UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

GEOPHYSICAL AND LITHOLOGIC LOGS OF 35 WELLS IN CONVERSE AND CAMPBELL COUNTIES, WYOMING

By

Frank B. Kistner

Open-File Report 80-125

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

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LIST OF ABBREVIATIONS

bk	-	black
brn	-	brown
BS	-	Borehole Sonic Survey
carb	-	carbonaceous
dk	-	dark
f	-	fine
FDC	-	Compensated Formation Density (well survey)
frag	-	fragment (s, al)
ft	-	foot (feet)
GRC	-	Gamma Ray-Caliper (well survey)
gy	-	gray
IES	-	Induction Electric (well survey)
in.	-	inch (inches)
LTD	-	Logged Total Depth
m	-	medium
NR	-	No Record
qtz	-	quartz
sh	-	shale
slt	-	silt
sltst	-	siltstone
ss	-	sandstone
TB	-	Thunder Basin (Grazing Association well number)

METRIC CONVERSION

All depths, distances, and elevations are given in feet; to convert to meters multiply by 0.3048.

GEOPHYSICAL AND LITHOLOGIC LOGS OF 35 WELLS IN CONVERSE AND CAMPBELL COUNTIES, WYOMING

By Frank B. Kistner

INTRODUCTION

During 1976-78, 34 existing water wells and the upper portion of one oil-and-gas test in Converse and Campbell Counties, Wyo., were geophysically logged to augment coal data gathered as a part of an ongoing U.S. Geological Survey (USGS) program to evaluate and classify mineral lands in the public domain. The overall purpose of the program is to gather data on the thickness, extent, correlation, quality, and recoverability of coal beds, and the thickness and lithologic characteristics of the associated rocks in the Tertiary Fort Union and Wasatch Formations of the Powder River Basin. The wells were logged concurrently with, and in addition to, coal test holes being drilled in the same vicinity. In this manner, the program gathered considerable additional coal information at little extra expense to the government.

This report presents the geophysical logs and, for four wells (WW-76001, -76002, -77009, and -77013), driller's lithologic descriptions lagged, or corrected by depth intervals, to match the geophysical logs of each well. Insufficient completion data and no cores or samples are available for these wells. Log OW-77001 represents the upper 447 ft of the Diamond Shamrock Scott Fed. 22-17 oil-and-gas test. Water wells WW-77004, -77006, -77008, -77015, -77016, -78009, -78017, and -78019 penetrate non-Federal or leased Federal coal. Because the logs for these wells contain proprietary data, they are not presented here.

Similar information from 371 test holes and approximately 157 coal samples from 56 core tests in Campbell and Converse Counties, Wyo., was presented in earlier reports (U.S. Geological Survey and Montana Bureau of Mines and Geology, 1973, 1974, 1976a and 1976b, 1977, and 1978; Kistner, 1977; and Kistner and others, 1979). Figure 1 shows the locations and numbers of wells logged during 1976-78.

Specific locations, following the system of land survey used by the U.S. Bureau of Land Management, appear on the individual log headings. The locations are indicated as distances, in feet, scaled from section lines as they appear on topographic quadrangle sheets. Surface elevations are approximated from the topographic contours. Table 1 shows the locations and total depths for the 35 wells.

All wells were cased, and most contained a 2-inch steel riser pipe through which the wells were logged. The wells were geophysically logged with a 1¼-inch-diameter gamma-ray probe. The probe used for logging during 1978 employed a casing collar locator and a large crystal gamma-ray detector to enhance lithologic characteristics of formation(s) traversed. The logs were photographically reduced to 1 in. to 50 ft for convenience in reproducing this report. The originals are on file at the Casper office.

ACKNOWLEDGMENTS

Fieldwork was carried out by the following USGS personnel: Frank B. Kistner and Linda G. Riglin, geologists, and Gregg A. Hollomon, technician. Lithologic descriptions were adapted from the driller's logs by Frank B. Kistner.

The following landowners gave permission to log water wells on their lands: Baker Ranch, Jerry Dilts, The Dilts Co., D. Duane Haefele, Hardy Ranch Co., Pat L. Isenberger, Jacobs Ranch, Inc., Arthur R. Johnson, Morton's, Inc., Peabody Coal Company, Floyd Ray Ranch, Floyd C. Reno, Jr., Mathew J. Reno, Steinle Ranch, Stoddard Ranches, and Stuart Bros., Inc. Permission from John Love and George Holden of Diamond Shamrock Corp. to log the Scott Fed. 22-17 oil-and-gas test is also acknowledged.

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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.

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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.

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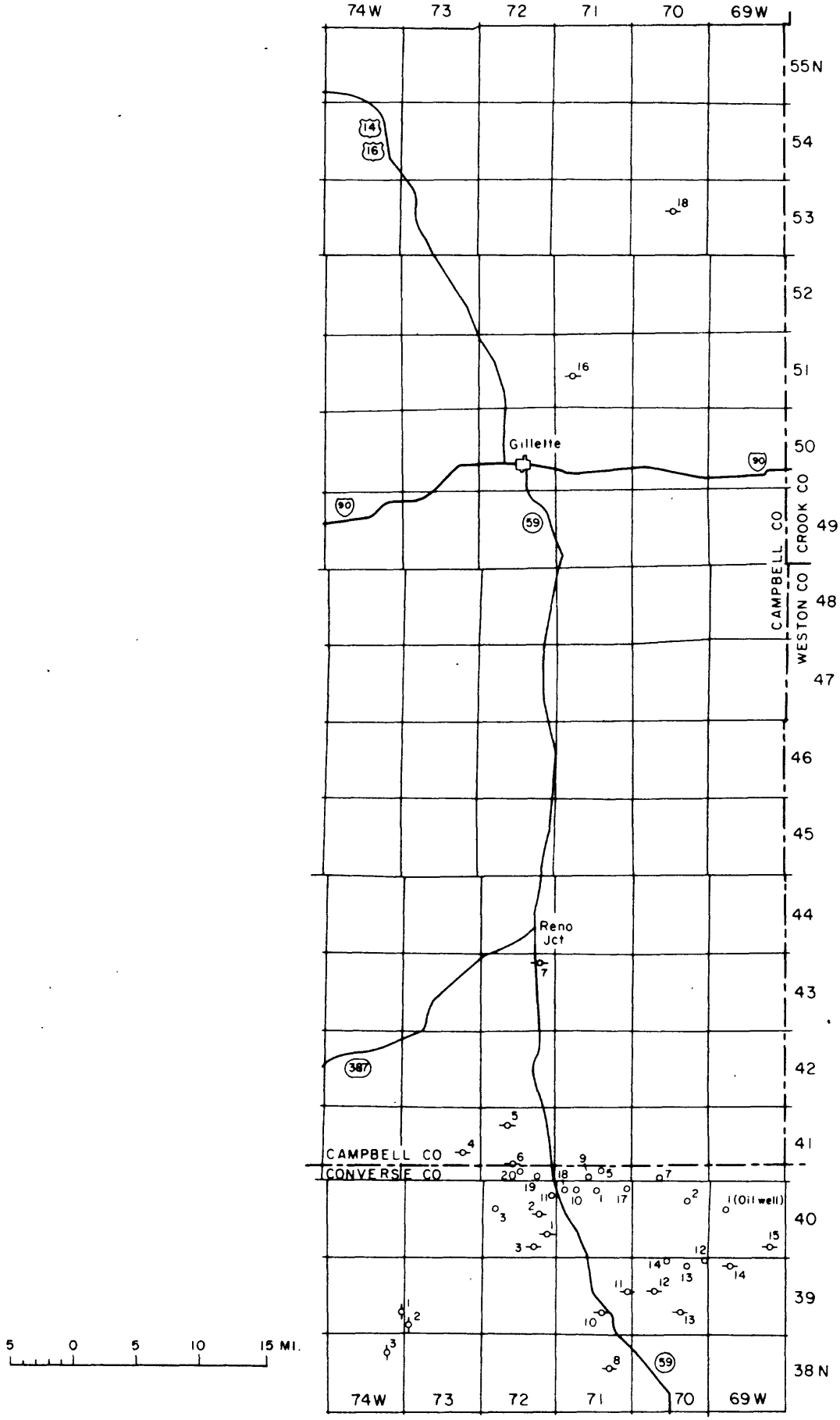
_____ 1978, Geophysical logs for Campbell and Converse Counties, Wyoming, chapter E of Preliminary report of 1977 coal drilling in eastern Montana and northeastern Wyoming: U.S. Geological Survey Open-File Report 77-721-E, 202 p.



Year logged — Well number

WW-77019 - Well reference on log forms

Holes logged in 1976
Holes logged in 1977
Holes logged in 1978

FIGURE 1.- Well locations in Converse and Campbell Counties, Wyoming.

Table 1.--Locations and total depths for 35 wells in Converse, and Campbell Counties, Wyo.

Well No.	Location T.N.	R.W.	sec.	¼	Total Depth (feet) Logged	Drilled
WW-76001	39	74	25	NE	232	238
WW-76002	39	73	31	NW	474	475
WW-76003	38	74	11	NE	71	NR
WW-77001	40	71	3	SW	522	NR
WW-77002	40	70	11	SW	708	709
WW-77003	40	72	17	NW	560	NR
WW-77005	41	71	34	NE	572	NR
WW-77007	41	70	33	SW	489	NR
WW-77009	41	71	33	SE	489	495
WW-77010	40	71	5	SW	293	NR
WW-77011	40	72	12	NE	326	NR
WW-77012	39	70	1	NE	124	NR
WW-77013	39	70	2	SW	657	675
WW-77014	39	70	4	NE	720	NR
WW-77017	40	71	1	SE	563	NR
WW-77018	40	71	6	SE	503	NR
WW-77019	41	72	35	SE	182	NR
WW-77020	41	72	34	NW	560	NR
OW-77001	40	69	17	NW	447	5894
WW-78001	40	72	25	NW	210	NR
WW-78002	40	72	14	SE	580	NR
WW-78003	40	72	35	NW	856	NR
WW-78004	41	73	23	SE	448	NR
WW-78005	41	72	9	SW	212	NR
WW-78006	41	72	28	SE	650	NR
WW-78007	43	72	2	SW	250	NR
WW-78008	38	71	14	SW	390	NR
WW-78010	39	71	27	NE	840	NR
WW-78011	39	71	13	SE	900	NR
WW-78012	39	70	17	SE	480	NR
WW-78013	39	70	27	NE	300	NR
WW-78014	39	69	5	SE	640	760
WW-78015	40	69	35	NE	705	760
WW-78016	51	71	20	SW	240	NR
WW-78018	53	70	15	SW	185	NR

UNITED STATES GEOLOGICAL SURVEY

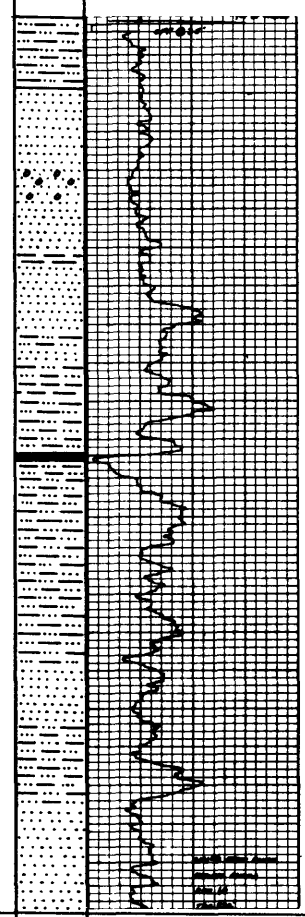
HOLE NO WW-76001
SHEET 1 OF 1

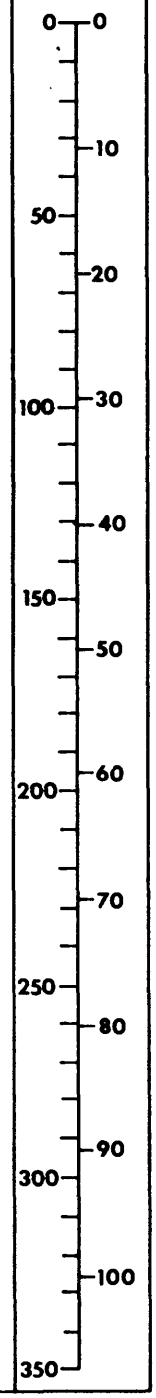
AREA Powder River Basin		QUAD NAME Coal Draw (SW¼)	
DATE STARTED 10-15-1974	DATE COMP. 10-15-1974	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 25 T. 39 N., R. 74 W., FOOTAGE LOC. 2300 FNL ~~FSL~~ 42 FEL ~~FWL~~			GROUND ELEV 5075
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY 238	CORING 0	TOTAL DEPTH 238
DRILLING AGENCY: Robertson Well Service	DRILL TYPE: Failing 1500		DEPTH TO WATER 7-21-1976 109
LITHOLOGY RECORDED BY D. Robertson	GEOPHYSICAL LOGS RECORDED BY F. Kistner 7-21-1976		

REMARKS: Lithology from driller's log lagged to gamma ray log.

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 50 CPS LOGGING SPEED 17 FT/MIN LOGGED DEPTH 232'	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		

Clay and silt, colluvium
18
Sand, fine to medium, poorly sorted, loose; gravel from 42 to 48 ft.
48
Sandstone, medium, good porosity
60
Sandstone, medium, with silty stringers
75
Siltstone, bluish-gray
110
114 Shale, brown, carbonaceous
116 Coal
120 Shale, brown, carbonaceous
Siltstone, gray
166
Sandstone, medium to fine, good porosity
193
Siltstone, gray; sandy in part
204
Sandstone, fine; fair to good porosity
232 L.T.D.





UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-76002
SHEET 1 OF 2

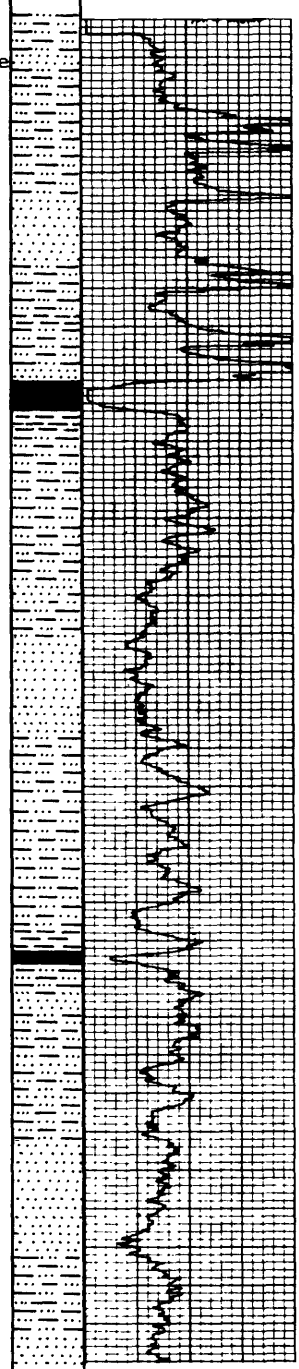
AREA Powder River Basin		QUAD NAME Coal Draw (SW¼)	
DATE STARTED 12-5-1974	DATE COMP. 12-5-1974	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 31 T. 39 N., R. 73 W., FOOTAGE LOC. 1950 FNL ~~FSL~~ 1150 ~~FEL~~ FWL			GROUND ELEV 5230
SIZE AND BIT TYPE: NR	FOOTAGE: ROTARY 475	CORING 0	TOTAL DEPTH 475
DRILLING AGENCY: Robertson Well Service	DRILL TYPE: Failing 1500		DEPTH TO WATER 7-20-1976 147
LITHOLOGY RECORDED BY D. Robertson	GEOPHYSICAL LOGS RECORDED BY F. Kistner 7-21-1976		

REMARKS: Lithology from driller's log lagged to gamma ray log

GAMMA: T.C. 4 SEC.-RANGE 50 CPS; LOGGING SPEED 15 FT/MIN; LOGGED DEPTH 474

DENSITY: T.C. ___ SEC.-RANGE ___ CPS; LOGGING SPEED ___ FT/MIN; LOGGED DEPTH ___

Depth	LITHOLOGY
	Siltstone, brownish - to bluish-gray, sandy, weathered near surface with light-gray, fine, loose sandstone from 12 to 13 ft.
47	
	Sandstone, medium, loose, dry
64	
	Siltsone, bluish-gray, soft
78	Shale, brown, carbonaceous
81	Siltstone, gray
92	Sandstone, fine, silty
94	Coal
102	Shale, brown, carbonaceous
107	
	Siltstone, gray; with minor dark-gray interbeds
147	
153	Sandstone, fine, silty, low porosity
161	Siltstone, gray
	Sandstone, medium, good porosity
187	
	Siltstone, gray; with sandy interbeds
238	Shale, brown, carbonaceous
243	Coal
246	
	Siltstone, gray; with sandy interbeds
292	
	Sandstone, medium to fine, fair porosity
322	
	Siltstone, gray
343	Sandstone, fine, fair to low porosity



DEPTH: FEET 0, 50, 100, 150, 200, 250, 300, 350; METERS 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-76002
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH
		T.C. 4 SEC.-RANGE 50 CPS LOGGING SPEED 15 FT/MIN LOGGED DEPTH 474	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	FEET / METERS

354 Sandstone, fine, fair to low porosity

Siltstone, gray; with sandy interbeds

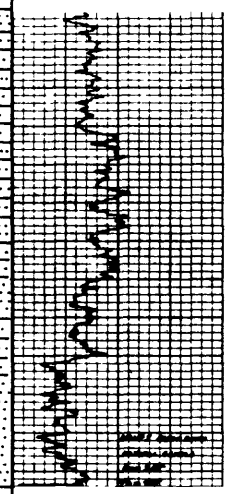
420 Ss, fine, to sltst, little porosity
428

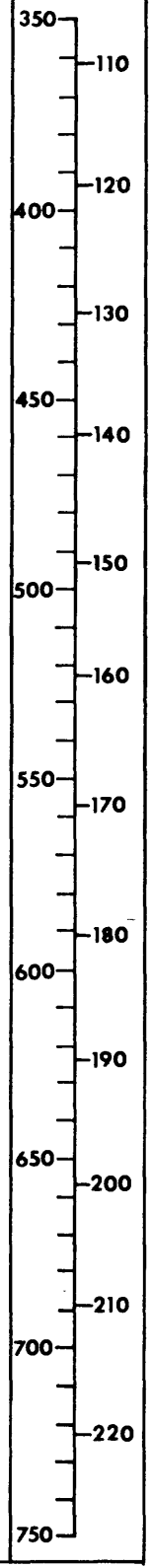
Siltstone, gray

440

Sandstone, fine to medium, fair to good porosity

474 L.T.D.





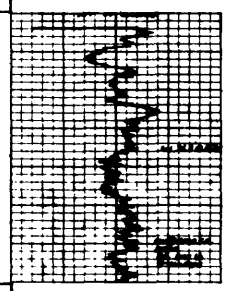
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-76003
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Coal Draw (SW¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 11 T. 38 N., R. 74 W., FOOTAGE LOC. 2000 FNL ~~XXX~~ 950 FEL ~~XXX~~			GROUND ELEV 5200
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER 8-10-1976 37
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY F. Kistner 8-10-1976		

REMARKS: Abandoned windmill
6 in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 50 CPS LOGGING SPEED 16 FT/MIN LOGGED DEPTH 71	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



71 L.T.D.

0, 50, 100, 150, 200, 250, 300, 350 FEET

0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 METERS

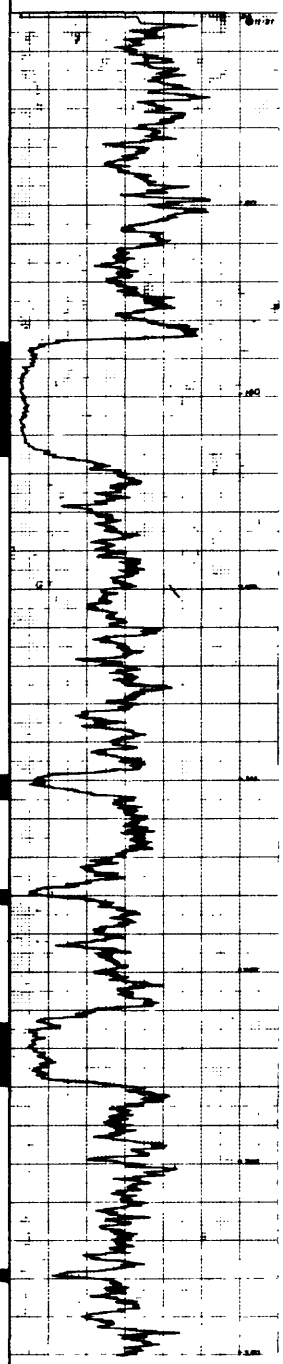
UNITED STATES GEOLOGICAL SURVEY

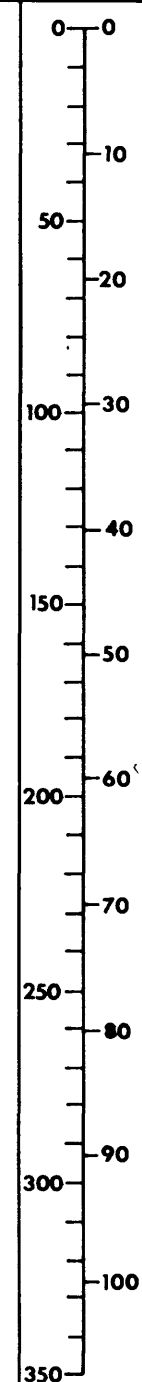
HOLE NO WW-77001
SHEET 1 OF 2

AREA Powder River Basin	QUAD NAME Betty Reservoir (NE¼)
DATE STARTED NR	DATE COMP. NR
COUNTY Converse	STATE Wyoming
LOCATION: SEC. 3 T. 40 N., R. 71 W., FOOTAGE LOC. 1500 ~~XXX~~ FSL 1000 ~~XXX~~ FWL	GROUND ELEV 4690
SIZE AND BIT TYPE: NR	FOOTAGE: ROTARY NR, CORING NR; TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR; DEPTH TO WATER 9-1-1977 97
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY L. D. Riglin 9-1-1977

REMARKS: TB-206
6-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 16 FT/MIN LOGGED DEPTH 522	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		





86
Coal
116

199
Coal
204

229
Coal
231

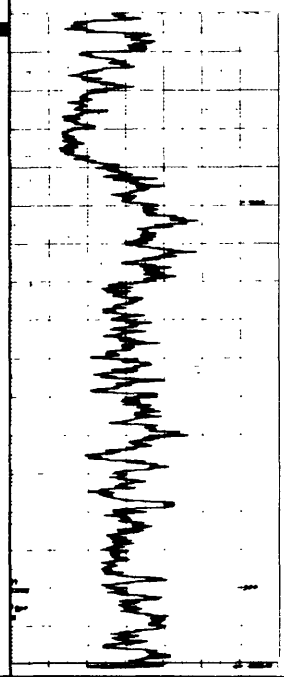
263
Coal
280

328
Possible Coal
330

UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77001
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 16 FT/MIN LOGGED DEPTH 522	DENSITY T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	DEPTH FEET / METERS
352 355 Possible coal	?			350 / 110
				120
				400 / 130
				450 / 140
				150
				500
522 L.T.D.				160
				550 / 170
				180
				600 / 190
				650 / 200
				210
				700 / 220
				750

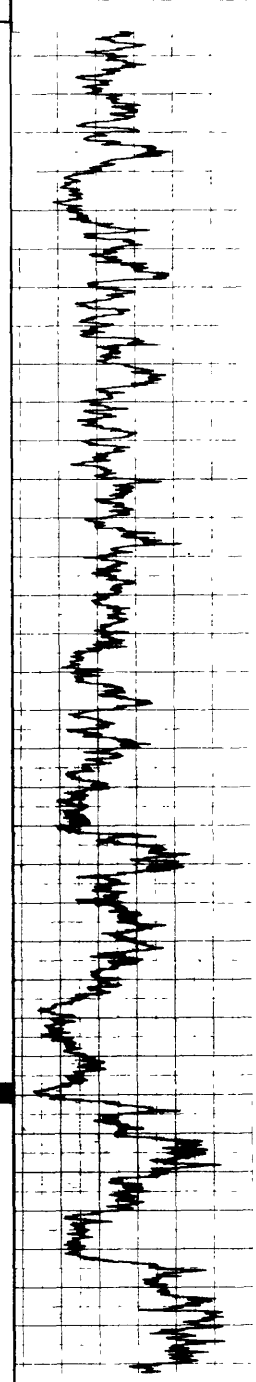
UNITED STATES GEOLOGICAL SURVEY

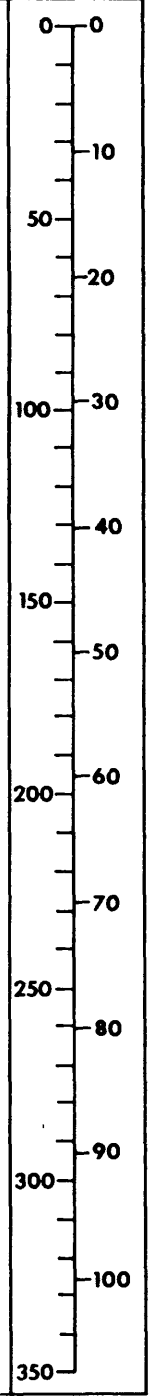
HOLE NO WW-77002
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Coal Bank Draw	
DATE STARTED NR	DATE COMP. 1965	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 11 T. 40 N., R. 70 W., FOOTAGE LOC. 950 ~~XXX~~ FSL 1500 ~~XXX~~ FWL			GROUND ELEV 4597
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY 709	FOOTAGE CORING NR	TOTAL DEPTH 709
DRILLING AGENCY: Robertson Well Service	DRILL TYPE: Failing 1500 (?)		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY L. D. Riglin 9-6-1977		

REMARKS: TB-94
4-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 16 FT/MIN LOGGED DEPTH 708	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		
277 281 Possible coal	?				



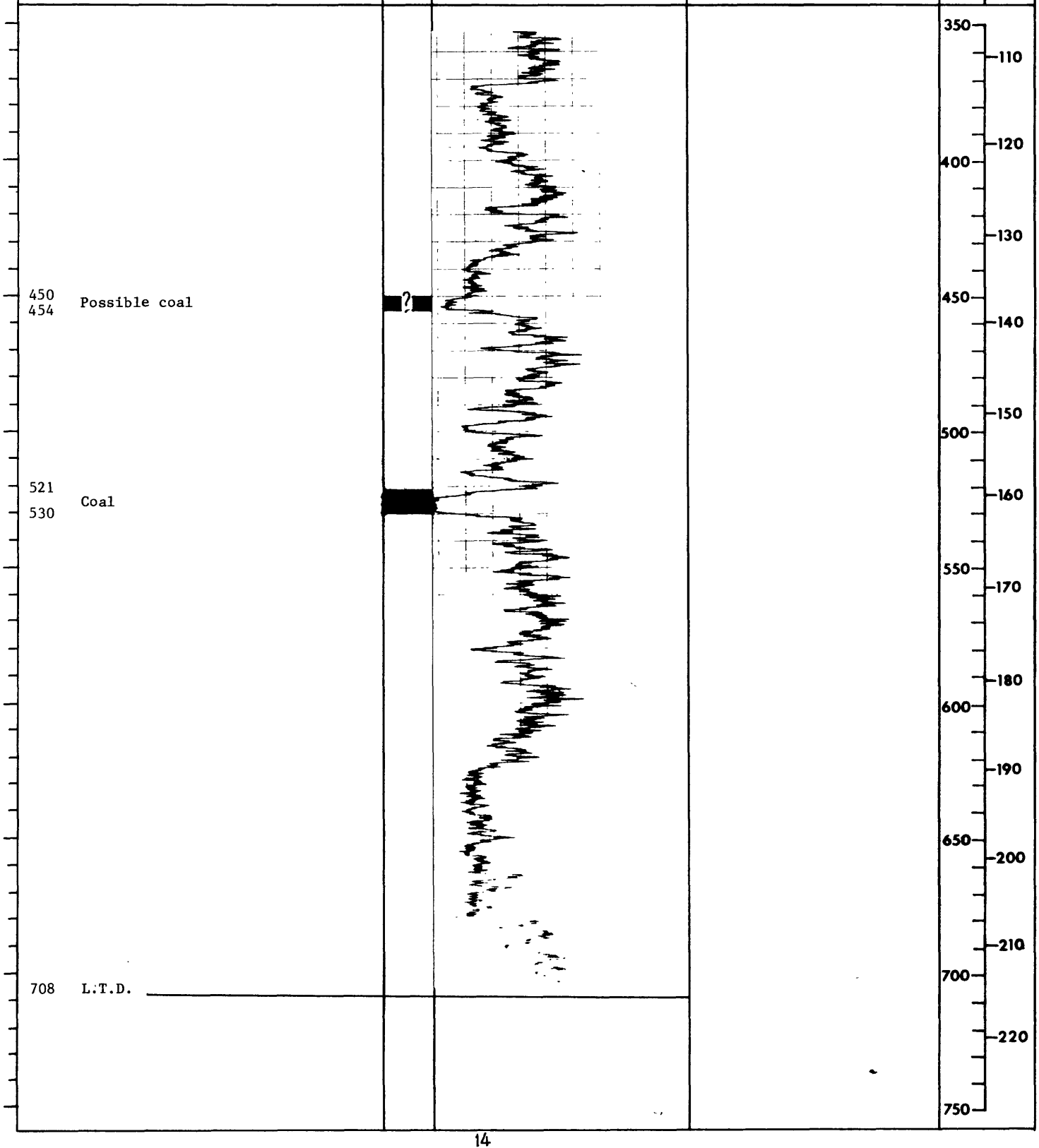


UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77002
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC. · RANGE 100 CPS LOGGING SPEED 16 FT/MIN LOGGED DEPTH 708	T.C. ___ SEC. · RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



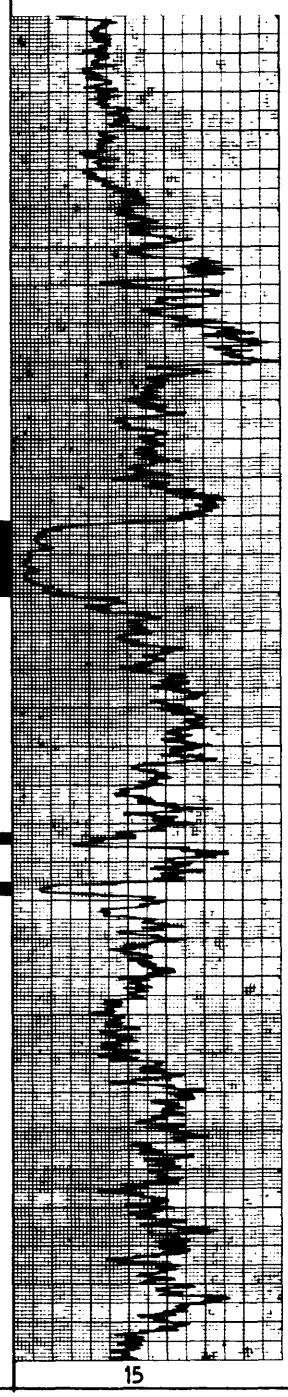
UNITED STATES GEOLOGICAL SURVEY

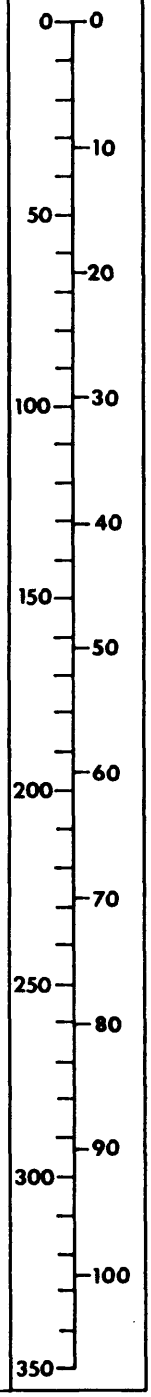
HOLE NO WW-77003
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Coal Draw (NE¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 17 T. 40 N., R. 72 W., FOOTAGE LOC. 500 FNL ~~FSL~~ 1650 ~~FEL~~ FWL			GROUND ELEV 4716
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY L. D. Riglin 9-20-1977		

REMARKS: 7-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC. - RANGE 100 CPS LOGGING SPEED 17 FT/MIN LOGGED DEPTH 560	T.C. ___ SEC. - RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		





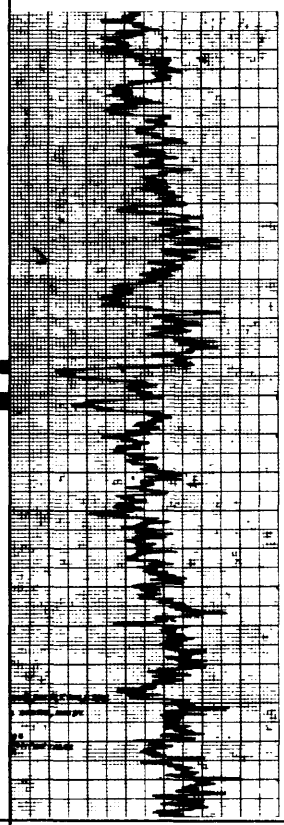
132
Coal
151

214
216 Possible coal
226
228 Coal

UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77003
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA T.C. 4 SEC. - RANGE 100 CPS LOGGING SPEED 17 FT/MIN LOGGED DEPTH 560	DENSITY T.C. ___ SEC. - RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	DEPTH FEET / METERS
442 445 Possible coal	?			350 / 110
450 453 Possible coal	?			120
				400 / 130
				450 / 140
				150
				500 / 160
				550 / 170
560 L.T.D.				180
				600 / 190
				650 / 200
				210
				700 / 220
				750

UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77005
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Betty Reservoir (NE¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 34 T. 41 N., R. 71 W., FOOTAGE LOC. 2200 FNL ~~XXX~~ 850 FEL ~~XXX~~			GROUND ELEV 4580
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY L. D. Riglin 10-2-1977		

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH
		T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 15 FT/MIN LOGGED DEPTH 572	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	FEET / METERS

16

Coal, carbonaceous shale

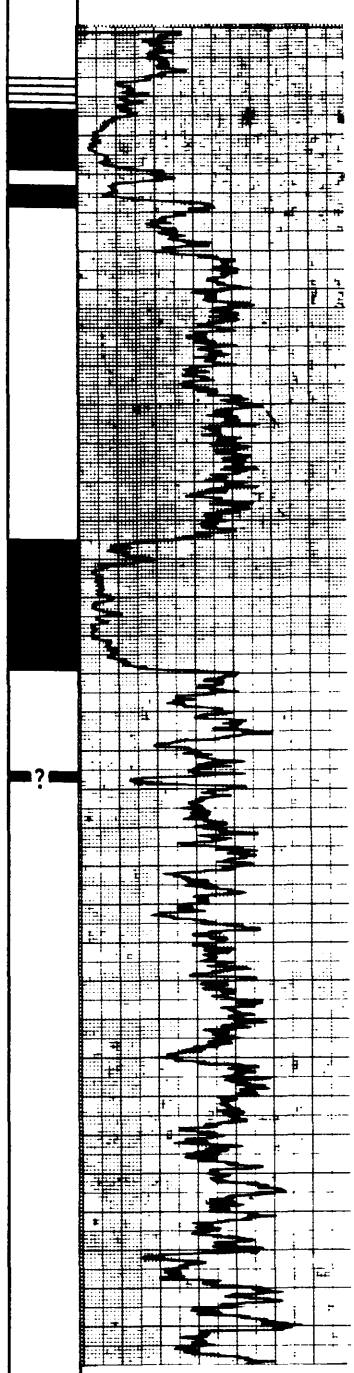
39
42
47 Coal

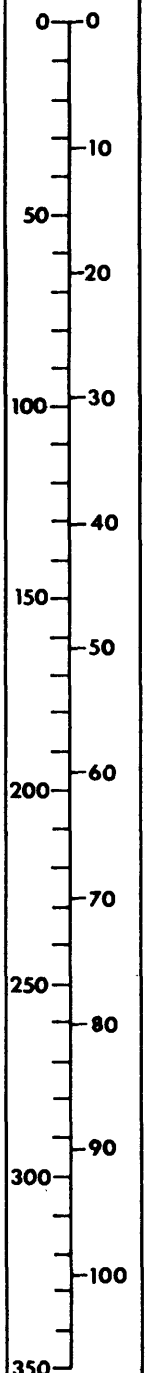
135

Coal

169

196
198 Possible coal

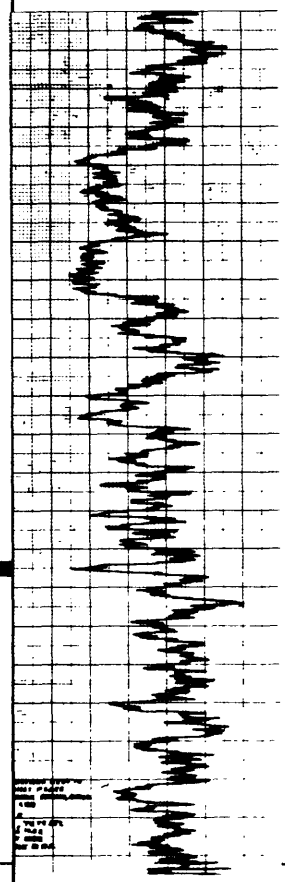




UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77005
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 15 FT/MIN LOGGED DEPTH 572	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		
494 497 Possible coal	?			350 400 450 500 550 600 650 700 750	110 120 130 140 150 160 170 180 190 200 210 220
572 L.T.D.					

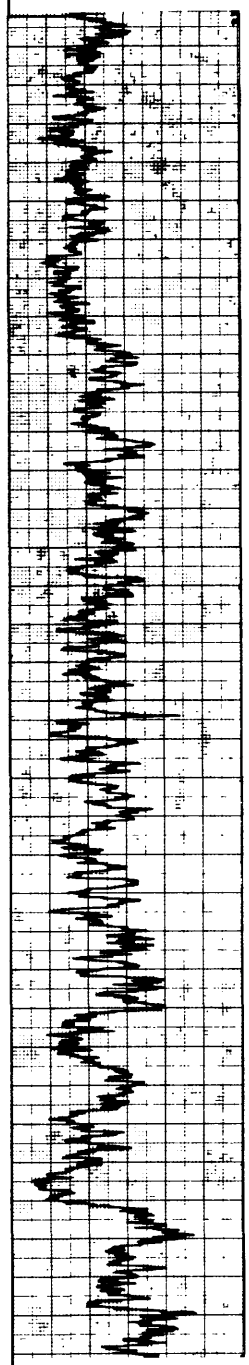
UNITED STATES GEOLOGICAL SURVEY

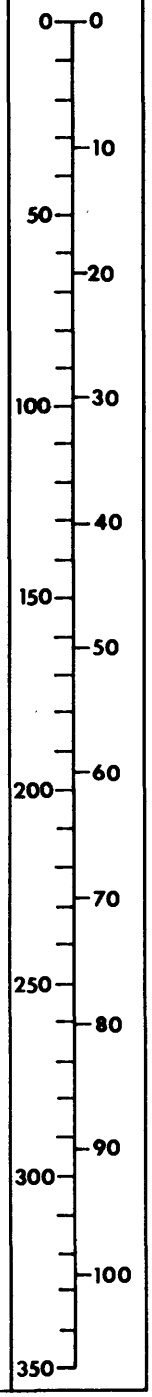
HOLE NO WW-77007
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Betty Reservoir (NE¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 33 T. 41 N., R. 70 W., FOOTAGE LOC. 2300 FSL 1800 FWL			GROUND ELEV 4520
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY L. D. Riglin 10-2-1977		

REMARKS: 3-in surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC. - RANGE 100 CPS LOGGING SPEED 16 FT/MIN LOGGED DEPTH 489	T.C. ___ SEC. - RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		

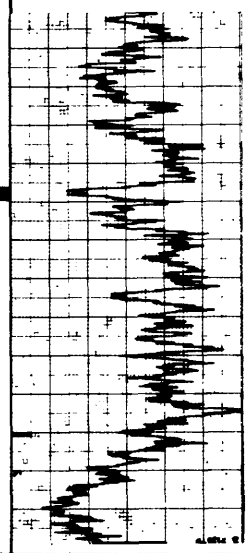




UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77007
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 16 FT/MIN LOGGED DEPTH 489	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		
395 397 Possible coal	?			350 400 450 500 550 600 650 700 750	110 120 130 140 150 160 170 180 190 200 210 220
489 L.T.D.					

UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77009
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Betty Reservoir (NW¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 33 T. 41 N., R. 71 W., FOOTAGE LOC. 800 ~~FNL~~ FSL 1750 ~~FWL~~ FEL			GROUND ELEV 4600
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY 495	CORING NR	TOTAL DEPTH 495
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 10-13-1977		

REMARKS: TB-161

Lithology from driller's log lagged to gamma ray log. 2-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH
		T.C. 4 SEC. RANGE 100 CPS LOGGING SPEED 17 FT/MIN LOGGED DEPTH 488.5	T.C. ___ SEC. RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	FEET / METERS

Silt and clay, colluvium

36 Ss, f. poorly sorted with frag;
42 ss, red-baked slt, ironstone; qtz and granite pebbles

50 Coal, black

Siltstone, gray

72

Sandstone, fine, fair porosity

89

Siltstone, gray

145
149 Coal, black

159 Siltstone, gray
163 Coal, black
170 Siltstone, gray, sandy
Coal
171 Siltstone, gray
183 Carbonaceous shale
186 Siltstone, gray
189

Coal

207

Siltstone, gray

245
246 Coal, black

Siltstone, gray

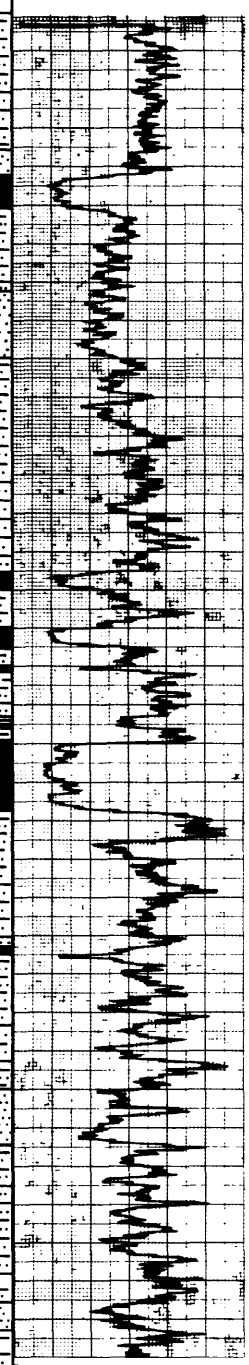
280

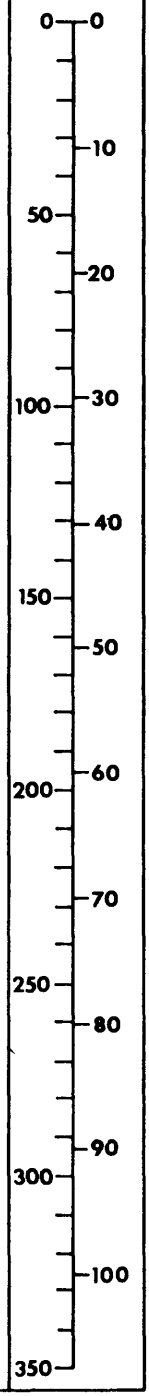
Ss, f to med., fair porosity

294

Siltstone, gray to dark brown with thin carbonaceous interbeds

336
342 Sandstone, fine, poor porosity
Siltstone, gray





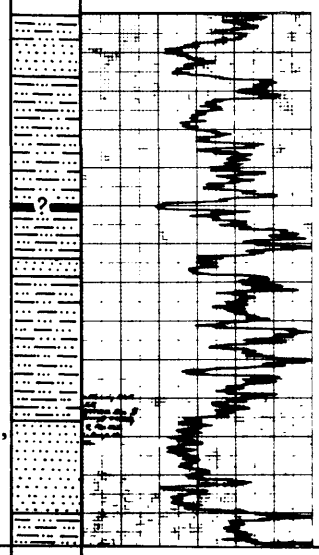
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77009
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH
		T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 17 FT/MIN LOGGED DEPTH 488.5	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	FEET / METERS

357 Siltstone, gray
Sandstone, fair porosity
366
Siltstone, gray
398
400 Possible coal
Siltstone, gray to dark-brown
413
418 **Sandstone,** fine, poor porosity
Siltstone, gray with very thin coal stringers
455
Sandstone, fine to medium grained, fair porosity
479
Siltstone, gray, sandy
489 L.T.D.



DEPTH: 350, 400, 450, 500, 550, 600, 650, 700, 750 FEET; 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220 METERS

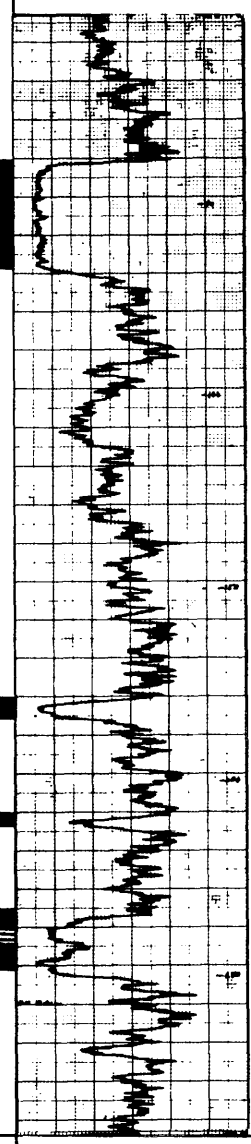
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77010
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Betty Reservoir (NW¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 5 T. 40 N., R. 71 W., FOOTAGE LOC. 800 FSL 2300 FWL			GROUND ELEV 4638
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 10-13-1977		

REMARKS: 6-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 13 FT/MIN LOGGED DEPTH 292.9	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



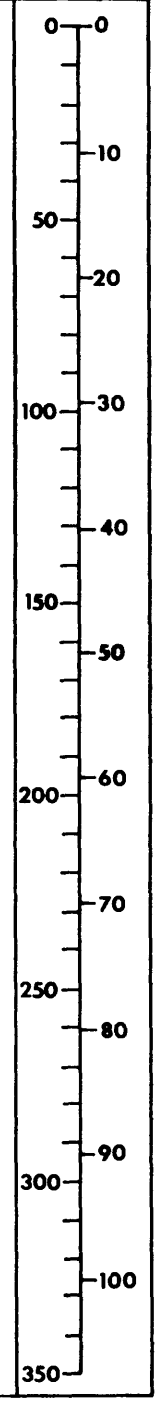
40 Coal 68

180 184 Coal

210 212 Coal

236 Coal; carbonaceous shale 250

293 L.T.D.



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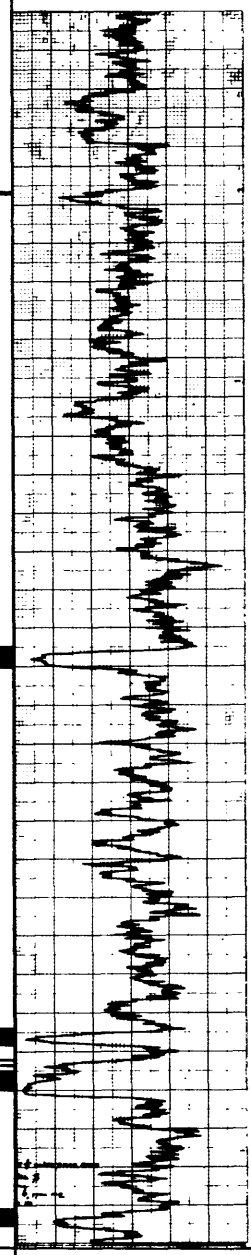
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77011
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Betty Reservoir (NW¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 12 T. 40 N., R. 72 W., FOOTAGE LOC. 1400 FNL ~~FSL~~ 300 FEL ~~FWL~~			GROUND ELEV 4634
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 10-13-1977		

REMARKS: 4-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 17 FT/MIN LOGGED DEPTH 326	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



52–53 Possible coal

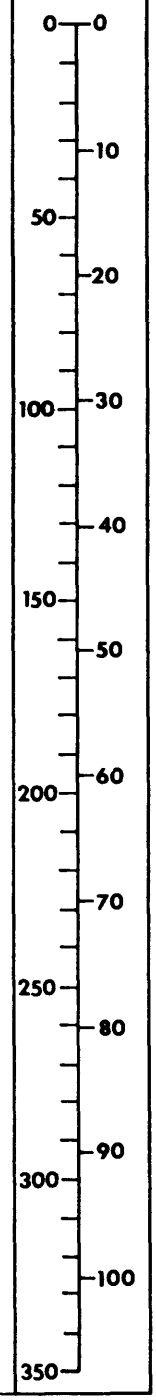
170–174 Coal

269–272 Coal

277–285 Coal and carbonaceous shale

317–320 Coal

326 L.T.D.



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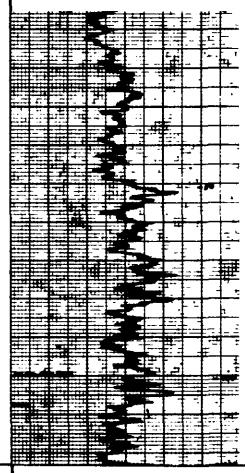
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77012
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Coal Bank Draw	
DATE STARTED 10-19-1968	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 1 T. 39 N., R. 70 W., FOOTAGE LOC. 665 FNL ~~FSL~~ 614 FEL ~~FWL~~			GROUND ELEV 4525
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: True Drilling Company	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hoolomon 10-14-1977		

REMARKS: Formerly Chorney Oil Company, 1-1 Morton's Inc. oil and gas test
commercial logs: IE 327 - 10,526; BS/GRC 324 - 10,522; FDC 5,000 - 10,524
2-in steel surface pipe

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC. · RANGE 100 CPS LOGGING SPEED 15 FT/MIN LOGGED DEPTH 123.7	T.C. ___ SEC. · RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



124 L.T.D.

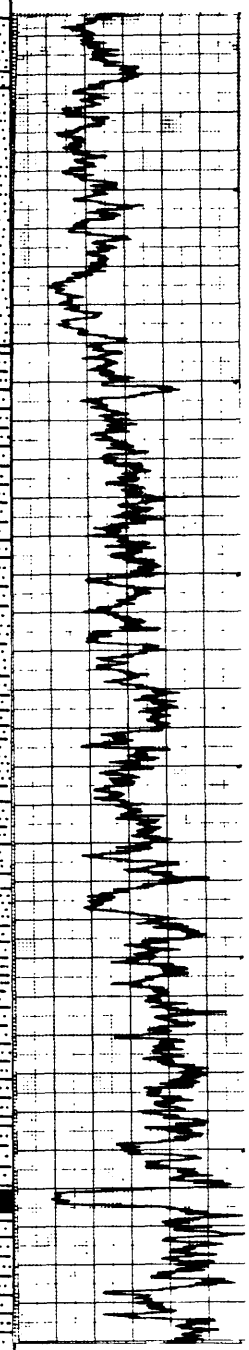
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77013
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Coal Bank Draw	
DATE STARTED NR	DATE COMP. 9-6-1976	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 2 T. 39 N., R. 70 W., FOOTAGE LOC. 2250 ~~FNL~~ FSL 150 ~~FEL~~ FWL			GROUND ELEV 4570
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY 675	CORING 0	TOTAL DEPTH 675
DRILLING AGENCY: Ruby Drilling	DRILL TYPE: Mayhew 2000		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 10-14-1977		

REMARKS: TB-192
Lithology from driller's log lagged to gamma ray log
5½-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 15 FT/MIN LOGGED DEPTH 656.9	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



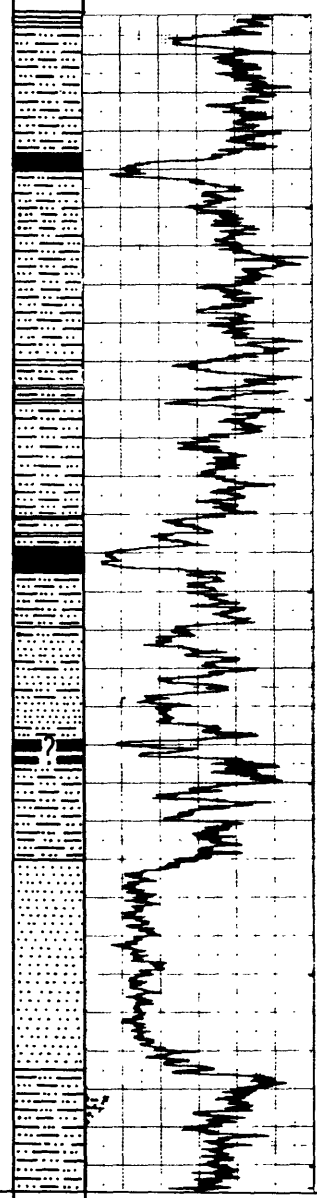
Depth	Lithology
3	Silt, light-brown, sandy
5	Sand, brown to black
18	gravel
22	
	Sandstone, bluish-gray; with minor gravel (?)
89	
	Siltstone, gray to brown
137	
	Sandstone, silty
179	
	Siltstone
191	
	Ss, silty; with thick to very thick, well sorted Ss interbeds below 223 ft
239	
	Siltstone
310	
314	Coal
	Siltstone; with discontinuous thin carbonaceous stringers

UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77013
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH
		T.C. 4 SEC. RANGE 100 CPS LOGGING SPEED 15 FT/MIN LOGGED DEPTH 656.9	T.C. ___ SEC. RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	FEET / METERS



Siltstone; with discontinuous thin carbonaceous stringers

387
391 Coal

Siltstone; with discontinuous thin carbonaceous stringers

489
494 Coal

Siltstone

509

Sandstone, with thick to very thick siltstone interbeds

535

Siltstone, with possible coal interbeds from 539 to 541 ft, and from 542 to 543 ft

570

Sandstone, weakly cemented

626

Siltstone

657 L.T.D.

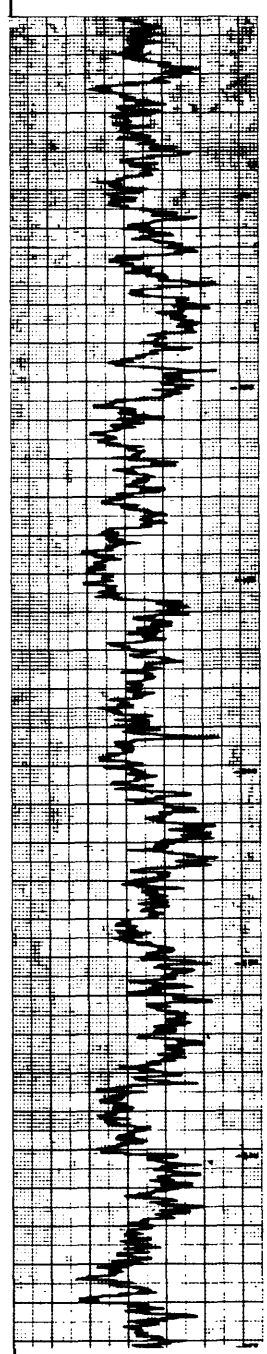
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77014
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Betty Reservoir (NE¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 4 T. 39 N., R. 70 W., FOOTAGE LOC. 1750 FNL 0 FEL			GROUND ELEV 4610
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 10-14-1977		

REMARKS: 4-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 15 FT/MIN LOGGED DEPTH 720	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



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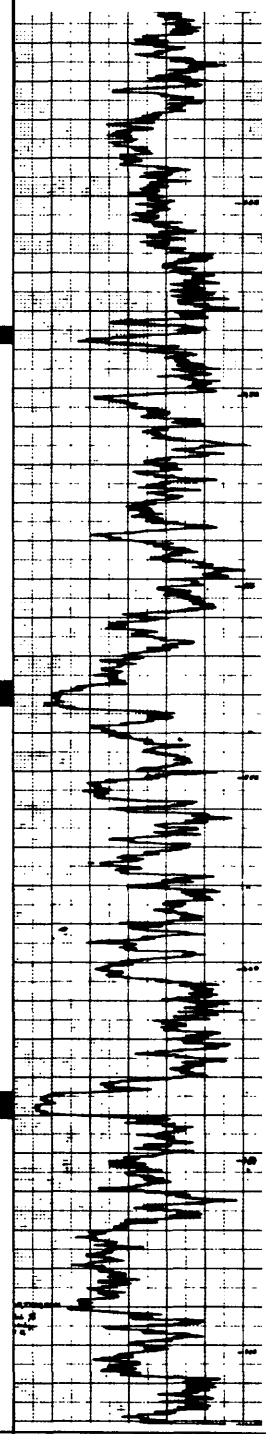
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77014
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC. - RANGE 100 CPS LOGGING SPEED 15 FT/MIN LOGGED DEPTH 720	T.C. ___ SEC. - RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



432 435 Possible coal

525 532 Coal

632 638 Coal

720 L.T.D.

350 400 450 500 550 600 650 700 750

110 120 130 140 150 160 170 180 190 200 210 220

UNITED STATES GEOLOGICAL SURVEY

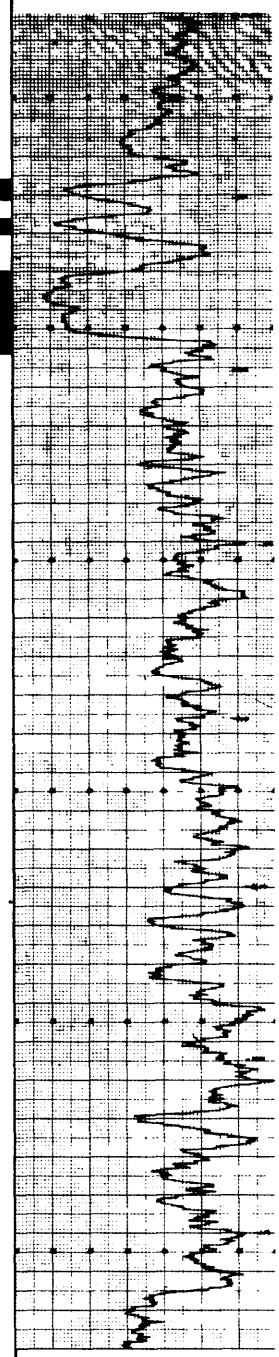
HOLE NO WW-77017
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Betty Reservoir (NE¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 1 T. 40 N., R. 71 W., FOOTAGE LOC. 100 ~~FNL~~ FSL 800 ~~FWL~~ FEL			GROUND ELEV 4585
SIZE AND BIT TYPE: NR	FOOTAGE: ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 11-1-1977		

REMARKS: 4-in steel surface casing
Depths are inaccurate

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 18 FT/MIN LOGGED DEPTH 563	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		

46
50 Coal
55 Coal
59
74
Coal
91

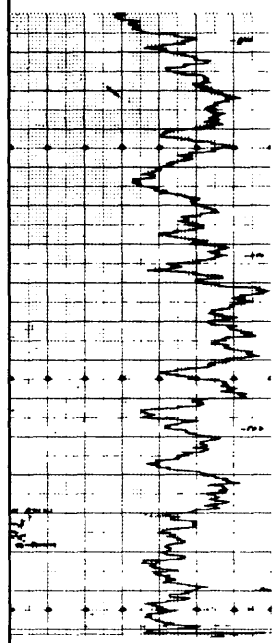


0, 50, 100, 150, 200, 250, 300, 350 FEET
0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 METERS

UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77017
SHEET 2 OF 2

REMARKS: Depth inaccurate

LITHOLOGY	STRIP LOG	GAMMA T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 18 FT/MIN LOGGED DEPTH 563	DENSITY T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	DEPTH FEET / METERS
				350 / 110 120 400 130 450 140 150 500 160 550 170
563 L.T.D.				180 600 190 650 200 210 700 220 750

UNITED STATES GEOLOGICAL SURVEY

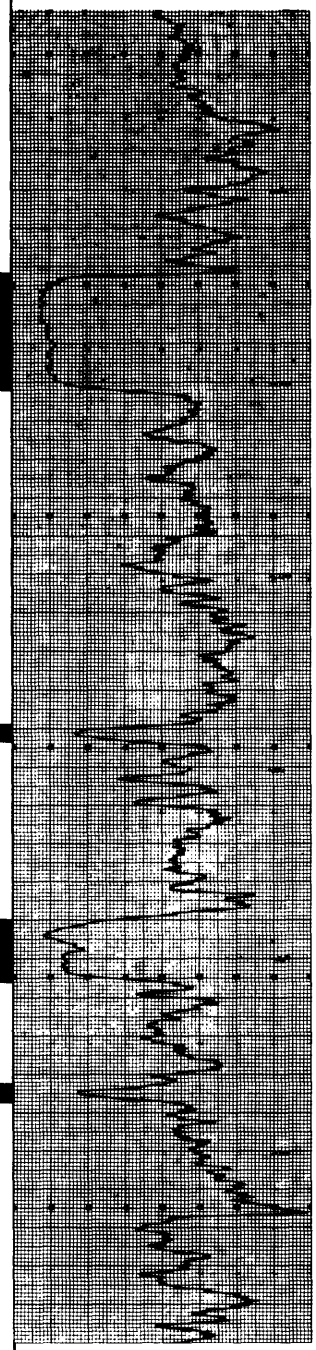
HOLE NO WW-77018
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Betty Reservoir NW¼	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 6 T. 40 N., R. 71 W., FOOTAGE LOC. 0 ~~FNL~~ FSL 900 ~~FWL~~ FEL			GROUND ELEV 4630
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 11-1-1977		

REMARKS: 4-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 18 FT/MIN LOGGED DEPTH 503	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		

72
Coal
101
189
192 Coal
240
Coal
255
283
286 Coal

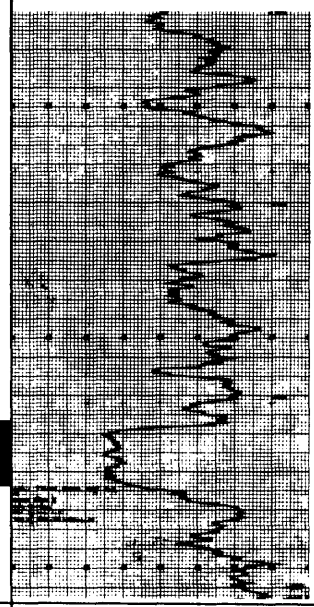


0, 50, 100, 150, 200, 250, 300, 350 FEET
0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 METERS

UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77018
SHEET 2 OF 2

REMARKS:

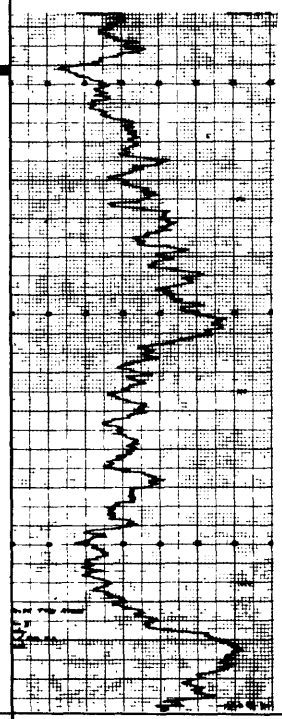
LITHOLOGY	STRIP LOG	GAMMA T.C. 4 SEC. · RANGE 100 CPS LOGGING SPEED 18 FT/MIN LOGGED DEPTH 503	DENSITY T.C. ___ SEC. · RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	DEPTH FEET / METERS
457 Possible coal 473	?			350 / 110; 400 / 120; 450 / 130; 500 / 140; 550 / 150; 600 / 160; 650 / 170; 700 / 180; 750 / 190; 200; 210; 220
503 L.T.D.				

UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77019
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Betty Reservoir (NW¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 35 T. 41 N., R. 72 W., FOOTAGE LOC. 2500 ~~FNL~~ FSL 2400 ~~FWL~~ FEL			GROUND ELEV 4860
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	FOOTAGE CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER NR
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 11-1-1977		

REMARKS: 4-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 22 FT/MIN LOGGED DEPTH 182	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		
15 17 Possible coal	?			0 50 100 150 200 250 300 350	0 10 20 30 40 50 60 70 80 90 100
182 L.T.D.					

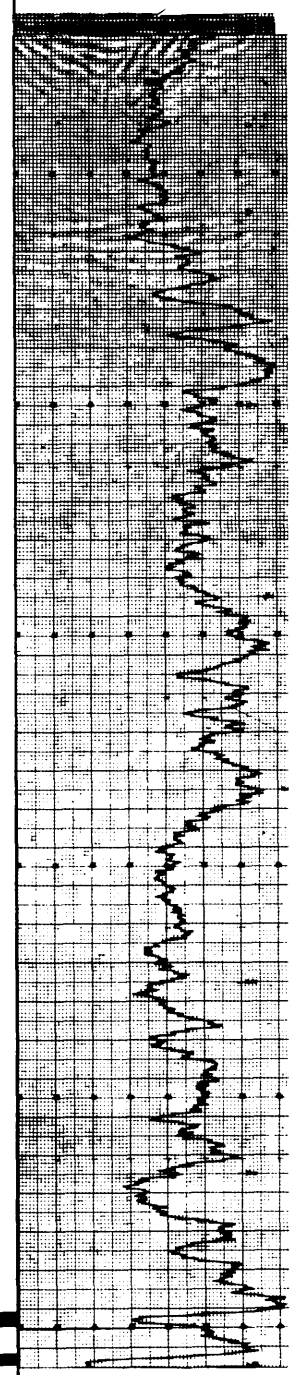
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77020
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Betty Reservoir (NW¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 34 T. 41 N., R. 72 W., FOOTAGE LOC. 250 FNL 1350 FWL			GROUND ELEV 4790
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER NR
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 11-1-1977		

REMARKS: 6-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC. RANGE 100 CPS LOGGING SPEED 18 FT/MIN LOGGED DEPTH 560	T.C. ___ SEC. RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



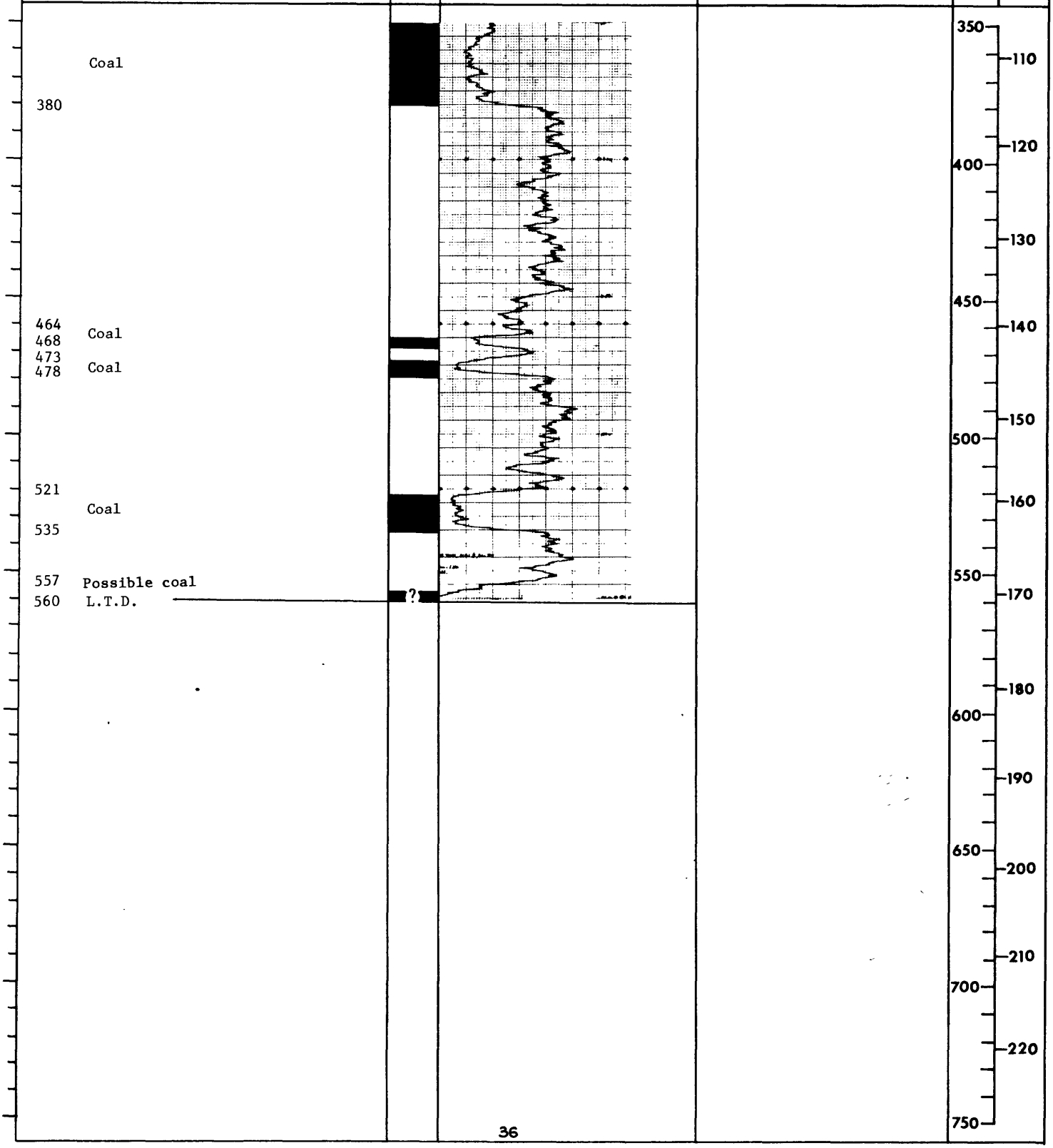
336 Possible coal
340
348 Coal

UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-77020
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH
		T.C. 4 SEC. - RANGE 100 CPS LOGGING SPEED 18 FT/MIN LOGGED DEPTH 560	T.C. ___ SEC. - RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	FEET / METERS



UNITED STATES GEOLOGICAL SURVEY

HOLE NO OW-77001
SHEET 1 OF 2

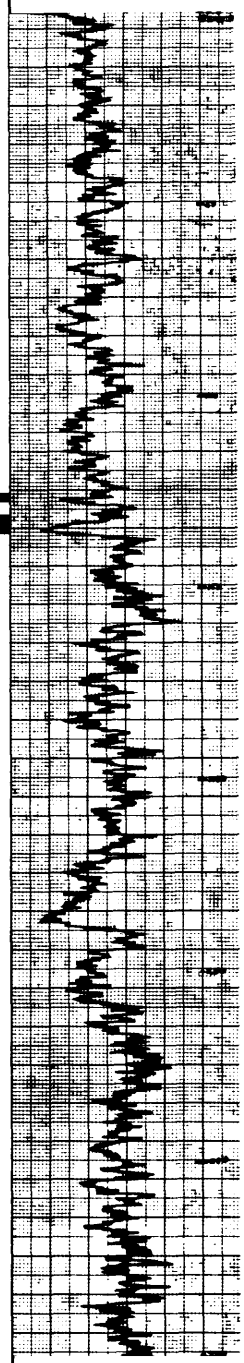
AREA Powder River Basin		QUAD NAME Coal Bank Draw	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 17 T. 40 N., R. 69 W., FOOTAGE LOC. 1980 FNL 1980 FWL			GROUND ELEV 4510
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY 5894	CORING NR	TOTAL DEPTH 5894
DRILLING AGENCY: Exeter	DRILL TYPE: NR		DEPTH TO WATER NR
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY F. B. Kistner 10-4-1977		

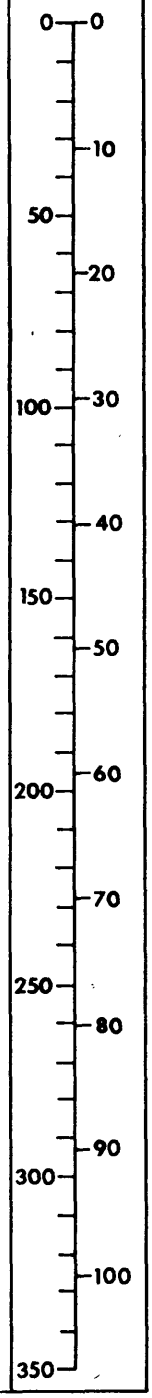
REMARKS: Diamond Shamrock, Scott Fed. 22-17
9 5/8-in steel surface casing
Heavy mud in hole

Commercial logs: FDC/GR 4600 - 5881
IE 1011 - 5876

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 100 CPS LOGGING SPEED 14 FT/MIN LOGGED DEPTH 447	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		

125 Possible coal
127
131 Possible coal
136

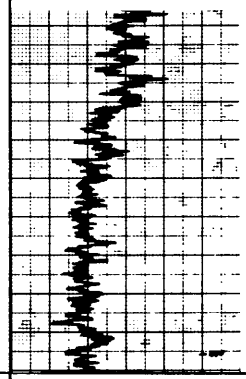




UNITED STATES GEOLOGICAL SURVEY

HOLE NO OW-77001
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA T.C. 4 SEC. · RANGE 100 CPS LOGGING SPEED 14 FT/MIN LOGGED DEPTH 447	DENSITY T.C. ___ SEC. · RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	DEPTH FEET / METERS
				350 / 110 400 / 120 130
447 L.T.D.				450 / 140 500 / 150 160 550 / 170 180 600 / 190 650 / 200 210 700 / 220 750

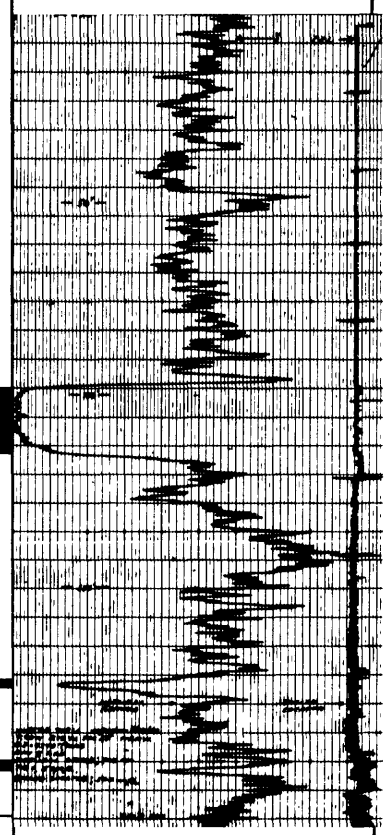
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78001
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Betty Reservoir (NW¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 25 T. 40 N., R. 72 W., FOOTAGE LOC. 700 FNL ~~FSL~~ 1700 ~~FEL~~ FWL			GROUND ELEV 4720
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	FOOTAGE CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER NR
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 6-13-1978		

REMARKS: 6-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 1 SEC.-RANGE 5 CPS LOGGING SPEED 15 FT/MIN LOGGED DEPTH 210	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



98 Coal 115

175 177 Coal

196 198 Possible coal

210 L.T.D.

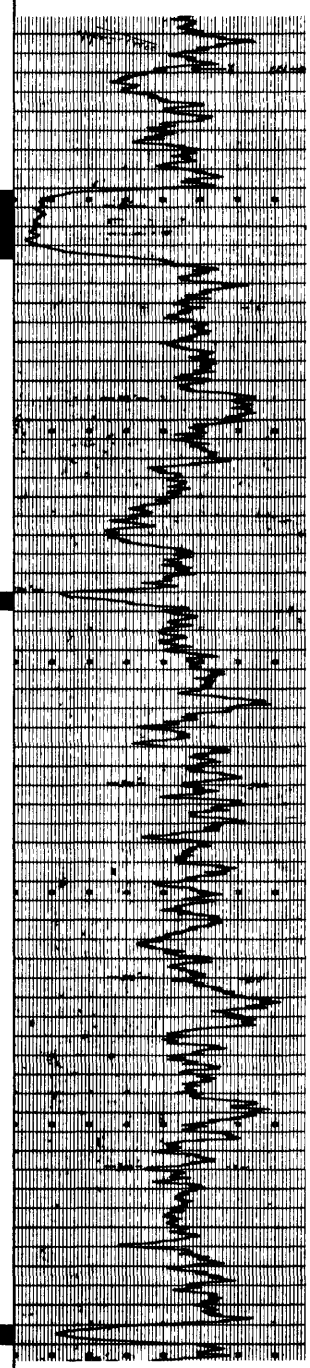
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78002
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Betty Reservoir (NW¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 14 T. 40 N., R. 72 W., FOOTAGE LOC. 1000 ~~FNL~~ FSL 400 ~~FWL~~ FEL			GROUND ELEV 4680
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 6-14-1978		

REMARKS: 4½-in steel surface casing

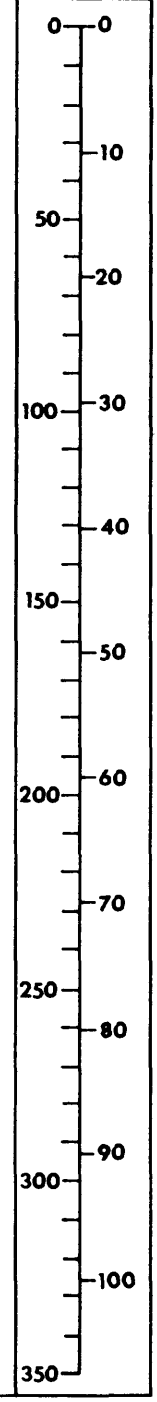
LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 2 SEC. · RANGE 5 CPS LOGGING SPEED 15 FT/MIN LOGGED DEPTH 580	T.C. ___ SEC. · RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



45
Coal
63

150
154 Coal

340
344 Coal

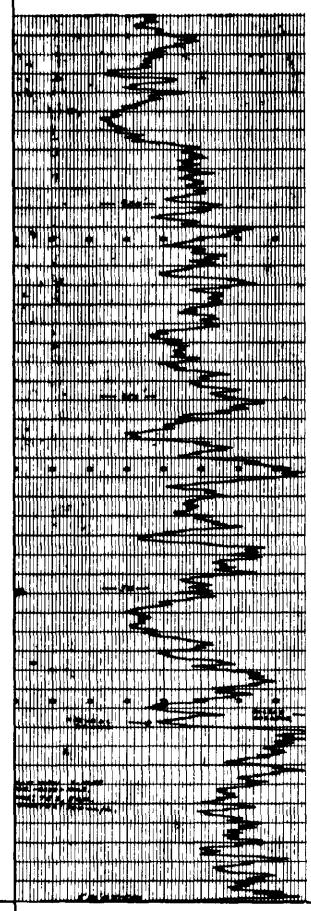


UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78002
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA T.C. 2 SEC. - RANGE 5 CPS LOGGING SPEED 15 FT/MIN LOGGED DEPTH 580	DENSITY T.C. ___ SEC. - RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	DEPTH FEET	DEPTH METERS



580 L.T.D.

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 WW-78003
SHEET 1 OF 3

AREA Powder River Basin		QUAD NAME Betty Reservoir (NW¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 35 T. 40 N., R. 72 W., FOOTAGE LOC. 2200 FNL ~~FSL~~ 1000 ~~FEL~~ FWL			GROUND ELEV 4752
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 6-15-1978		

REMARKS: 5-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 1 SEC.-RANGE 5 CPS LOGGING SPEED 16 FT/MIN LOGGED DEPTH 856	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		

85–92 Coal

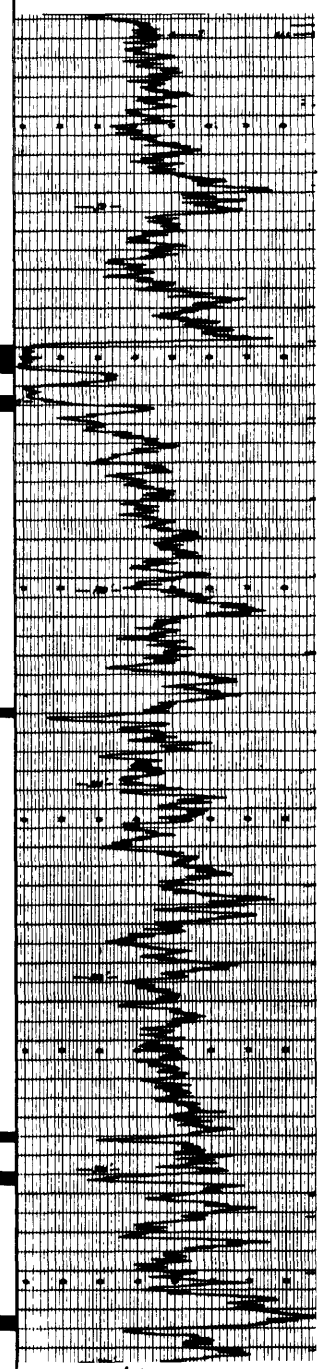
97–101 Coal

180–182 Possible coal

290–292 Possible coal

300–303 Possible coal

338–341 Possible coal

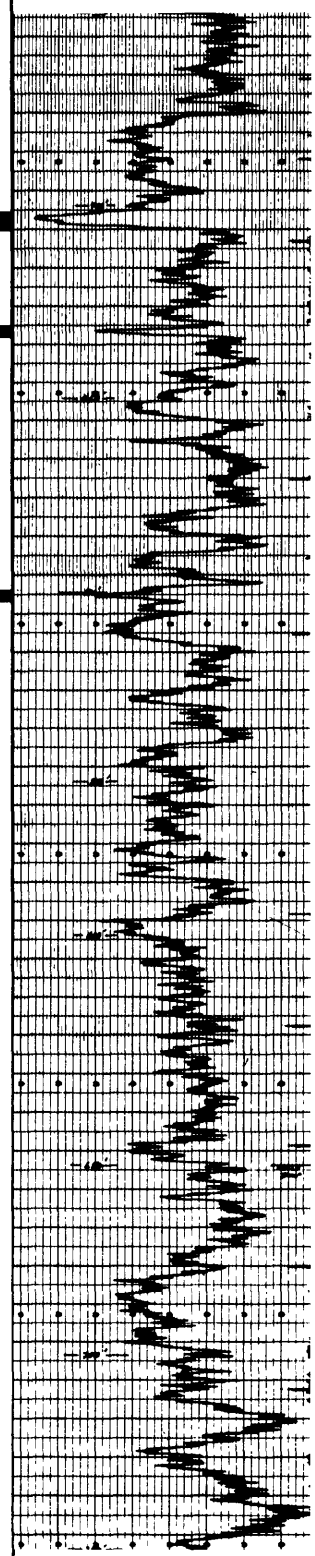


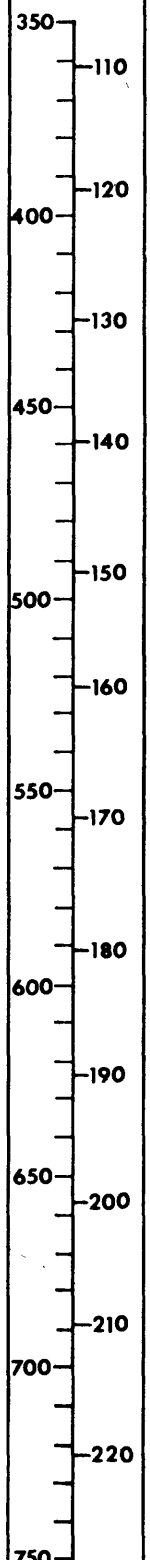
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78003
SHEET 2 OF 3

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA T.C. 1 SEC. · RANGE 5 CPS LOGGING SPEED 16 FT/MIN LOGGED DEPTH 856	DENSITY T.C. ___ SEC. · RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	DEPTH FEET / METERS
402–405 Coal				
431–433 Possible coal	?			
500–502 Possible coal	?			

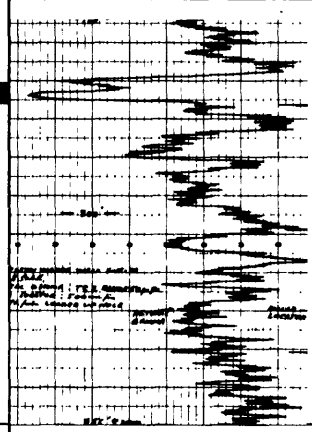




UNITED STATES GEOLOGICAL SURVEY

HOLE NO. WW-78003
SHEET 3 OF 3

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA T.C. 1 SEC. - RANGE 5 CPS LOGGING SPEED 16 FT/MIN LOGGED DEPTH 856	DENSITY T.C. ___ SEC. - RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	DEPTH FEET	DEPTH METERS
766 771 Coal				750	230
					240
				800	
					250
856 L.T.D.				850	260
					270
				900	
					280
				950	290
					300
				1000	
					310
				1050	320
					330
				1100	
					340
				1150	350

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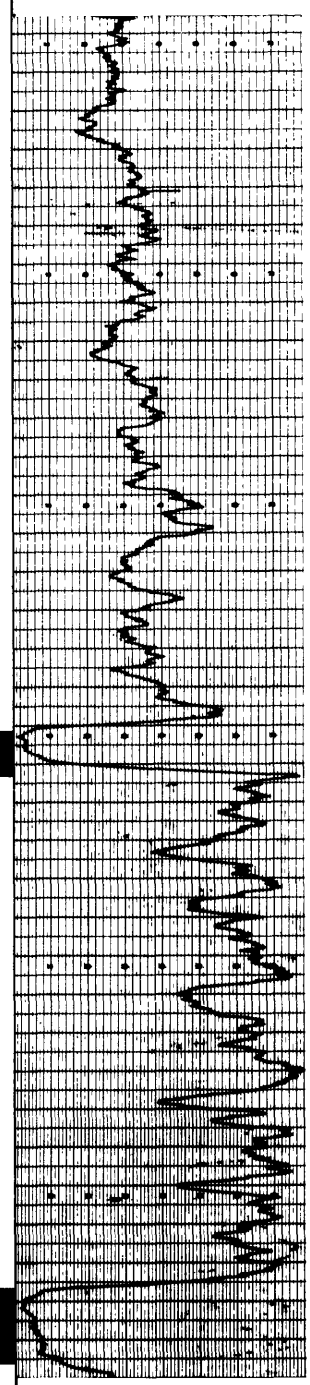
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78004
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Turnercrest (SE¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 23 T. 41 N., R. 73 W., FOOTAGE LOC. 1600 ~~FNL~~ FSL 500 ~~FWL~~ FEL			GROUND ELEV 4837
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 7-19-1978		

REMARKS: 7-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 5 CPS LOGGING SPEED 16-18 FT/MIN LOGGED DEPTH 448	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



185 Coal 196

331 Coal

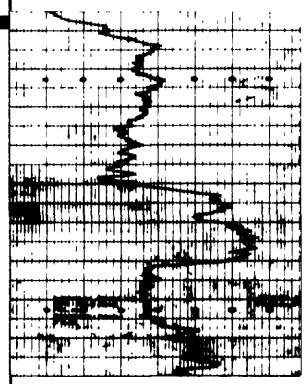
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78004
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC. - RANGE 5 CPS LOGGING SPEED 16-18 FT/MIN LOGGED DEPTH 448	T.C. ___ SEC. - RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		

353 Coal



448 L.T.D.

350 110 120 400 130 450 140 150 500 160 550 170 180 600 190 650 200 210 700 220 750

41

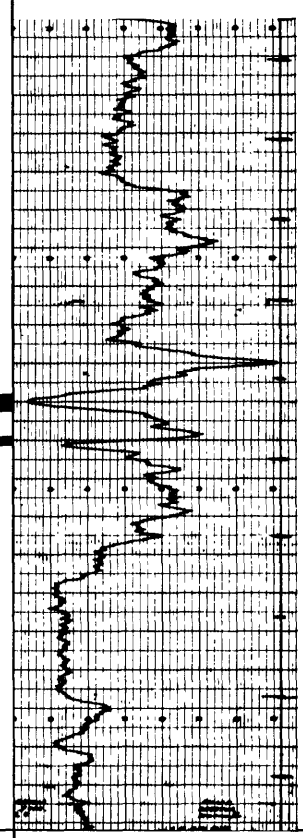
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78005
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Turnercrest (SE¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 9 T. 41 N., R. 72 W., FOOTAGE LOC. 100 ~~XXX~~ FSL 300 ~~XXX~~ FWL			GROUND ELEV 4900
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	FOOTAGE CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER NR
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 7-20-1978		

REMARKS: 6-in steel surface casing

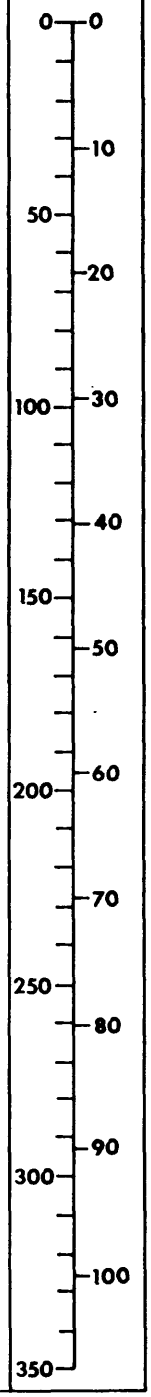
LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 5 CPS LOGGING SPEED 16-18 FT/MIN LOGGED DEPTH 212	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



97 102 Coal

110 112 Coal

212 L.T.D.



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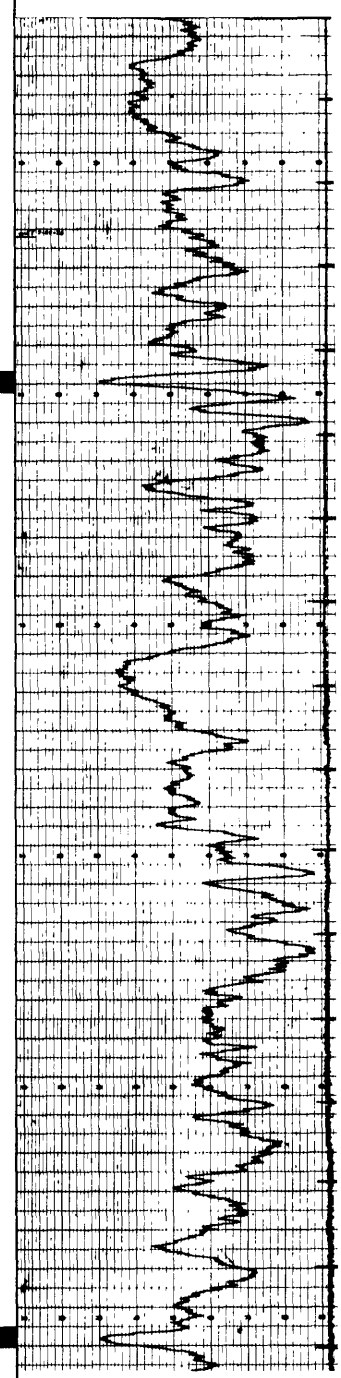
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78006
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Coal Draw (NE¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 28 T. 41 N., R. 72 W., FOOTAGE LOC. 300 ~~FNL~~ FSL 1700 ~~FWL~~ FEL			GROUND ELEV 4791
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER 7-24-78 57
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 7-22-1978		

REMARKS:
3-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC. RANGE 5 CPS LOGGING SPEED 17 FT/MIN LOGGED DEPTH 650	T.C. ___ SEC. RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



92
96 Coal

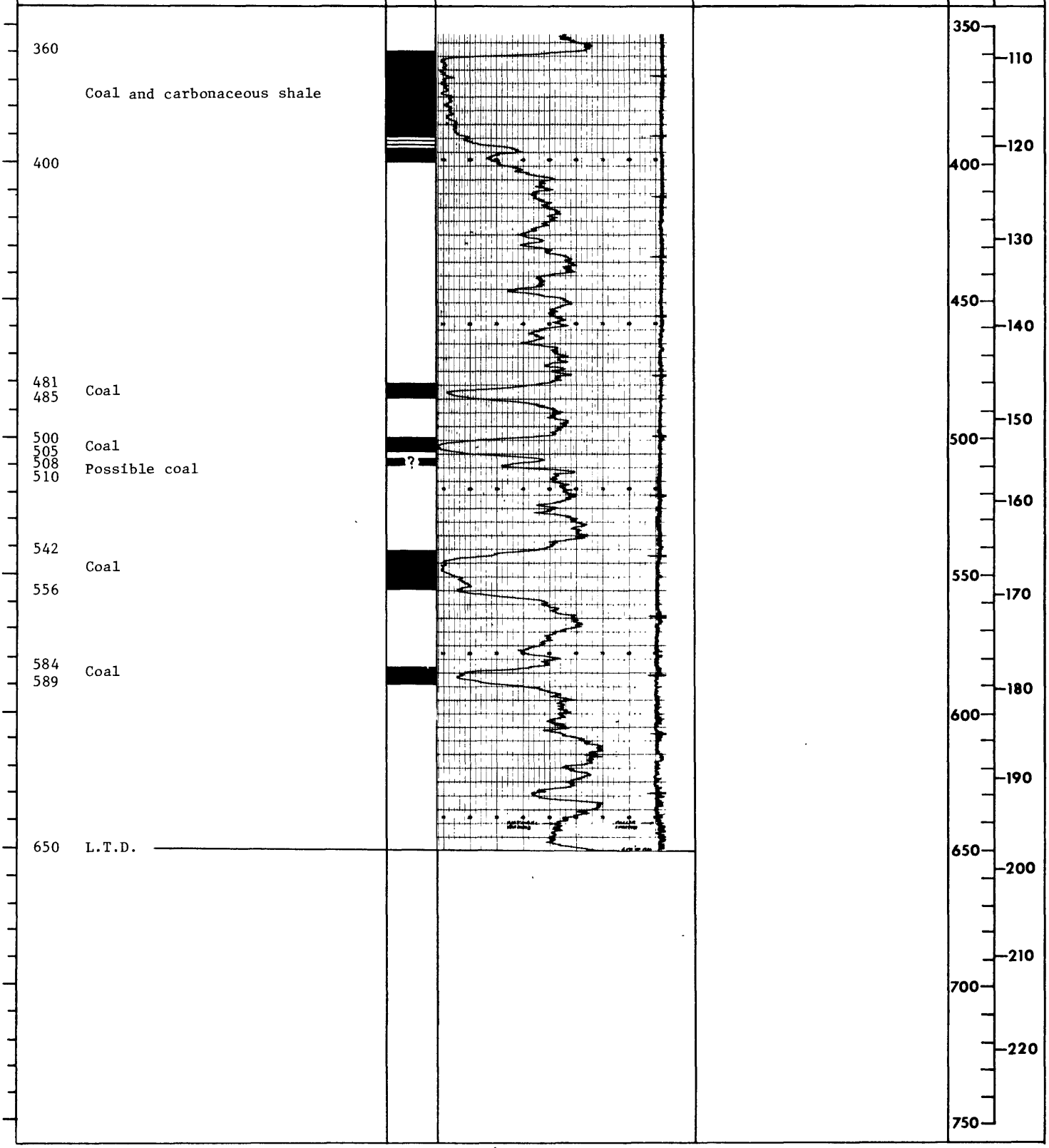
342
345 Possible coal

UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78006
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC. - RANGE 5 CPS LOGGING SPEED 17 FT/MIN LOGGED DEPTH 650	T.C. ___ SEC. - RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



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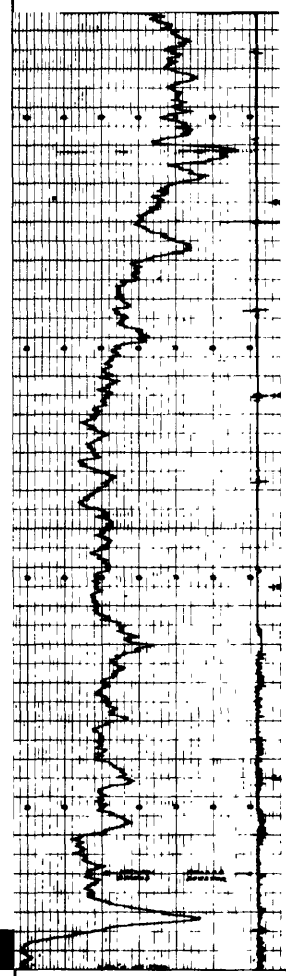
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78007
SHEET 1 OF 1

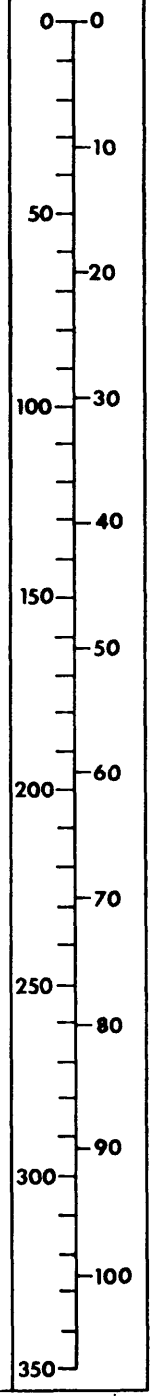
AREA Powder River Basin		QUAD NAME Little Thunder Reservoir	
DATE STARTED NR	DATE COMP. NR	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 2 T. 43 N., R. 72 W., FOOTAGE LOC. 100 ~~FNL~~ FSL 2600 ~~FEL~~ FWL			GROUND ELEV 4890
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: Wyoming Highway Department	DRILL TYPE: NR		DEPTH TO WATER NR
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 7-22-1978		

REMARKS: Wyoming Highway Department Waterwell No. 2
8 3/4-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 5 CPS LOGGING SPEED 15-16 FT/MIN LOGGED DEPTH 250	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



241 Coal, base not logged
250 L.T.D.



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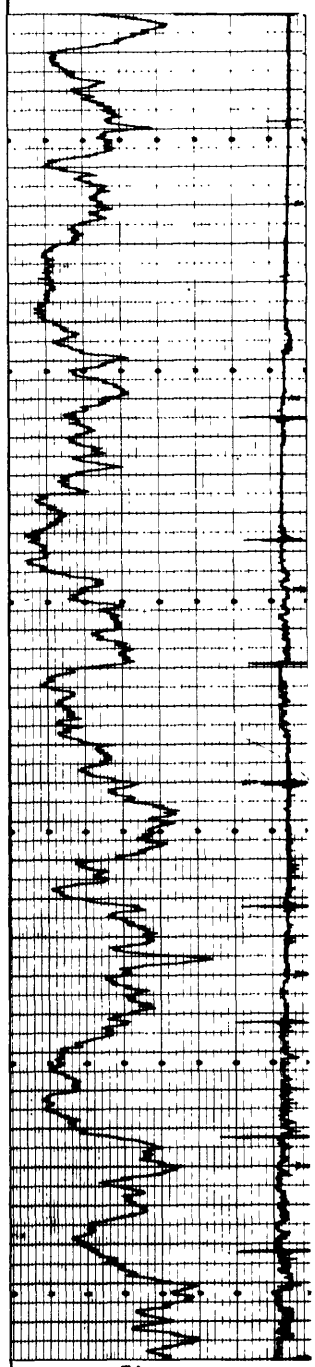
UNITED STATES GEOLOGICAL SURVEY

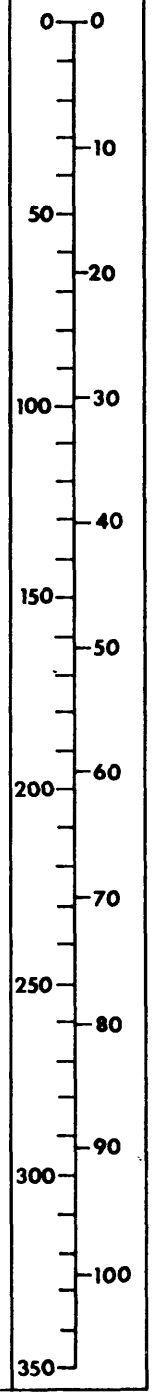
HOLE NO WW-78008
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Betty Reservoir (SE¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 14 T. 38 N., R. 71 W., FOOTAGE LOC. 300 FSL 300 FWL			GROUND ELEV 4690
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 8-31-1978		

REMARKS: 5¼-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 390	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		

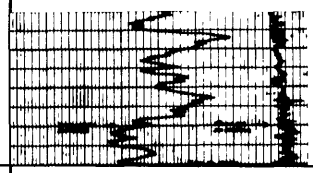




UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78008
SHEET 2 OF 2

REMARKS:

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

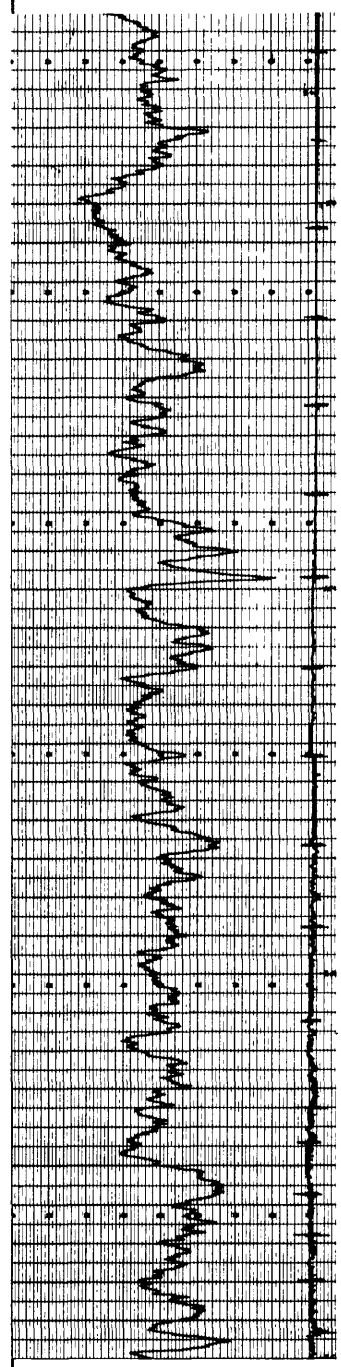
UNITED STATES GEOLOGICAL SURVEY

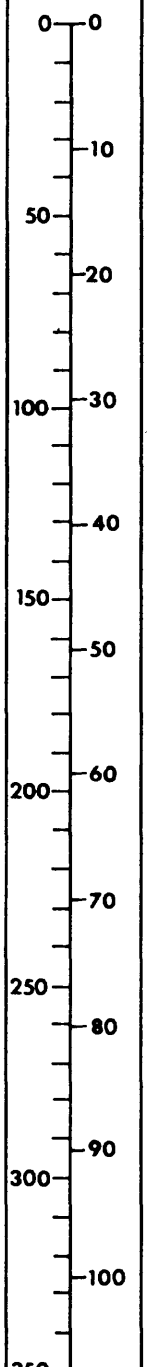
HOLE NO WW-78010
SHEET 1 OF 3

AREA Powder River Basin		QUAD NAME Betty Reservoir (SE¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 27 T. 39 N., R. 71 W., FOOTAGE LOC. 800 FNL ~~FSL~~ 1100 FEL ~~FWL~~			GROUND ELEV 4672
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 9-5-1978		

REMARKS:
3½-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC. RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 840	T.C. ___ SEC. RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



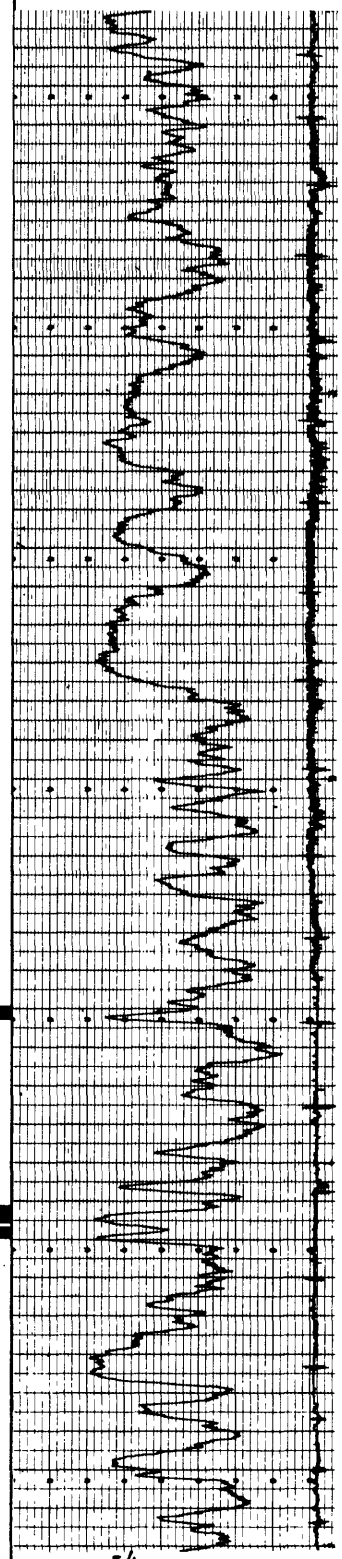


UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78010
SHEET 2 OF 3

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC. RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 840	T.C. ___ SEC. RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



610
612 Possible coal

662
666 Possible coal
668
670 Possible coal

350 110 120 400 130 450 140 150 500 160 550 170 180 600 190 650 200 210 700 220 750

v9

UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78010
SHEET 3 OF 3

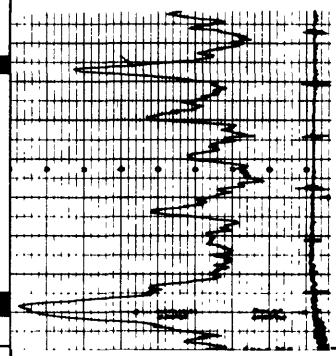
REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 840	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		

766–769 Coal

827–832 Coal

840 L.T.D.



750 800 850 900 950 1000 1050 1100 1150

230 240 250 260 270 280 290 300 310 320 330 340 350

50

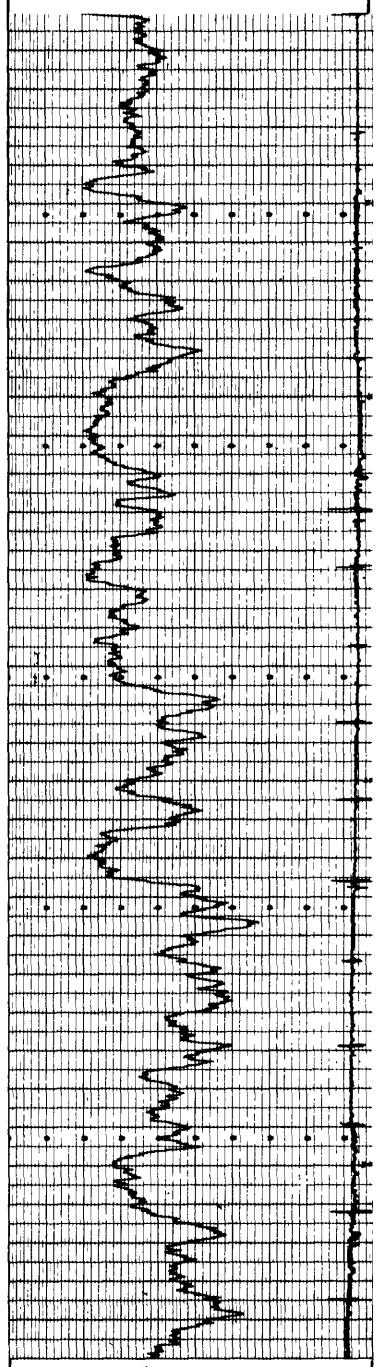
UNITED STATES GEOLOGICAL SURVEY

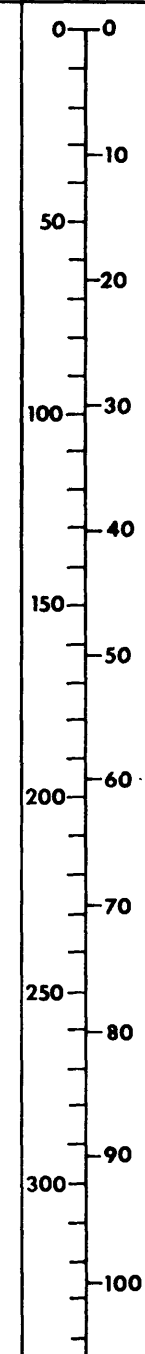
HOLE NO WW-78011
SHEET 1 OF 3

AREA Powder River Basin		QUAD NAME Betty Reservoir (SE¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 13 T. 39 N., R. 71 W., FOOTAGE LOC. 1100 ~~FNL~~ FSL 1800 FEL ~~FWL~~			GROUND ELEV 4650
SIZE AND BIT TYPE: NR	FOOTAGE: ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 9-5-1978		

REMARKS:
4½-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 900	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



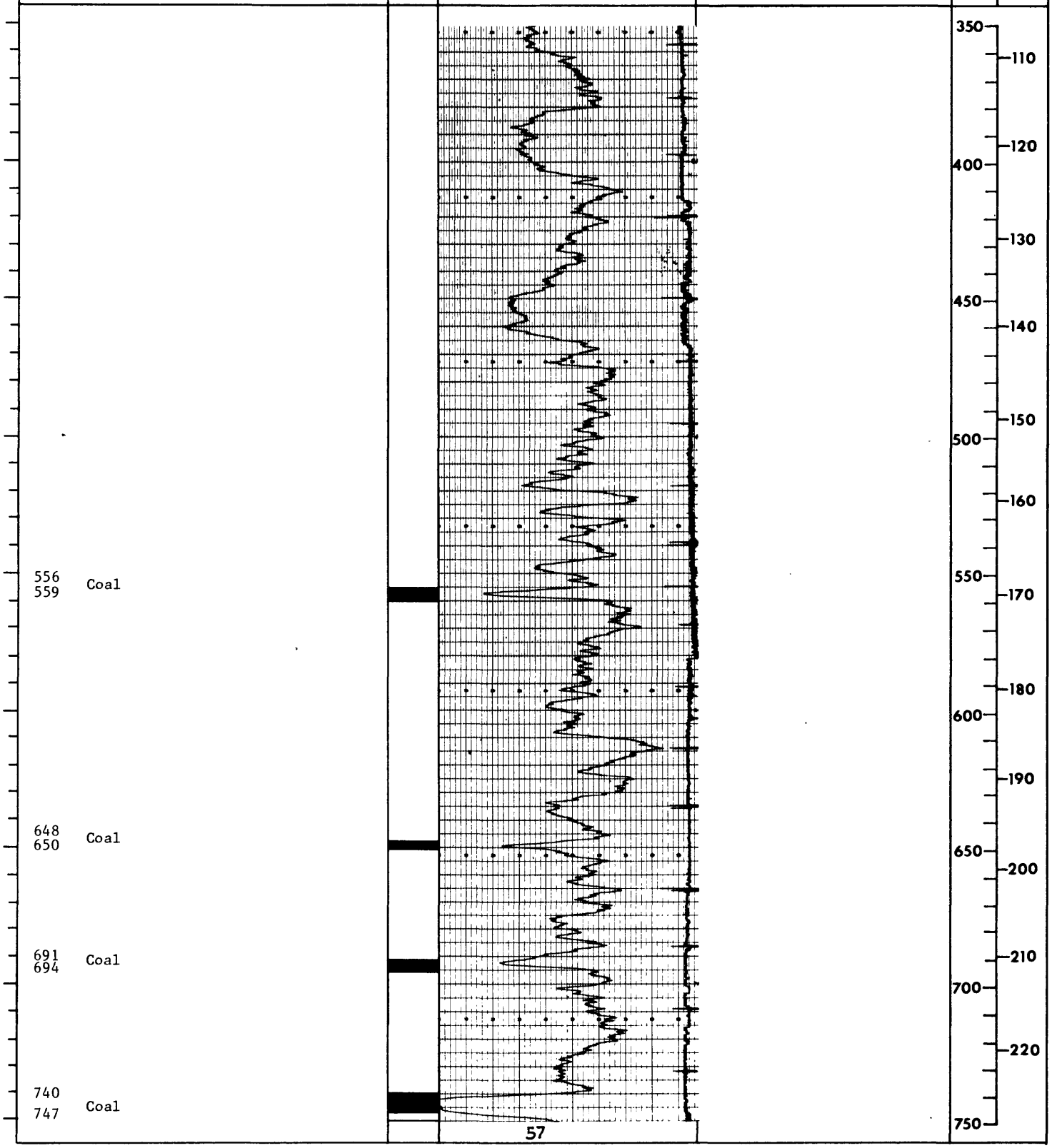


UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78011
SHEET 2 OF 3

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 900	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78011
SHEET 3 OF 3

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH
		T.C. 4 SEC.-RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 900	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	FEET / METERS

812–815 Coal

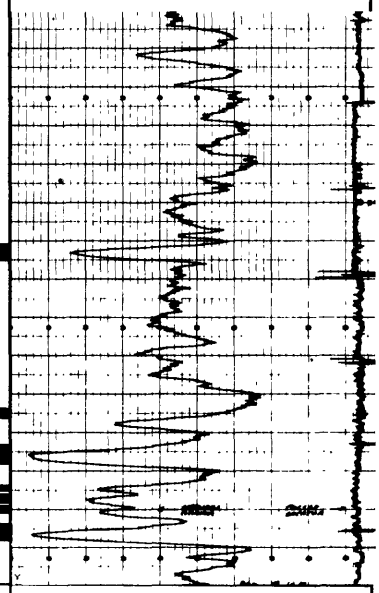
Possible coal

864–869 Coal

Carbonaceous shale with possible coals

885–888 Coal

900 L.T.D.



DEPTH: FEET 750, 800, 850, 900, 950, 1000, 1050, 1100, 1150 — METERS 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350

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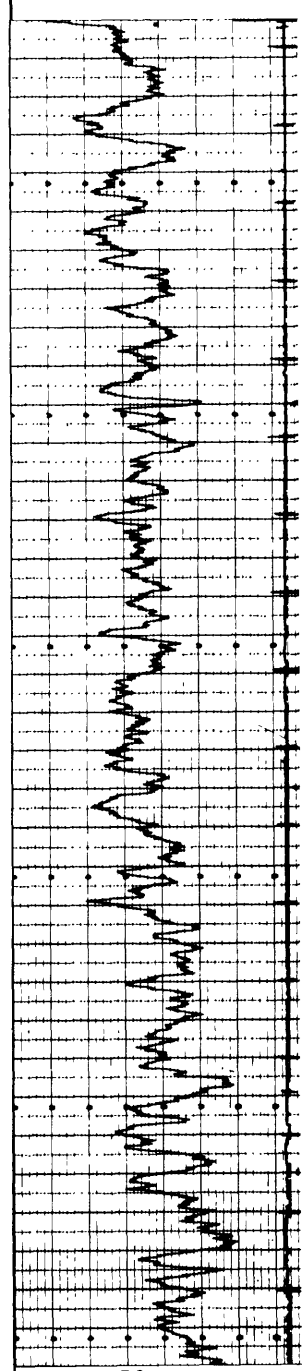
UNITED STATES GEOLOGICAL SURVEY

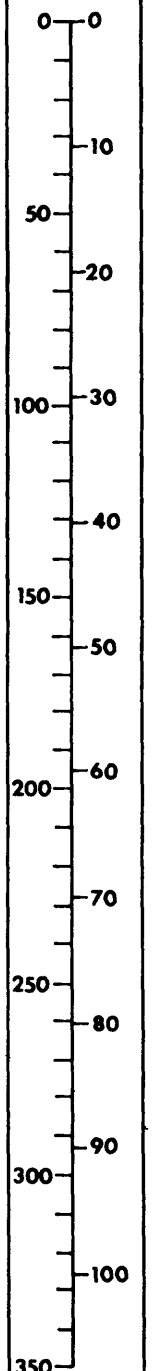
HOLE NO WW-78012
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Betty Reservoir (SE¼)	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 17 T. 39 N., R. 70 W., FOOTAGE LOC. 100 ~~FNL~~ FSL 2300 ~~FWL~~ FEL			GROUND ELEV 4598
SIZE AND BIT TYPE: NR	FOOTAGE: ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 9-5-1978		

REMARKS: 2-in steel surface pipe

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 480	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		

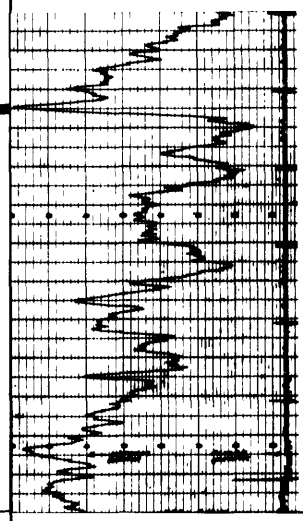




UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78012
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA T.C. 4 SEC.-RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 480	DENSITY T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	DEPTH FEET	DEPTH METERS
374 376 Coal				350	110
					120
				400	
					130
				450	
					140
480 L.T.D.					150
				500	
					160
				550	
					170
					180
				600	
					190
				650	
					200
					210
				700	
					220
				750	

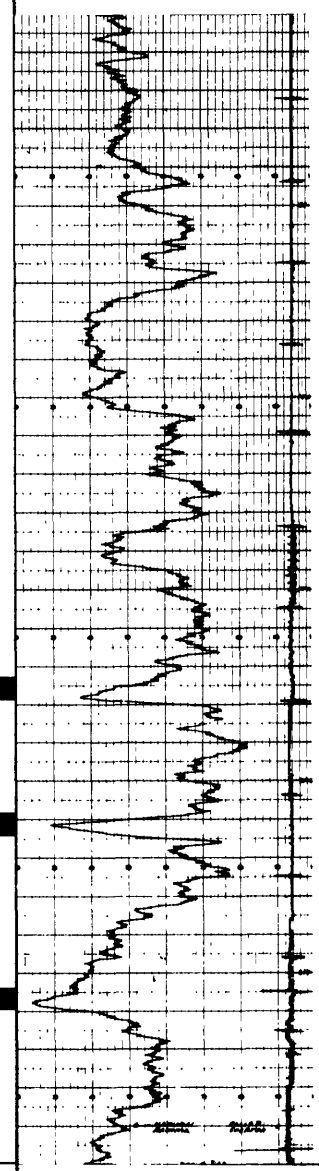
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78013
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Tin Can Lake	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 27 T. 39 N., R. 70 W., FOOTAGE LOC. 2600 FNL ~~FSL~~ 1200 FEL ~~FWL~~			GROUND ELEV 4550
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 9-13-1978		

REMARKS: 4½-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 300	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



175–180 Possible coal

210–215 Coal

256–260 Coal

300 L.T.D.

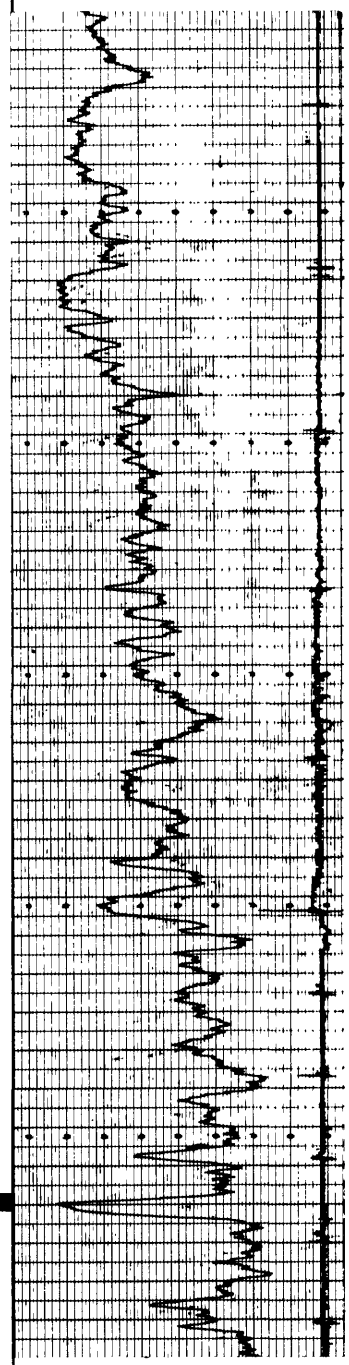
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78014
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Coal Bank Draw	
DATE STARTED NR	DATE COMP. NR	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 5 T. 39 N., R. 69 W., FOOTAGE LOC. 300 ~~FNL~~ FSL 1800 ~~FWL~~ FEL			GROUND ELEV 4460
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH 760
DRILLING AGENCY: Ruby Drilling	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 9-14-1978		

REMARKS: Morton's Inc., S. Dorr Well No. 119
6 5/8-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC. RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 640	T.C. ___ SEC. RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



309
312 Coal

UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78014
SHEET 2 OF 2

REMARKS:

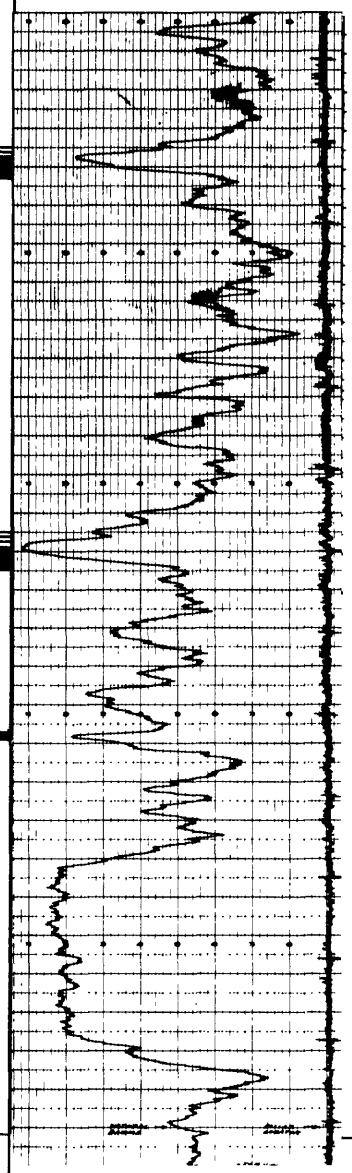
LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH
		T.C. 4 SEC. RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 640	T.C. ___ SEC. RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	FEET / METERS

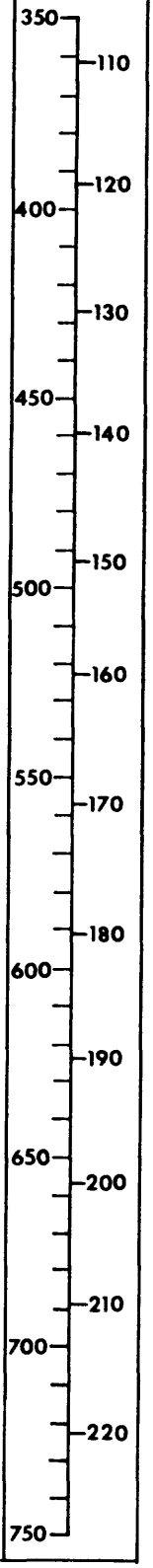
386–391 Coal

487–492 Coal

537–539 Possible coal

640 L.T.D.





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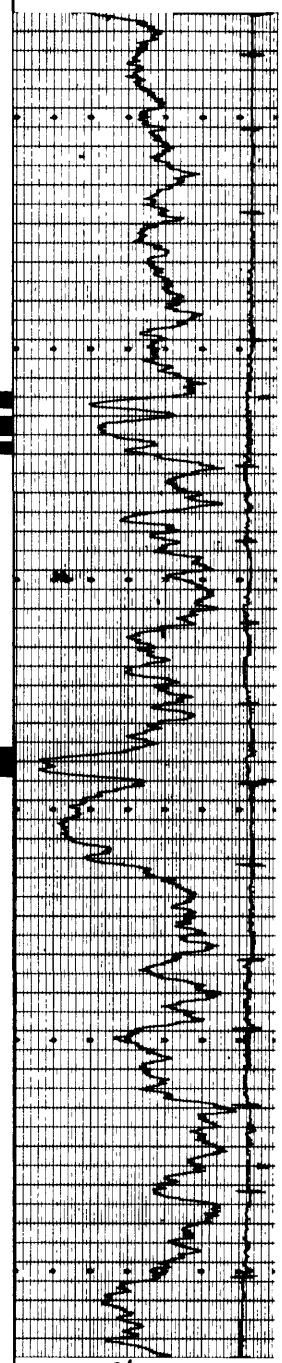
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78015
SHEET 1 OF 2

AREA Powder River Basin		QUAD NAME Fiddleback Ranch	
DATE STARTED 12-1-1974	DATE COMP. 12-15-1974	COUNTY Converse	STATE Wyoming
LOCATION: SEC. 35 T. 40 N., R. 69 W., FOOTAGE LOC. 1200 FNL 800 FEL			GROUND ELEV 4400
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY 760	CORING NR	TOTAL DEPTH 760
DRILLING AGENCY: Frank Kirn	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 9-14-1978		

REMARKS: Morton's Inc., Welch Flats Well No. 115
4½-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA T.C. 4 SEC.-RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 705	DENSITY T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___	DEPTH FEET	DEPTH METERS
98 102 Possible coal	?			0	0
106 111 Possible coal	?				10
113 115 Possible coal	?			50	20
				100	30
					40
				150	50
193 199 Coal				200	60
					70
				250	80
					90
				300	100
				350	



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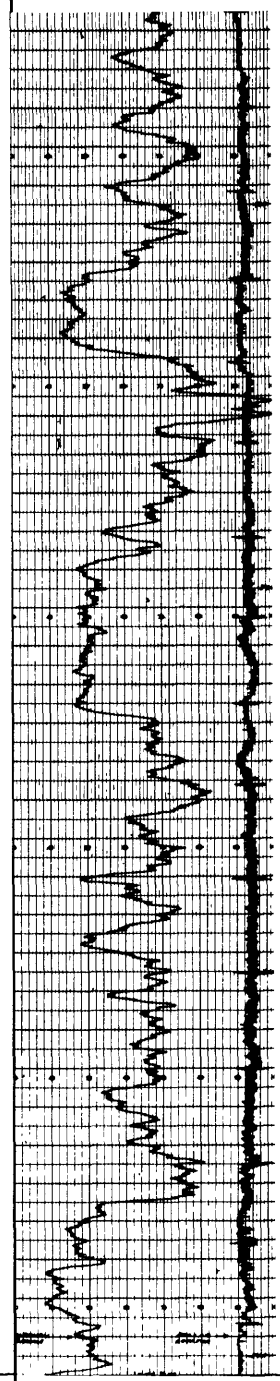
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78015
SHEET 2 OF 2

REMARKS:

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC. - RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 705	T.C. ___ SEC. - RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



705 L.T.D.

350 110 120 400 130 450 140 150 500 160 550 170 180 600 190 650 200 210 700 220 750

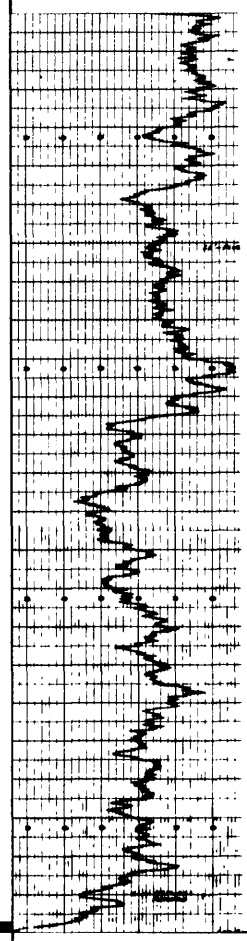
UNITED STATES GEOLOGICAL SURVEY

HOLE NO WW-78016
SHEET 1 OF 1

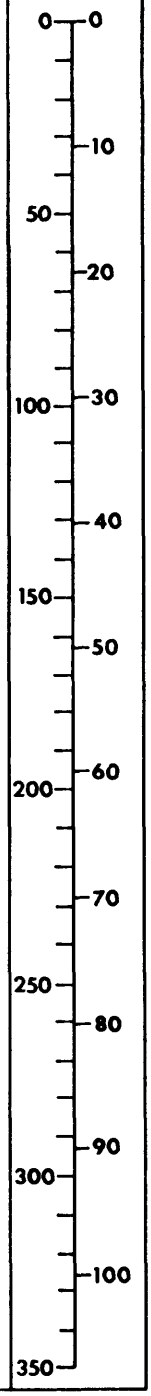
AREA Powder River Basin		QUAD NAME Moyer Springs	
DATE STARTED NR	DATE COMP. NR	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 20 T. 51 N., R. 71 W., FOOTAGE LOC. 2300 ~~FNL~~ FSL 600 ~~FEL~~ FWL			GROUND ELEV 4390
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER 10-1-1978 62
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 10-1-1978		

REMARKS: 4½-in PVC surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 240	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



238 Possible coal
240 L.T.D.



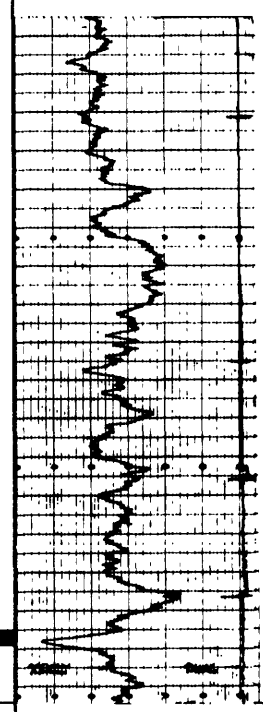
UNITED STATES GEOLOGICAL SURVEY

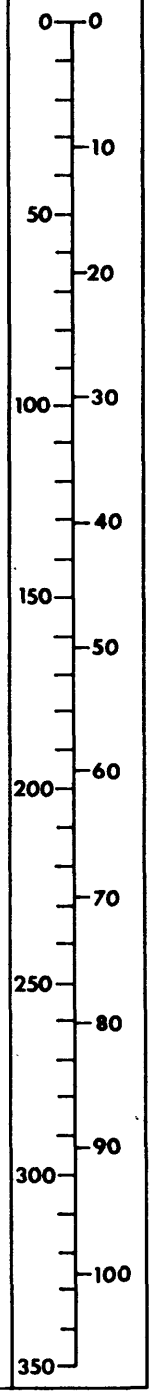
HOLE NO WW-78018
SHEET 1 OF 1

AREA Powder River Basin		QUAD NAME Lone Tree Creek	
DATE STARTED NR	DATE COMP. NR	COUNTY Campbell	STATE Wyoming
LOCATION: SEC. 15 T. 53 N., R. 70 W., FOOTAGE LOC. 700 ~~FNL~~ FSL 600 ~~FEL~~ FWL			GROUND ELEV 3800
SIZE AND BIT TYPE: NR	FOOTAGE ROTARY NR	FOOTAGE CORING NR	TOTAL DEPTH NR
DRILLING AGENCY: NR	DRILL TYPE: NR		DEPTH TO WATER Flowing
LITHOLOGY RECORDED BY NR	GEOPHYSICAL LOGS RECORDED BY G. A. Hollomon 10-4-1978		

REMARKS:
10-in steel surface casing

LITHOLOGY	STRIP LOG	GAMMA	DENSITY	DEPTH FEET	DEPTH METERS
		T.C. 4 SEC.-RANGE 5 CPS LOGGING SPEED 16-17 FT/MIN LOGGED DEPTH 185	T.C. ___ SEC.-RANGE ___ CPS LOGGING SPEED ___ FT/MIN LOGGED DEPTH ___		



167–170 Coal

185 L.T.D.