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F. A. Christensen

: Executive Officer, DMEA Field Team, Region III

ject: Docket DMEA-4742 (Uranium) Contract Idm-E1133, McAlester Fuel Company (Star claims and leased land) Fall River County, South Dakota - Operator's Monthly Progress Report for the month of November 1957

Enclosed are the original and four copies each of Forms MF-104 and MF-104A, Operator's Narrative Report, and Engineer's Report for the above period.

The work is being performed partly under independent subcontract and partly at fixed unit costs. The drilling rates are as low or lower than the rates contained in the lowest and best bid submitted with the application. Under the circumstances, the rates for the work performed under independent subcontract are considered to be reasonable.

We consider that the Operator has complied with the intent of the contract, and the work for which payment is recommended is acceptable to the Government. Payment is recommended for 75 percent of the amount reported on Form MF-104 for November 1957, contingent on your verification of the correctness of applicable rates and arithmetical accuracy of computations.

Form MF-104, Operator's Monthly Report and Voucher for November 1957, contains an arithmetical error of $10.00 under Unit Costs. In addition, the Operator has not properly reported the cost of analyses. In both cases the Operator had reported less that the allowable cost. We will inform the Operator to make the necessary adjustments on the next reports submitted on voucher and accounting Forms MF-104 and MF-104A.

REMARKS:

Date of Report ---------- December 20, 1957
Date Received in Field Office ---------- December 24, 1957
Date Received in Region Office ---------- January 8, 1958

Original signed by
W. H. KING

W. H. King

Enclosures
JDC:jy
cc: Chm.Op.Comm. (2)
DMEA,DFC
MF-104 file, Reg. III
Harshman w/copy of Engr's. report
Townsend Chron.

DMEA
DEPARTMENT OF THE INTERIOR
JAN 8 - 1958
REGION III
DENVER, COLORADO

REGION III

Building 20
Denver Federal Center
Denver 2, Colorado
January 7, 1958

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: E. O. Binyon

Subject: Docket DMEA 4742 (Uranium) Contract Idm-E1133,
McAlester Fuel Company, (Star claims and leased land)
Fall River County, S. D. -- Progress report for November 1957

An inspection of the property was made December 3, 1958 in company with Don H. Richter, U. S. Geological Survey.

The location and depths of the 46 holes drilled during the period were found to be as shown on the map and as reported by the operator. Two extra holes, Nos. 47 and 48, were drilled at company expense, to a depth of 260 and 275 feet respectively. This footage is not claimed for payment in the MF-104 and 104A.

As reported by the operator, the radiometric logs show mineralization in 10 holes in the Lakota formation and 1 hole (hole 46) in the Fall River. Although the mineralization (as reported) is weak, .05 and .06 percent eU_3O_8 in holes No. 2 and 3 being the highest, a check of the logs show them to be even lower inasmuch as no deduction of the back ground was made in some instances. In the case of holes 2 and 3 the eU_3O_8 as interpreted from the logs should be .03 and .04 percent.

A check of the MF-104 and 104A show them to be in order except that the amount claimed for "Incidental Allowances" should be $2,109.72 instead of $2,099.72 the amount shown on the forms. The operator has submitted driller's invoice for 18,656 feet of drilling and 24 hours of standby time but has claimed only 17,581 feet and the 24 hours for payment. Also the operator submits a duplicate of the assay certificate and invoice for 13 assays at a price of $3.00 per assay, where as the contract stipulates a cost of $3.50 per assay.

All work was done in conformance with the contract terms and it is recommended that the operator be paid $14,977.29 which is the Government's share at 75 percent of $19,969.72 ($19,959.72 plus $10.00 error in Incidental Allowance).

Expiration date of the contract is May 1, 1958.

E O Binyon

EOB/mw cc: 6 Idm-E1133 chron

E. O. Binyon, Mining Engineer

Form MF-124 (Rev.)
(April 1952)

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
OPERATOR'S MONTHLY REPORT AND VOUCHER

RECEIVED 20 D.M.E.A.

Month of November, 1957 Docket No. DMEA 4742 Contract No. Idm-E 1133
Operator's Name McAlester Fuel Company Minerals Uranium
Address McAlester, Oklahoma
Contract Amount, $72,136.00 Government Participation: 75 % Amount, $54,102.00

ITEMS OF COSTS	FOR OPERATOR'S USE			FOR GOVERNMENT USE ONLY		
	Monthly Total	Totals Previously Reported	Totals To Date	Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Short Form Contracts:						
Drilling	17,581.00		17,581.00			
Bulldozing						
Crosscutting						
Drifting						
Standby Time	240.00		240.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
~~Sampling and~~ Analysis	39.00		39.00			
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify):						
Unit Cost Contingency	2,099.72		2,099.72			
TOTALS	19,959.72		19,959.72	19,959.72	—	19,959.72

I certify that the above bill is correct and just and that payment therefor has not been received.

Date 12-20-57 *Payee McAlester Fuel Co.

Per Jon E. Garrard Title Vice Pres.

*When a voucher is signed or receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary," or "Treasurer," as the case may be.

NOTE.—Title 18, U. S. Code (Crimes), section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

(Instructions on reverse)

Pursuant to authority vested in me, I certify that this account is correct and proper for payment in the amount of:

$14,969.79

Signature RRe
(Authorized Certifying Officer)

Date 1-15-58 Vou. No. DMA-58-79

(See other side)

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. IDM-E 1133 in accordance with the terms of the contract.

Signature E. O. Simon ($14,977.29) Title Mining Engineer Date January 7, 1958

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature W. H. King Title Executive Officer Date JAN 10 1958

MONTHLY REPORT OF OPERATOR

The Operator (Contractor) of an exploration project is required to make a monthly report to the Government through the Regional Executive Officer. This report consists of three parts as follows:

(*a*) *Form MF-104—Operator's Monthly Report and Voucher.*—This form details expenditures and constitutes a voucher for reimbursing the Operator for the Government's share of costs;

(*b*) *Form MF-104A—Operator's Unit Cost and Progress Report.*—This is a statistical report of expenditures which shows costs for the various types of operation; and

(*c*) *Narrative.*—A concise narrative description of progress made, results accomplished, and any unusual difficulties encountered must be furnished as an attachment to this Report and Voucher. Wherever possible, the narrative is to be illustrated with maps or sketches showing formations penetrated and location and assays of samples taken as well as advances in workings. In the case of diamond drilling or churn drilling, the location and inclination of holes is to be shown on a map; logs and assays also are to be submitted.

The Monthly Report of Operator should be prepared in an original and four copies all of which must be sent to the Executive Officer of the Region not later than the 15th of the month following.

Preparation of Form MF-104—Operator's Monthly Report and Voucher.—All the applicable spaces in Form MF-104 should be filled in by the Operator, and the Operator or his agent should sign the certification in the lower left corner of the form.

The items of costs are arranged in the order they appear in Article 6 (a) of Form MF-200 (Revised February 1952), however, this form is readily adaptable for use in reporting activities under other contract forms.

Under Item (1) delete words "Short Form" if the contract is a sub-contract under Form MF-200; and delete word "Independent" if the contract reported is on Form MF-200 (A). Also, report work paid for on a unit basis under contract Form MF-200 as though it were performed under an independent contract.

Under Item (2) include labor, supervision and technical services incurred for the exploratory operations. Do not include labor, supervision and technical services used for work performed under items (5) and (6).

Under Item (3) include the costs of material and supplies used in the project other than that used under items (5) and (6).

Under Item (4) appear the three types of operating equipment expenditures, that is, rental, purchase and depreciation. The expenditures made for renting equipment belonging to a third party will be reported under "Rental". The amount paid or duly obligated for payment for the purchase of equipment will be reported under "Purchase". The amount of expenditures due the Operator to reimburse him for depreciation of equipment owned will be reported under "Depreciation".

Item (5) comprises costs of labor, supervision, technical services, materials, etc., which are used in the initial rehabilitation and repair of existing buildings, installations, fixtures, and equipment. These costs, therefore, should not be reported under items (2) and (3).

Item (6) includes the labor, supervision, technical services, materials, etc., used in the installation or construction of new buildings, fixed improvements, etc., necessary for the project. These costs, therefore, should not be reported under items (2) and (3).

Item (7) covers miscellaneous types of expenditure such as payroll taxes, liability insurance, workmen's compensation insurance, repairs to equipment and sampling and analysis. Only that part of payroll taxes, liability insurance and workmen's compensation which are paid by the operator should be reported under item (7). The share paid by the employee as a payroll deduction is to be included under item (2) as labor costs.

Item (8) includes any unforeseen costs not included in the other seven categories.

The original of Form MF-104 when submitted for reimbursable expenses incurred under contract Form MF-200 must be supported by original documentation or by certified copies of purchase orders, payrolls or transcripts of payrolls, unless such documentation has been waived by the Regional Executive Officer. This certification may be stated thus, "Certified True Copy (or Transcript)", followed by appropriate signature. If the Executive Officer of the Region determines that a contract under Form MF-200 should have an "on-site" audit, that is, a Government auditor should make an audit of the Operator's books and records of account, the Operator need not support his monthly voucher with original or certified documents except in cases of equipment purchases whose individual costs exceed $50.00. In these cases the original or a certified copy of the purchase order or invoice should be attached to the Monthly Voucher. N. B.—Only the *original* of Form MF-104 is required to be documented. The four copies of Form MF-104 are not to be thus supported.

Form MF-104 submitted for reimbursement under fixed price contracts on Form MF-200 (A), however, are not required to be supported by documentation of any kind. The Operator will submit his claim under item (1) of Form MF-104 by deleting as stated above the word "Independent" and by showing the number of feet or other units immediately after the appropriate descriptive word, such as, drilling, bulldozing, crosscutting, drifting, etc., and giving the "Monthly Total" amount due. "Totals Previously Reported", and "Totals to Date" columns should also be filled in.

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Stage I Completed

Month of November 1957 Docket No. DMEA 4742 Contract No. Idm-E 1133

Operator's Name McAlester Fuel Company Minerals Uranium

Address McAlester, Oklahoma

OPERATION	UNIT	COSTS THIS MONTH	UNITS THIS MONTH	COSTS TO DATE	UNITS TO DATE	UNIT COSTS TO DATE	AUTHORIZED BY CONTRACT	
							Units	Unit Costs
Drifting								
Crosscutting								
Raising								
Shafts								
Winzes								
Drilling: Core								
Non-core	1 ft	17,581.00	17581	17,581.00	17581	1.00		
Bulldozers	1 hr	none	none	none	none	none		
Standby	1 hr	240.00	24	240.00	24	10.00		
Chem. Assays	1	39.00	13	39.00	13	3.00		
Test Pits								
Roads and Trails								
Contingencies	1 ft	2,099.72	17581	2,099.72	17581	0.12		
TOTAL DISTRIBUTED COSTS		19,959.72		19,959.72				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS								

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this report is correct and complete to the best of their knowledge and belief.

Date 12-20-57 Operator Mc Alester Fuel Co

Per Jon E. Garnard Title Vice pres.

NOTE.—Title 18, U. S. Code (Crimes), section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

REMARKS:

(Instructions on reverse)

A O Bunyon

(For Government use only)

DMEA
DEPARTMENT OF THE INTERIOR
DEC 23 1957
REGION III
DENVER, COLORADO

INSTRUCTIONS

Preparation of Form MF-104A—Operator's Unit Cost and Progress Report.—Applicable places on Form 104A should be filled in by the Operator. The purpose of this form is twofold as follows: (1) to furnish the supervising engineers and other administrators with statistical information necessary to better determine the progress of the project; and (2) to furnish more permanent information on mining costs for future use. The more important phases of operation on which permanent information is desired have been outlined in the form. There are blank lines, however, for those unusual phases which may need to be reported for a particular project. It will be necessary for the Operator to distribute his costs among the applicable phases reported with the exception of three items the costs of which are not to be distributed by the Operator. These three items are: "Operating Equipment Purchased", "Initial Rehabilitation and Repairs", and "New Buildings, Improvements, etc." The reason for not distributing these items on a monthly basis is doubtless clear to the Operator, since such distribution might well overstate the cost for any one month or period short of the entire contract period.

Form MF-104A has been designed to tie in with Form MF-104 for both monthly and cumulative costs. The "Total Costs" on Form MF-104A for each month should equal the monthly "Total Costs" as reported on Form MF-104. This is also true of the "Total Costs To Date".

In preparing Form MF-104A, it will be necessary frequently to distribute certain costs over a number of items. For instance, supervisory and engineering costs may have to be distributed over several phases, such as, drifting, crosscutting, raising, etc., provided that these items were reported active for the month. Such distributions should be made on the basis of time spent on the various phases, on man days of labor charged to such phases, or on some other equitable basis. "Operating Equipment", "Initial Rehabilitation and Repairs", and "New Buildings Improvements, etc.", will be distributed to the several phases of the project by the Washington Office of DMEA at the close of the project if determined necessary. The last two columns headed "Authorized by Contract" will be filled in by the Operator if such information is found in the contract. This information is usually a part of Exhibit "A" of the contract. A space for remarks has been provided for the use of the Operator to call attention to any unusual circumstances causing excessive or disproportionate unit costs.

GPO 872894

Statement

A. R. ORMSBEE

Drilling Contractor

315 20th Stre | Box 255 | Boulder, Colorado

Date [illegible]

M [illegible]

[illegible]

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

O.K. Pokak Ford

ROBERT FORD
MINING GEOLOGIST

BLAKE FOX
PETROLEUM GEOLOGIST

FORD & FOX
Consulting Geologists
206 S. BROADWAY
RIVERTON, WYOMING

P.O. BOX 428

UL6-3468

December 16, 1957

DMEA
DEPARTMENT OF THE INTERIOR
DEC 20 1957
REGION III
DENVER, COLORADO

REPORT ON WORK ACCOMPLISHED UNDER STAGE I

Exploration Project Contract
McAlester Fuel Company
Docket No. DMEA 4742 (Uranium)
Contract No. Idm-E 1133

INTRODUCTION

All drilling under Stage I of the above named contract was restricted to the Star claims and Leased Lands in Fall River County, South Dakota. This property is located in Township 9 south and Range 3 and 4 east, in the Flint Hill Quadrangle. Forty-eight rotary non-core holes were drilled totaling 19,374 feet. Total allowed footage based upon the DMEA contract was 17,581 feet. The attached map shows the location and depth of all drill holes to date.

EXPLORATION DRILLING

? [illegible] (12 holes/day)

Drilling under Stage I was started on November 9, 1957 and completed on November 12, 1957. The drilling was done with two Mayhew and one Failing drills. Dust samples were collected with a drilling medium of air, and water circulated samples were collected from extreme depth and wet rock. All samples, air and water borne, were collected at two foot intervals.

Drill hole locations were surveyed with transit, and are plotted on the accompanying map with reference to U. S. Coast and Geodetic Survey coordinates for the State of South Dakota. Accompanying cross sections are east-west, looking north and conform to the north coordinates as shown on the drill hole location map.

SAMPLING AND DRILL HOLE PROBING

Samples were logged lithologically and checked for radioactivity with a Model 111B Scintillation Counter. Samples were collected and saved from each two foot intervals, with duplicate samples taken for assay purposes from intervals that gave two or more times background count. It is usually the case with continuous drilling that a lag in samples can be expected. Therefore, the highest assay does not always conform to the peak radioactivity as shown by the drill hole probe readings. Also, the circulating medium has lost much of the uranium values.

All holes were probed by Century Geophysical Corporation, Uranium Division, Grand Junction, Colorado. Probe records accompanying this report show Gamma, resistivity, and self potential curves. The accompanying chart of drill hole depths also gives information on mineralization encountered. The thickness of the intercept is taken from the deflection of the gamma curve and the counts per second (c. p. s.) given is maximum. The attached correlation curve resolves the c. p. s. into actual grade of ore based on Century logs in ore of similar mineralogy.

GEOLOGY AND MINERALIZATION

The Stage I drilling confirmed the presence of the upper Fall River fluvial sandstone - mudstones, and the Gould channel sandstones or unit S_4 on U. S. G. S. MF maps 63-66. The sandstone-mudstone ratio of the Lakota formation varies with a lateral gradation from thick sandstone units to mudstone facies near the east and west property boundaries.

Resistivity and self potential logs on the drill holes were a great aid in picking sandstone lenses and mudstone-siltstone rock where extreme lost circulation drilling made accurate sampling almost impossible. Isopach maps

are being developed on the thickness of the Gould channel sandstone and the Lakota sandstone trend. These maps will be included with the formal request for Stage II drilling.

Cross section maps included with this report show lithology based on sample description and electric logs. Said cross sections conform to the coordinate system of the plan map and have a similar horizontal scale but exaggerated vertical scale of 1"=100'.

Definite stratigraphic units were extremely difficult to pick from drill cuttings. The alternating sandstone-mudstone in the Fall River and top of the Lakota formation, together with the variable thickness of the Fuson formation made formation contacts difficult to pick with repeated reasonable correlation. The sandstone interbedded with the Fuson or near the top of the Lakota was impossible to pick from the Gould channel sandstones in some drill holes. The distinctive outcrop features of the Gould sandstone were lost in the air or water borne samples.

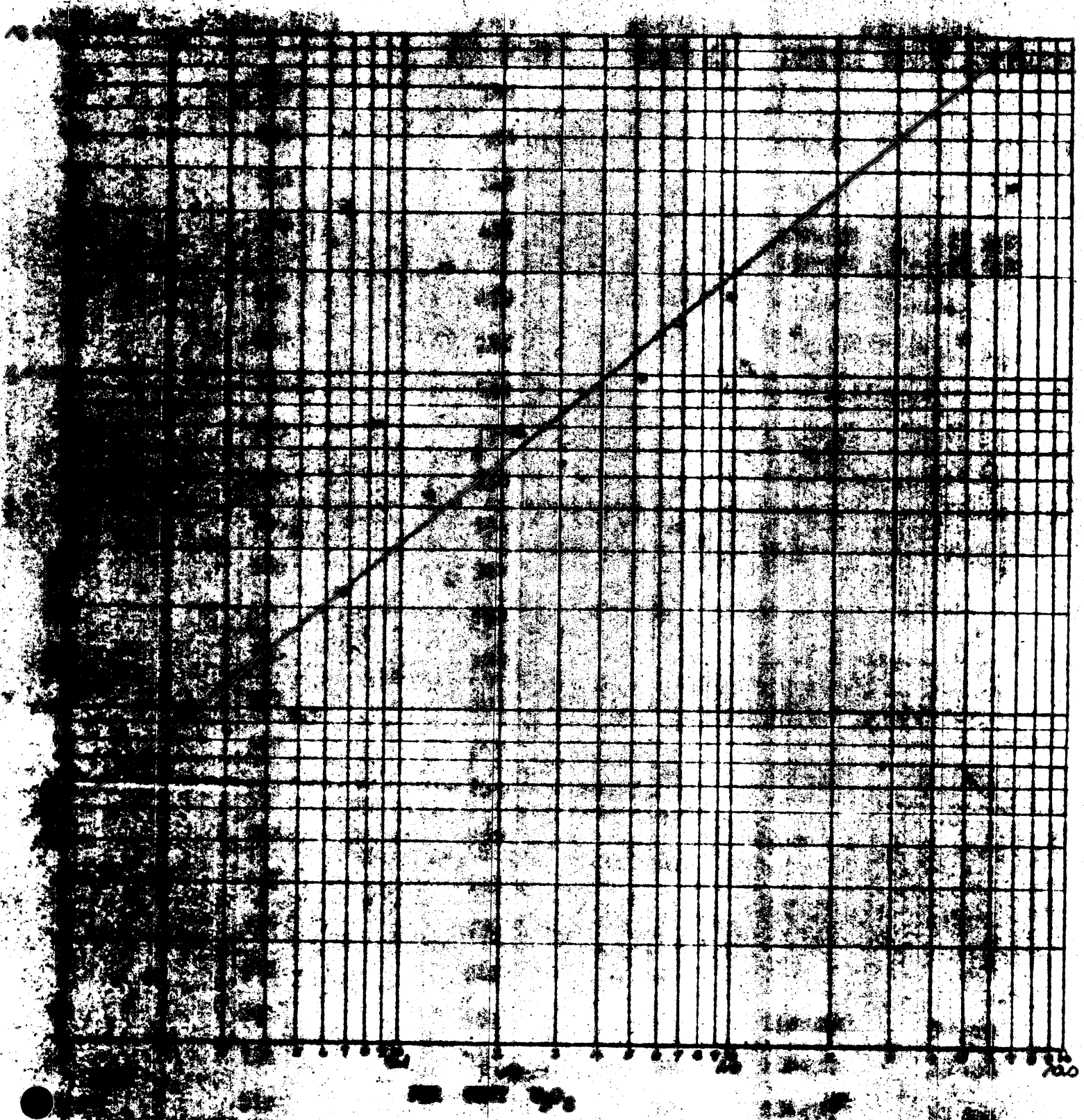
The electric logs have proven the most able method of correlating the Gould channel sandstones by showing an extremely high self potential and resistivity curve. These logs together with lithology description, attached to this report, have made the correlation of the Gould channel sands possible.

Respectfully Submitted,

Robert Ford

Robert Ford

CORRELATION GRAPH



PER CENT U_3O_8

[illegible] RELATING COUNTS PER MINUTE TO PER CENT U_3O_8

CENTURY GEOPHYSICAL CORP.

STAGE 1 DRILLING

HOLE NO.	TOTAL DEPTH	DMEA SPONSORED	ADDITIONAL DRILLING	MINERALIZED FOOTAGE	MINERALIZED COUNTS PER SECOND
26	500	500			
27	498	498			
28	148	148			
29	436	436		420-429 350-361	28 cps 50 cps
30	470	470			
31	180	180			
32	140	140			
33	500	500			
34	450	450			
35	534	534			
36	520	520			
37	500	500			
38	500	500			
39	500	500			
40	560	560			
41	400	400			
42	530	530			
43	545	545			
44	530	530			
45	575	575			
46	600	600		192-200	30 cps
47	260		260	180-188	45 cps
48	275		275	220-225	60 cps
TOTALS	19,374	17581	1793		

STAGE 1 DRILLING

HOLE NO.	TOTAL DEPTH	DMEA SPONSORED	ADDITIONAL DRILLING	MINERALIZED FOOTAGE	MINERALIZED COUNTS PER SECOND
1	465	465			
2	485	485		288-302	130 cps
3	515	300	215	345-359	160 cps
4	460	460		305-320 405-418	45 cps 80 cps
5	468	300	168	353-364	22 cps
6	520	300	220	382-400	110 cps
7	250	250			
8	500	500		440-452 475-488	36 cps 38 cps
9	200	200			
10	485	485		440-465	20 cps
11	140	140			
12	170	170			
13	230	230			
14	300	300			
15	560	300	260	495-517	110 cps
16	500	500			
17	500	300	200		
18	520	520		475-483 425-233	52 cps 32 cps
19	180	180			
20	495	300	195		
21	240	240			
22	180	180			
23	500	500			
24	180	180			
25	180	180			

URANIUM CENTER LABORATORY
915 ELK DRIVE
RIVERTON, WYO.
Phone UL 6-2679

Chemical Analysis Report for:

Mc Allester Fuel
(Ford & Fox

12/15/57
$ 0308

Lab. No.	Customer's Sample No.	
3382-1	Hole #4, 416	nil
11-2	" " 418	0.01
11-3	" " 420, 424	0.02
11-4	" #15 108-110	0.02
11-5	" #15 110-112	0.01
11-6	" " 112-114	0.01
11-7	Raby #4 418-420	0.02
11-8	" #47 70-72	0.01
11-9	" " 184-186	0.01
11-10	48, 202-204	0.01
11-11	48, 224-226	0.02
11-12	47, 188-190	0.01
11-13	47, 186-188	0.01

Assayer---John K. Schneider
A.E.C. Umpire Analyst

No. Assays 13 at 3.00 each= 39.00

Credit Balance _____ Balance due _____

Total due 39.00

HOLE NO. M-1

J. O'Leary

0-2	Overburden with fragments of buff sandstone.
2-14	Brown fine-grained sandstone. Some quartzite at 12-14 feet.
14-20	Laminated dark siltstone and white fine-grained sandstone. Increase in proportion of siltstone with depth. Some gypsum at 18-20.
20-24	Buff, fine-grained, silty sandstone with trace of limonite and some gypsum.
26-28	Buff, fine-grained, silty sandstone. Some lamination.
28-46	Black sandy (very fine grained), mudstone.
46-86	Reddish-black fine-grained sandstone. Trace of hematite at 50-52. Turns white at 52. Becomes coarser with depth. Buff from 82 to 86.
86-130	Dark gray, very fine to fine-grained silty sandstone with stringers of mudstone throughout.
130-160	Buff fine to medium-grained sandstone.
160-166	Dark gray fine-grained silty sandstone.
166-174	Dark gray fine-grained silty sandstone with some mudstone.
174-328	Gray fine-grained sandstone. Some black mudstone at 188-190, 232-236. Color changes at 236 to buff, to pink, to white. Some black mudstone at 300 to 310. Color from 310 to 328 - light gray.
328-332	Black sandy (very fine-grained) carbonaceous (?) mudstone.
332-336	Light gray fine-grained sandstone.
336-350	Black sandy (very fine-grained) carbonaceous (?) mudstone.
350-356	Light gray fine-grained sandstone.
356-360	Black carbonaceous (?) mudstone.
360-384	Light gray to pink fine-grained sandstone.
384-432	Dark gray to gray (very fine-grained) sandy mudstone. Lighter with depth.
432-465	Light gray to white very fine-grained silty sandstone.

HOLE NO. M-2

J. O'Leary

0-2	Brown fine-grained silty sandstone.
2-6	Light buff fine-grained sandstone.
6-12	Light brown, limonite stained, fine-grained sandstone with clay stringers.
12-20	Orange, limonite stained, fine-grained sandstone.
20-26	Orange, limonite stained, fine-grained sandstone and black shale.
26-30	Buff, limonite stained, fine-grained sandstone and dark gray mudstone.
30-40	Brown silty fine-grained sandstone. Buff from 38 to 40.
40-46	Dark gray fine-grained sandstone and mudstone.
46-64	Dark gray sandy mudstone. Sand increases with depth.
64-72	Dark gray fine-grained muddy sandstone.
72-110	Buff fine-grained sandstone grades to medium at 88 to 110.
110-120	Dary gray fine-grained muddy sandstone.
120-126	Dark gray sandy (fine-grained) mudstone.
126-134	Buff fine-grained sandstone.
134-158	Dark gray sandy (fine-grained) mudstone.
158-180	Light gray fine-grained sandstone.
180-198	Brown fine-grained sandstone. Limonite stained 180-182 and 192-196.
198-206	Greenish-gray, fine-grained silty sandstone.
206-214	Gray, fine-grained, muddy sandstone.
214-228	Light gray fine-grained sandstone. Some mudstone at 222-226.
228-234	Light gray fine-grained sandstone and dark gray mudstone.
234-244	Light gray fine-grained sandstone.
244-246	Dark gray sandy (fine-grained) mudstone.
246-260	Light gray, fine-grained, silty sandstone. Some mudstone at 252-256.
260-266	Light gray fine-grained sandstone and dark gray mudstone.
266-478	Light gray fine-grained sandstone. Some mudstone at 270-274, 278-282, and 284-286. Color changes at 298 to very light gray to pink to gray again at 394. Occasional silt.
478-485.	Pale green sandy shale.

HOLE NO. H-3

Max Hartle

0-8	Topsoil.
8-22	Buff medium-grained sandstone.
22-24	Buff to gray fine-grained sandstone.
24-36	Light gray fine-grained sandstone.
36-42	Buff medium-grained sandstone.
42-48	Light brown medium-grained sandstone.
48-50	Brown medium-grained sandstone.
50-52	Orange to brown medium-grained sandstone.
52-54	Buff fine-grained sandstone.
54-56	Buff fine-grained sandstone and blue shale.
56-60	Buff fine-grained sandstone.
60-68	Dark gray sandy shale.
68-72	Light brown silt.
72-76	Light brown sandy clay.
76-80	Gray silty sand.
80-84	Brown fine-grained sandstone.
84-90	Light gray to brown fine-grained sandstone.
90-94	Light gray fine-grained sandstone.
94-110	Brown fine-grained sandstone.
110-128	Very light gray fine-grained sandstone.
128-130	Light gray to brown fine-grained sandstone.
130-132	Light gray fine-grained sandstone.
132-140	Light gray sandstone and blue shale.
140-142	Very light gray fine-grained sandstone.
142-146	Light gray to brown fine-grained sandstone.
146-148	Buff sandstone and blue shale.
148-244	Bray to buff fine-grained sandstone.
244-246	Dark gray fine-grained sandstone and blue shale,

HOLE NO. M-3

246-250	Buff sandstone.
250-266	Alternating layers mudstone and fine-grained sandstone.
266-280	Buff fine-grained sandstone.
280-290	Dark gray mudstone.
290-300	Buff sandstone.
300-515	No sample return.

HOLE NO. M-4

0-2	Light brown silty overburden.
2-24	Buff fine-grained sandstone.
24-28	Dark gray laminated siltstone and mudstone with some sand.
28-42	Dark gray, very fine-grained muddy sandstone.
42-50	Dark gray silty mudstone with some laminations.
50-54	Dark gray fine-grained muddy sandstone.
54-62	White fine-grained sandstone and black mudstone.
62-92	White to buff fine-grained sandstone. Changes from white to buff at 78.
92-108	Dark gray sandy (fine-grained) mudstone.
108-128	Dark gray muddy fine-grained sandstone.
128-134	White fine-grained sandstone.
134-150	Dark gray mudstone. Some sand at 134-142.
150-188	Light gray fine-grained sandstone. A little silt at 184.
188-220	Gray fine-grained silty sandstone.
220-236	White fine-grained sandstone.
236-244	Gray fine-grained silty sandstone.
244-256	White fine-grained sandstone. Some mud at 248-250.
256-260	Dark gray fine-grained muddy sandstone.
260-270	Dark gray fine-grained sandstone with some mud.
270-278	White fine-grained sandstone.
278-318	Alternating bands of sandstone and mudstone.
318-444	Pink to gray to white fine-grained sandstone.
444-460	Gray to green fine-grained silty sandstone.

HOLE NO. M-5
Max Hartle

0-2	Topsoil.
2-6	Light yellow fine-grained sandstone.
6-10	Buff very fine-grained sandstone.
10-44	Yellow to light gray fine-grained sandstone.
44-50	Brown to orange fine-grained sandstone.
50-68	Dark gray sandy shale.
68-72	Dark gray to red sandy shale.
72-78	Brown to yellow fine-grained sandstone.
78-90	Orange fine-grained sandstone.
90-128	Cream to brown fine-grained sandstone.
128-130	Brown to yellow fine-grained sandstone.
130-148	Mauve siltstone.
148-188	Red to gray to blue mudstone.
188-200	Light gray silty sandstone.
200-210	Light brown, to dark brown, fine-grained sandstone.
210-216	Dark gray to blue mudstone.
216-220	Red fine-grained sandstone.
220-222	Mudstone.
222-232	Buff, yellow, orange, red, fine-grained sandstone.
232-234	Mudstone.
234-250	Yellow to buff to red fine-grained sandstone.
250-254	Silty sandstone.
254-284	Siltstone.
284-300	Mudstone.
300-468	No sample return.

HOLE NO. M-6

Max Hartle

0-4	Topsoil
4-60	Light Gray to buff fine-grained sandstone.
60-90	Pink to purple to blue-black sandy shale.
90-94	Pink to red fine-grained sandstone.
94-96	Pink to gray sandy shale.
96-104	Pink to red fine-grained sandstone.
104-138	Light gray to buff fine to medium-grained sandstone.
138-146	Light brown fine to medium-grained sandstone interbedded with blue shale.
146-150	Light brown sand and blue shale.
150-158	Gray to blue mudstone.
158-162	Pink mudstone.
162-174	Gray-blue siltstone.
174-184	Dark gray mudstone.
184-192	Brown to buff fine-grained sandstone.
192-194	Blue shale.
194-220	Buff fine-grained sandstone.
220-234	Gray sandy shale.
234-260	Pink to buff sandstone.
260-300	Gray fine-grained sandstone.
	Unable to log samples below this point.

HOLE NO. M-7

J. O'Leary

0-46	Buff fine-grained sandstone. Yellow at 8-14. Hematite staining at 44-46.
46-50	Dark gray siltstone.
50-54	Buff fine-grained sandstone.
54-66	Dark gray siltstone and mudstone.
66-82	Dark gray to red, fine-grained silty sandstone.
82-184	White fine-grained sandstone. Stringers of mudstone at 166-176.
184-220	Brown medium-grained sandstone, green siltstone, green mudstone.
220-224	Brown, fine to medium-grained sandstone.
224-244	Alternating bands of green siltstone, red mudstone and brown medium-grained sandstone.
244-250	Brown medium-grained sandstone.

HOLE NO. M-8

J. O'Leary

0-76	Buff to white, fine-grained sandstone.
76-96	Dark gray silty mudstone with some fine-grained sand.
96-104	Black hard shale.
104-138	Gray fine-grained sandstone with pyrite throughout.
138-152	Gray medium to coarse-grained sandstone. Well-rounded grains. No pyrite.
152-178	Dark gray silty mudstone.
178-190	Red-brown, fine-grained sandstone.
190-198	Dark gray mudstone with some fine-grained sand.
198-232	White to buff fine-grained sandstone with some green siltstone at 216-218.
232-242	Brown to green siltstone.
242-258	Brown to buff very fine-grained sandstone.
258-284	Dark gray mudstone.
284-286	Black hard shale.
286-344	Gray siltstone.
344-486	Dark gray fine-grained sandstone, siltstone, mudstone. Little sandstone below 428. Went blind at 486.

HOLE NO. M-9

J. O'Leary

0-54	White to buff fine-grained sandstone.
54-74	Light gray siltstone with some fine sand. Slightly laminated in places. Very sandy from 68 to 74.
74-96	Buff fine-grained sandstone. Some silty mudstone at 86-88.
96-102	Bright orange-brown medium-grained sandstone.
102-120	White to buff fine-grained sandstone. Medium-grained from 116-118. Some stringers of red mudstone at 118-120.
120-132	Dark gray siltstone.
132-140	Buff medium to coarse-grained sandstone.
140-154	Orange-brown medium to coarse-grained sandstone.
154-160	Brown medium-grained sandstone.
160-162	Dark gray shale with some sand.
162-200	Brown to buff fine-grained sandstone.

HOLE NO. M-10

J. O'Leary

0-8	Buff fine-grained sandstone.
8-46	White fine-grained sandstone.
46-70	Black silty mudstone. Some lamination 56-58.
70-98	Red to brown fine-grained sandstone with stringers of mudstone at 74-76. Some silty dark gray and red mudstones in lower 10 ft.
98-116	Dark gray silty mudstone.
116-162	Dark gray muddy siltstone.
162-190	Buff fine-grained sandstone with stringers of red mudstone from 176-180.
190-198	Red mudstone.
198-254	Buff fine-grained sandstone.
254-290	Brown fine-grained sandstone.
290-300	Pale green sandy (fine-grained) siltstone.
300-312	Gray-green very fine-grained sandstone and siltstone.
312-322	Gray-green claystone.
322-348	Gray-green siltstone with some clay.
348-362	Gray claystone.
362-372	Gray-green very fine-grained sandstone with some clay.
372-382	Gray-green siltstone and claystone.
382-396	Gray fine-grained sandstone.
396-400	Gray siltstone.
400-486	Light gray very fine-grained sandstone with some clay and silt. Less clay with depth from 434. Less silt with depth from 460. Sand slightly coarser with depth. Pyrite from 338 to bottom.

HOLE NO. M-11

J. O'Leary

0-6	Dark buff medium-grained sandstone.
6-28	Fine-grained sandstone. Some green clay from 6-16. Limonite straining 26-28.
28-52	Light gray fine-grained silty sandstone.
52-56	Red-brown fine-grained sandstone.
56-58	Black carbonaceous fine-grained sandstone.
58-76	Red fine to medium-grained sandstone. Coarser with depth.
76-80	Green shale with some pink fine-grained sand.
80-104	Green fine-grained sandstone and siltstone.
104-122	Red-brown fine-grained sandstone.
122-138	Dark gray to black fine-grained sandstone and mudstone.
138-140	Buff fine-grained sandstone.

HOLE NO. M-12

J. O'Leary

0-2	Brown silty sand.
2-44	Buff fine-grained sandstone. Damp 6-18. Limonite stained 40-44.
44-78	Dark gray sandy siltstone.
78-84	Red fine-grained sandstone.
84-92	Buff fine to medium-grained sandstone.
92-152	Dark gray fine-grained sandstone and mudstone.
152-170	Buff fine-to-medium-grained sandstone. Damp to 156. Hematite staining at 168-170. Some siltstone at 150-154.

HOLE NO. M-13

J. O'Leary

0-22	White to buff fine-grained sandstone.
22-28	Red-brown fine to medium-grained poorly sorted sandstone.
28-36	Dark gray very fine-grained muddy sandstone.
36-52	Black silty carbonaceous mudstone.
52-56	Gray mudstone.
56-64	Red fine-grained sandstone.
64-84	Gray mudstone.
84-88	Gray fine-grained sandstone.
88-108	Green siltstone.
108-140	Green and black siltstone and mudstone.
140-240	Red to white fine-grained sandstone. Some green mudstone stringers throughout. (Poor sample 200-240).

HOLE NO. M-14

J. O'Leary

0-4	Silty sand.
4-60	Very fine-grained sandstone. Brown to 14 then white to 60. Mudstone stringers 44-46.
60-94	Dark gray carbonaceous silty mudstone.
94-118	Red-brown fine-grained sandstone. Medium-grained from 114-118.
118-140	Dark gray silty mudstone.
140-206	Buff fine to medium-grained sandstone.
206-264	Variegated blue, red, orange mudstone and claystone.
264-315	Dark gray fine-grained mudstone and sandstone.

HOLE NO. M-15

Max Hartle

0-4	Topsoil.
4-30	Buff medium-grained sandstone.
30-34	Buff coarse-grained sandstone.
34-44	Light brown medium-grained sandstone.
44-62	Gray-green to yellow-green fine-grained sandstone.
62-76	Dark gray silty sand.
76-86	Dark gray mudstone.
86-92	Dark gray to red fine-grained sandstone.
92-94	Purple mudstone.
94-108	Light brown silty sand.
108-156	Yellow-brown to light buff to pink fine-grained sandstone.
156-160	Brown medium-grained sandstone.
160-170	Buff coarse-grained sandstone.
170-184	Buff medium-grained sandstone.
184-208	Light buff to light brown coarse-grained sandstone.
208-216	Yellow-green fine-grained sandstone.
216-222	Yellow to pink sandy clay.
222-226	Buff fine-grained sandstone.
226-232	Brown sandy shale.
232-236	Blue shale.
236-238	Red fine-grained sandstone.
238-240	Blue shale.
240-246	Red fine-grained sandstone.
246-250	Blue-gray mudstone.
250-288	Light blue silty sand.
288-296	Gray fine-grained sandstone.
296-300	Blue-black mudstone.

HOLE NO. M-15

300-340	Gray silty sand.
340-366	Gray fine-grained sandstone.
366-402	Gray silty sand.
402-410	Light gray fine-grained sandstone.
410-420	Dark gray silty sand.
420-468	Gray fine-grained sandstone.
468-472	Dark gray silty sand.
472-480	Dark gray silty sand.
480-492	Dark gray silty sand.
492-504	Light gray fine-grained sandstone.
504-518	Dark gray silty sand.
518-520	Light gray fine-grained sandstone.
520-560	No sample return.

HOLE NO. M-16

J. O'Leary

0-2	Silty sand
2-42	Buff fine-grained sandstone. Some clay 14-16. Slightly muddy 36-40.
42-48	Red-brown fine to medium-grained sandstone. Some pyrite throughout.
48-72	Dark gray to black silty mudstone. More silt with depth.
72-78	Red to pink medium-grained sandstone. Some pyrite throughout.
78-94	Dark gray mudstone.
94-118	Dark gray muddy siltstone.
118-120	Dark gray mudstone.
120-204	Buff to brown, medium to coarse-grained channel sandstone. Pebbles as large as peas from 126 to 138. Pebbles ½ as large as peas from 146 to 150. Pyrite throughout. Light gray clay seams from 182 to 204.
204-216	Dark gray to blue mudstone.
216-222	Red and white fine-grained sandstone.
222-226	Dark gray mudstone with pyrite.
226-232	Gray siltstone with pyrite. Some mudstone.
232-282	Gray mudstone with silt and some pyrite.
282-492	Fine-grained sandstone.
492-500	White claystone - Morrison (Much contamination from 182 to bottom.)

HOLE NO. M-17

J. O'Leary

0-2	Brown silty sand.
2-64	Buff fine-grained sandstone. Iron-stained 2 to 18 and 60 to 64.
64-110	Dark gray siltstone. Black 152-156. Pyrite at 78. Laminated 150-156.
110-130	Fine-grained sandstone. Gray 110-112. Red-brown 112-130.
130-132.	Dark gray siltstone.
132-134	Red fine-grained sandstone.
134-142	Dark gray siltstone with some mud.
142-158	Gray fine-grained sandstone with some silt.
158-194	Pink to white to buff fine-grained sandstone.
194-204	Black shale and dark gray mudstone.
204-240	Sandstone. Red-brown 204-206.k White 206-234. Red-brown 234-240.
240-252	Gray silty mudstone.
252-256	Red fine-grained sandstone.
256-280	Green-gray mudstone with silt.
280-500	No sample return.

HOLE NO. M-18

J. O'Leary

0-4	Brown silty sand.
4-48	Buff fine to medium-grained sandstone. Medium to coarse from 44 to 48.
48-82	Dark gray silty mudstone. Maroon from 78 to 82.
82-128	Orange to buff medium-grained sandstone. Medium to coarse from 114 to 128. Hematite staining from 100 to 102.
128-152	Dark gray silty mudstone and siltstone.
152-180	Buff-orange fine-grained sandstone.
180-184	Buff medium to coarse-grained sandstone.
184-210	Buff fine-grained sandstone.
210-240	Dark gray mudstone and brown silt.
240-246	Tan very fine-grained sandstone.
246-296	Dark gray siltstone and mudstone.
296-316	Gray to dark gray very fine-grained very silty sandstone.
316-320	Dark gray mudstone.
320-352	Gray to dark gray very fine-grained very silty sandstone.
352-360	Gray to dark gray siltstone.
360-400	Gray to dark gray very fine-grained very silty sandstone.
400-520	No sample return.

HOLE NO. M-19

J. O'Leary

0-52	White to buff fine-grained sandstone. Clay at 2-10.
52-58	Brown to buff, medium to coarse-grained channel sand with pyrite.
58-76	Dark gray to black silty mudstone.
76-82	Dark gray muddy siltstone.
82-88	Gray fine-grained sandstone. Mud 86-88.
88-96	Dark gray muddy siltstone.
96-102	Dark gray mudstone with silt.
102-108	Dark gray muddy siltstone.
108-128	Dark gray mudstone and siltstone.
128-132	Dark gray muddy siltstone.
132-142	Dark gray to green silty shale.
142-152	Dark gray silty mudstone with a trace of orange sand from 150-152.
152-174	Orange fine-grained to medium-grained sandstone with some pyrite.
174-180	Dark gray mudstone.

HOLE NO. M-20

J. O'Leary

0-4	Silty sand.
4-8	Buff fine-grained sandstone. Hematite staining from 6 to 8.
8-58	Buff fine-grained sandstone with some mud at 14-16.
58-68	Brown to red-brown medium-grained sandstone.
68-72	Coffee brown coarse-grained channel sand. Grains coated with limonite.
72-92	Dark gray silty mudstone. Carbonaceous from 84 to 88.
92-128	Red to pink fine-grained sandstone. Buff at 106.
128-140	Dark gray silty mudstone.
140-150	Red to blue very fine-grained silty sandstone.
150-170	Dark gray mudstone, siltstone and very fine-grained sandstone.
170-180	Buff medium to coarse-grained sandstone. Red-brown from 170-172.
180-495	No sample return.

HOLE NO. M-21

Max Hartle

0-2	Topsoil.
2-28	Buff to light brown fine-grained sandstone.
28-76	Light gray to brown fine-grained sandstone.
76-102	Gray to black mudstone.
102-104	Purple mudstone.
104-120	Gray to purple siltstone.
120-126	Gray to buff to brown siltstone.
126-128	Purple mudstone.
128-132	Gray-black mudstone.
132-138	Red to orange, fine-grained sandstone.
138-140	Purple mudstone.
140-158	Gray to pink fine-grained sandstone.
158-218	Buff fine-grained sandstone.
218-240	Buff to brown medium-grained sandstone. Light red from 220-222.

HOLE NO. M-22

Max Hartle

0-2	Topsoil.
2-10	Gray to gray-green fine-grained sandstone.
10-64	Light gray to brown fine-grained sandstone.
64-68	Brown medium to coarse-grained sandstone.
68-70	Olive shale.
70-94	Dark gray to black mudstone.
94-96	Cocoa brown sandy clay.
96-110	Gray to light gray sandy clay.
110-148	Light gray to buff fine-grained sandstone.
148-150	Gray to light brown siltstone.
150-156	Gray to brown medium-grained sandstone.
156-162	Brown to light brown coarse-grained sandstone.
162-172	Buff medium-grained sandstone.
172-180	No sample.

HOLE NO. M-23

Max Hartle

0-2	Topsoil.
2-14	Light gray to green fine-grained sandstone.
14-16	Dark gray mudstone.
16-20	Gray fine-grained sandstone.
20-46	Brown to buff to light gray to white fine-grained sandstone.
46-48	Coffee brown medium to coarse-grained sandstone.
48-52	Blue-gray mudstone with pyrite.
52-54	Gray to brown sandy clay.
54-60	Blue-gray silty clay.
60-78	Dark gray to black mudstone.
78-86	Gray siltstone.
86-114	Buff fine-grained sandstone.
114-116	Siltstone.
116-122	Buff fine-grained sandstone.
122-128	Light buff medium-grained sandstone.
128-158	Light buff fine-grained sandstone.
158-176	Light buff medium to coarse-grained sandstone.
176-184	Dark gray to black mudstone.
184-190	Brown medium to coarse-grained sandstone.
190-210	Light buff to pink fine-grained sandstone.
210-222	Orange to buff to red fine-grained sandstone.
222-226	Blue-black mudstone.
226-234	Buff fine-grained sandstone.
234-236	Pink siltstone.
236-242	Blue to pink to red sandy shale.
242-258	Blue to gray mudstone.
258-300	Dark gray to dirty gray siltstone.
300-306	Gray very fine-grained sandstone.

HOLE NO. N-23

306-308	Gray to black siltstone.
308-344	Dirty gray to black very fine-grained sandstone.
344-346	Black sandy shale.
346-500	Gray very fine-grained sandstone.

HOLE NO. M-24

Max Hartle

0-2	Light brown muddy sandstone.
2-16	Light gray fine-grained sandstone.
16-18	Gray-black mudstone.
18-20	Brown silty sand.
20-30	Alternating layers of light brown sandstone and blue mudstone.
30-60	Light gray fine-grained sandstone.
60-62	Dark gray siltstone.
62-64	Light gray fine-grained sandstone.
64-66	Gray to brown mudstone.
66-68	Buff fine-grained sandstone.
68-70	Dark brown fine-grained sandstone.
70-90	Gray to black siltstone.
90-114	Light gray to buff fine-grained sandstone.
114-130	Buff medium-grained sandstone.
130-132	Gray coarse-grained sandstone.
132-178	Gray to black mudstone.
178-180	Black to brown mudstone.

HOLE NO. M-25

Max Hartle

0-2	Topsoil.
2-16	Light gray to light brown fine-grained sandstone.
16-18	Gray-black mudstone.
18-34	Buff fine-grained sandstone.
34-36	Gray-black mudstone.
36-46	Light greenish-gray fine-grained sandstone.
46-54	Buff to brown fine-grained sandstone.
54-70	Dark gray mudstone.
70-80	Dark gray siltstone.
80-86	Buff to red-brown silty fine-grained sandstone.
86-88	Red-brown to blue-gray siltstone.
88-124	Blue-gray siltstone.
124-136	Brown to gray to buff medium-grained sandstone.
136-138	Buff fine-grained sandstone.
138-160	Light fray fine-grained sandstone.
160-164	Gray to black mudstone.
164-168	Light brown fine-grained sandstone.
168-170	Gray-black mudstone.
170-176	Buff to yellow fine-grained sandstone.
176-180	Light gray to buff fine-grained sandstone.

HOLE NO. M-26

Max Hartle

0-4	Brown sandy clay.
4-10	Light brown fine-grained sandstone.
10-12	Brown sandy shale.
12-14	Gray mudstone.
14-16	Light brown sandstone.
16-20	Brown and gray sand and mudstone layers.
20-22	Brown fine-grained sandstone.
22-24	Gray mudstone and red sandstone.
24-36	Gray mudstone and buff sandstone layers.
36-40	Light brown fine-grained sandstone.
40-42	Gray mudstone.
42-46	Buff fine-grained sandstone.
46-64	Gray to dark gray silty sand.
64-90	Light gray to red fine-grained sandstone.
90-96	Gray silty sand.
96-104	Gray sandstpne.
104-106	Gray to pink fine-grained silty sand.
106-124	Buff to light red to light buff fine-grained sandstone.
124-126	Buff fine-to medium-grained sandstone.
126-132	Buff coarse-grained sandstone.
132-150	Light gray medium to coarse-grained sandstone.
150-168	Light gray fine-grained sandstone.
168-172	Light brown silty sand.
172-174	Pink to green medium-grained sandstone.
174-204	Light gray to pink silty sand.
204-206	Lead gray silty sand.

HOLE NO. M-26

206-230	Buff to gray fine-grained sandstone.
230-234	Dark gray mudstone.
234-254	Blue-gray shale.
254-264	Gray silty sand.
264-274	Blue shale.
274-284	Blue-gray silty sand.
284-316	Gray very fine-grained sandstone.
316-360	Dark gray very fine-grained silty sand.
360-370	Dark gray mudstone.
370-384	Very fine-grained silty sand.
384-392	Dark gray to black mudstone.
392-398	Dark gray very fine-grained silty sand.
398-404	Black mudstone.
404-460	Dark gray very fine-grained silty sand.
460-464	Dark gray to black mudstone.
464-480	Dark gray very fine-grained silty sand.
480-500	Silty sand with small proportion of coarse white sand grains.

HOLE NO. M-27

Max Hartle

0-2	Light brown fine-grained sandstone.
2-4	Blue shale.
4-16	Brown to light buff fine-grained sandstone.
16-20	Blue shale.
20-32	Brown medium-grained sandstone.
32-34	Blue shale.
34-36	Buff fine to medium-grained sandstone.
36-40	Dark gray silty sand.
40-52	Dark gray to black mudstone.
52-56	Light gray fine-grained sandstone.
56-66	Buff medium-grained sandstone.
66-138	Blue-gray shale.
138-150	Gray silty fine-grained sandstone.
150-158	Dark gray shale.
158-250	Pink to buff fine-grained sandstone.
250-400	Gray fine-grained sandstone.
400-450	Blue shale and gray sand.
450-	Gray carbonaceous fine-grained sandstone.

HOLE NO. M-28

Max Hartle

0-2	Topsoil.
2-8	Buff to brown fine-grained sandstone.
8-10	Gray mudstone.
10-20	Buff to brown siltstone.
20-50	Gray-black mudstone.
50-54	Pink siltstone.
54-62	Pink to light gray silty sand.
62-80	Light gray to pink to brown fine-grained sandstone.
80-98	Buff fine to medium-grained sandstone.
98-100	Gray mudstone.
100-104	Buff fine to medium-grained sandstone.
104-106	Buff coarse-grained sandstone.
106-110	Buff medium to coarse-grained sandstone.
110-112	Light gray fine-grained sandstone.
112-118	Light gray medium to coarse-grained sandstone.
118-122	Light gray fine-grained sandstone.
122-150	Light gray to white five to medium-grained sandstone.
150-154	Gray to black mudstone.

HOLE NO. M-29

Max Hartle

0-18	Buff to brown to gray fine-grained sandstone.
18-20	Green fine-grained sandstone and clay.
20-50	Brown to red fine to medium-grained sandstone.
50-68	Brown to black to buff to pink medium-grained sandstone.
68-84	Blue-black mudstone.
84-86	Gray to buff fine-grained sandstone.
86-100	Blue-black mudstone.
100-102	Black sandy clay.
102-104	Gray-green clay.
104-112	Brown to gray fine-grained sandstone.
112-114	Gray medium-grained sandstone.
114-122	Gray to brown to buff fine-grained sandstone.
122-134	Brown medium-grained sandstone.
134-160	Gray fine to medium-grained sandstone.
160-166	Brown to buff medium to coarse-grained sandstone.
166-170	Blue sandy clay.
170-172	Pink sandy clay.
172-174	Gray fine-grained sandstone.
174-176	Gray-black sandy clay.
176-200	Buff to brown fine to medium-grained sandstone.
200-250	Gray silty sand.
250-300	Gray fine-grained sandstone.
300-400	Gray silty sand.
400-436	No sample return.

HOLE NO. M-30

Max Hartle

0-6	Topsoil.
6-18	Buff to brown fine-grained sandstone.
18-20	Blue-gray mudstone.
20-22	Light brown fine-grained sandstone.
22-24	Blue-gray mudstone.
24-28	Buff to brown fine-grained sandstone.
28-30	Sandstone and mudstone layers.
30-46	Light buff fine-grained sandstone.
46-56	Brown medium-grained sandstone.
56-60	Light buff to red fine-grained sandstone.
60-62	Brown coarse-grained sandstone.
62-66	Black mudstone.
66-78	Blue-gray silty sand.
78-94	Light gray fine-grained sandstone.
94-104	Blue to blue-green shale.
104-116	Gray sandy clay.
116-130	Blue-green sandy shale.
130-134	Gray sandstone and dark gray shale layers.
134-160	Dark gray shale.
160-164	Dark gray shale and red sandstone.
164-174	Gray to red fine-grained sandstone.
174-176	Gray shale.
176-184	Red and gray layers, fine-grained sandstone.
184-192	Pink to buff sandstone.
192-212	Light gray fine-grained sandstone.
212-216	Gray to red sandy shale.

HOLE NO. M-30

216-226	Blue-green to gray shale.
226-232	Gray to red sandy shale.
232-250	Gray to red sandstone and shale layers.
250-254	Gray sandstone.
254-264	Gray to red sandy shale.
264-300	Light gray sandy shale.
300-320	Dark gray sandy shale.
320-330	Dark gray with green layers, fine-grained sandstone.
330-384	Light gray sandstone.
384-400	Gray sandstone and blue-green and black shale.
400-404	Gray fine-grained sandstone and black shale.
404-412	Light gray sandstone and black oily shale.
412-460	Light gray sandstone, black oily shale, and blue-green shale.
460-470	Gray to blue silty sand and black shale.

HOLE NO. M-31

Max Hartle

0-6	Brown fine-grained sandstone.
6-10	Blue-gray mudstone.
10-14	Brown sandstone and blue mudstone in layers.
14-16	Brown fine-grained sandstone.
16-18	Brown sandstone and blue mudstone in layers.
18-24	Brown to gray fine-grained sandstone.
24-26	Blue mudstone.
26-30	Gray medium-grained sandstone.
30-48	Light gray fine-grained sandstone.
48-62	Gray silty sand.
62-64	Black silty sand with pyrite.
64-76	Light gray fine-grained sandstone.
76-84	Blue-gray silty sand.
84-100	Blue-gray mudstone.
100-120	Blue-gray silty sand.
120-122	Light brown fine-grained sandstone.
122-134	Blue-gray silty sand.
134-146	Gray to buff coarse-grained sandstone.
146-150	Light gray medium to coarse-grained sandstone.
150-160	Buff to brown medium-grained sandstone.
160-162	Gray-black mudstone.
162-164	Coffee brown fine-grained sandstone.
164-168	Light red silty sand.
168-170	Pink to dark gray silty sand.
170-178	Buff fine to medium-grained sandstone and red shale layers.
178-180	Buff fine to medium-grained sandstone.

HOLE NO. M-32

Max Hartle

0-8	Brown to buff fine-grained sandstone.
8-16	Gray to green sandy shale.
16-18	Blue-gray mudstone.
18-24	Buff silty sand.
24-26	Gray fine-grained sandstone.
26-30	Gray-green to brown silty sand.
30-32	Blue-gray mudstone.
32-34	Pink fine-grained sandstone.
34-36	Gray-green silty sand.
36-50	Blue-gray mudstone.
50-76	Light gray to pink to red siltstone.
76-86	Pink silty sand.
86-88	Buff siltstone.
88-104	Light gray to buff medium to coarse-grained sandstone.
104-130	Light gray fine to medium-grained sandstone.
130-140	Light gray fine-grained sandstone.

HOLE NO. M-33

J. O'Leary

0-28	Buff fine-grained sandstone. Limonite stained at 8 to 10 and 14 to 18. Trace of mudstone at 18-20.
28-30	Dark gray mudstone.
30-50	Buff fine-grained sandstone. Limonite stained 34 to 36 and 44 to 46. Trace of mudstone, 34 to 36 and 42 to 44.
50-60	Buff fine to medium-grained sandstone. Coarse channel 58-60. Trace hematite 58-60.
60-66	Dark gray mudstone. Trace hematite 60-62.
66-74	Red fine-grained sandstone.
74-138	Buff fine to medium-grained sandstone. At 116 some coarse sand - increase in amount and grain size with depth.
138-142	Dark gray mudstone.
142-144	Red very fine-grained sandstone.
144-168	Dark gray slightly silty mudstone.
168-174	Buff fine-grained sandstone and dark gray mudstone.
174-180	Light gray fine-grained sandstone.
180-238	Pink fine to medium-grained sandstone with some coarse sand. Pink color due to hematite staining.
238-244	Dark gray mudstone and sandstone.
244-264	Buff fine-grained sandstone with some medium-grained sand.
264-274	Dark gray mudstone and buff fine-grained sandstone.
274-280	Maroon to gray fine-grained sandstone with some silt.
280-354	Buff to red fine-grained sandstone.
354-360	Dark gray mudstone and red-buff fine-grained sandstone.
360-370	Red fine-grained sandstone.
370-376	Dark gray mudstone and fine-grained sandstone.
376-384	Reddish fine-grained sandstone with pebbles. Some mudstone at 380-384.
384-394	Red fine-grained sandstone.

HOLE NO. M-33

394-406	Black mudstone and red fine-grained sandstone.
406-410	Gray very fine-grained sandstone with traces of mud.
410-418	Dark gray mudstone.
418-484	Gray to dark gray very fine-grained sandstone and siltstone. Some mud throughout. Some black shale stringers from 470 to 484.
484-500	Light gray and green claystone. (Jm)

HOLE NO. M-34

J. O'Leary

0-30	Buff fine-grained sandstone. Some dark gray mudstone at 6-8.
30-48	Buff fine to medium-grained sandstone.
48-60	Brown medium-grained sandstone.
60-68	Dark gray silty mudstone.
68-74	Red fine-grained sandstone.
74-94	Buff coarse to medium-grained channel sand. Medium at 86-94.
94-124	Dark gray muddy siltstone. Reddish to 102.
124-128	Dark buff fine-grained sandstone.
128-148	Dark gray silty mudstone.
148-154	Dark gray muddy siltstone.
154-232	Buff fine-grained sandstone.
232-236	Light gray siltstone.
236-240	Pink fine-grained sandstone.
240-242	Dark gray silty mudstone.
242-250	Pink to gray to buff fine-grained sandstone.
250-256	Dark gray muddy siltstone.
256-382	Buff to pink to gray fine-grained sandstone. Color turns to brown at 364.
382-386	Green shale.
386-432	Light gray fine to medium-grained sandstone. More medium-grained with depth.
432-450	Gray-green claystone. (Jm)

HOLE NO. M-35

Max Hartle

0-10	Soil.
10-18	Buff fine-grained sandstone.
18-20	Light brown shale.
20-40	Light brown to buff fine-grained sandstone.
40-52	Gray sandy shale.
52-80	Gray mudstone.
80-82	Black mudstone.
82-86	Gray silty sand.
86-96	Gray shale.
96-108	Gray sandstone.
108-112	Gray-black mudstone.
112-118	Gray fine-grained sandstone.
118-128	Mudstone.
128-132	Gray fine-grained sandstone.
132-140	Gray fine-grained silty sand.
140-142	Gray mudstone.
142-158	Gray fine-grained sandstone.
158-166	Gray silty sand.
166-170	Red sandstone.
170-178	Light buff fine-grained sandstone.
178-184	Pink fine-grained sandstone.
184-216	Light buff medium to coarse-grained sandstone.
216-220	Light buff coarse-grained sandstone.
220-230	Light buff fine-grained sandstone.
230-250	Blue shale (lime).
250-256	Light gray sandy shale (lime).
256-270	Light gray fine-grained sandstone (lime).

HOLE NO. M-35

270-276	Gray sandy shale (lime).
276-280	Light gray fine-grained sandstone (lime).
280-288	Gray-blue shale (lime).
288-300	Gray fine-grained sandstone.
300-340	Gray fine-grained carbonaceous sandstone.
340-510	Gray fine-grained carbonaceous sandstone (water).
510-518	Gray carbonaceous pyrite sandstone.
518-524	Black sandy shale.
524-534	Light gray shale (lime).

HOLE NO. M-36

Max Hartle

0-20	Buff coarse-grained sandstone.
20-44	Buff sand and gravel, pea size.
44-50	Gray sandy clay.
50-60	Gray to blue sandy clay (lime).
60-100	Gray to blue sandy shale.
100-120	Gray fine-grained sandstone.
120-122	Brown medium-grained sandstone.
122-124	Blue shale.
124-126	Brown medium grained sandstone.
126-140	Blue-gray mudstone.
140-148	Black mudstone.
148-160	Light gray fine-grained sandstone.
160-166	Light gray silty sand.
166-170	Light gray sandy shale.
170-174	Pink to red fine-grained sandstone.
174-184	Light gray fine-grained sandstone.
184-196	Light gray coarse-grained sandstone.
196-204	Light gray medium to coarse-grained sandstone.
204-220	Light gray coarse grained sandstone.
220-224	Gray-green shale.
224-228	Red fine-grained sandstone.
228-238	Gray to black shale.
238-248	Gray fine-grained sandstone.
248-250	Gray-black shale.
250-256	Dark gray sandy shale.
256-262	Light gray fine-grained sandstone (lime).

HOLE NO. M-36

262-266	Pink fine-grained sandstone (lime).
266-278	Light gray sandstone (lime).
278-282	Light blue shale (lime).
282-306	Light gray fine-grained sandstone (lime).
306-330	Light gray fine-grained sandstone.
330-340	Black shale.
340-362	Light gray sandstone.
362-368	Black shale.
368-370	Light gray fine-grained sandstone.
370-380	Black shale.
380-392	Black shale.
392-406	Gray fine-grained sandstone.
406-414	Black shale.
414-460	Gray fine-grained sandstone.
460-520.	Black shale and fine-grained sand.

HOLE NO. M-37

0-8	Soil
8-14	Light brown fine-grained sandstone.
14-26	Gray-green sandy shale.
26-28	Gray fine-grained sandstone.
28-30	Light brown sandstone.
30-34	Black mudstone.
34-42	Light gray-blue sandy clay.
42-46	Red fine-grained sandstone.
46-54	Gray-blue sandy clay.
54-62	Gray fine-grained sandstone.
62-94	Gray to blue mudstone.
94-100	Gray fine-grained sandstone.
100-106	Dark gray mudstone.
106-124	Gray to black fine-grained sandstone.
124-132	Gray-black mudstone.
132-134	Black mudstone.
134-136	Light gray fine-grained sandstone.
136-138	Red sandstone.
138-156	Light gray silty sand.
156-170	Pink fine-grained sandstone.
170-212	Light buff fine-grained sandstone.
212-216	Light buff medium to coarse-grained sandstone.
216-222	Light buff coarse-grained sandstone.
222-226	Light buff medium-grained sandstone.
226-230	Light buff coarse-grained sandstone.
230-260	Gray coarse-grained sandstone.
260-264	Black shale.

HOLE NO. M-37

264-278	Buff coarse-grained sandstone.
278-286	Gray-green fine-grained sandstone.
286-300	Blue-green shale.
300-310	Gray shale.
310-382	Gray fine-grained sandstone.
382-400	Black sandy shale.
400-414	Gray fine-grained carbonaceous sandstone.
414-422	Black shale.
422-	Interbedded shale, gray sandstone.

HOLE NO. M-38

0-4	Soil
4-14	Buff fine-grained sandstone.
14-24	Pea-sized sand and gravel.
24-28	Brown fine-grained sandstone.
28-30	Sandy clay.
30-38	Gray-green fine-grained sandstone.
38-40	Gray-green sandy clay.
40-44	Gray-black mudstone.
44-54	Pink to red fine-grained sandstone.
54-58	Drab sandy clay.
58-66	Gray-black mudstone.
66-68	Red fine-grained sandstone.
68-72	Pink to gray fine-grained sandstone.
72-74	Gray fine-grained sandstone.
74-73	Drab sandy clay.
78-80	Gray silty sand.
80-100	Dark gray mudstone.
100-110	Gray silty sandstone.
110-116	Gray mudstone.
116-150	Dark gray mudstone.
150-156	Gray fine-grained sandstone.
156-190	Pink fine-grained sandstone.
190-206	Light gray fine-grained sandstone.
206-226	Buff medium grained sandstone.
226-246	Gray coarse-grained sandstone.
246-262	Dark gray coarse-grained sandstone (lime).

HOLE NO. M-38

262-300	Gray medium-grained sandstone (lime).
300-320	Gray medium to coarse-grained sandstone (lime).
320-338	Gray coarse-grained sandstone (lime).
338-340	Gray medium-grained sandstone (lime).
340-350	Gray fine-grained sandstone (lime).
350-356	Gray medium to coarse-grained sandstone.
356-360	Gray fine-grained sandstone.
360-370	Gray medium to coarse-grained sandstone (lime).
370-500	Gray fine-grained sandstone.

HOLE NO. M-39

0-18	Brown fine-grained sandstone. Overburden.
18-32	Black shale.
32-40	Gray silty sandstone.
40-44	Brown fine-grained sandstone.
44-56	Gray siltstone.
56-60	Black carbonaceous mudstone.
60-74	Gray siltstone. Some mud near bottom.
74-76	Gray fine-grained sandstone.
76-82	Dark gray mudstone.
82-88	Gray fine-grained sandstone.
88-106	Gray siltstone.
106-108	Black carbonaceous mudstone.
108-134	Gray siltstone.
134-162	Gray fine-grained sandstone with some mud. Carbon 156-162.
162-172	Pink-gray fine-grained sandstone. Went to water at 172.
172-198	Green shale.
198-216	Buff coarse-grained sandstone.
216-266	Black mudstone.
266-370	Red fine-grained sandstone. Color changes to gray at 308.
370-422	Dark gray sandy mudstone.
422-490	Light gray fine-grained sandstone. With mud stringers.
490-500	Black shale.

HOLE NO. E-40

0-12	Overburden with pebbles and brown sand.
12-26	Black shale.
26-34	Brown fine-grained sandstone.
34-36	Dark gray shale.
36-46	Brown fine-grained sandstone.
46-72	Gray siltstone. Reddish 54-62.
72-80	Brown to buff fine-grained sandstone.
80-88	Gray siltstone.
88-94	Gray fine-grained sandstone.
94-110	Gray siltstone. Some mud 104-110.
110-130	Light gray medium-grained sandstone.
130-154	Light gray mudstone. Went to water 154.
154-170	Buff coarse to medium-grained sandstone. Channel. Pyrite throughout.
170-184	Green-blue shale with pyrite.
184-198	Buff coarse to medium-grained sandstone with pyrite.
198-222	Blue shale. Samples poor.
222-242	Buff coarse to medium-grained sandstone. Channel. With pyrite.
242-470	Samples poor.
470-560	Samples poor but blue-green and black shale with occasional stringers of white silt (more silt with depth).

HOLE NO. M-41

0-20	Black shale.
20-26	Gray siltstone.
26-30	Buff fine-grained sandstone.
30-42	Gray siltstone.
42-48	Buff fine-grained sandstone.
48-50	Black carbonaceous mudstone.
50-68	Dark gray muddy siltstone.
68-80	Buff fine-grained sandstone.
80-86	Gray siltstone.
86-90	Buff fine-grained sandstone.
90-92	Black fine-grained carbonaceous sandstone.
92-110	Dark gray mudstone.
110-120	Gray siltstone.
120-126	Gray fine-grained sandstone.
126-148	Dark gray silty mudstone.
148-188	Buff fine-grained sandstone. Mud at 168-174.
188-266	Buff coarse-grained sandstone. Channel. Grades to Medium with depth.
266-278	Dark gray mudstone.
278-340	Light gray fine-grained sandstone.
340-370	Black shale.
370-400	Light gray fineegrained sandstone.

HOLE NO. M-42

0-4	Overburden, brown silty sand.
4-26	Very fine-grained sandstone, buff to 10, then buff brown to orange. Some clay 16-22.
26-32	Brown fine-grained sandstone. Some mud.
32-40	Gray fine-grained laminated sandstone and mudstone. With pyrite (lime).
40-64	Dark gray mudstone with fine-grained sand. (red 40-42) Lime to 46.
64-66	Gray fine-grained sandstone (lime). Some mud.
66-78	Dark gray fine-grained sandstone and mudstone. Lime to 72.
78-80	Gray fine-grained sandstone.
80-82	Dark gray to black mudstone.
82-92	Gray siltstone and fine-grained sandstone with mud.
92-104	Dark gray mudstone and siltstone.
104-110	Gray very fine-grained sandstone.
110-134	Dark gray fine-grained sandstone and mudstone.
134-138	Dark gray fine-grained sandstone with mud.
138-172	White fine-grained sandstone. Lime to 144.
172-186	Pink to gray fine-grained sandstone.
186-200	Gray medium to coarse-grained sandstone, channel, finer with depth. Some pyrite.
200-208	Sample poor - went to water at 200.
208-212	Dark gray mudstone.
212-230	Light gray medium-grained sandstone.
230-242	Blue-green claystone. Lime from 238.
242-340	Light gray sandstone. A fragment of petrified wood and pyrite, lime throughout. Dark gray stringers of mud and clay throughout.
340-356	Blue-gray claystone. Lime.
356-512	Black shale, Some oil, pyrite 490-504 - lime to 368. Stringers of very fine-grained sandstone, white at 496-510.
512-530	Green claystone. Jm (lime).

HOLE NO. M-43

0-8	Brown shaly and sandy overburden.
8-38	Brown to gray shale - with depth.
38-40	Buff medium-grained sandstone.
40-48	Gray silty sandstone.
48-52	Buff fine to medium-grained sandstone.
52-68	Gray fine-grained silty sandstone.
68-78	Red very fine-grained sandstone and siltstone.
78-106	Gray siltstone. Trace mud 82-84. Red 88-92 with mud stringers.
106-108	Gray fine-grained sandstone. Some mud.
108-120	Gray to dark gray mudstone and siltstone.
120-134	Light gray fine-grained sandstone.
134-148	Gray to dark gray silty mudstone. Fine-grained sand throughout.
148-154	Dark gray fine-grained muddy sandstone.
154-166	Dark gray silty mudstone.
166-186	Light gray silty sandstone. Pink 166-170, 174-178.
186-230	Light gray fine-grained sandstone. Little silt. Pink from 190 to 230. Went to water at 210.
230-256	Buff Medium to coarse-grained sandstone.
256-272	Blue claystone.
272-408	Light gray fine-grained sandstone. Gradually changes to siltstone with depth. (Blue with depth).
408-526	Black shale. Very fine-grained sandstone stringers throughout. Oil bearing.
526-545	Gray to green shale. Jm

HOLE NO. M-44

0-28	Brown sandy overburden.
28-62	Gray siltstone with mud.
62-86	Red silty mudstone. Gray at 62-68.
86-96	Gray laminated siltstone and sandstone.
96-122	Gray fine-grained sandstone with silt and mud occasional.
122-190	Dark gray mudstone. Abundant pyrite throughout. Some sandstone stringers. Black at 146-160, (carbonaceous).
190-288	Light buff to gray fine-grained sandstone. Coarse off and on throughout at 200-210. Channel. Mud stringers throughout.
288-292	Black mudstone.
292-308	Red fine-grained sandstone.
308-348	Pink fine-grained sandstone.
348-350	Gray sandy shale.
350-380	Gray fine-grained sandstone.
380-440	Gray fine-grained sand and shale.
440-530	Black shale.

HOLE NO. M-45

0-10	Alluvial soil.
10-64	Black shale.
64-96	Gray sandstone and Gray shale.
96-100	Light gray sandy shale.
100-110	Pink to gray sandy clay.
110-134	Dark gray shale.
134-150	Gray fine-grained sandstone.
150-165	Dark gray sandy shale.
165-186	Dark gray mudstone.
186-200	Pink to gray dandy clay.
200-210	Pink and gray medium-grained sandstone.
210-212	Gray medium to coarse-grained sandstone.
212-228	Gray coarse-grained sandstone.
228-236	Pink to gray sandy shale.
236-250	Pink to gray fine to medium-grained sandstone.
250-264	Pink to gray silty sand.
264-270	Buff medium-grained sandstone.
270-324	Gray silty sand.
324-330	Gray medium-grained sandstone (lime).
330-370	Gray silty sand.
370-438	Gray fine-grained sandstone.
438-450	Black shale.
450-540	Gray fine-grained sandstone.
540-550	Black shale.
550-575	No sample.

HOLE NO. M-46

0-96	Black shale.
96-110	Dark gray claystone.
110-122	Gray fine-grained sandstone.
122-170	Gray claystone to 126. Then red to 130.
170-190	Gray fine-grained sandstone.
190-200	Claystone and some mudstone.
200-250	Samples were destroyed.
250-292	Light gray coarse-grained sandstone. Channel.
292-300	Gray mudstone.
300-446	Light gray fine-grained sandstone.
446-460	Black shale.
460-600	Black-gray sometimes green shale.

HOLE NO. M-47

0-62	Buff fine-grained sandstone. Lime stain 4-6, 60-62.
62-72	Dark gray carbonaceous sandy mudstone and siltstone.
72-88	Dark gray muddy sandstone.
88-130	Buff fine- to medium-grained sandstone. Coarse with depth. (Channel).
130-156	Dark gray fine-grained muddy sandstone.
156-158	Pink medium-grained sandstone.
158-174	Black shale. Some white sand, 164-168.
174-214	Buff to white fine to medium-grained sandstone. Coarse with depth. Channel.
214-216	Blue gray shale.
216-242	White medium-grained sandstone. Channel.
242-260	Dark gray mudstone.

HOLE NO. M-48

0-22	Brown fine-grained sandstone and mudstone.
22-46	Dark gray muddy sandstone.
46-50	Gray medium-grained sandstone.
50-84	Fine-grained sandstone, buff to white to medium 66-78, coarse-grained, buff 78-84.
84-108	Gray siltstone.
108-126	Buff medium to coarse-grained sandstone. Red 108-110.
126-128	Black carbonaceous shale.
128-166	Red to brown to buff fine to medium-grained sandstone.
166-224	Gray to light gray very fine-grained sandstone with depth. Some mud 166-170, 194-204.
224-276	Pink very fine-grained sandstone. White at 248-274 throughout. Some mud 250-254.

Drill Logs (electric)

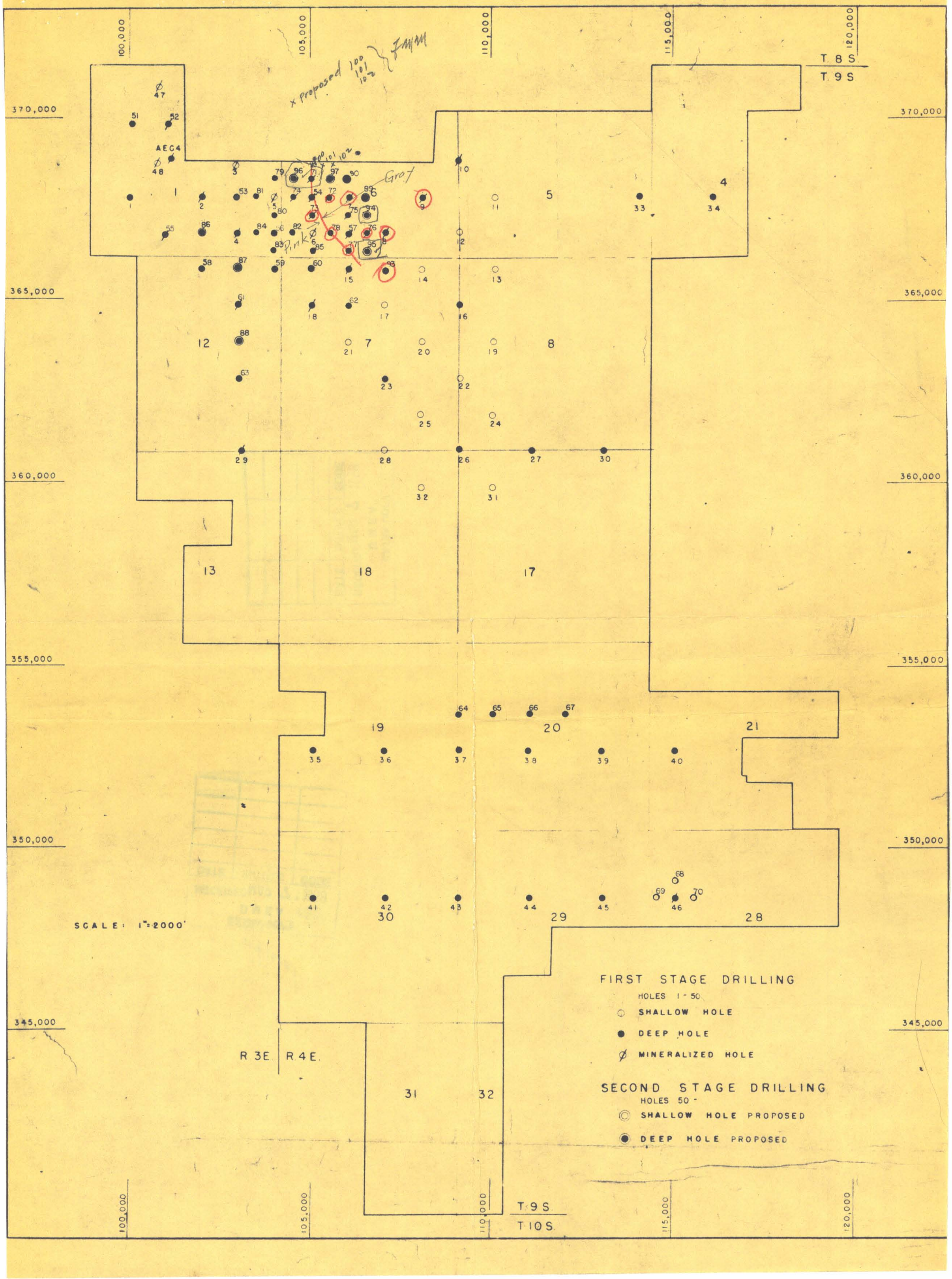
DMEA - 4742

Idm - E 1133

McAlester Fuel Co.

Holes 1 through #8

(note 2 company holes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FIRST STAGE DRILLING
HOLES 1 - 50
SHALLOW HOLE
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MINERALIZED HOLE
SECOND STAGE DRILLING
HOLES 50 -
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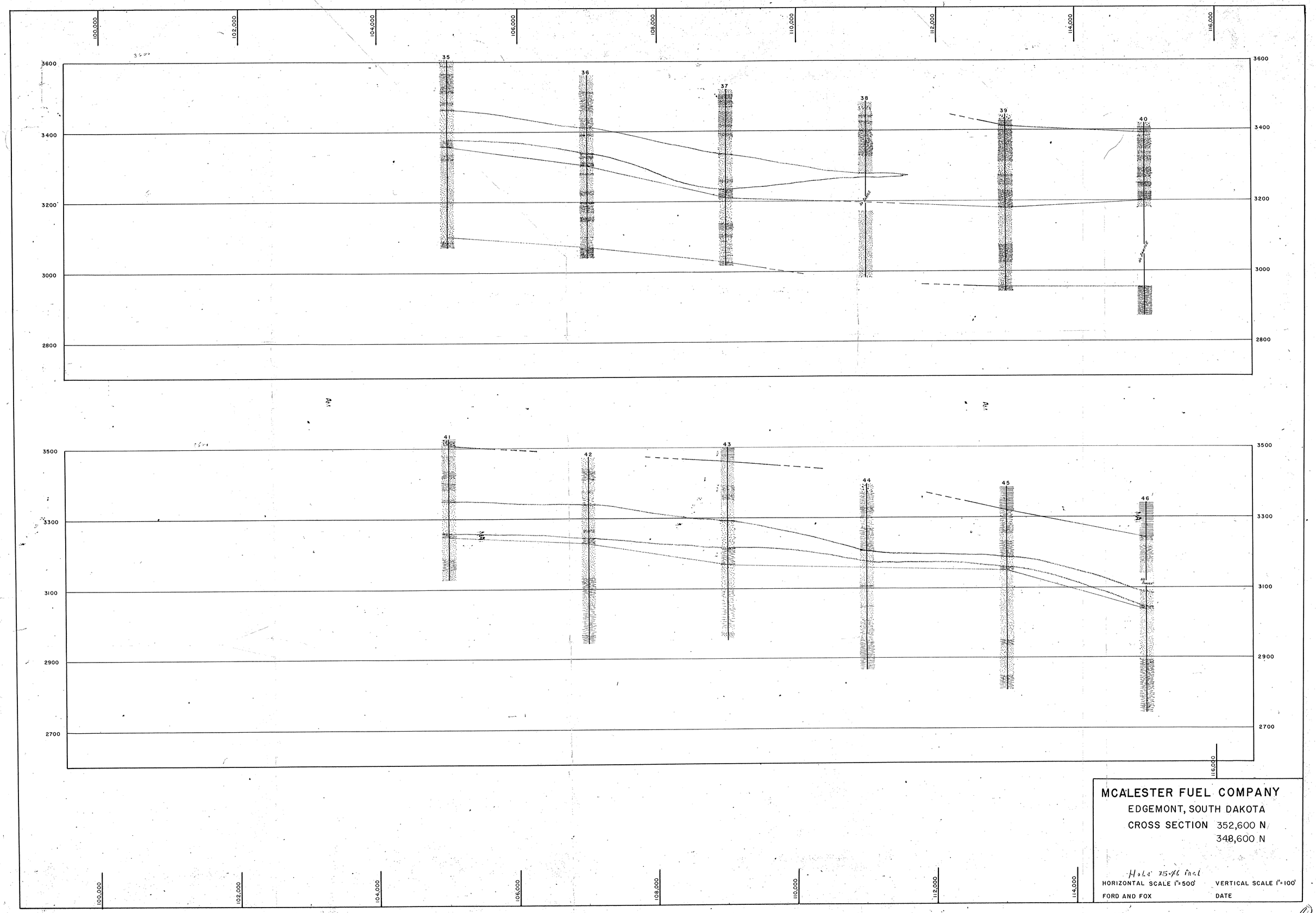
DEEP HOLE PROPOSED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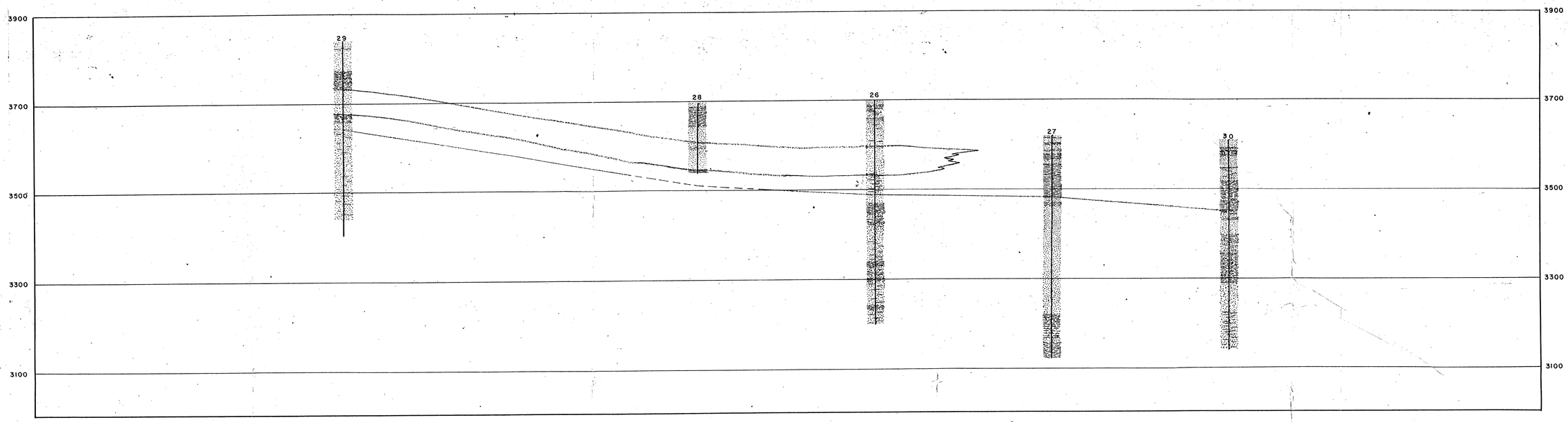
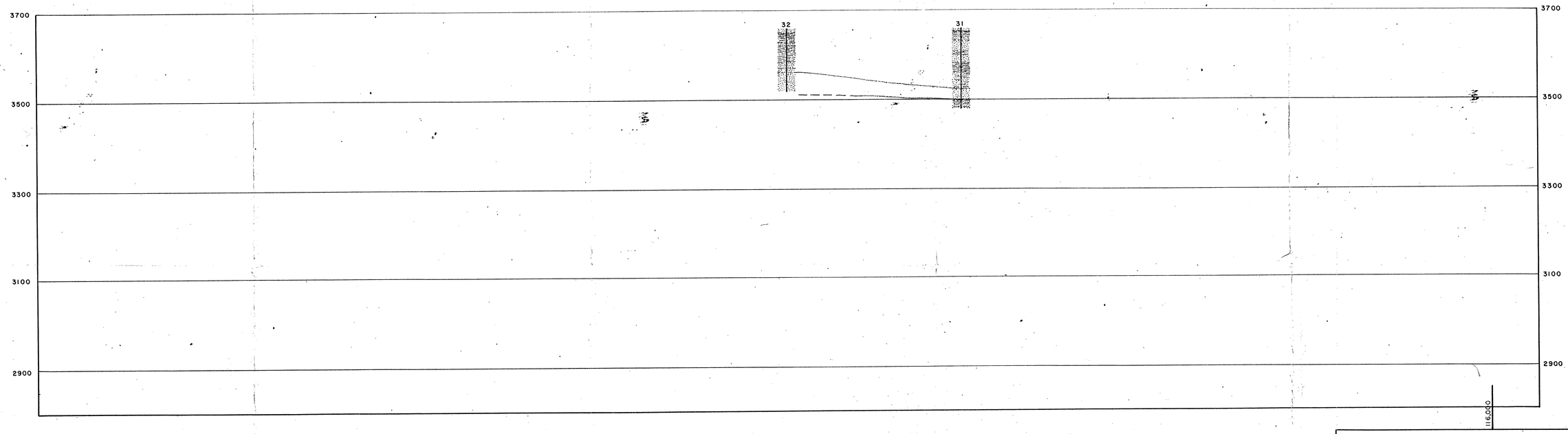
MCALESTER FUEL COMPANY
EDGEMONT, SOUTH DAKOTA
CROSS SECTION 352,600 N
348,600 N
Holes 35-46 incl
HORIZONTAL SCALE 1"=500'
VERTICAL SCALE 1"=100'
FORD AND FOX
DATE

6





MCALESTER FUEL COMPANY

EDGEMONT, SOUTH DAKOTA

CROSS SECTION 360,800 N

359,800 N

Holes 26-32

HORIZONTAL SCALE 1"=500'

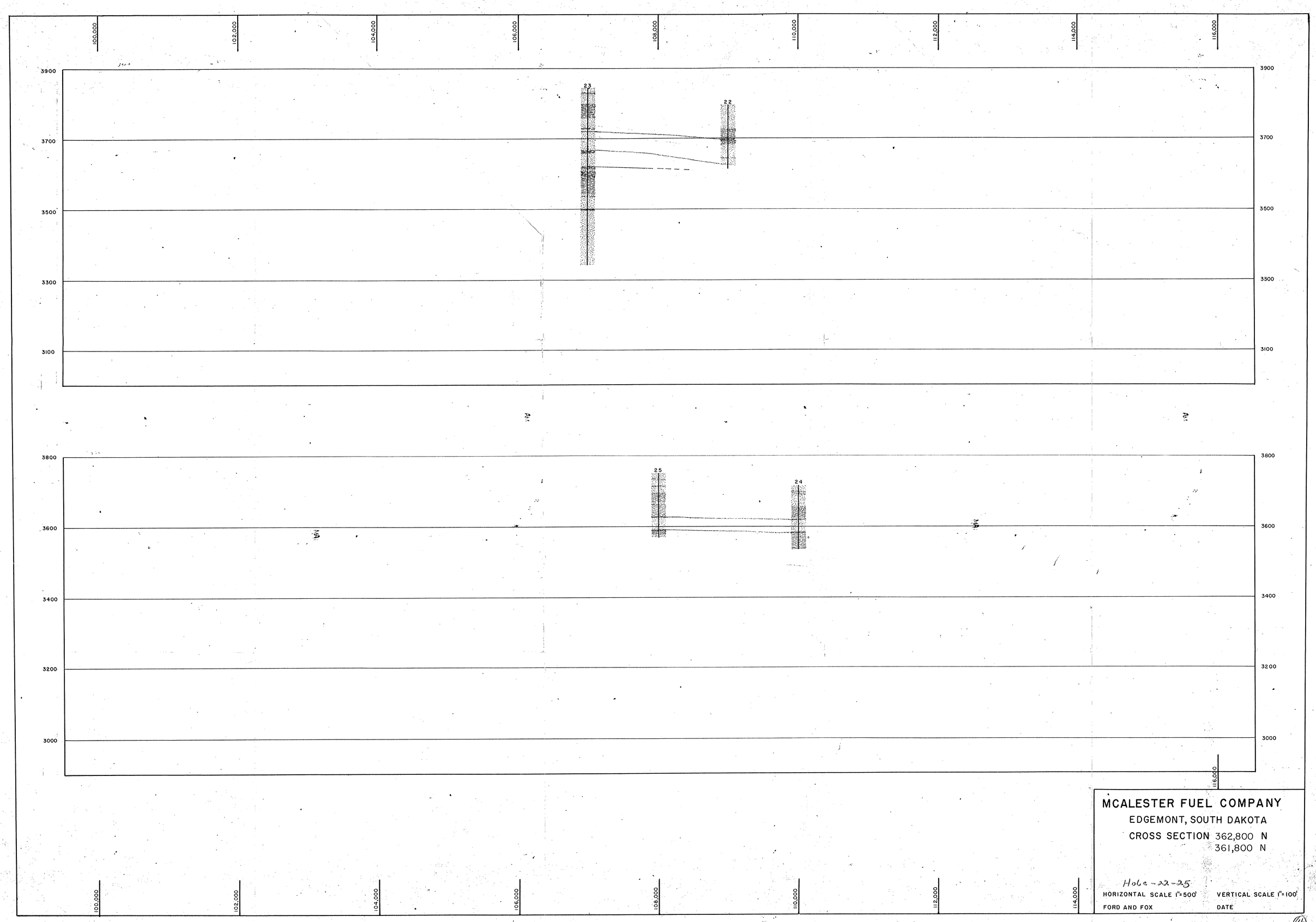
VERTICAL SCALE 1"=100'

FORD AND FOX

DATE

100,000
102,000
104,000
106,000
108,000
110,000
112,000
114,000

5



MCALESTER FUEL COMPANY

EDGEMONT, SOUTH DAKOTA

CROSS SECTION 362,800 N
361,800 N

Hole - 22-25

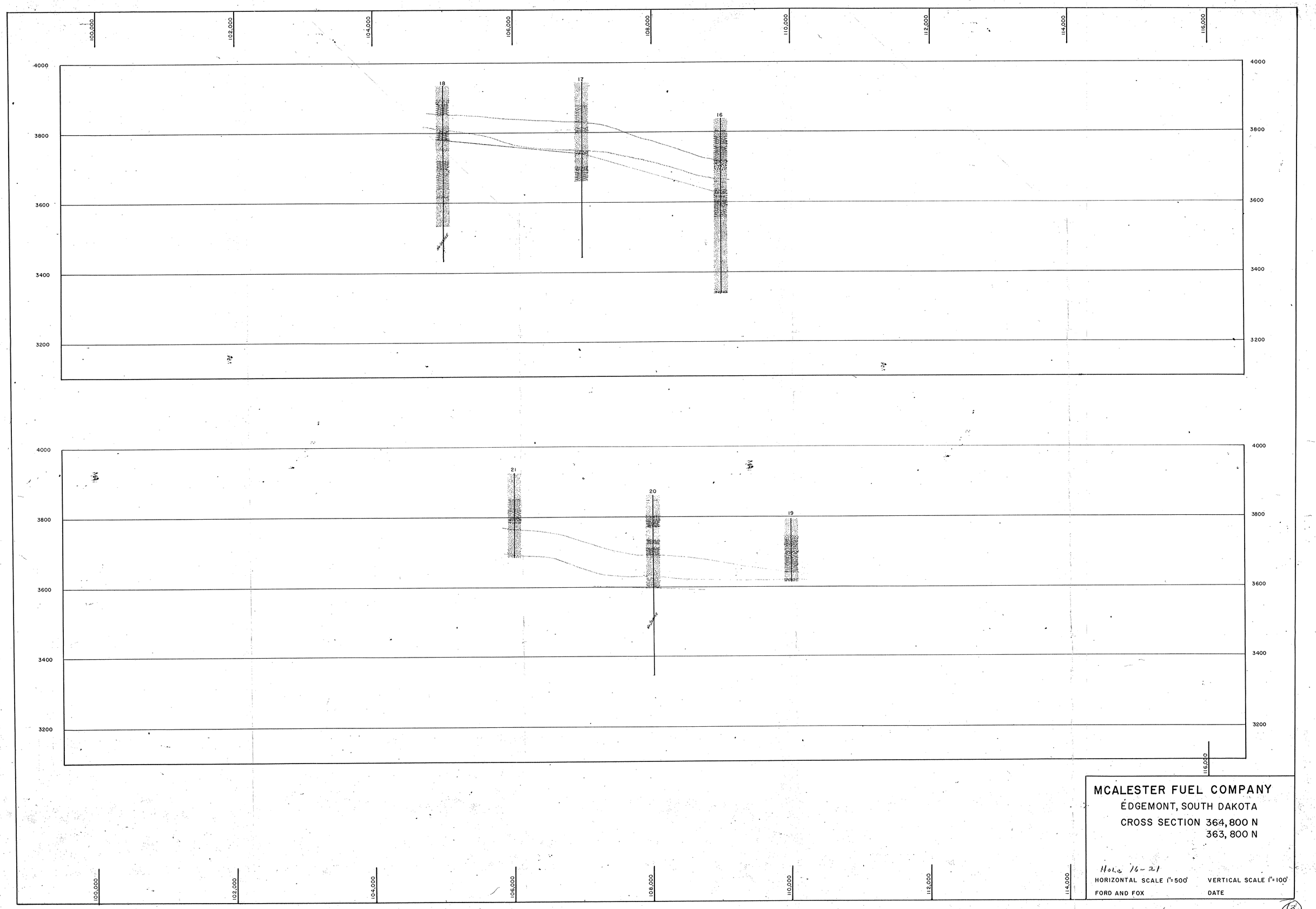
HORIZONTAL SCALE 1"=500'

VERTICAL SCALE 1"=100'

FORD AND FOX

DATE

(4)

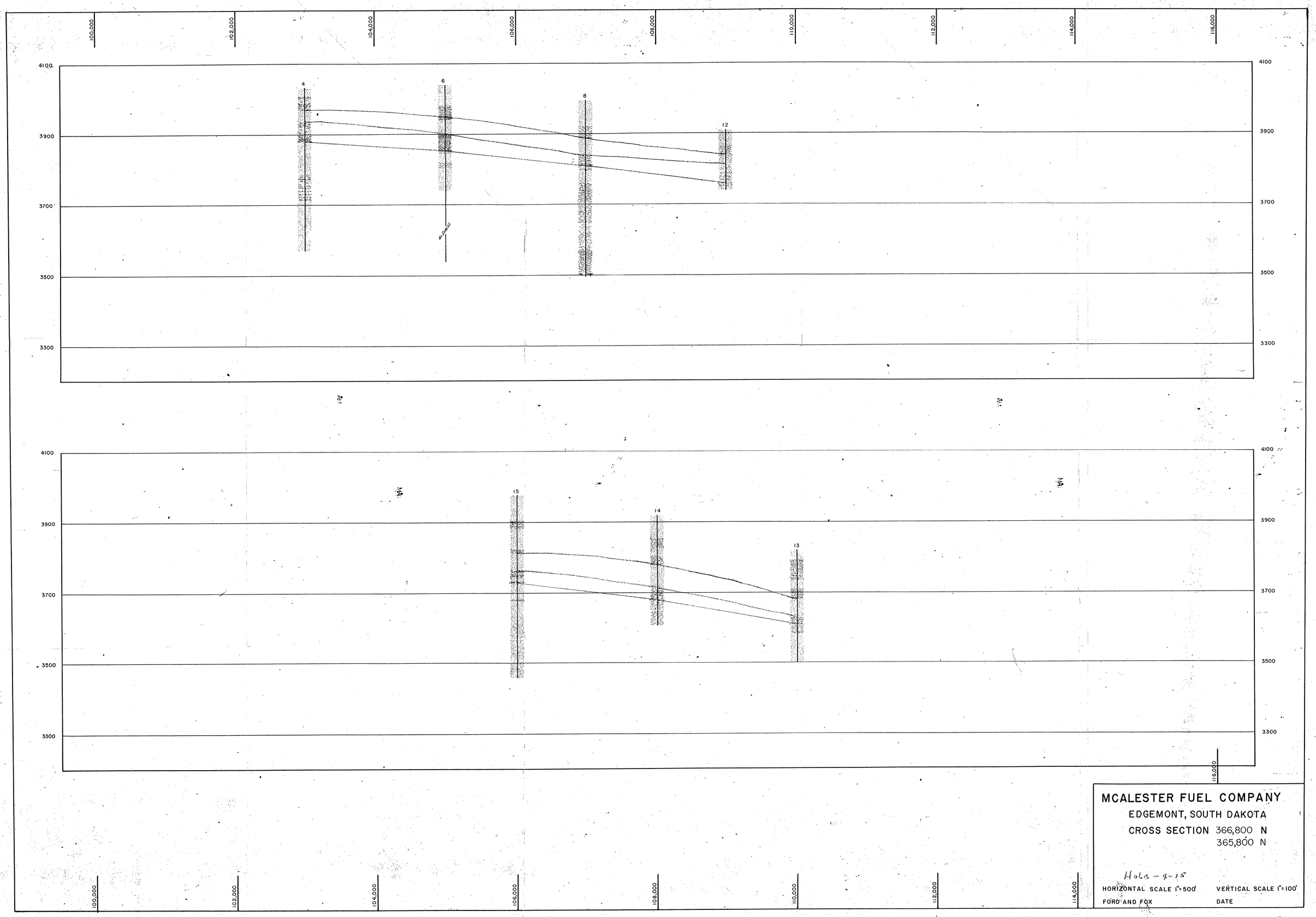


MCALESTER FUEL COMPANY
EDGEMONT, SOUTH DAKOTA
CROSS SECTION 364,800 N
363,800 N

Hole 16-21

HORIZONTAL SCALE 1"=500'
VERTICAL SCALE 1"=100'
FORD AND FOX
DATE

13



MCALESTER FUEL COMPANY

EDGEMONT, SOUTH DAKOTA

CROSS SECTION 366,800 N
365,800 N

Holes - 4-15

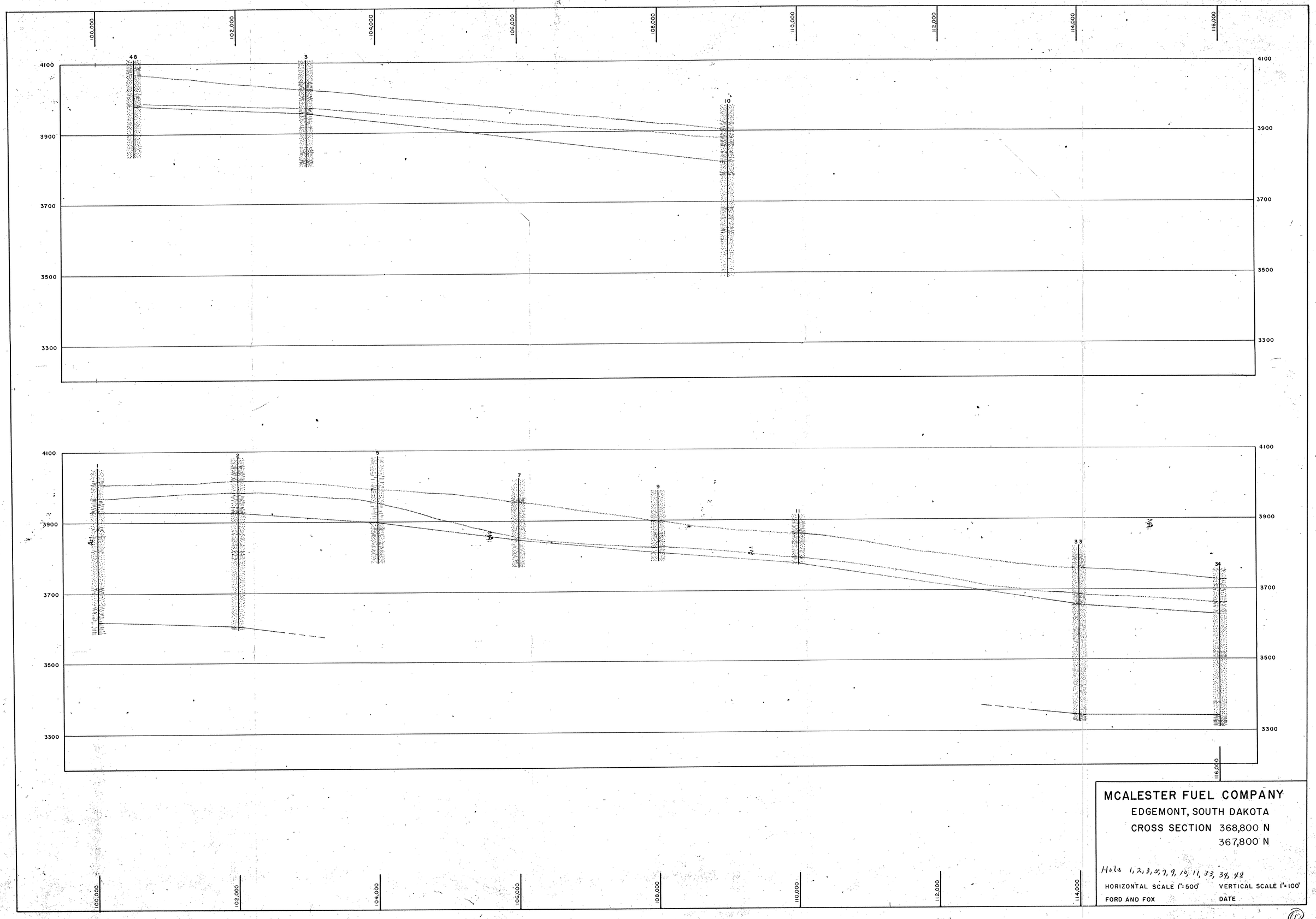
HORIZONTAL SCALE 1" = 500'

VERTICAL SCALE 1" = 100'

FORD AND FOX

DATE

2



MCALESTER FUEL COMPANY

EDGEMONT, SOUTH DAKOTA

CROSS SECTION 368,800 N

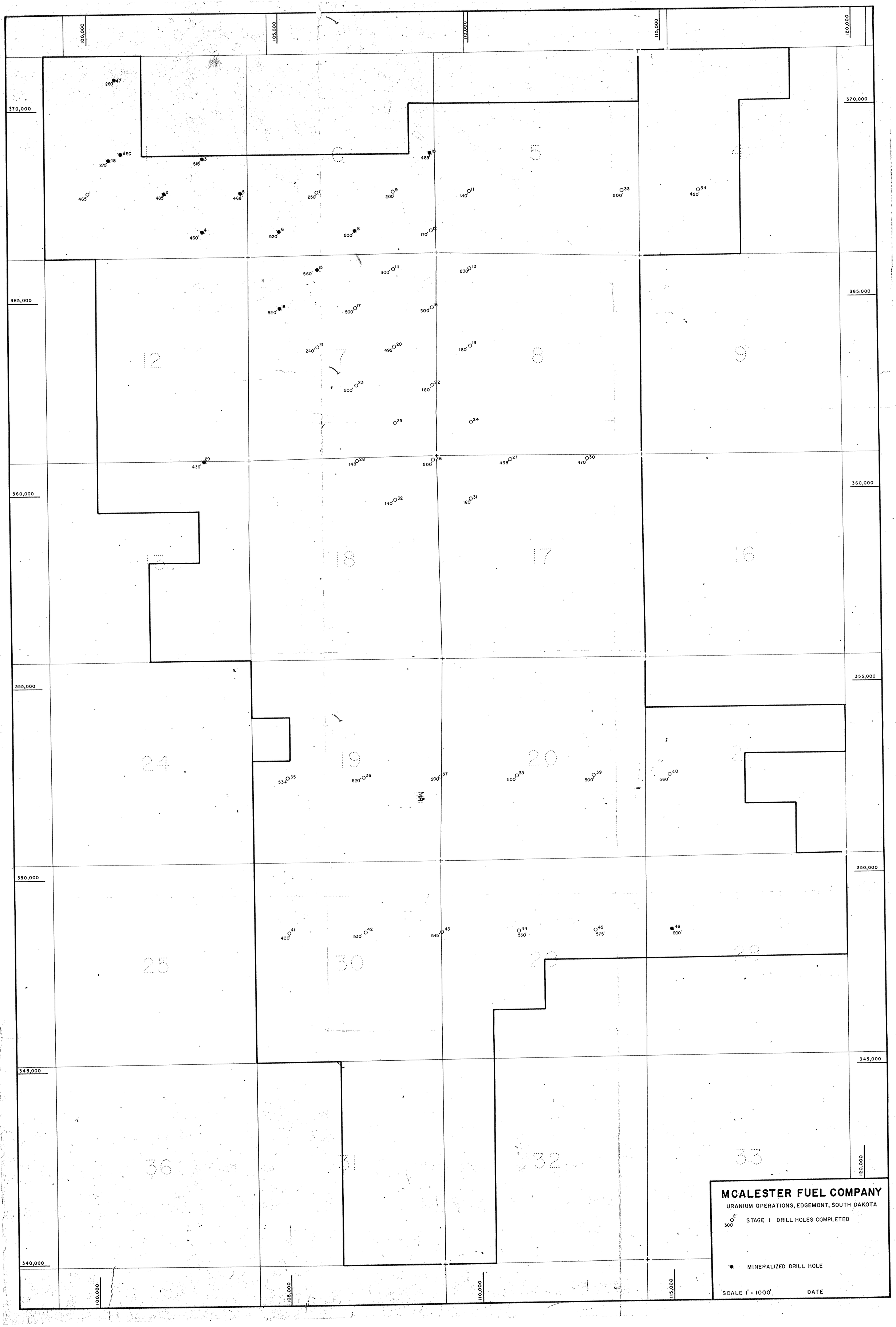
367,800 N

Hole 1, 2, 3, 5, 7, 9, 10, 11, 33, 34, 48

HORIZONTAL SCALE 1"=500' VERTICAL SCALE 1"=100'

FORD AND FOX DATE

11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300' 14
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500' 26
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470' 30
140' 32
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530' 44
575' 45
600' 46
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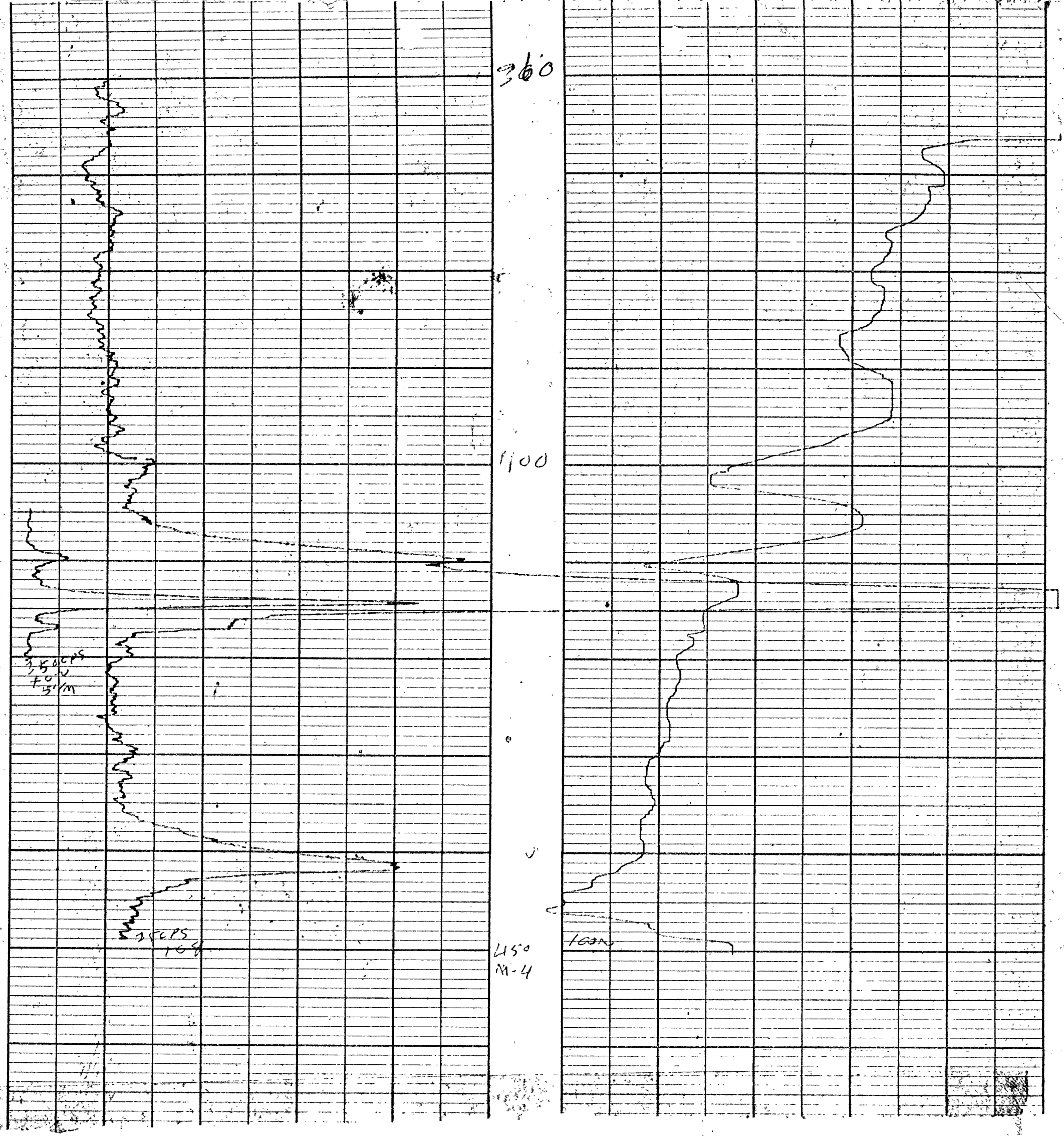
33
MCALESTER FUEL COMPANY
URANIUM OPERATIONS, EDGEMONT, SOUTH DAKOTA
300' 2 STAGE I DRILL HOLES COMPLETED
MINERALIZED DRILL HOLE
SCALE 1" = 1000'
DATE



MINNEAPOLIS-HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., U.S.A. CHART NO. 5840A

LOGGING DATA

PROBE SIZE: 138 CALIBRATION: 300

DATE: 11-13-57 FIELD HDQTRS: Edgemont

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	M 4						
HOLE DIA.	IN						
DRILLED DEPTH	460 FT						
LOGGED DEPTH	450 FT	15					105
GAMMA SCALE	25 CPS	250					
TIME CONSTANT	8 SEC	2					
PAPER SPEED	10 FT/IN	10					
LOGGING SPEED	10 FT/M	5 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100						
SELF POT SCALE	MV/IN						
BORE HOLE MEDIUM	water WITH						
MUD READINGS	RESISTIVITY		TYPE BASE				
	VISCOSITY		SALINITY				
CALIPER SCALE	MV/IN	LEG SIZE	PAPER SCALE				
TIME IN	1330	CASED TO			I.D.	IN	
TIME OUT	1400	CORE INT.			DIAM	IN	

LOCATION			TIME	
SEC.	TWP.	RGE.	DRIVE:	10
COUNTY: Fall River			FIELD:	5
STATE: SD			STANDBY:	1.5
AREA: Flint Hill			BREAKDOWN:	
CLIENT:			TOTAL:	3.0
McAlester				
LOG REC'D BY:			OPERATOR: Miller	
			PARTY NO: U11	

Century

GEOPHYSICAL CORP.

TULSA, OKLA., U. S. A.

EXPLORATION LOG

COMPANY:

BORE HOLE NO.

FIELD

COUNTY

LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ---------- FILE ----------

DRLG. MEAS. FROM ---------- NO. ----------

DATE:	
FOOTAGE	
TOTAL DEPTH (DR)	
HOLE DIAM.	
LOGGING SPEED	
TIME CONSTANT	
MUD TYPE	
CASED TO	

LOCATION OF HOLE

ELEVATION KB GL

BKGRD. COUNT ----------

SLUSH PIT CT. ----------

REMARKS:

420-405 - 250 cps

Cut Log at at 360

Log 105

No SP

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KD	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 50 MV/IN

\+ 10 MV −

CALIPER MV/IN

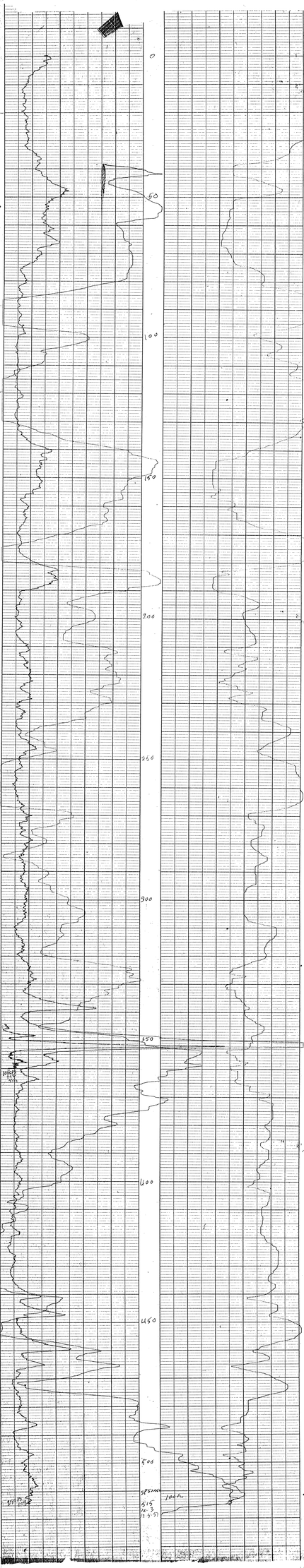
4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

NATURAL GAMMA RAY

COUNTS PER SECOND

RESISTANCE

OHMS — M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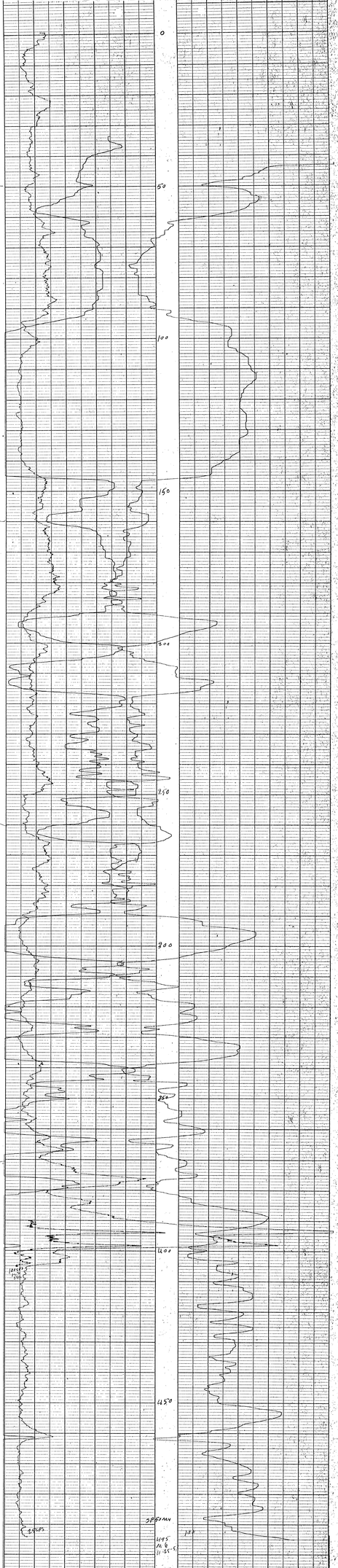
1900
1950
2000



LOGGING DATA

PROBE SIZE: 5" CALIBRATION: 7.00

DATE: 11-28-57 FIELD HOURS: 5 Hours

	SYSTEM NO.	NO.	NO.	NO.	NO.	NO.
HOLE SIZE	16.6					
MUD WT.	10.00 lb.					
CALIPER	7.00 "					
SURFACE	475 ft					
SURFACE	8.5 in	100				
CASING SIZE	5 in	0				
CASING WGT.	14 lbs	0				
SENSITIVITY	1.0	N/A	N/A	N/A	N/A	N/A
SELF POTENTIAL	100					
SP-CALIBRATION	1.0 MV/IN					
MUD RESISTIVITY	1.0 ohm					
RESISTIVITY						
REMARKS						

RESISTIVITY: SALINITY:

VISCOSITY:

CALIPER		CASING COLLAR	
TIME	1700	CASING SHOE	
TIME	2100	CASING SHOE	

SEC. TWP. RGE. DRIVE: 5"
COUNTY: Gallatin FIELD: L.F.
STATE: Ill. STANDBY:
AREA: Lost Hill BREAKDOWN:
CLIENT: TOTAL: 1.5
ADDRESS:
LOGGED BY: OPERATOR: McCabe
PARTY NO.: 611

Century
GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
SCREEN HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.
LOG MEAS. FROM FILE
DRILL MEAS. FROM NO.
DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASID TO

LOCATION OF HOLE
ELEVATION
GL
KB
REGRD. COUNT
FLUSH PT. CO.

REMARKS:
445' - 390 - 1000 cps

INTERPRETATION

RADIO METRIC 'N' VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH FROM-TO-FEET	% U3O8	CONC. CPM	% CaCO3

INTERPRETATION BY:

GEOLOGIC TOPS

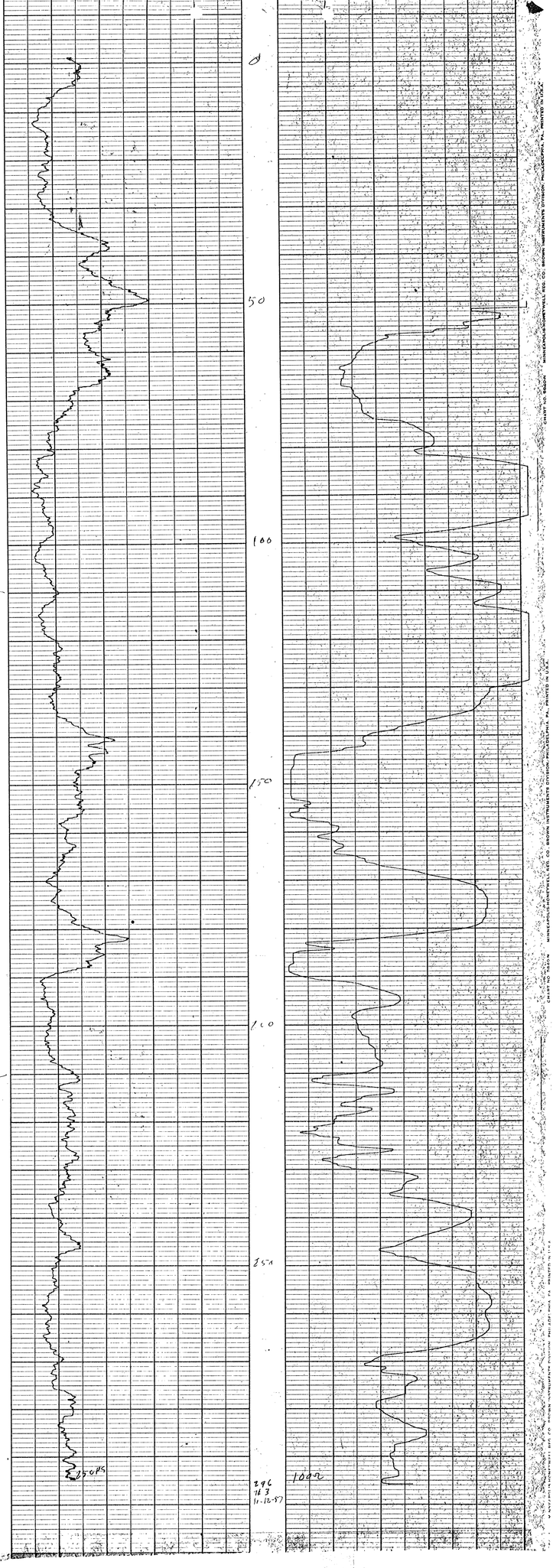
FORMATION	DEPTHS	THICKNESSES

SELF POTENTIAL 50 MV/IN.

CALIPER MV/IN.

NATURAL GAMMA RAY
COUNTS PER SECOND

RES.
Ω



LOGGING DATA

PROBE SIZE: 1 3/8 CALIBRATION: 200
DATE: 11-12-87 ELD HOUSS & [illegible]

	INITIAL RUN	REC. RUN	REC. RUN	REC. RUN	REC. RUN
HOLE NO.	103				
HOLE DIA.	6 1/2 IN				
DRILLED DEPTH	300 FT.				
LOGGED DEPTH	296 FT.				
GAMMA SCALE	27 CPS				
TIME CONSTANT	8 SEC.				
PAPER SPEED	10 FT/IN				
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100				
SELF POT SCALE	— MV/IN				
BORE HOLE MEDIUM	water	WATER		TYPE BASE	
MUD READINGS	RESISTIVITY				
	VISCOSITY			SALINITY	
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE	
TIME IN	1530	CASED TO		I.D.	IN
TIME OUT	1600	CORE INT.		DIAM	IN

LOCATION		TIME	
SEC.	TWP. RGE.	DRIVE:	?
COUNTY:	Falls River	FIELD:	?
STATE:	S.D.	STANDBY:	
AREA:	Flint Hills	BREAKDOWN:	
CLIENT:	Independent	TOTAL:	?
LOG REC'D BY:		OPERATOR:	Miller
		PARTY NO:	U11

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:
JORF HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG. MEAS. FROM ..... FILE .....
DRLG. MEAS. FROM ..... NO. .....

DATE:	
FOOTAGE	
TOTAL DEPTH (DR)	
HOLE DIAM.	
LOGGING SPEED	
TIME CONSTANT	
MUD TYPE	
CASED TO	

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT .....
SLUSH PIT CT. .....

REMARKS:

No Water Flow S.P.

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	% KO	CORR. CPS.	% U3O8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL

+ — −

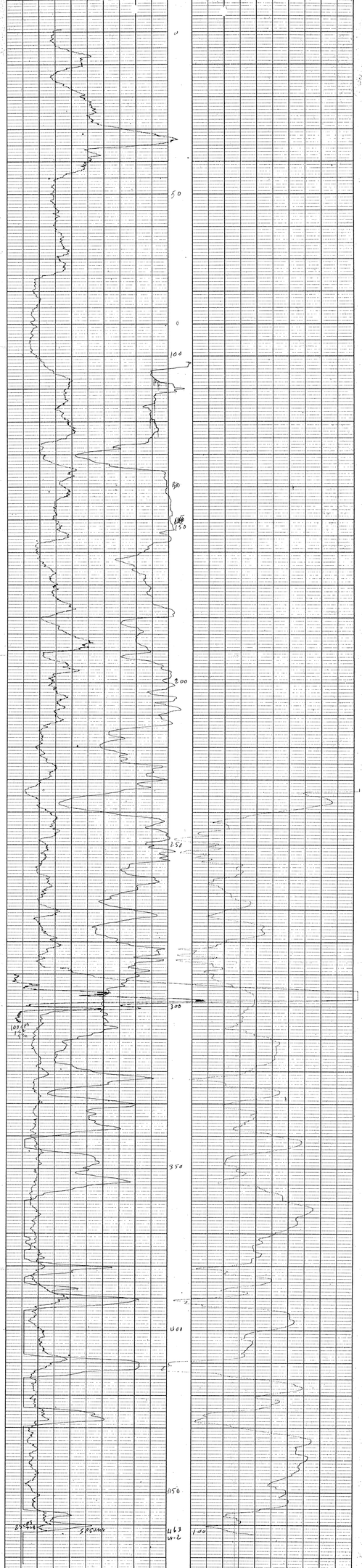
NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M

MINNEAPOLIS-HONEYWELL REG. CO. BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A. CHART NO. 5500M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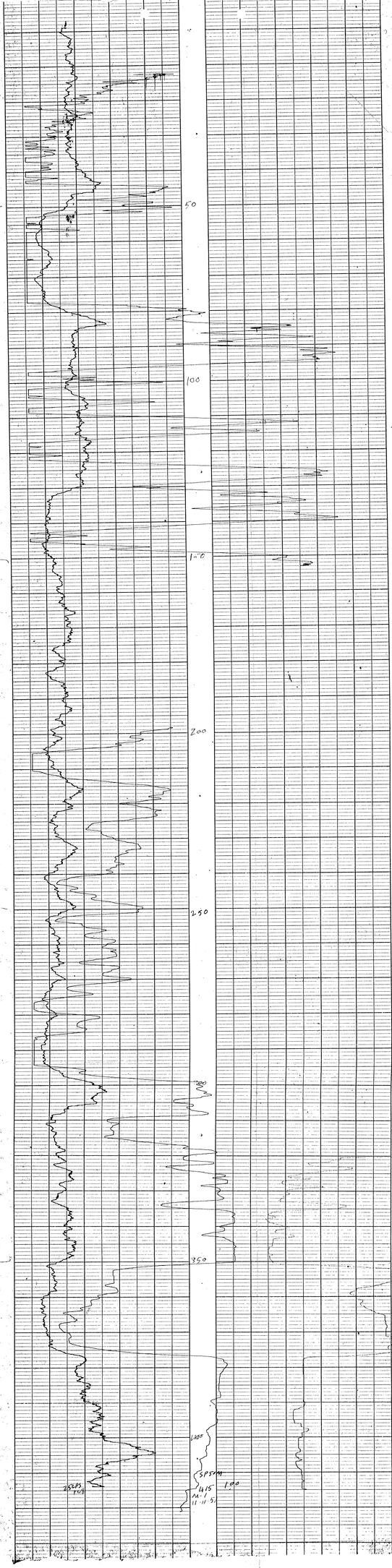


LOGGING DATA

PROBE SIZE: 1 3/8 CALIBRATION: 2.0
DATE: 11-11-57 FIELD HOOTAS 4 Jones

	INITIAL RUN	RE. RUN	RE. RUN	RE. RUN	RE. RUN	RE. RUN
HOLE NO.	M-1					
HOLE SIZE	4 1/2 in					
DRILLED DEPTH	415 ft					
CASING DEPTH	415 ft					
GAMMA TIME CONSTANT	2.5 sec					
FIELD CONSTANT	3 MSC					
SPEED	1.5 FT/MIN					
LOGGING SPEED	15 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTIVITY SCALE	10 Ω					
MEASURE DISTANCE	10 BOTTOM					
BORE HOLE BOTTOM	Water	WITH			TYPE BOTTOM	
MUD RESISTIVITY						
READINGS	VISCOSITY				SALINITY	
CALIPER SCALE	INCHES	TUBE SIZE		CALIPER SCALE		
TUBE SIZE	10 10	CASED TO			10	10
TUBE TYPE	400	CORE TO			DIAM	28

LOCATION

SEC. | TWP. | RGE. | DRIVE:
COUNTY: Cattaraugus | FIELD:
STATE: N.Y. | STANDBY:
AREA: | BREAKDOWN:
CLIENT: | TOTAL: 1.4
Ag Consultant
LOG REC'D BY: | OPERATOR: Miller

TIME

PARTY NO: 6'11

Century
GEOPHYSICAL CORP.
TULSA OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.
LOG MEAS. FROM ..... FILE NO.
DRLG. MEAS. FROM .....
DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO
ELEVATION DF GL
SEGRD. COUNT (SLUSH PIT CT.)

LOCATION OF HOLE

REMARKS:
Below water
water 2 days A wet dd
Not in ... 6L

INTERPRETATION

RADIO METER IN WATTS COMPUTED WITH UP REFLECTION OF LOW AL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTY	DEPTH	%	COUN	GAMMA
TYP. COL.	THICKNESS	NO	CPM	GUIDE

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL - 50 Mv

+ 10 −

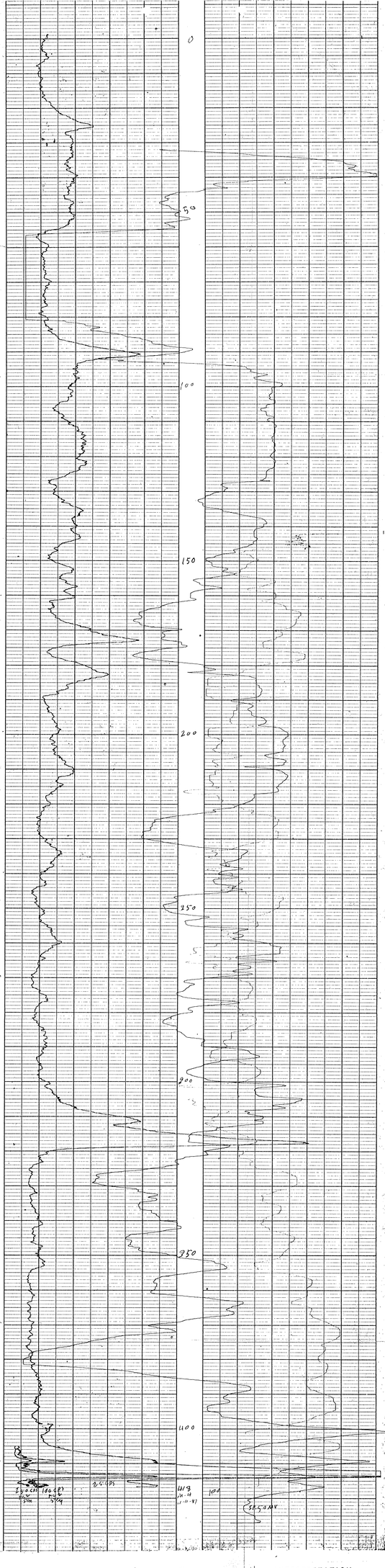
NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M

CHART NO. 5660A — BUNDY-PICLIN-SCHLUMBERGER-WELL-LOG CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.



LOGGING DATA

PROBE SIZE: 1 3/8 CALIBRATION: 500

DATE: 11-11-57 FIELD HOURS: 8 hours

	INITIAL RUN	REC. RUN	REC. RUN	REC. RUN	REC. RUN
HOLE DIA.	7 7/8"				
HOLE DEPTH	1119				
DRILLER DEPTH	1118				
LOGGER DEPTH	1118	1112			1117
GAMMA SCALE	2.5	500	100	200	
TIME CONSTANT	5 SEC	2 SEC			
SPEED	1 FPM	1 FPM	1 FPM		
GOUGING SPEED	1 FPM	1 FPM	1 FPM	1 FPM	1 FPM
RESISTIVITY SCALE	1.0				
SPEED	1.5 FPM				
BORE HOLE MEDIUM	Water		Clear Water		
MUD RESISTIVITY			RESISTIVITY		
MUD RESISTIVITY			RESISTIVITY		
CALIPER SCALE					
TIME	11 15	CASED DEPTH			
TIME	12 00	CORE DEPTH			

LOCATION: SEC. 7 TWP. 7 RGE. 7 COUNTY: Pittsburg STATE: Ok AREA: CLIENT: Mc Alester Fuel LOG REC'D BY:

TIME: DRIVE: FIELD: 9 hr STANDBY: BREAKDOWN: TOTAL: 12 OPERATOR: Mc Elson PARTY NO: 611

Century
GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.
LOG MEAS. FROM FILE
DRILL. MEAS. FROM NO.

LOCATION OF HOLE

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

ELEVATION: KB GL
BGRD. COUNT
SLUSH PIT CT

REMARKS:
6117 - 6115 10" I
Zone 6117 - 6115 2.5 CPS

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH ENCOUNTERED	K %	CUPR. GPR.	U3O8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL SEPM

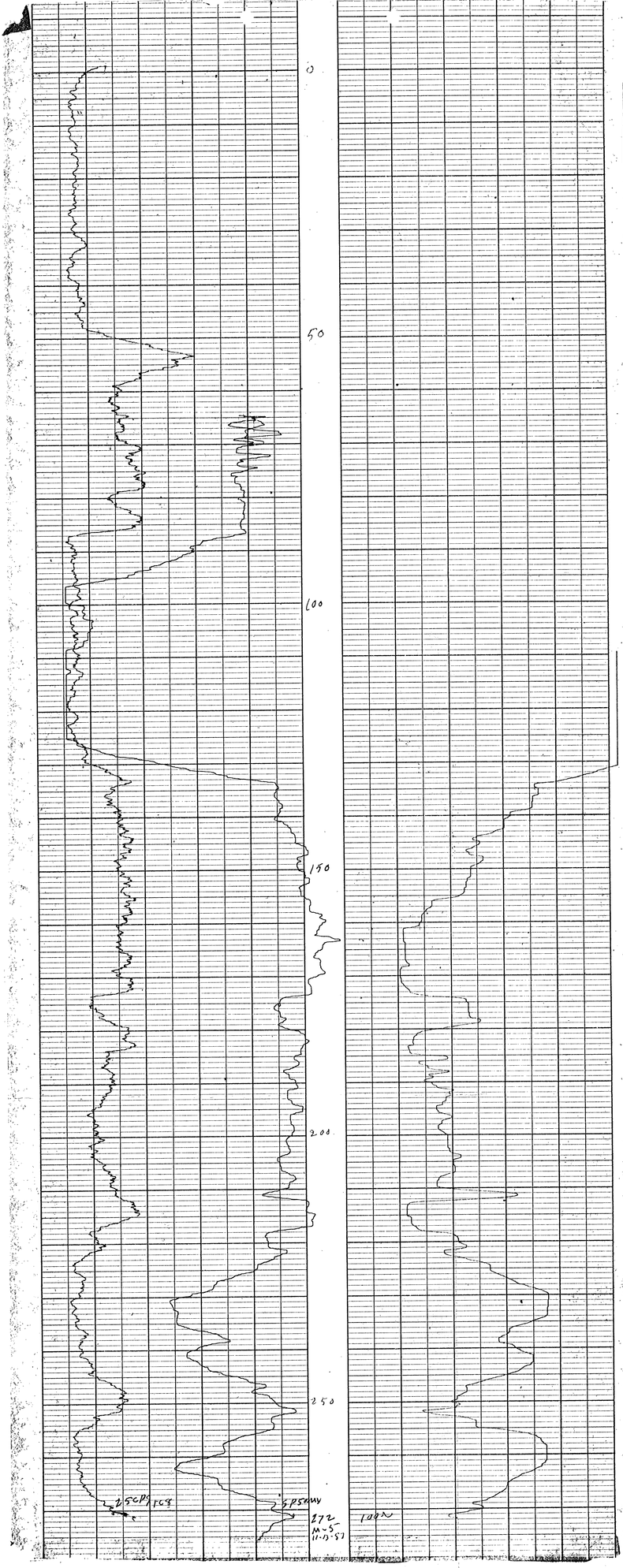
+ 10 0 10 −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 1 3/8 CALIBRATION: 500

DATE: 11-13-57 FIELD HDQTRS: Edgport

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	M-5					
HOLE DIA.	6 1/2 IN					
DRILLED DEPTH	300 FT					
LOGGED DEPTH	272 FT					
SCALE	2.3 CPS					
TIME CONSTANT	8 SEC					
PAPER SPEED	1 FT/IN					
LOGGING SPEED	1' FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100					
SELF POT SCALE	10 MV/IN					
BORE HOLE MEDIUM	Water	WITH	Clear			
MUD	RESISTIVITY		TYPE BASE			
READINGS	VISCOSITY		SALINITY			
CALIPER SCALE	MV/IN	LEG SIZE	PAPER SCALE			
TIME IN	2 PM	CASED TO		I.D.	IN	
TIME OUT	10 15	CORE INT.		DIAM	IN	

LOCATION		TIME	
SEC.	TWP. RGE.	DRIVE:	3
COUNTY: Fayette		FIELD:	1 1/2
STATE: PA		STANDBY:	1 1/2 WAITING FOR WATER TANK
AREA: Five Hill		BREAKDOWN:	
CLIENT: MC 46 5729		TOTAL:	2.5
LOG REC'D BY:		OPERATOR: Miller	
		PARTY NO: 411	drilled with A-7

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ..... FILE .....
ORIG. MEAS. FROM ..... NO. .....

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT .....
SLUSH PIT CT. .....

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K %D	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 5 mv

+ 10 mv −

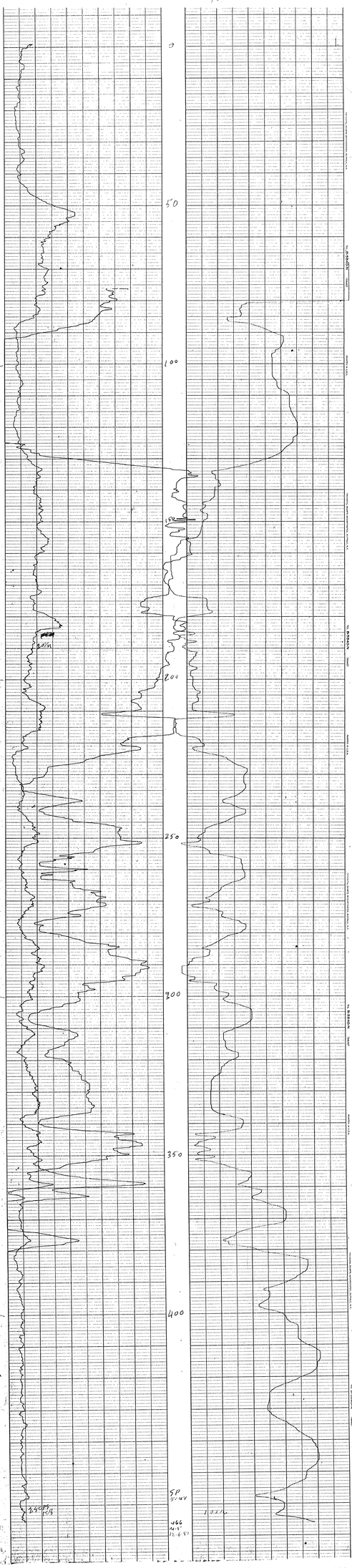
NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M

CHART NO. 5860A MINNEAPOLIS-HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.



LOGGING DATA

PROBE SIZE: 2"
CALIBRATION: 500 FIELD
DATE: 12-6-57
HIDOTES: Oglesbury

	RUN	RUN	RUN	RUN	RUN	RUN
HOLE DIA.	14.5"					
MUD WT.	10.2 LB					
MUD LEVEL	415 FT					
VISCOSITY	46 SEC					
DEPTH	466 FT					
SPEED	33 FPM					
CASING DEPTH	8 FT					
CASING DIA.	1.5" FT/IN					
SUPPORT SPEED	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
PRESSURE	150					
DRILL STEM DIA.	1.0					
DRILL PIPE DEPTH						
MUD RESISTIVITY				WATER	CLEAR CLEAR	
MUD BACKGROUND	VISCOSITY			BALLISTE		
COLLAR LOCATOR	MUD	LEAD		FIELD CHECK		
TIME	1444	CLOCK			C.D.	TV
TIME OUT	1520	CLOCK			DIAM.	TV

LOCATION		TIME	
SEC:	TWP: RGE:	DRIVE:	9
COUNTY: Hall Rain		FIELD:	2
STATE: Tex		STANDBY:	2
AREA: Lubbock Tex		BREAKDOWN:	
CLIENT:		TOTAL:	7.0
Medistor			
LOG REC'D BY:		OPERATOR: Miller	
		PARTY NO: 511	

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM FILE
DRILL MEAS. FROM MSL

DATE:
PERMANENT
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
DERR. COUNT
TUBING RT. CT.

REMARKS:

190 - 200 -

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC	DEPTH PRECEDER	% KO	CORR. CPS.	% U+Th

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 5MV

+ 10 - 10 -

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MVIN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M

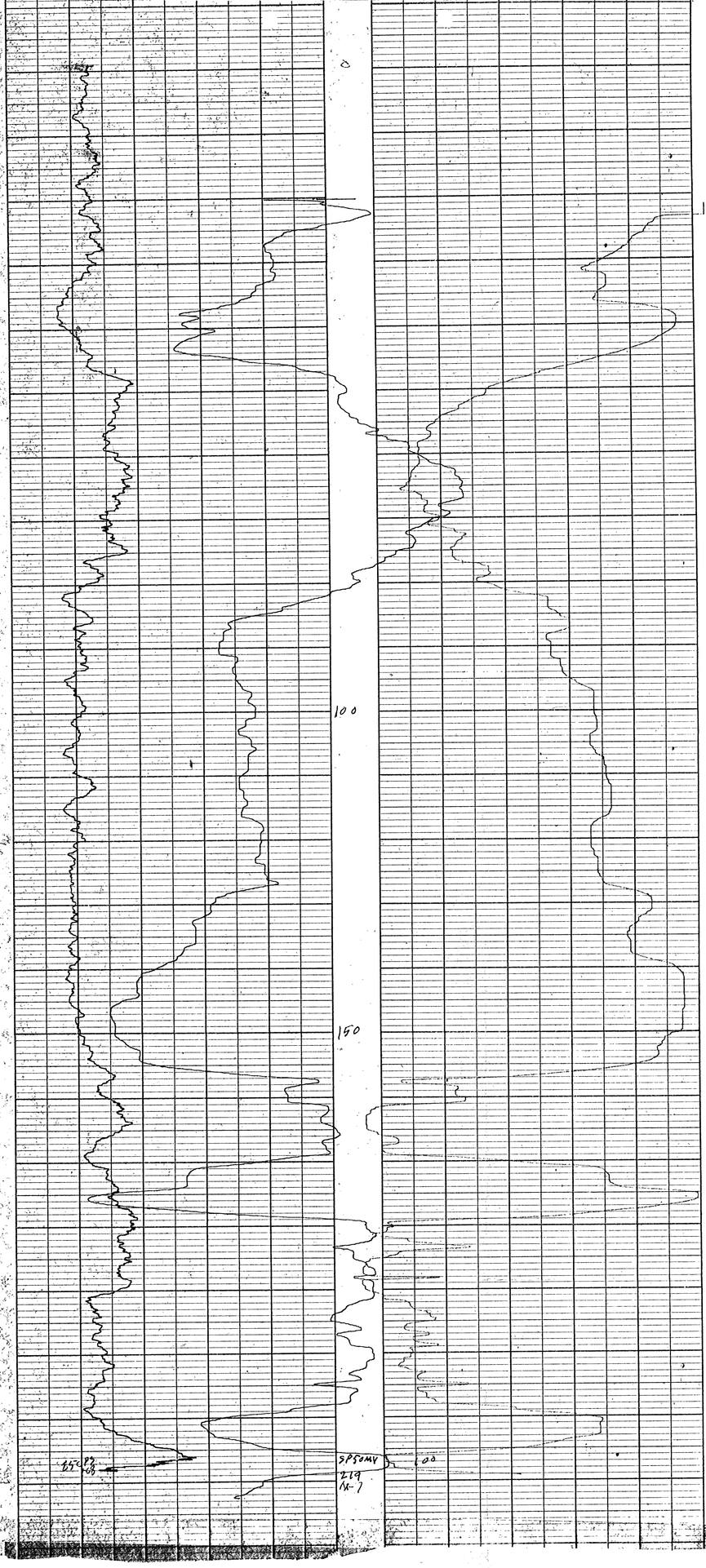


CHART NO. 5860-N MINNEAPOLIS-HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.

CHART NO. 5860-N MINNEAPOLIS-HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.

LOGGING DATA

PROBE SIZE: 1-3/8 CALIBRATION: 300
DATE: 1-11-57 FIELD HQ'TRS: [illegible]

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	M-7						
HOLE DIA.	4½ IN						
DRILLED DEPTH	250 FT						
LOGGED DEPTH	219 FT						
GAMMA SCALE	25 CPS						
TIME CONSTANT	5 SEC						
PAPER SPEED	10 FT/IN						
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100						
SELF POT SCALE	10 MV/IN						
BORE HOLE MEDIUM	Water	WITH					
MUD READINGS	RESISTIVITY			TYPE BASE			
	VISCOSITY			SALINITY			
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE			
TIME IN	1200	CASED TO			I.D.	IN	
TIME OUT	1259	CORE INT.			DIAM	IN	

LOCATION		TIME	
SEC.	TWP. RGE.	DRIVE:	4
COUNTY:	[illegible]	FIELD:	5
STATE:	S.D.	STANDBY:	
AREA:		BREAKDOWN:	
CLIENT:	Mr. Hoisler	TOTAL:	9
LOG REC'D BY:		OPERATOR:	Miller
		PARTY NO:	V11

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM FILE
DRLG. MEAS. FROM NO.

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT
SLUSH PIT CT.

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KD	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 5mv

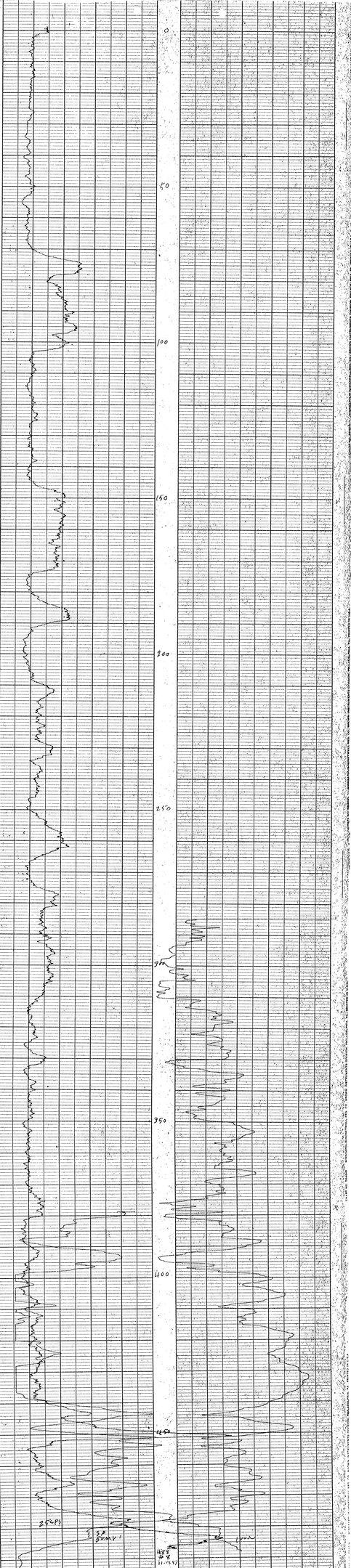
+ 10 MV −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M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1700
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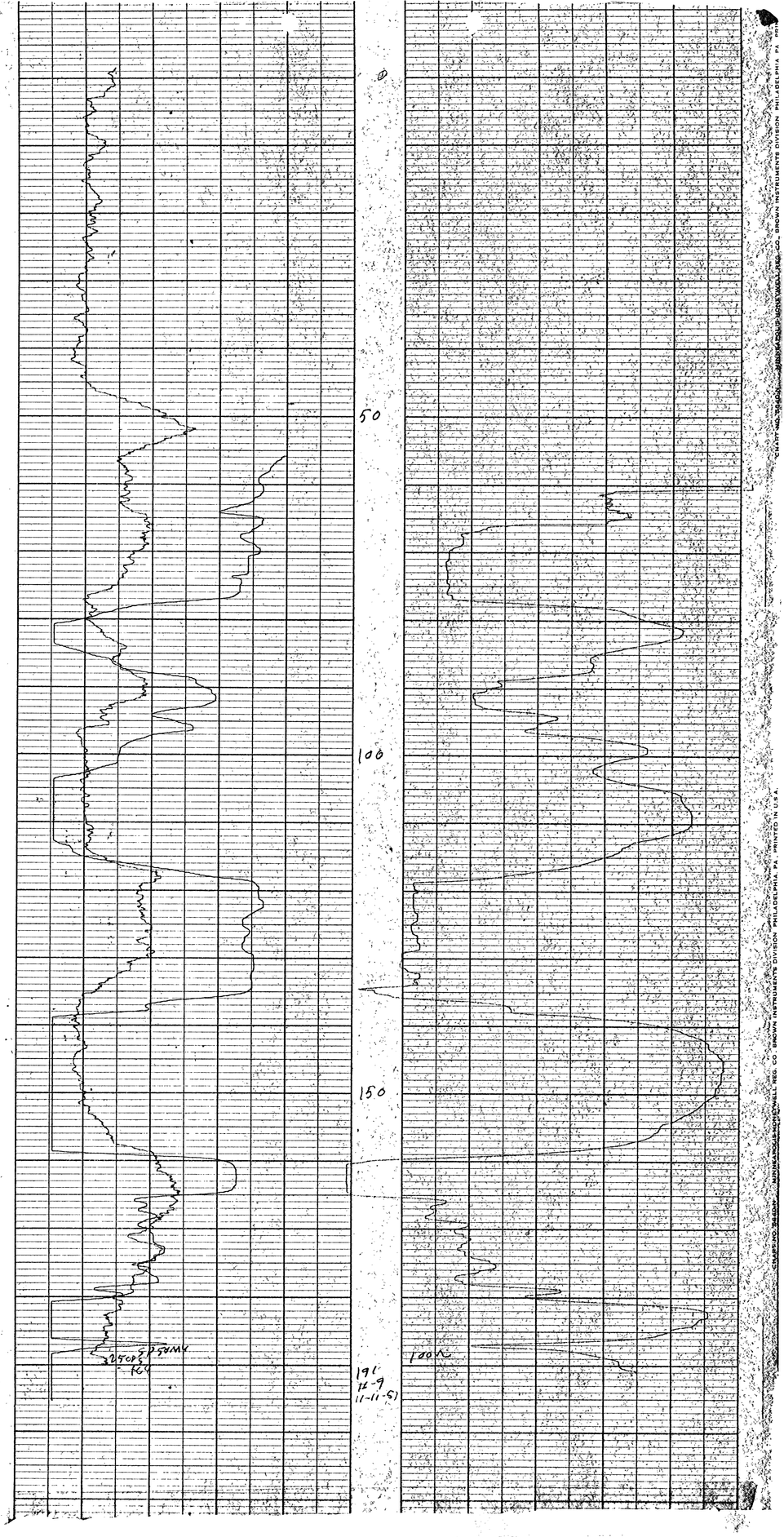
1800
1850
1900
1950
2000



LOGGING DATA

PROBE SIZE: 1 3/8 CALIBRATION: 300

DATE: 11-11-57 FIELD HDQTRS: Edgemont

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	#-9						
HOLE DIA.	4 1/2 IN						
DRILLED DEPTH	200 FT						
LOGGED DEPTH	191 FT						
GAMMA SCALE	25 CPS						
TIME CONSTANT	3 SEC						
PAPER SPEED	10 FT/IN						
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100						
SELF POT SCALE	10 MV/IN						
BORE HOLE MEDIUM	Water	WITH					
MUD READINGS	RESISTIVITY			TYPE BASE			
	VISCOSITY			SALINITY			
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE			
TIME IN	1315	CASED TO				I.D.	IN
TIME OUT	1390	CORE INT.				DIAM	IN

LOCATION			TIME	
SEC.	TWP.	RGE.	DRIVE:	3 hr
COUNTY:	Fall River		FIELD:	3
STATE:	SD		STANDBY:	6
AREA:			BREAKDOWN:	
CLIENT:			TOTAL:	
Mc Glass Inc				
LOG REC'D BY:			OPERATOR:	Miller
			PARTY NO:	611

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ---------- FILE ----------
DRLG. MEAS. FROM ---------- NO. ----------

DATE:	
FOOTAGE	
TOTAL DEPTH (DR)	
HOLE DIAM.	
LOGGING SPEED	
TIME CONSTANT	
MUD TYPE	
CASED TO	

LOCATION OF HOLE

ELEVATION
KB
GL

BKGRD. COUNT ------
SLUSH PIT CT. ------

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KD	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 5 MV/IN

+ 10 MV −

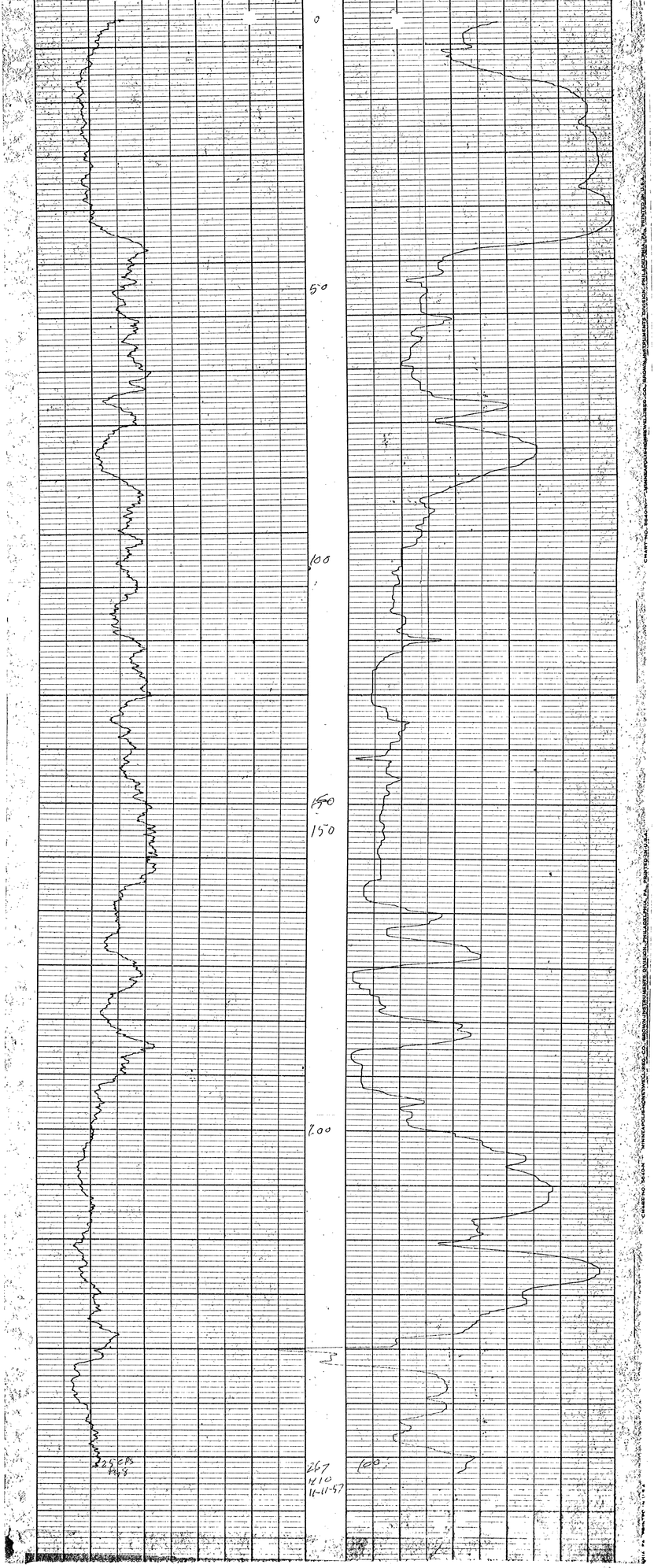
NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M

CHART NO. 5-2-2-2 MANUFACTURED BY CLARKE-CHAPMAN-JOHNSON-VALLEY, INC. CO., BROWN INSTRUMENTS DIVISION PHILADELPHIA, PA. PRINTED IN U.S.A.



LOGGING DATA

PROBE SIZE: 1 3/8 CALIBRATION: 300

DATE: 11-11-57 FIELD HDQTRS: Edgemont

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	#10					
HOLE SIZE	4 1/2 IN					
DRILLED DEPTH	300 FT					
LOGGED DEPTH	267 FT					
GAMMA SCALE	25 CPS					
TIME CONSTANT	3 SEC					
PAPER SPEED	10 FT/IN					
LOGGING SPEED	1' FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100					
SELF POT SCALE	MV/IN	Clear				
BORE HOLE MEDIUM	Water	WATER				
MUD READINGS	RESISTIVITY			TYPE BASE		
	VISCOSITY			SALINITY		
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE		
TIME IN	1600	CASED TO				
TIME OUT	1630	CORE INT.		I.D. DIAM	IN	

LOCATION			TIME	
SEC.	TWP.	RGE.	DRIVE:	5
COUNTY: Fall River			FIELD:	3
STATE: SD			STANDBY:	3
AREA:			BREAKDOWN:	
CLIENT: McAlester			TOTAL:	1.5
LOG REC'D BY:			OPERATOR: Miller	
			PARTY NO: 011	

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ---------- FILE
DRLG. MEAS. FROM ---------- NO.

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT
SLUSH PIT CT.

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KO	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL MV/IN

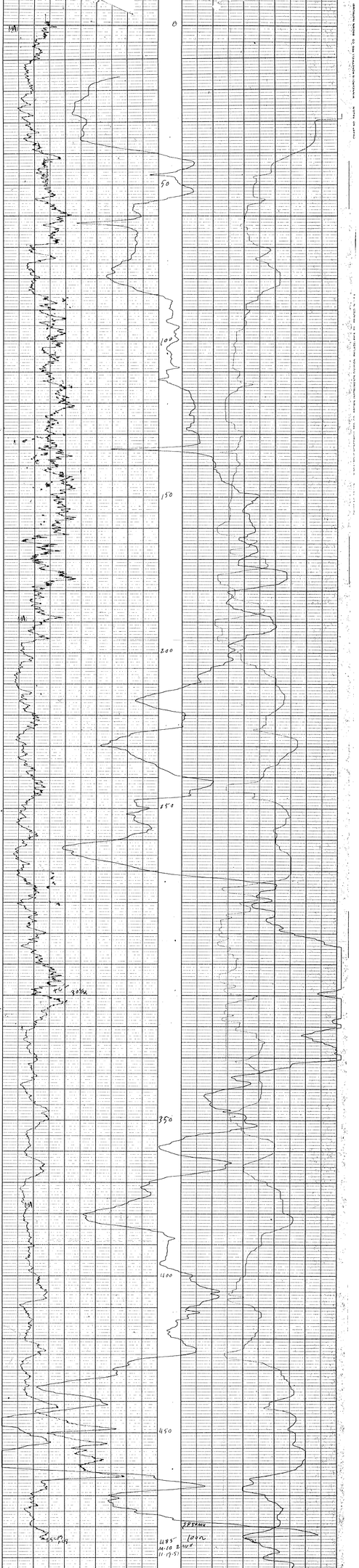
+ —

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 5"
CALIBRATION: 300
FIELD
DATE: 11-19-57 HOURS: 8 afternoon

	INTERV.	INTERV.	INTERV.	INTERV.
	FROM	TO	FROM	TO
HOLE DIR.	M			
DIP	45°-50°			
TOTAL DEPTH	485'			
CASING DEPTH	15'7"			
CASING SIZE	8"			
TUBE CLEARANCE	7	SEC.		
ZERO SPEED	1525			
SPEED	1525			
SPEED CHECK	1525	CPM		
CABLE SPEED	15'6"			
MUD WEIGHT		MUD VISC.		
MUD RESIST.		MUD PH		
BORE HOLE DEVIATION	10	DEGS.		
MUD RESISTIVITY		MUD TEMP.		TIME SINCE CIRCULATION
CALIPER OPEN TIME	10'6"	LES WATER SUPP.	CASING SHOE	
CASING TIME	10'6"	CASING SIZE		I.D.	ft
TUBE TIME	10'6"	TUBE SIZE		I.D.	ft

LOCATION
SEC. TWP. RGE.
COUNTY: Nueces
STATE: Tex
AREA: East Tilt
CLIENT:
Sec 42 Sutton
LOG REC'D BY:

TIME
DRIVE: 1.9
FIELD:
STANDBY:
BREAKDOWN:
TOTAL: 6.6

OPERATOR: A. Lee
PARTY NO. V-1

Town Insurance

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BOREHOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM
DRILL MEAS. FROM
FILE NO.
DATE:
PROPAGS
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE
ELEVATION
KB
DF
GL
BEGRD. COUNT
FLUSH PO CK

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH CHECKPOINT	% U.O.	COND. CPM.	% U.O.

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL MV/IN

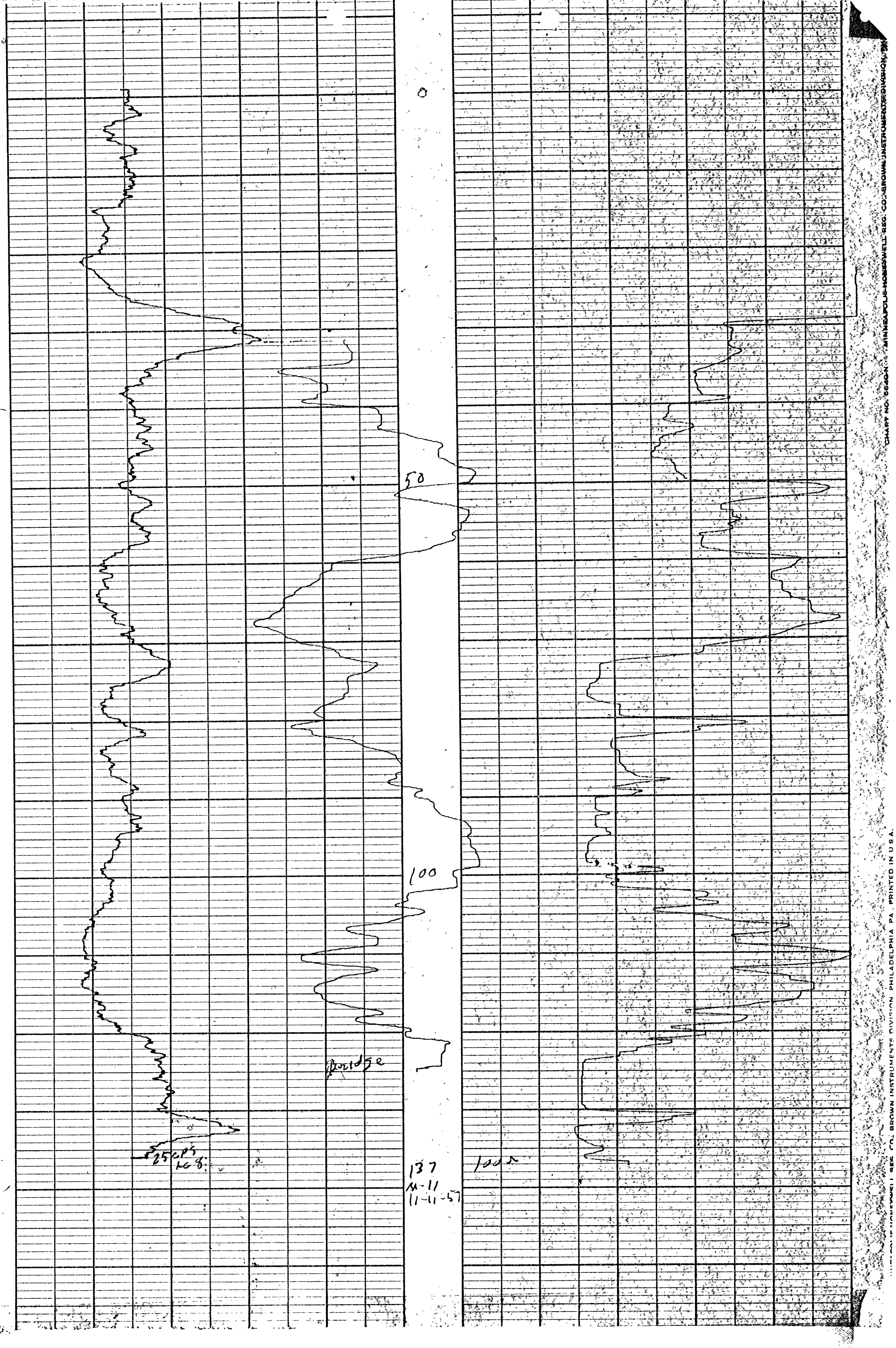
+ ◀ 10 → ▶ −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9	
4	6	8	10	12	14	
4	8	12	16	20	24	

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 1 3/5 CALIBRATION: 300

DATE: 11-11-57 FIELD HDQTRS: Edgemont

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	1-11						
HOLE DIA.	4 1/2 IN						
DRILLED DEPTH	140 FT						
LOGGED DEPTH	137 FT						
GAMMA SCALE	25 CPS						
TIME CONSTANT	3 SEC						
PAPER SPEED	10 FT/IN						
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100						
SELF POT SCALE	10 MV/IN						
BORE HOLE MEDIUM	Water	WITH	Clear				
MUD	RESISTIVITY			TYPE BASE			
READINGS	VISCOSITY			SALINITY			
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE			
TIME IN	1430	CASED TO			I.D.	IN	
TIME OUT	1750	CORE INT.			DIAM	IN	

LOCATION			TIME	
SEC.	TWP.	RGE.	DRIVE:	2
COUNTY: Fall River			FIELD:	4
STATE: SD			STANDBY:	
AREA:			BREAKDOWN:	
CLIENT:			TOTAL:	6
McALLISTER				
LOG REC'D BY:			OPERATOR: Miller	
			PARTY NO: 011	

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ---------- FILE ----------
DRLG. MEAS. FROM ---------- NO. ----------

DATE:	
FOOTAGE	
TOTAL DEPTH (DR)	
HOLE DIAM.	
LOGGING SPEED	
TIME CONSTANT	
MUD TYPE	
CASED TO	

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT ----------
SLUSH PIT CT. ----------

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KD	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 5 MV/IN

+ 10 MV −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M

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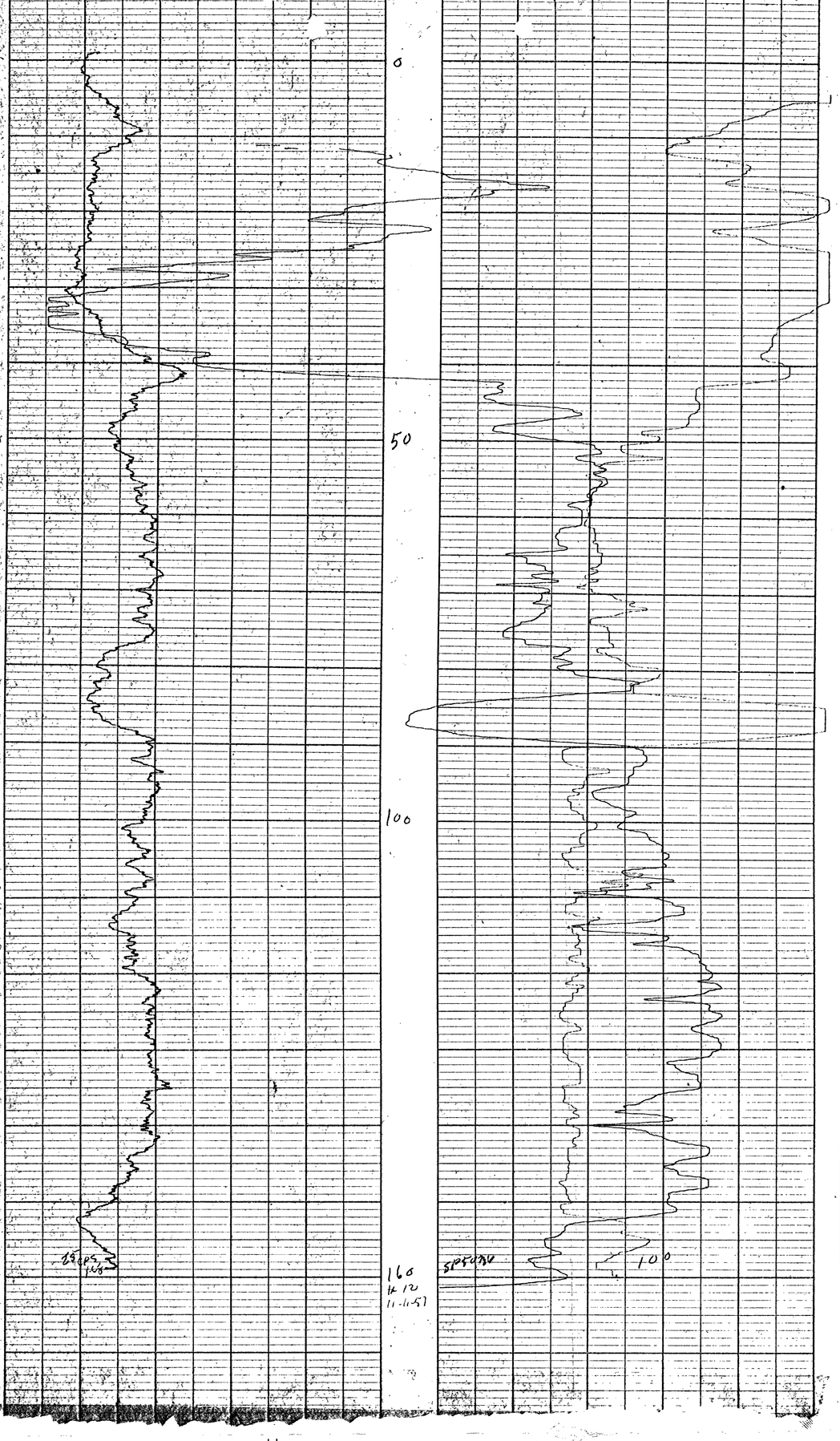


LOGGING DATA

PROBE SIZE: 1 3/8 CALIBRATION:

DATE: 11-11-57 FIELD HQRTRS:

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	H-12						
HOLE DIA.	11 1/2 IN						
DRILLED DEPTH	170 FT						
LOGGED DEPTH	160 FT						
GAMMA SCALE	25 CPS						
TIME CONSTANT	3 SEC						
PAPER SPEED	10 FT/IN						
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100						
SELF POT SCALE	10 MV/IN						
BORE HOLE MEDIUM	Water	WITH	Clear				
MUD READINGS	RESISTIVITY			TYPE BASE			
	VISCOSITY			SALINITY			
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE			
TIME IN	1400	CASED TO			I.D.	IN	
TIME OUT	1420	CORE INT.			DIAM	IN	

LOCATION			TIME	
SEC.	TWP.	RGE.	DRIVE:	2
COUNTY: Fall River			FIELD:	3
STATE: SD			STANDBY:	4
AREA:			BREAKDOWN:	
CLIENT:			TOTAL:	9
McAllister				
LOG REC'D BY:			OPERATOR: Mallon	
			PARTY NO: 401	

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM _____ FILE _____
DRLG. MEAS. FROM _____ NO. _____

DATE:	
FOOTAGE	
TOTAL DEPTH (DR)	
HOLE DIAM.	
LOGGING SPEED	
TIME CONSTANT	
MUD TYPE	
CASED TO	

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT _____
SLUSH PIT CT. _____

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KD	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 50 MV

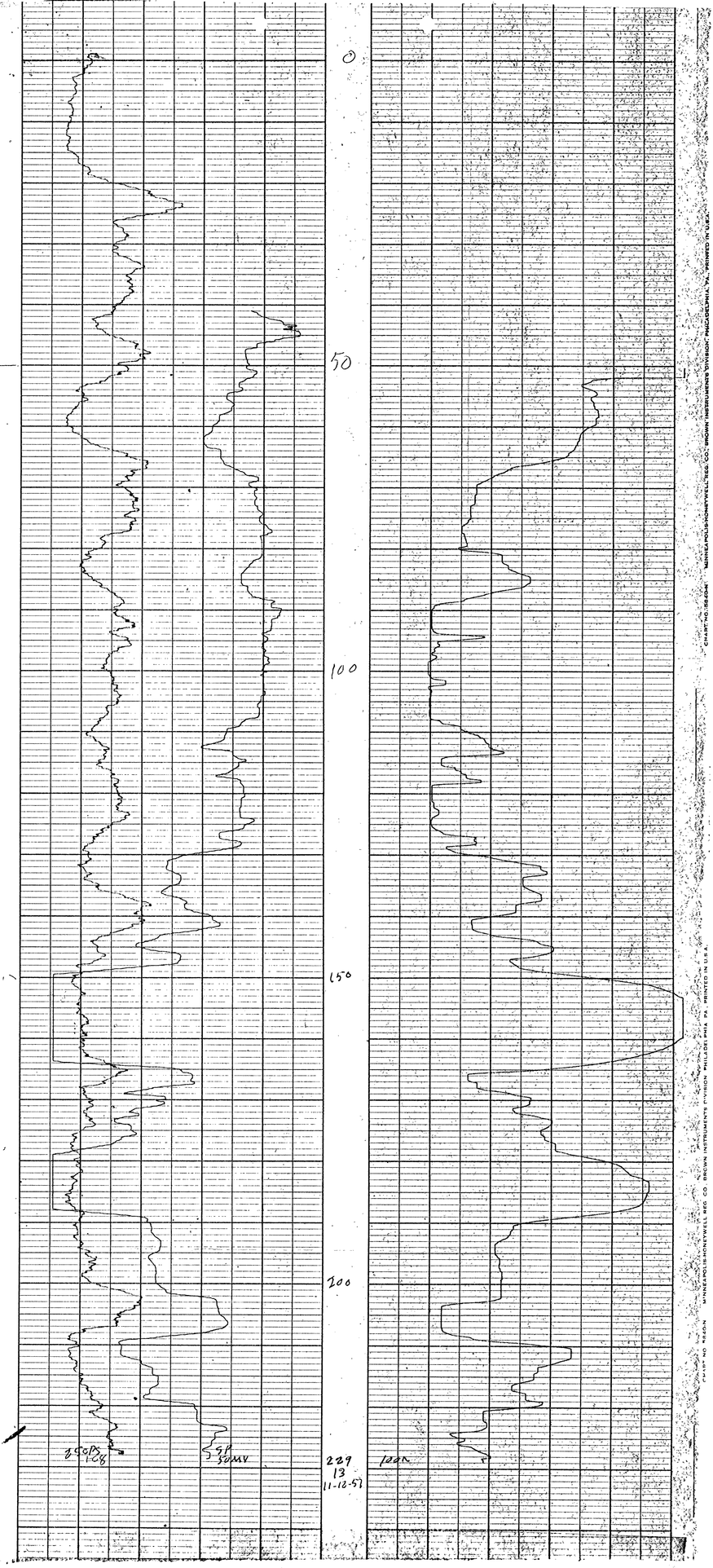
+ 10 MV −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 1.25 CALIBRATION: 30

DATE: 11-12-57 FIELD HOOTRS: Edgewood

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	13					
HOLE DIA.	6 1/4 IN					
DRILLED DEPTH	230 FT.					
LOGGED DEPTH	229 FT					
GAMMA SCALE	200 CPS					
TIME CONSTANT	5 SEC					
PAPER SPEED	10 FT/IN					
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100					
SELF POT SCALE	10 MV/IN.					
BORE HOLE MEDIUM	Water	WITH				
MUD READINGS	RESISTIVITY			TYPE BASE		
	VISCOSITY			SALINITY		
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE		
TIME IN	1515	CASED TO			I.D.	IN
TIME OUT	1910	CORE INT.			DIAM	IN

LOCATION			TIME	
SEC.	TWP.	RGE.	DRIVE:	3
COUNTY: Fall River			FIELD:	4
STATE: SD			STANDBY:	1.5
AREA: Flint Hill			BREAKDOWN:	
CLIENT: Mr. Carter			TOTAL:	2.2
LOG REC'D BY:			OPERATOR: Miller	
			PARTY NO: 611	

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U. S. A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ..... FILE .....
DRLG. MEAS. FROM ..... NO. .....

DATE:	
FOOTAGE	
TOTAL DEPTH (DR)	
HOLE DIAM.	
LOGGING SPEED	
TIME CONSTANT	
MUD TYPE	
CASED TO	

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT .....
SLUSH PIT CT. .....

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K SD	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 50 MV

+ 10 MV −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M

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MINNEAPOLIS-HONEYWELL REG. CO. BROWN INSTRUMENTS DIVISION PHILADELPHIA, PA. PRINTED IN U.S.A.

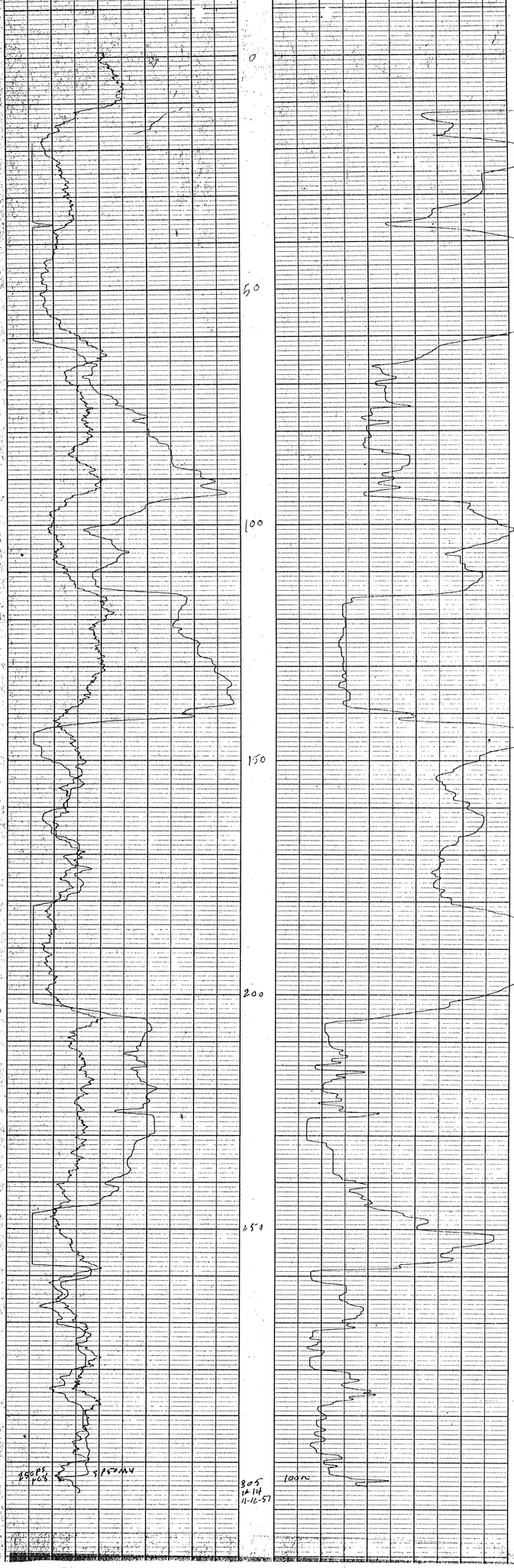


CHART NO. 5860H MINNEAPOLIS-HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.

LOGGING DATA

PROBE SIZE: 1 3/8 CALIBRATION: 300

DATE: 11-12-57 FIELD HOURS: 2 1/2 hrs

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	14						
HOLE DIA.	4 1/2 IN						
DRILLED DEPTH	306 FT						
LOGGED DEPTH	305 FT						
SCALE	23 CPS						
TIME CONSTANT	5 SEC						
LOGGING SPEED	19 FT/M						
RESISTANCE SCALE	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
SELF POT SCALE	100						
BORE HOLE MEDIUM	10 MV/IN						
MUD READINGS	water WITH						
	RESISTIVITY			TYPE BASE			
	VISCOSITY			SALINITY			
CALIPER SCALE	MV/IN	LOG SIZE		PAPER SCALE			
TIME	1317	CASED TO					
TIME OFF	1400	CORE DIA.		I.D. DIAM	IN		

LOCATION		TIME	
SEC.	TWP. RGE.	DRIVE:	3
COUNTY:	Lake River	FIELD:	2
STATE:	SD	STANDBY:	1 1/2
AREA:	Flint Hill	BREAKDOWN:	
CLIENT:		TOTAL:	3.4
Joe Hazelton		OPERATOR:	Miller
LOG REC'D BY:		PARTY NO:	111

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ..... FILE .....
DRLG. MEAS. FROM ..... NO. .....

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL
EKGRD. COUNT .....
SLUSH PIT CT. .....

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	% KD	CORR. CFR.	% U3O8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 5 2/3

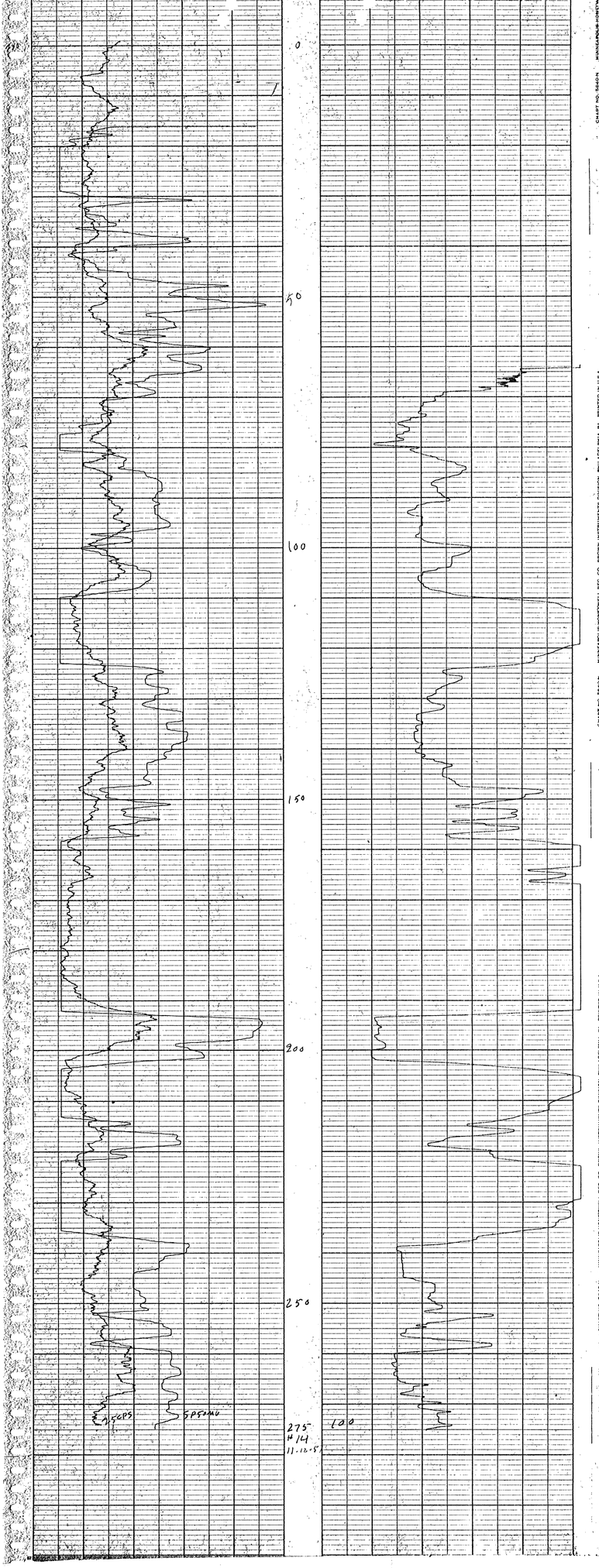
+ ◀ 10 " ▶ −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 1 7/8 CALIBRATION: 3.00

DATE: 11-12-57 FIELD HDQTRS: Edgemont

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	17						
HOLE DIA.	4 1/2 IN						
DRILLED DEPTH	250 FT						
LOGGED DEPTH	275 FT						
GAMMA SCALE	25 CPS						
TIME CONSTANT	3 SEC						
PAPER SPEED	10 FT/IN						
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100						
SELF POT SCALE	10 MV/IN						
BORE HOLE MEDIUM	water	WTR	Clear				
MUD READINGS	RESISTIVITY			TYPE BASE			
	VISCOSITY			SALINITY			
CALIPER SCALE	MV/IN	LOG SIZE		PAPER SCALE			
TIME IN	14:50	CASED TO				I.D.	IN
TIME OUT	1:15	CORE INT.				DIAM	IN

LOCATION		TIME	
SEC.	TWP. RGE.	DRIVE:	7
COUNTY:	Fall River	FIELD:	3
STATE:	SD	STANDBY:	7
AREA:	Hot Springs	BREAKDOWN:	
CLIENT:	Mesabi Sea	TOTAL:	1.4
LOG REC'D BY:		OPERATOR:	Miller
		PARTY NO:	611

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ..... FILE .....
DRLG. MEAS. FROM ..... NO. .....

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT
SLUSH PIT CT.

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KD	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL

+ ◀ ▶ −

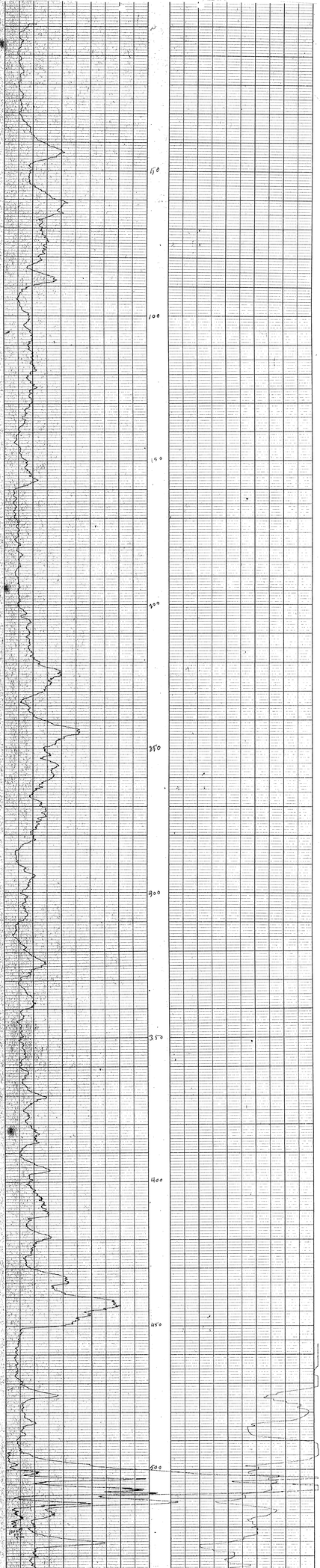
NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M

CHART NO. 5640N MINNEAPOLIS-HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.



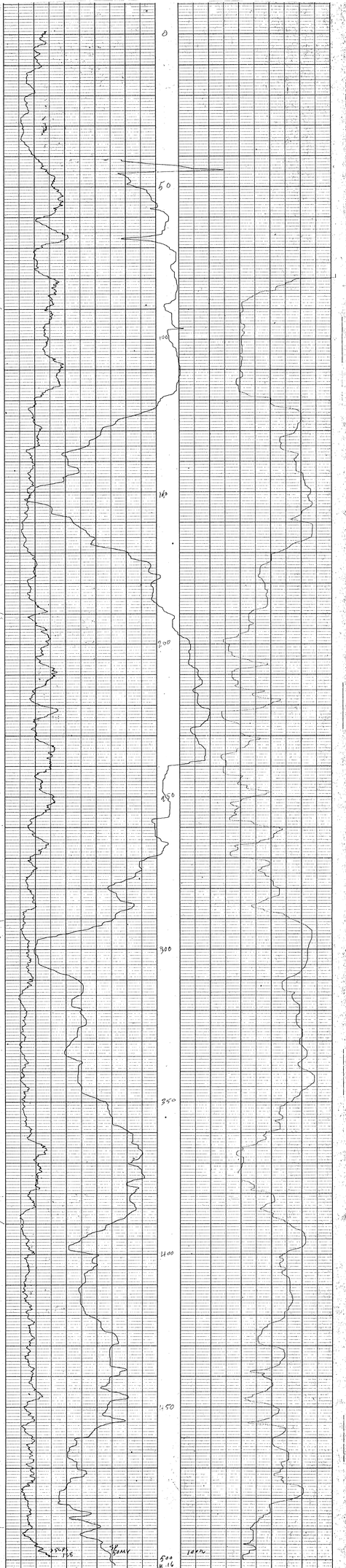
LOGGING DATA

PROBE SIZE: 2"
CALIBRATION: 500
DATE: 11-2-57
FIELD HOURS: 8 hours

	TIME	DATE	HOURS	TIME	DATE	HOURS
HOLE FILLED	M-W 15					
BEGIN LOGGING	8:00					
BEGIN CALIBRATION	8:45					
CALIBRATION COMPLETE	8:50					
BEGIN LOGGING	9:00					
LOGGING COMPLETE	10:00					
BEGIN CALIBRATION	10:05					
CALIBRATION COMPLETE	10:10					
BEGIN PULLING	10:10					
PULLING COMPLETE	10:40					
BEGIN REWIND	10:40					
REWIND COMPLETE	11:50					
TOTAL HOURS	3					

	FROM	TO	FROM	TO	FROM	TO
BEGIN						
END						

RECEIVER			
TAPE			
TRUCK			
DAY	11/5/57		
NIGHT	11/5/57		



LOGGING DATA

PAGE SIZE: 1.25 in. CALIBRATION: 500

DATE: 11-14-57 FIELD HOURS: 8 Original

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5	RUN 6
HOLE DEPTH	M-16					
HOLE DIAM.	6 in.					
DRILLER DEPTH	500 ft					
CASING DEPTH	500 ft					
MUD LEVEL	3 ft					
CASING DIAM.	8 in.					
SPEED	1 FT/MIN	FT/MIN	FT/MIN	FT/MIN	FT/MIN	FT/MIN
SENSITIVITY	10					
RELAY SETTING	1 MV/IN					
MUD WEIGHT	10.0 lb/gal	MUD				
MUD RESISTIVITY		RESISTIVITY			FUEL LEVEL	
		MINERALIZATION			RAILROAD	
COLLAR LOCATOR	1					
TIME CONSTANT	1 SECS					
TIME CONSTANT	1 SECS					
LOCATION					TIME	
SEC.	TWP.	RGE.	DRIVE:			
COUNTY: Fayette			FIELD:			
STATE: Tex			STANDBY:			
AREA: Field Office			BREAKDOWN:			
CLIENT:			TOTAL:			
OPERATOR: Miller						
PARTY NO. 5-1						

Century

GEOPHYSICAL CORP.
TULSA, OKLA. U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.
LOG MEAS. FROM FILE
DRIL. MEAS. FROM INC.
DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO
REMARKS:

LOCATION OF HOLE

ELEVATION
G.L.
BEARS COUNT
ELEVA AT CR

INTERPRETATION

RADIO METRIC "K" VALUES COMPUTE: [illegible]
BENEFIT OF LOCAL ORE CONTENT BREAKDOWN [illegible]

MINERALIZATION

COVER PER SEC.	DEPTH ENCOUNTER	% ORE	CONC. GPM	% SHALE

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

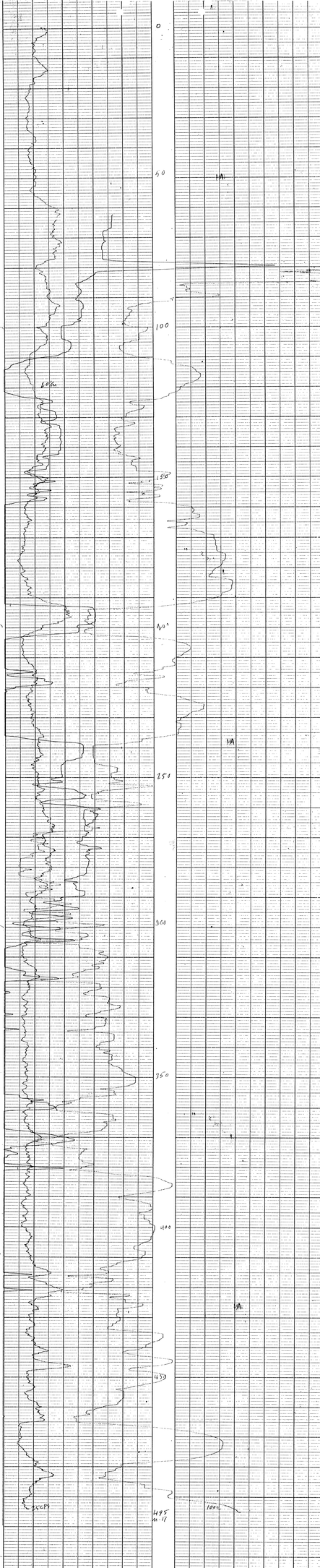
SELF POTENTIAL 50 MV

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 2 CALIBRATION: 4.1

DATE: 11-24-57 FIELD HOUSE: Odgrimes

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HIGH RES.	MA					
LOW RES.	5.1/2 in					
DRILLER	5.0 in					
LOGGER	5.0 in					
TOTAL DEPTH	495 ft					
GAMMA	2.5 cps					
CURRENT	3 ma					
CABLE SPEED	15 fpm					
SPEED	15 fpm	15fpm	15fpm	15fpm	15fpm	15fpm
SENSITIVITY	100					
TIME CONST.	3 sec					
MUD WT.	9.0 lb/gal					
MUD VISCOSITY	40 sec					
MUD RESISTIVITY			WATER LOSS			
			SUBSURFACE		BOTTOM HOLE	
CALIBRATOR TOP	16 in		CASING SIZE		TUBING SIZE	
CALIBRATOR BOTTOM	16 in		CASING TOP		TUBING TOP	
CASING BOTTOM	1710		CASING BOTTOM			

LOCATION		TIME	
SEC. TWP. RGE.		DRIVE:	8
COUNTY: Yellowstone		FIELD:	2
STATE: Mont.		STANDBY:	2
AREA: Billings Hill		BREAKDOWN:	
CLIENT: Anaconda		TOTAL:	3.2
OPERATOR: Miller			
PARTY NO: 6-1			

SELF POTENTIAL mv

+ 10 −

NATURAL GAMMA RAY
COUNTS PER SECOND

Century
GEOPHYSICAL CORP.
TULSA, OKLA. U.S.A.
EXPLORATION LOG

COMPANY:
SCREHOLE NO.:
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM
DRILL MEAS. FROM
DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

FILE NO.
LOCATION OF HOLE
ELEVATION
KB
DF
GR
REGRD. COUNT
CLOSED PT. CT.

REMARKS:

INTERPRETATION

RADIO METRIC VALUES UNCORRECTED WITHOUT BENEFIT OF LOCAL OIL EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH FROM	THICKNESS	%	GRADE GPM	GRADE %U3O8

INTERPRETATION BY:

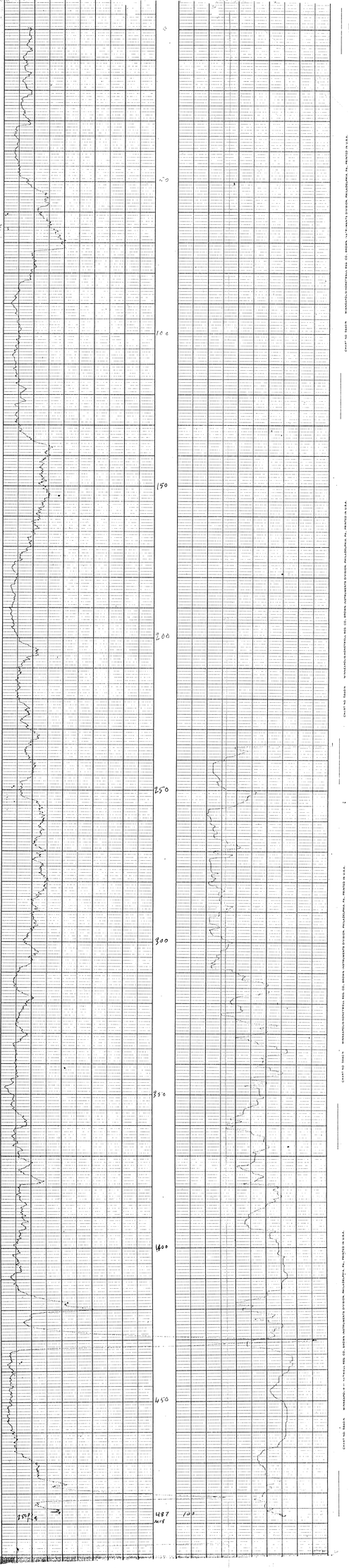
GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

CALIPER MV/IN

4	5	6	7	8	9	
4	6	8	10	12	14	
4	8	12	16	20	24	

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 5"
CALIBRATION: 5.6
FIELD
DATE: 11-25-57
HDQTRS: Original

HOLE SIZE							
MUD WT.							
MUD LEVEL	0-70 FT						
DRILLER	0-50 FT						
LOGGER	487 FT						
CASING SIZE	8 5/8	CSG					
CASING WT.	23	LBS					
RATED CAPACITY	1"	FEET					
ACTUAL CAPACITY	1"	FEET	FEET	FEET	FEET	FEET	FEET
ABSOLUTE CAPACITY							
MELT WT.							
MELT LEVEL							
DENSITY	10.0	LBS/GAL					
MEDIUM			MUD			TUBE SIZE	
MUD RESISTIVITY		RESISTIVITY				RESISTIVITY	
		AMBIENT					
CALIPER SETTING		MUD	LEGS OPEN		CALIPER HOLES		
TIME	13:45		CASING SHOE			T.D.	
DATE	11-25		DATE			DATE	

LOCATION
SEC. TWP. RGE.
COUNTY: Jefferson
STATE: Ill
AREA: Final Well
CLIENT:
(LOG RECORD BY:)

TIME
DRIVE: 4
STANDBY: 4
BREAKDOWN:
TOTAL: 12

OPERATOR: Miller

PARTY NO: 41

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U. S. A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ..... FILE
FIELD MEAS. FROM ..... NO.

DATE:
FOOTAGE
TOTAL DEPTH (DB)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
DF
GR
RECORD COUNT
(ULSON PER CC)

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC	DEPTH THICKNESS	K %	CORR. CPS	% EQUIV.

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL

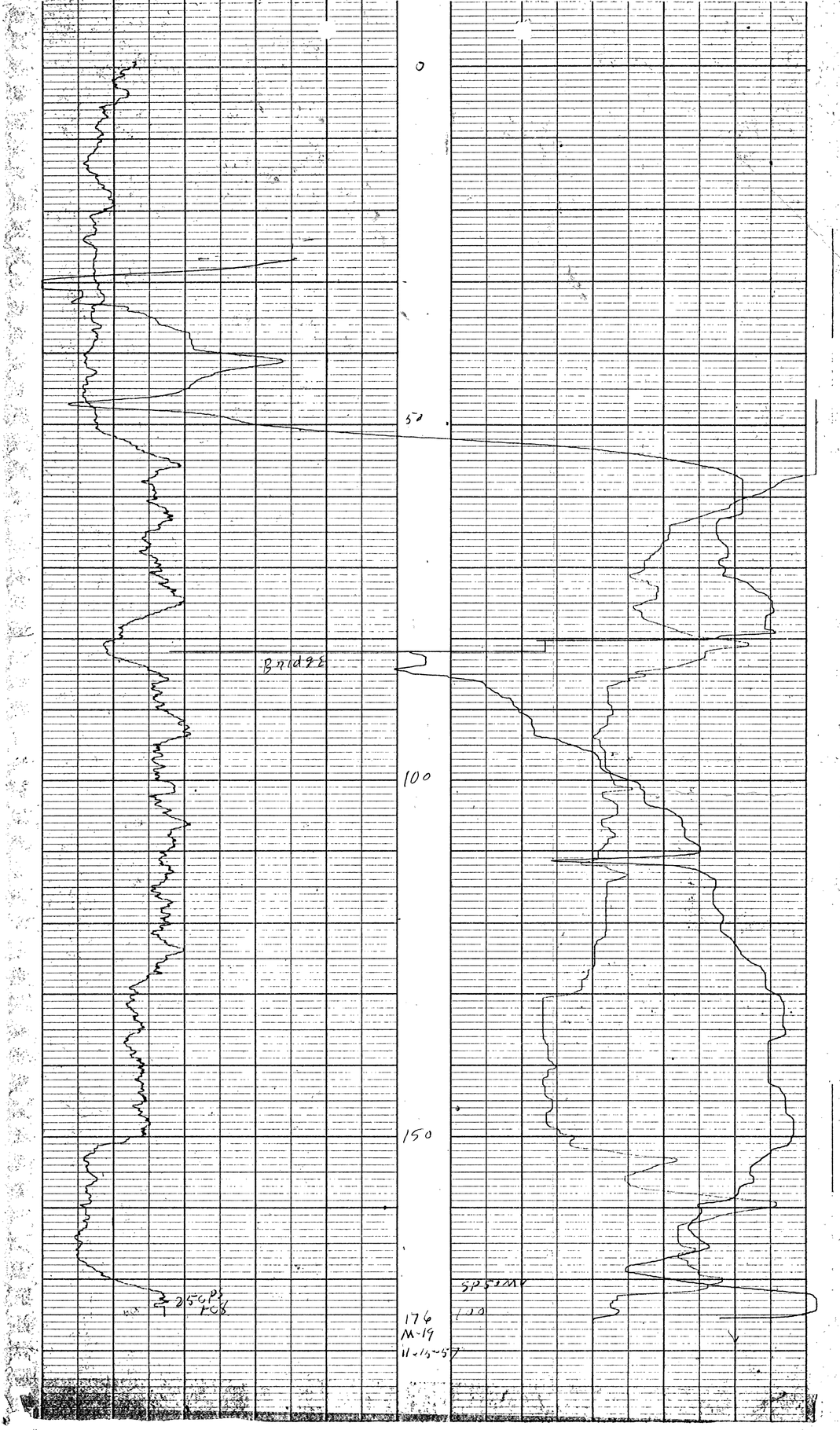
+ ◑ — ◑ −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9	
4	6	8	10	12	14	
4	8	12	16	20	24	

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 2" CALIBRATION: 300

DATE: 11-13-57 FIELD HDQTRS: Edgemont

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	M 19						
HOLE DIA.	4 1/2 IN						
DRILLED DEPTH	180 FT						
LOGGED DEPTH	176 FT						
GAMMA SCALE	25 CPS						
TIME CONSTANT	8 SEC						
PAPER SPEED	10 FT/IN						
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100						
SELF POT SCALE	10 MV/IN						
BORE HOLE MEDIUM	Water	WITH					
MUD READINGS	RESISTIVITY			TYPE BASE			
	VISCOSITY			SALINITY			
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE			
TIME IN	1145	CASED TO				I.D.	IN
TIME OUT	1410	CORE INT.				DIAM	IN

LOCATION

SEC. TWP. RGE.

COUNTY: Fall River

STATE: SD

AREA: Flint Hill

CLIENT: Mcalester

LOG REC'D BY:

TIME

DRIVE: 1.0

FIELD: 4

STANDBY: 3 3/4

BREAKDOWN: 5

TOTAL: 5.2

OPERATOR: McClure

PARTY NO: 011

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U. S. A.

EXPLORATION LOG

COMPANY:

BORE HOLE NO.

FIELD

COUNTY

LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ---------- FILE ----------

DRLG. MEAS. FROM ---------- NO. ----------

DATE:	
FOOTAGE	
TOTAL DEPTH (DR)	
HOLE DIAM.	
LOGGING SPEED	
TIME CONSTANT	
MUD TYPE	
CASED TO	

LOCATION OF HOLE

ELEVATION
KB
GL

BKGRD. COUNT ----------
SLUSH PIT CT. ----------

REMARKS:

SALT

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KD	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 5MV/IN

+ 10 MV −

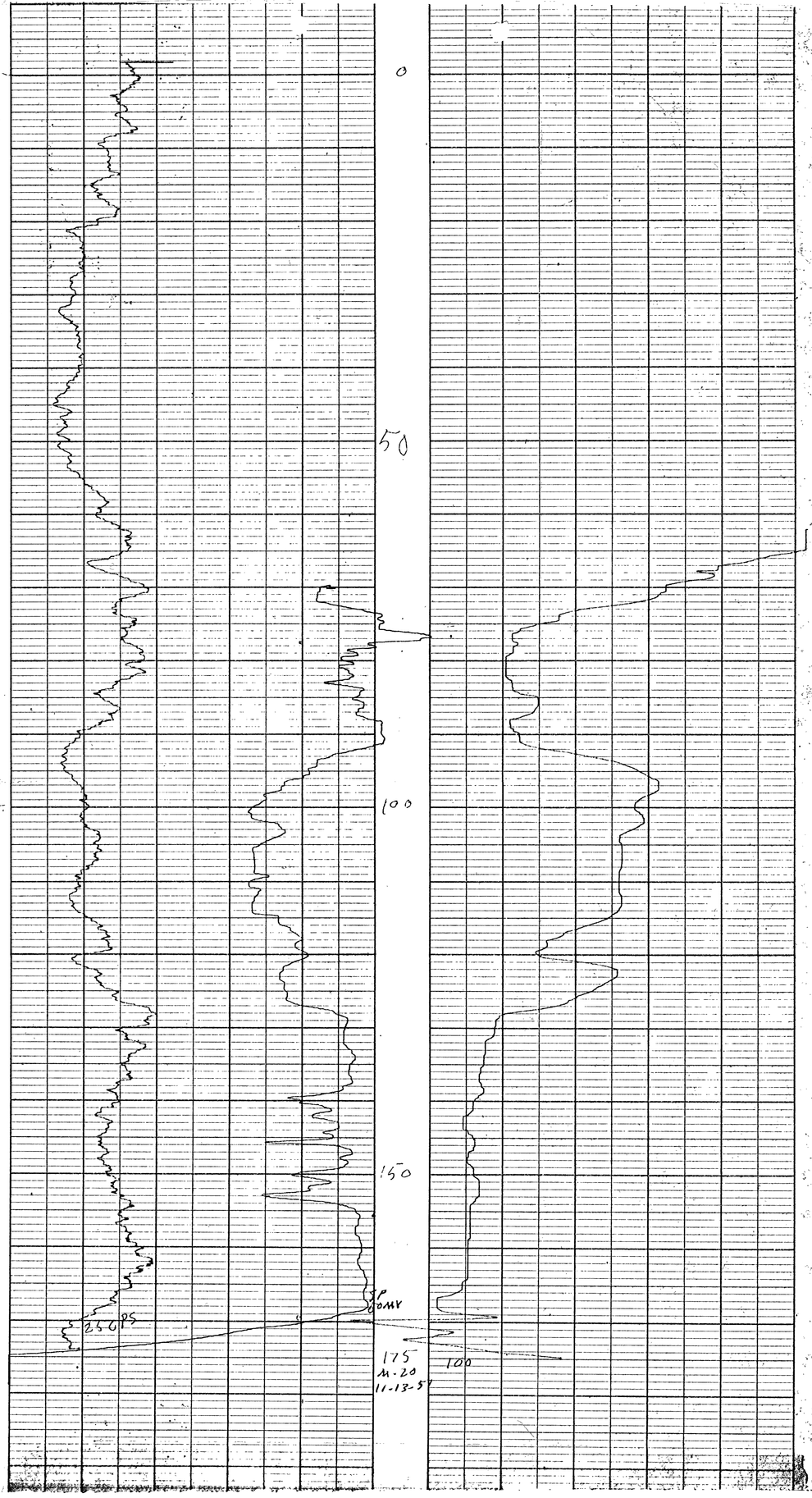
NATURAL GAMMA RAY
COUNTS PER SECOND

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

CALIPER MV/IN

RESISTANCE
OHMS — M

CHART NO. 5840-N MINNEAPOLIS-HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.



CH-SPT NO. 38420N MINNEAPOLIS-HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.

HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.

LOGGING DATA

PROBE SIZE: 1 3/4 CALIBRATION: 2 0

DATE: 11-12-57 FIELD HDQTRS: Polgamont

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	M-20					
HOLE DIA.	4 1/2 IN					
DRILLED DEPTH	190 FT					
LOGGED DEPTH	175 FT					
GAMMA SCALE	23 CPS					
TIME CONSTANT	5 SEC					
PAPER SPEED	10 FT/IN					
LOGGING SPEED	1 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100					
SELF POT SCALE	10 MV/IN					
BORE HOLE MEDIUM	water WITH clear					
MUD READINGS	RESISTIVITY			TYPE BASE		
	VISCOSITY			SALINITY		
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE		
TIME IN	1645	CASED TO			I.D.	IN
TIME OUT	1100	CORE INT.			DIAM	IN

LOCATION			TIME	
SEC.	TWP.	RGE.	DRIVE:	3
COUNTY: Falls River			FIELD:	2
STATE: SD			STANDBY:	5
AREA: Flint Hill			BREAKDOWN:	
CLIENT: Westchester			TOTAL:	3
LOG REC'D BY:			OPERATOR: Mellon	
			PARTY NO: 011	

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ---------- FILE
DRLG. MEAS. FROM ---------- NO.

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT
SLUSH PIT CT.

REMARKS:

for water

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KD	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 5MV/IN

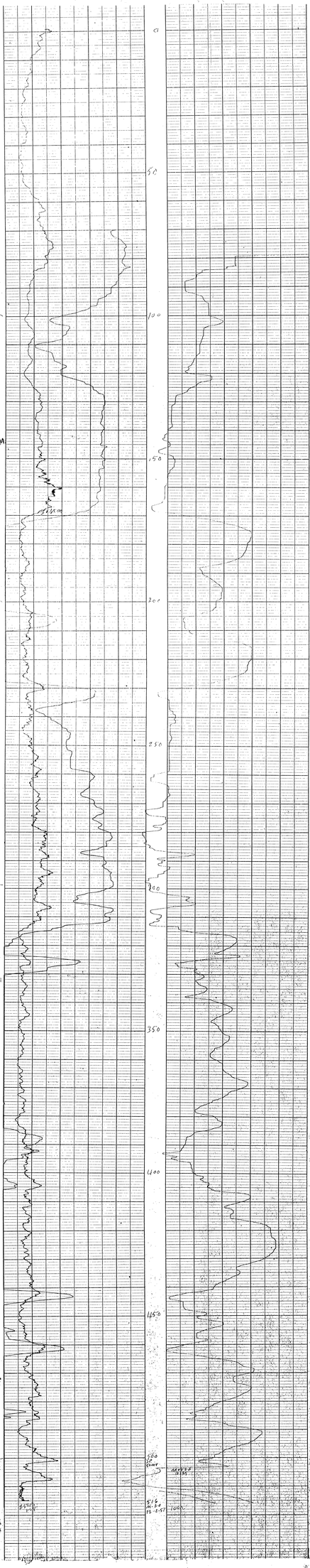
+ 10 MV −

NATURAL GAMMA RAY
COUNTS PER SECOND

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

CALIPER MV/IN

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 2.1"
CALIBRATION: 3.00
DATE: 12-2-57
FIELD INSPECTOR: Coleman

	NATURAL	SP	RES.	RES.	RES.	RES.	RES.
	GAMMA	SP	16"	64"	16"	64"	16"
HOLE SIZE	10.20						
DATE	12-2-57						
DRILLER	5'6"						
LOGGER	5'6"						
BOTTOM	5'6"						
CASING	5'3"						
TIME	9 AM						
CONDITION							
MUD WEIGHT	10						
MUD VISCOSITY	37						
MUD PH	10.0						
MUD FLUID LOSS	1						
MAX. REC. TEMP.	1						
RM @ MEAS. TEMP.	1.0						
RMF @ MEAS. TEMP.							
RMC @ MEAS. TEMP.							
MUD SOURCE							
RESISTIVITY							
RMF @ MEAS. TEMP.							
RMC @ MEAS. TEMP.							
MUD SOURCE							
RESISTIVITY							

CALIPER SURVEY	YES	TOOL STICKING	
TIME	11:15	TIME	
DATE	12-2-57	DATE	
TIME	1:30	TIME	
DATE	12-2-57	DATE	

LOCATION

SEC. TWP. RGE.
COUNTY: Tulsa
STATE: Okla.
AREA: Tulsa Hole
CLIENT:
Ed Rice Estate
LOG SEC'D BY:

TIME

DRIVE: 1.5
FREEZE: 1.5
STANDBY: 1.5
BREAKDOWN:
TOTAL: 7.5

OPERATOR: Miller

PARTY NO.: 811

12-2-57

SELF POTENTIAL (mv)

+ 10 −

NATURAL GAMMA RAY
COUNTS PER SECOND

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.:
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM
DRILL MEAS. FROM
FILE NO.

LOCATION OF HOLE

DATE:
PERMANENT
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

ELEVATION
DF
GL
SECRD. COUNT
(CLOSE AS %)

REMARKS:

INTERPRETATION

RADIO METRIC 'N' VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

FEATURES PER SEC.	DEPTH PROGRESS	% U3O	GRADE GT.M.	% U3O4

INTERPRETATION BY:

GEOLOGIC TOPS

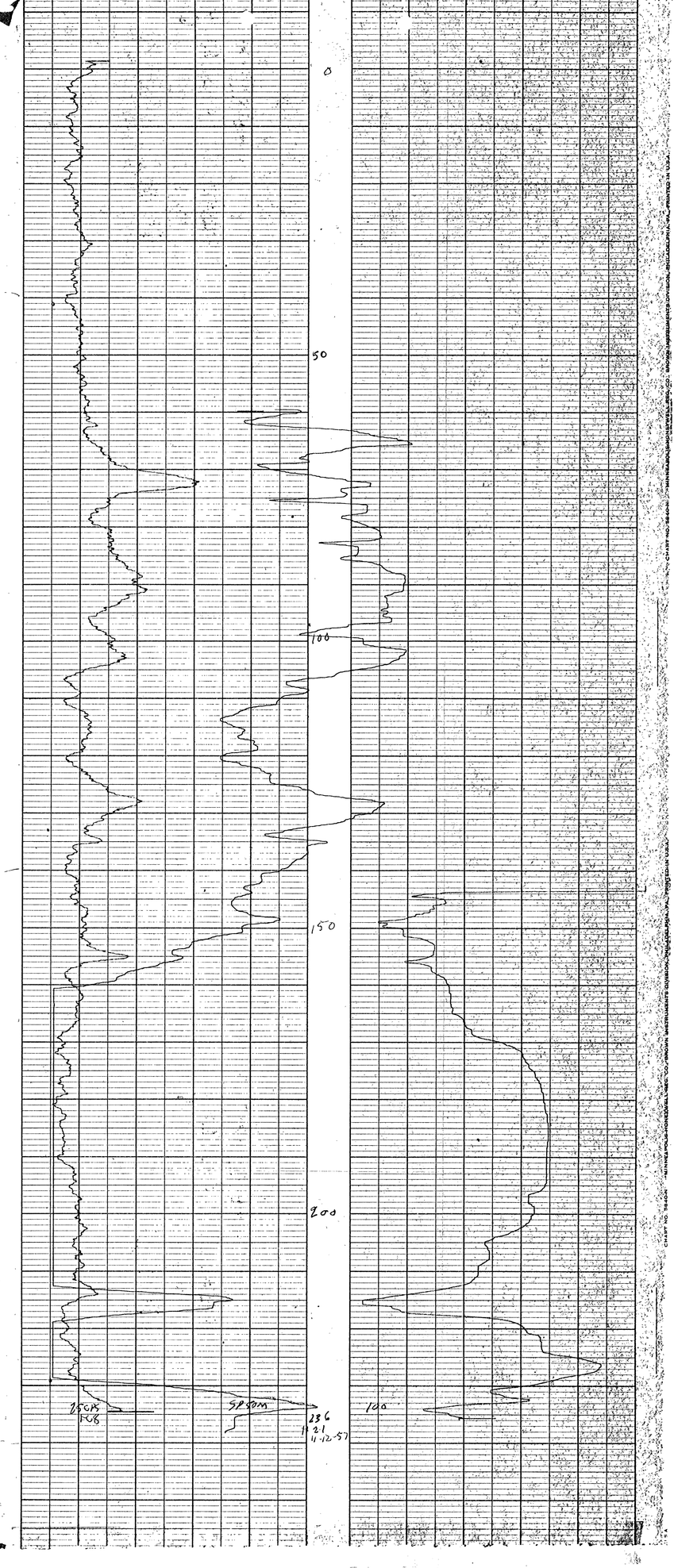
FORMATION	DEPTH	THICKNESS

12-2-57

CALIPER MV/IN

4	5	6	7	8
4	6	8	10	12
4	8	12	16	20

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 1 3/8 CALIBRATION: 300

DATE: 11-12-57 FIELD HDQTRS: Edgemont

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	21					
HOLE DIA.	4 1/2 IN					
DRILLED DEPTH	240 FT					
LOGGED DEPTH	236 FT					
GAMMA SCALE	25 CPS					
TIME CONSTANT	5 SEC					
PAPER SPEED	10 FT/IN					
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100					
SELF POT SCALE	MV/IN					
BORE HOLE REGIME	Water	WITH				
MUD READINGS	RESISTIVITY		TYPE BASE			
	VISCOSITY		SALINITY			
CALIPER SCALE	MV/IN	LEG SIZE	PAPER SCALE			
TIME IN	1630	CASED TO		I.D.	IN	
TIME OUT	1650	CORE INT.		DIAM	IN	

LOCATION			TIME	
SEC.	TWP.	RGE.	DRIVE:	5
COUNTY: Fall River			FIELD:	4
STATE: SD			STANDBY:	
AREA: Flint Hill			BREAKDOWN:	
CLIENT: Mecalter			TOTAL:	9
LOG REC'D BY:			OPERATOR: Miller	
			PARTY NO: U 11	

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ..... FILE
DRLG. MEAS. FROM ..... NO.

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT
SLUSH PIT CT.

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KO	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL

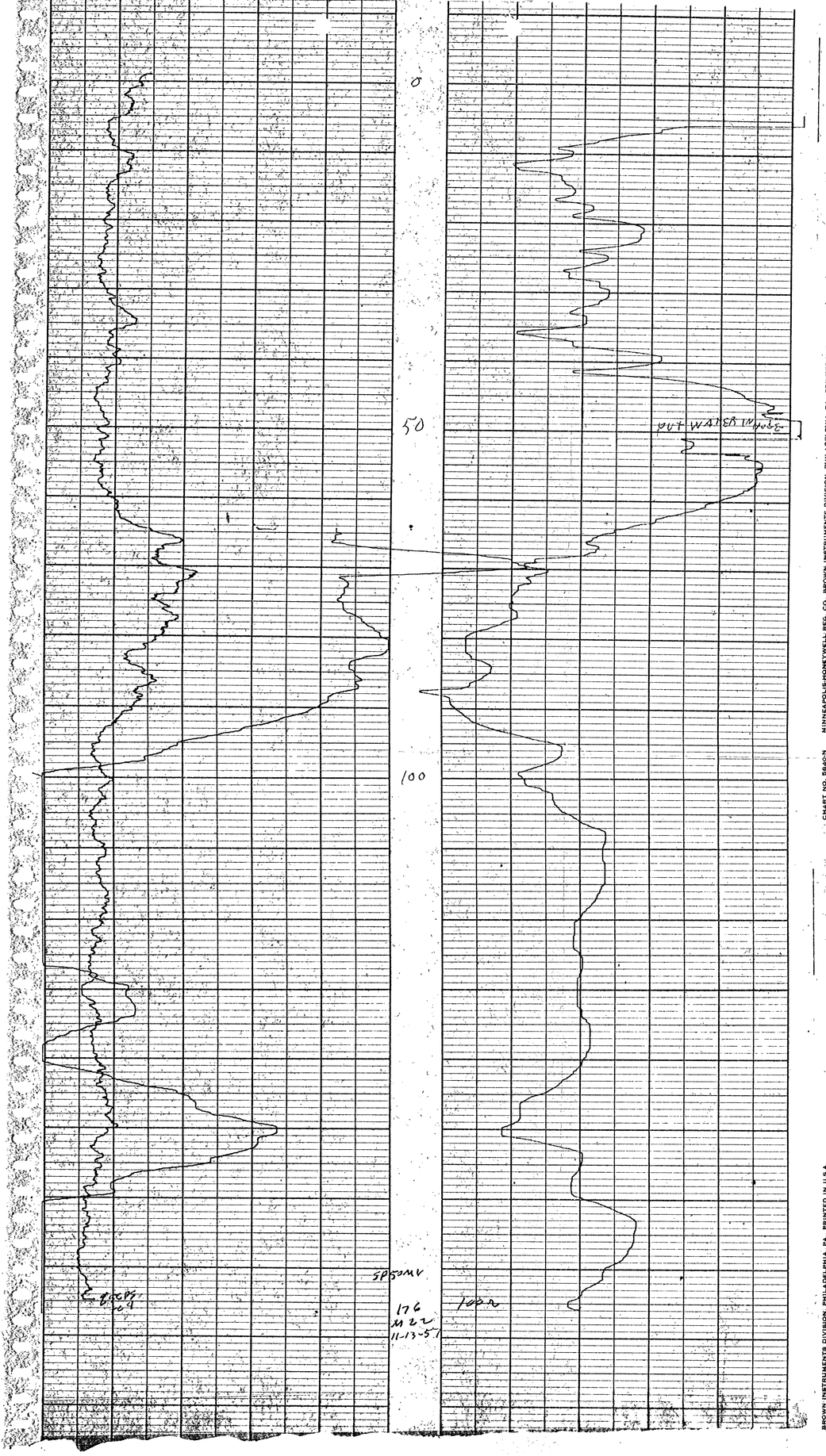
+ ◀ ▶ −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M



BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.
CHART NO. 5840-N MINNEAPOLIS-HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.

LOGGING DATA

PROBE SIZE: 1 3/8 CALIBRATION: 300

DATE: 11-13-57 FIELD HDQTRS: Co. Edgemont

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	M22						
HOLE DIA.	4 1/2 IN						
DRILLED DEPTH	176 FT						
LOGGED DEPTH	176 FT						
GAMMA SCALE	25 CPS						
TIME CONSTANT	3 SEC						
PAPER SPEED	10 FT/IN						
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100						
SELF POT SCALE	10 MV/IN						
BORE HOLE MEDIUM	water	WITH					
MUD READINGS	RESISTIVITY			TYPE BASE			
	VISCOSITY			SALINITY			
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE			
TIME IN	1600	CASED TO				I.D.	IN
TIME OUT	1620	CORE INT.				DIAM	IN

LOCATION			TIME	
SEC.	TWP.	RGE.	DRIVE:	.5
COUNTY: FALL RIVER			FIELD:	.4
STATE: SD			STANDBY:	1.5
AREA: FLINT HILL			BREAKDOWN:	
CLIENT:			TOTAL:	2.4
McCALLESTER				
LOG REC'D BY:			OPERATOR: Miller	
			PARTY NO: V 11	

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U. S. A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM _____ FILE _____
DRLG. MEAS. FROM _____ NO. _____

DATE:	
FOOTAGE	
TOTAL DEPTH (DR)	
HOLE DIAM.	
LOGGING SPEED	
TIME CONSTANT	
MUD TYPE	
CASED TO	

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT _____
SLUSH PIT CT. _____

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KD	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 5 MV/IN

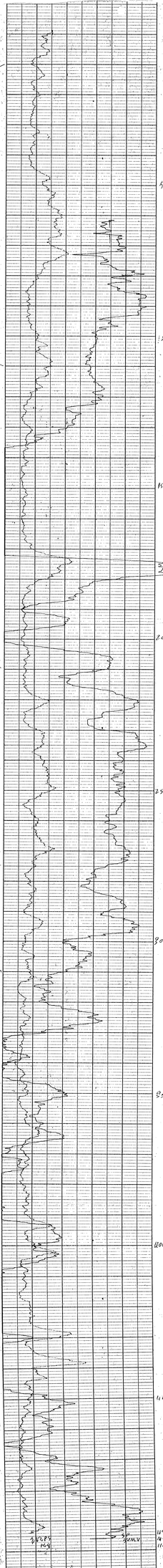
+ 10 MV −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 2"
CALIBRATION: 300
FIELD
HOOPTES: 8/gount
DATE: 11-19

	INITIAL	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.
	READ.	READ.	READ.	READ.	READ.	READ.	READ.
HOLE SIZE	11-3/4						
MUD WT.	10.2 LB						
DRILLER TD	500 FT						
LOGGER TD	495 FT						
GAMMA SCALE	3-3 CPS						
TIME CONSTANT	5 SEC						
COUNTER RATE	1.5 FPM						
SPEED	FPM	FPM	FPM	FPM	FPM	FPM	FPM
RECORDER SCALE	1"						
MUD PUMP	10 BBL/MIN						
MUD TYPE	Water Clear						
MUD RESISTIVITY						RESIST.	
MUD TEMPERATURE							
						RESISTIVITY	

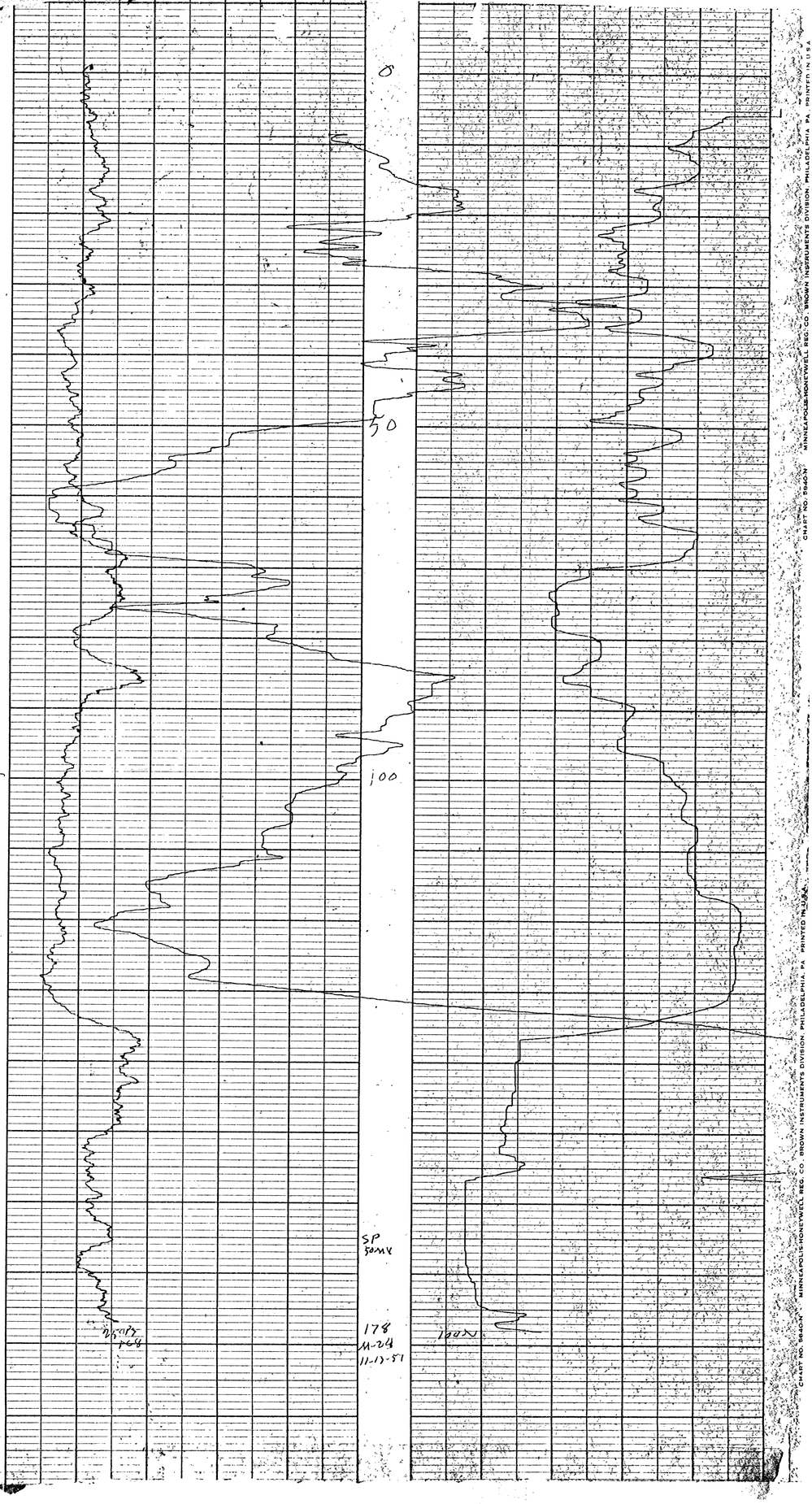


CHART NO. 5860N MINNEAPOLIS-HONEYWELL REG. CO. BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA. PRINTED IN U.S.A.

LOGGING DATA

PROBE SIZE: 1 3/8 CALIBRATION: 300

DATE: 11-13-57 FIELD HDQTRS: Elgin art

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	M-24						
HOLE DIA.	4 1/2 IN						
DRILLED DEPTH	150 FT						
LOGGED DEPTH	178 FT						
GAMMA SCALE	25 CPS						
TIME CONSTANT	8 SEC						
PAPER SPEED	10 FT/IN						
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100						
SELF POT SCALE	10 MV/IN						
BORE HOLE MEDIUM	water WITH						
MUD READINGS	RESISTIVITY			TYPE BASE			
	VISCOSITY			SALINITY			
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE			
TIME IN	1515	CASED TO				I.D.	IN
TIME OUT	1575	CORE INT.				DIAM	IN

LOCATION			TIME	
SEC.	TWP.	RGE.	DRIVE:	
COUNTY: Fall River			FIELD:	4
STATE: SD			STANDBY:	1 5
AREA: Flint Hill			BREAKDOWN:	
CLIENT: McAlester			TOTAL:	2.9
LOG REC'D BY:			OPERATOR: Miller	
			PARTY NO: 011	

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM _____ FILE _____
DRLG. MEAS. FROM _____ NO. _____

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT
SLUSH PIT CT.

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KO	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 50mv

+ 10 MV −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M

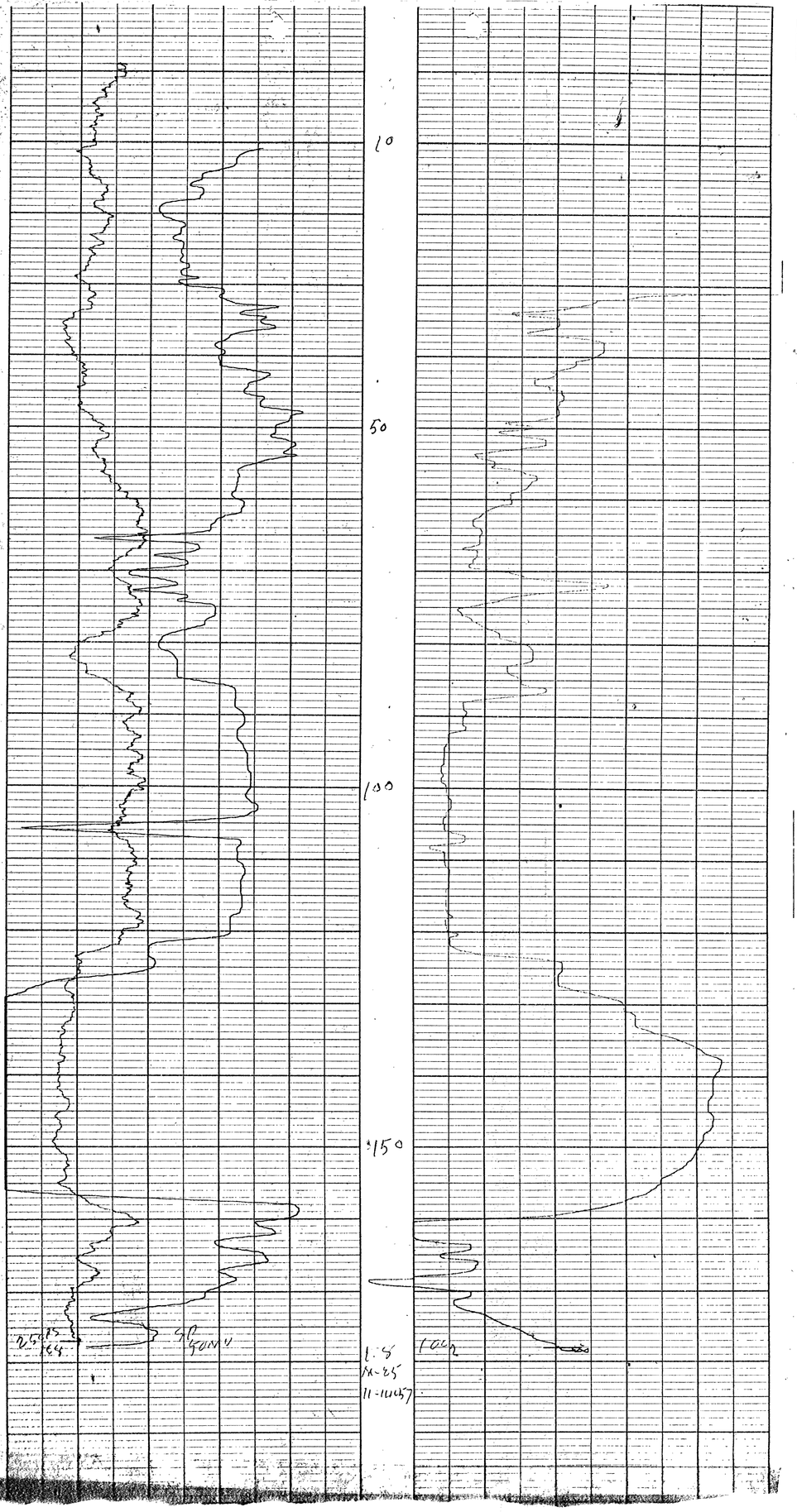


CHART NO. 5840-N MINNEAPOLIS-HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.

HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.

LOGGING DATA

PROBE SIZE: 1½ CALIBRATION: 1 x 2

DATE: 11-14-57 FIELD HDQTRS: Edgemont

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO	M 25						
HOLE DIA.	4½ IN						
DRILLED DEPTH	150 FT						
LOGGED DEPTH	175 FT						
GAMMA SCALE	25 CPS						
TIME CONSTANT	4 SEC						
PAPER SPEED	10 FT/IN						
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100						
SELF POT SCALE	10 MV/IN						
BORE HOLE MEDIUM	water	WITH	Clear				
MUD READINGS	RESISTIVITY			TYPE BASE			
	VISCOSITY			SALINITY			
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE			
TIME IN	1115	CASED TO					
TIME OUT	15	CORE INT.			I.D. DIAM		IN

LOCATION

SEC. TWP. RGE.
COUNTY: Fall River
STATE: S.D.
AREA: Flint Hill
CLIENT:
~~OPER~~ McAlester
LOG REC'D BY:

TIME

DRIVE: 1.0
FIELD:
STANDBY: 2.3
BREAKDOWN:
TOTAL: 3.3
OPERATOR: Miller
PARTY NO: 561

Century GEOPHYSICAL CORP TULSA OKLA. U.S.A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ---------- FILE
DRLG. MEAS. FROM ---------- NO.

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT
SLUSH PIT CT.

REMARKS:

INTERPRETATION

RADIO METRIC VALUES CORRECTED FOR WATER OF
LENGTH OF LOCATION EQUIVALENT FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KO	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 50/1

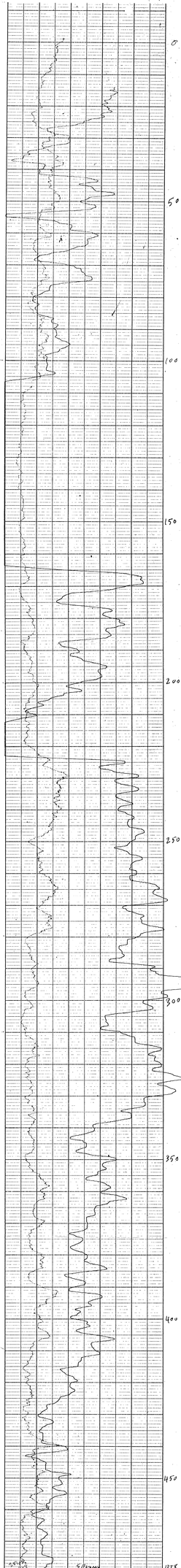
+ 16 MV ± −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M



LOGGING DATA

PAGE SIZE: 2" CALIBRATION: 5.0
DATE: 11-20-57 FIELD HOOKTS: 5/15/2MM

	INITIAL RUN	1ST RUN	2ND RUN	3RD RUN	4TH RUN	5TH RUN
HOLE NO.	M-25					
HOLE DIAM.	6 1/2					
SPECIAL SLUGGER	600					
SLUGGER SPEED	60					
MUD WEIGHT	73					
CONTINUOUS STATIC	10					
STATIC SPEED	10					
SPECIAL RESISTIVITY	1/2	1/2	1/2	1/2	1/2	1/2
RESISTIVITY SCALE	10					
MUD RESISTIVITY	1.0	MATCH				
MUD TEMPERATURE	50	50	MATCH			
RESISTIVITY				SAME		
VISCOSITY				SALINITY		
CALIPER DIAM.	6 1/2					
CALIPER TIME	11	11	MATCH			
TIME	11					
TIME CONST.						
LOG REC. BY						

LOCATION		TIME	
SEC.	TWP. RGE.	DRIVE:	1.0
COUNTY: Tioga Bore		FIELD:	1.0
STATE: PA		STANDBY:	3.0
AREA: Pine Creek		BREAKDOWN:	
CLIENT:		TOTAL:	7.0
Operation			
LOG REC. BY:		OPERATOR:	M. Lee
		PARTY NO.:	6

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
HOLE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.
LOG MEAS. FROM FEET
DRILL MEAS. FROM FEET
DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO
RECORD COUNT
FLUSH PH CT.

LOCATION OF HOLE

ELEVATION
KB
GL

REMARKS:

Fresh water in Sample pit
Artesian flow in hole 4 feet
Well 100 feet water level

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THOUSANDS	%	U3O8 LB.	U3O8 GPM	% U3O8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL mv

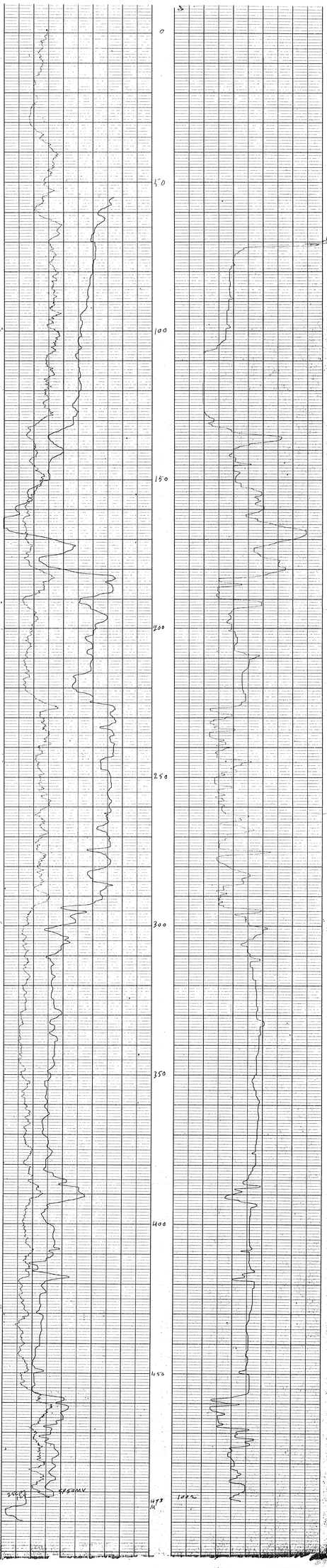
+ 10 — 0 —

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9	
4	6	8	10	12	14	
4	8	12	16	20	24	

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 2"
CALIBRATION: 2.00
DATE: 11-22-57
FIELD HOOPTS: Efficient

	CENTRAL BLOCK	NO. 1 DOWN	NO. 2 DOWN	NO. 3 DOWN	NO. 4 DOWN	NO. 5 DOWN
HIGH VOLT.	1.5					
SELLER	1.5					
SELLER	1.5					
SELLER	1.5					
GAMMA	1.5					
TIME CONSTANT	3 SEC.					
SPEED	15 FEET/M.					
SENSITIVITY	10					
SELF POT.	10 MV/IN.					
DRAW HOOK BOTTOM	10.40 ft.					
MUD RESISTIVITY						
MUD VISCOSITY						
MUD SALINITY						
CALIPER TIME	1210	CALIPER DEPTH	1.5	CALIPER TIME	1.5	
CALIPER TIME	1230	CALIPER DEPTH		CALIPER TIME		

LOCATION
SEC. TWP. RGE.
COUNTY: Bell Run
STATE: Ky.
AREA: Pennt Hill
CLIENT:
LOG SEC. 10 RT.

TIME
DRIVE: 7
FIELD: 7
STANDBY: 3
BREAKDOWN: 5.0
TOTAL:

OPERATOR: Allen

PARTY NO. 411

Century
GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.:
FIELD:
COUNTY:
LOCATION: SEC. TWP. RGE.
LOG MEAS. FROM HR
DRIL. MEAS. FROM MD
DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE
ELEVATION
KB
DF
GROUND
BEGRD. FOUNT.
TUBING BY CT.

REMARKS:
driller Rode and set
on Scale HAR TO FISH 1012
1.5

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

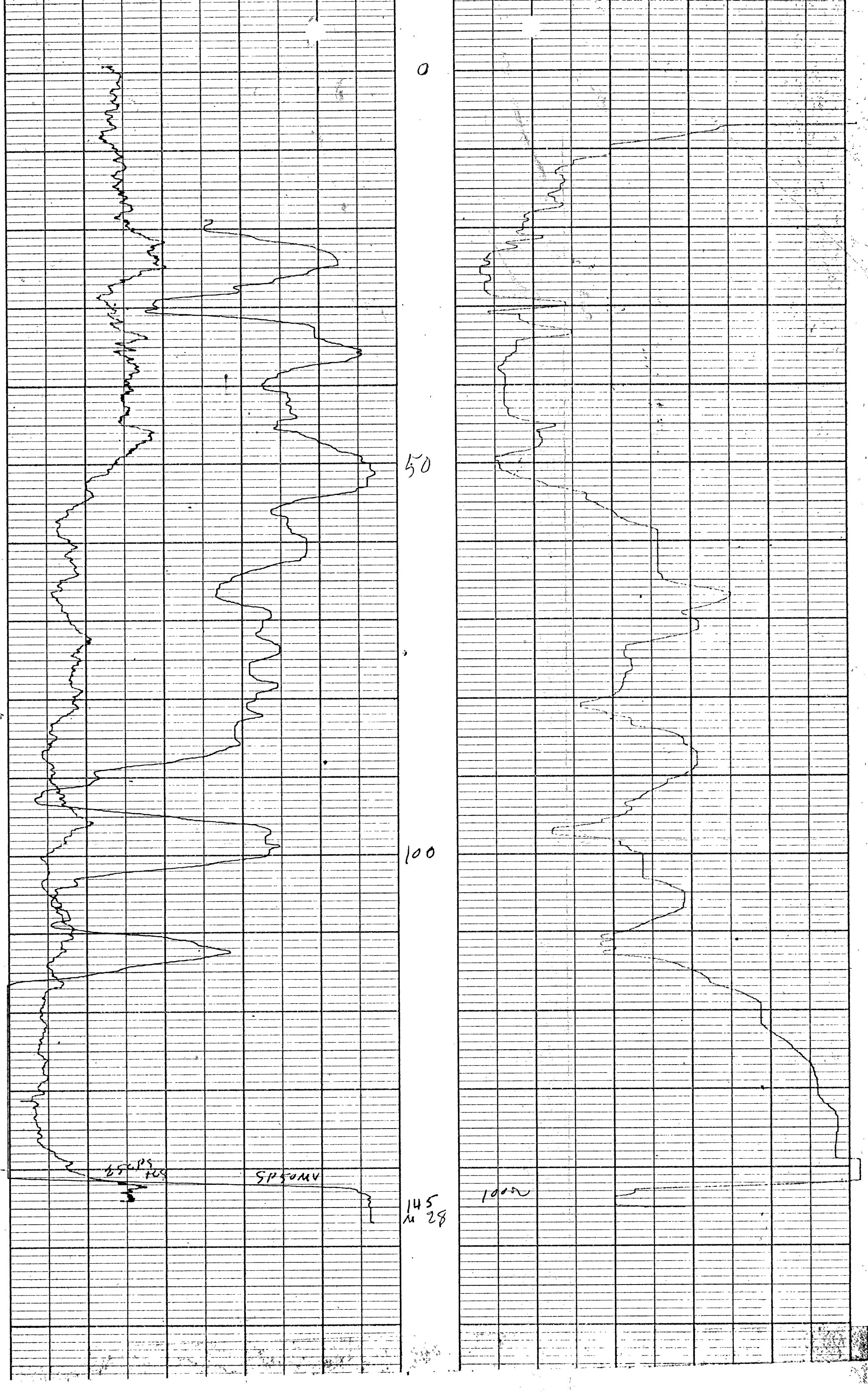
MINERALIZATION

CENTER PER SEC.	DEPTH INTERVAL	%	CORR. CON.	% U3O8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS



LOGGING DATA

PROBE SIZE: 2" CALIBRATION: 300

DATE: 11-19-59 FIELD HDQTRS: Edgemont

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	28						
HOLE DIA.	11 1/2 IN						
DRILLED DEPTH	146 FT						
LOGGED DEPTH	145 FT						
GAMMA SCALE	25 CPS						
TIME CONSTANT	8 SEC						
PAPER SPEED	10 FT/IN						
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100						
SELF POT SCALE	10 MV/IN						
BORE HOLE MEDIUM	water	WITH					
MUD READINGS	RESISTIVITY			TYPE BASE			
	VISCOSITY			SALINITY			
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE			
TIME IN	1300	CASED TO			I.D.	IN	
TIME OUT	1315	CORE INT.			DIAM	IN	

LOCATION

SEC. TWP. RGE.

COUNTY: FALL RIVER

STATE: S D

AREA: FLINT HILL

CLIENT:

LOG REC'D BY: McALESTER

TIME

DRIVE: .3

FIELD: .3

STANDBY: 1.8

BREAKDOWN:

TOTAL: 2.4

OPERATOR: Miller

PARTY NO: 011

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:

BORE HOLE NO.

FIELD

COUNTY

LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ---------- FILE ----------

DRLG. MEAS. FROM ---------- NO. ----------

DATE:

FOOTAGE

TOTAL DEPTH (DR)

HOLE DIAM.

LOGGING SPEED

TIME CONSTANT

MUD TYPE

CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL

BKGRD. COUNT ----------
SLUSH PIT CT. ----------

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KD	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 50/M

+ 10 MV −

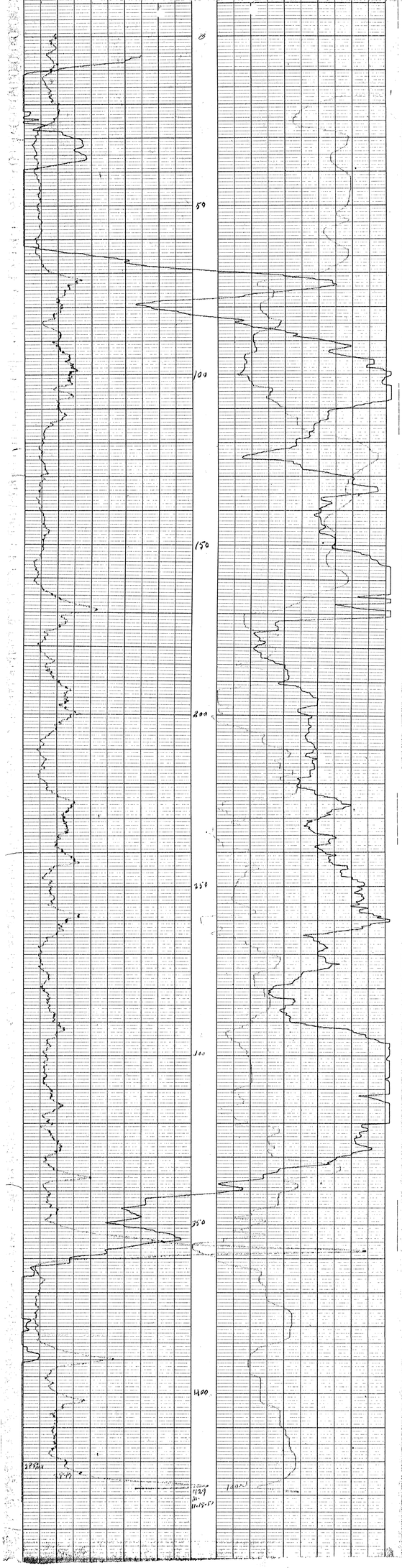
NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M

CHART NO. 3640-N MINNEAPOLIS-HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.



LOGGING DATA

PROBE SIZE: 1"

CALIBRATION: 3-0

FIELD HIDDERS: [illegible]

DATE: 11-15-57

	INITIAL RUN	RE. RUN	RE. RUN	RE. RUN	RE. RUN	RE. RUN
HOLE SIZE	4"					
MUD WEIGHT	8.9					
DRILLER DEPTH	1412					
LOGGER DEPTH	1417					
SPEED	40 FPM					
TIME CONSTANT	SEC					
PAPER SPEED	FT/M					
RESISTANCE SPEED	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
SELF POT. SCALE	MV/IN					
RESISTANCE SCALE	OHMS					
MUD RESISTIVITY		RESISTIVITY			SALINITY	
CALIPER SCALE	IN		CALI. CORR.		FILTER LENGTH	
TIME			CALIB.			
TIME			CORR.			

LOCATION		TIME	
SEC.	TWP. RGE.	DRIVE:	7
COUNTY:	[illegible]	FIELD:	1
STATE:	[illegible]	STANDBY:	2.0
AREA:	[illegible]	BREAKDOWN:	
CLIENT:		TOTAL:	3.7
[illegible]		OPERATOR:	[illegible]
LOG REC'D BY:			
		PARTY NO:	[illegible]

Century

GEOPHYSICAL CORP.
TULSA, OKLA. U.S.A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM .....
FELD. MEAS. FROM ..... MDL

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASIN TO

LOCATION OF HOLE

ELEVATION
KB
DF
GL
DEGRD. COUNT .....
FLUSH PIT CT. .....

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC	DEPTH THICKNESS	% U3	CORR. CAL.	% U3O4

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL MV/IN

+ ◀ 15 — 0 ▶ −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4 5 6 7 8 9
4 6 8 10 12 14
4 8 12 16 20 24

RESISTANCE
OHMS — M

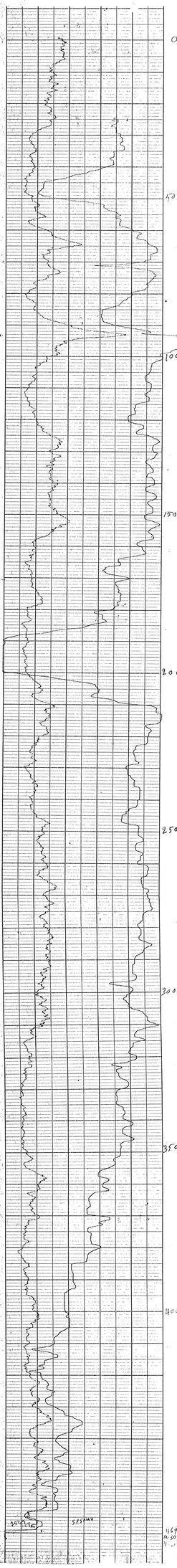


CHART NO. 5A6A5 MINNEAPOLIS-HONEYWELL REG. CO. BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA. PRINTED IN U.S.A.

LOGGING DATA

PROBE SIZE: 2" CALIBRATION: 300
DATE: 1-21-57 FIELD PROBES: Original

	INITIAL RUN	RD 2	RD 3	RD 4	RD 5	RD 6	RD 7
HOLE DEPTH	0-30						
CASING DEPTH	1150						
SENSOR DEPTH	470 ft						
SENSOR SETTING	469 ft						
CALIBRATOR SETTING	25						
CALIBRATOR SENSOR	5						
SPECIAL SETTINGS	10						
RECORDER SETTINGS							
HOLE DIAMETER	100						
MUD WEIGHT	10						
MUD HOLE DIAMETER	7 inches						
MUD RESISTIVITY							
MUD RESISTIVITY							
CALIPER DEPTH	13 30						
TIME	11 15						

LOCATION: SEC. TWP. RGE.
COUNTY: Hillsboro
STATE: Tex
AREA: Mount Hope
CLIENT: Chesebrough
(Ex-SEC. 5 BY)

TIME
DRIVE: 1.5
FIELD: 4
STANDBY: 4.0
BREAKDOWN:
TOTAL: 6.2

OPERATOR: Miller
PARTY NO: 6-11

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ..... FILE NO.
DRILL MEAS. FROM .....
DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE
ELEVATION
KB
DF
GROUND
DEGREE COUNT
DEGREE PER CM

REMARKS:
Texas Water on Sleep Pit

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC	DEPTH ENCOUNTERED	% KO	CORR. CPS	% EVEN

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL

+ 10 - 0 -

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4 5 6 7 8 9
4 6 8 10 12 14
4 8 12 16 20 24

RESISTANCE
OHMS - M

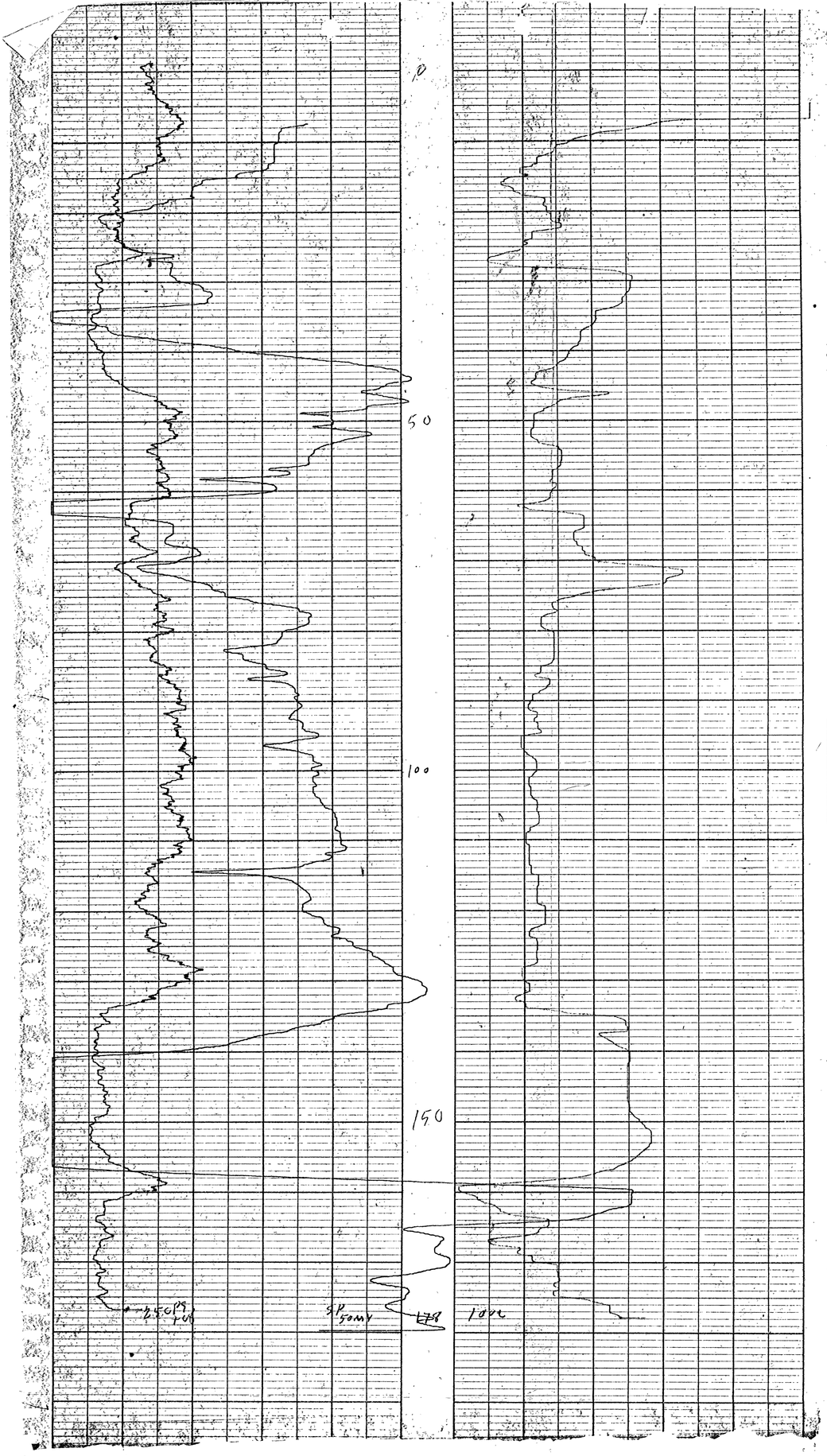


CHART NO. 5860N MINNEAPOLIS-HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.

MINNEAPOLIS-HONEYWELL REG. CO., BROWN INSTRUMENTS DIVISION, PHILADELPHIA, PA., PRINTED IN U.S.A.

LOGGING DATA

PROBE SIZE: 2" CALIBRATION: 300

DATE: 11-13-57 FIELD HDQTRS: Eldorado

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.							
HOLE DIA.	4 1/2 IN						
DRILLED DEPTH	190 FT						
LOGGED DEPTH	173 FT						
GAMMA SCALE	25 CPS						
TIME CONSTANT	3 SEC						
PAPER SPEED	10 FT/IN						
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100						
SELF POT SCALE	10 MV/IN						
BORE HOLE MEDIUM	water	WITH	Silver				
MUD READINGS	RESISTIVITY			TYPE BASE			
	VISCOSITY			SALINITY			
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE			
TIME IN	1315	CASED TO			I.D.	IN	
TIME OUT	1535	CORE INT.			DIAM	IN	

LOCATION			TIME	
SEC.	TWP.	RGE.	DRIVE:	2
COUNTY: FALL RIVER			FIELD:	4
STATE: SD			STANDBY:	7
AREA: FLINT HILL			BREAKDOWN:	1.0
CLIENT:			TOTAL:	2.0 3
LOG REC'D BY: Mr. Sheldon			OPERATOR: Miller	
			PARTY NO: 611	

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.
LOG MEAS. FROM ..... FILE .....
DRLG. MEAS. FROM ..... NO. .....

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT .....
SLUSH PIT CT. .....

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KD	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 50MV

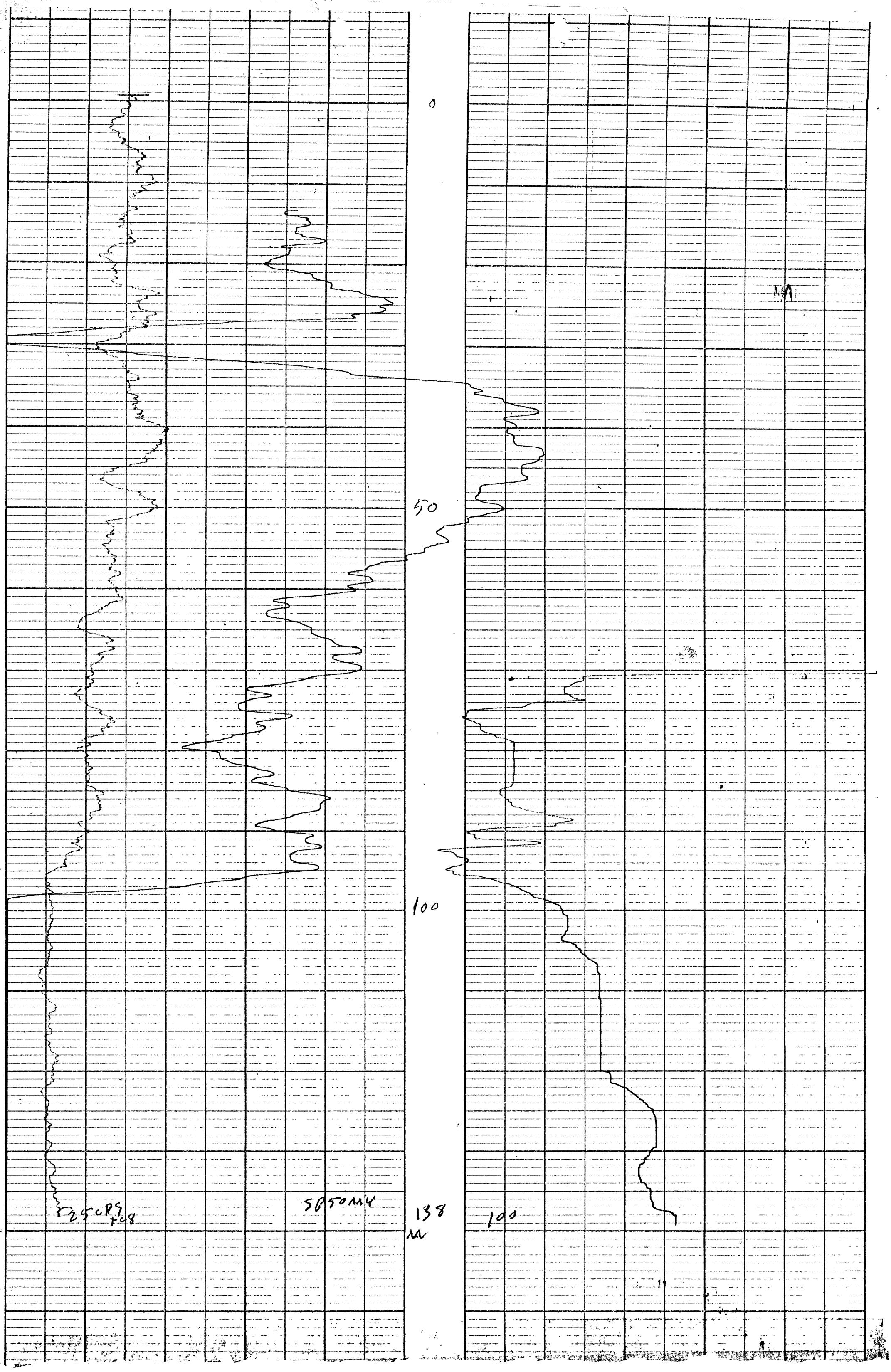
+ | 10 MV | −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 2.1" CALIBRATION: 300

DATE: 11-25-57 FIELD HDQTRS: Edgemont

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	M 32						
HOLE DIA.	4 1/2 IN						
DRILLED DEPTH	140 FT						
LOGGED DEPTH	138 FT 133						
GAMMA SCALE	25 CPS						
TIME CONSTANT	5 SEC						
PAPER SPEED	10 FT/IN						
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100						
SELF POT SCALE	10 MV/IN						
BORE HOLE MEDIUM	Water	WITH					
MUD READINGS	RESISTIVITY			TYPE BASE			
	VISCOSITY			SALINITY			
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE			
TIME IN	0930	CASED TO			I.D.	IN	
TIME OUT	0900	CORE INT.			DIAM	IN	

LOCATION			TIME	
SEC.	TWP.	RGE.	DRIVE:	5
COUNTY: Fall River			FIELD:	5
STATE: SD			STANDBY:	
AREA: Client hole			BREAKDOWN:	
CLIENT: Meadwater			TOTAL:	1.0
LOG REC'D BY:			OPERATOR: Miller	
			PARTY NO: 6.11	

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ..... FILE .....
DRLG. MEAS. FROM ..... NO. .....

DATE:	
FOOTAGE	
TOTAL DEPTH (DR)	
HOLE DIAM.	
LOGGING SPEED	
TIME CONSTANT	
MUD TYPE	
CASED TO	

LOCATION OF HOLE

ELEVATION
KB
GL

BKGRD. COUNT .....
SLUSH PIT CT. .....

REMARKS:

Waiting for hole to fill up

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KD	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 50/M

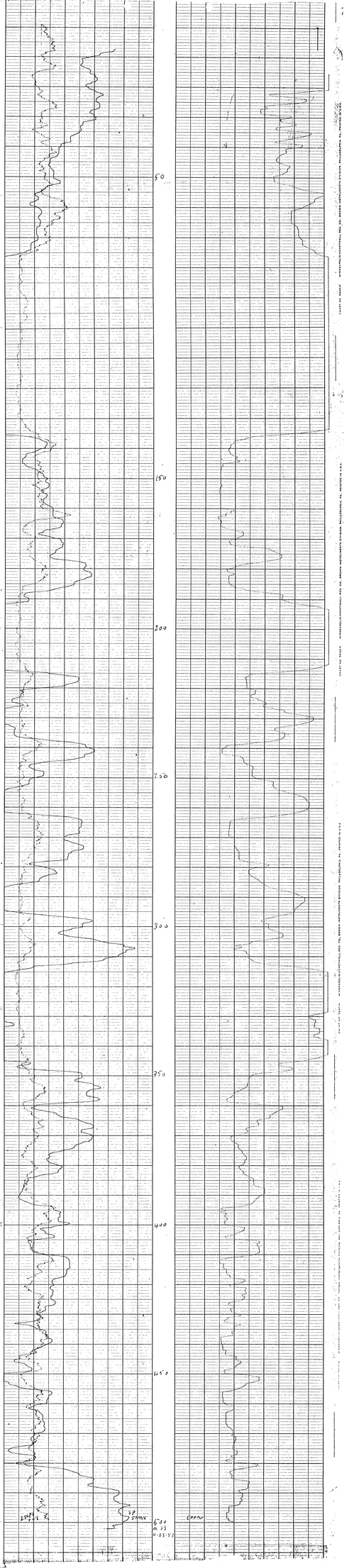
+ 10 MV −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 2" CALIBRATION: 300
DATE: 11-23-57 FIELD HOURS: 6 1/2 HOURS

	INITIAL	SEC. 1	SEC. 2	SEC. 3	SEC. 4	SEC. 5
HOLE SIZE	4 3/4"					
MUD WEIGHT	8.5 LB					
SECURITY	6.5 IN					
SECURITY	6.5 IN					
SECURITY	6.5 IN					
GAMMA SCALE	2 CPS					
GAMMA SENSITIVITY	2 CPS					
PAPER SPEED	15 FEET/H					
RESISTIVITY SCALE	10 OHMS					
RESISTIVITY SENSITIVITY	1.0					
MUD RESISTIVITY	1.0 OHMS					
MUD TEMPERATURE	60 °F					
MUD RESISTIVITY						
SUBSURFACE						

CALIPER CHECK	TIME	CALIPER CHECK	TIME
2.5		2.5	

LOCATION	TIME	
SEC. TWP. RGE.	DRIVE:	1.5
COUNTY: Tulsa Okla.	FIELD:	3.0
STATE:	STANDBY:	1.0
AREA:	BREAKDOWN:	
CLIENT:	TOTAL:	5.5
LOG REC'D BY:	OPERATOR:	
	PARTY NO:	

Century
GEOPHYSICAL CORP.
TULSA, OKLA. U.S.A.
EXPLORATION LOG

COMPANY:
DDH HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.
LOG MEAS. FROM FILE
DRILL MEAS. FROM NO.
DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO
REMARKS:

LOCATION OF HOLE
ELEVATION
GL
KB
DEGRS. COUNT
SLOPE PER 100

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	% U3O8	COUNTS CPS.	% U3O8

INTERPRETATION BY:

GEOLOGIC TOPS

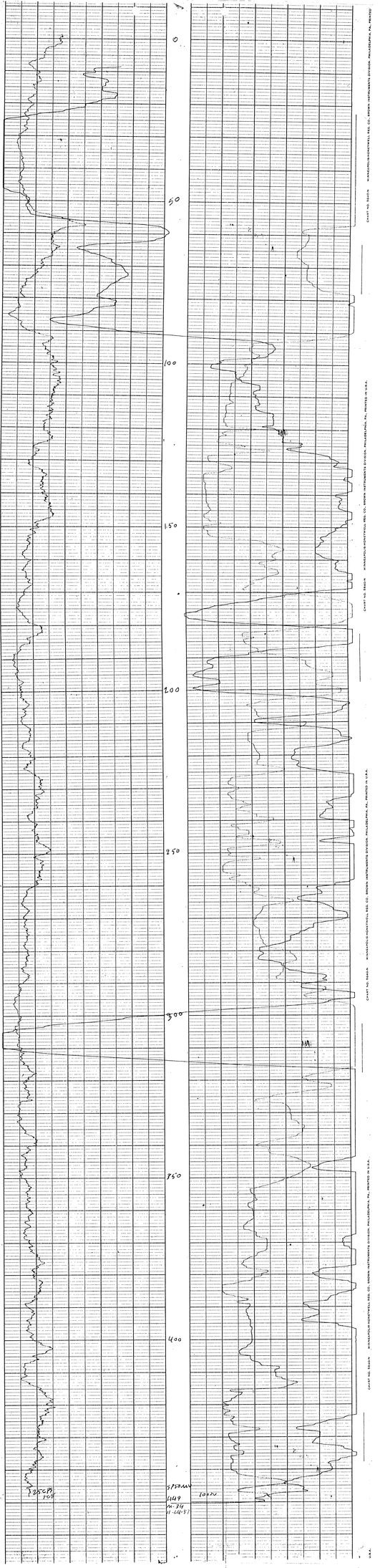
FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL MV

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN
4 5 6 7 8 9
4 6 8 10 12 14
4 8 12 16 20 24

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 2" CALIBRATION: 3.0

DATE: 11-24-57 FIELD HOOKUP: Bridgeport

	INITIAL RUN	RE. RUN	RE. RUN	RE. RUN	RE. RUN	RE. RUN	RE. RUN
HOLE DEPTH	14.34						
MUD WEIGHT	9.4 #						
CALIPER SIZE	4.5"						
CASING SIZE	4.5"						
LINE CONTRACT	53 CPM						
PAPER SPEED	7 MM/MIN						
LOGGING SPEED	8 FT/MIN	FT/MIN	FT/MIN	FT/MIN	FT/MIN	FT/MIN	FT/MIN
RESISTIVITY	300						
TIME CONSTANT	1.0 SECS						
BORE-HOLE MEDIUM	Air	WITH					
MUD RESISTIVITY				PIPE SIZE			
MUD TEMPERATURE				BOTTOM HOLE			
CALIPER CHART		CPS		PAPER SPEED			
GAMMA CHART	1-04	CPS		PAPER SPEED			
TIME	12:45			TIME		AM	PM

LOCATION: SEC. ____ TWP. ____ RGE. ____
COUNTY: Jefferson
STATE: Ill.
AREA: Fox Hill
CLIENT: McCarter
LOG REC'D BY: ____

TIME: DRIVE: 5.0; FIELD: 3.0; STANDBY: ____; BREAKDOWN: ____; TOTAL: 8.0

OPERATOR: Nelson

PARTY NO: 611

Century

GEOPHYSICAL CORP.
TULSA, OKLA. U.S.A.

EXPLORATION LOG

COMPANY:
BORE-HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.
LOG MEAS. FROM ____ FILE NO. ____
DRLG. MEAS. FROM ____
DATE:
FOOTAGE
TOTAL DEPTH (DB)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
DB
GL
RGRS COUNT
TULSA BH CT

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	% U3	CONC. CPS.	% U3O8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 5 MV/MM

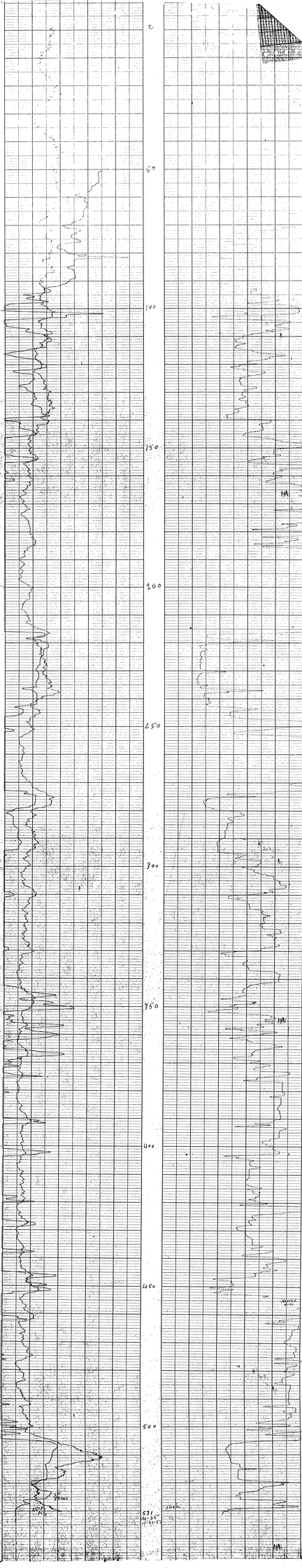
+ ◀ 10 → ▶ −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 2" CALIBRATION: 500

DATE: 11-27-57 FIELD HOURS: 8 hours

	INITIAL	FINAL				
HOLE DEPTH	0	531				
MUD LEVEL	Brown					
MUD WEIGHT	8.5#					
CASING DEPTH	37 ft					
CASING DIAMETER	2.5 cm					
LOGGING SPEED	7 MPI					
MUD RESISTIVITY	1.0 OHM					
MUD RESISTANCE	100					
MUD TEMP.	10					
MUD PITS	Water					
RUN NO.	1	2	3	4	5	6
DATE	11-27-57					
HOUR	1630					
SENSITIVITY	1					
CALIBRATOR	500					
SELF POTENTIAL	0					
NATURAL GAMMA RAY	0					
RESISTANCE	100					
CALIPER	8					

DRILL STEM: DRIVE: 8
FIELD: 1.8
STANDBY: 2.8
BREAKDOWN:
TOTAL: 4.1

LOCATION: SEC. TWP. RGE.
COUNTY: Cuyahoga
STATE: Ohio
AREA: Parker R
CUBINE:
Westlake
LOG REC'D BY:

TIME: 1630 / 1730

OPERATOR: Miller

PARTY NO.: 411

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:
SORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM FILE
DRILL MEAS. FROM

DATE
RUN NUMBER
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
DF
GL
WORK OVER
FLUSH PIT CT.

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH DISCOVER	%	COUNTS PER	% GRADE

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTH	THICKNESS

SELF POTENTIAL MV/IN

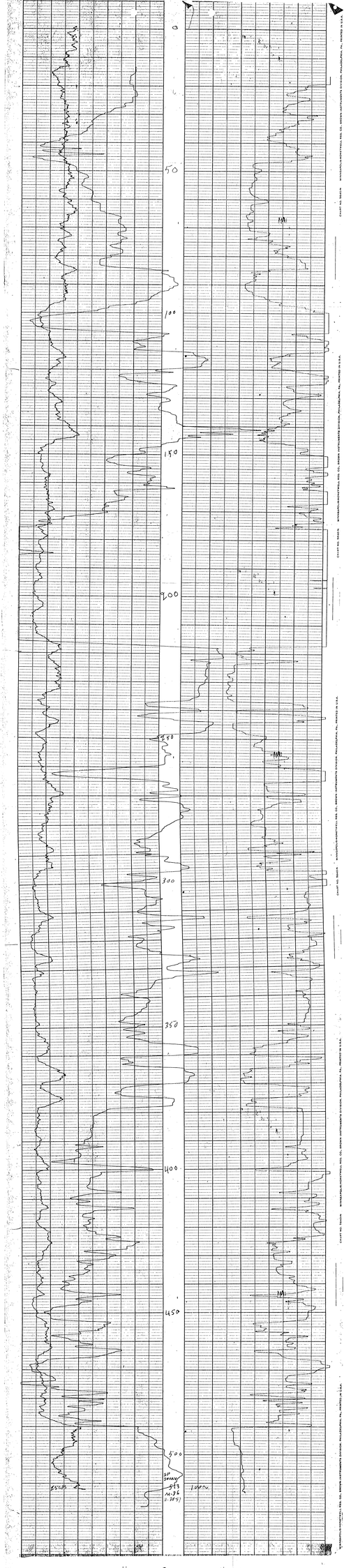
+ 10 −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4 5 6 7 8 9
4 6 8 10 12 14
4 8 12 16 20 24

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 2.11 CALIBRATION: 500

DATE: 11-30-57 FIELD: FIELD: Gulf Stroud

	FROM	TO	FROM	TO	FROM	TO	FROM	TO
HOLE	26-25							
HOLE	4450 in							
CASING	4750 in							
CASING	2473 in							
WATER	5	SPF						
CHANGE	9	SEC						
CHANGE	10	FEET						
DRILLING	4	FEET	FEET	FEET	FEET	FEET	FEET	FEET
DRILLING	100							
DRILLING	10	MEGS						
BORE HOLE	10 MMHO		MEGS					
BORE HOLE					TANK			
BEARINGS	BAREBRIDGE				MUD			
	WINDMILL				BALANCE			
CALIPER								
MUD		MEGS			PLATE			
TEMP	15.45				PLATE			
TEMP	5.20				CLOCK			
MUD								

LOCATION			TIME	
SEC.	TWP.	RGE.	DRIVE:	9
COUNTY:	CALLAWAY		FIELD:	8
STATE:	Mo		STANDBY:	10
AREA:	MAMIE		BREAKDOWN:	
CLIENT:	Gulf Oil Corp.		TOTAL:	5.1

LOG REC'D BY: Mills

OPERATOR: Mills

PARTY NO.: 1121

Century

GEOPHYSICAL CORP.

TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:

BORE HOLE NO.:

FIELD

COUNTY

LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM FEE
TOTAL MEAS. FROM

LOCATION OF HOLE

DATE:

FOOTAGE

TOTAL DEPTH (DR)

HOLE DIAM.

LOGGING SPEED

TIME CONSTANT

MUD TYPE

CASED TO

ELEVATION
DF
GL

DERRICK COUNT
FLOOR ABV GL

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC	DEPTH THICKNESS	% eU	% eRa	% eThO2

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 11/30/57

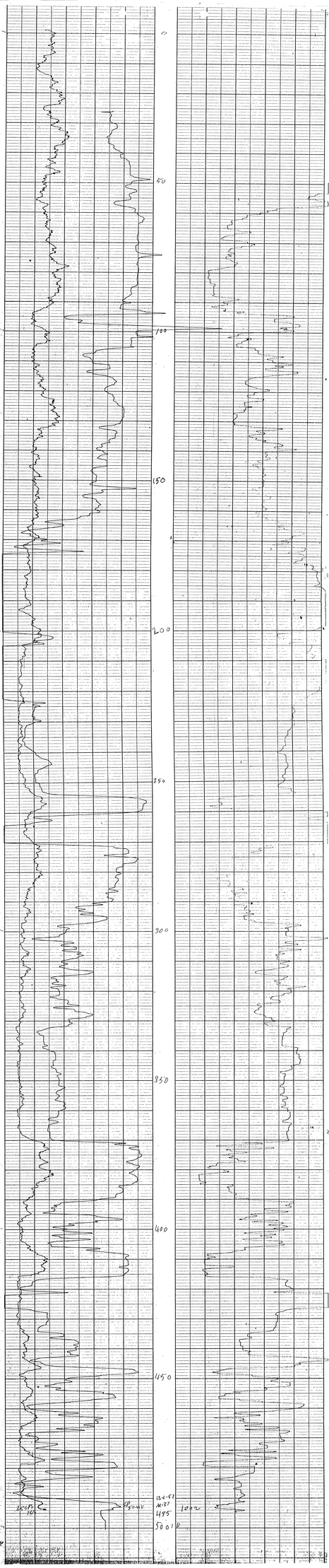
+ 10 — 0 —

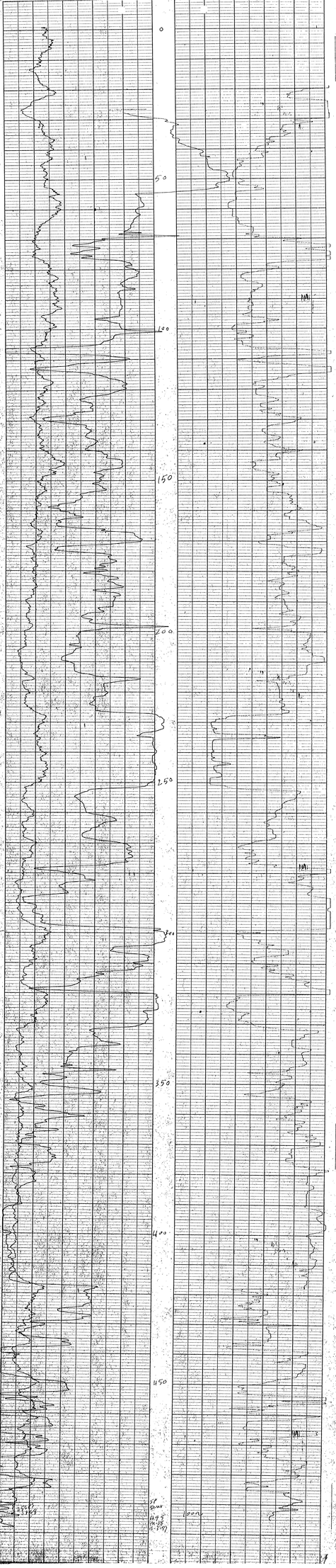
NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4 5 6 7 8 9
4 6 8 10 12 14
4 8 12 16 20 24

RESISTANCE
OHMS — M


0
50
100
150
200
250
300
350
400
450
500
CENTURY RADIOMETRIC
CENTURY RADIOMETRIC
CENTURY RADIOMETRIC



LOGGING DATA

PROBE SIZE: 2" CALIBRATION: 800

DATE: 12-2-61 FIELD HOURS: Equipment

MAX. RECORD	11.53						
MAX. SCALE	11.53						
SENSITIVITY	5.75						
SENSITIVITY SCALE	11.75						
SENSITIVITY SCALE	5.75						
CALIBRATOR	9	SEC.					
CALIBRATOR SCALE	10	FSTM	FSTM	FSTM	FSTM	FSTM	FSTM
SENSITIVITY	10.0						
SENSITIVITY SCALE	10	MV/IN					
MEASURE	Rowlen						
BOX	BOREHOLE		MUD			CASE	
DERAILLER	HOROSCOPE					BALLNECK	
CALIPER							
MAX.	11.45	MV/IN	LOG			I.D.	IN
MIN.	11.45		CASE				
TOP	12.45		SCALE			O.D.	IN

LOCATION TIME

SEC. TWP. RGE. DRIVE: 8

COUNTY: Red River FIELD: 1.5

STATE: Ok. STANDBY: .5

AREA: MARKET A. BREAKDOWN:

CLIENT: TOTAL: 2.3

Rowlen

LOG REC'D BY: OPERATOR: Milton

PARTY NO: 611

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

KB MEAS. FROM ..... MSL
GRD. MEAS. FROM ..... MSL

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL
WORK COUNT
TELEPH. REC. OF

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH TRACKBACK	% eU	% eU	CORR. CPS.	% CuEq

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 5-20mv

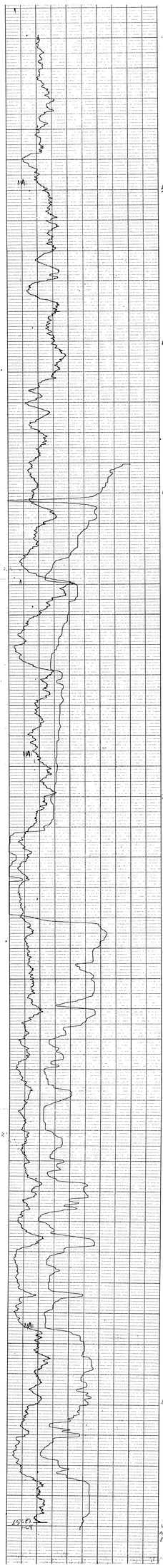
+ 10 −

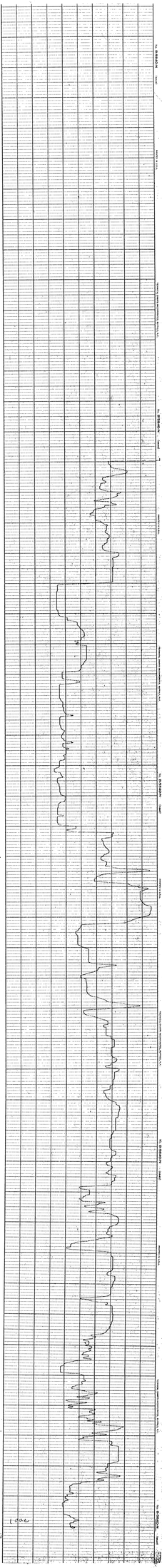
NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M





LOGGING DATA

PROBE SIZE: 211 CALIBRATION: 500

DATE: 12-5-57 FIELD HOURS: 8 1/2 hours

		MAIN									
		MAIN									
MUD WT.	8.9										
MUD VISC.	40	SEC									
MUD DEPTH	500	FT									
SOUNDER DEPTH	490	FT									
SURF. TEMP.	25	°CPS									
TIME CONSTANT	1	SEC									
CHART SPEED	1	INCH									
SPEED	10	INCH	INCH	INCH	INCH	INCH	INCH	INCH	INCH	INCH	INCH
SENSITIVITY	100										
SCALE	10	MUDM									
BORE HOLE DIAM.	10 3/4				MUD.						
MUD RESISTIVITY								FILTER CAKE			
MUD RESISTIVITY											
CALIPER SCALE		MUD.		CASE							
TIME	5:30			CASED							
TIME	6:10			CLEAN							

LOCATION: SEC. TWP. RGE.

COUNTY: Gulf Rio

STATE: Tex.

AREA: Brooks

CLIENT:

LOG REC'D BY: Washington

TIME: DRIVE: 1.5

FIELD:

STANDBY:

BREAKDOWN:

TOTAL: 1.5

OPERATOR: Miller

PARTY NO: 111

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.:
FIELD:
COUNTY:
LOCATION: SEC. TWP. RGE.

SOE MEAS. FROM ..... FLR
DRLG. MEAS. FROM ..... NO.

DATE:
FOOTAGE:
TOTAL DEPTH (DR):
HOLE DIAM.:
LOGGING SPEED:
TIME CONSTANT:
MUD TYPE:
CASED TO:

LOCATION OF HOLE

ELEVATION
KB
DL
RCORD COUNT
TUBING PR CT.

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH FROM/TO	% EU	TOTAL CPS.	% U3O8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL MV/IN

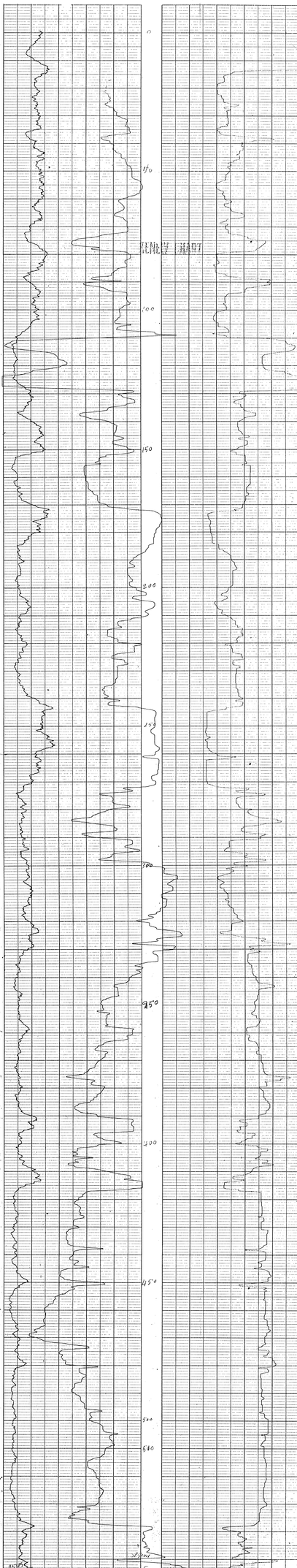
+ 10 – 0 –

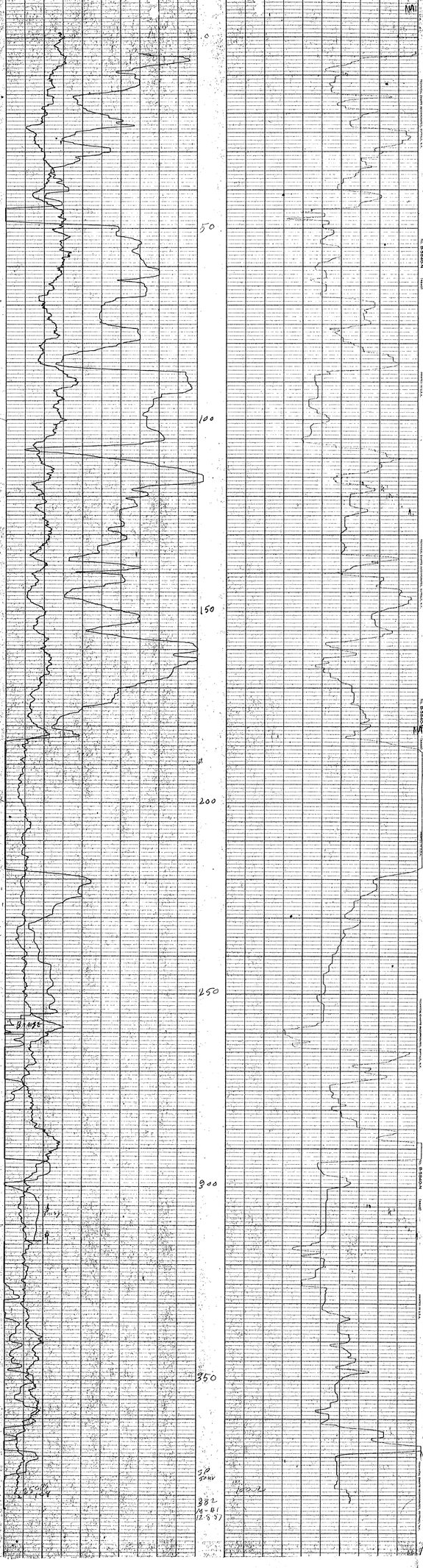
NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M


EMPTY HOLE
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
950
1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550
1600
1650
1700
1750
1800
1850
1900
1950
2000



LOGGING DATA

PROBE SIZE: 2" CALIBRATION: 300

DATE: 12-8-57 FIELD REPORTS: Edgemont

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	M-41						
HOLE SIZE	4 3/4"						
DRILLED DEPTH	400 ft						
CASING DEPTH	23.5 ft						
GAMMA SCALE	25 CPS						
SELF POT. CURRENT	7 MA						
PAPER SPEED	10 FT/HR						
LOGGING SPEED	5 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	100						
SELF POT. SCALE	10 MV/IN						
BOREHOLE WEIGHT	Water		WTR				
MUD DENSITY					PIPE SIZE		
MUD HEADING							
VISCOSITY					SALINITY		
CALIPER SCALE	MV/IN	LEG SCALE		PAPER SCALE			
TIME TIME	1000	CASED INT.			I.D.		IN
TIME OFF	1100	OPEN INT.			DIAM		IN

LOCATION

SEC. TWP. RGE.
COUNTY: Fall River
STATE: S.D.
AREA: Manka
CLIENT: Independent
LOG REC'D BY:

TIME

DRIVE: 15
FIELD: 10
STANDBY:
BREAKDOWN:
TOTAL: 1.25

OPERATOR: Miller
PARTY NO.: 41

Century

GEOPHYSICAL CORP.
TULSA, OKLA. U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ..... FILE NO.
DRLG. MEAS. FROM .....

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL
RKB40, COUNT .....
SLUSH PIT CT. .....

REMARKS:

Tools Dropping to 2nd Bottom
Thick Mud.

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	% RO	% CONC. GRA.	% U3O8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL 5 MV/IN

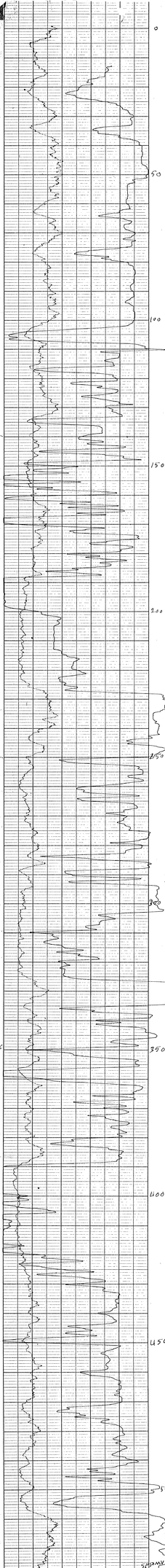
+ 10 — 0 —

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M

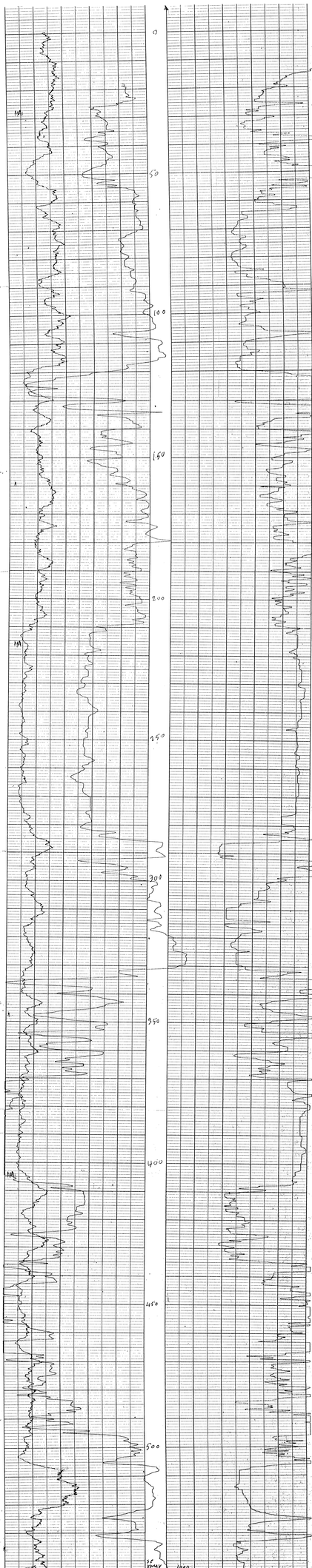


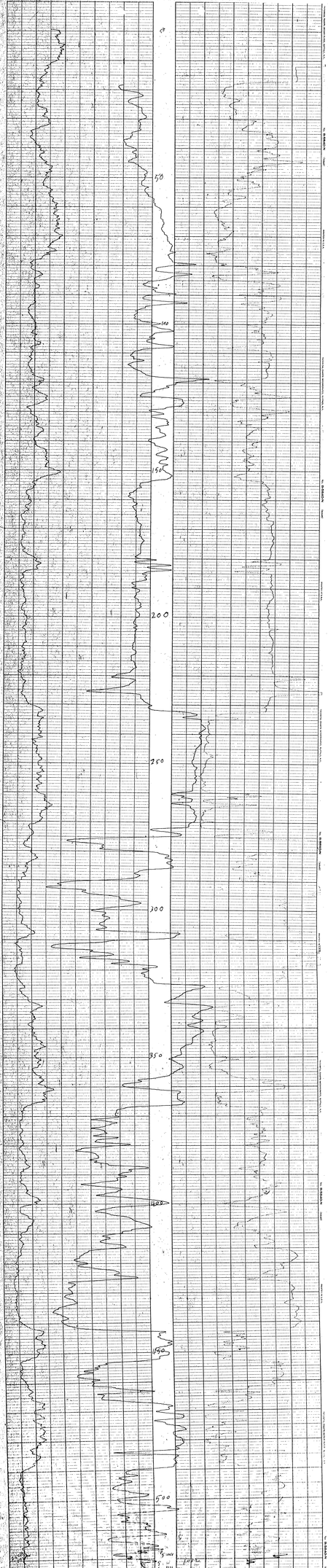
LOGGING DATA

PROBE SIZE: 5" CALIBRATION: 30 0

DATE: 11-26-51 FIELD HOURS: 7 1/2 HOURS

	CHANNEL 1	CHANNEL 2	CHANNEL 3	CHANNEL 4	CHANNEL 5
SCALE					
SCALE	10-42				
SCALE	10-42				
SCALE	30				
SCALE	30				
SCALE	5-25				
SCALE	5-25				
SCALE	5				
SCALE	5				
SCALE	1				
SCALE	1				
SCALE	1


0
50
100
150
200
250
300
350
400
450
500
550
NA
NA
NA



LOGGING DATA

PROBE SIZE: 2 11 — CALIBRATION: 300
DATE: 12-11-57 — FIELD HOOTS: Lynard

HOLE SIZE	7 7/8"				
CASING SIZE	4 1/2"				
CASING DEPTH	67 ft				
LOGGER DEPTH	622 ft				
MAX. RECORD	29				
LOGGING SPEED	30				
MUD SPEED	1				
MUD WEIGHT	10				
RESISTIVITY	100				
MUD TEMP.	70				
BOTTOM HOLE TEMP.	Water				
MUD SOURCE	RESERVOIR	WELL		FLOW LINE	
				RECEIVER	
CASING SIZE	WEIGHT	TOP	CASING SHOE		
4 1/2	9.5	0	67		
TUBING SIZE	WEIGHT	TOP	TUBING SHOE		

LOCATION
SEC. TWP. RGE.
COUNTY: Illinois
STATE: Ill
AREA: Mark R
CLIENT: Anderson
LOG REC'D BY:

TIME
DRIVE: 1.0
FIELD:
STANDBY: 4.4
BREAKDOWN:
TOTAL: 6.4

OPERATOR: Miller

PARTY NO: U11

SELF POTENTIAL 5 MV/IN

+ 10 −

NATURAL GAMMA RAY
COUNTS PER SECOND

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM KB
DRILL MEAS. FROM KB

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
DERR. FLOOR
GROUND
CLOSE BY CH.

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH FROM-TO	% U	CORR. U%	% U EQUIV.

INTERPRETATION BY:

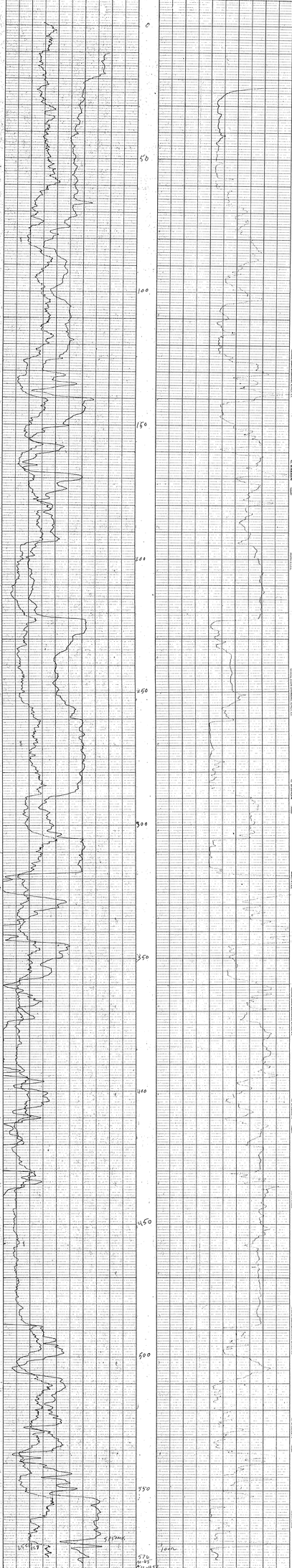
GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

CALIPER MV/IN

4	5	6	7	8	9"
6	8	10	12	14	
8	12	16	20	24	

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 7 11
DATE: 12-12-57
CALIBRATION: 300
FIELD:
HOURS: Edgewood

HOLE SIZE	7 7/8							
MUD WT.	11 lbs.							
MUD VISC.	37 s							
SURFACE CASING	576 ft							
MAX. TEMP.	85°F							
LAST CASING	576 ft							
LOGGER TD	7 ft							
LOGGER TD	10 min							
DRILLER TD	10 min	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL
RECORD AT	10 min							
RUN NO.	1	MAIN						
RUN DATE	12-12-57							
BOTTOM	PERMEABILITY			MUD				
	VISCOSITY							
CALIPER		STEEL	STEEL					
TIME CONST.	16 sec							
SPEED	30 ft							

LOCATION
SEC. Pat
COUNTY Bell Brown
STATE Tex
AREA Anderson
CLIENT
(CODE OBJECTS BY)

TIME
DRIVE: 1.2
FIELD: 1.8
STANDBY: 3.5
BREAKDOWN:
TOTAL: 7.0

OPERATOR: Miller

PARTY NO. 611

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

USE MEAS. FROM FILE
FIELD, MEAS. FROM

DATE	LOCATION OF HOLE
FOOTAGE	+ +
TOTAL DEPTH (DR.)	+ +
HOLE DIAM.	
LOGGING SPEED	SLEEVE/DIA.
TIME CONSTANT	DEGREE COUNT CLOCK AND DIA.
MUD TYPE	
CASIN 10	

REMARKS:

Last Hole - End

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

CASING PER SEC.	DEPTH TRAVERSED	%	TYPE ORE	%

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL

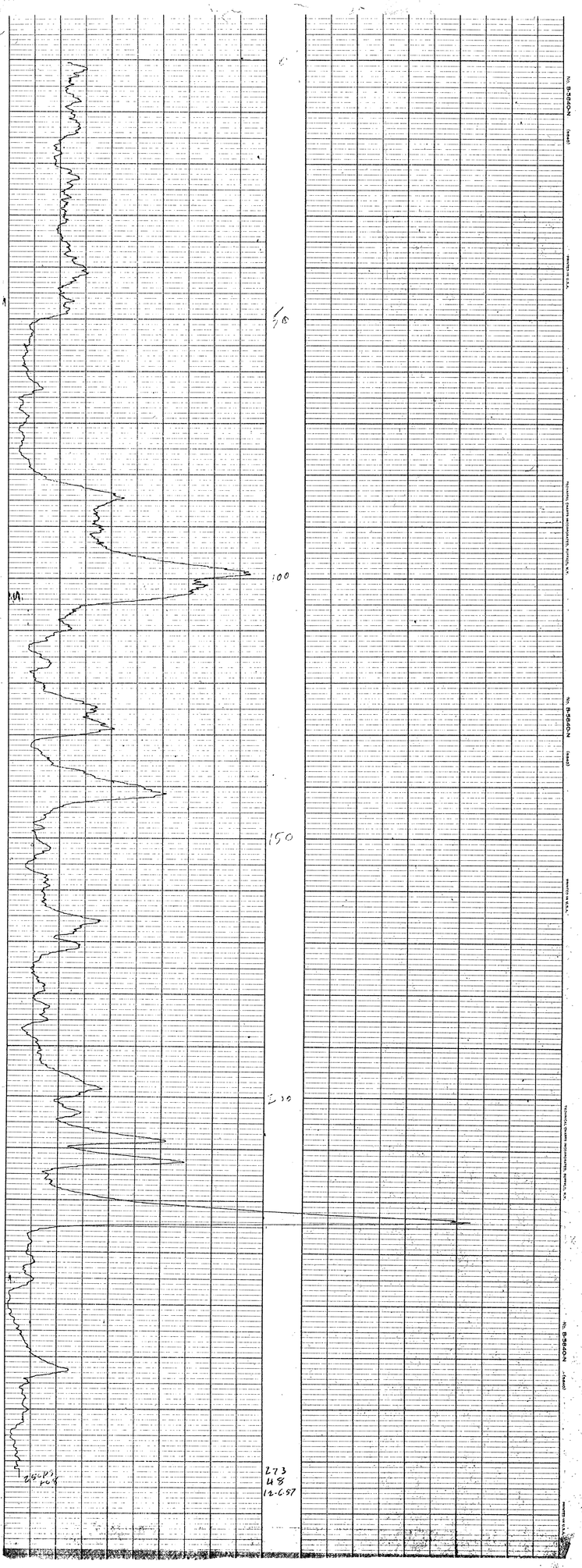
+ ◀ 10 ▶ −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 3000 24 CALIBRATION: 300
DATE: 12-7-57 FIELD HDQTRS:

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	48						
HOLE DIAM.	4 1/2 IN						
DRILLED DEPTH	273 FT.						
LOGGED DEPTH	273 FT.						
GAMMA SCALE	25 CPS						
TIME CONSTANT	8 SEC.						
PAPER SPEED	10 FT/IN						
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE							
DEEP PUT SCALE							
BORE HOLE MEDIUM	dry						
MUD VISCOSITY	RESISTIVITY MV/IN						
	VISCOSITY						
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE			
TIME IN	1700	CASED TO					
TIME OUT	1730	CORE INT.				I.D.	IN
						DIAM.	IN

WITH: TYPE BASE: SALINITY:

LOCATION		TIME	
SEC.	TWP. RGE.	DRIVE:	3
COUNTY: Pike Ky		FIELD:	7
STATE: KY		STANDBY:	
AREA: Lost Hill		BREAKDOWN:	
CLIENT: Mealister		TOTAL:	1.0
LOG REC'D BY:		OPERATOR: Miller	
		PARTY NO: 611	

Century

GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ..... FILE .....
DRLG. MEAS. FROM ..... NO. .....

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT .....
SLUSH PIT CT. .....

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KD	CORR. CPS.	% U3O8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

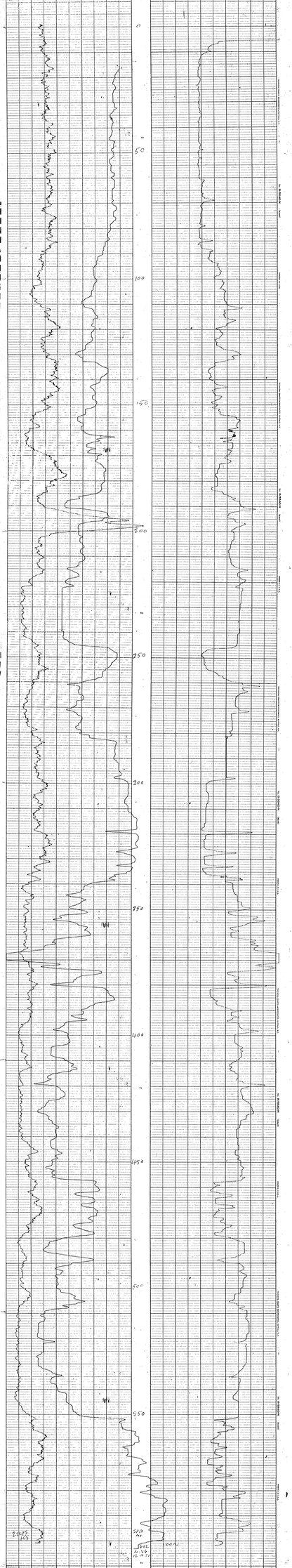
SELF POTENTIAL
+ MV −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M



LOGGING DATA

PROBE SIZE: 1.5"
CALIBRATION: 5" = 0
DATE: 12-14-52
FIELD FIGURES: 20 amps

HOLE SIZE	7 in						
MUD WT.	10 lb						
MUD VISCOSITY	40 sec						
MUD RESISTIVITY	1.5 ohm						
MUD TEMP.	75 F						
CASING SIZE	8 5/8 in						
CASING DEPTH	1 ft						
MATRIX	SANDSTONE						
MATRIX DENSITY	2.65						
MUD FILTRATE	1.0						
MUD CAKE	1/8 in						
MATRIX DT	55 μs/ft						
	FROM	TO	FROM	TO	FROM	TO	FROM	TO
MATRIX DENSITY	2.65						
MUD FILTRATE	1.0						
MUD CAKE	1/8 in						
MATRIX DT	55 μs/ft						
MATRIX	SANDSTONE						
	FROM	TO	FROM	TO	FROM	TO	FROM	TO
MATRIX	SANDSTONE						
	BOUGHER				DELAVAN		

COUNTY		COUNTY	
STATE		STATE	
LOC.		LOC.	
LOCATION		TIME	
SEC.	TWP.	RGE.	DRIVE: 1.5
COUNTY:	Kane	FIELD:	FIELD: 1.0
STATE:	Utah	STANDBY:	STANDBY: 3.0
AREA:	Moab	BREAKDOWN:	BREAKDOWN:
CLIMB:		TOTAL:	TOTAL: 4.5
DATE: 12-14-52 / 12-15-52		OPERATOR:	OPERATOR: Miller
LOG RECEIVED:			

PART NO. 6-4

Century GEOPHYSICAL CORP.

TULSA, OKLA., U.S.A.

EXPLORATION LOG

COMPANY:
WORK HOLE NO.:
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

DIS. MEAS. FROM DRILL MEAS. FROM	KB / DF / GL	LOCATION OF HOLE
DATE		
FOOTAGE		
TOTAL DEPTH (DR)		
HOLE DIAM.		
LOGGING SPEED		
TIME CONSTANT		ELEVATION
MUD TYPE		KB
CASED TO		DF
		GL

REMARKS: WEBER COUNTY CLERK REF CO.

INTERPRETATION

RADIO METRIC "I" VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR.

MINERALIZATION

COUNTS PER SEC.	DEPTH MEASURED	I	COUNTS PER SEC.	DEPTH MEASURED	I

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

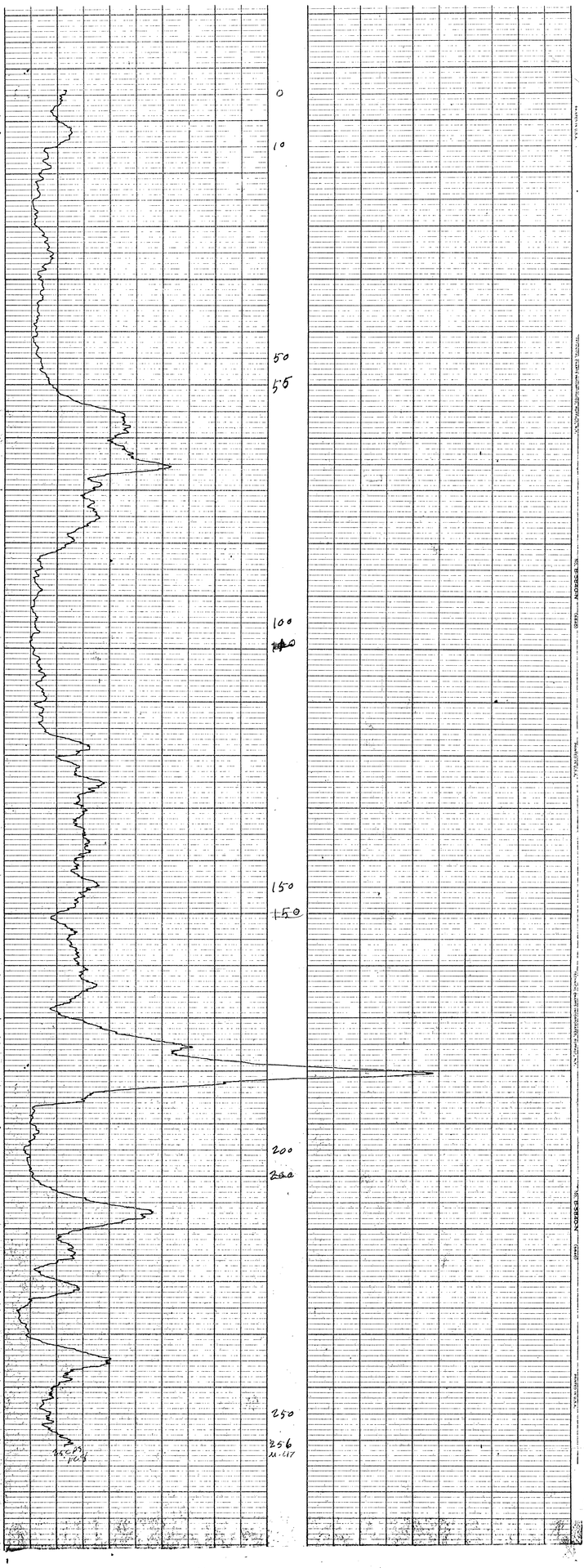
SELF POTENTIAL

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER IN/IN

4 5 6 7 8
6 8 10 12 14

Copy of Radiation



LOGGING DATA

PROBE SIZE: 2"
CALIBRATION: 30°
DATE: 12-7-57
FIELD HDQTRS: Edgemont

	INITIAL RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN	RE-RUN
HOLE NO.	M 42					
HOLE SIZE	4 1/2 IN					
DRILLED DEPTH	256 FT					
LOGGED DEPTH	256 FT					
GAMMA SCALE	2.5 CPS					
TIME CONSTANT	3 SEC					
PAPER SPEED	10 FT/M					
LOGGING SPEED	10 FT/M	FT/M	FT/M	FT/M	FT/M	FT/M
RESISTANCE SCALE	—					
SELF POT SCALE	— MV/IN					
BORE HOLE MEDIUM	dry	WATER				
MUD READINGS	RESISTIVITY			TYPE BASE		
	VISCOSITY			SALINITY		
CALIPER SCALE	MV/IN	LEG SIZE		PAPER SCALE		
TIME IN	1200	CASED TO			T.D.	IN
TIME OUT		CORE INT.			DIAM	IN

LOCATION			TIME	
SEC.	TWP.	RGE.	DRIVE:	10
COUNTY: Fall River			FIELD:	5
STATE: S.D.			STANDBY:	30
AREA: Lost Hill			BREAKDOWN:	
CLIENT: Macalester			TOTAL:	4.5
LOG REC'D BY:			OPERATOR: Miller	
			PARTY NO: U11	

Century
GEOPHYSICAL CORP.
TULSA, OKLA., U.S.A.
EXPLORATION LOG

COMPANY:
BORE HOLE NO.
FIELD
COUNTY
LOCATION: SEC. TWP. RGE.

LOG MEAS. FROM ---------- FILE ----------
DRLG. MEAS. FROM ---------- NO. ----------

DATE:
FOOTAGE
TOTAL DEPTH (DR)
HOLE DIAM.
LOGGING SPEED
TIME CONSTANT
MUD TYPE
CASED TO

LOCATION OF HOLE

ELEVATION
KB
GL
BKGRD. COUNT ----------
SLUSH PIT CT. ----------

REMARKS:

INTERPRETATION

RADIO METRIC % VALUES COMPUTED WITHOUT BENEFIT OF LOCAL ORE EQUILIBRIUM FACTOR

MINERALIZATION

COUNTS PER SEC.	DEPTH THICKNESS	K KD	CORR. CPS.	% U_3O_8

INTERPRETATION BY:

GEOLOGIC TOPS

FORMATION	DEPTHS	THICKNESS

SELF POTENTIAL

+ — −

NATURAL GAMMA RAY
COUNTS PER SECOND

CALIPER MV/IN

4	5	6	7	8	9
4	6	8	10	12	14
4	8	12	16	20	24

RESISTANCE
OHMS — M