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# Geological Report

BURTON-HAWKS EXPLORATION

#10 Spaulding

Northwest Northeast

Section 28, Township 9 North, Range 81 West

Jackson County, Colorado

*Whipstock*

DVR	
FJP	
HHM	✓
JAM	✓
JJD	✓

*File*C. S. CANNAN  
PETROLEUM GEOLOGIST



BURTON HAWKS EXPLORATION

#10 Spaulding

Northwest Northeast

Section 28, Township 9 North, Range 81 West

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# STATISTICAL WELL DATA

OPERATOR	BURTON-HAWKS EXPLORATION
Well Name & Number	Spaulding #10
Location	NW NE 28-9N-81W Jackson County, Colorado 730' FNL 2087' FEL
Elevation	8197' GR 8204' DF
Contractor	George McGee Drilling Company
Pusher	George McGee
Directional Work	Rocky Mountain Drilling Control
Engineer	John Isom
Mud Company	Pro Mud Company
Engineer	Leon Ledbetter
Spudded	11:00 A.M. 4/18/74
Set Surface	9:20 A.M. 4/19/74
Under Surface	2:30 A.M. 4/20/74
Completed Drilling	5:15 P.M. 4/27/74
Completed Logging	10:15 P.M. 4/27/74
Plug set @ 1000'	4/28/74



# DAILY CHRONOLOGICAL REPORT

4/16/74 Rigging up.

4/17/74 Rigging up. Laying water line.

4/18/74 Drilling rat hole and pilot hole. Reaming pilot hole to 12 1/4.

4/19/74 Finish reaming. Ran surface pipe and cement. Nipple up. Check blow out preventors. Drill out cement.

4/20/74 Drill cement. Mix mud. Drilling @ 2:30 A.M. Drilling 460' @ 12:00 A.M. Drill to 700'. Lay down square collar. Pick up Dyna-drill.

4/21/74 Trip in with Dyna-drill. Orient tool. Drilling @ 1:45 A.M. Drill to 887'. Trip out lay down Dyna-drill. Clean mud tank. Mix gel and chemicals. Pick up 5 drill collars. In with bottom hole blade stabilizer, 4 3/4 drill collar and 9 drill collars. On bottom @ 10:00 P.M.

4/22/74 Drilling 1090' @ 12:00 A.M. Drill to 1141'. Trip out. In with 6 point reamer, monel collar and blade stabilizer. Add 12 bbls oil @ 950'.

4/23/74 Drilling 1351' @ 7:00 A.M. Trip @ 1531'. Add 12 bbls oil.

4/24/74 Finish trip. Drilling @ 1:00 A.M. Trip @ 1650'. Pull 6 point reamer. Put stabilizer above monel.

4/25/74 Trip @ 1834'. Blade reamer above monel. Ream to bottom. Drilling new hole @ 7:45 A.M. Drill to 2003'. Direction holding @ S13W. Trip out for Dyna drill.

4/26/74 Finish trip. Drilling @ 4:50 A.M. Drilling 2030' @ 7:00 A.M. Trip out with Dyna drill. Back on bottom @ 11:30 P.M. with near bit blade reamer, monel and stabilizer.

4/27/74 Drilling 2249' @ 7:00 A.M. Drilling 2297' @ 11:30 A.M. Drill to 2400'. Mix mud. Make short trip (10 stands). Circulate 1 hr. Out for logs. Finish logging @ 10:15 P.M. Setting plug @ 1000'.



# CASING & CEMENTING RECORD

4 JOINTS 24# 8 5/8 (151') at 160' K.B. with 110 sacks regular cement 2 % CaCl - Halliburton.

Plug down @ 9:20 A.M. 1 8 5/8 Larkin shoe & 2 8 5/8 Larkin centralizers.

## BIT RECORD

No.	Size	Make	Type	Depth In	Depth Out	Footage
1	7 7/8	HTC	OSC1G Retip	0	167	167
2	12 1/4	STC	DGT Rerun	0	167	Reaming
3	7 7/8	HTC	OSC1G	167	700	533
4	7 7/8	HTC	OSC1G	700	887	178
5	7 7/8	HTC	OSC1G	887	1141	263
6	7 7/8	STC	DGT	1141	1531	390
7	7 7/8	STC	DGT	1531	1650	119
8	7 7/8	STC	DGT	1650	1834	184
9	7 7/8	STC	DGT-J	1834	2003	169
10	7 7/8	STC	DGT-J	2003	2146	143
11	7 7/8	STC	DGT-J	2146	2400	254



# ROCKY MOUNTAIN DRILLING CONTROL COMPANY

COMPANY \_\_\_\_\_  
 WELL \_\_\_\_\_  
 LOCATION \_\_\_\_\_  
 TYPE OF SURVEY \_\_\_\_\_ DISTRICT \_\_\_\_\_

JOB NO. \_\_\_\_\_ DATE \_\_\_\_\_  
 FIELD CREW \_\_\_\_\_

STA. NO.	MEASURED DEPTH	COURSE LENGTH	DRIFT ANGLE	VERTICAL DEPTH	TRUE VERTICAL DEPTH	COURSE DEV.	DRIFT DIRECTION	COORDINATE DIFFERENCES				RECTANGULAR COORDINATES							
								NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST				
	130	130	3/4	129 99	129 99	170	S 3 0 W		1 48		85		1 48					85	
	290	160	3/4	159 98	289 97	210	" 6 0 "		1 05		1 83		2 53				1 68		
	472	182	1 1/4	181 96	471 93	397	" 6 0 "		1 99		3 44		4 52				5 12		
	650	178	1 3/4	177 91	649 84	547	" 7 4 "		1 51		5 26		6 03				10 38		
	738	88	3	87 88	737 72	461	" 1 6 "		4 44		1 27		10 47				11 65		
	768	30	5	29 89	767 61	261	" 1 3 "		2 55		59		13 02				12 24		
	797	29	6 3/4	28 80	796 41	341	" 6 "		3 39		35		16 41				12 59		
	826	29	8	28 72	825 13	404	" 5 E		4 02	35			20 43				12 24		
	856	30	9 1/4	29 61	854 74	482	" 1 7 "		4 61	1 41			25 04				10 83		
	904	48	12	46 95	901 69	998	" 1 6 "		9 59	2 75			34 63				8 08		
	962	58	14 1/2	56 15	957 84	1452	" 1 6 "		13 96	4			48 59				4 08		
	1022	60	16 3/4	57 45	1015 29	1729	" 1 3 "		16 84	3 89			65 43				19		
	1082	60	18 1/2	56 90	1072 19	1904	" 1 2 "		18 62	3 96			84 05	3 77					
	1145	63	21	58 82	1131 01	2222	" 1 0 "		21 89	3 86			105 94	7 63					
	1242	97	20 3/4	90 71	1221 72	3437	" 8 "		34 04	4 80			139 98	11 43					
	1331	89	21	83 09	1304 81	3189	" 7 "		31 65	3 88			171 63	15 31					
	1391	60	21	56 61	1360 82	2150	" 7 "		21 34	2 62			192 97	17 93					
	1479	88	22	81 59	1442 41	3297	" 5 "		32 85	2 87			225 82	20 80					
	1570	91	22 1/2	84 07	1526 48	3482	" 4 "		34 74	2 43			260 56	23 23					
	1630	60	23	55 23	1581 71	2344	" 5 3 "		23 41	1 22			283 97	24 45					



ROCKY MOUNTAIN DRILLING CONTROL COMPANY

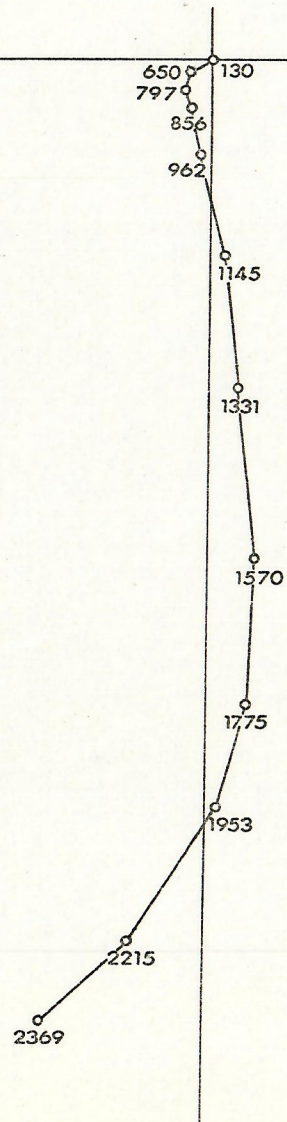
COMPANY \_\_\_\_\_  
WELL \_\_\_\_\_  
LOCATION \_\_\_\_\_  
TYPE OF SURVEY \_\_\_\_\_ DISTRICT \_\_\_\_\_

JOB NO. \_\_\_\_\_ DATE \_\_\_\_\_  
FIELD CREW \_\_\_\_\_

[illegible]



# ROCKY MOUNTAIN DRILLING CONTROL COMPANY



BURTON HAWKS  
*Spaulding #10*  
Lone Pine Field

SCALE:



# MUD PROGRAM

Date	Depth	Vis.	Wt.	Filtrate	Solids	Oil	Acc. Cost
4/18	Drilling Surface Hole						
4/19	167'						\$ 200.00
4/20	437'	34	8.9	11.8	4.3	0	\$ 414.24
4/21	846'	37	9.4	8.4	7.8	0	\$ 524.29
4/22	1077'	36	9	4.4	4.8	0	\$ 830.40
4/23	1472'	39	9.3	6.	10.	5%	\$1085.32
4/24	1671'	33	9.1	6.8	16.5	10%	\$1236.54
4/25	1875'	48	9.6	4.4	16.	6%	\$1625.68
4/26	2084'	46	9.6	4.6	13.	4%	\$1756.09
4/27	2284'	46	9.8	4.2	16.	4%	\$1880.31

# LOGGING PROGRAM

Schlumberger - Induction Electric Log

# ELECTRIC LOG FORMATION TOPS

Carlisle	1278'	+6926'
Frontier	1728'	+6476'
Carlisle	1848'	+6356'
Frontier	2228'	+5976'



COMPANY BURTON-HAWKS Exploration

WELL No. 10 Spaulding

FIELD Lone Pine

COUNTY JACKSON STATE COLORADO

LOCATION NE-SW of N 1/2 API Serial No. \_\_\_\_\_

Sec. 28 Twp. 9N Rge. 81W

Other Services: None

Permanent Datum: G.L. Elev. 8197

Log Measured From KB 7 Ft. Above Perm. Datum

Drilling Measured From KB

Elev.: K.B. 8204  
D.F.  
G.L. 8197

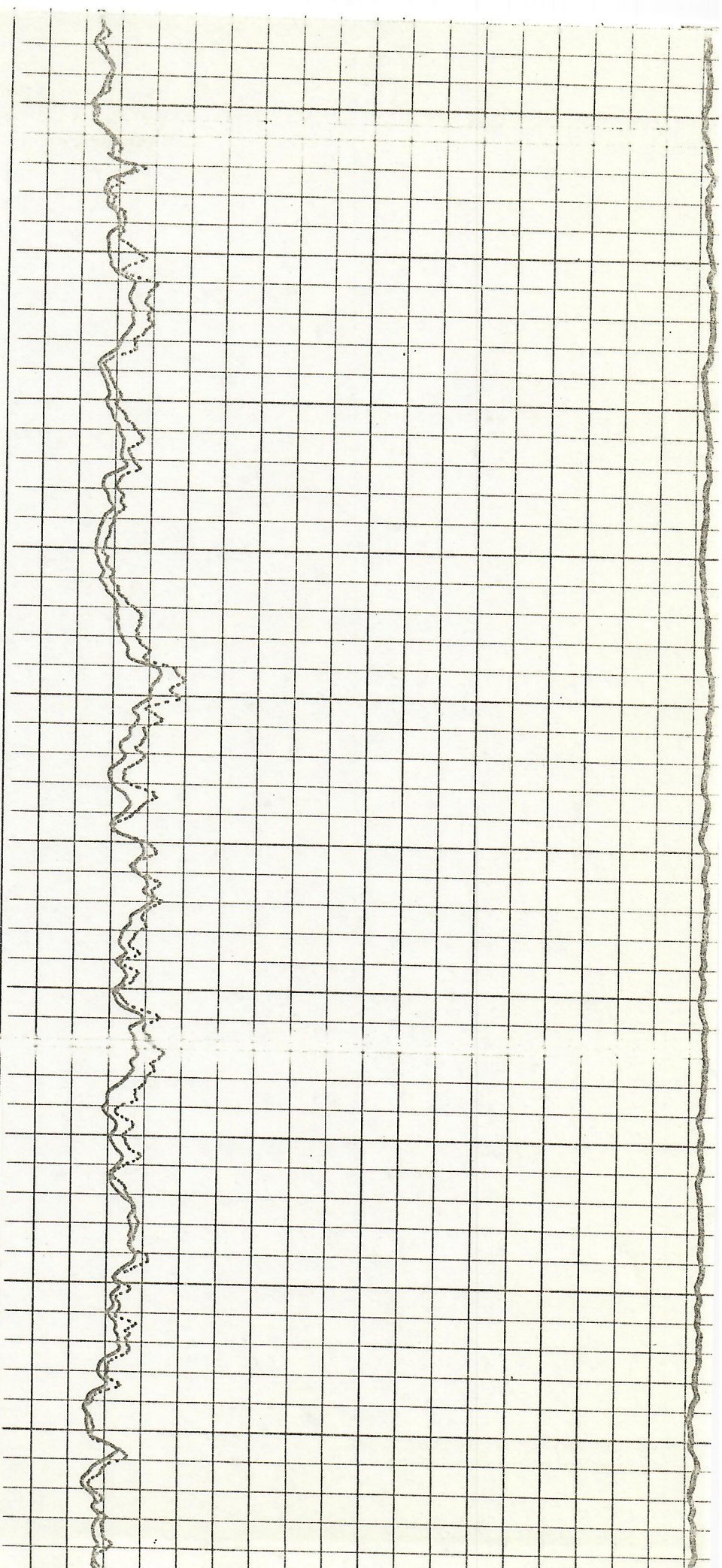
Date	<u>4-27-74</u>				
Run No.	<u>ONE</u>				
Depth—Driller	<u>2400</u>				
Depth—Logger	<u>2391</u>				
Btm. Log Interval	<u>2390</u>				
Top Log Interval	<u>161</u>				
Casing—Driller	<u>55/8 @ 160</u>				
Casing—Logger	<u>161</u>				
Bit Size	<u>7 7/8</u>				
Type Fluid in Hole	<u>FGM</u>				
Dens.	<u>9.8</u>	<u>60</u>			
pH	<u>10.0</u>	<u>4.2</u>	ml		
Source of Sample	<u>Pit</u>				
R <sub>m</sub> @ Meas. Temp.	<u>1.13</u>	<u>@ 62 °F</u>			
R <sub>mt</sub> @ Meas. Temp.	<u>.86</u>	<u>@ 62 °F</u>			
R <sub>mc</sub> @ Meas. Temp.	<u>—</u>	<u>@ — °F</u>			
Source: R <sub>mt</sub>	<u>M</u>				
R <sub>m</sub> @ BHT	<u>—</u>	<u>@ — °F</u>			
Time Since Circ.	<u>2 hrs.</u>				
Max. Rec. Temp.	<u>74.7M</u>	<u>°F</u>			
Equip. Location	<u>5657 FM</u>				
Recorded By	<u>Adkisson</u>				
Witnessed By	<u>S. CRANFORD</u>				

SPONTANEOUS-POTENTIAL	
MILLIVOLTS	
$- \frac{20}{4} +$	

DEPTHS	RESISTIVITY	
	OHMS. M <sup>2</sup> /M	
	A - 16" - M	
0	SHORT NORMAL	100
0		1000
0	INDUCTION	100
0		1000
0	AMP. SHORT NORMAL	20

CONDUCTIVITY	
MILLIMHOS/M = $\frac{1000}{\text{OHMS. M}^2/\text{M}}$	
6FF40	
INDUCTION	0
	500





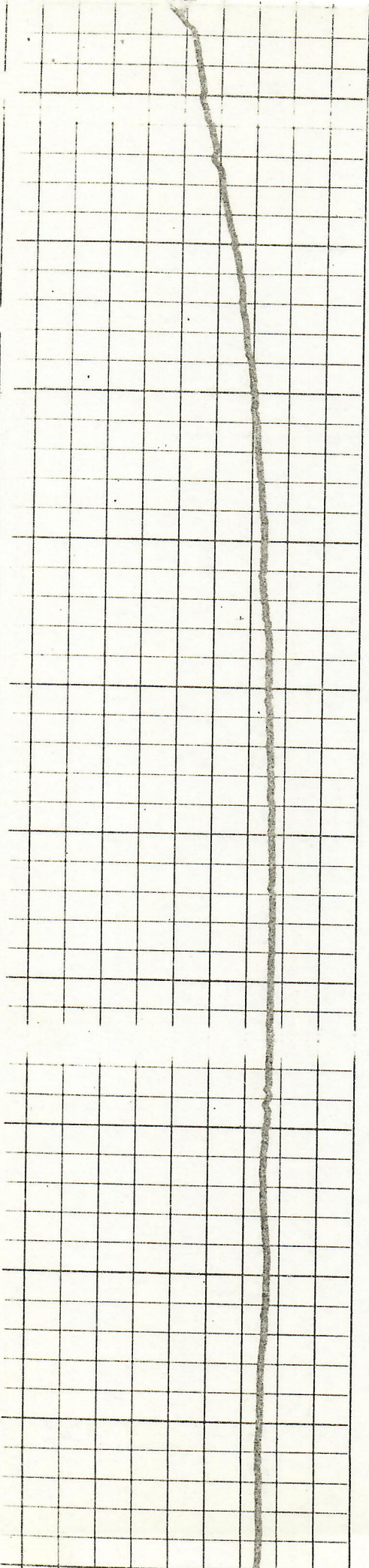
0300

0400

0500

0600

0700





1200

1100

1000

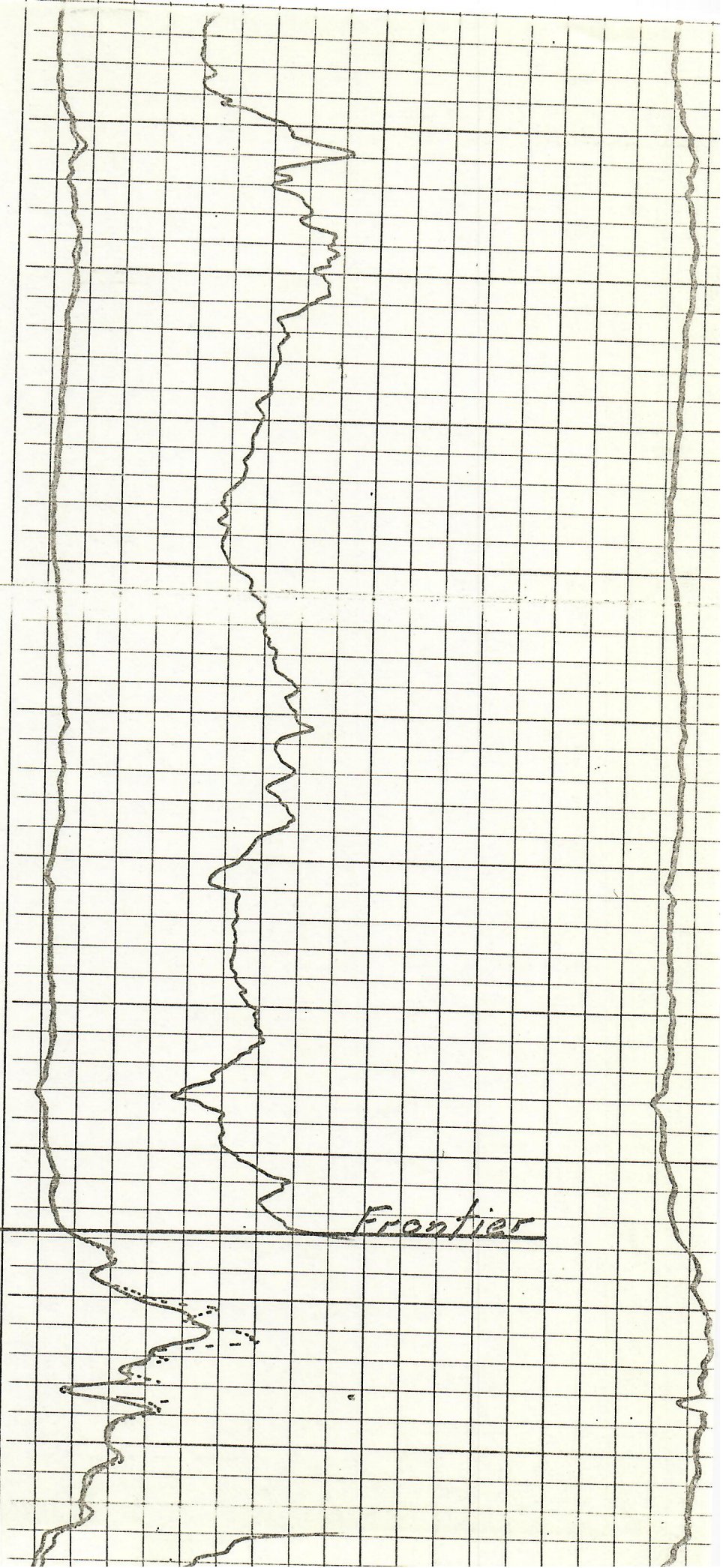
0900

0800

Carlisle







1400

1500

1600

1700

1800

Frontier



1900

2000

2100

2200

2300

Frontier

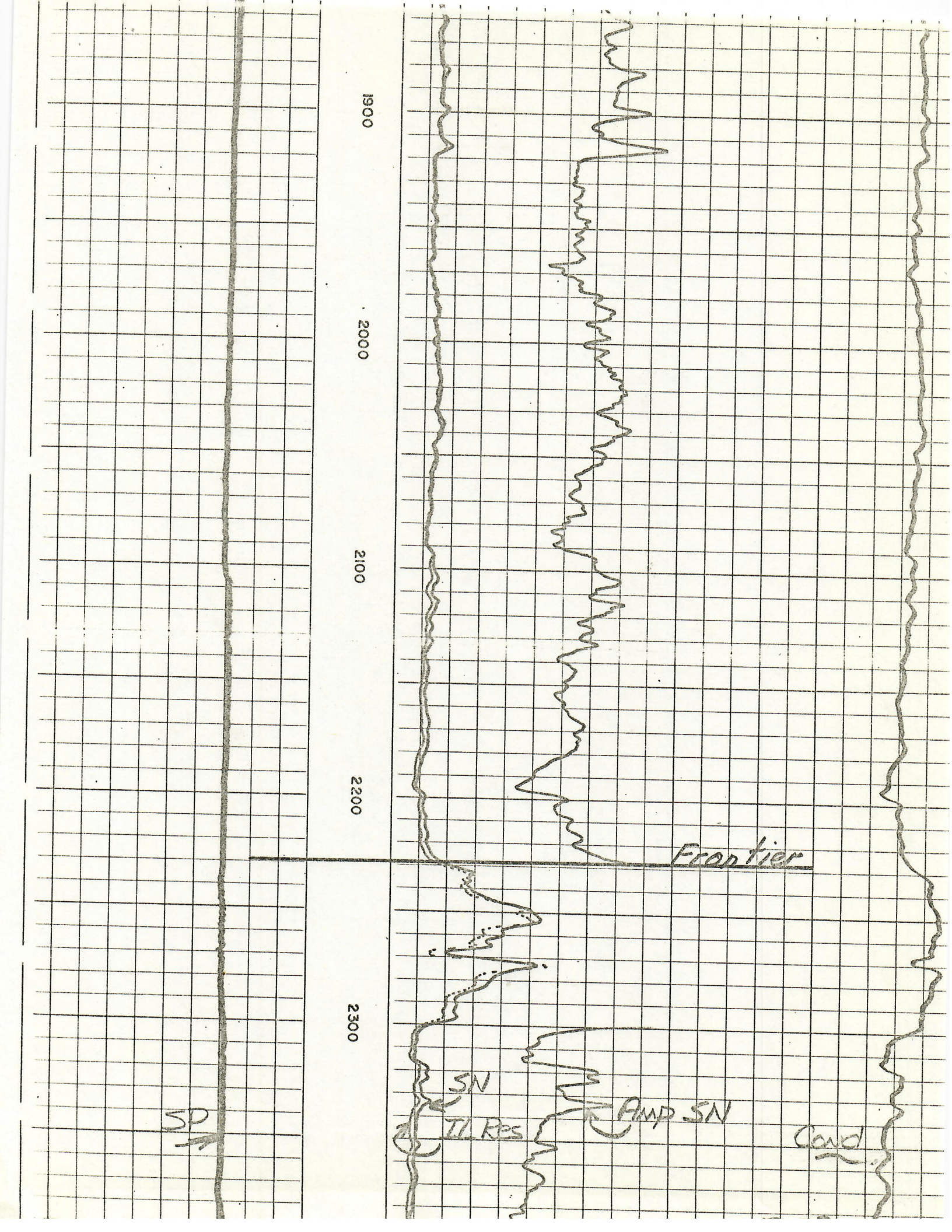
SN

TL Res

AMP SN

COND

SD





# SAMPLE DESCRIPTION

200 - 210	Shale. Dark grey, brownish grey with fine foram fragments.
210 - 450	Shale as above.
450 - 1290	Shale as above. Increase in foram fragments.
1290 - 1350	Shale as above. Decrease in foram fragments.
1350 - 1750	Shale, grey-light grey, soft.
1750 - 1760	Siltstone, grey-brownish grey, soft, calcareous. Lime, grey-tan, silty in part, soft. Fair odor, fluorescence and cut.
1760 - 1770	As above. Slight increase in lime.
1770 - 1840	Siltstone. Firm, calcareous, show decreasing.
1840 - 1850	Decrease in siltstone, shale, grey, soft.
1850 - 2250	Shale, grey-dark grey, soft. Many fine clusters silt. Mud solids high.
2250 - 2270	Siltstone, grey-tan, calcareous, soft. Lime, grey-tan firm, soft, silty in part. Some staining, slight odor, fluorescence.
2270 - 2310	Siltstone, grey-tan, soft, show as above.
3310 - 2360	Shale, grey to dark grey, soft, slightly silty in part.
2360 - 2400	Shale as above. High content solids.



## SUMMARY

The #10 Spaulding was drilled to a depth of 2400'. Only light hydrocarbon shows were encountered in the two Frontier sections drilled.

The hole was drilled to a depth of 700' with a square collar and a Dyna-drill run to change the direction of the hole to a southerly direction. The original target coordinates being 520' south and 100' west of the surface location.

It was discovered the surface location was approximately 50' further west than originally thought, thus changing the west coordinate to 50' rather than 100'. It was also decided to shorten the south distance 50' to 100'.

A Southeast direction was established with the Dyna-drill. It was then pulled at 887'.

The hole was drilled to a depth of 2003' with various drilling assemblies. At a depth of 1836' a direction of S 13 W was obtained and this direction held for a hundred and fifty feet. It was felt that 1835' is the point where a fault was crossed.

A Dyna-drill run was made from 2003' to 2146' and direction changed to S 42 W. A turn of 29°. A drilling assembly was then run to let the hole drift. At total depth the coordinates were 499' South and 84' West.



The Frontier section was first encountered at 1728'. After crossing the fault at 1835' and re-entering the Carlisle, the Frontier was again found at 2228'. This depth precluded drilling the Dakota - Lakota Section at a depth permitting production.

It was decided to set a plug at 1000' and move the rig to another location.