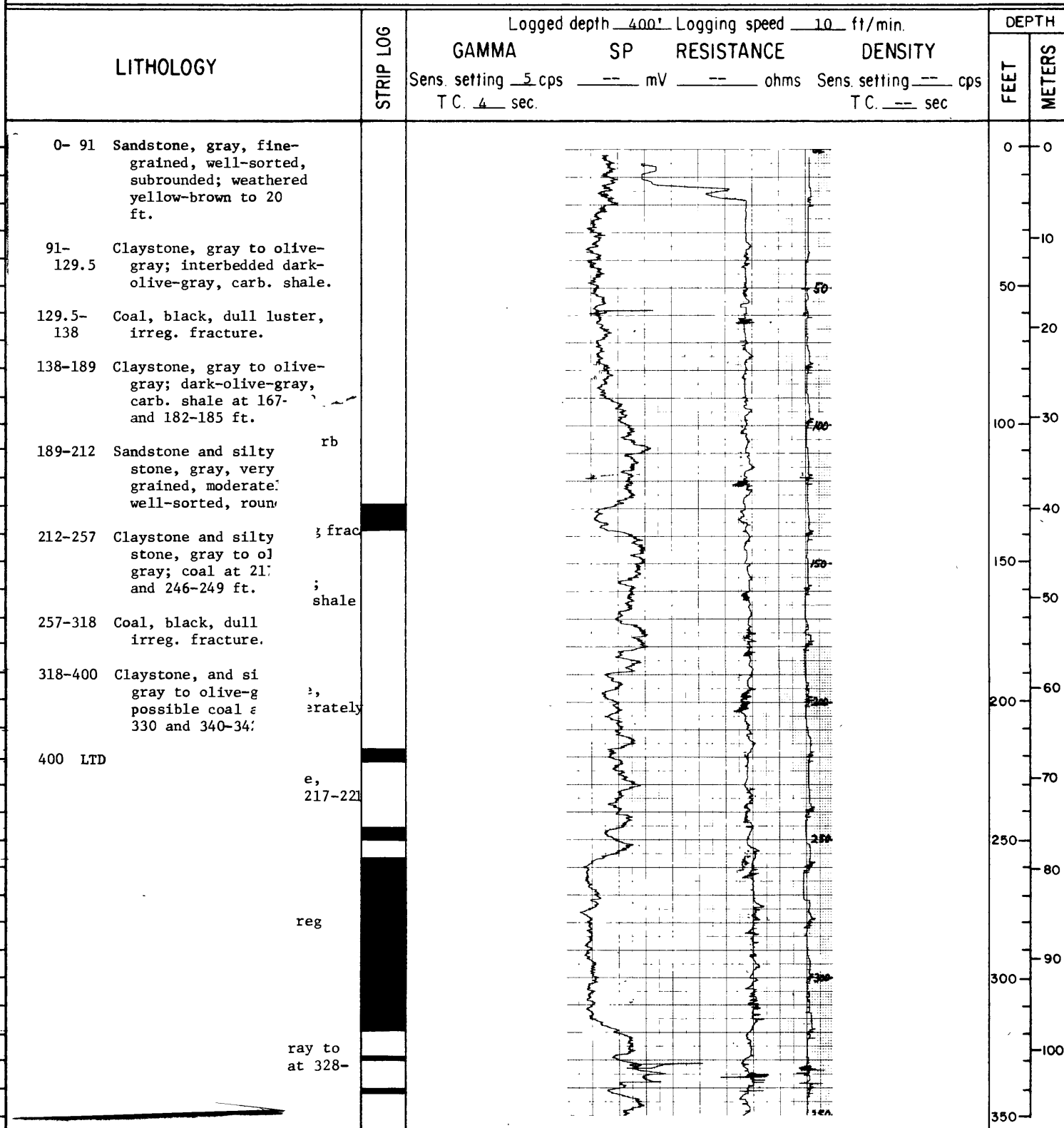
LITHOLOGY	STRIP LOG	Logged depth <u>450'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>5</u> cps	<u>--</u> mV	<u>--</u> ohms	Sens. setting <u>--</u> cps		
		T.C. <u>4</u> sec.			T.C. <u>--</u> sec.		
369-401 Coal, black, dull luster, irreg. frac.; claystone at 396-398 ft.						350	
401-411 Claystone, gray; carb. shale at 401-404 ft.						110	
411-446 Sandstone, silty, gray, fine-grained, poorly sorted, rounded.						120	
446-450 Claystone, gray.						130	
450 LTD						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-80051

SHEET 1 OF 2

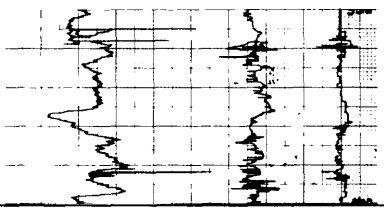
AREA Powder River Basin		QUAD NAME Eagle Rock	
DATE STARTED: 8-19-80	DATE COMP: 8-20-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 5 T. 46 N., R. 71 W. FOOTAGE LOC.		250' FSL 500'	FEL FSL GROUND ELEV. 4610'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 420' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	DEPTH TO FLUID NR
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS: Logged through drill pipe. Collar locator and neutron equipment malfunction.			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80051
SHEET 2 OF 2

REMARKS:

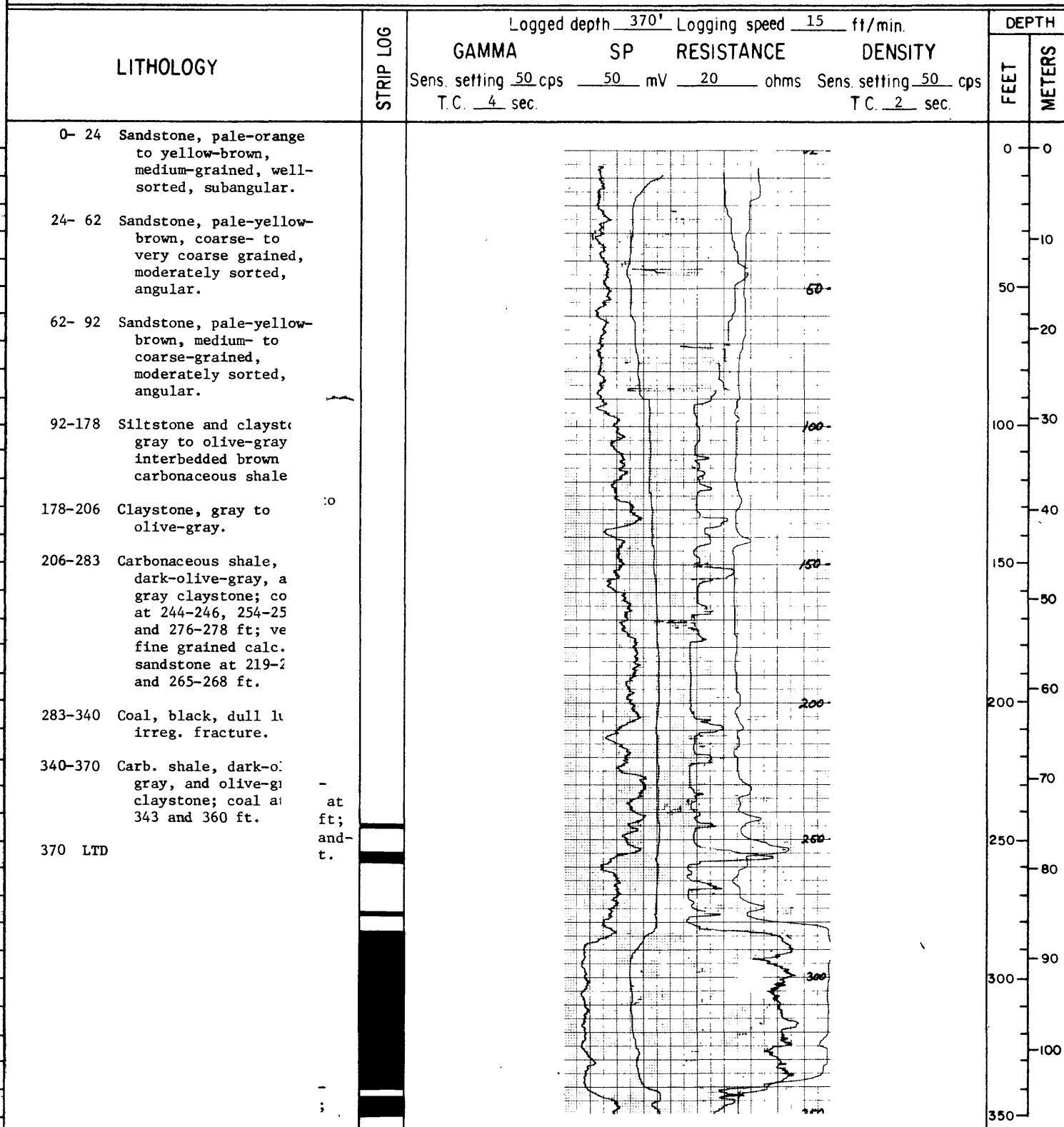
LITHOLOGY	STRIP LOG	Logged depth <u>400'</u> Logging speed <u>10</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>5</u> cps T.C. <u>4</u> sec.	<u>--</u> mV	<u>--</u> ohms	Sens. setting <u>--</u> cps T.C. <u>--</u> sec.		
						350	
							110
							120
							400
							130
							450
							140
							150
							500
							160
							550
							170
							180
							600
							190
							650
							200
							210
							700
							220
							750

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80052

SHEET 1 OF 2

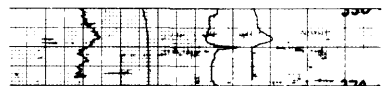
AREA Powder River Basin		QUAD NAME Eagle Rock	
DATE STARTED: 8-26-80	DATE COMP: 8-27-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 5 T. 46 N., R. 71 W. FOOTAGE LOC.		2550' FNE FSL	1875' FEE FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 370' CORING 0	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4675'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.	GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.		TOTAL DEPTH 370'
REMARKS: Resistance spiking			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80052
SHEET 2 OF 2

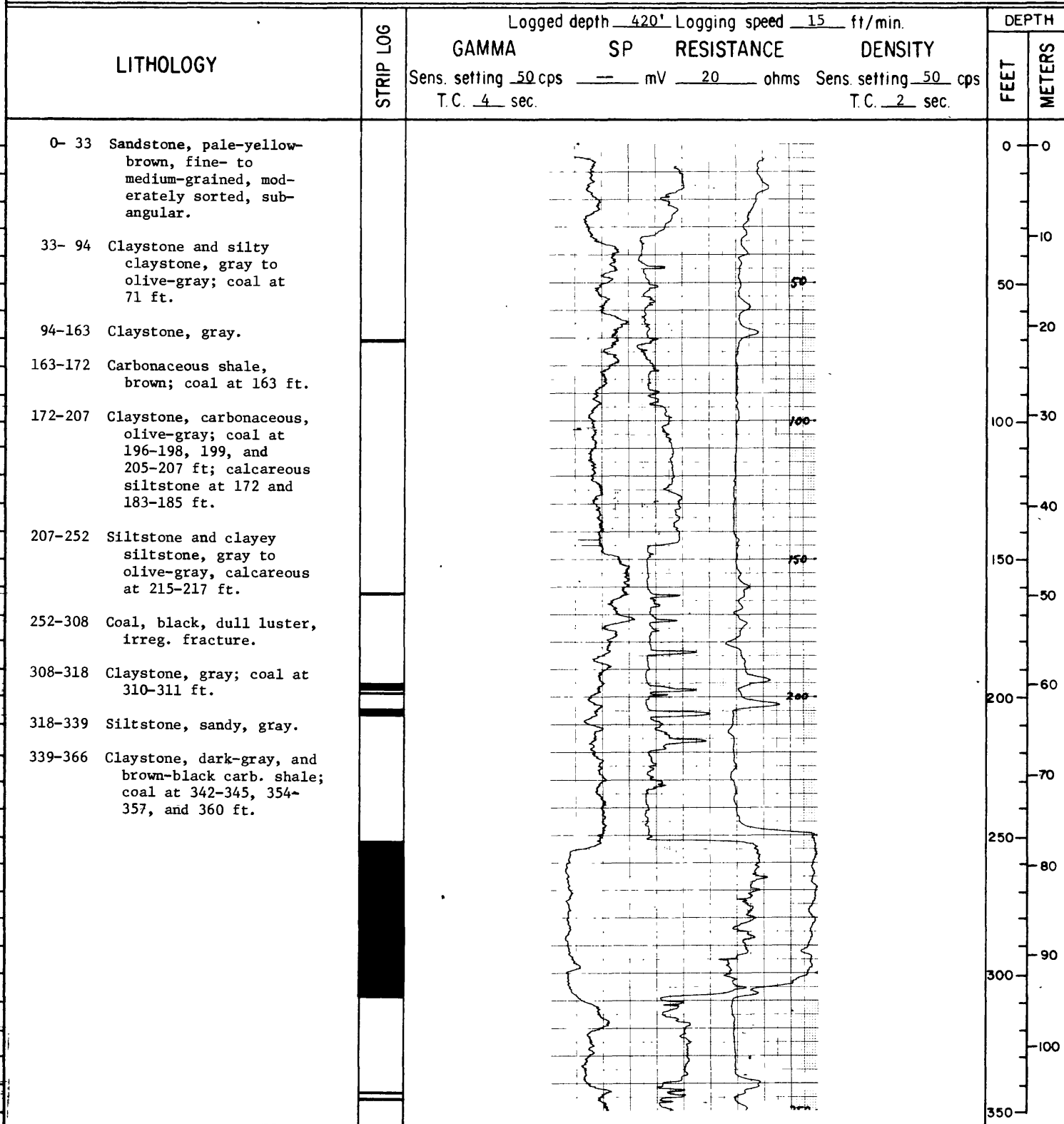
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>370'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	SP <u>50</u> mV	RESISTANCE <u>20</u> ohms	DENSITY Sens. setting <u>50</u> cps T.C. <u>2</u> sec.	FEET	METERS
						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-80053
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME The Gap SW	
DATE STARTED: 8-28-80	DATE COMP: 8-28-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 32 T. 47 N., R. 71 W. FOOTAGE LOC.		1800' FNL 1800' 2100' FWL	GROUND ELEV. 4650'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 420' CORING 0'	TOTAL DEPTH 420'
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		DEPTH TO FLUID 0'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS:			

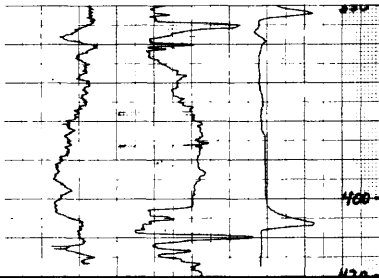


UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80053

SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>420'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	-- mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
366-376 Siltstone, gray.						350	
376-403 Siltstone, sandy, gray.						110	
403-416 Claystone and siltstone, olive-gray; coal at 409-411 ft.						120	
416-420 Siltstone, sandy, gray.						400	
420 LTD						130	
						140	
						150	
						160	
						170	
						180	
						190	
						200	
						210	
						220	
						750	

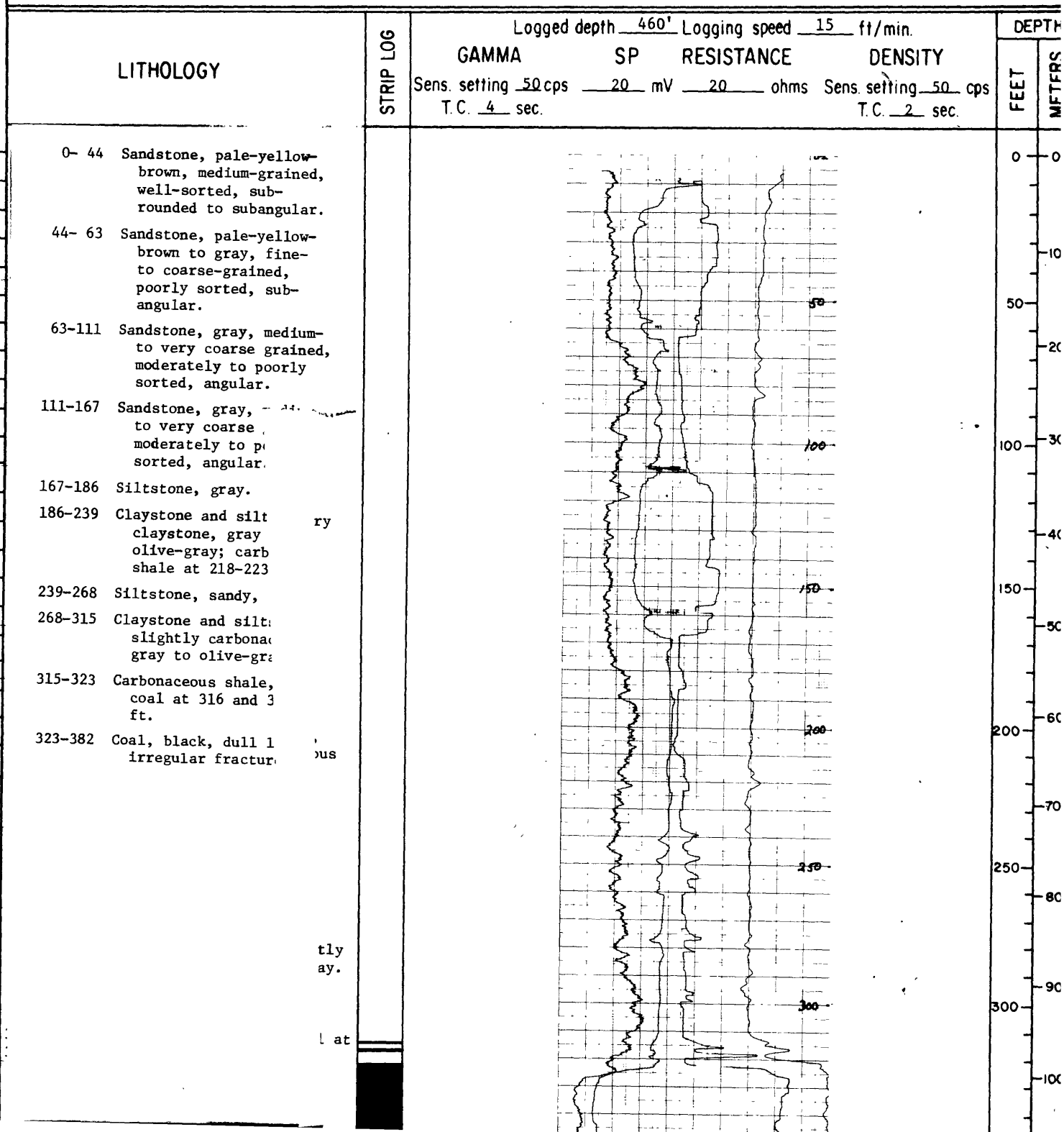
UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80054

SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME The Gap SW	
DATE STARTED: 8-29-80	DATE COMP: 8-29-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 31 T. 47 N., R. 71 W. FOOTAGE LOC.		2200' FSL	1800' FSL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 460' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4660'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.	GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.		TOTAL DEPTH 460'
		DEPTH TO FLUID 0'	

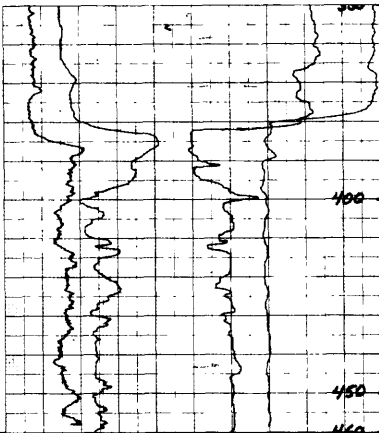
REMARKS:



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80054
SHEET 2 OF 2

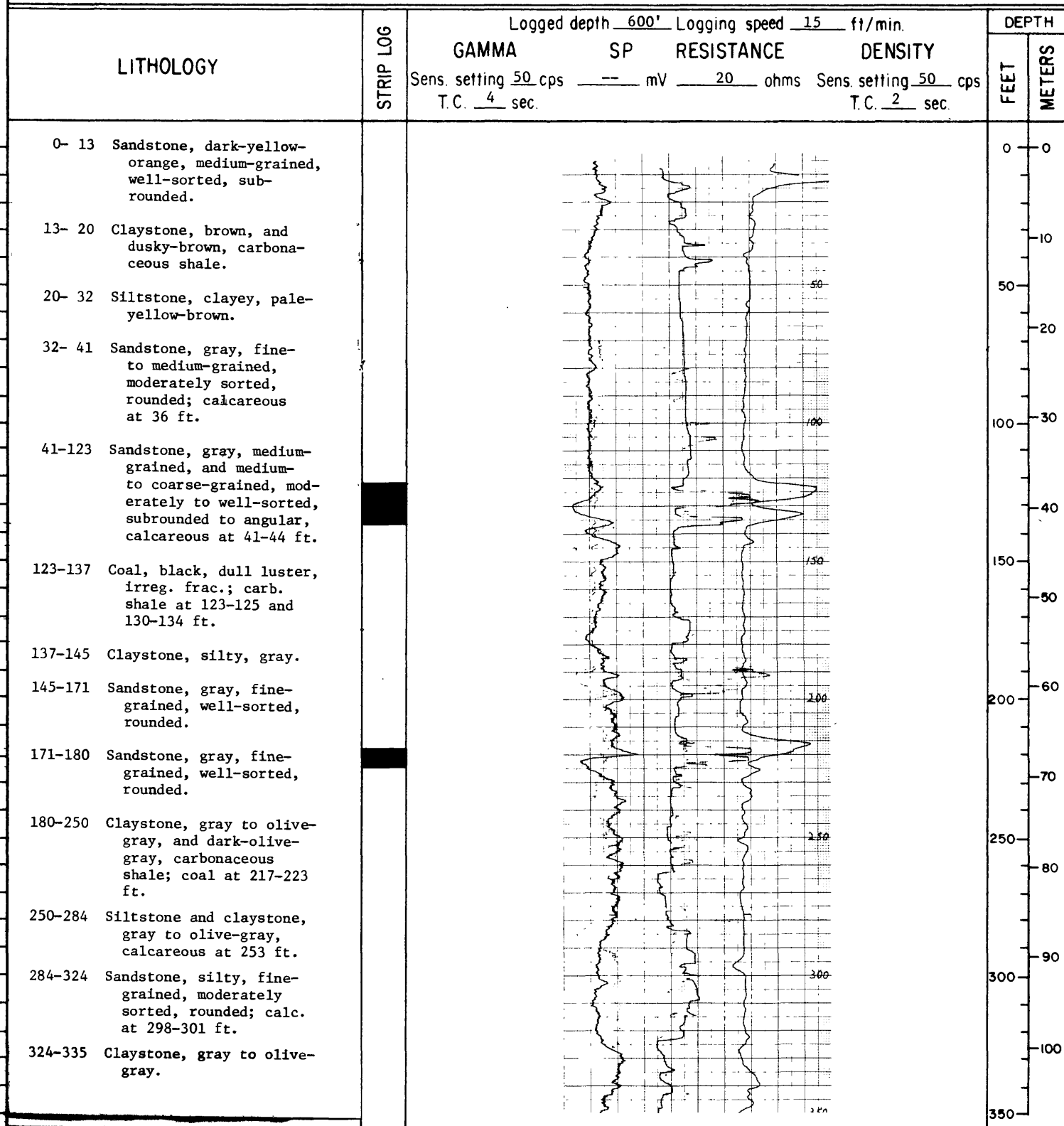
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>460'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	SP <u>20</u> mV	RESISTANCE <u>20</u> ohms	DENSITY Sens. setting <u>50</u> cps T.C. <u>2</u> sec.	FEET	METERS
382-396 Claystone, silty, gray; coal at 391 ft.						350	
396-460 Siltstone, sandy, gray.						400	
460 LTD						450	
						500	
						550	
						600	
						650	
						700	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80055
SHEET 1 OF 2

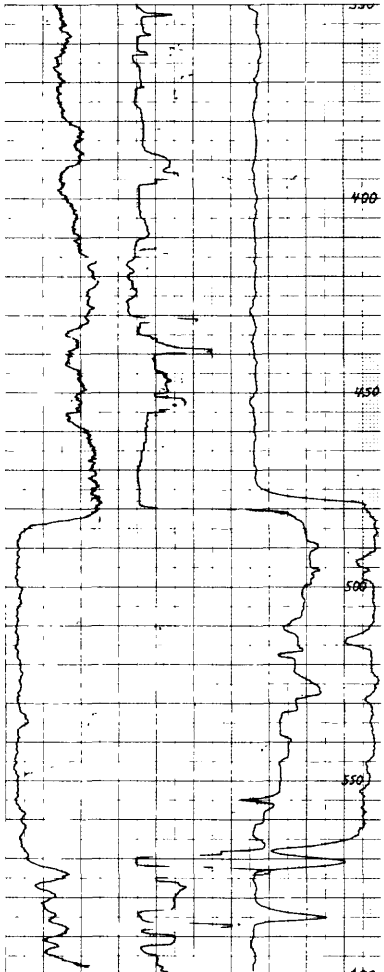
AREA Powder River Basin		QUAD NAME The Gap SW	
DATE STARTED: 8-29-80	DATE COMP.: 8-30-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 25 T. 47 N., R. 72 W. FOOTAGE LOC.		2345' FSL 1255' FWL	GROUND ELEV. 4676'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 600' CORING 0'	TOTAL DEPTH 600'
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	DEPTH TO FLUID 0'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-800
SHEET 2 OF 2

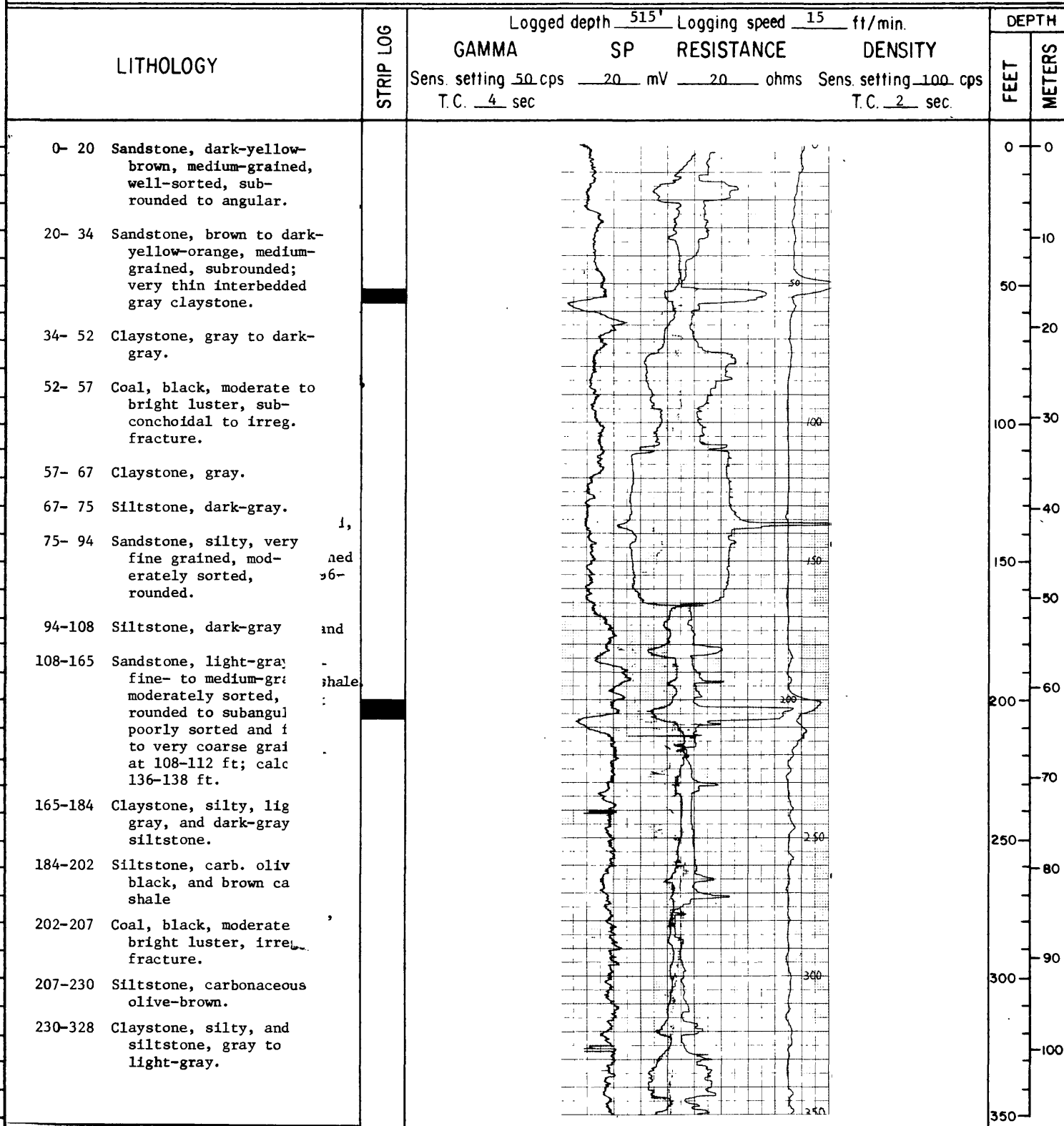
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>600'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	-- mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
335-352 Carbonaceous shale, dark-olive-gray, and olive-gray claystone.						350	
						110	
352-410 Claystone, silty, gray to olive-gray, calc. at 352 ft; carb. shale at 389-396 ft.						120	
410-431 Claystone, olive-gray.						400	
431-455 Siltstone, clayey, gray to olive-gray; yellow- brown siderite at 431 and 439 ft.						130	
455-480 Claystone, olive-gray.						450	
480-575 Coal, black, dull luster, irreg. fracture; clay- stone at 555-556 and 568-572 ft.						140	
575-600 Claystone, silty, gray to olive-gray; coal at 587-588 ft.						150	
600 LTD						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-8005
SHEET 1 OF 2

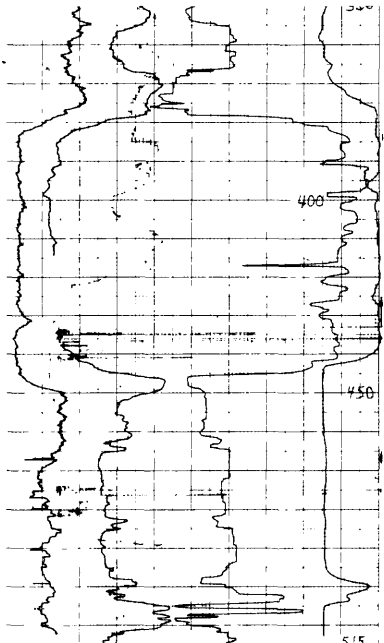
AREA Powder River Basin		QUAD NAME The Gap SW	
DATE STARTED: 8-31-80	DATE COMP: 9-1-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 13 T. 47 N., R. 72 W. FOOTAGE LOC.		1348' FNL FWL 1435' FNL	GROUND ELEV. 4648'
SIZE AND BIT TYPE: 5" Drag		FOOTAGE ROTARY 515' CORING 0'	TOTAL DEPTH 515'
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		DEPTH TO FLUID 0'
LITHOLOGY RECORDED BY: R.J. Noah		GEOPHYSICAL LOGS RECORDED BY: R.J. Noah	
REMARKS: Gamma, Resistance and SP spiking. No SP log from 414 to 435 ft.			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80056
SHEET 2 OF 2

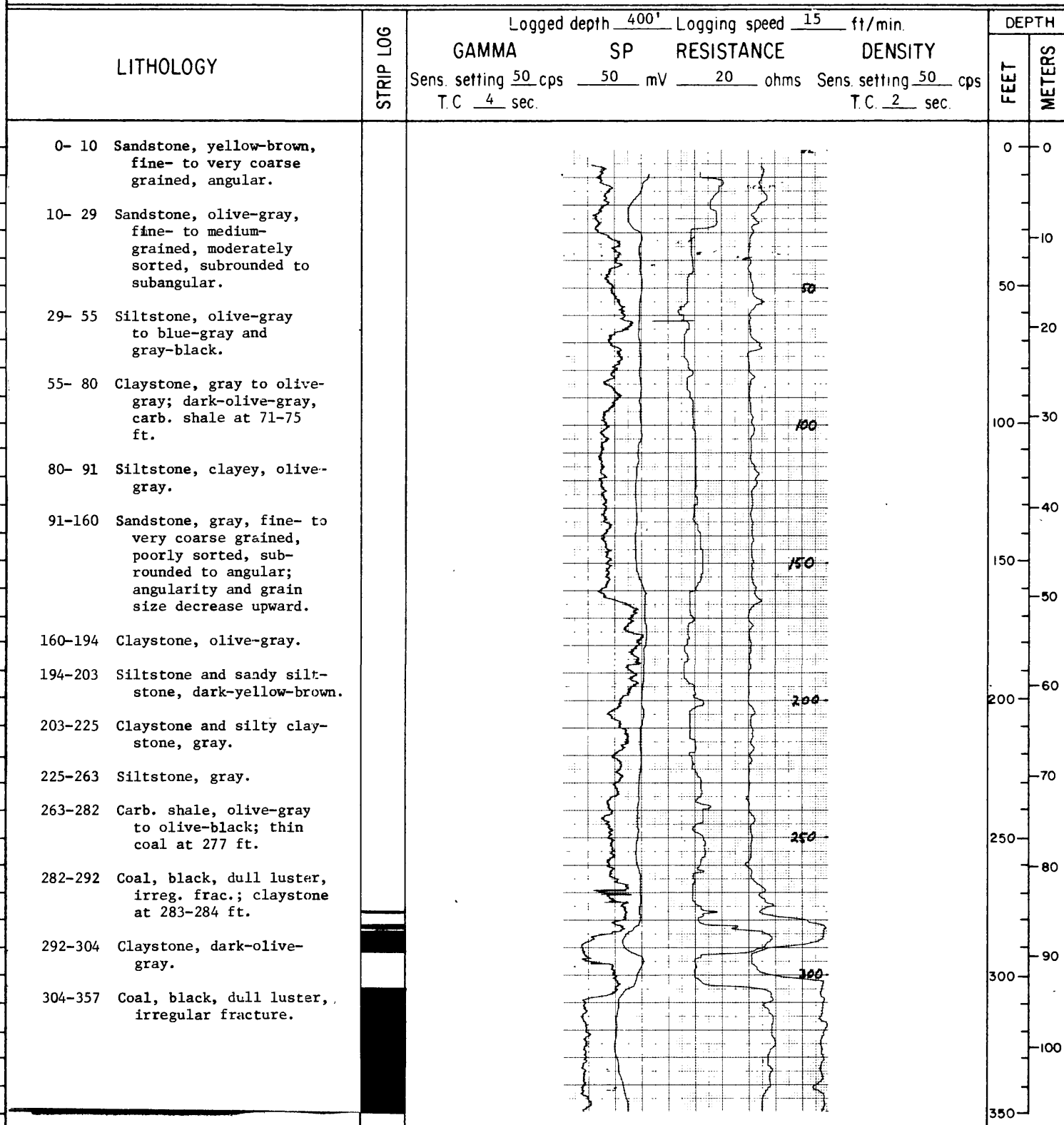
REMARKS: Gamma, Resistance and SP spiking.
No SP log from 414 to 435 ft.

LITHOLOGY	STRIP LOG	Logged depth <u>515'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps	<u>20</u> mV	<u>20</u> ohms	Sens. setting <u>100</u> cps		
		T.C. <u>4</u> sec.			T.C. <u>2</u> sec.		
328-367 Siltstone, sandy, olive-gray to dark-gray.						350	
367-378 Claystone, silty, light-gray.						110	
378-445 Coal, black, dull to moderate luster, irreg. fracture; claystone at 416-417 ft.						120	
445-449 Claystone, light-gray.						400	
449-462 Siltstone, olive-gray.						130	
462-502 Siltstone, sandy, olive-gray.						450	
502-510 Coal, claystone.						140	
510-515 Siltstone, sandy, olive-gray.						150	
515 LTD						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80057
SHEET 1 OF 2

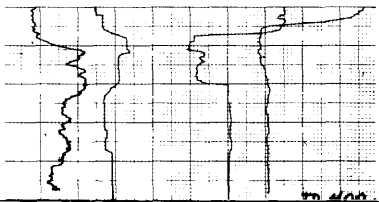
AREA Powder River Basin		QUAD NAME Eagle Rock	
DATE STARTED: 9-2-80	DATE COMP: 9-9-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 18 T. 46 N., R. 71 W. FOOTAGE LOC.		2055' FNL 2055 2420' FEL 2420	GROUND ELEV. 4628'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 400' CORING 0'	TOTAL DEPTH 400'
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		DEPTH TO FLUID 0'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS: Gamma spiking at 269-274 ft.			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80057
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>400'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps	<u>50</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps		
		T.C. <u>4</u> sec			T.C. <u>2</u> sec.		
357-370 Claystone, gray to olive-gray.						350	
370-400 Siltstone and clayey siltstone, gray; slightly carbonaceous at 378-383 ft.						110	
400 LTD						120	
						400	
						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-80058
SHEET 1 OF 2

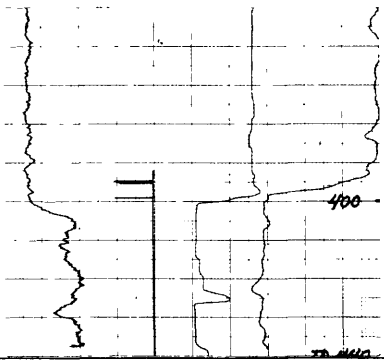
AREA Powder River Basin		QUAD NAME Eagle Rock	
DATE STARTED: 9-10-80	DATE COMP: 9-10-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 7 T. 46 N., R. 71 W. FOOTAGE LOC.		FNL 275' FSL	FEL 1786' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE	
		ROTARY 440'	CORING 0'
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill		GROUND ELEV 4645'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		TOTAL DEPTH 440'	
		DEPTH TO FLUID 0'	
REMARKS: Gamma spiking		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	

LITHOLOGY	STRIP LOG	Logged depth 440' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps T.C. 4 sec.	-- mV	20 ohms	Sens. setting 50 cps T.C. 2 sec		
0- 20 Sandstone, yellow-brown, medium-grained, well-sorted, subrounded.						0	0
20- 43 Sandstone, silty, yellow-brown, fine- to very fine grained, poorly sorted, rounded to subrounded.						10	
43- 72 Sandstone, gray, medium- to coarse-grained, moderately to poorly sorted, subrounded to subangular.						50	
72-134 Claystone and clayey siltstone, gray to dark-olive-gray; brown-black carbonaceous shale						100	30
134-175 Sandstone, gray, medium- to coarse-grained, moderately sorted, subrounded to angular.						150	40
175-227 Claystone and silty claystone, gray to olive-gray; thin interbedded brown carbonaceous shale.						200	50
227-231 Sandstone, gray, medium-grained, subrounded.						250	60
231-238 Claystone, olive-gray.						250	70
238-252 Sandstone, olive-gray, fine-grained, well-sorted, rounded.						250	80
252-296 Claystone and siltstone, gray to olive-gray.						250	90
296-303 Sandstone, gray, very fine grained, rounded, calcareous.						300	
303-341 Claystone, olive-gray; brown-black coal at 310-312, 321-325, and 329-333 ft.						300	
341-400 Coal, black, dull luster, irregular fracture.						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80058
SHEET 2 OF 2

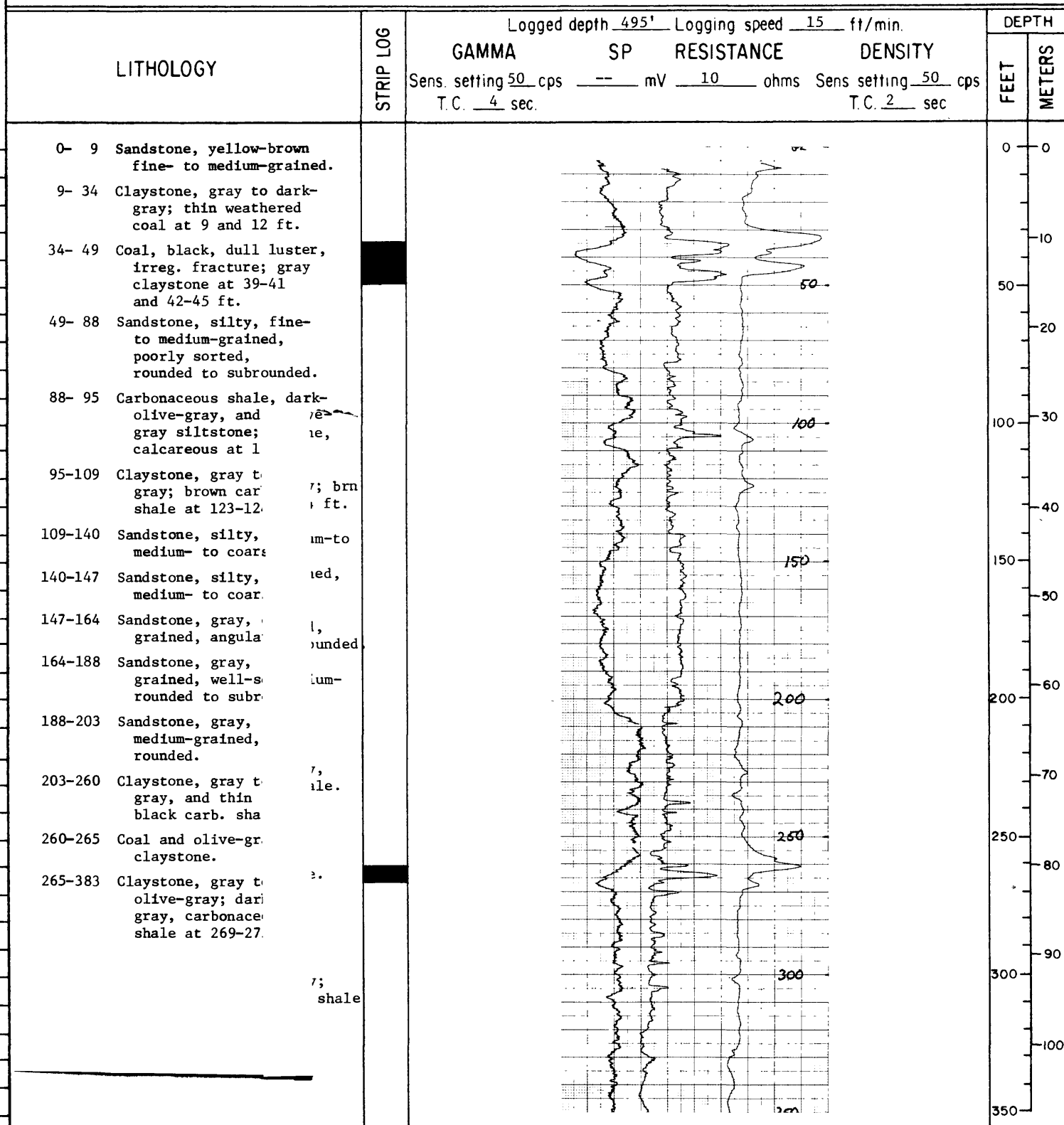
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>440'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>--</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
400-440 Claystone, slightly carbonaceous, gray to dark-olive-gray; dark-yellow-brown siderite at 424-426						350	
440 LTD						400	
						450	
						500	
						550	
						600	
						650	
						700	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80059
SHEET 1 OF 2

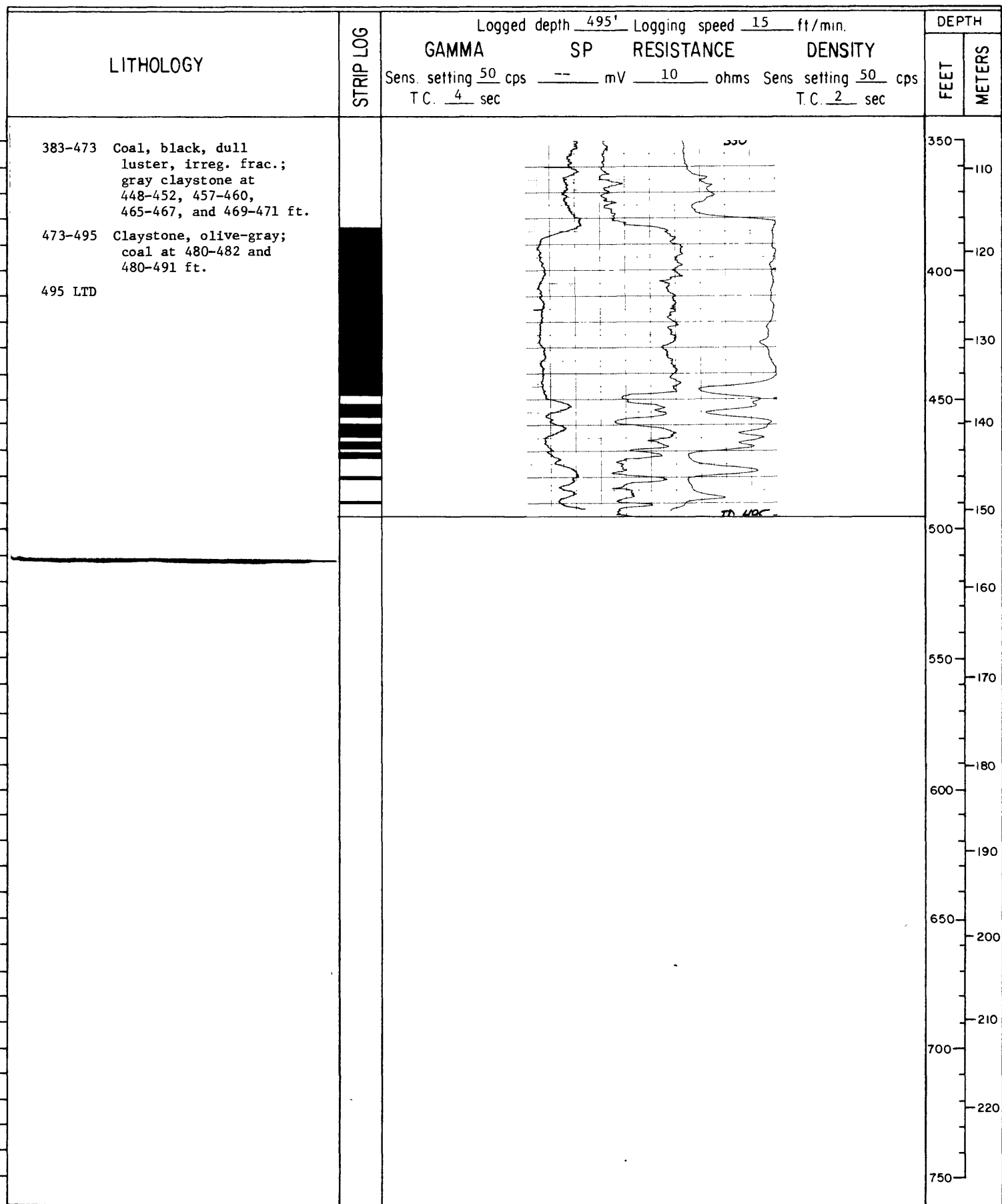
AREA Powder River Basin		QUAD NAME Eagle Rock	
DATE STARTED: 9-10-80	DATE COMP: 9-11-80	COUNTY: Campbell	STATE: Wyoming
LOCATION: SEC. 1 T.46 N., R.72 W.		FOOTAGE LOC. 2395' FSL 127' FEL	
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 495' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80059
SHEET 2 OF 2

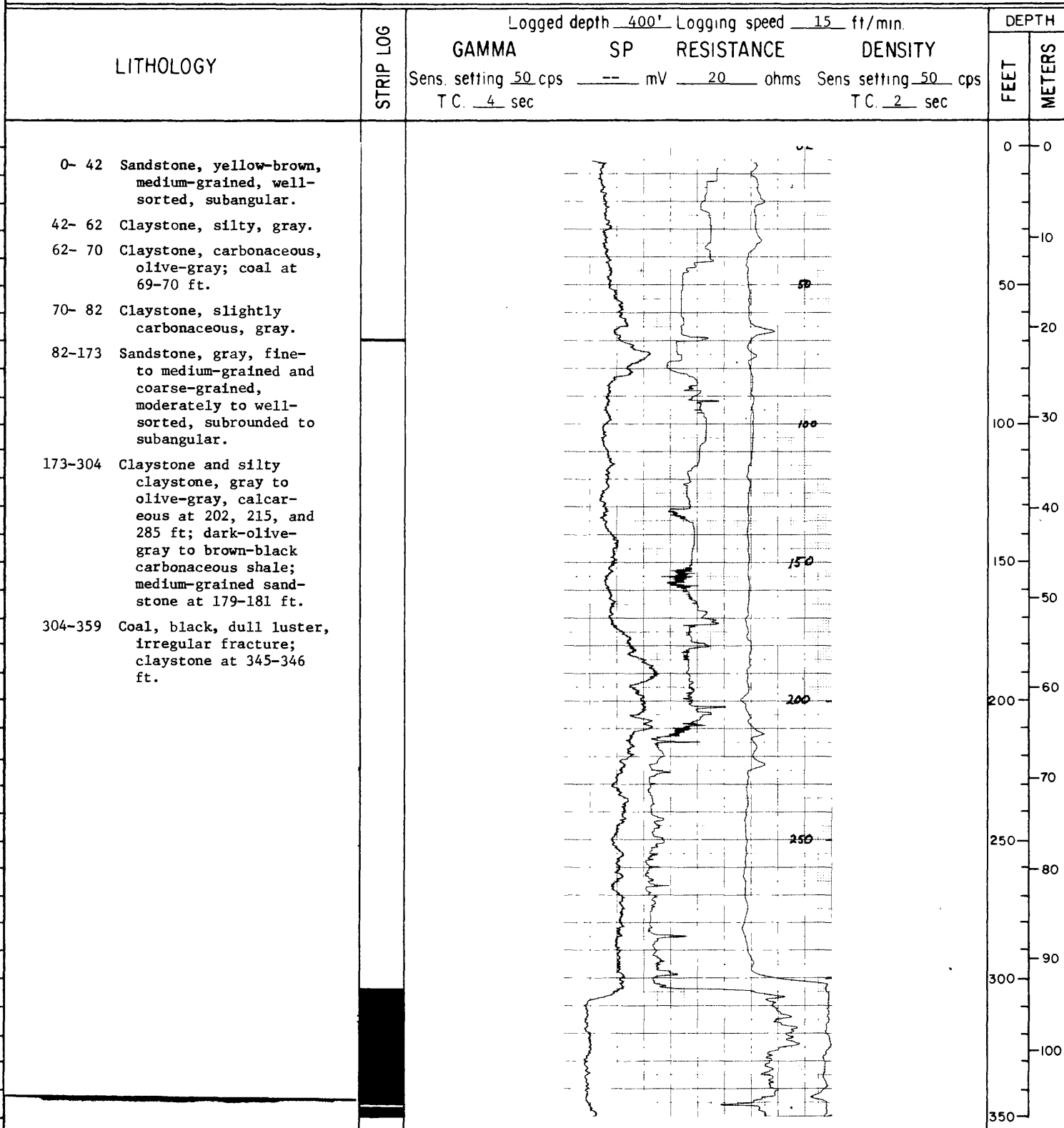
REMARKS:



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80060
SHEET 1 OF 2

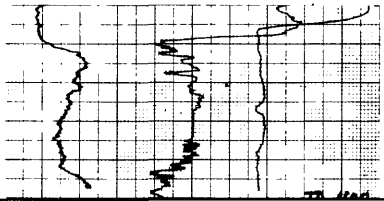
AREA Powder River Basin		QUAD NAME The Gap SW	
DATE STARTED: 9-11-80	DATE COMP: 9-12-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 30 T. 47 N., R. 71 W. FOOTAGE LOC.		1860' FNL FSL	2605' FEET FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 400' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4666'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
REMARKS: Resistance spiking.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80060
SHEET 2 OF 2

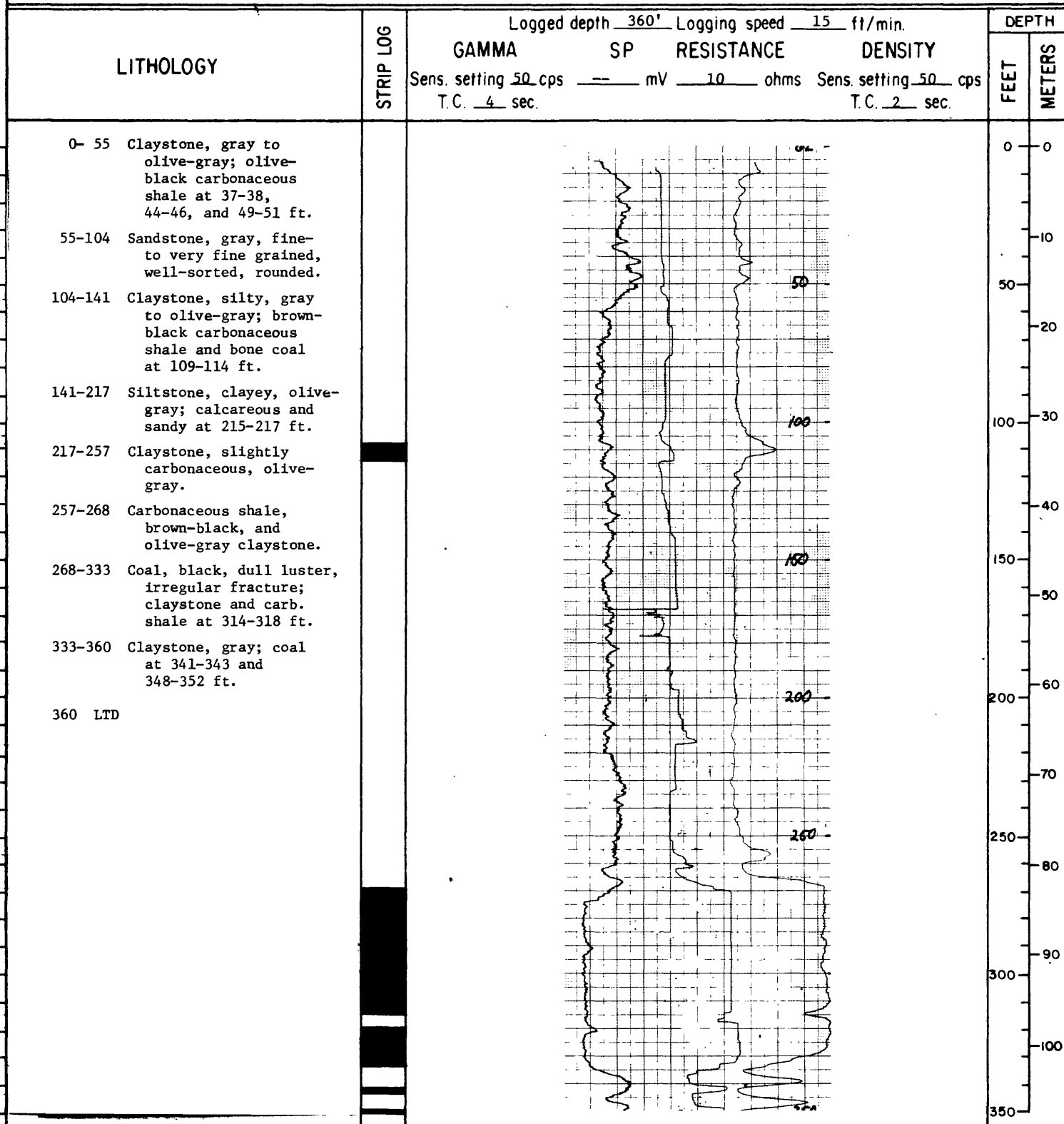
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>400'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
359-368 Claystone and silty claystone, olive-gray. 368-393 Siltstone, gray. 393 LTD		Sens. setting <u>50</u> cps <u>---</u> mV <u>20</u> ohms Sens. setting <u>50</u> cps T.C. <u>4</u> sec. T.C. <u>2</u> sec.					
						350 110 120 400 130 450 140 500 150 160 550 170 600 180 650 190 700 200 750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80061
SHEET 1 OF 2


AREA Powder River Basin		QUAD NAME The Gap SW	
DATE STARTED: 9-12-80	DATE COMP: 9-13-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 28 T. 47 N., R. 71 W. FOOTAGE LOC.		100' FNL #94	96' FEL #94
SIZE AND BIT TYPE: 4 3/4" Drag		GROUND ELEV. 4633'	
		TOTAL DEPTH 360'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
REMARKS: Resistance spiking at 168-197 ft.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80061
SHEET 2 OF 2

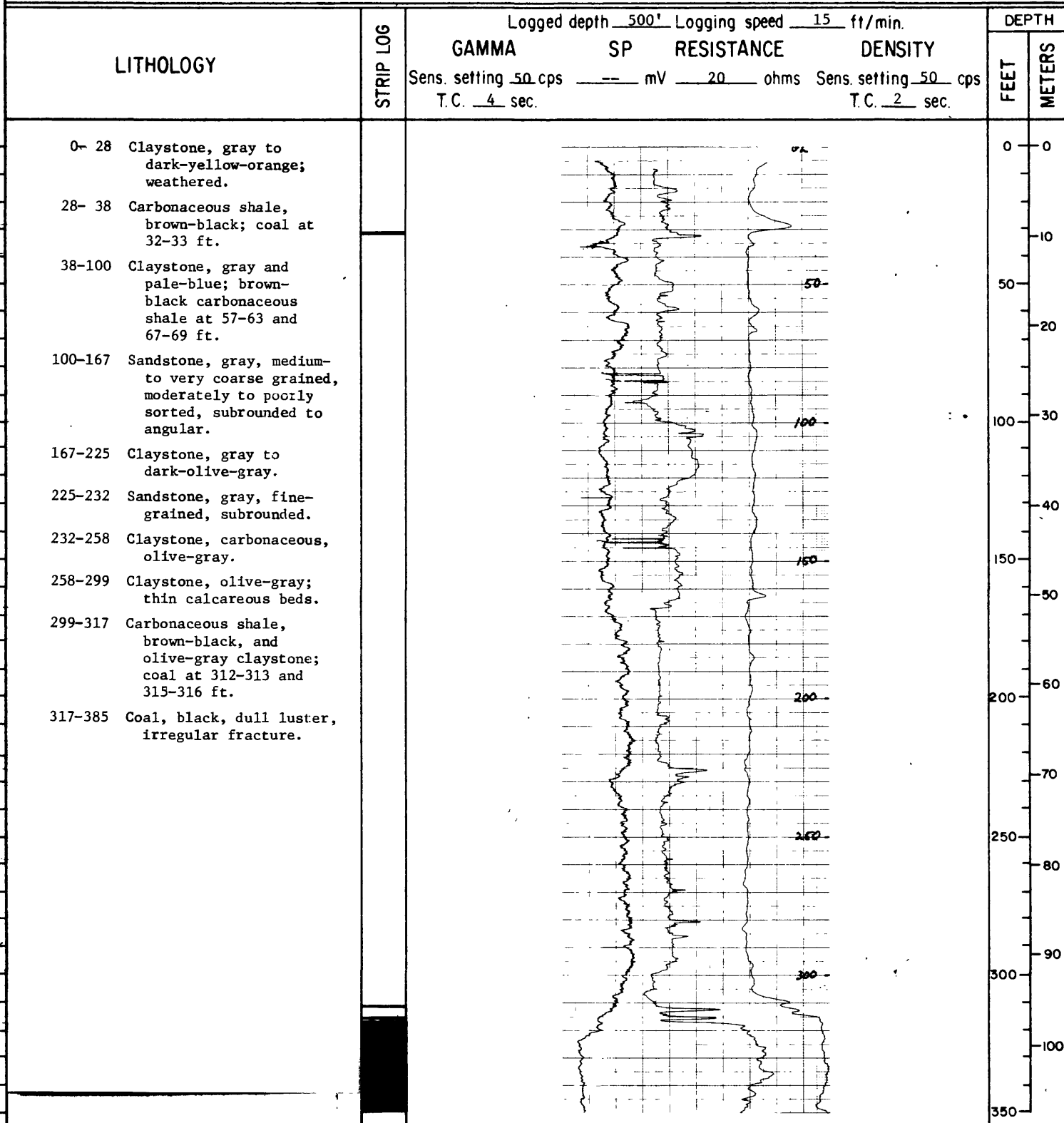
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>360'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps <u>--</u> mV <u>10</u> ohms Sens. setting <u>50</u> cps T.C. <u>4</u> sec. T.C. <u>2</u> sec.					
						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-80062
SHEET 1 OF 2

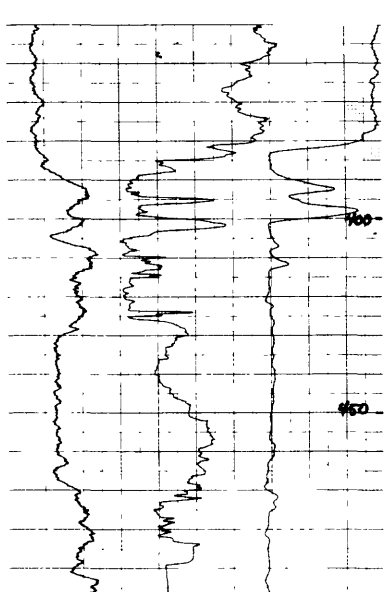
AREA Powder River Basin		QUAD NAME The Gap SW	
DATE STARTED: 9-13-80	DATE COMP: 9-14-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 7 T. 47 N., R. 71 W. FOOTAGE LOC.		60' FSL	40' FEL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE	
		ROTARY 500'	CORING 0'
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524	GROUND ELEV. 4658'	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS: Resistance spiking.			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80062
SHEET 2 OF 2

REMARKS:

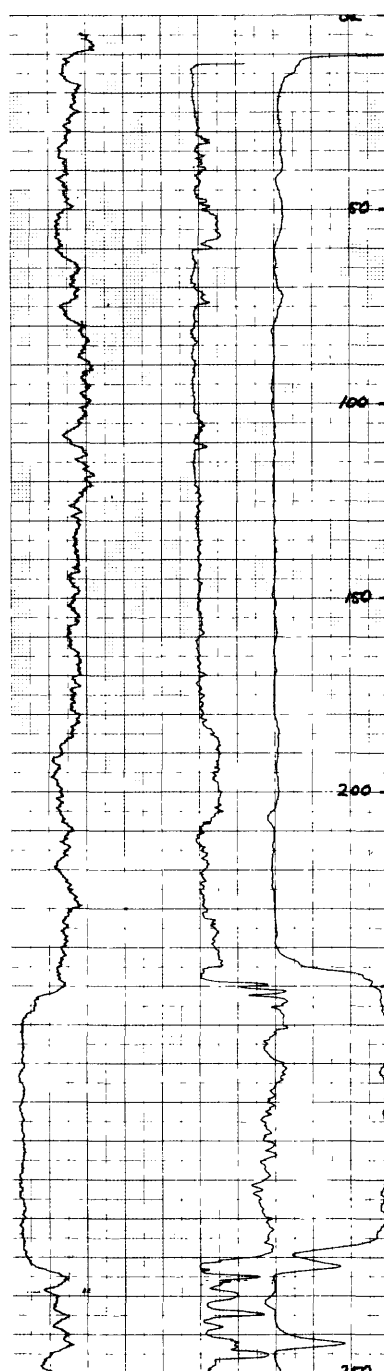
LITHOLOGY	STRIP LOG	Logged depth <u>500'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	<u>--</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
385-424 Claystone, gray, and dark-olive-gray, carbonaceous shale; coal at 395-396 and 400-403 ft.						350	
424-436 Sandstone, gray, fine-grained, rounded; claystone at 425-426 ft.						400	
436-473 Siltstone, sandy, gray.						450	
473-500 Claystone, silty, gray; dark-olive-gray carbonaceous claystone at 484-489 ft.						500	
500 LTD						550	
						600	
						650	
						700	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80063

SHEET 1 OF 2

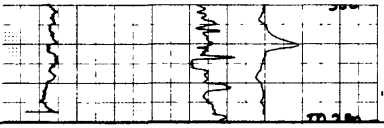
AREA Powder River Basin		QUAD NAME The Gap SW	
DATE STARTED: 9-15-80	DATE COMP: 9-15-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 6 T. 47 N., R. 71 W. FOOTAGE LOC.		FNL 492' FSL	FEL 2275' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 386' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4550'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 13'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			

LITHOLOGY	STRIP LOG	Logged depth 380' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps T.C. 4 sec.	— mV	50 ohms	Sens. setting 50 cps T.C. 2 sec.		
0- 10 Sand and silt, dark-yellow-brown; weathered.						0	0
10- 28 Claystone, gray.							10
28- 50 Sandstone, gray, fine-to medium-grained, moderately to well-sorted, rounded.						50	50
50- 60 Sandstone, gray, medium-grained, well-sorted, rounded.						20	
60-184 Claystone, silty, gray.							
184-208 Sandstone, gray, fine-to medium-grained, moderately sorted, rounded						100	30
208-249 Siltstone and clayey siltstone, gray.							40
249-320 Coal, black, dull luster, irregular fracture; carbonaceous shale at 250-251 and 252-253 ft.						150	50
320-380 Siltstone and clayey siltstone, gray; coal at 324-326, 344-346 ft; siderite at 334-335 ft.						200	60
380 LTD							70
						250	80
							90
						300	
							100
						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD
SHEET 2 OF 2

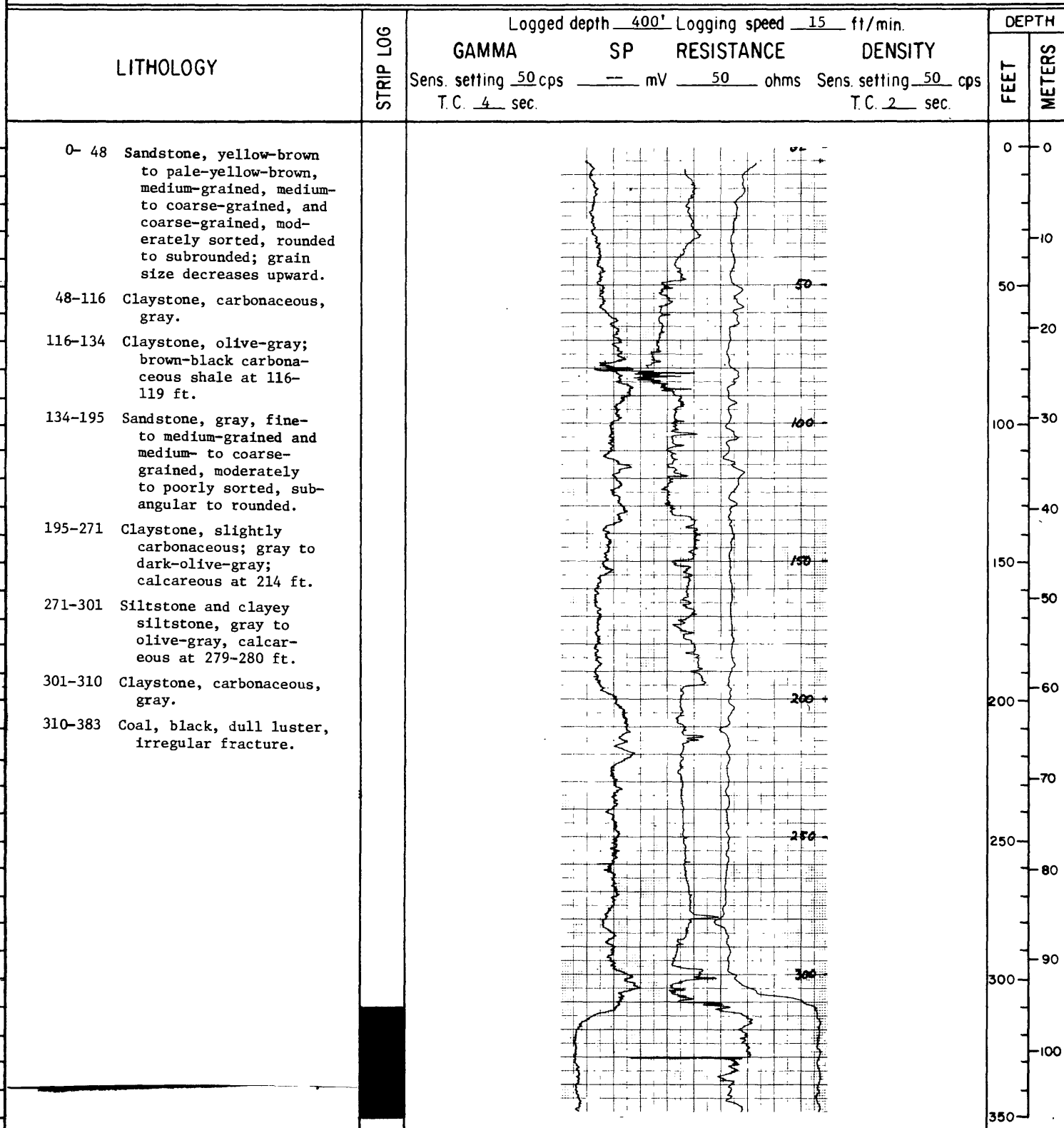
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>380'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps <u>--</u> mV <u>50</u> ohms		Sens. setting <u>50</u> cps			
T.C. <u>4</u> sec.		T.C. <u>2</u> sec.					
						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-80064
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME The Gap SW	
DATE STARTED: 9-15-80		DATE COMP: 9-17-80	
COUNTY Campbell		STATE Wyoming	
LOCATION: SEC. 18 T. 47 N., R. 71 W.		FOOTAGE LOC. 2560' FSL 1195' FWL	
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 400' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS: Gamma spiking at 80-83 ft. Resistance spiking at 80-88 and 330 ft.			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80064
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>400'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps		Sens. setting <u>50</u> cps			
		T.C. <u>4</u> sec		T.C. <u>2</u> sec.			
383-400 Claystone, gray; coal at 397-398 ft. 400 LTD						350	
						110	
						120	
						400	
						130	
						450	
						140	
						150	
						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	

HOLE NO. CD-80065
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME The Gap SW	
DATE STARTED: 9-17-80	DATE COMP: 9-18-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 28 T. 48 N., R. 71 W. FOOTAGE LOC.		FNL 308' FSL	FWL 415' FWL GROUND ELEV 4570'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE	
		ROTARY 345'	CORING 0' TOTAL DEPTH 345'
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			

LITHOLOGY	STRIP LOG	Logged depth <u>345'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T C <u>4</u> sec.	-- mV	<u>50</u> ohms	Sens. setting <u>50</u> cps T C <u>2</u> sec.		
0- 64 Sandstone, gray, fine- to coarse-grained, moderately to poorly sorted, rounded to angular; weathered brown to 10 ft.						0	0
64- 75 Claystone, silty, gray.						50	15
75-108 Sandstone, gray to brown, fine- to medium-grained, moderately sorted, subrounded to angular.						100	30
108-152 Claystone, gray.						150	45
152-173 Siltstone, gray.						200	60
173-198 Sandstone, gray, very fine grained, well- sorted, rounded.						250	75
198-210 Claystone, gray; coal at 209 ft.						300	90
210- 283.5 Coal, black, dull luster, irregular fracture.						350	105
283.5- 311 Sandstone and silty sandstone, gray, very fine grained, well- sorted, rounded.						400	120
311-345 Siltstone, gray, and olive-gray carbona- ceous claystone; thin coal at 314 and 316 ft.						450	135
345 LTD						500	150

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80066
SHEET 1 OF 1

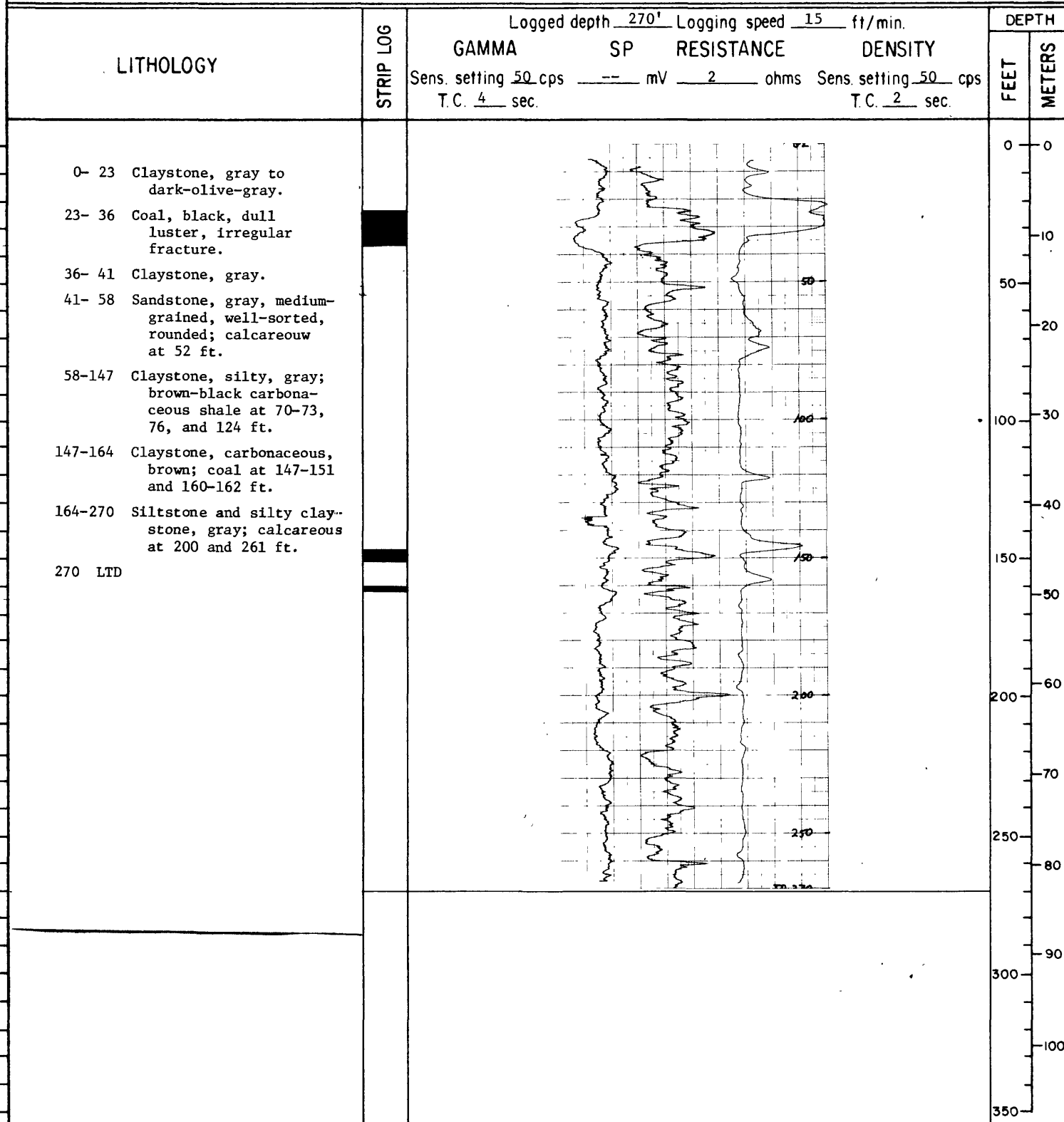
AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 9-22-80	DATE COMP: 9-25-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 2 T. 48 N., R. 71 W. FOOTAGE LOC.		1210' FSL	395' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 207.2' DRING 82.8'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	GROUND ELEV. 4644'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			

LITHOLOGY	STRIP LOG	Logged depth 290' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps T.C. 4 sec.	-- mV	10 ohms	Sens. setting 50 cps T.C. 2 sec.		
0- 10 Claystone, yellow-gray, weathered.						0	0
10- 28 Sandstone, silty, light-olive-gray, fine- to very fine grained, moderately sorted, rounded.						10	
28- 49 Siltstone, gray.						20	
49- 53 Coal, black, dull luster, irreg. frac.						30	
53- 65 Sandstone, gray, fine-grained, well-sorted, rounded.						40	
65-154 Claystone and silty claystone, gray to olive-gray; carbonaceous shale at 76-81 ft.						50	
154-168 Carbonaceous shale, dark-olive-gray; interbedded thin coal and very fine grained sandstone.						60	
168-218 Coal, black, dull luster, irregular fracture.						70	
218-242 Claystone, gray.						80	
242-263 Coal, black, dull luster, irregular fracture.						90	
263-290 Claystone, gray; dark-olive-gray carbonaceous shale at 267-269 ft.						100	
290 LTD						110	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80067
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 9-29-80	DATE COMP: 9-29-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 4 T. 48 N., R. 70 W. FOOTAGE LOC.		1490' FSL	385' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 270' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV 4742'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.	GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.		TOTAL DEPTH 270'
REMARKS:			

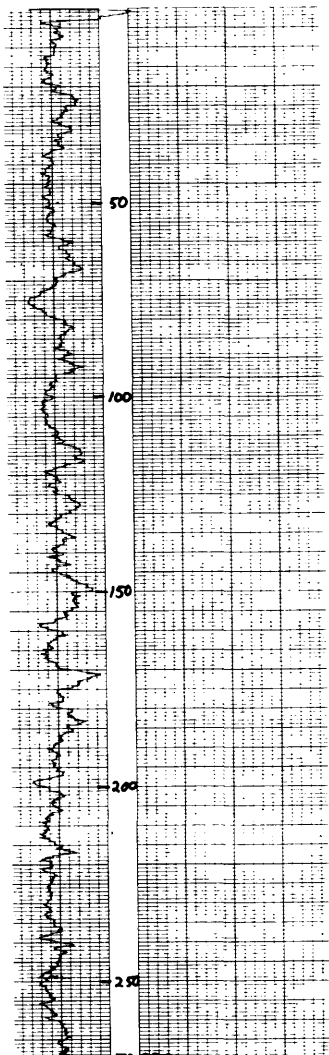


UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80068

SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 9-30-80	DATE COMP: 10-2-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 21 T. 49 N., R. 70 W. FOOTAGE LOC.		2300' FNL FSL	1285' FEL FNL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 270' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4770'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.	GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.		TOTAL DEPTH 270'
REMARKS: Resistance and density equipment not operating.			

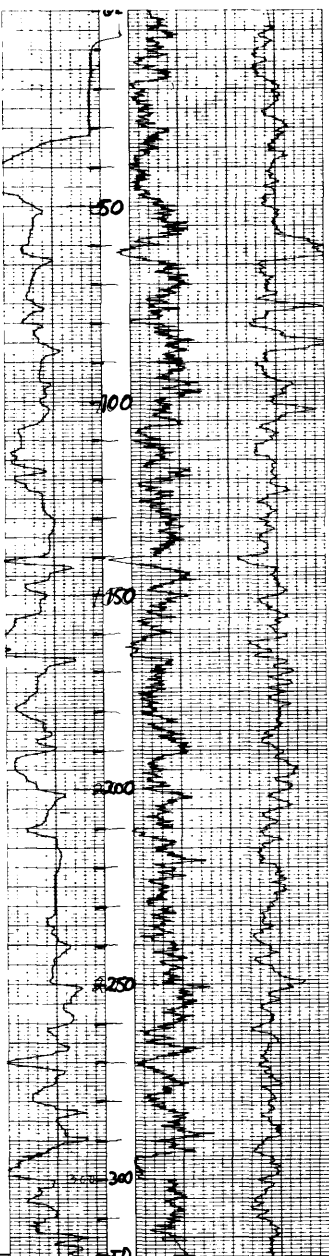
LITHOLOGY	STRIP LOG	Logged depth 270' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps T.C. 4 sec.	-- mV	-- ohms	Sens. setting -- cps T.C. -- sec		
0- 23 Claystone, gray to dark-olive-gray.						0	0
23- 36 Coal, black, dull luster, irregular fracture.							10
36- 41 Claystone, gray.						50	
41- 58 Sandstone, gray, medium-grained, well-sorted, rounded; calcareous at 52 ft.							20
58-147 Claystone, silty, gray; brown-black carbonaceous shale at 70-73, 76, and 124 ft.						100	30
147-164 Claystone, carbonaceous, brown; coal at 147-151 and 160-162 ft.							40
164-270 Siltstone and silty claystone, gray; calcareous at 200 and 261 ft.						150	
270 LTD							50
						200	60
							70
						250	80
							90
						300	
							100
						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80069

SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-3-80	DATE COMP: 10-3-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 22 T. 49 N., R. 70 W. FOOTAGE LOC.		2010' FSL 1540' FWL	GROUND ELEV. 4775'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 320' CORING 0'	TOTAL DEPTH 320'
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		DEPTH TO FLUID NR
LITHOLOGY RECORDED BY: T.P. Lonnie	GEOPHYSICAL LOGS RECORDED BY: R.J. Noah		
REMARKS: Log format from left to right SP, Gamma, Density due to use of back-up logging unit.			

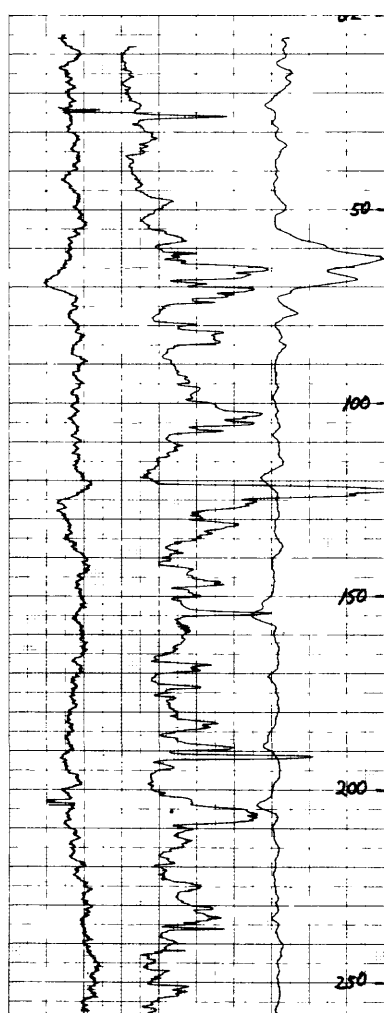
LITHOLOGY	STRIP LOG	Logged depth 320' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 100 cps T.C. 4 sec.	20 mV	-- ohms	Sens. setting 100 cps T.C. 2 sec.		
0- 18 Siltstone, grayish-brown.						0	0
18- 48 Sandstone and silty sandstone, yellow-brown, fine-grained, well-sorted, subangular.							10
48- 58 Claystone, yellow-brown.						50	
58- 64 Coal, black, dull luster, irregular fracture.						20	
64-106 Claystone, olive-gray; coal at 75-77 and 84-87 ft; carbonaceous shale at 102 ft.						100	30
106-156 Siltstone, light-gray; calcareous at 140-142 ft.							40
156-166 Sandstone, light-gray, very fine grained, rounded.						150	
166-260 Siltstone and claystone, gray to olive-gray.						50	
260-300 Siltstone, slightly sandy, gray to olive-gray.						200	60
300-320 Claystone, olive-gray.						70	
320 LTD						80	
						90	
						100	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80070

SHEET 1 OF 1

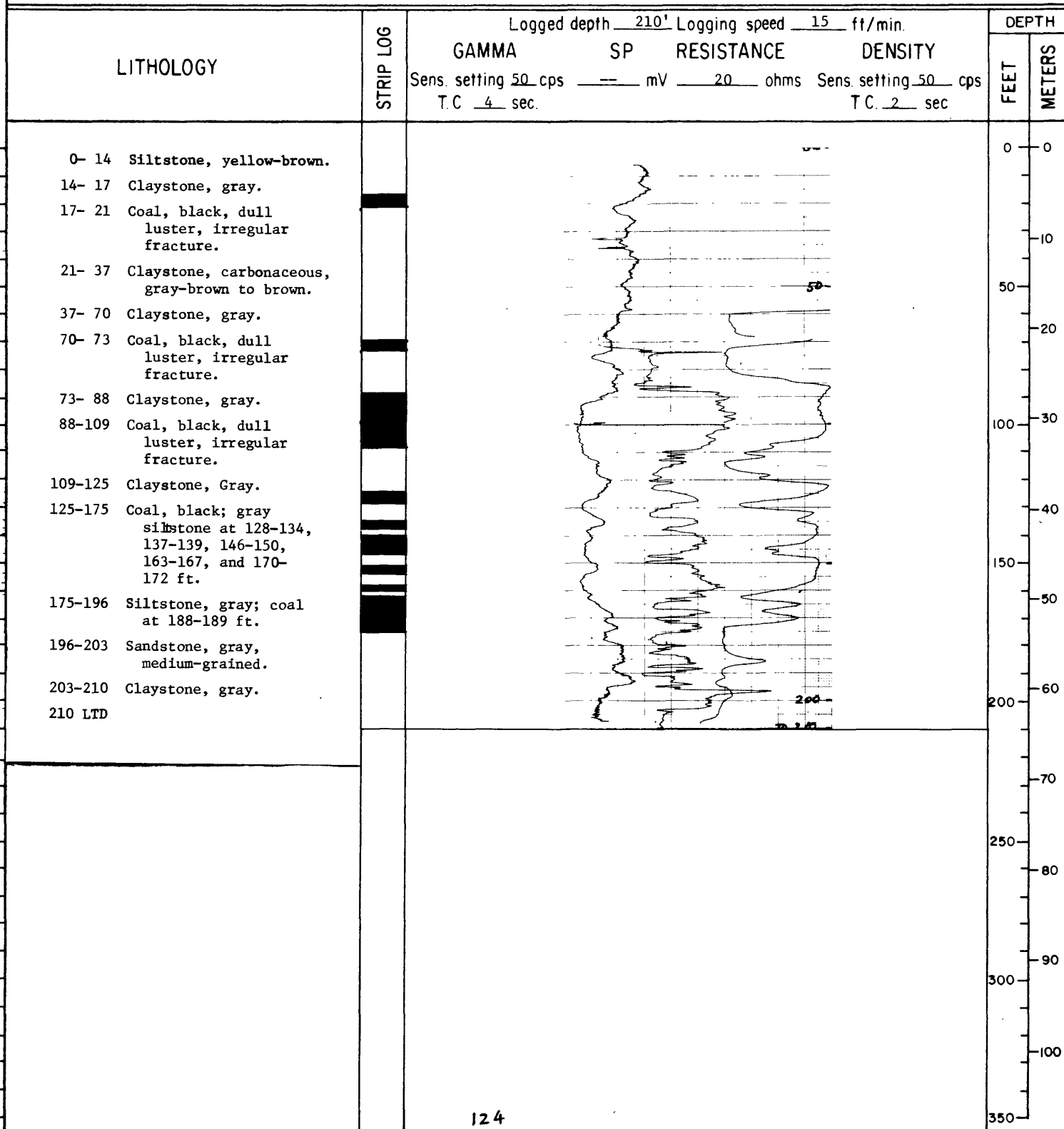
AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-4-80	DATE COMP: 10-4-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 28 T. 49 N., R. 70 W. FOOTAGE LOC.		980' FSL	875' FEL
SIZE AND BIT TYPE: 5" Drag		FOOTAGE ROTARY 260' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS:			

LITHOLOGY	STRIP LOG	Logged depth 260' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps T.C. 4 sec	--- mV	10 ohms	Sens. setting 50 cps T.C. 2 sec		
0- 64 Claystone, carbonaceous, gray to dark-olive-gray; calcareous at 26 ft.						0	0
64- 74 Coal, black, dull luster, irregular fracture; claystone.							10
74-121 Claystone and siltstone, gray to olive-gray.						50	50
121-127 Sandstone, gray, very fine grained, rounded, calcareous.							20
127-224 Claystone and siltstone, gray to olive-gray, calcareous at 154, 192, and 205-209 ft.						100	30
224-260 Claystone, carbonaceous, gray to dark-olive-gray.							40
260 LTD						150	150
						200	200
							70
						250	250
							80
							90
						300	300
							100
						350	350

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80071
SHEET 1 OF 1

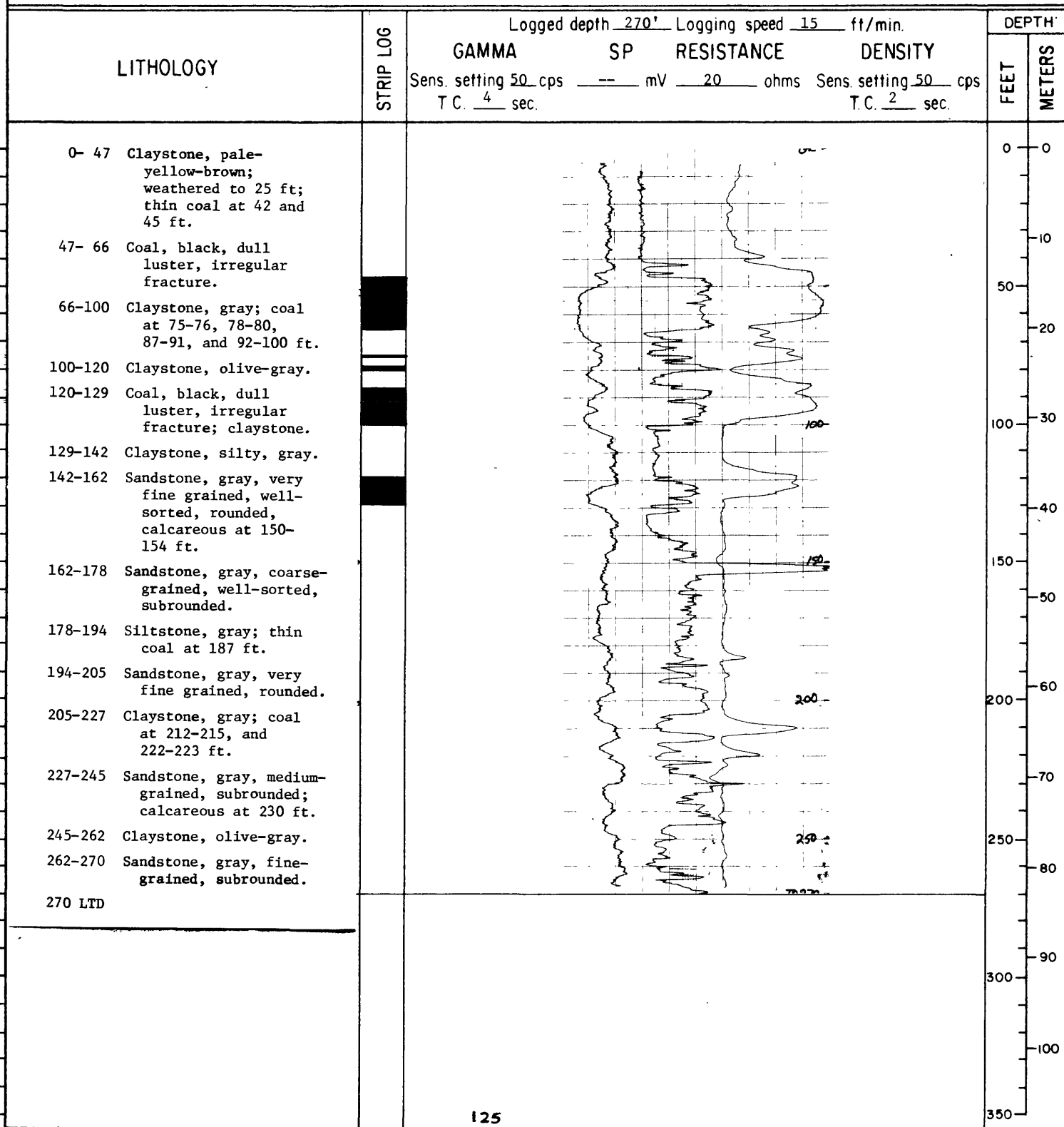
AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-4-80	DATE COMP: 10-4-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 17 T. 48 N., R. 70 W. FOOTAGE LOC.		FNL 255' 295'	FEL 1245' 1245'
SIZE AND BIT TYPE: 5" Drag		GROUND ELEV 4768'	
		TOTAL DEPTH 220'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 60'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS: No resistance log recorded above 74 ft. No density log recorded above 60 ft.			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80072
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-5-80	DATE COMP: 10-5-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 8 T. 48 N., R. 70 W. FOOTAGE LOC.		FNL EST 150'	FEL FWL 620'
SIZE AND BIT TYPE: 4 3/4" Drag		GROUND ELEV. 4762'	
		TOTAL DEPTH 275'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
REMARKS:		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	

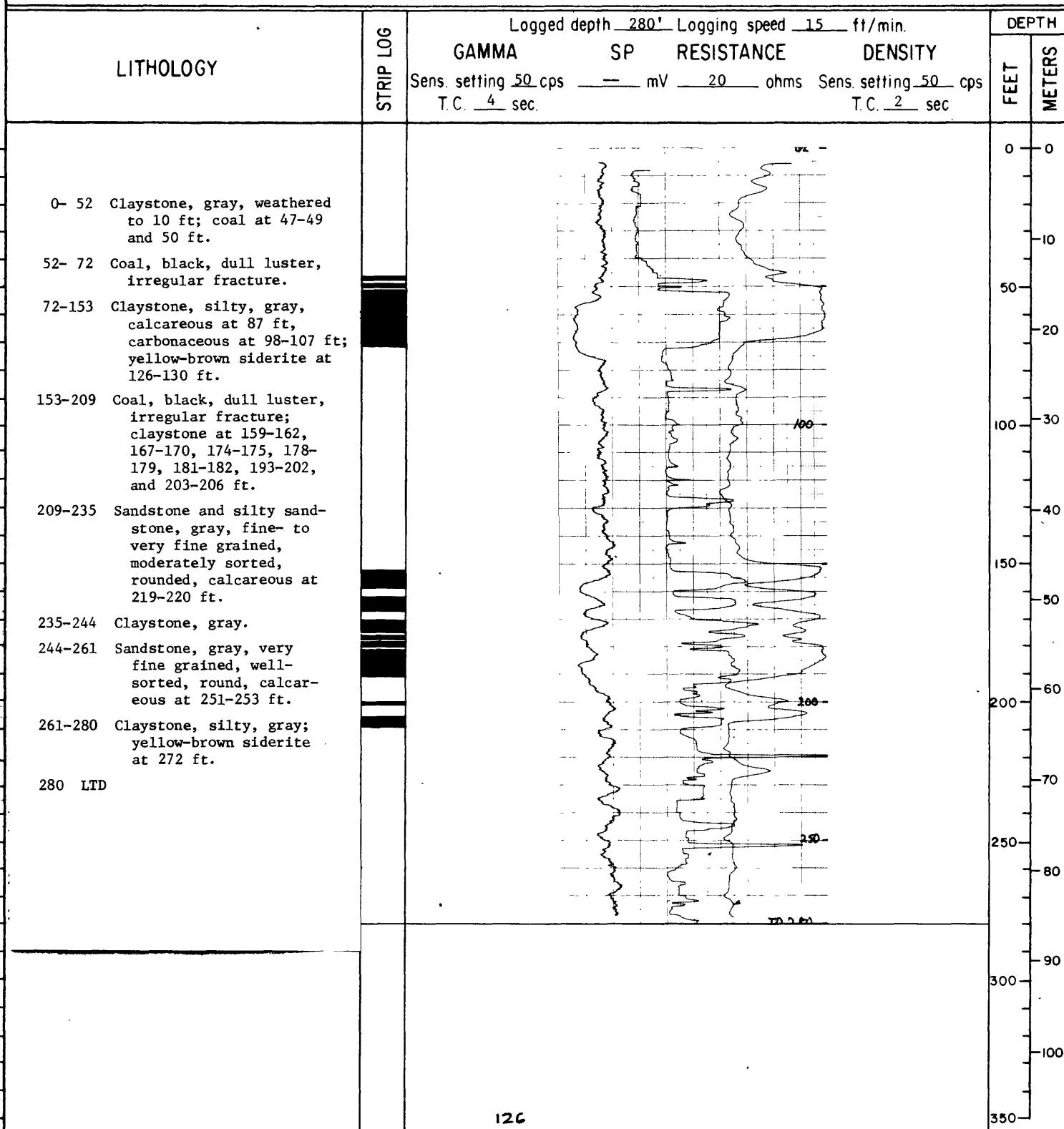


UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80073

SHEET 1 OF 1

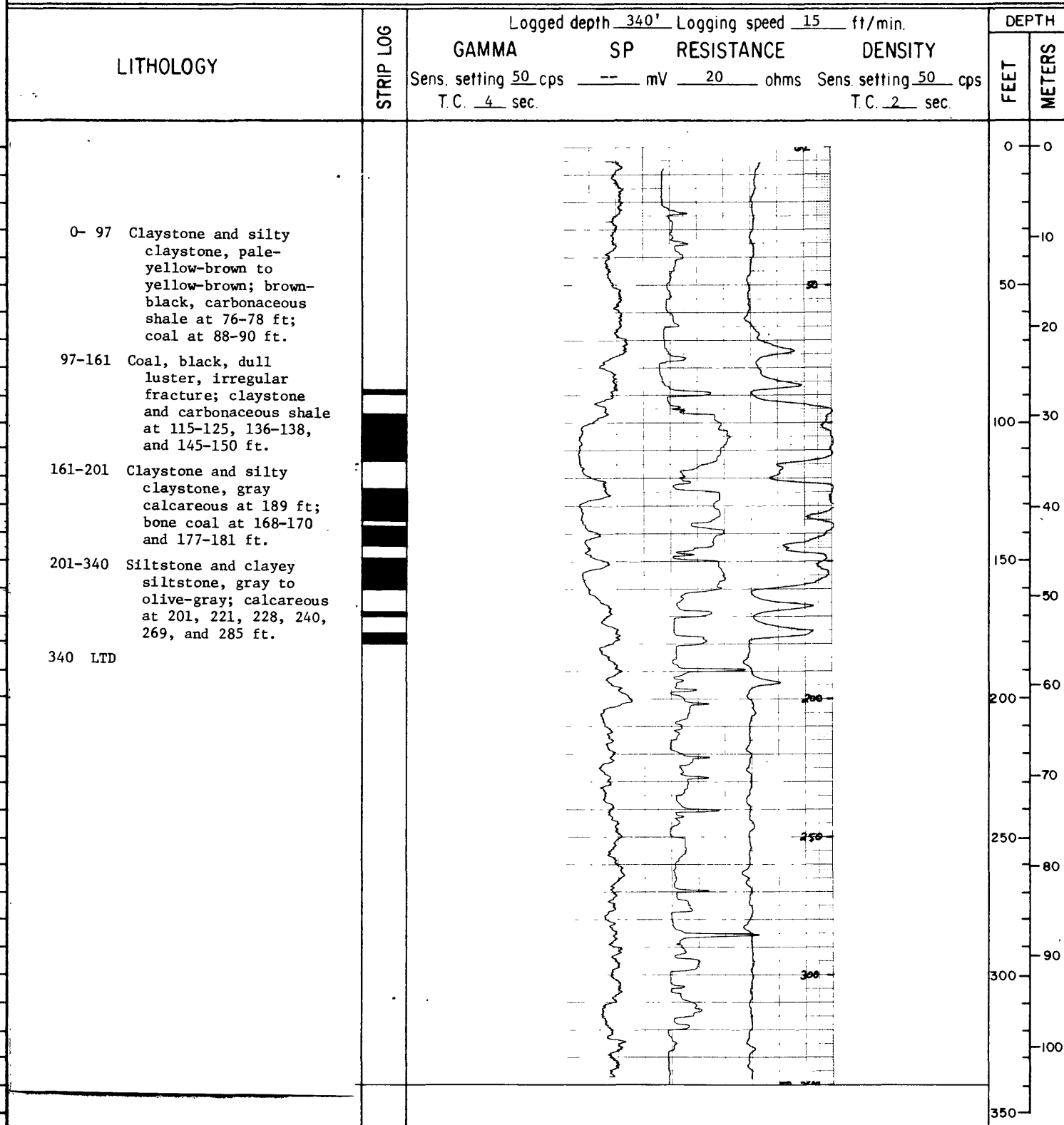
AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-5-80	DATE COMP: 10-6-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 5 T. 48 N., R. 70 W. FOOTAGE LOC.		475' FSL	795' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE	
		ROTARY 280'	CORING 0'
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80074
SHEET 1 OF 1

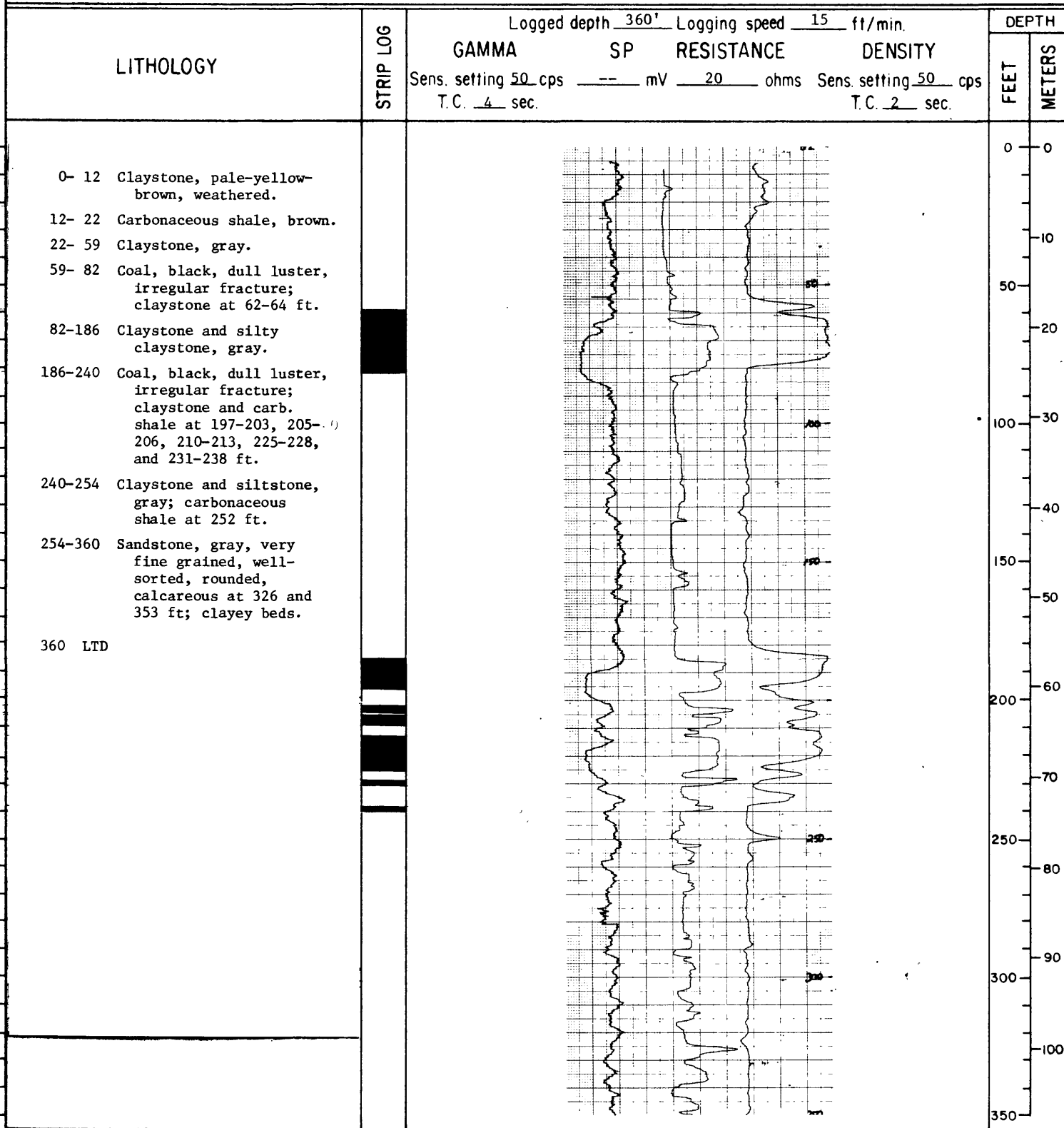
AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-6-80	DATE COMP: 10-6-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 17 T. 48 N., R. 70 W. FOOTAGE LOC.		1050' FSL FSL 1125' FEL FEL	GROUND ELEV. 4794'
SIZE AND BIT TYPE: 5" Drag		FOOTAGE ROTARY 340' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	TOTAL DEPTH 340'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80075
SHEET 1 OF 2

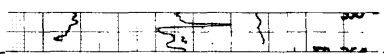
AREA Powder River Basin		QUAD NAME Saddle Horse Butte	
DATE STARTED: 10-7-80	DATE COMP: 10-7-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 20 T. 48 N., R. 70 W. FOOTAGE LOC.		960' FSL 2640' FSL	GROUND ELEV. 4783'
SIZE AND BIT TYPE: 5" Drag		FOOTAGE ROTARY 360' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	TOTAL DEPTH 360'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80075
SHEET 2 OF 2

REMARKS:

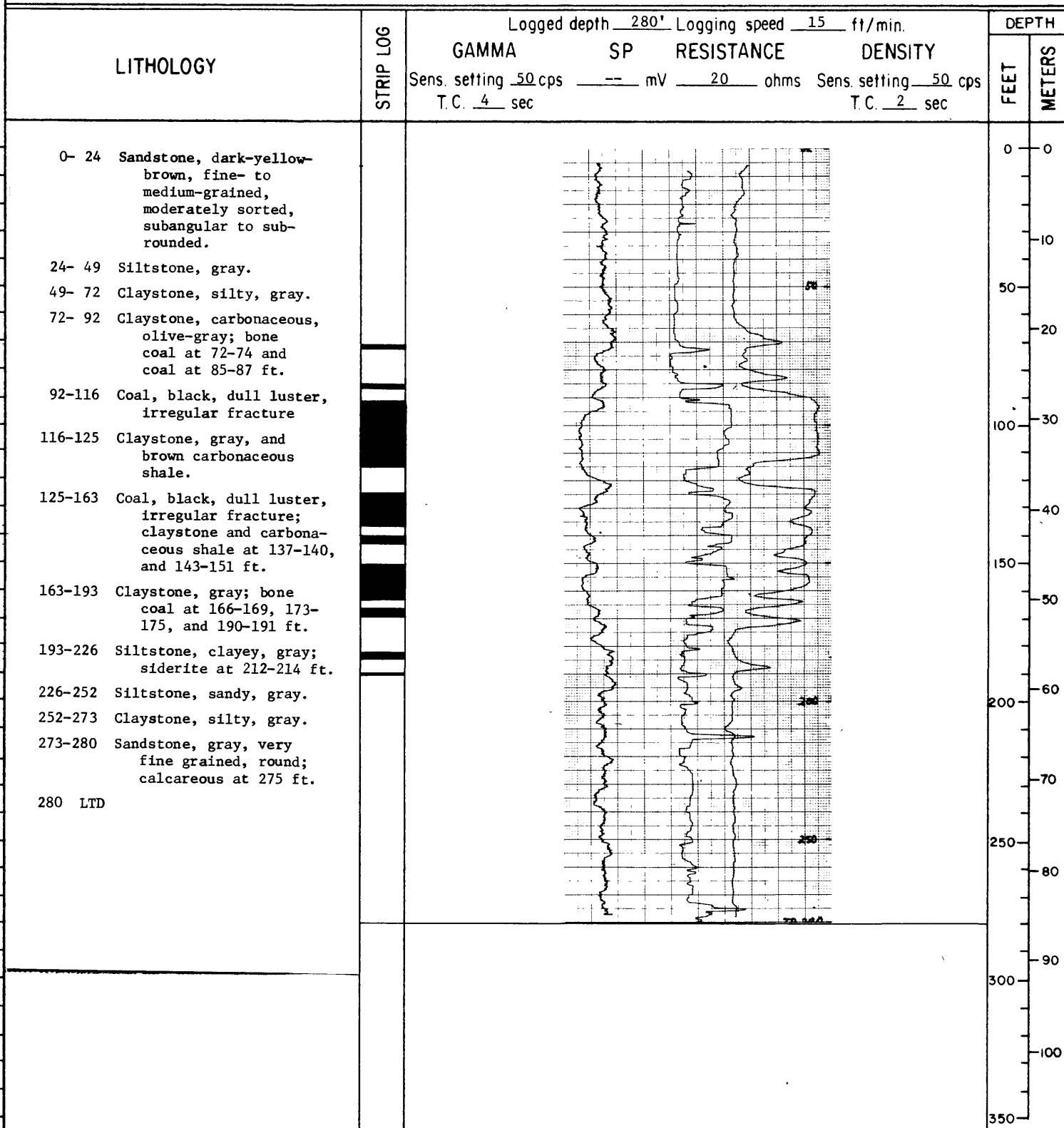
LITHOLOGY	STRIP LOG	Logged depth <u>360'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	SP -- mV	RESISTANCE <u>20</u> ohms	DENSITY Sens. setting <u>50</u> cps T.C. <u>2</u> sec.	FEET	METERS
						350	
						110	
						120	
						400	
						130	
						450	
						140	
						150	
						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80076

SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-18-80	DATE COMP: 10-18-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 17 T. 48 N., R. 70 W. FOOTAGE LOC.		2415' FSL	2650' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 280' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4753'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS:			

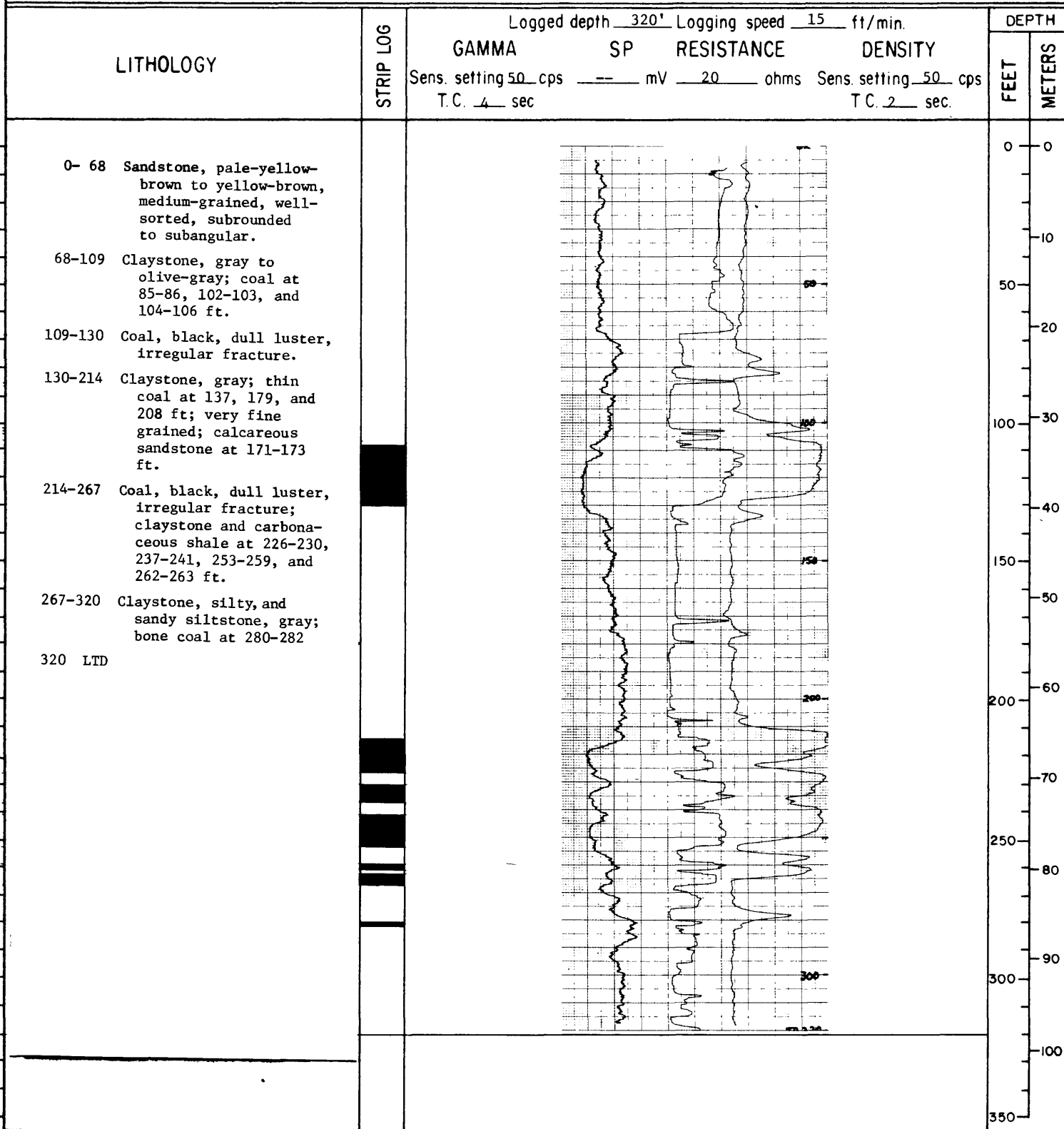


UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80077

SHEET 1 OF 1

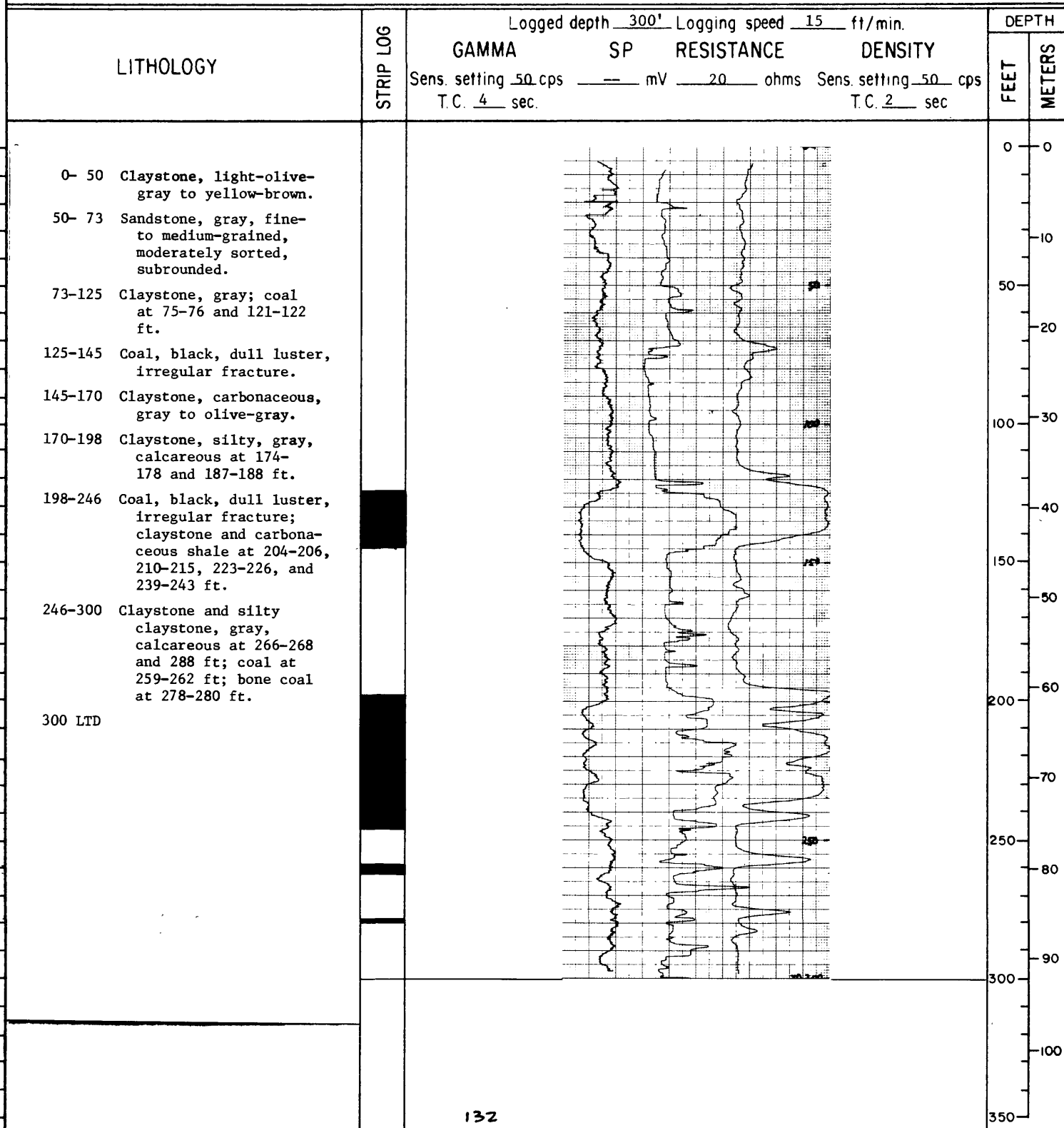
AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-20-80	DATE COMP: 10-20-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 8 T. 48 N., R. 70 W. FOOTAGE LOC.		2055' FNL 191	1160' FE FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE	
DRILLING AGENCY: USGS/CD/NCR		ROTARY 320' CORING 0'	TOTAL DEPTH 320'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DRILL TYPE: Portadrill 524	DEPTH TO FLUID 0'
REMARKS:		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80078
SHEET 1 OF 1

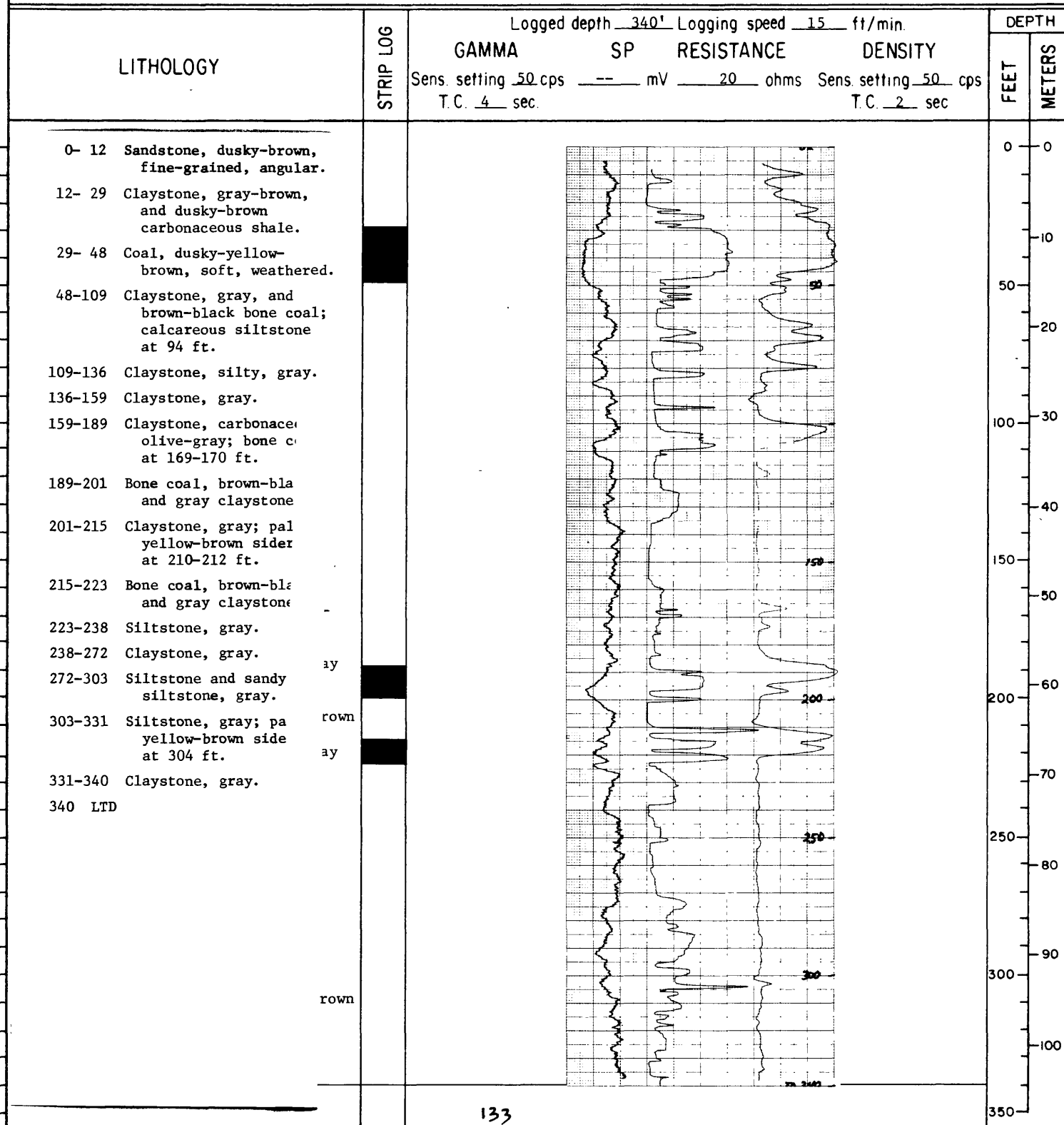
AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-20-80	DATE COMP: 10-20-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 17 T. 48 N., R. 70 W. FOOTAGE LOC.		FNL 445' 494' 310'	GROUND ELEV. 4770'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 300' CORING 0'	TOTAL DEPTH 300'
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		DEPTH TO FLUID 0'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS: Gamma spiking above 25 ft.			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80079
SHEET 1 OF 1

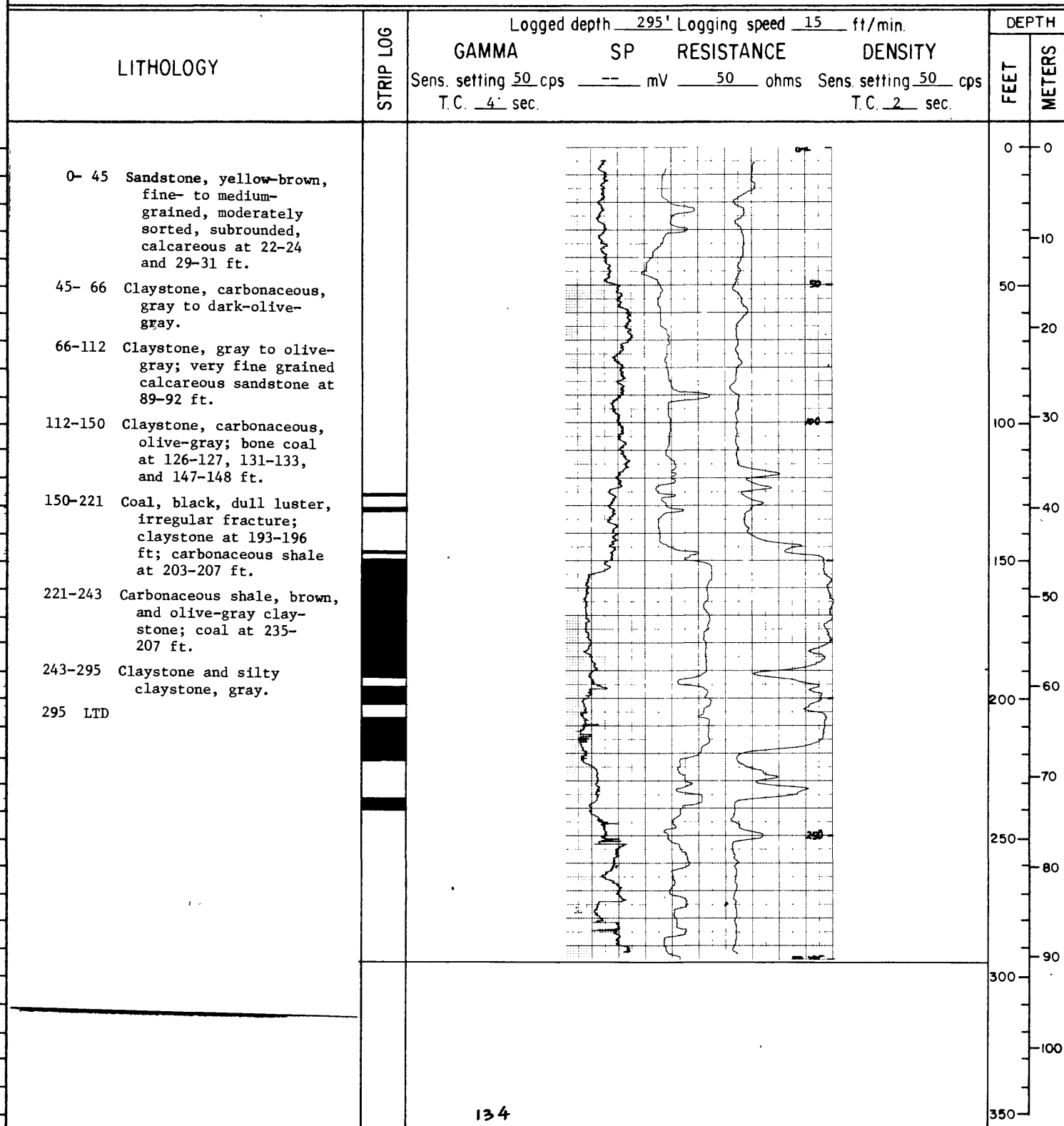
AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-20-80	DATE COMP: 10-21-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 24 T. 49 N., R. 71 W. FOOTAGE LOC.		2195' FSL	90' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 340' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	GROUND ELEV. 4595'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80080
SHEET 1 OF 1

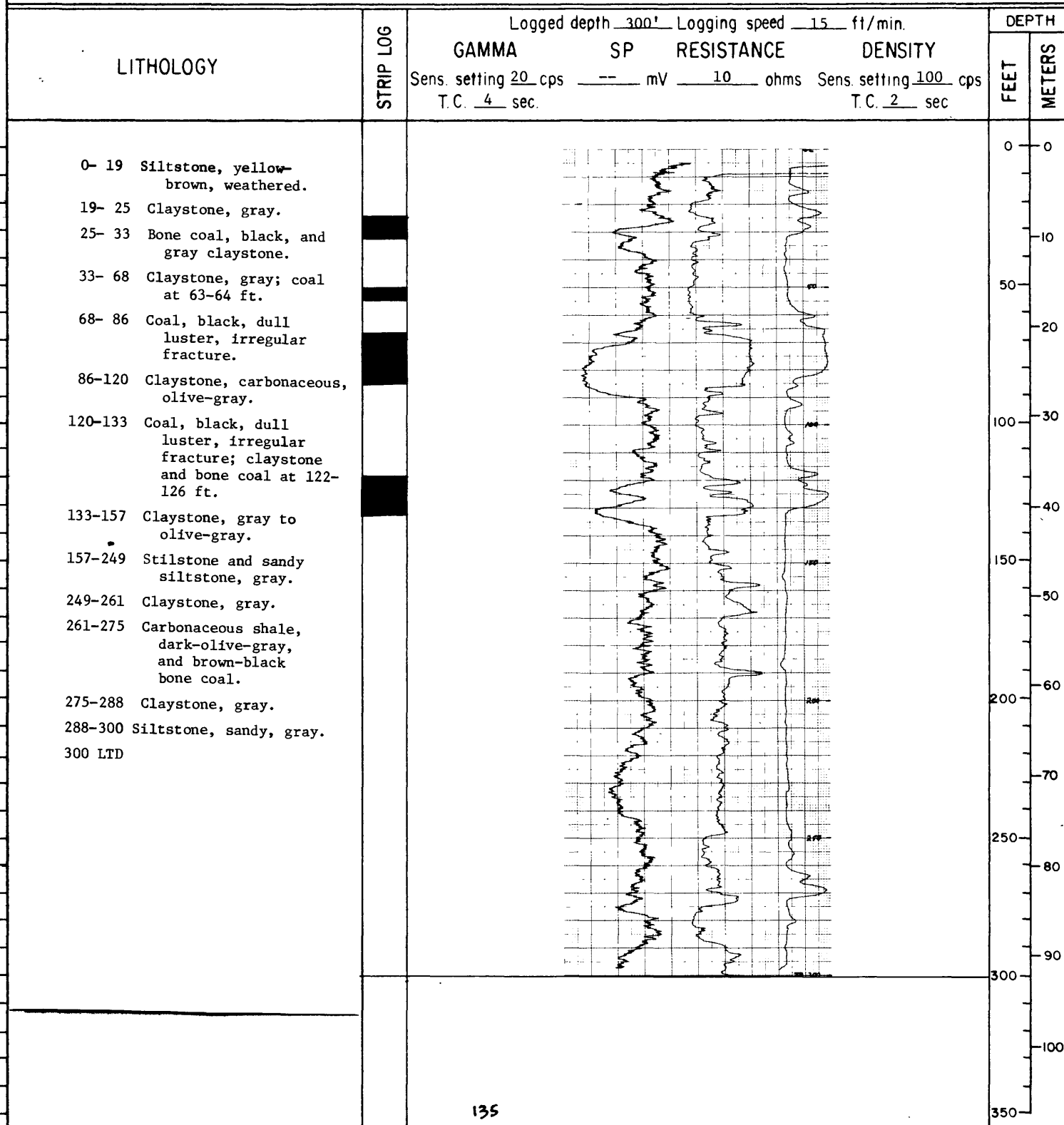
AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-21-80	DATE COMP: 10-21-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 1 T. 48 N., R. 71 W. FOOTAGE LOC.		1570' FSL	2040' FEL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 300' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4648'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS: Gamma spiking.			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80081
SHEET 1 OF 1

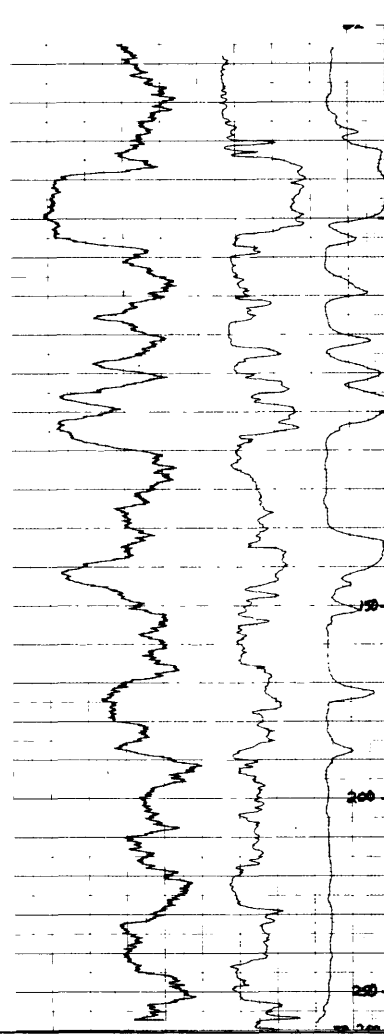
AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-22-80	DATE COMP: 10-22-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 32 T. 49 N., R. 70 W. FOOTAGE LOC.		2195' FNL #8 850' FWL	GROUND ELEV. 4810'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 300' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		TOTAL DEPTH 300'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.	GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 9'
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80082
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-22-80	DATE COMP: 10-22-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 5 T. 48 N., R. 70 W. FOOTAGE LOC.		FNL 1470' 1470'	FWL 1660' 1660'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 260' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4738'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			

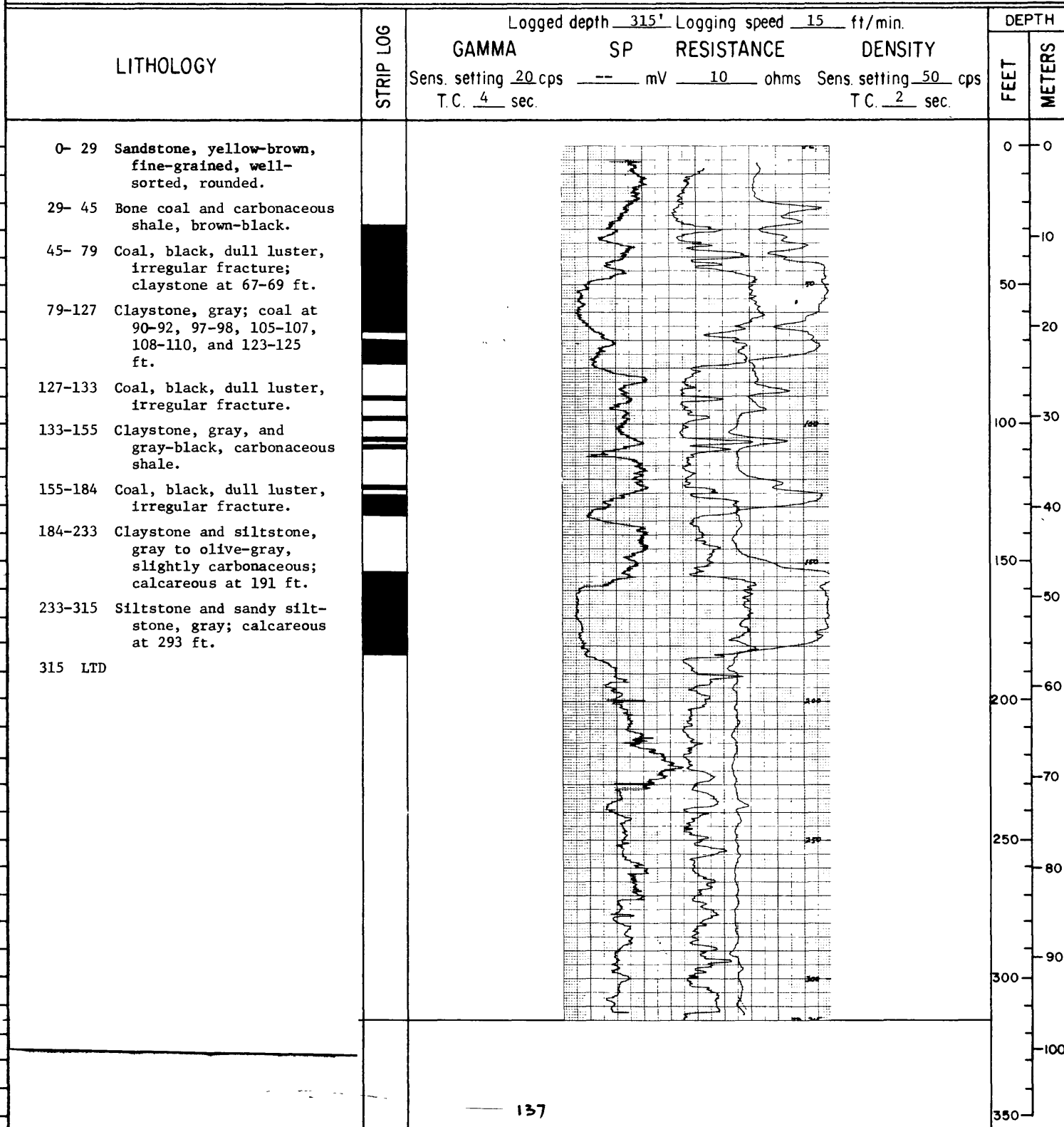
LITHOLOGY	STRIP LOG	Logged depth 260' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 20 cps T.C. 4 sec.	-- mV	20 ohms	Sens. setting 100 cps T.C. 2 sec.		
0- 26 Claystone, pale-yellow-brown.						0	0
26- 34 Carbonaceous shale, gray-brown; coal at 30-31 ft.						10	
34- 54 Coal, black, dull luster, irregular fracture.						50	
54- 71 Claystone, gray; bone coal at 57-59 ft.						20	
71-106 Coal, black, dull luster, irregular fracture, and gray claystone. Coal intervals: 71-73, 83-86, 92-95, and 98-106 ft.						100	30
106-116 Claystone, gray.							
116-135 Siltstone, gray.							
135-144 Coal, black, dull luster, irregular fracture.						40	
144-165 Claystone, carbonaceous, dark-olive-gray; bone coal at 147-148 and 154-155 ft.						150	50
165-187 Sandstone, gray, fine-to very fine grained, moderately sorted, round; bone coal at 174-177 ft.						200	60
187-194 Claystone, olive-gray.							
194-217 Siltstone, gray.							
217-229 Claystone, gray.						70	
229-242 Sandstone, gray, very fine grained, well-sorted, rounded.						250	80
242-252 Claystone, gray.							
252-260 Siltstone, sandy, gray.							
260 LTD							
						90	
						300	
						100	
						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80083

SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-23-80	DATE COMP: 10-23-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 11 T. 49 N., R. 71 W. FOOTAGE LOC.		850' FNL 850'	595' FEL 595'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 320' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4570'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS: Gamma spiking below 199 ft.			

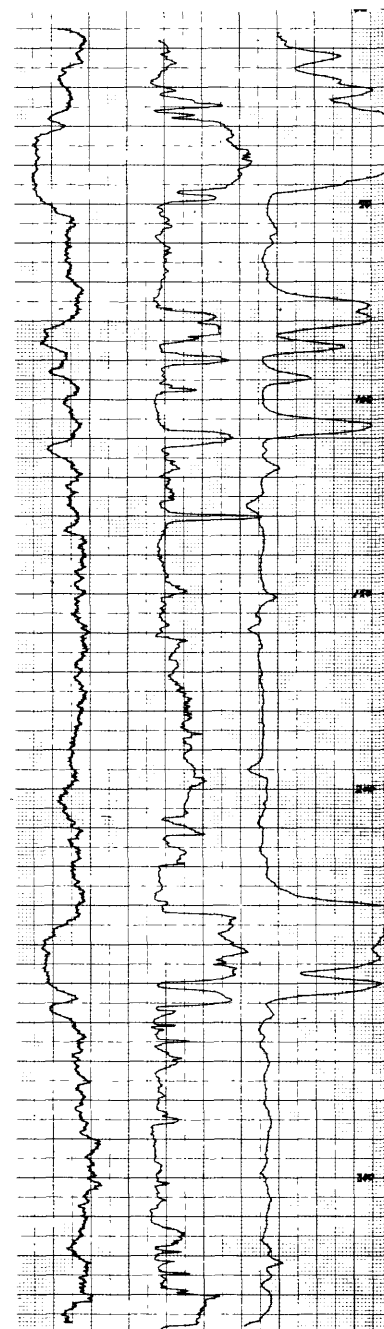


UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80084

SHEET 1 OF 1

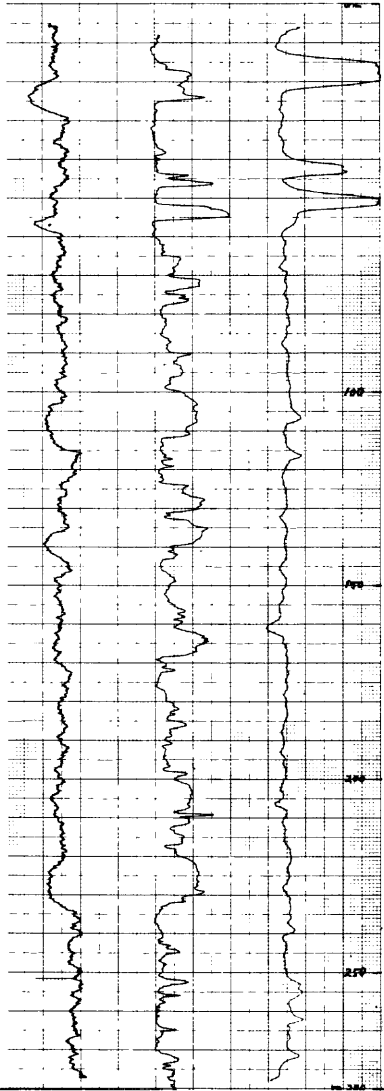
AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-30-80	DATE COMP: 10-30-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 13 T. 49 N., R. 71 W. FOOTAGE LOC.		1240' FSL	985' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 340' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4625'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			

LITHOLOGY	STRIP LOG	Logged depth 340' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps T.C. 4 sec.	-- mV	20 ohms	Sens. setting 50 cps T.C. 2 sec.		
0- 13 Claystone, yellow-brown, weathered.						0	0
13- 29 Claystone, carbonaceous, brown; coal at 24-25 ft.							10
29- 49 Coal, black, dull luster, irregular fracture; carbonaceous shale at 47-48 ft.						50	20
49- 78 Claystone, gray.							30
78- 91 Coal, black, dull luster, irregular fracture; claystone at 80-81 and 85-89 ft.						100	40
91-108 Claystone, gray; coal at 97-98 ft.							50
108-112 Coal, black, dull luster, irregular fracture.						200	60
112-162 Claystone, gray to olive-gray, calcareous at 130-131 ft.							70
162-194 Siltstone, gray.						250	80
194-199 Sandstone, gray, very fine grained, rounded.							90
199-220 Siltstone and silty claystone, gray.						300	100
220-232 Claystone, gray.							
232-256 Coal, black, dull luster, irregular fracture; claystone at 249-252 ft.							
256-330 Claystone and silty claystone, gray to olive-gray.							
330-340 Siltstone, sandy, gray.							
340 LTD							

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80085
SHEET 1 OF 1

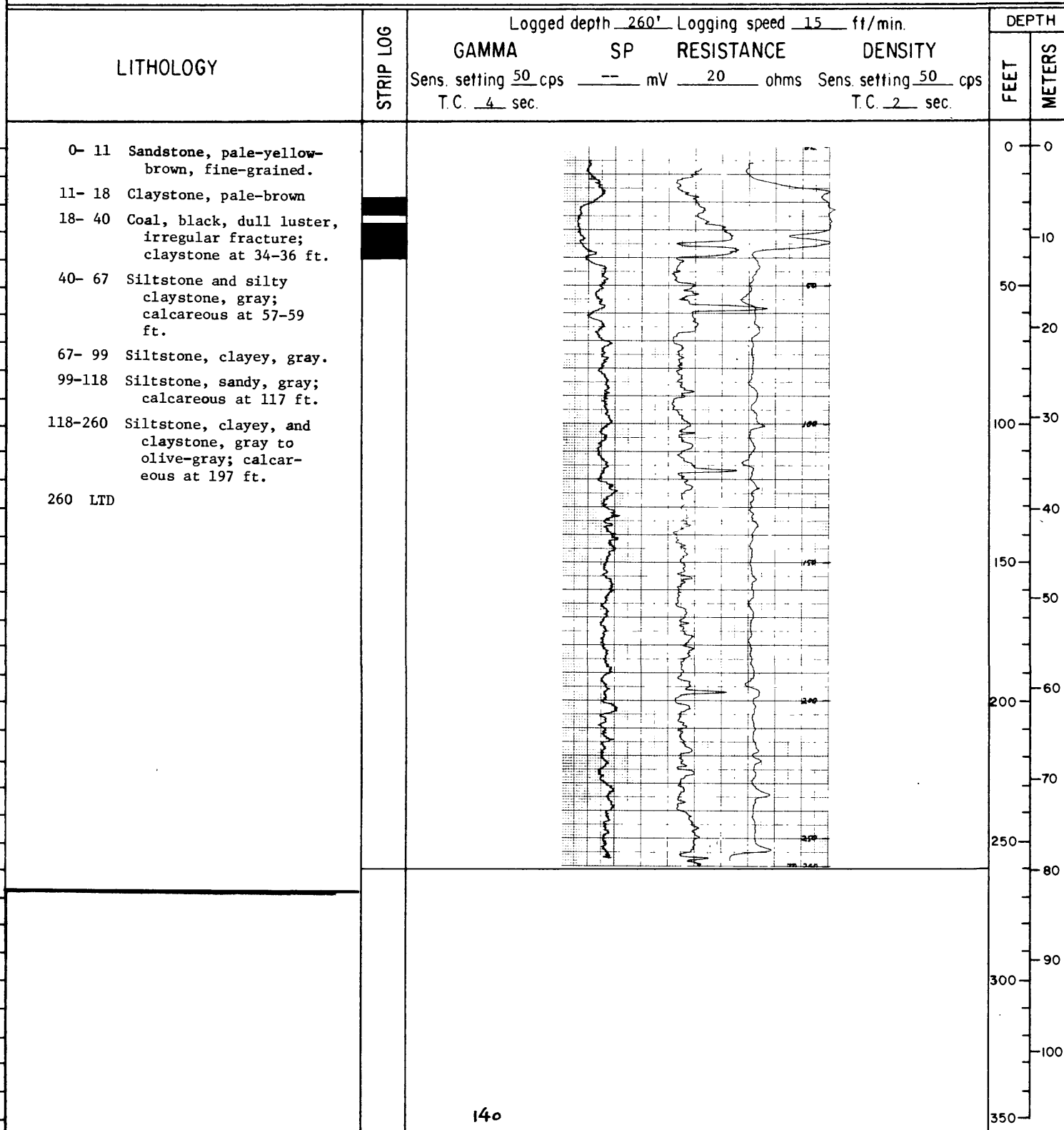
AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-30-80	DATE COMP: 10-30-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 18 T. 49 N., R. 70 W. FOOTAGE LOC.		495' FSL FSL 350' FEL FEL	GROUND ELEV. 4605'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 280' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		TOTAL DEPTH 280'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			

LITHOLOGY	STRIP LOG	Logged depth 280' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps T.C. 4 sec	-- mV	20 ohms	Sens. setting 50 cps T.C. 2 sec.		
0- 17 Claystone, dusky-brown, weathered.						0	0
17- 25 Coal, black, dull luster, irregular fracture.							
25- 65 Claystone, gray; coal at 44-47 and 62-56 ft.						10	
65-100 Claystone, silty, gray.						50	
100-112 Sandstone, gray, fine- to medium-grained.						20	
112-124 Claystone, silty, gray.							
124-140 Sandstone, silty, gray, very fine grained, moderately sorted, rounded.						30	
140-162 Claystone, silty, gray.							
162-168 Sandstone, silty, gray, very fine grained.						40	
168-198 Claystone, silty, gray.							
198-232 Sandstone, dark-yellow-brown and gray, fine- to very fine grained, moderately sorted, rounded.						50	
232-280 Claystone, carbonaceous, gray to olive-gray.						60	
280 LTD						200	
						70	
						80	
						90	
						100	
						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80086
SHEET 1 QF 1

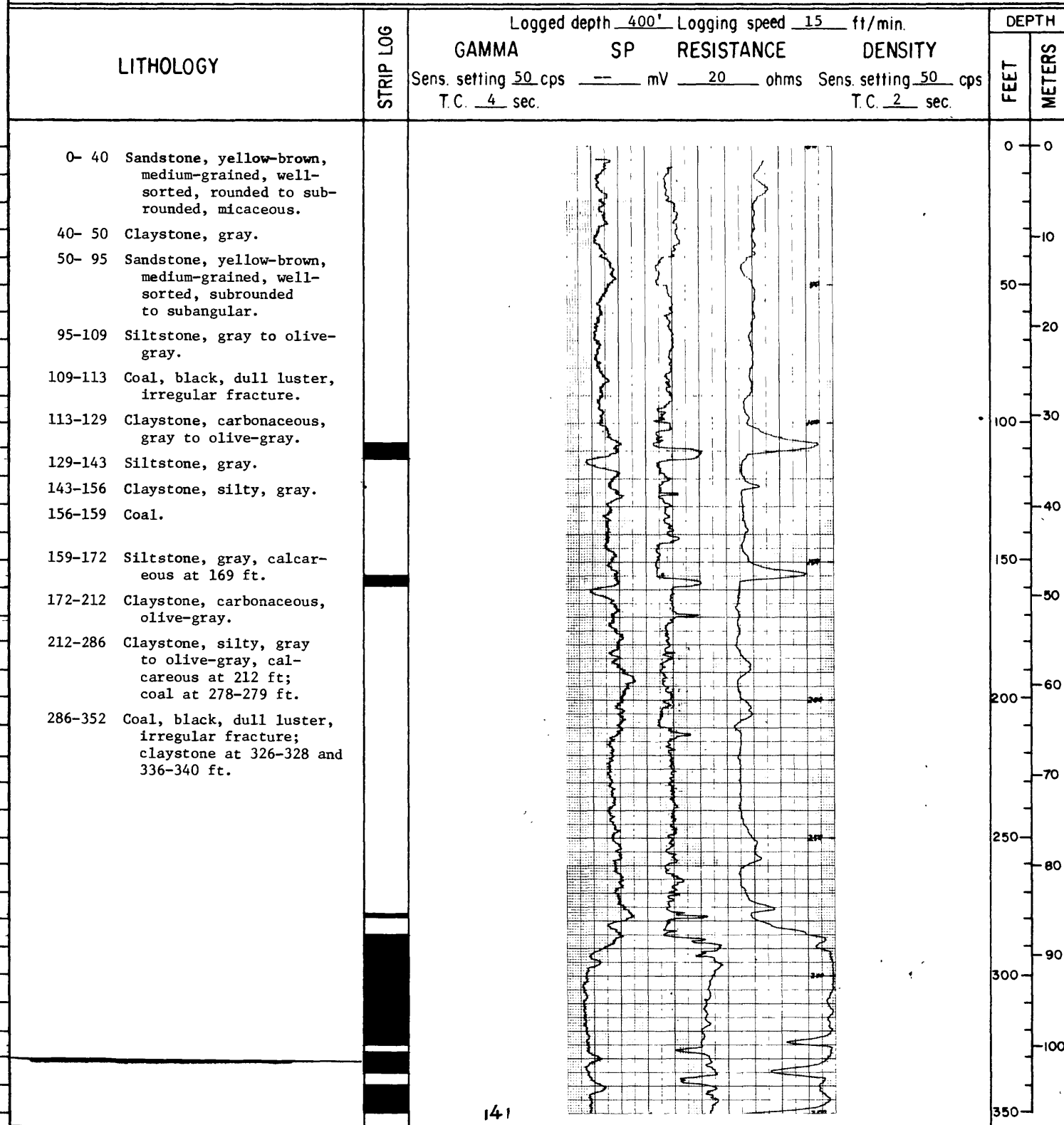
AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-31-80	DATE COMP: 10-31-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 18 T. 49 N., R. 70 W. FOOTAGE LOC.		30' FNL 50'	360' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE	
		ROTARY 260'	CORING 0'
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4530'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80087
SHEET 1 OF 2

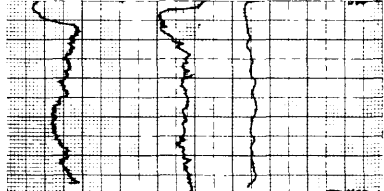
AREA Powder River Basin		QUAD NAME Coyote Draw	
DATE STARTED: 10-31-80	DATE COMP: 11-1-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 27 T. 49 N., R. 71 W. FOOTAGE LOC.		1790' FSL 585' FEL	GROUND ELEV. 4770'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 400' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		TOTAL DEPTH 400'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.			
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80087
SHEET 2 OF 2

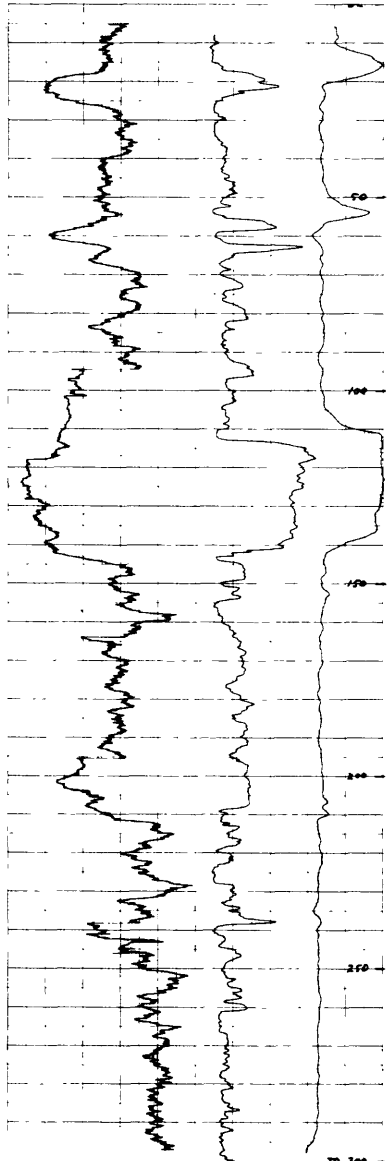
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>400'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	SP --- mV	RESISTANCE <u>20</u> ohms	DENSITY Sens. setting <u>50</u> cps T.C. <u>2</u> sec.	FEET	METERS
352-400 Siltstone, sandy, gray. 400 LTD						350	
						400	
						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-80088
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Gillette East	
DATE STARTED: 11-1-80	DATE COMP: 11-2-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 3 T. 49 N., R. 71 W. FOOTAGE LOC.		1500' FNL 1005' 1005' FWL	GROUND ELEV. 4448'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 300' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		TOTAL DEPTH 300'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS: Gamma spiking.			

LITHOLOGY	STRIP LOG	Logged depth 300' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 20 cps T.C. 4 sec.	-- mV	20 ohms	Sens. setting 100 cps T.C. 2 sec.		
0- 17 Claystone, dusky-yellow, weathered.						0	0
17- 23 Coal.							
23- 37 Claystone, gray.						10	
37- 56 Siltstone, clayey, gray.							
56- 59 Coal.						50	
59-113 Claystone and siltstone, gray; very fine grained calcareous sandstone at 62-64 ft.						20	
113-142 Coal, black, dull luster, irregular fracture.							
142-208 Siltstone and claystone, gray to olive-gray.						100	30
208-300 Claystone and silty claystone, gray to olive-gray; calcareous at 238 ft.						40	
300 LTD						150	
						50	
						200	60
						70	
						250	80
						90	
						300	
						100	
						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80089

SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME The Gap	
DATE STARTED: 11-2-80	DATE COMP: 11-2-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 10 T. 49 N., R. 71 W. FOOTAGE LOC.		FNL 1760' 1800' 2230' FWL	GROUND ELEV. 4495'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 340' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	TOTAL DEPTH 340' DEPTH TO FLUID 11'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS:			

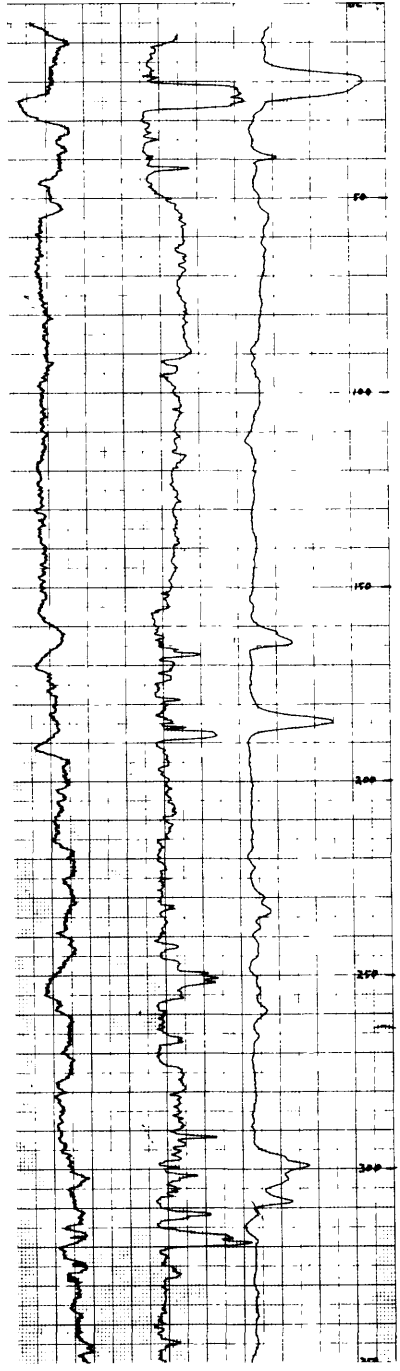
LITHOLOGY	STRIP LOG	Logged depth 340' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps T.C. 4 sec.	-- mV	20 ohms	Sens. setting 50 cps T.C. 2 sec.		
0- 10 Sandstone, gray-brown, medium-grained.						0	0
10- 52 Claystone, gray; bone coal at 23, 33, 43, and 47 ft.							
52- 78 Sandstone, gray, medium- to coarse-grained, poorly sorted, sub-angular, calcareous at 54 ft.						10	
78-144 Claystone, gray to olive-gray; very fine grained calcareous sandstone at 100-102 ft.						50	
144-163 Claystone, silty, gray, and brown-black carbonaceous shale.						20	
163-193 Coal, black, dull luster, irregular fracture.						100	30
193-218 Claystone, carbonaceous, gray to olive-gray.						40	
218-233 Siltstone, gray.						150	
233-254 Sandstone, gray, fine- to medium-grained, moderately sorted, rounded.						50	
254-272 Carbonaceous shale, brown-black, and gray claystone.						200	60
272-340 Claystone and siltstone, gray to olive-gray.						70	
340 LTD						250	80
						300	90
						100	
						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80090

SHEET 1 OF 2

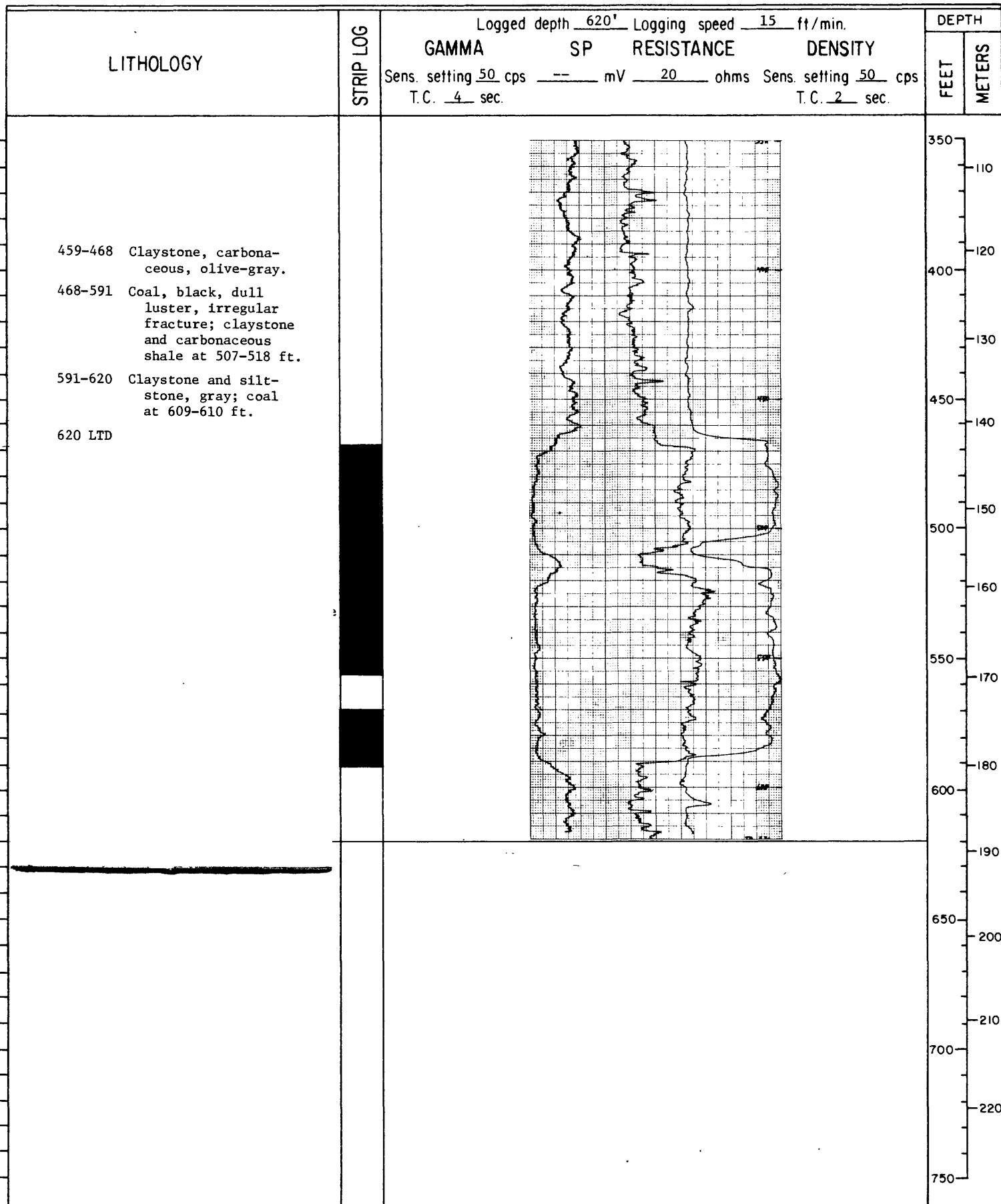
AREA Powder River Basin		QUAD NAME Rawhide School	
DATE STARTED: 11-2-80	DATE COMP: 11-3-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 19 T. 51 N., R. 72 W. FOOTAGE LOC.		42' FNL 48'	2658' FEL 2718'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE RDTARY 620' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS:			

LITHOLOGY	STRIP LOG	Logged depth 620' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps T.C. 4 sec.	-- mV	20 ohms	Sens. setting 50 cps T.C. 2 sec.		
0- 10 Sandstone, gray, medium- to coarse-grained.						0	0
10- 21 Claystone, pale-yellow- brown to gray.							
21- 27 Coal.						10	
27- 51 Claystone and silty claystone, gray; calcareous at 42 ft.						50	
51- 91 Sandstone, dark-yellow- brown, medium-grained, well-sorted, sub- angular.						20	
91-116 Sandstone, dark-yellow- brown, fine- to coarse-grained, poorly sorted, rounded to subangular.						100	30
116-156 Sandstone, gray, medium- grained, well-sorted, rounded to subrounded.						40	
156-189 Claystone, gray and very fine grained sandstone interbeds; bone coal at 166-168 and 187- 189 ft.						150	50
189-215 Siltstone, gray.							
215-232 Claystone, silty, gray.							
232-246 Claystone, carbonaceous, olive-gray to dark- olive-gray.						200	60
246-256 Sandstone, gray, very fine grained, calcar- eous at 249-253 ft.						70	
256-273 Carbonaceous shale, brown- black, and olive-gray claystone.						250	75
273-298 Claystone, silty, gray.						80	
298-316 Carbonaceous shale, brown-black, and olive- gray claystone.							
316-320 Sandstone, gray, very fine grained, calcareous.						300	90
320-459 Claystone and silty claystone, olive-gray; calcareous at 370, 373, 394, and 443 ft.						100	
						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80090
SHEET 2 OF 2

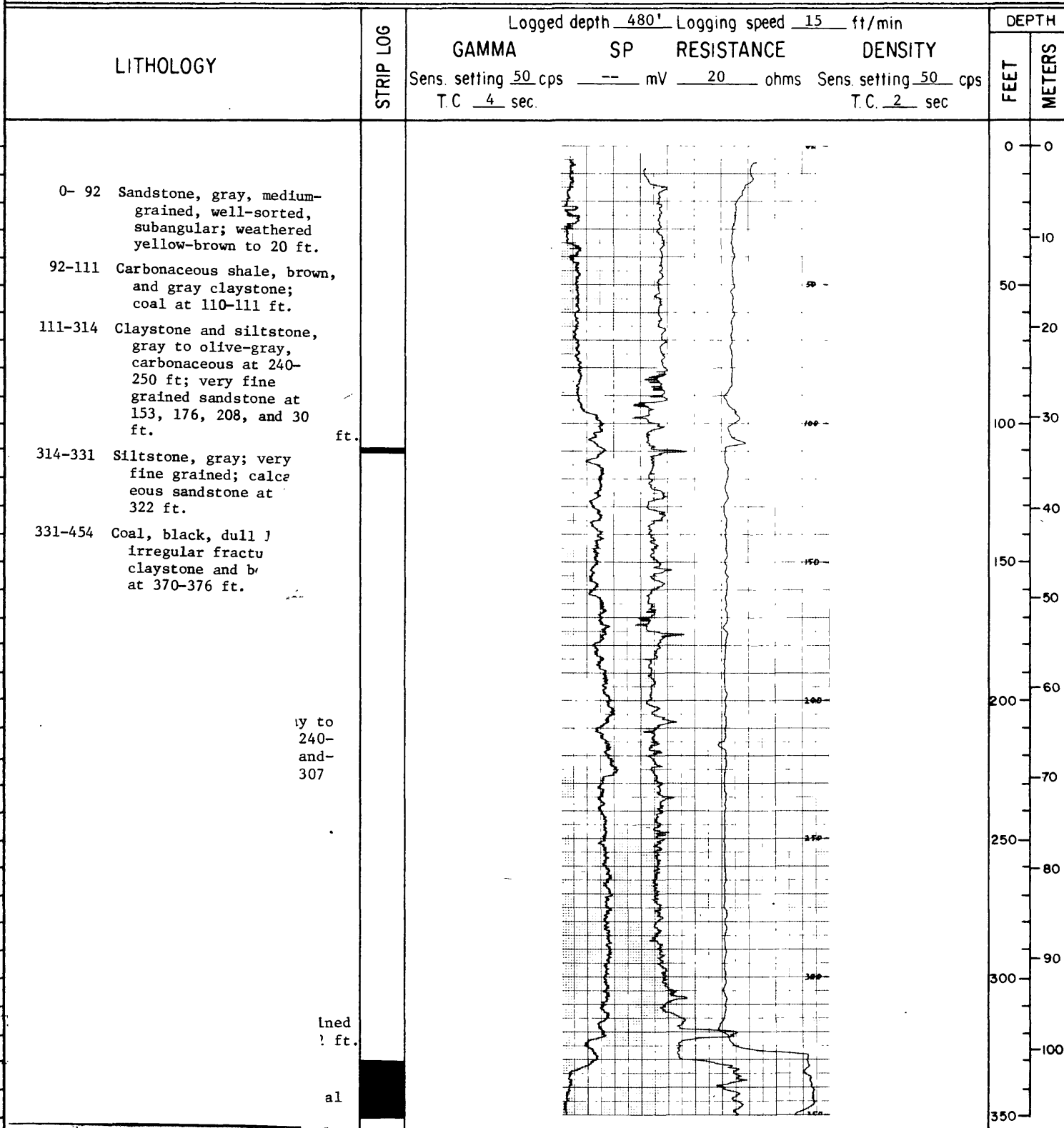
REMARKS:



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80091
SHEET 1 OF 2

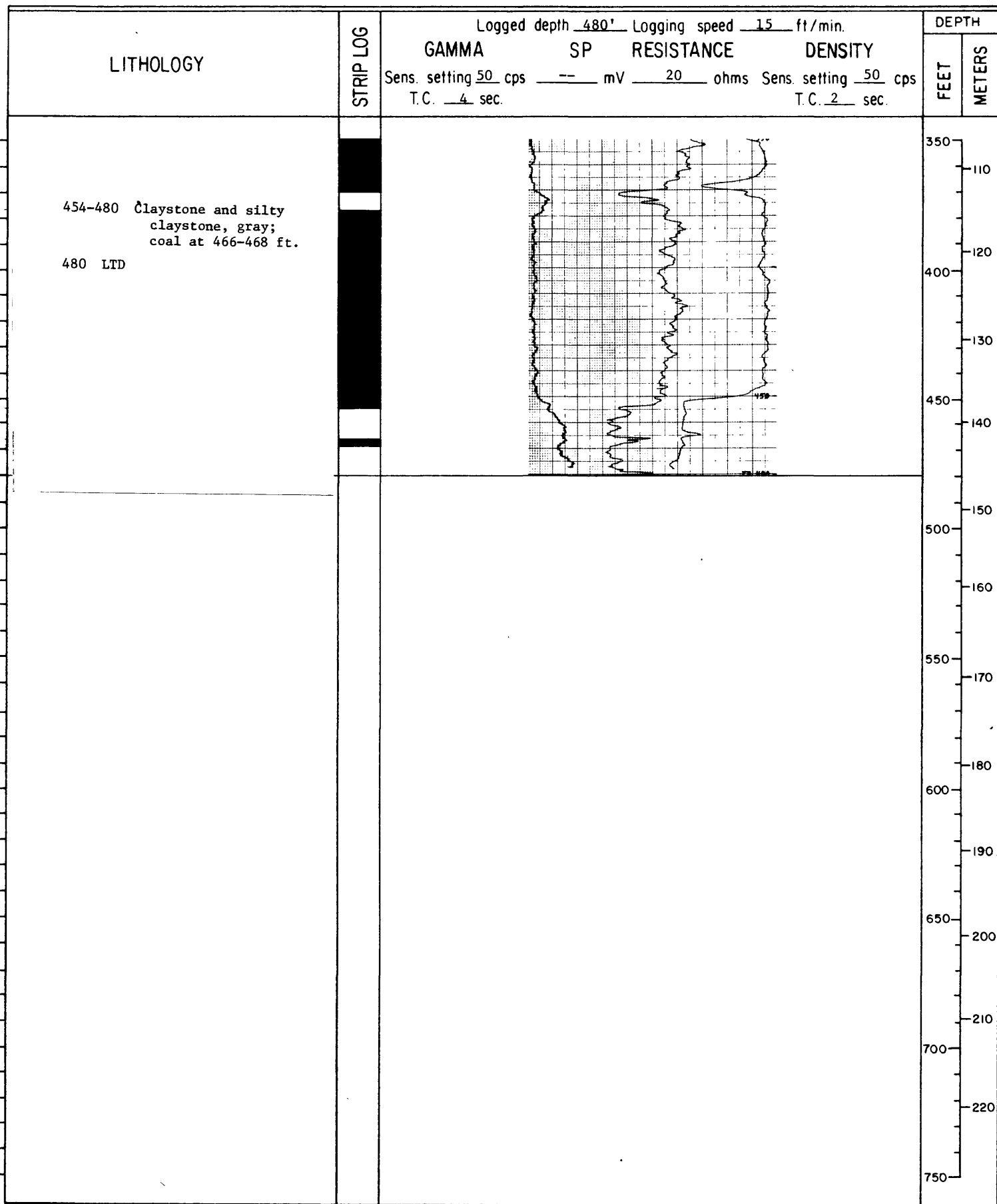
AREA Powder River Basin		QUAD NAME Rawhide School	
DATE STARTED: 11-3-80	DATE COMP: 11-4-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 20 T. 51 N., R. 72 W. FOOTAGE LOC.		1560' FSL	840' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 480' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4290'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS: Resistance spiking.			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80091
SHEET 2 OF 2

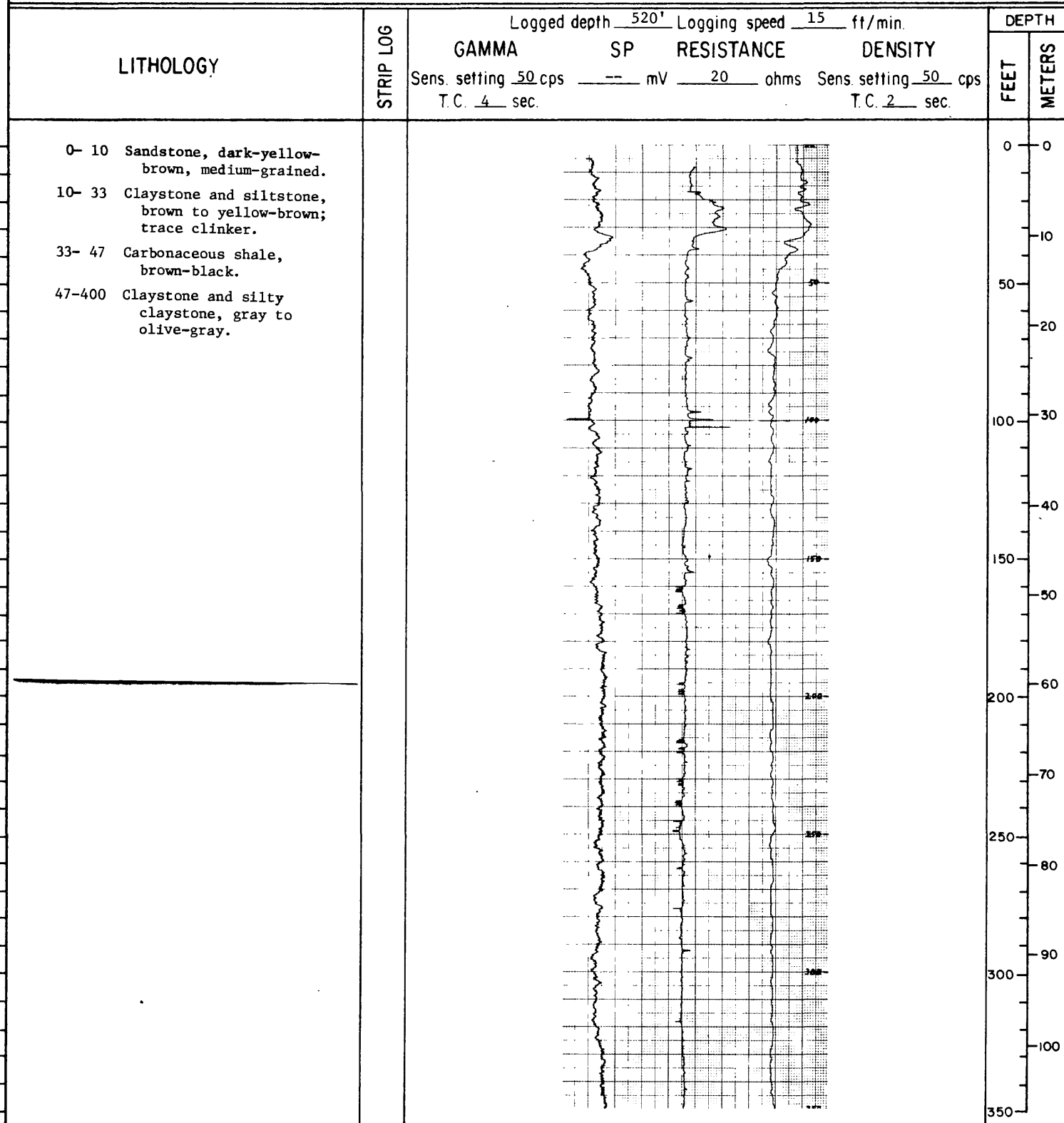
REMARKS:



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80092
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Moyer Springs	
DATE STARTED: 11-4-80	DATE COMP: 11-5-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 23 T. 51 N., R. 72 W. FOOTAGE LOC.		300' FNL FWL	30' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 520' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4406'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.	GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.		TOTAL DEPTH 520'
REMARKS: Gamma and resistance spiking.			

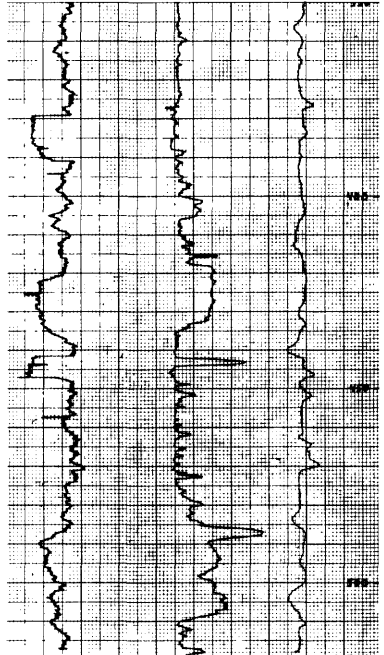


UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80092

SHEET 2 OF 2

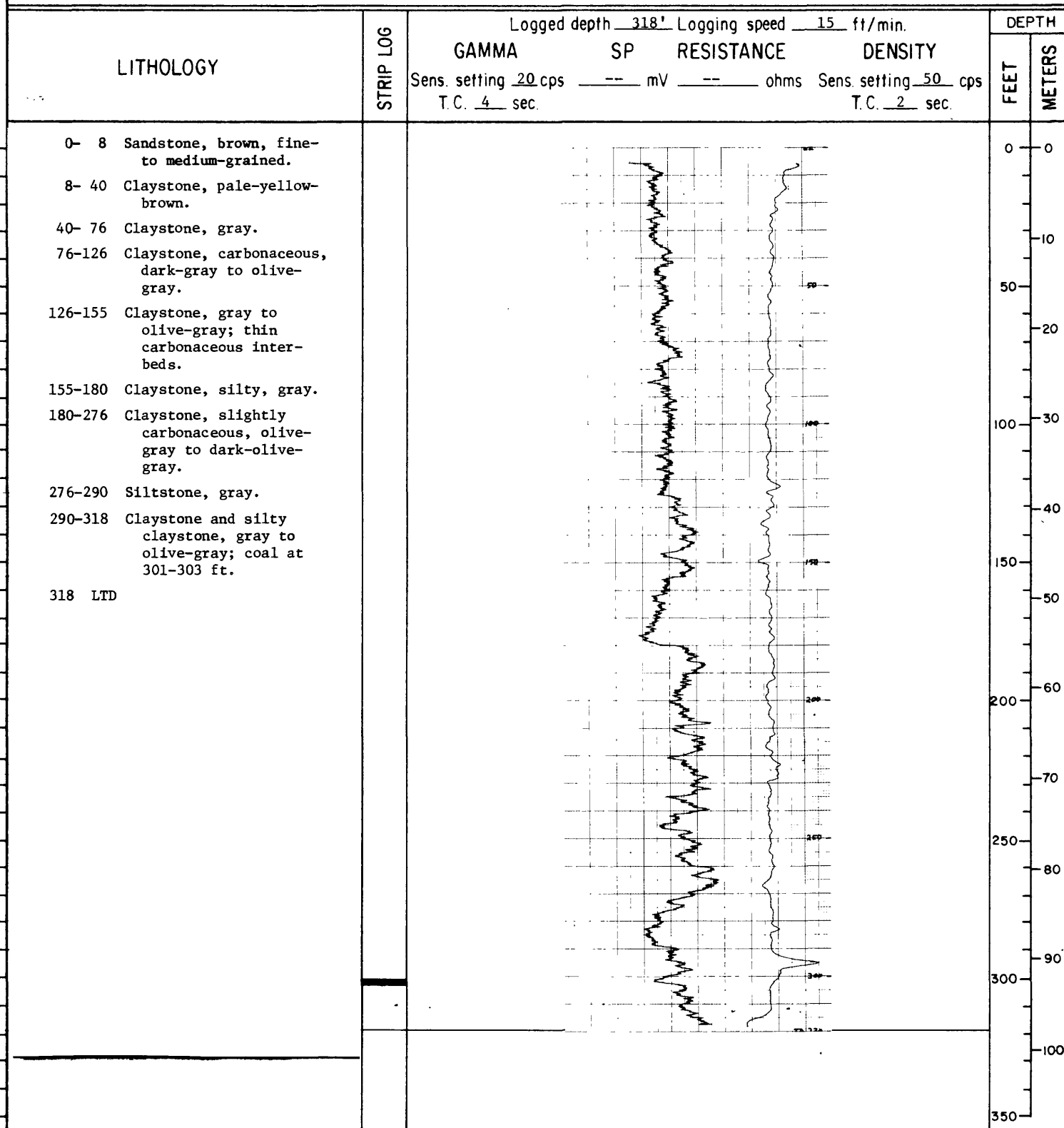
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>520'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps T.C. <u>4</u> sec.	--- mV	<u>20</u> ohms	Sens. setting <u>50</u> cps T.C. <u>2</u> sec.		
400-406 Siltstone, gray.						350	
406-418 Claystone, carbonaceous, olive-gray.							110
418-433 Siltstone, clayey, carbonaceous, olive-gray to gray-brown.							120
433-485 Claystone, carbonaceous, olive-gray to dark-olive-gray; very fine grained calcareous sandstone at 442-444 ft.						400	
485-509 Siltstone, gray, calcareous at 486-489 ft.							130
509-520 Claystone, silty, gray.							140
520 LTD						450	
							150
						500	
							160
						550	
							170
						600	
							180
						650	
							190
						700	
							210
							220
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80093
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Moyer Springs	
DATE STARTED: 11-5-80	DATE COMP: 11-6-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 13 T. 51 N., R. 72 W. FOOTAGE LOC.		87' FSL	2235' FWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 320' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS: No resistance log.			

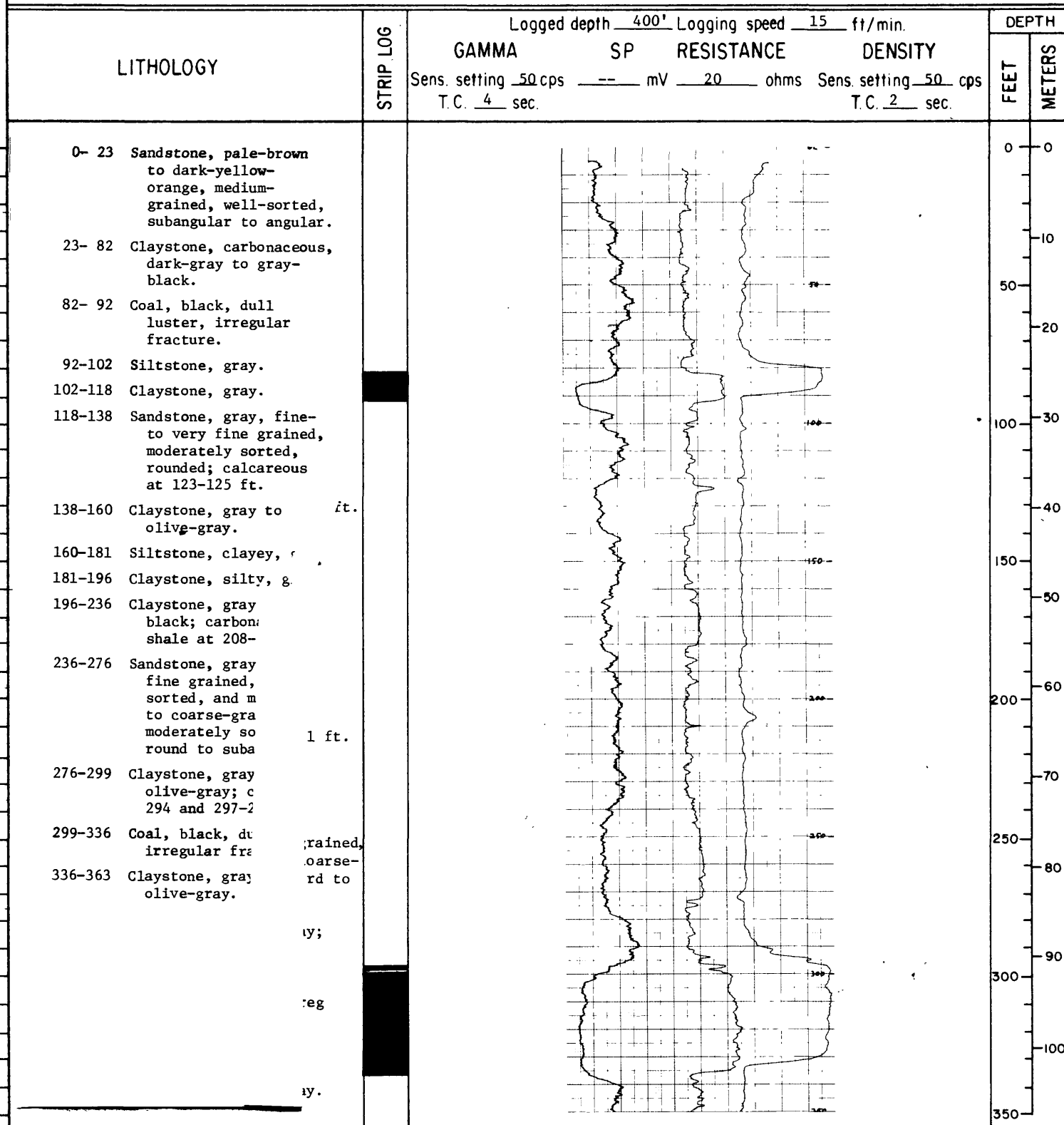


UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80094

SHEET 1 OF 2

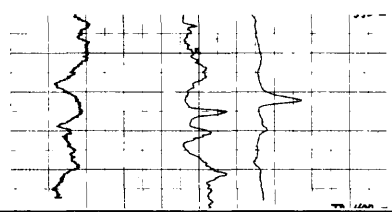
AREA Powder River Basin		QUAD NAME Eagle Rock	
DATE STARTED: 11-10-80	DATE COMP: 11-10-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 6 T. 45 N., R. 71 W. FOOTAGE LOC.		550' FSL 1010' FWL	GROUND ELEV. 4685'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 400' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		DEPTH TO FLUID 0'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS:			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80094
SHEET 2 OF 2

REMARKS:

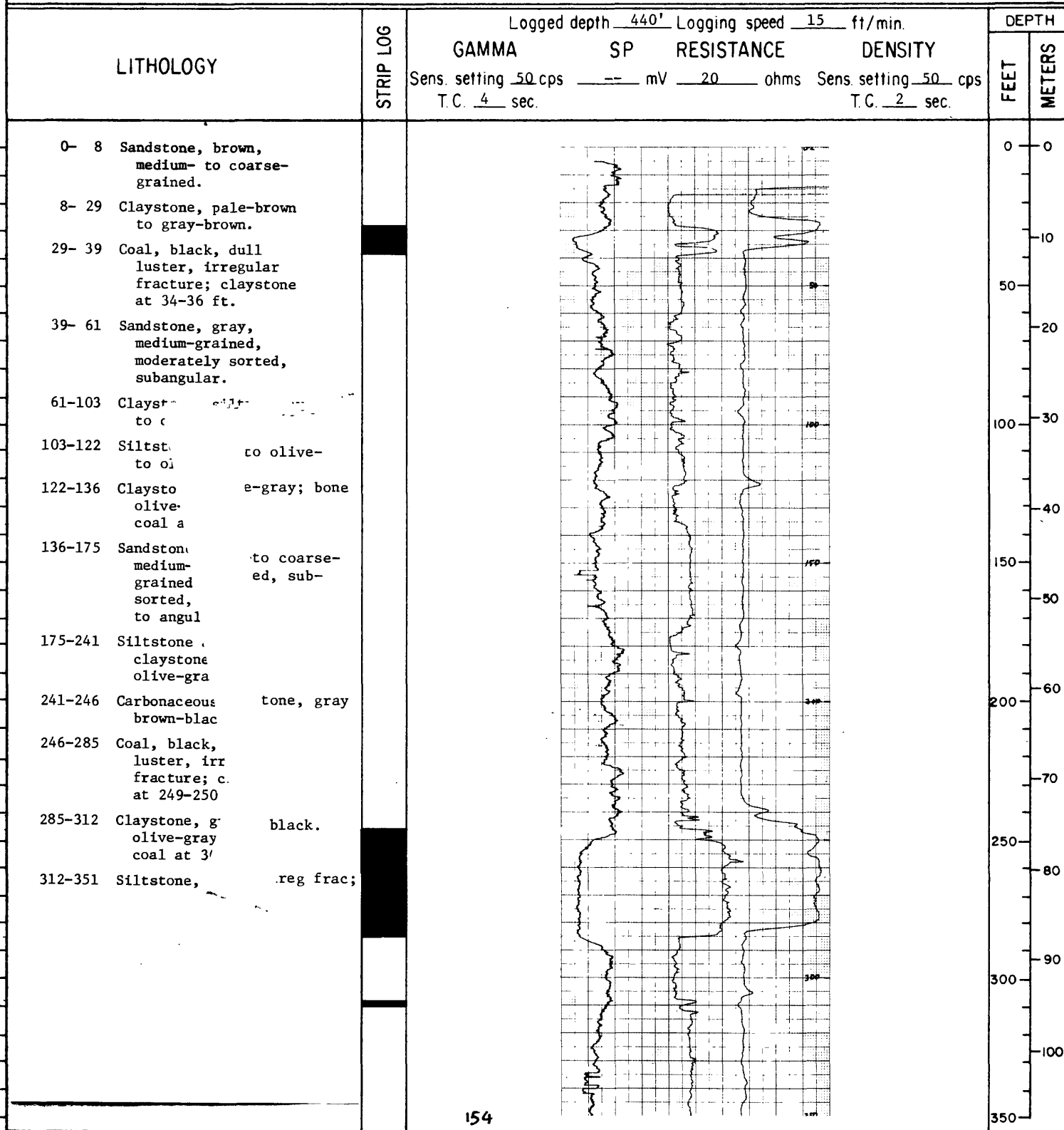
LITHOLOGY	STRIP LOG	Logged depth <u>400'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps <u>--</u> mV <u>20</u> ohms Sens. setting <u>50</u> cps T.C. <u>4</u> sec. T.C. <u>2</u> sec.					
363-367 Siltstone, gray.						350	
367-387 Claystone, carbonaceous, gray to olive-gray; coal at 375-376 ft.						110	
387-400 Siltstone, sandy, olive- gray.						120	
400 LTD						400	
						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-80095

SHEET 1 OF 2

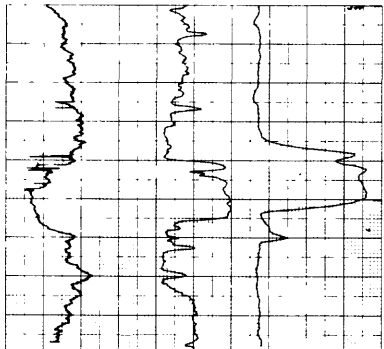
AREA Powder River Basin		QUAD NAME Eagle Rock	
DATE STARTED: 11-10-80	DATE COMP: 11-11-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 8 T. 45 N., R. 71 W. FOOTAGE LOC.		1110' FNL	20' FFWL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE	
		ROTARY 440'	CORING 0'
DRILLING AGENCY: USGS/CD/NCR		DRILL TYPE: Portadrill 524	
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS: Gamma spiking.			



UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80095
SHEET 2 OF 2

REMARKS:

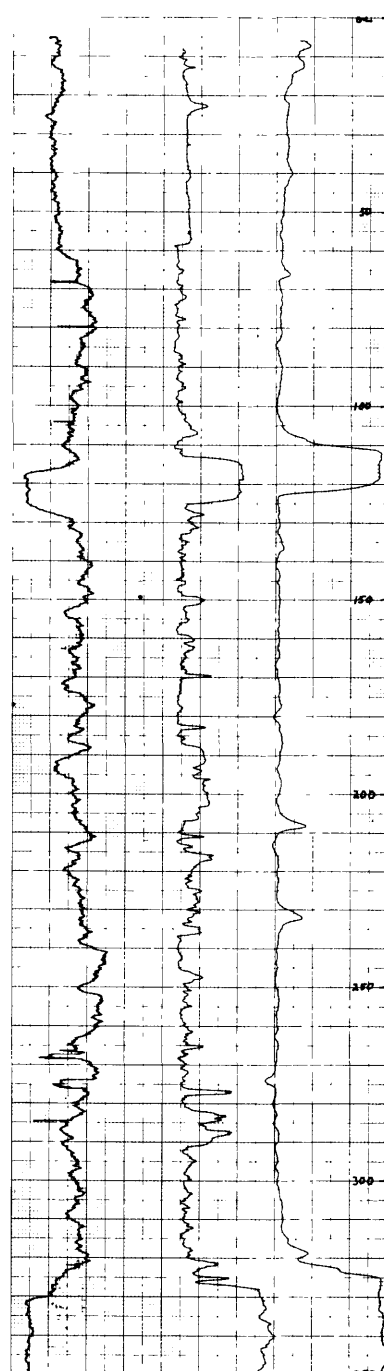
LITHOLOGY	STRIP LOG	Logged depth <u>440'</u> Logging speed <u>15</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps	<u>--</u> mV	<u>20</u> ohms	Sens. setting <u>50</u> cps		
		T.C. <u>4</u> sec.			T.C. <u>2</u> sec.		
351-390 Claystone, silty, gray; calcareous at 357-358 and 376-377 ft.						350	
390-406 Coal; carbonaceous shale at 393-394 ft.						110	
406-425 Carbonaceous shale, brown-black, and dark-olive-gray claystone; coal at 412 ft.						120	
425-440 Claystone, silty, gray.						400	
440 LTD						130	
						450	
						140	
						150	
						500	
						160	
						550	
						170	
						180	
						600	
						190	
						650	
						200	
						210	
						700	
						220	
						750	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80096

SHEET 1 OF 2

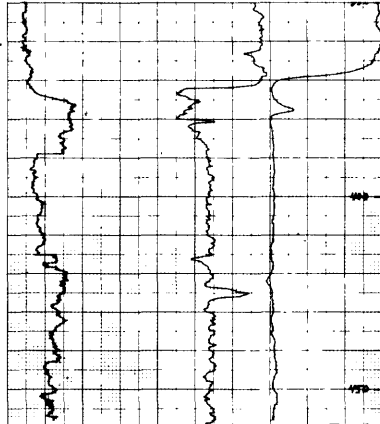
AREA Powder River Basin		QUAD NAME Eagle Rock	
DATE STARTED: 11-11-80	DATE COMP: 11-12-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 18 T. 45 N., R. 71 W. FOOTAGE LOC.		1150' FNL #8 910' FWL	GROUND ELEV. 4695'
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE ROTARY 460' CORING 0'	
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		TOTAL DEPTH 460'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		DEPTH TO FLUID 0'	
REMARKS: Gamma spiking.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	

LITHOLOGY	STRIP LOG	Logged depth 460' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps T C 4 sec	-- mV	20 ohms	Sens. setting 50 cps T.C. 2 sec		
0- 5 Claystone, gray-brown, weathered.						0	0
5- 59 Sandstone, gray, medium-grained, well-sorted, subangular.							10
59-113 Claystone and silty claystone, gray to dark-olive-gray.						50	
113-125 Coal, black, dull luster, irregular fracture.						20	
125-282 Claystone and silty claystone, gray to olive-gray, calcareous at 169, 183, and 276-278 ft; dark-olive-gray to black carbonaceous shale at 207-212 and 232-237 ft.						100	30
282-291 Sandstone, gray, very fine grained, calcareous.						40	
291-327 Claystone, carbonaceous, gray to dark-olive-gray; bone coal at 321-323 and 325-326 ft.						150	50
327-372 Coal, black, dull luster, irregular fracture.						50	
						200	60
						70	
						250	80
						80	
						300	90
						100	
						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80096
SHEET 2 OF 2

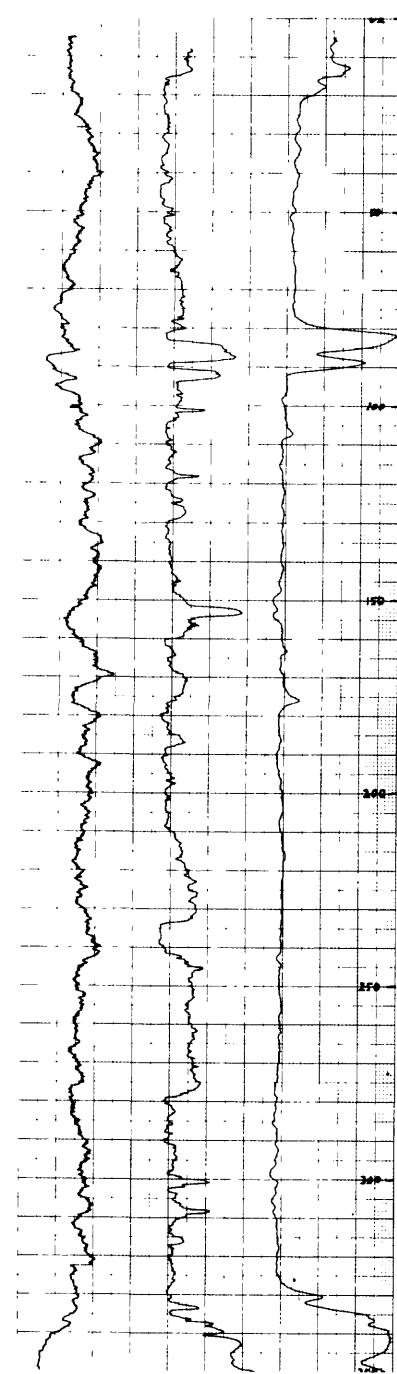
REMARKS:

LITHOLOGY	STRIP LOG	Logged depth <u>460'</u> Logging speed <u>15'</u> ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting <u>50</u> cps <u>--</u> mV <u>20</u> ohms Sens. setting <u>50</u> cps T.C. <u>4</u> sec. T.C. <u>2</u> sec.					
372-385 Claystone, olive-gray; coal at 380 ft.						350	
385-460 Siltstone, gray, calcareous at 424-426 ft.						110	
460 LTD						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-80097
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Eagle Rock	
DATE STARTED: 11-12-80	DATE COMP: 11-13-80	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 17 T. 45 N., R. 71 W. FOOTAGE LOC.		910' FNL	1620' FNL
SIZE AND BIT TYPE: 4 3/4" Drag		FOOTAGE	
		ROTARY 440'	CORING 0'
DRILLING AGENCY: USGS/CD/NCR	DRILL TYPE: Portadrill 524		GROUND ELEV. 4725'
LITHOLOGY RECORDED BY: G.W. Kepler, Sr.		GEOPHYSICAL LOGS RECORDED BY: G.W. Kepler, Sr.	
REMARKS: Gamma spiking.			

LITHOLOGY	STRIP LOG	Logged depth 440' Logging speed 15 ft/min.				DEPTH	
		GAMMA	SP	RESISTANCE	DENSITY	FEET	METERS
		Sens. setting 50 cps	-- mV	20 ohms	Sens. setting 50 cps		
		T.C. 4 sec.			T.C. 2 sec.		
0- 15 Sandstone, light-brown, coarse-grained, and reddish brown clinker fragments.						0	0
15- 60 Claystone and silty claystone, gray to dark-gray.							10
60- 84 Sandstone, gray, medium-grained, well-sorted, rounded; siltstone at 80-84 ft.						50	20
84- 94 Coal; claystone at 89-91 ft.							
94-149 Claystone and silty claystone, gray; calcareous at 101 and 118 ft.						100	30
149-160 Sandstone, gray, very fine grained, well-sorted, rounded, calcareous.							40
160-180 Carbonaceous shale, brown-black, and gray claystone.						150	50
180-217 Claystone, carbonaceous, gray to cark-olive-gray.							
217-233 Sandstone, gray, very fine grained, well-sorted, rounded.						200	60
233-242 Claystone, gray.							
242-279 Sandstone, gray, fine- to very fine grained, well-sorted, rounded.							70
279-337 Claystone, silty, gray; very fine grained calcareous sandstone at 299-302 and 308-309 ft; coal at 333-334 ft.						250	80
337-388 Coal, black, dull luster, irregular fracture.						300	90
							100
						350	

UNITED STATES GEOLOGICAL SURVEY

HOLE NO. CD-80097
SHEET 2 OF 2

REMARKS:

