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REPORT ON STRUCTURE TEST PROGRAM

P. & N.G. PERMITS NOS. 1397 TO 1403

SOUTH TATHLINA AREA, N.W.T.

Prepared For

Murphy Corporation

May, 1958

J. C. SPROULE & ASSOCIATES

GEOLOGICAL & EXPLORATION CONSULTANTS

501 EIGHTH AVENUE WEST
CALGARY — ALBERTA

TELEPHONES
AMHERST 2-4128
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INTRODUCTION

A structure test program was conducted during February and March, 1958 on the Petroleum and Natural Gas Permits held by Murphy Corporation in the South Tathlina area of the Northwest Territories. Previous regional studies by J. C. Sproule & Associates indicated anomalous structure might be expected in the Murphy Permit area. (See "Geological Report, Murphy Corporation Permit Holdings, South Tathlina Area, N.W.T." submitted February 1958). The structure test program was planned to locate structural trends anomalous to the regional structure and to check particularly those areas in which strong structural relief was suggested by the photogeological interpretation. No holes were located on Permits Nos. 1398 and 1401, as these Permits are topographically unfavorable for access, and deep holes involving difficult drilling conditions would be required to reach correlatable Devonian marker horizons.

The structure test holes were drilled by Accurate Exploration Ltd. during the period between February 16 to March 26, 1958. Altogether, 19 structure tests were drilled and logged. Four additional holes were planned and access roads for these were prepared, but the advent of spring weather prevented the drilling of these holes.

Electric logging, hole deviation surveying and location and elevation surveying for the program were conducted by Electronic Logging & Velocity Co. Ltd.

C. A. S. Bulmer, a geologist with J. C. Sproule & Associates, supervised the field geological aspects of the operation. By having a geologist in the field for the examinations and correlations of logs it was possible to save on footage costs by reducing the proposed depths for a number of the holes, and to permit a better selection of structure control points by taking advantage of the structural interpretations from currently drilling holes.

This report is illustrated by a structure map contoured on the Structure Test Marker "L", a distinctive electro-log feature in the Grumbler formation of the Upper Devonian. To give a wider structural picture, the contouring is extended to include the structure tests of Union Oil Company of California and Merrill Petroleums Limited, which have been made available to Murphy Corporation. Copies of the electric logs for all the holes drilled, with the correlation markers indicated, are also included with the report. Samples were taken for the deeper tests, and lithological descriptions for Structure Tests Nos. 1, 4, 12, 14 and 23 appear as Appendices I to V. The locations of Structure Tests and Structure Test Data are given in Tables I and II.

STRUCTURE TEST DATA

The footage drilled for the 19 holes totalled 6,526 feet, which averages 343 feet per hole.

Correlations have been made by the use of electric logs and lithology. Electric log markers are designated by letters. A number of these markers have been previously used by the authors in adjacent areas. For example, letters which are common to the logs of both Merrill Petroleums Limited and Murphy Corporation indicate the same marker horizons. The letters used for the Murphy logs are, in descending order, C, M, K, G, L, Z, H, X, J, P and Q.

The Murphy structure tests are mostly drilled and correlated in the Upper Devonian Grumbler formation. Two holes, Nos. 12 and 14, are believed to penetrate beds equivalent to the Alexandra formation which is beneath the Grumbler. The "Q" horizon is considered equivalent to the top of the Alexandra formation. This Upper Devonian formation occurs typically only in the vicinity of Alexandra Falls. Cretaceous shales and sandstones are present above the Devonian limestones in the southwest part of the drilled area.

Electric log correlations can be made with confidence on all holes except Nos. 23, 6 and 14. Reefing conditions which develop in the two eastern Permits cause this difficulty. Beds, which elsewhere have great lateral continuity with fairly constant character, change character rapidly in these few holes in the eastern Permits.

The locations in terms of latitude and longitude for the 19 holes drilled by Murphy Corporation in the South Tathlina area are given in Table I. Table II gives elevations, total depths, and depths and elevations for the correlation markers for the Murphy structure tests.

(See Table I on next page)

TABLE I

LOCATIONS OF STRUCTURE TESTS

S.T. No.	Location
1	Lat. 60° 27' 46" N, Long. 116° 54' 30" W.
2	Lat. 60° 25' 37" N, Long. 116° 49' 12" W.
3	Lat. 60° 23' 31" N, Long. 116° 46' 6" W.
4	Lat. 60° 21' 23" N, Long. 116° 45' 10" W.
5	Lat. 60° 16' 42" N, Long. 116° 43' 30" W.
6	Lat. 60° 18' 28" N, Long. 116° 30' 42" W.
7	Lat. 60° 13' 25" N, Long. 116° 36' 43" W.
8	Lat. 60° 12' 0" N, Long. 116° 30' 24" W.
9	Lat. 60° 8' 20" N, Long. 116° 41' 50" W.
10	Lat. 60° 8' 7" N, Long. 116° 30' 22" W.
11	Lat. 60° 4' 48" N, Long. 116° 33' 30" W.
12	Lat. 60° 2' 39" N, Long. 116° 51' 32" W.
13	Lat. 60° 0' 49" N, Long. 116° 39' 20" W.
14	Lat. 60° 0' 8" N, Long. 116° 30' 8" W.
15	Lat. 60° 8' 34" N, Long. 116° 54' 4" W.
16	Lat. 60° 15' 14" N, Long. 116° 51' 15" W.
17	Lat. 60° 10' N, Long. 116° 36' W.
18	Lat. 60° 14' N, Long. 116° 30.5' W.
23	Lat. 60° 16' N, Long. 116° 33' W.

TABLE II

STRUCTURE TEST DATA

Structure Test No.:	1	2	3	4	5	6	7	8	9	10	11	12
Elevation (Feet) :	1009	987	986	978	965	932	935	985	949	978	982	972
Total Depth (Feet):	272	204	299	294	307	205	302	205	308	204	203	1094
Marker "C" Depth :												
Elev. :												
Marker "M" Depth :	109	100	74	52								188
Elev. :	+900	+887	+912	+926								+784
Marker "K" Depth :	143	137	113	94	67							240
Elev. :	+866	+850	+873	+884	+898							+732
Marker "G" Depth :	215		182	163	136				77			314
Elev. :	+794		+804	+815	+829				+872			+658
Marker "L" Depth :	232		200	182	152				95			333
	+777	+762*	+786	+796	+813	+1001*	+934*	+1037*	+854	+965*	+960*	+639
Marker "Z" Depth :	265		233	213	183				129			369
Elev. :	+744		+753	+765	+782				+820			+603
Marker "H" Depth :				285	252		111	58	205	127	136	448
Elev. :				+693	+713		+824	+927	+744	+851	+846	+524
Marker "X" Depth :					292		143	78	245			490
Elev. :					+673		+792	+907	+704			+482
Marker "J" Depth :												
Elev. :						162	280					619
						+770	+655					+353
Marker "P" Depth :												730
Elev. :												+242
Marker "Q" Depth :												890
Elev. :												+82

* Calculated value

Table II - Continued

Structure Test No.:	13	14	15	16	17	18	23
Elevation (Feet) :	982	984	991	983	960	974	933
Total Depth (Feet):	307	824	315	297	244	248	394
Marker "C" Depth :			150	114			
Elev. :			+841	+869			
Marker "M" Depth :			218	180			
Elev. :			+773	+803			
Marker "K" Depth :			262	222			
Elev. :			+729	+761			
Marker "G" Depth :					36		
Elev. :					+924		
Marker "L" Depth :	130	142			58		
Elev. :	+852	+842	+636*	+668*	+902	+1023*	+1017*
Marker "Z" Depth :	165				90		
Elev. :	+817				+870		
Marker "H" Depth :	247	268			172	51	
Elev. :	+735	+716			+788	+923	
Marker "X" Depth :	288				207		
Elev. :	+694				+753		
Marker "J" Depth :		424				222	194
Elev. :		+560				+752	+739
Marker "P" Depth :							
Elev. :							
Marker "Q" Depth :		?704					
Elev. :		+280					

GEOLOGICAL STRUCTURE

The accompanying map is, as is noted above, contoured on the "L" horizon of the Upper Devonian. This marker occupies a central position within the composite section encountered by the Murphy holes. Although it is generally desirable to map on the lowest usable correlation marker, the occurrence of fairly constant intervals between markers should make the use of the "L" horizon satisfactory within the project area.

Southwest-trending basement faults or flexures are dominant features of the regional structure in the general area south and southwest of Great Slave Lake. The reef development in the Middle Devonian in the Pine Point area, south of Great Slave Lake and east of the area of the accompanying map, for example, is controlled by a southwest-trending fault zone. Elsewhere, in both the Northwest Territories and northern Alberta, Devonian reef development also appears closely related to such trends. Other trends and structural features responsible for reefoid developments may be present but, if so, they have not been recognized to date.

From our regional structural knowledge of the general area south and west of Great Slave Lake it is anticipated that local structural features are closely related to the above-noted southwest basement trends. Our contouring of the structure test data is based on such an interpretation. The regional strike in the subject area is very close to north-south. Three southwest structural trends have been mapped in the Murphy Permit area. Faulting, transverse to the predominant regional fault trends, is also known in the general area and, if present in the Murphy Permit area, this could result in closed local structures on any of the three southwest trending structural features which have been mapped. Further detailing will be required to determine the presence of such closed structures. The original isolated reefoid developments along these faulted trends were probably much closer to horizontal than they are now and, subsequently, they have been tilted basinward. This could result in porosity traps along the major trends even if structural closure is not present. The three trends noted above will be discussed in order from north to south.

The most northerly anomalous structural feature, which is in Permit No. 1397, is based chiefly on Structure Test No. 1. This test hole is structurally 100 feet higher than regional. Four additional holes, which were planned to further define this feature, were not drilled because of the spring thaw.

A northeast-southwest linear feature is mapped close to the Hay River in Permit No. 1400 and in the north portion of Permit No. 1403. Local reefing of near-surface Devonian beds may be further evidence of the reflection of deeper structure. As correlated, Structure Test No. 23 indicates additional anomalous local structure. Marked undulations in the outcropping beds at this point serve to confirm the interpretation of near-surface reef development. Possible alternative correlations for Structure Tests Nos. 6 and 23 could modify slightly the mapped locally anomalous structure.

Potentially, the largest structural anomaly in the Murphy Permit area is in the southeast portion of Permit No. 1403. This anomaly is based on Structure Test No. 14 and a questionable correlation with the Imperial Yates River No. 16-18 deep test to the southeast in Alberta. Although an alternative correlation can be made for No. 14, both correlations suggest a structural anomaly of considerable magnitude. The change in facies, which makes Test No. 14 difficult to correlate, is in itself evidence of probable structural relief in the area. The anomalous area in this corner of Permit No. 1403 is on trend with a northeast-southwest subsurface fault in Alberta, which has been suggested on the basis of deep-test data.

CONCLUSIONS AND RECOMMENDATIONS

The structure test program, which has been conducted by Murphy Corporation on their South Tathlina area P. & N.G. holdings in the Northwest Territories, has indicated anomalous structure in the northern half of Permit No. 1397 and in the eastern portions of Permits Nos. 1400 and 1403. These indicated areas of anomalous structure coincide in general with predicted areas of high structural relief based on the previous photogeological interpretation.

Oil and gas shows in the Slave Point and Presqu'ile formations are prevalent in the general Great Slave Lake area. Reef developments in these formations are the principal prospective zones for oil and gas in the subject area. Such reef developments may be anticipated in areas where structural anomalies appear related to tectonic trends, such as those which have been indicated on the accompanying structure test map.

The following recommendations are proposed.

1. The acquisition of additional P. & N.G. Permits to the east of Permits Nos. 1400 and 1403 should be considered, as both reefing in near-surface beds and anomalous structure are present in this area. This recommendation was previously made in our letter of May 2, 1958 to Mr. F. Jacobson, of Murphy Corporation, and we understand that a request has already been made for posting of two Permits on the east.

2. Further detailing of the structure in Permits Nos. 1400 and 1403 by structure test drilling should be undertaken this coming winter. This could be done in conjunction with the exploration of additional Permits, should Murphy Corporation be successful in obtaining them.

3. Structure Test Holes Nos. 19, 20, 21 and 22, which have been already located, should be drilled this coming winter to further evaluate the anomalous structural trend indicated by the relation of Structure Test Hole No. 1 to other control points.

4. Consideration of a deep test or tests should be postponed until additional structural exploration has been completed.

S. R. L. Harding, P. Eng.

R. deWit

901 - Eighth Avenue West,
Calgary, Alberta.
May 31, 1958.

APPENDIX I

SAMPLE DESCRIPTION

MURPHY CORPORATION - SOUTH TATHLINA LAKE S.T. NO. 1

Location: N. 169,652', E. 14,573' of Boundary Monument No. 267, N.W.T. P. & N. G. Permit No. 1397

Elevation: 1,008.7' (Ground)

Total Depth: 272'

Completed: March 7, 1958

Status: Dry and abandoned

Logged by: E. J. Tassonyi

Interval Feet	Description
UPPER DEVONIAN	
0 - 10	Limestone - silty, tan to buff, finely crystalline; in part slightly calcarenitic.
10 - 20	Limestone - silty, buff to greyish buff, dense to calcarenitic.
20 - 30	Limestone - silty, calcarenitic, with traces of minute calcite nodules. Some tan, fragmental dolomitic limestone with crinoid fragments and traces of brachiopods; in part dark mottled; residue slightly silty; trace of green, calcareous, silty shale (partings).
30 - 40	Limestone - silty, tan to light grey, calcarenitic. Light grey, and greenish-grey, argillaceous, micaceous, calcareous siltstone partings.
40 - 60	Limestone - generally very silty, tan to buff, dense, in part calcarenitic. Some fragmental limestone with crinoid fragments throughout; traces of dolomitic recrystallization at the base:

Interval Feet	Description
	trace of brachiopod fragments from 70 feet on. Trace of light brown, finely crystalline, silty limestone at 90 feet.
90 - 100	Limestone - silty, buff; dense, in part calcarenitic to sublithographic; brachiopod? fragments. Light grey, slightly micaceous, calcareous siltstone and silty limestone partings.
100 - 110	Limestone - silty, tan to buff, calcarenitic to sublithographic. Some pale grey, silty, sublithographic limestone.
110 - 120	Shale - calcareous, silty, light green, micromicaceous. Limestone, silty, buff; in part calcarenitic; trace of crinoid fragments.
120 - 130	Limestone, silty, buff; in part very silty; in part sublithographic to calcarenitic with fossil fragments. Trace of greenish-grey, very argillaceous, calcareous siltstone.
130 - 140	Limestone - silty, buff, calcarenitic to dense. Siltstone - calcareous, argillaceous, pale grey.
140 - 150	Siltstone - calcareous, light greenish-grey; in part micaceous; in part very argillaceous; grading into pale greyish green, very silty, calcareous shale. Limestone - silty, buff, very finely crystalline to calcarenitic; with brachiopods and a trace of algal? nodule. Some grey mottled tan limestone.
150 - 170	Limestone - tan, bioclastic; crinoid and brachiopod fragments embedded in a dense, sublithographic matrix. Trace of dark steel-grey, dense, pyritic limestone with brachiopod fragments at 160 feet; traces of dark mottling and minute calcite nodules at 170 feet; interbedded with pale grey, very calcareous siltstone.
170 - 180	Missing.
180 - 200	Limestone - silty, tan to buff, fossiliferous, fragmental; in part calcarenitic; trace of minute calcitic nodules at top of interval; subordinate light grey, calcareous siltstone and silty limestone interbeds.
200 - 220	Limestone - very silty, buff to light buff, dense, with fossil fragments.

Interval Feet	Description
	Limestone - silty, dense, pale grey. Siltstone - calcareous, pale greenish-grey; becoming micaceous toward the base.
220 - 250	Limestone - silty, tan to light grey; pyritic at 250 feet; interbedded with subordinate light grey, very calcareous siltstone. From 230 feet on some tan, finely crystalline and fossiliferous fragmental, slightly silty limestone with crinoid fragments.
250-270	Limestone - silty, buff to greyish-buff, dense; brachiopods. Trace of greyish buff and greenish grey calcareous siltstone.

SAMPLE DESCRIPTION

MURPHY CORPORATION - SOUTH TATHLINA LAKE S.T. NO. 4

Location: N. 130,366', E 42,060' of Boundary Monument No. 267 N.W.T. P. & N. G. Permit No. 1397

Elevation: 978.2' (Ground)

Total Depth: 294'

Completed: March 3, 1958

Status: Dry and abandoned

Logged by: E. J. Tassonyi

Interval Feet	Description
0-20	No samples. Glacial drift?
UPPER DEVONIAN	
20-40	Limestone - silty, buff to tan, finely crystalline to calcarenitic; grey mottling at 20'-30'; few light grey, very silty limestone partings. Brachiopods at the top of interval, brachiopod? fragments at the base. Some greyish tan, calcarenitic, silty limestone at the base.
40-60	Limestone - silty, buff to tan, calcarenitic; interbedded with some light greenish grey, very calcareous siltstone and greenish grey, dense, very silty limestone. Trace of green, micaceous, calcareous shale at 50' to 60'. Trace of light cream, microcrystalline, silty limestone at the base.
60-80	Limestone - silty, buff, calcarenitic; fossil fragments at the base; interbedded with subordinate light greenish grey very silty limestone and similar calcareous siltstone. Trace of light grey, microcrystalline, silty limestone.
80-90	Limestone - silty, buff and light buff, dense.
90-140	Limestone - silty, buff to light grey, calcarenitic to dense; pyritic at 120'. At 120' some buff, finely crystalline limestone with fossil fragments; in part recrystallized. Light grey, and greenish grey, in part micaceous and argillaceous, calcareous siltstone throughout (interbeds) with traces of carbonaceous specks at 120'. Brachiopods at 100'; few crinoid stems at 110'; brachiopods and crinoid fragments at the base.

Interval Feet	Description
140-150	Limestone - silty, buff, calcarenitic to dense; some microcrystalline with fossil fragments; interbedded with light grey, and greenish grey, very calcareous siltstone and creamish grey, silty limestone.
150-180	Limestone - silty, buff to tan, and some cream, dense; in part microcrystalling to sublithographic; interbedded with light grey and greenish grey, micaceous, calcareous siltstone and light grey, very silty limestone. (One pink, lithographic limestone fragment at the base?)
180-190	Limestone - buff, silty, microcrystalline to sublithographic; in part calcarenitic, Subordinate greenish grey calcareous siltstone with carbonaceous specks and scattered fine mica.
190-200	Limestone - silty, buff and greenish grey, dense to microcrystalline.
200-220	Limestone - buff to cream, finely crystalline, slightly silty; interbedded with greenish grey, micaceous, calcareous siltstone; prominent at 210'. Trace of cream, lithographic limestone at 220'.
220-240	Limestone - silty, buff to cream, microcrystalline; in part cryptocrystalline or calcarenitic. Trace of pale greenish grey very silty limestone and similar, very calcareous siltstone at the base.
240-260	Limestone - silty, light buff, dense with some buff microcrystalline to cryptocrystalline slightly silty limestone. Some pale grey, very silty limestone and light grey, calcareous siltstone. (Some (5%) coal with traces of fine, white, very fine grained sandy partings and a few fragments of very fine-grained, slightly glauconitic, quartzose sandstone. Coal prominent at the top, decreasing toward the base. The origin of the coal in the samples uncertain.)
260-270	Limestone - silty, cream to buff, dense to calcarenitic with traces of pale greenish grey, micaceous, very calcareous siltstone. (Abundant coal)
270-280	Limestone - buff, to cream, microcrystalline to cryptocrystalline, slightly silty. Trace of greenish grey calcareous siltstone. (Some coal)

Interval Feet	Description
280-290	Limestone - very silty, buff with some tan, dense, cryptocrystalline to microcrystalline, slightly silty limestone. Trace of light greenish grey, calcareous siltstone. (Some coal)

NOTE: The presence of the coal in the samples from 240' on appears to be inconsistent with the general lithology. It is probable, that it is contamination from the 0' - 20' horizon or from outside source.

APPENDIX III

SAMPLE DESCRIPTION

MURPHY CORPORATION - SOUTH TATHLINA LAKE S.T. NO. 12

Location:	N. 15,595', E. 2,167' of Boundary Monument No. 267 N.W.T. P. & N. G. Permit No. 1402
Elevation:	972.2' (Ground)
Total Depth:	1094'
Completed:	February 23, 1958
Status:	Dry and abandoned
Logged by:	E. J. Tassonyi

Interval Feet	Description
PLEISTOCENE AND HOLOCENE	
0-60	Glacial drift. Granule sand, conglomeratic.
CRETACEOUS	
60-70	Sandstone - calcareous, white, quartzose, glauconitic, fine-grained, subangular, poorly sorted. Trace of light grey, spore bearing shale. Interval may be reworked.
70-100	Sandstone - as above, strongly glauconitic.
100-110	Shale - greyish brown, very hard; abundant pyrite.
110-127	Sandstone and siltstone. Sandstone - slightly calcareous, white to light grey, quartzose, glauconitic, fine-grained, subangular, poorly sorted. Siltstone - slightly calcareous and argillaceous, light grey, glauconitic. Trace of black pyritic shale at the base.
UPPER DEVONIAN	
127-180	Limestone - slightly to moderately silty, light tan to buff, calcarenitic to finely crystalline to cryptocrystalline; trace of brachiopod fragments; calcite lined vugs at 130'; trace of grey coloration and indistinct dark mottling from 150' on. Greenish grey, silty, calcareous shale partings at 170'.

Interval Feet	Description
180-190	Limestone - as above; in part very silty with grey, argillaceous silty partings.
190-220	Limestone - generally very silty, buff, calcarenitic, fragmental with fossil fragments; bryozoa at 210'. Some light grey (greenish tinge) very calcareous siltstone throughout. (Trace of light grey glauconitic sandstone at 190' to 200', caving?)
220-240	Limestone - silty, tan to greyish tan, calcarenitic; fossil fragments; in part very silty; trace of crinoids at 240'. Trace of pale grey, pyritic, silty limestone at 220'.
240-250	Limestone - silty, tan, finely crystalline and calcarenitic. Trace of light grey, very silty limestone and light grey, very calcareous siltstone. Trace of bryozoa.
250-260	Limestone - tan to cream, sublithographic, slightly silty. Trace of greenish grey, calcareous siltstone.
260-280	Limestone - silty, pale grey to buff. Siltstone - calcareous, greenish grey. Trace of dark tan, lithographic limestone and pale green, very silty, calcareous shale at 280'. Brachiopod fragments at 270'.
280-300	Limestone - silty, pale grey to tan, finely crystalline; brachiopods at 290'. Siltstone - calcareous, light grey, slightly argillaceous.
300-330	Limestone - pale grey to tan, cryptocrystalline to microcrystalline, slightly silty. Abundant light grey calcareous siltstone at 310'; trace of pale greenish grey, silty, calcareous shale at 330'.
330-370	Limestone - silty, pale grey to tan, cryptocrystalline.
370-390	Limestone - silty, pale grey, in part calcarenitic to sublithographic.
390-400	Limestone - silty, buff to tan; traces of pyrite; abundant brachiopods.
400-410	Limestone - slightly silty, buff to tan, calcarenitic to dense. Pale greyish green, silty, calcareous shale partings.
410-440	Limestone - silty, tan, fragmental, calcarenitic; traces of green calcareous shale between 410' to 430'. Siltstone - calcareous, greenish grey.

Interval Feet	Description
440-450	Limestone - silty, buff to tan, calcarenitic; in part with traces of microscopic green silty mottling.
450-470	Limestone - silty, tan, fragmental, calcarenitic; traces of crinoids and brachiopods at the top; increasingly silty toward the base. Greenish grey, calcareous siltstone interbeds throughout. Greenish grey calcareous shale partings at 470'.
470-480	Limestone - marly, silty, pale greyish green; cryptocrystalline, some tan to buff, calcarenitic to sublithographic, very silty limestone.
480-490	Limestone - silty, pale greyish green to buff; interbedded with greenish grey, calcareous siltstone; brachiopods.
490-510	Limestone - tan, fragmental, slightly silty with some light grey and greyish tan, dense, slightly silty limestone at the base.
510-520	Siltstone - calcareous, light grey with greenish tinge, grading into limestone - silty, light grey, dense. Traces of pyrite and brachiopods. Some tan, calcarenitic, dense limestone.
520-530	Siltstone - as above. Limestone - silty, tan, fragmental to sublithographic.
530-570	Limestone - buff and tan, calcarenitic, dense with some sublithographic portions at the top; generally slightly silty. Traces of crinoid fragments at 540' with some fossiliferous fragmental limestone.
570-580	Limestone - grey, fragmental; traces of pseudo oolites? at the top. Limestone - tan, calcarenitic, in part silty; in part medium grained and partly recrystallized to dolomitic limestone.
580-600	Limestone - tan, calcarenitic to sublithographic; slightly silty. Some greenish grey, silty limestone throughout (contact with tan limestone observed). Trace of pyrite at 590'; greyish green very calcareous siltstone partings at 600'.
600-620	Limestone - silty, pale grey and greyish tan; in part mottled; fossiliferous-fragmental to calcarenitic. Pale greenish grey, calcareous siltstone partings.
620-650	Limestone - tan, calcarenitic to sublithographic; in part fossiliferous fragmental at 630'; generally slightly silty; trace of greenish grey calcareous siltstone at 640'.

Interval Feet	Description
650-690	Limestone - silty, tan, in part calcarenitic; in part sublithographic. Trace of green, calcareous shale at 660'; some greenish grey, very silty limestone at 680'; some dark tan, fragmental, dark mottled limestone at 690'.
690-710	Limestone - tan, calcarenitic and fossiliferous fragmental; slightly or very slightly silty.
710-720	Limestone - silty, fossiliferous-fragmental; crinoid fragments; green, calcareous shale partings.
720-750	Limestone - silty, tan, calcarenitic to sublithographic. Sample very poor at 730'; probably shale.
750-770	Limestone - silty, grey and greenish grey; dense, some tan fossiliferous-fragmental limestone with crinoid fragments at 770'. Siltstone - calcareous, light grey and greenish grey. Trace of green calcareous shale at 760'.
770-790	Siltstone - calcareous, light grey. Limestone - very silty, light grey, dense. Green, calcareous shale partings.
790-810	Limestone - very silty, light grey with greenish tinge, interbedded with light grey calcareous siltstone. (Abundant tan, fragmental limestone; recirculated sample?). Trace of green, calcareous shale.
810-820	Limestone - silty, pale grey; siltstone - as above.
820-840	Limestone - silty, pale grey, dense. Shale - calcareous, silty, green. Siltstone - calcareous, light grey.
840-860	Limestone - very silty, light grey; slightly argillaceous; interbedded with light grey, slightly argillaceous, very calcareous siltstone.
860-890	Limestone - very silty, pale grey; slightly argillaceous (40% clastic residue with very fine silt). Some similar calcareous siltstone and traces of green, calcareous shale throughout.
890-900	Limestone - silty, pale grey, dense.
900-910	Limestone - silty, tan, dense.
910-930	Limestone - buff and creamish buff, slightly silty, sublithographic to lithographic; some tan fragmental limestone.

Interval Feet	Description
930-940	Shale - calcareous, greenish grey. (Poor recirculated sample.)
940-950	Limestone - silty, pale greyish buff and greenish buff, dense to calcarenitic.
950-960	Siltstone and limestone. Siltstone - calcareous, light grey. Limestone - silty, light grey, dense. Trace of bright green, calcareous shale.
960-1020	Limestone - generally very silty, light grey and greyish buff, dense. Abundant (30% to 50%) grey and light grey, argillaceous, calcareous siltstone. Trace of bright green, micromicaceous, silty, calcareous shale at 1020'. (Poor samples.)
1020-1050	Limestone - silty, buff and pale grey, dense. Brachiopods at 1030'. Between 1030' to 1050' some siltstone and shale, as above. (Very poor, recirculated samples.)
1050-1060	Siltstone - very calcareous, light grey and greyish tan; interbedded with some pale grey and greyish cream, dense, very silty limestone.
1060-1094	Shale - calcareous, pale green; becoming greenish grey and silty. Siltstone - calcareous, light greenish grey. (Samples are very poor, contain abundant light grey and tan, silty limestone; probably recirculated.)

SAMPLE DESCRIPTION

MURPHY CORPORATION - SOUTH TATHLINA LAKE S.T. NO. 14

Location: N. 900', E. 159,109' of Boundary Monument No. 267, N.W.T. P. & N. G. Permit No. 1403

Elevation: 984.2' (Ground)

Total Depth: 823'

Completed: March 19, 1958

Status: Dry and abandoned

Logged by: E. J. Tassonyi

Interval Feet	Description
PLEISTOCENE AND HOLOCENE	
0 - 10	No sample
20 - 70	Glacial drift. Light brownish grey, slightly bentonitic clay with abundant glacial pebbles. Probably Cretaceous outwash in part.
CRETACEOUS	
70 - 80	Clay - as above. Sandstone - calcareous, white, quartzose, very fine-grained, glauconitic.
80 - 120	Clay - brownish grey, slightly bentonitic; some light brownish grey, calcareous shale at the base. Most of the fragments appear to be rolled.
120 - 130	Clay - as above; traces of white, very fine-grained, glauconitic calcareous sandstone.
UPPER DEVONIAN	
130 - 140	Limestone - buff, cryptocrystalline, very slightly silty.
140 - 150	Limestone - buff and greyish tan, cryptocrystalline, slightly silty and dolomitic.

Interval Feet	Description
150 - 160	Limestone - buff, cryptocrystalline, with fossil fragments; some buff sublithographic limestone; traces of dark grey mottling.
160 - 180	Limestone - buff, cryptocrystalline and calcarenitic, slightly silty; some light buff, dense, slightly silty limestone with fossil fragments; brachiopod shells and bryozoa common at the top; crinoids at the base; traces of dolomitic recrystallization.
180 - 190	Limestone - buff, very fine-grained, calcarenitic to sublithographic, slightly silty; fossil fragments; numerous fine fractures filled with secondary calcite.
190 - 200	Limestone - buff, in part slightly silty, calcarenitic, dense with traces of dark microscopic mottling.
200 - 230	Limestone - silty, pale greyish-cream to cream; calcarenitic, dense; greenish tinge at the top. Some light brown to buff calcarenitic limestone with abundant fossil fragments. Siltstone - calcareous, pale greenish-grey; abundant at top of interval, decreasing toward the base. Trace of reddish brown shaly smear on cuttings at 220 feet.
230 - 240	Limestone - pale greyish-cream, slightly silty, calcarenitic and fossiliferous-fragmental, dense; in part pale greenish-grey, silty limestone with fossil fragments, grading into greenish-grey calcareous siltstone.
240 - 260	Limestone - tan and buff, silty, calcarenitic; sublithographic in part; fossil fragments abundant, chiefly crinoids and bryozoa, some brachiopods. At 250 feet some creamish-grey and greyish-cream, fragmental, in part sublithographic limestone; in part very silty, grading into calcareous siltstone. Trace of slightly calcareous, greenish-grey, very silty micromicaceous shale at 250 feet.
260 - 270	Limestone - buff and tan, silty, very fragmental; at the base some greyish-cream, dense, silty limestone, grading into light greenish-grey, calcareous siltstone.
270 - 290	Limestone - pale cream, dense, very slightly silty with fine silt; some buff, calcarenitic limestone with crinoid fragments. Trace of light greenish-grey, silty, calcareous shale at the top; pale grey (with greenish tinge) dense, silty, in part marly limestone at the base.

Interval Feet	Description
290 - 300	Limestone - pale cream, microcrystalline to lithographic with traces of silt; traces of dark mottling and minute calcite nodules.
300 - 320	Limestone - cream, finely crystalline to sublithographic, with traces of minute calcite nodules and calcite-filled vugs; rare grey mottling. Trace of greenish-grey silty limestone and light green, very silty, calcareous shale at 310 - 320 feet.
320 - 370	Limestone - cream, finely crystalline to sublithographic; minute calcite nodules common. At 350 feet some pale creamish-grey, microcrystalline limestone with traces of ostracods and pale greenish-grey, very calcareous siltstone partings. At 360 feet traces of bryozoa. At 370 feet traces (thin partings) of greenish-grey, calcareous siltstone.
370 - 380	Limestone - greyish cream, slightly silty; some buff micro-crystalline to dense limestone.
380 - 420	Limestone - cream and buff, microcrystalline and finely crystalline with sublithographic portions; some creamish-grey, dense limestone throughout. At 390 - 400 feet the limestone is partly dolomitized.
420 - 430	Dolomitic limestone - cream, medium crystalline, dense; few scattered, isolated vugs; appear to be recrystallized calcarenitic limestone. Some pale cream microcrystalline to sublithographic limestone.
430 - 450	Limestone - pale cream to light buff, microcrystalline to sublithographic.
450 - 510	Limestone - light grey, silty, dense; some cream and buff, calcarenitic and microcrystalline, silty limestone from 480 feet on. Trace of grey, very calcareous siltstone throughout (partings); prominent at the top and from 480 feet on. Trace of grey, dense, pyritic limestone at 470 feet and brown, microcrystalline, pyritic limestone at 490 feet.
510 - 520	Limestone - greyish cream to buff, slightly silty, cryptocrystalline to dense; minor light grey, very silty limestone.

Interval Feet	Description
520 - 540	Limestone - buff to greyish-cream, slightly silty, micro-crystalline to cryptocrystalline; in part sublithographic. Some light grey, very silty limestone at the base.
540 - 550	Limestone - light greyish-cream to cream, slightly silty, cryptocrystalline to dense. Some grey, very silty-marly limestone and very calcareous siltstone.
550 - 560	Limestone - cream and buff, silty, cryptocrystalline to dense, with some greyish-cream, in part very silty limestone.
560 - 590	Limestone - slightly silty, dark buff; becoming cream and greyish-cream, cryptocrystalline or dense; in part very silty. Some cream sublithographic limestone at 580 feet.
590 - 600	Limestone - creamish-grey, slightly silty, microcrystalline; in part calcarenitic.
600 - 630	Limestone - light grey and creamish-grey, variably silty. Some dark tan and greyish tan, very silty limestone from 620 feet on. Trace of green, calcareous shale at 610 feet.
630 - 650	Limestone - silty, pale grey, to brownish-grey, cryptocrystalline to dense. NOTE: From 650 feet on samples are very bad, recirculated and caving samples.
650 - 670	Limestone - greenish cream to dark tan, silty; in part very silty.
670 - 710	Limestone - dark tan and grey, silty; in part very silty; siltstone - calcareous, grey. Green calcareous shale partings.
710 - 730	Limestone - tan to light grey, silty, finely crystalline to dense.
730 - 750	Limestone - light grey, silty, dense to cryptocrystalline; traces of greenish grey, very silty, calcareous shale and pale greenish-grey, marly, silty limestone.
750 - 760	Sandstone - light grey, very fine-grained. Siltstone - slightly calcareous, light grey; traces of green, micaceous, calcareous shale. Some limestone as above.

Interval Feet	Description
760 - 800	Caving samples. Sandstone - as above, with traces of green, slightly silty, micromicaceous shale; pale cream, in part silty limestone. Electrical log indicates shale section.

SAMPLE DESCRIPTION

MURPHY CORPORATION - SOUTH TATHLINA LAKE S.T. NO. 23

Location: N. 100,000', E. 77,396' of Boundary Monument No. 267, N.W.T. P. & N. G. Permit No. 1400.

Elevation: 932.5' (Ground)

Total Depth: 394'

Completed: March 25, 1958.

Status: Dry and abandoned

Logged by: E. J. Tassonyi

Interval Feet	Description
PLEISTOCENE AND HOLOCENE	
0 - 20	Glacial drift. Pebble conglomerate.
UPPER DEVONIAN	
20 - 50	Limestone - creamish-tan to buff, cryptocrystalline to sub-lithographic; some light tan, lithographic limestone at 40 feet with minute calcitic nodules and vugs. Traces of pale green and bright green calcareous shale partings.
50 - 60	Limestone - as above; abundant tan, microfragmental, very slightly silty limestone.
60 - 70	Limestone - tan to light tan, sublithographic; abundant dark tan, fragmental, silty limestone with crinoid fragments. Siltstone - calcareous, light greyish tan, with traces of red hematite? specks.
70 - 90	Limestone - silty, tan, calcarenitic to finely crystalline with recrystallized crinoid fragments; some gradations into sublithographic limestone. Traces of green shale.
90 - 110	Limestone - silty, light grey to greyish tan, calcarenitic, with abundant minute red specks (hematite? and/or detrital material. Some tan, coarsely crystalline, crinoidal and calcarenitic limestone (recirculated?).
110 - 120	Limestone - tan to buff, calcarenitic to fragmental; traces of

Interval Feet	Description
	traces of crinoids; subordinate disseminated fine silt; traces of dolomitization and some recrystallization. Trace of cream, lithographic limestone.
120 - 130	Limestone - tan to buff, in part fragmental, in part calcarenitic; trace of reddish finely disseminated (detrital?) specks. Trace of red, silty, calcareous shale (partings) at 120' to 130'. Some cream, sublithographic to microcrystalline limestone.
130 - 160	Limestone - light tan to creamish buff, generally calcarenitic; becoming fragmental with abundant crinoids at 150 to 160 feet. Trace of cream, lithographic limestone at the top; trace of grey, silty limestone with minute red specks at the base.
160 - 180	Limestone - buff and tan, calcarenitic to coarsely fragmental and crinoidal; prominently crinoidal toward the base.
180 - 190	Limestone - buff, calcarenitic with some lithographic limestone. Some silty, buff limestone with minute red specks and grey, fragmental, calcarenitic, silty limestone at the base.
190 - 200	Limestone - buff, fragmental, calcarenitic; in part silty with traces of red specks. Trace of light grey, calcareous siltstone.
200 - 210	Limestone - buff, fragmental, crinoidal; in part with abundant red specks. Some dark buff, calcarenitic, slightly silty and slightly dolomitic limestone.
210 - 230	Limestone - buff, sublithographic to lithographic with some calcarenitic limestone; traces of pinkish colouration. Trace of grey, silty, calcareous shale at the base.
230 - 250	Limestone - buff to creamish buff, sublithographic to lithographic; some tan, granular, very silty limestone at the top of interval; greyish brown, very calcareous siltstone at the base.
250 - 260	Limestone - tan, fragmental to sublithographic limestone; samples smeared with red, silty shale, indicating partings. Grey, calcareous siltstone and grey, argillaceous, silty limestone partings.
260 - 280	Limestone - argillaceous and silty, grey and greyish tan, dense; in part calcarenitic ; becoming dark tan and grey, locally very

Interval Feet	Description
	argillaceous with few fossil imprints and scattered minute red specks; some grey, calcareous siltstone at the base.
290 - 290	Limestone - argillaceous, silty, grey to dark tan, dense; in part calcarenitic; traces of minute red specks and carbonaceous? specks.
290 - 300	Limestone - as above, with some dark tan and cream, microcrystalline to sublithographic limestone.
300 - 320	Limestone - cream and tan, calcarenitic; some sublithographic limestone with minute calcite nodules; grey mottling at 310 feet. Subordinate tan, coarsely fragmental, recrystallized dolomite. Traces of reddish tan, fragmental limestone with abundant red specks and disseminated silty, shaly, hematitic? material. Samples suggest extremely variable lithology.
320 - 350	Limestone - argillaceous, silty, greyish tan, dense; trace of dark tan, calcarenitic limestone with red specks. Trace of bright green calcareous shale from 340 feet on.
350 - 370	Limestone - argillaceous, silty, light grey and brownish grey, sublithographic.
370 - 390	Limestone - argillaceous, buff to greenish-cream, slightly silty.

To accompany Geological Report to Murphy Corporation, May 31, 1958.

FIGURE - I

118°00' 45' 30' 15' 117°00' 45' 30' 15' 116°00' 45' 30'

61°00'

45

30

15

KAKISA LAKE

TATHLINA LAKE

KAKISA RIVER

RABBIT LAKE ROAD

BRIGGS N.E. TATHLINA

BRIGGS - GREAT SLAVE LAKE 1

N.W.T. DESMARAIS LAKE 1

N.W.T. HEART LAKE

GREAT SLAVE LAKE

HAY RIVER

WHITE BEAVER HAY R. 1

MILES LAKE ROAD

N.W.T. ESCARPMENT LAKE 1,2,3

MACKENZIE HIGHWAY

UNION ALEXANDRA 6

UNION ALEXANDRA 5

UNION ALEXANDRA 4

UNION ALEXANDRA 3

UNION ALEXANDRA 2

UNION ALEXANDRA

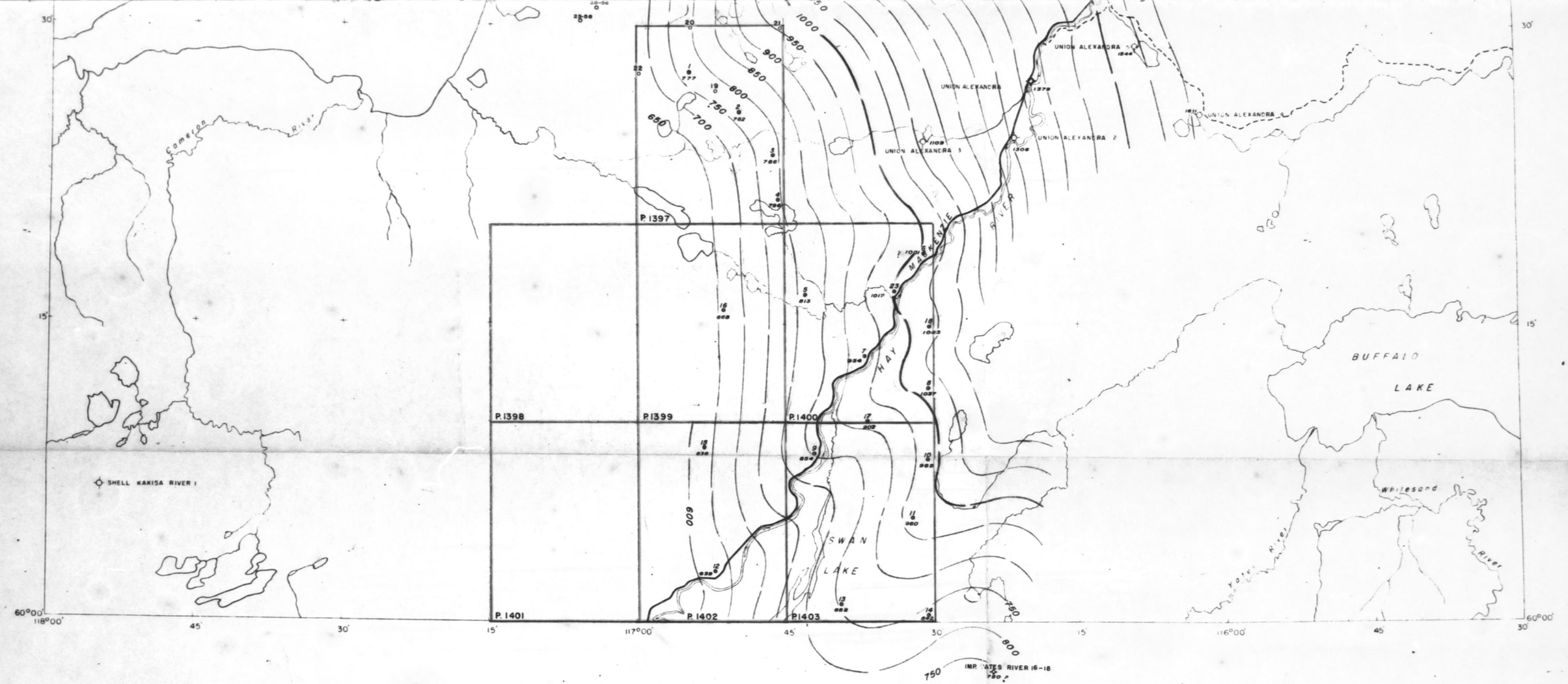
MACKENZIE RIVER

Pine Point Fault Trend Projected

P 1397

1150 1100 1050 1000 950 900 850 800 750 700 650

107



- Abandoned Well
- Location or Drilling Well
- Merrill Structure Test
- Proposed Structure Test
- Briggs Structure Test-1956
- Briggs Structure Test-1957
- Elevation on S.T. Marker "L"
- P. & N. G. Permits — Murphy Corporation

Suggested Subsurface Fault Trend

STRUCTURE MAP
SOUTH TATHLINA AREA, N.W.T.

Contours on Structure Test Marker "L"

Contour Interval 50ft. — Datum Sea Level

5 0 5 10
MILES
SCALE 1:250,000

Contour Interpretation by S.R.L.H. & R. deW.

April 25, 1958

2 of 2

S.K.

J.C. SPROULE & ASSOCIATES, CALGARY

FIGURE-I

ELECTRONIC Logging & Velocity Co. Ltd

CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

Location	COMPANY MURPHY CORPORATION
N 900'	WELL S.T. HOLE 14 FILE
E 159109'	FIELD SOUTH TATHLINA LAKE
DRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W
Measured From	G. L. Elevation 984·2
No.	1
ge Logged	MARCH 19, 1957
Depth, Logged	824'
Depth, Driller	
hoe, Logged	
oe, Driller	
e	4 3/4
d	NATURAL
nent	
t	
y	
Ohms m2m @ °F @ °F	
30 min	
p	
y	E. MIER
y	C. BULMER

REMARKS OR OTHER DATA

DEV. 1 1/2° AT 790'

	40	210	RESISTANCE	70

1 of

50

100

L-142

150

200

250

H-268

Top L+

250

H-268

300

Top Lr Granite (18)

350

ZONE OF REEFING

400

J-424

450

500

500

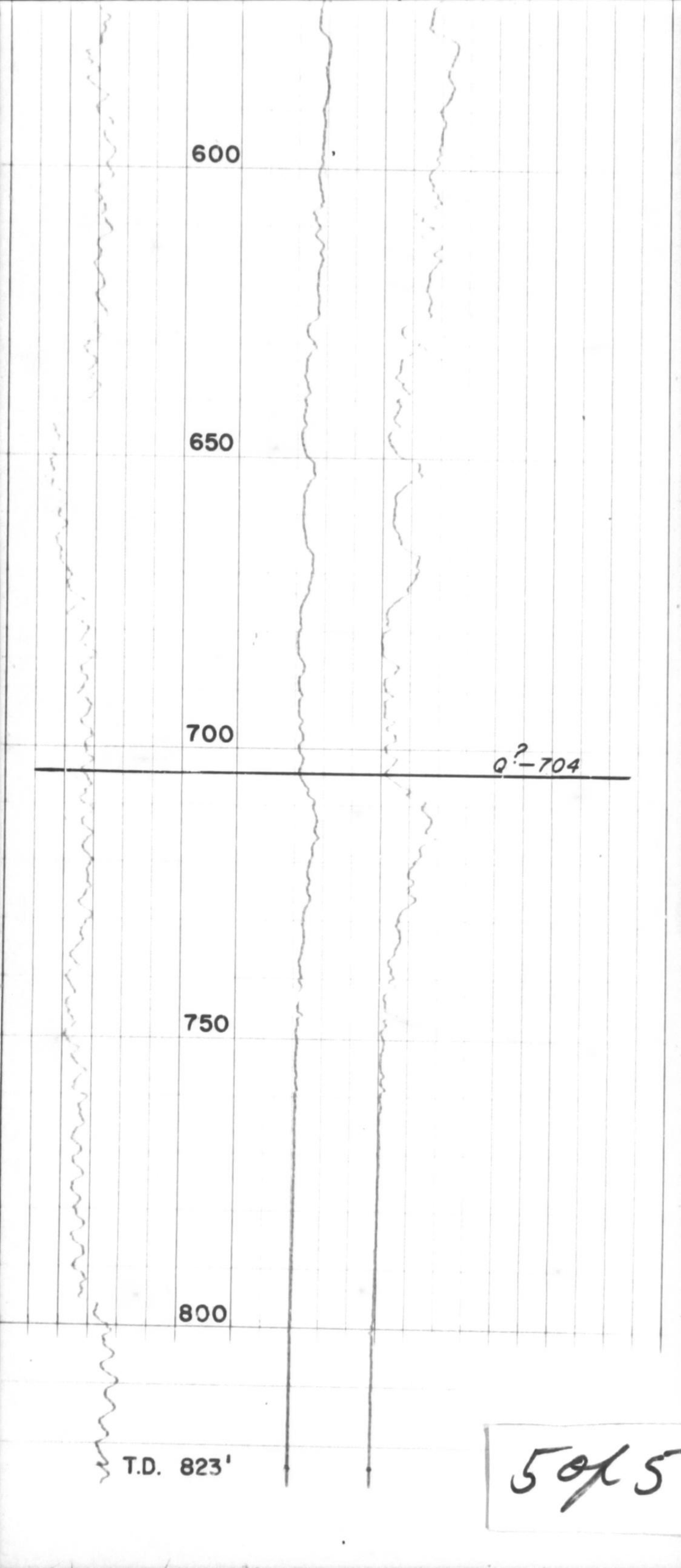
550

600

650

700

Q?—704



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ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY, ALBERTA

2.

STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 15595'	WELL S.T. HOLE 12 FILE
E 2167'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N.W.T. LSD
2 6 7	Sec. Twp. Rge. W

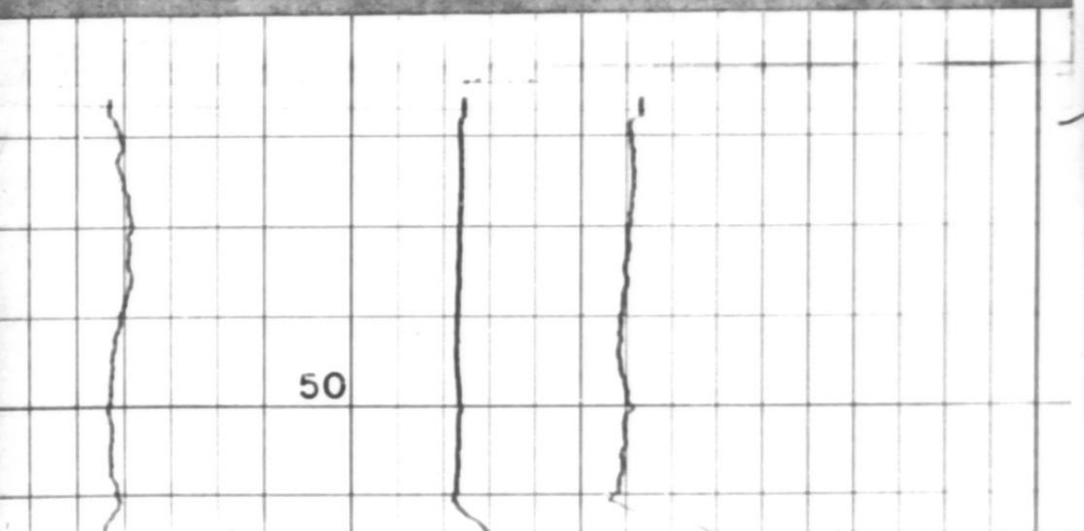
Log Measured From G.L. Elevation 972·2

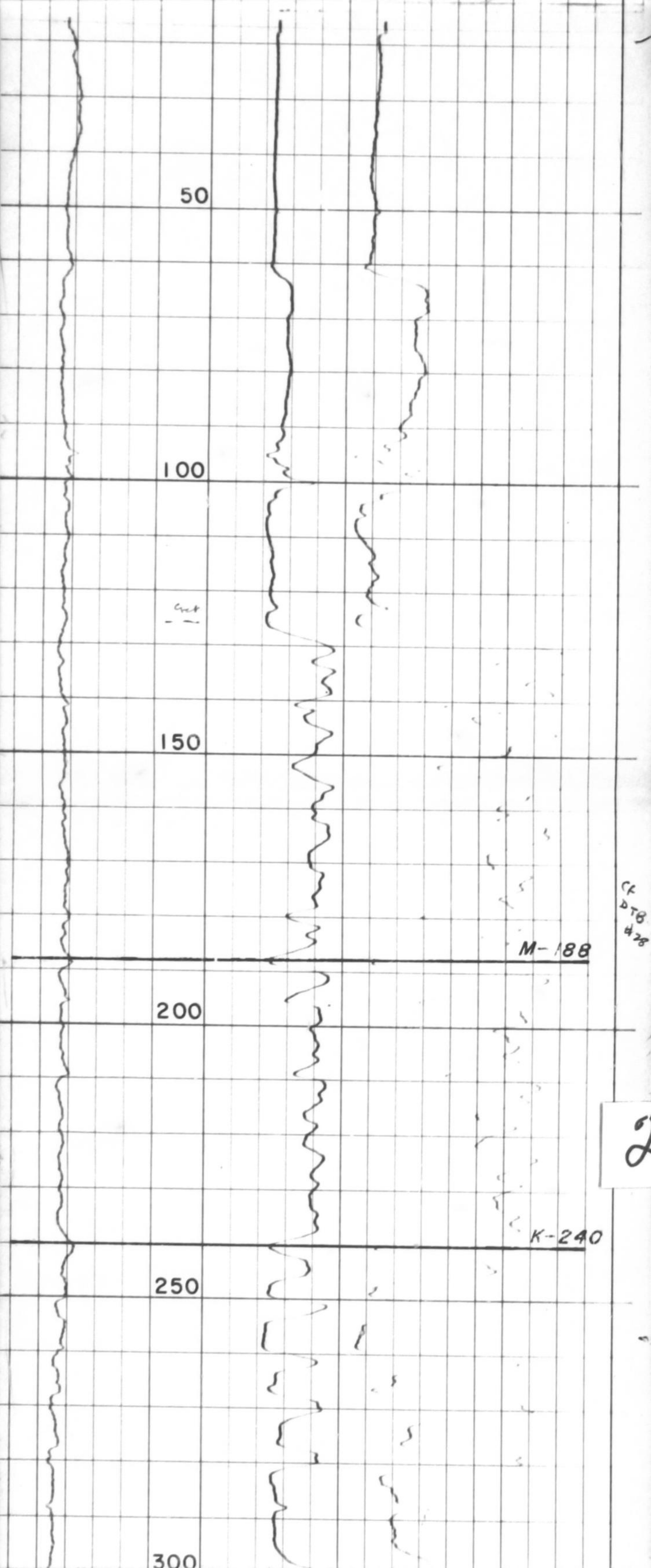
Run No.	1
Date	FEB. 23, 1958
Footage Logged	
Total Depth, Logged	1094'
Total Depth, Driller	
Csg Shoe, Logged	
Csg Shoe, Driller	
Csg Size	
Bit Size	4 3/4
Mud Kind	NATURAL
Treatment	
Weight	
Viscosity	
Ph.	
Resist. Ohms m2m	@ °F @ °F
Loss ml/30 min	
Max Temp	
Recorded By	E. MIER
Witnessed By	C. BULMER

REMARKS OR OTHER DATA

DEV. 1° AT 1090' & 550'

POTENTIAL	80	210	RESISTANCE	70




50
100
150
M-188
200
K-240
250
300
Cf
DTB
#28

300

G-314

L-333

350

Z-369

400

H-448

450

X-490

500

500

550

600

J-619

650

700

P-730

750

P-730

750

800

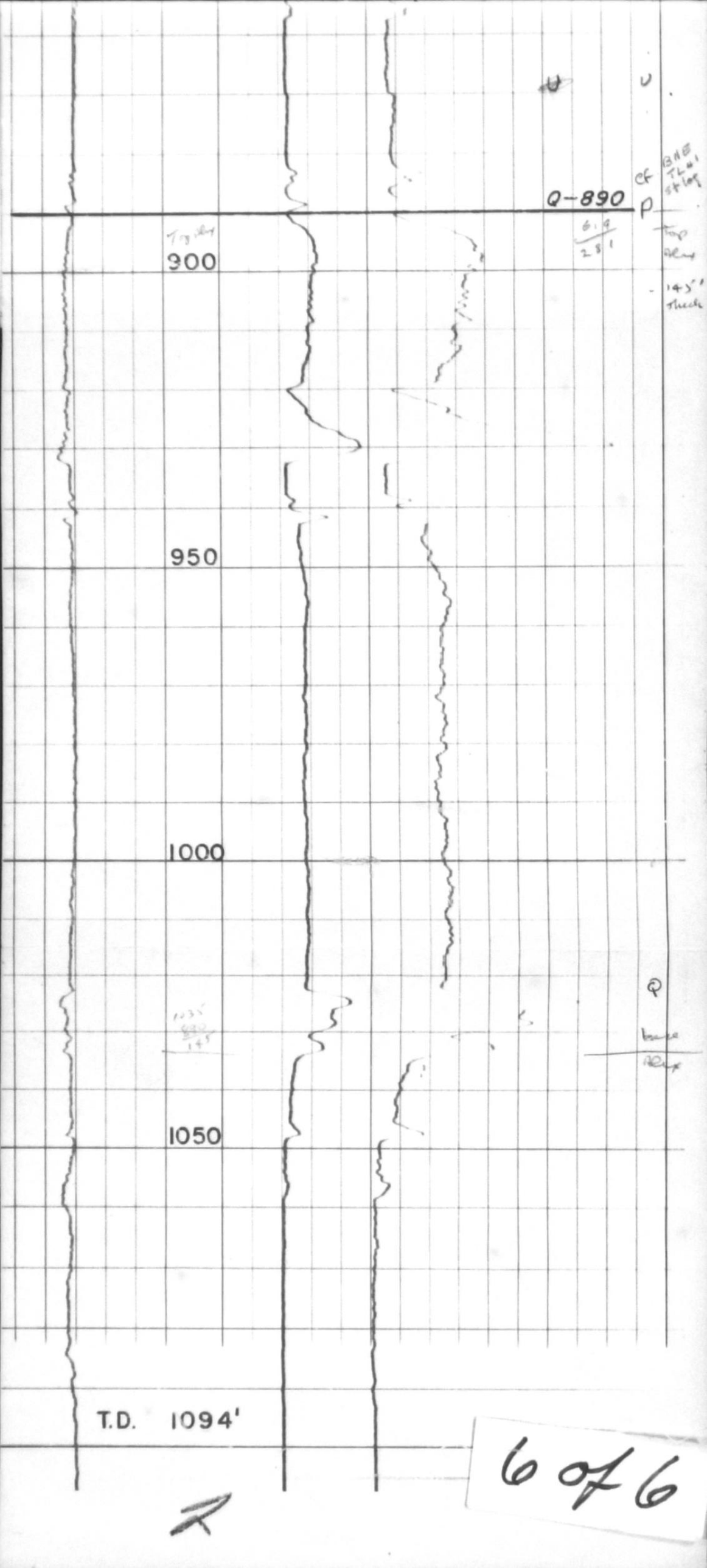
850

Q-890

900

950

1000


Q-890
300
950
1000
1050
T.D. 1094'

ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY ALBERTA

3

STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 100000'	WELL S.T. HOLE 23 FILE
E 77396'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 932·5

Run No. 1
Date MARCH 25, 1958
Footage Logged
Total Depth, Logged 394'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA

NO DEV.

POTENTIAL	40	210	RESISTANCE	70

(L-84)
(Above ground)

50

(Above ground)

50

100

ZONE

OF

REEFING

150

129

J-194

200

250

300

ELECTRONIC Logging & Velocity Co. Ltd

CALGARY ALBERTA

3

STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 100000'	WELL S.T. HOLE 23 FILE
E 77396'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 932·5

Run No.	I
Date	MARCH 25, 1958
Footage Logged	
Total Depth, Logged	394'
Total Depth, Driller	
Csg Shoe, Logged	
Csg Shoe, Driller	
Csg Size	
Bit Size	4 3/4
Mud Kind	NATURAL
Treatment	
Weight	
Viscosity	
Ph.	
Resist. Ohms m2m	@ °F @ °F
Loss ml/30 min	
Max Temp	
Recorded By	E. MIER
Witnessed By	C. BULMER

REMARKS OR OTHER DATA

NO DEV.

POTENTIAL	40	210	RESISTANCE	70

(L-84)
(Above ground)

50

(Above ground)

50

100

ZONE

OF

REEFING

150

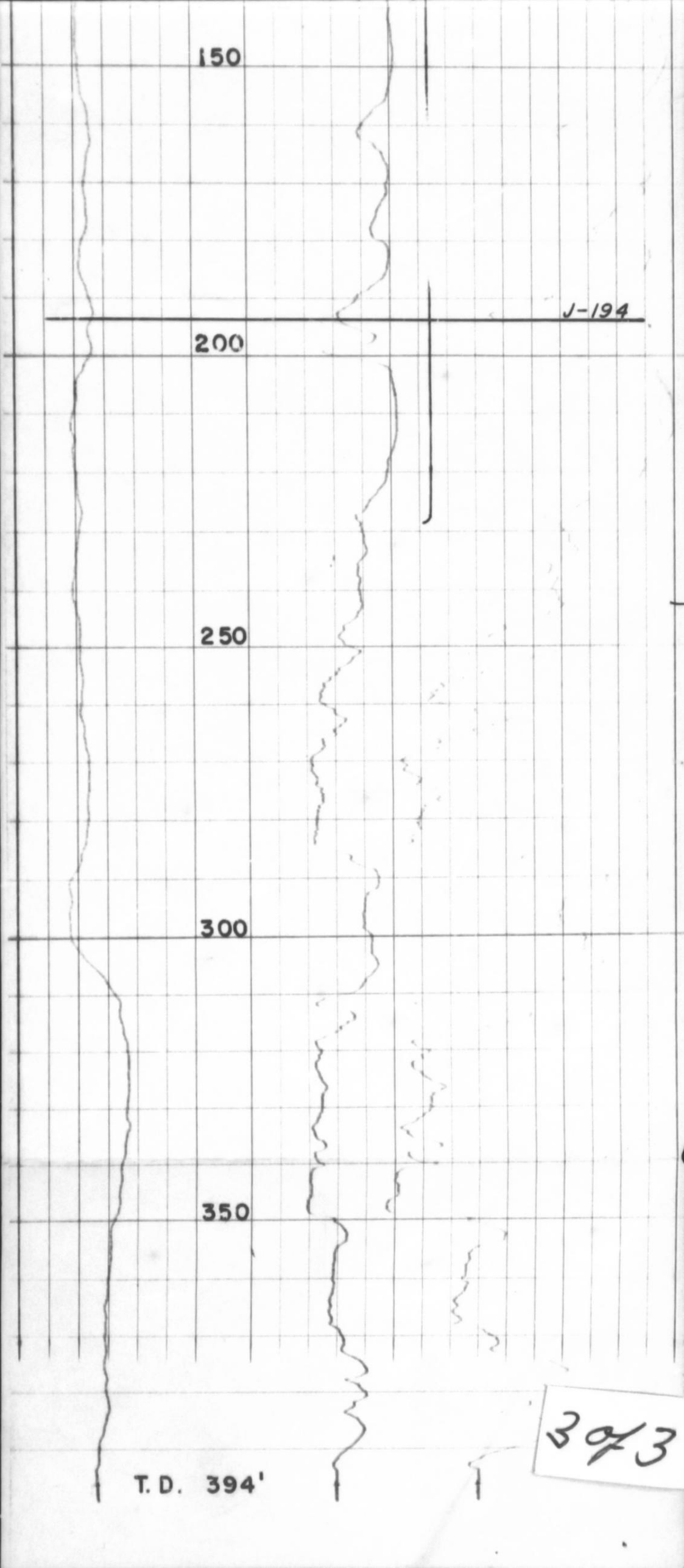
29

J-194

200

250

300


150
J-194
200
250
300
350
T. D. 394'
3 of 3

ELECTRONIC Logging & Velocity Co. Ltd.

4

CALGARY. ALBERTA

STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 130366'	WELL S.T. HOLE 4 FILE
E 42060'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

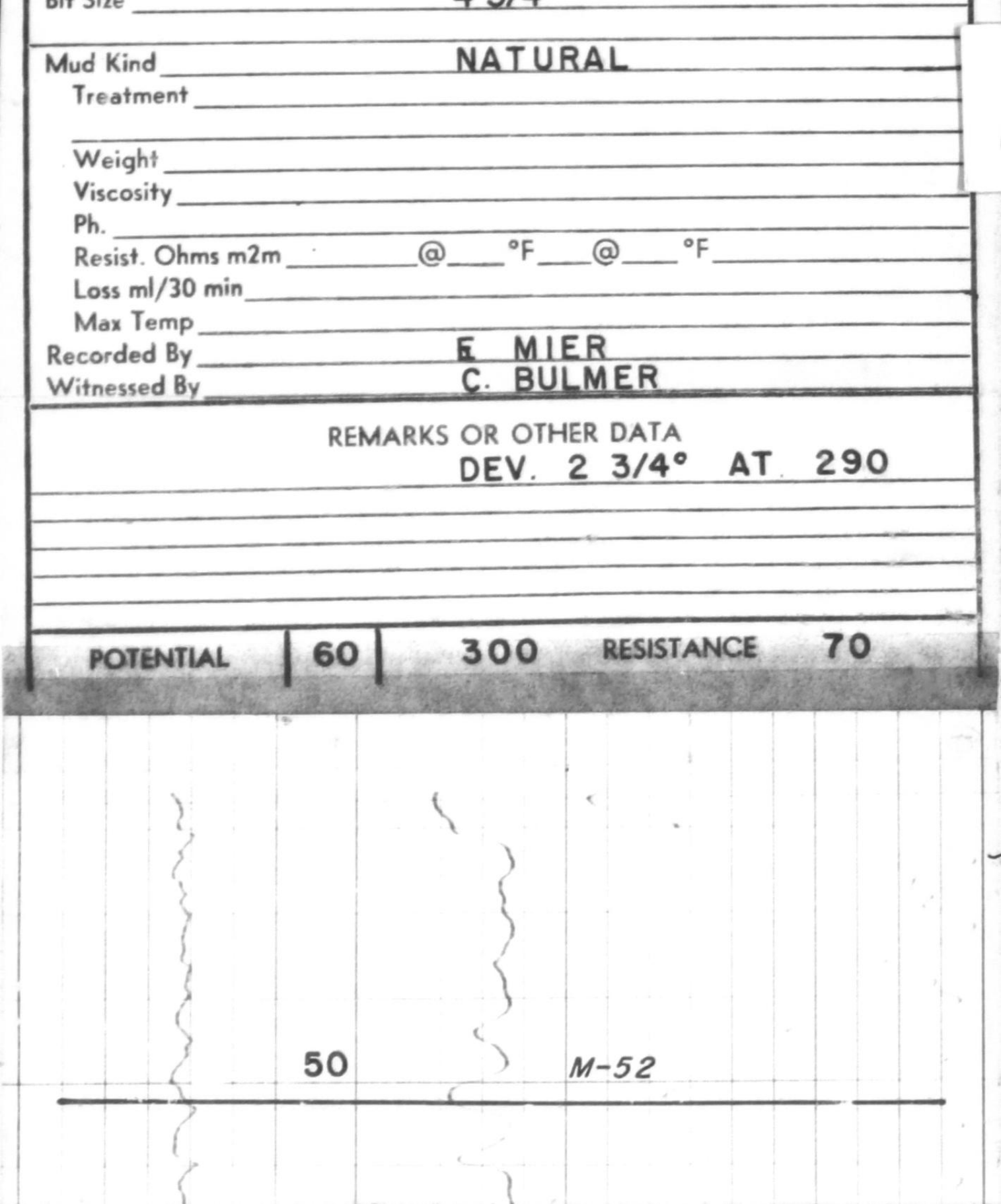
Log Measured From G. L. Elevation 978·2

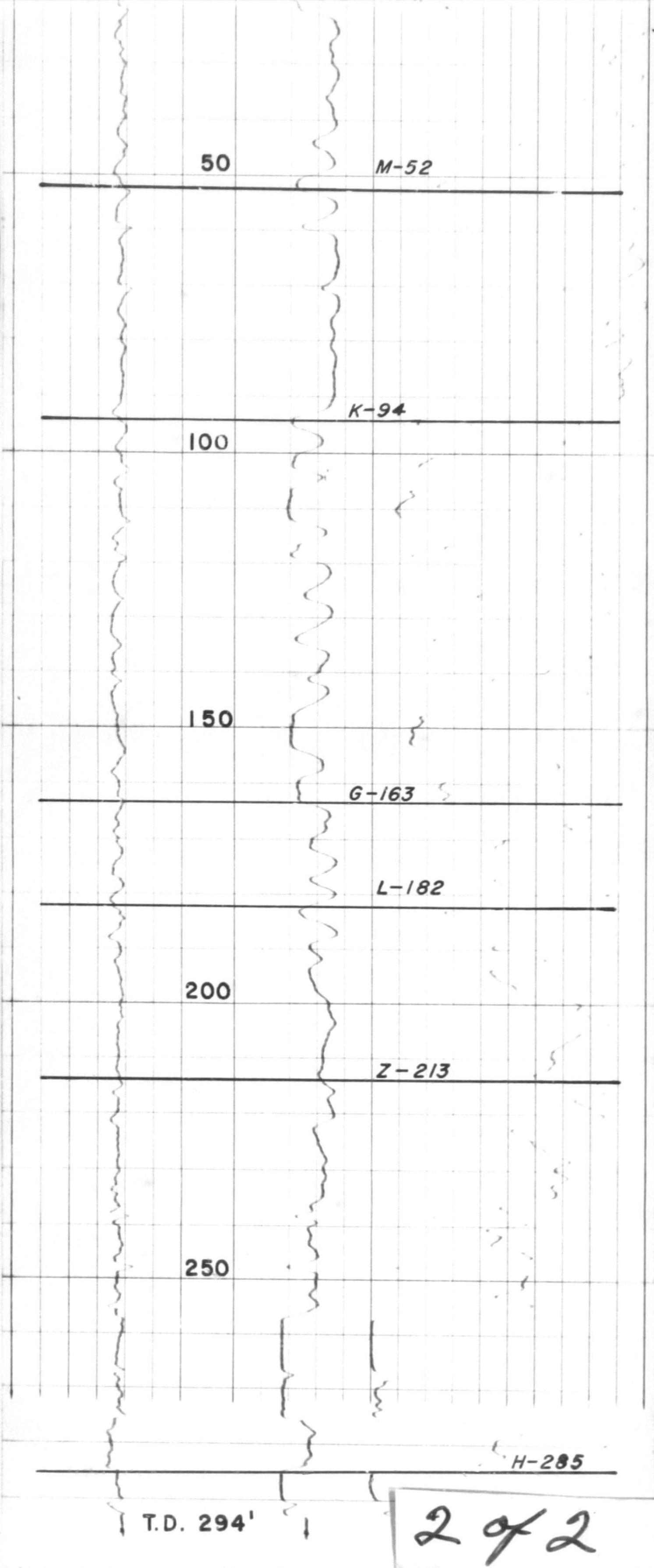
Run No. 1
Date MARCH 3, 1958
Footage Logged
Total Depth, Logged 294'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA
DEV. 2 3/4° AT 290

POTENTIAL	60	300	RESISTANCE	70





2 of 2

ELECTRONIC
Logging & Velocity Co. Ltd.

CALGARY. ALBERTA

5

STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 143252'	WELL S.T. HOLE 3 FILE
E 39246'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N.W.T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 985·7

Run No. 1
Date MARCH 5, 1958
Footage Logged
Total Depth, Logged 299'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

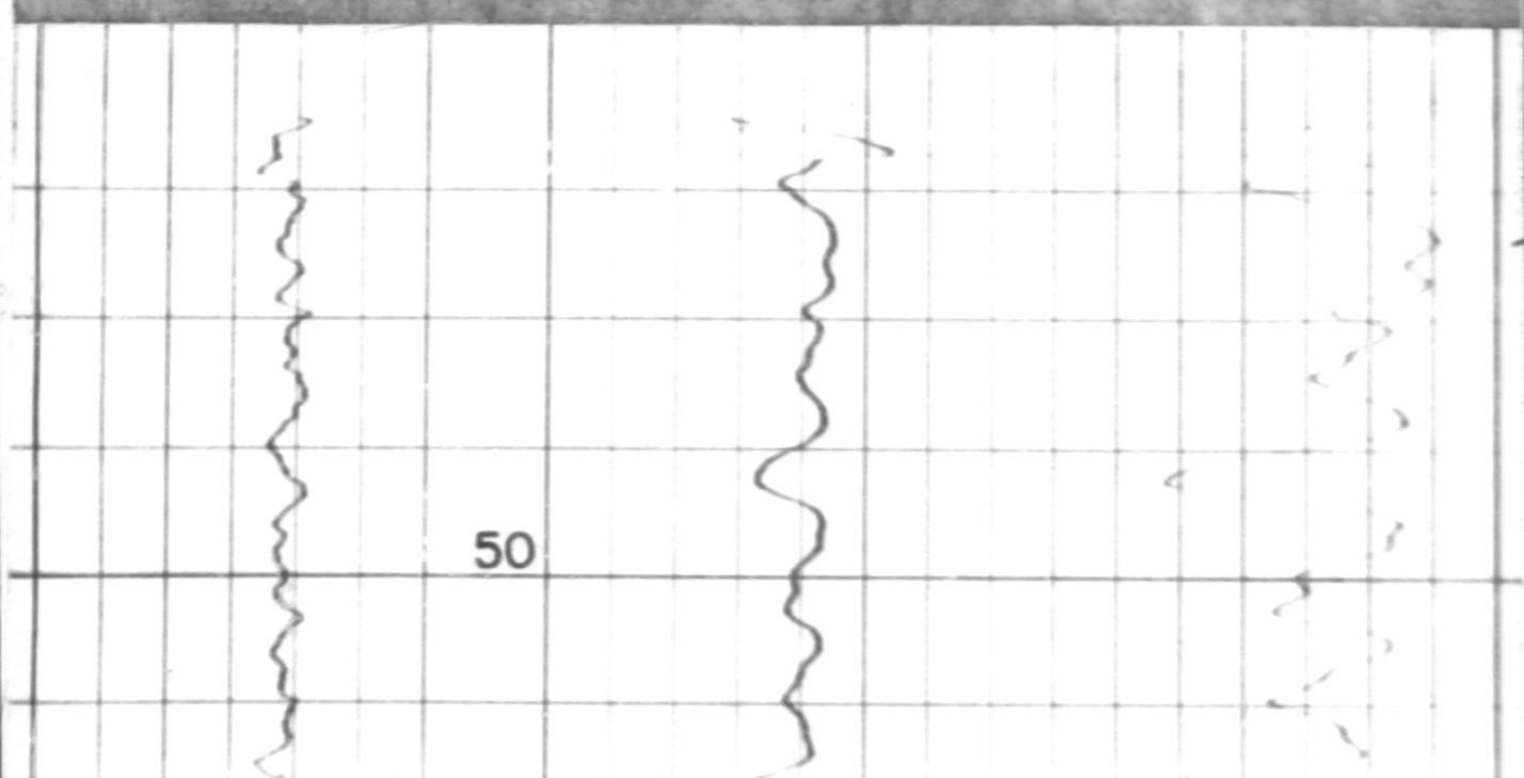
Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

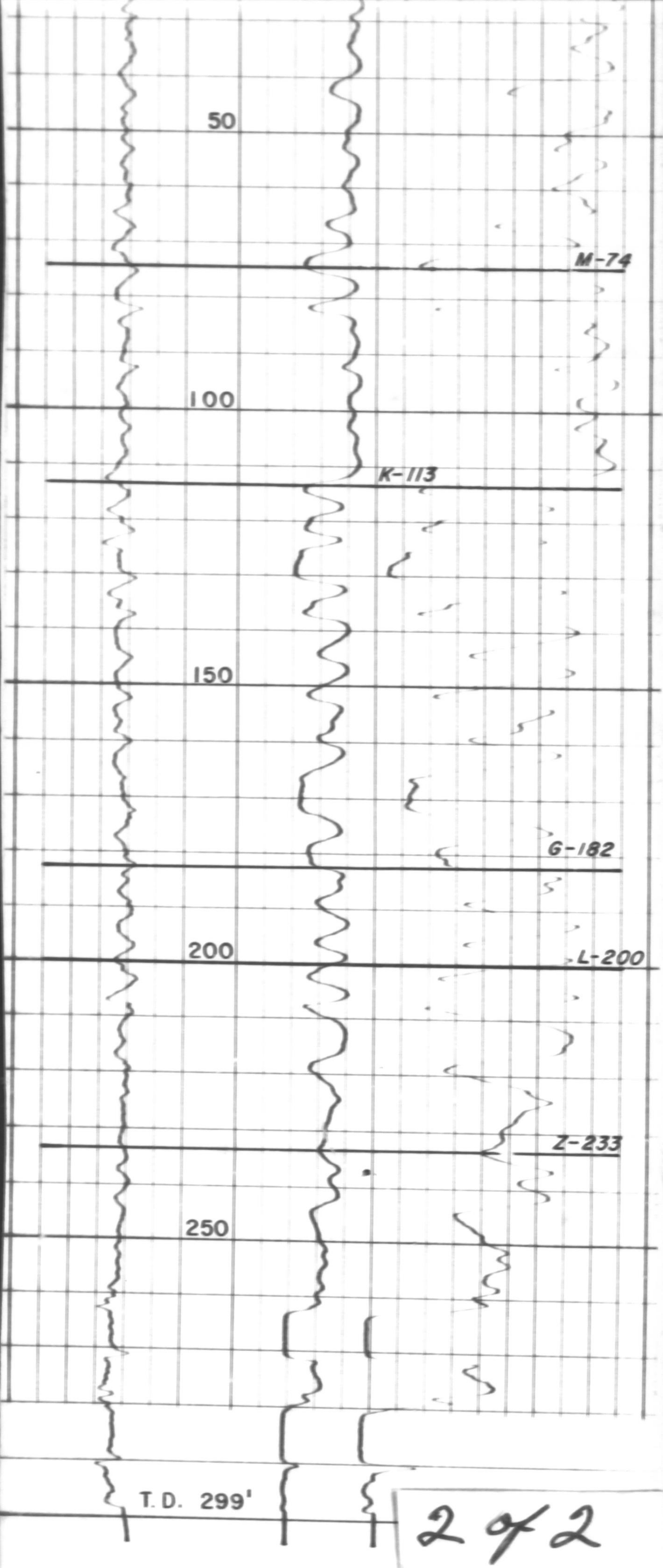
1

REMARKS OR OTHER DATA

DEV. 1° AT 295'

POTENTIAL	60	210	RESISTANCE	70





2 of 2

ELECTRONIC Logging & Velocity Co. Ltd.

6 CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

Location

N 3207'
W 7206'
BDRY. MON
251

COMPANY MURPHY CORPORATION

WELL S.T. HOLE 13 FILE

FIELD SOUTH TATHLINA LAKE

PROVINCE N. W. T. LSD

Sec. Twp. Rge. W

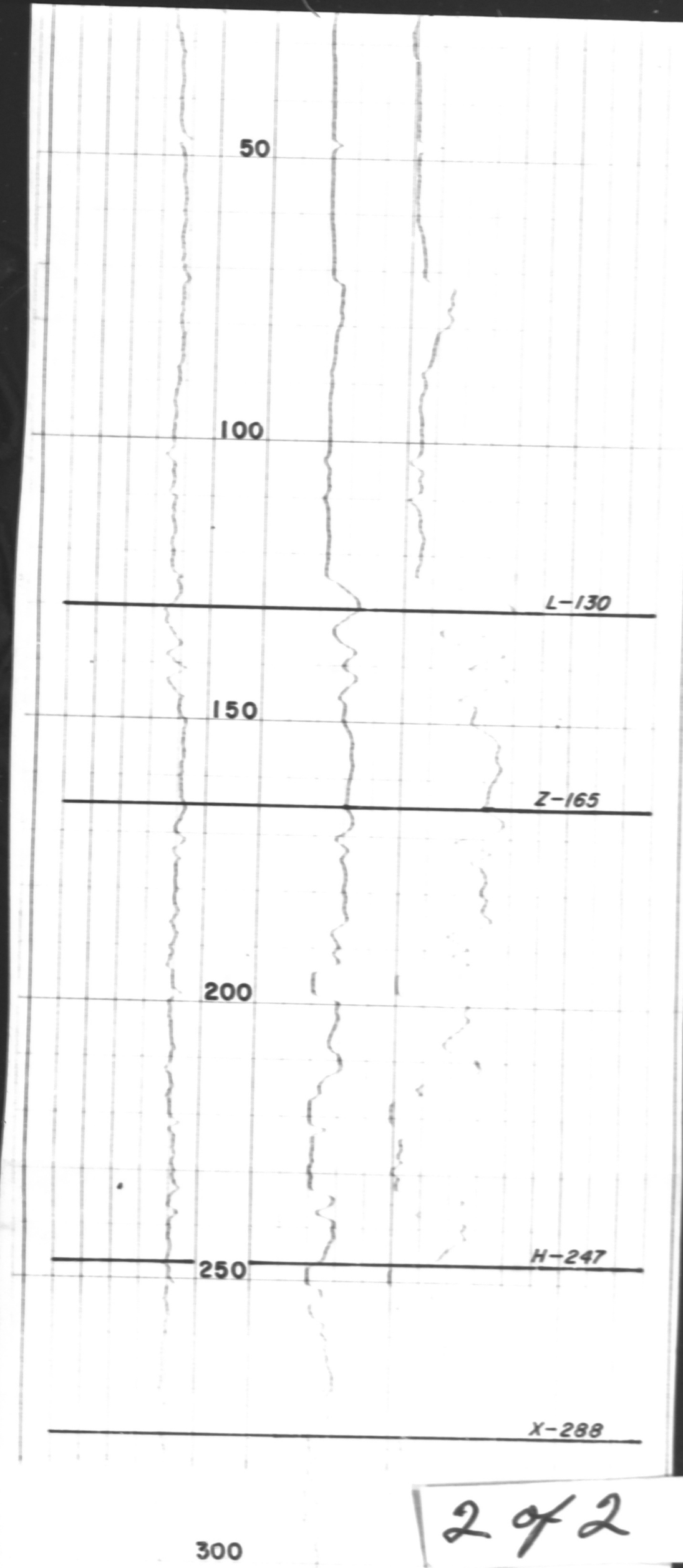
Log Measured From G. L. Elevation 982·4

Run No.	1
Date	MARCH 16, 1958
Footage Logged	307'
Total Depth, Logged	307'
Total Depth, Driller	
Csg Shoe, Logged	
Csg Shoe, Driller	
Csg Size	
Bit Size	4 3/4
Mud Kind	NATURAL
Treatment	
Weight	
Viscosity	
Ph.	
Resist. Ohms m2m	@ °F @ °F
Loss ml/30 min	
Max Temp	
Recorded By	E. MIER
Witnessed By	C. BULMER

REMARKS OR OTHER DATA

DEV. 1 1/2° AT 290'

POTENTIAL	40	210	RESISTANCE	70



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ELECTRONIC Logging & Velocity Co Ltd

1

CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

Location

N 52057'
E 14805'
BDRY. MON.

COMPANY MURPHY CORPORATION

WELL S.T. HOLE 15 FILE

FIELD SOUTH TATHLINA LAKE

PROVINCE N. W. T. LSD

Sec. Twp. Rge. W

Log Measured From G. L. Elevation 991·2

Run No. 1
Date FEB. 26, 1958.
Footage Logged
Total Depth, Logged 315'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment

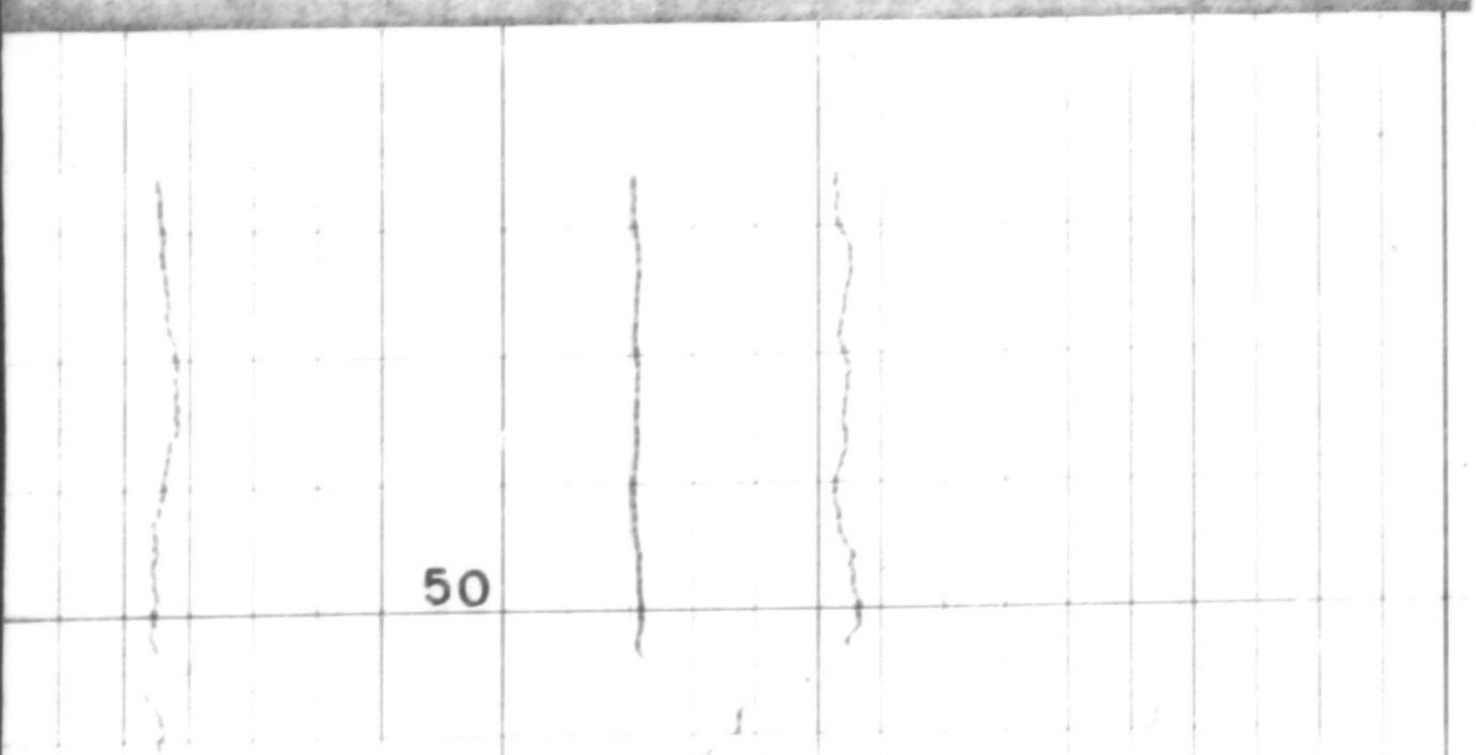
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

10

REMARKS OR OTHER DATA

DEV. 1° AT 295'

POTENTIAL	60	210	RESISTANCE	70



POTENTIAL | 60 | 210 RESISTANCE 70

50

100

150

C-150

200

M-218

250

K-262

2

ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

Location

N 93832'
E 23311'
BDRY. MON.
267

COMPANY MURPHY CORPORATION

WELL S.T. HOLE 16 FILE

FIELD SOUTH TATHLINA LAKE

PROVINCE N. W. T. LSD

Sec. Twp. Rge. W

Log Measured From G. L. Elevation 982·6

Run No. 1
Date FEB. 28, 1958
Footage Logged
Total Depth, Logged 297'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

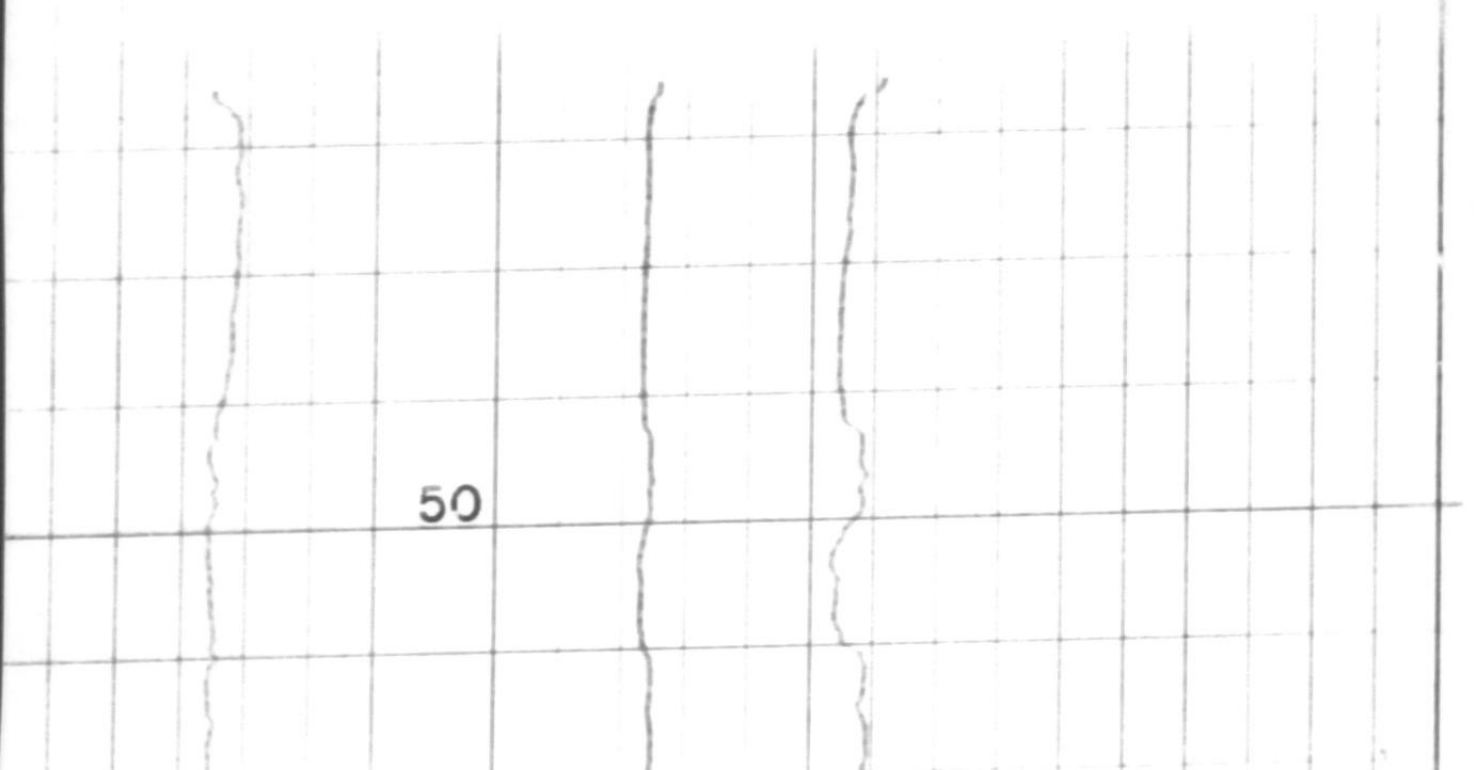
Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

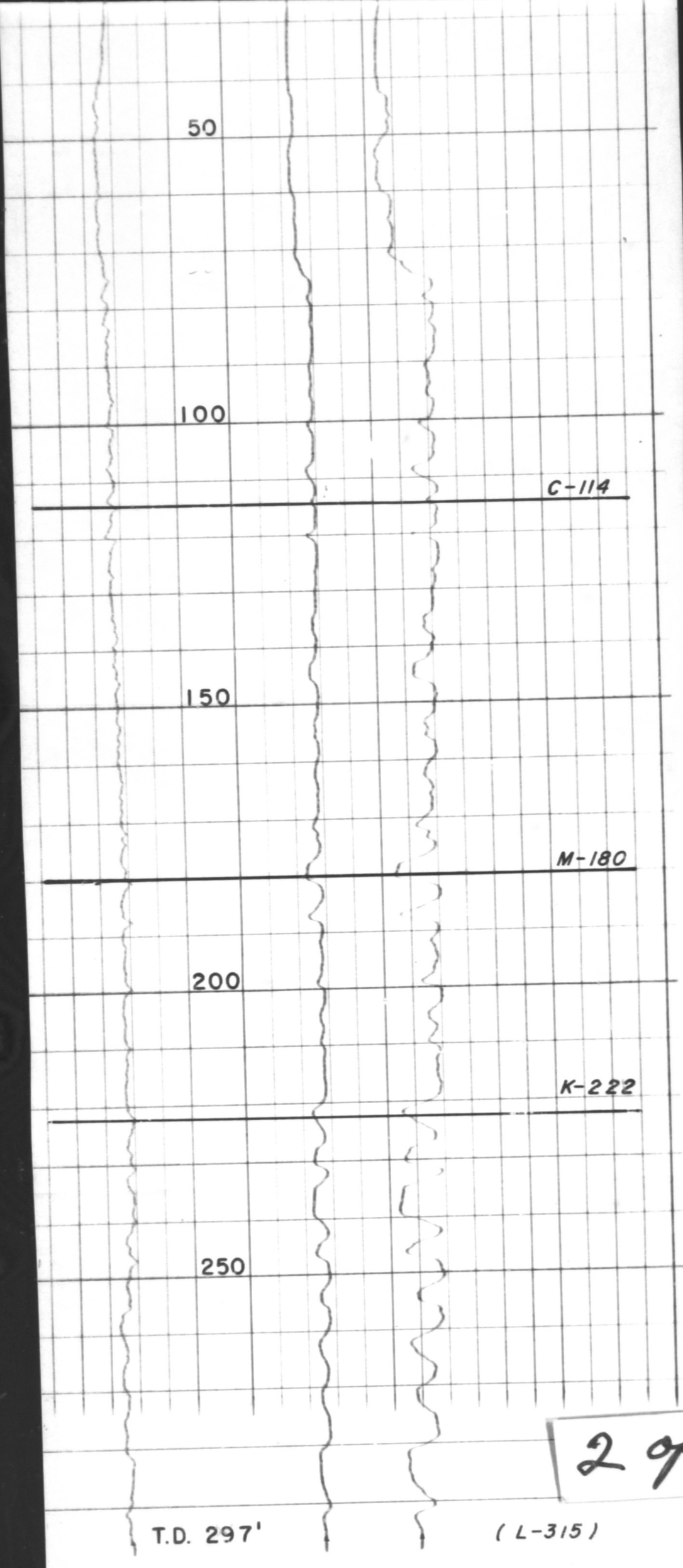
10

REMARKS OR OTHER DATA

DEV. 3/4° AT 290'

POTENTIAL | 60 | 210 RESISTANCE 20





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ELECTRONIC Logging & Velocity Co. Ltd.

9 CALGARY. ALBERTA

STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 59945'	WELL S.T. HOLE 17 FILE
E 37639'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 959·6

Run No. 1
Date MARCH 21, 1958
Footage Logged
Total Depth, Logged 244'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

10

REMARKS OR OTHER DATA

DEV. 2° AT 240'

POTENTIAL	40	210	RESISTANCE 70

G-36

50

L-58

DEV. 2° AT 240

POTENTIAL	40	210	RESISTANCE 70

G-36

50

L-58

Z-90

100

150

H-172

200

X-207

T.D. 244'

2 of 2

ELECTRONIC Logging & Velocity Co. Ltd.

10

CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 91918'	WELL S.T. HOLE 18 FILE
E 86643'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 974·0

Run No. 1
Date MARCH 23, 1958
Footage Logged
Total Depth, Logged 248'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA

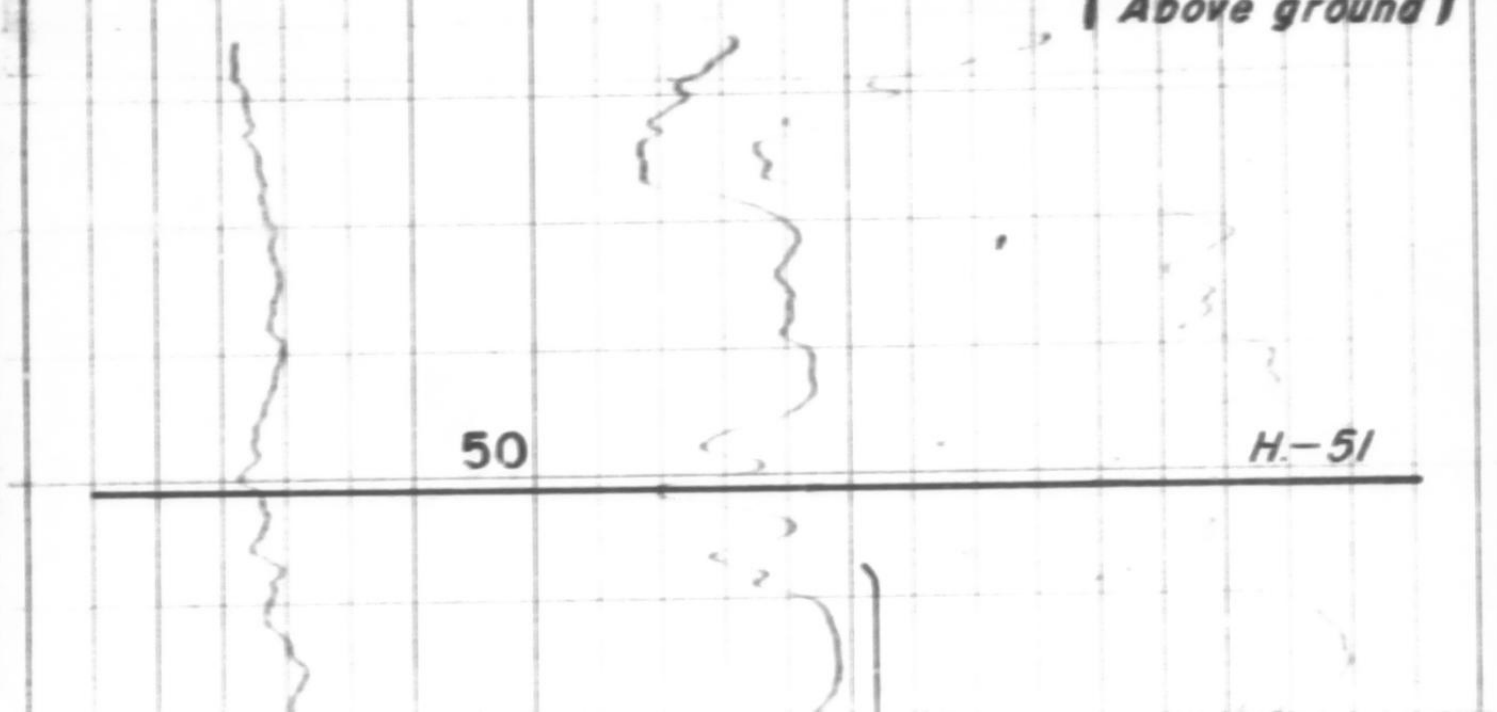
NO DEV.

LOST TOOL IN THE HOLE

POTENTIAL	40	210	RESISTANCE	70

1C

L-49
(Above ground)

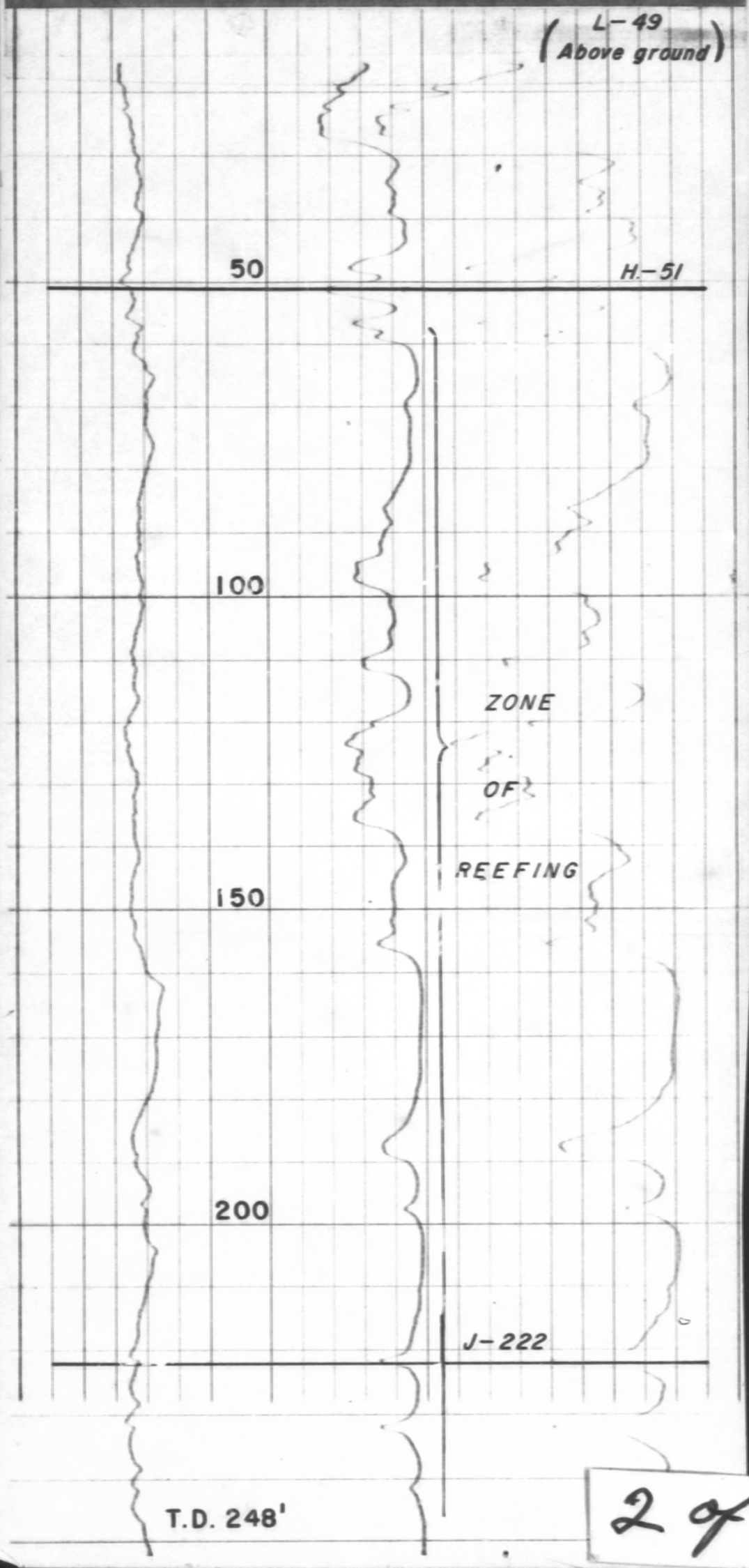


REMARKS OR OTHER DATA

NO DEV.

LOST TOOL IN THE HOLE

POTENTIAL	40	210	RESISTANCE	70



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ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 50988'	WELL S.T. HOLE 9 FILE 9
E 51953'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 949·4

Run No. 1
Date FEB. 25, 1958
Footage Logged
Total Depth, Logged 308'.
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp

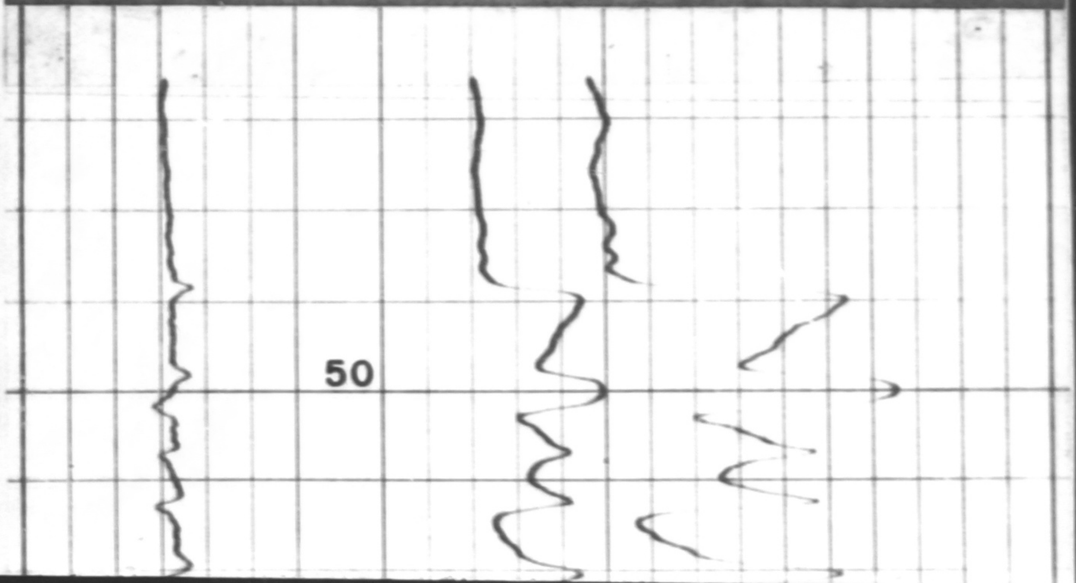
107

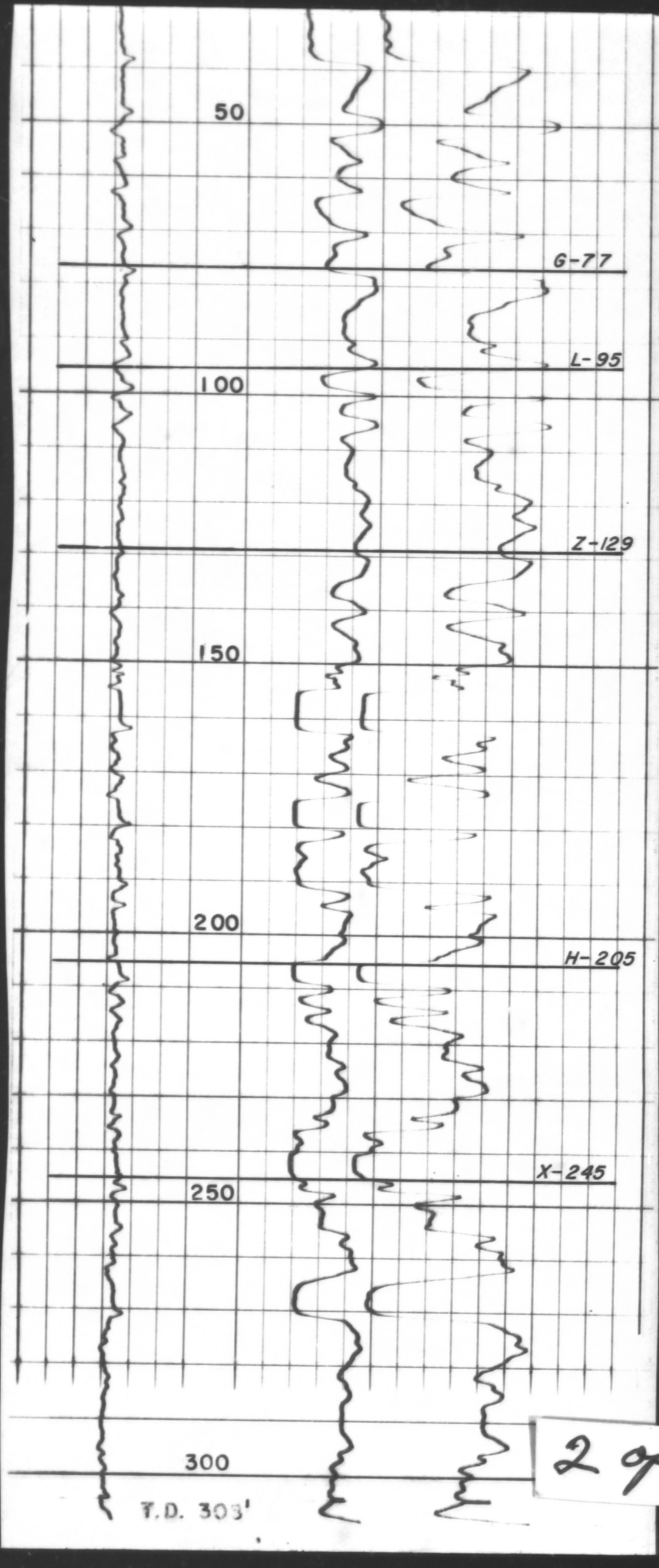
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA

DEV. 2 1/2° AT 295'

POTENTIAL	60	210	RESISTANCE	70




50
G-77
L-95
100
Z-129
150
200
H-205
X-245
250
300
T.D. 303'
29

ELECTRONIC
Logging & Velocity Co. Ltd.

12 CALGARY. ALBERTA

STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 82097'	WELL S.T. HOLE 7 FILE
E 67562'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 935·2

Run No. 1
Date MARCH 8, 1958
Footage Logged
Total Depth, Logged 302'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

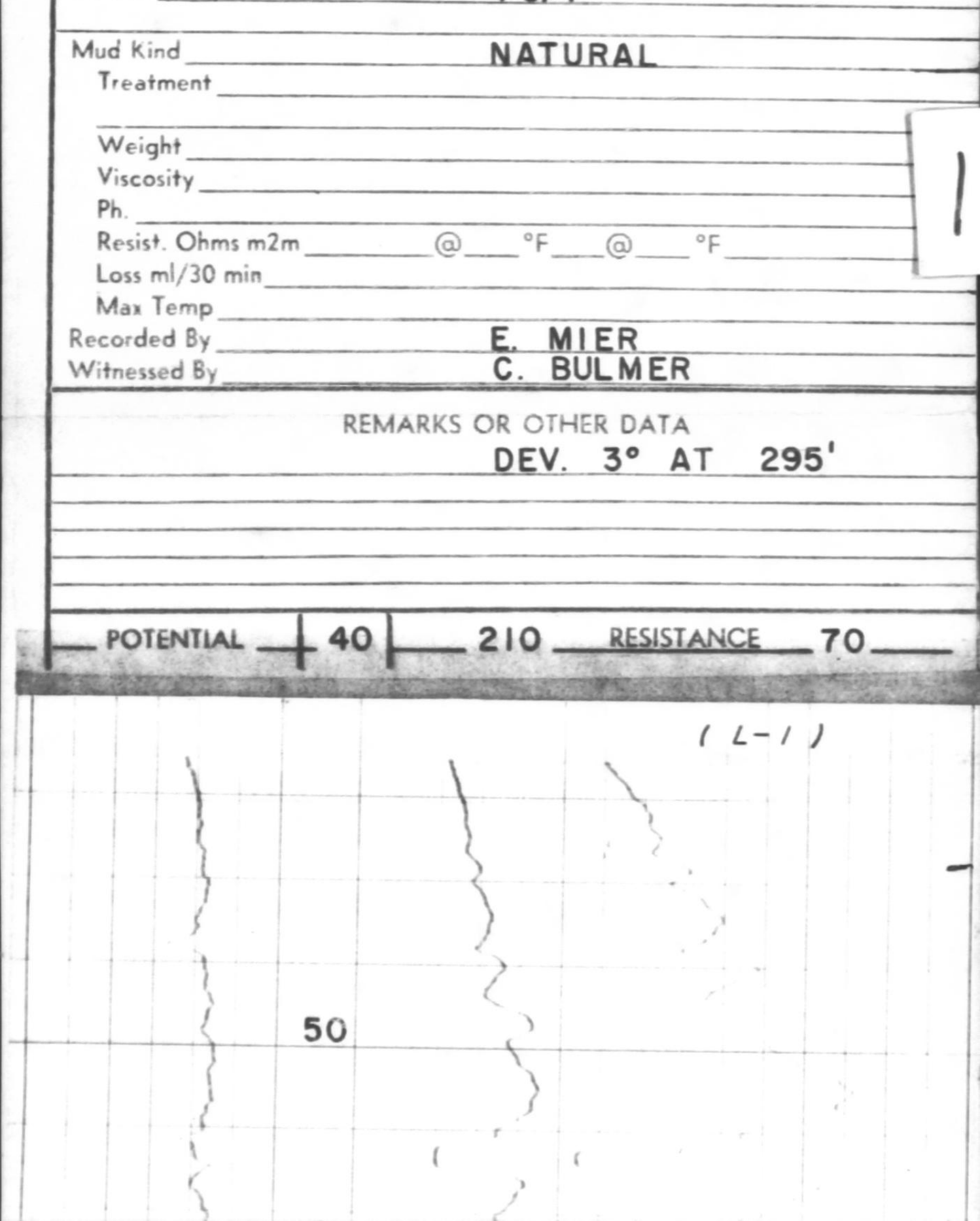
1

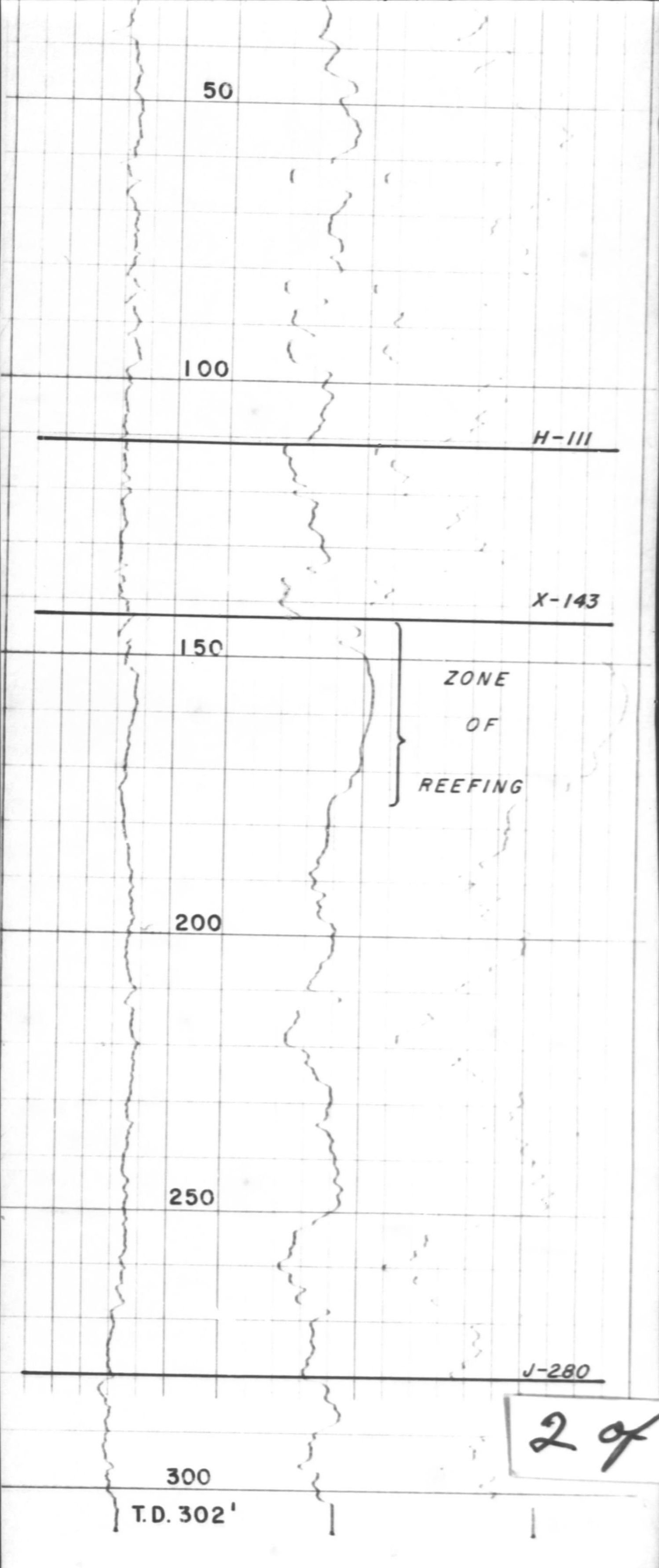
REMARKS OR OTHER DATA

DEV. 3° AT 295'

POTENTIAL | 40 | 210 RESISTANCE 70

(L-1)





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ELECTRONIC

Logging & Velocity Co. Ltd.

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CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 28652'	WELL S.T. HOLE II FILE
E 151983'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 982·2

Run No. 1
Date MARCH 14, 1958
Footage Logged
Total Depth, Logged 203'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

1 of

REMARKS OR OTHER DATA
DEV. 1 1/2 AT 200'

POTENTIAL	40	210	RESISTANCE	70

(L-22)

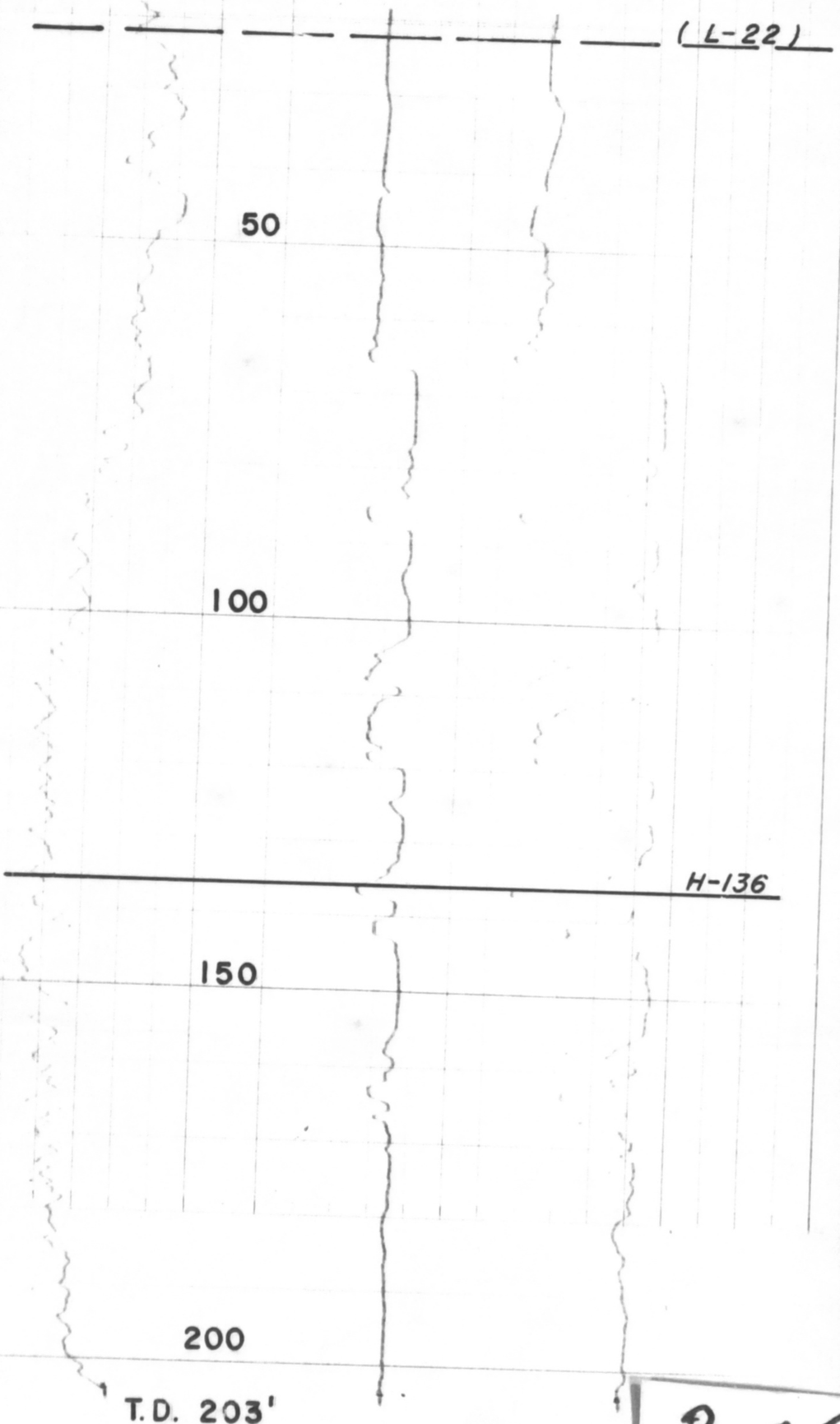
50

Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed by C. BULMER

REMARKS OR OTHER DATA
DEV. 1 1/2 AT 200'

POTENTIAL	40	210	RESISTANCE	70

(L-22)



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ELECTRONIC Logging & Velocity Co. Ltd.

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CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 49159'	WELL S.T. HOLE 10 FILE
E 155065'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 978·4

Run No. 1
Date MARCH 13, 1958
Footage Logged
Total Depth, Logged 204'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

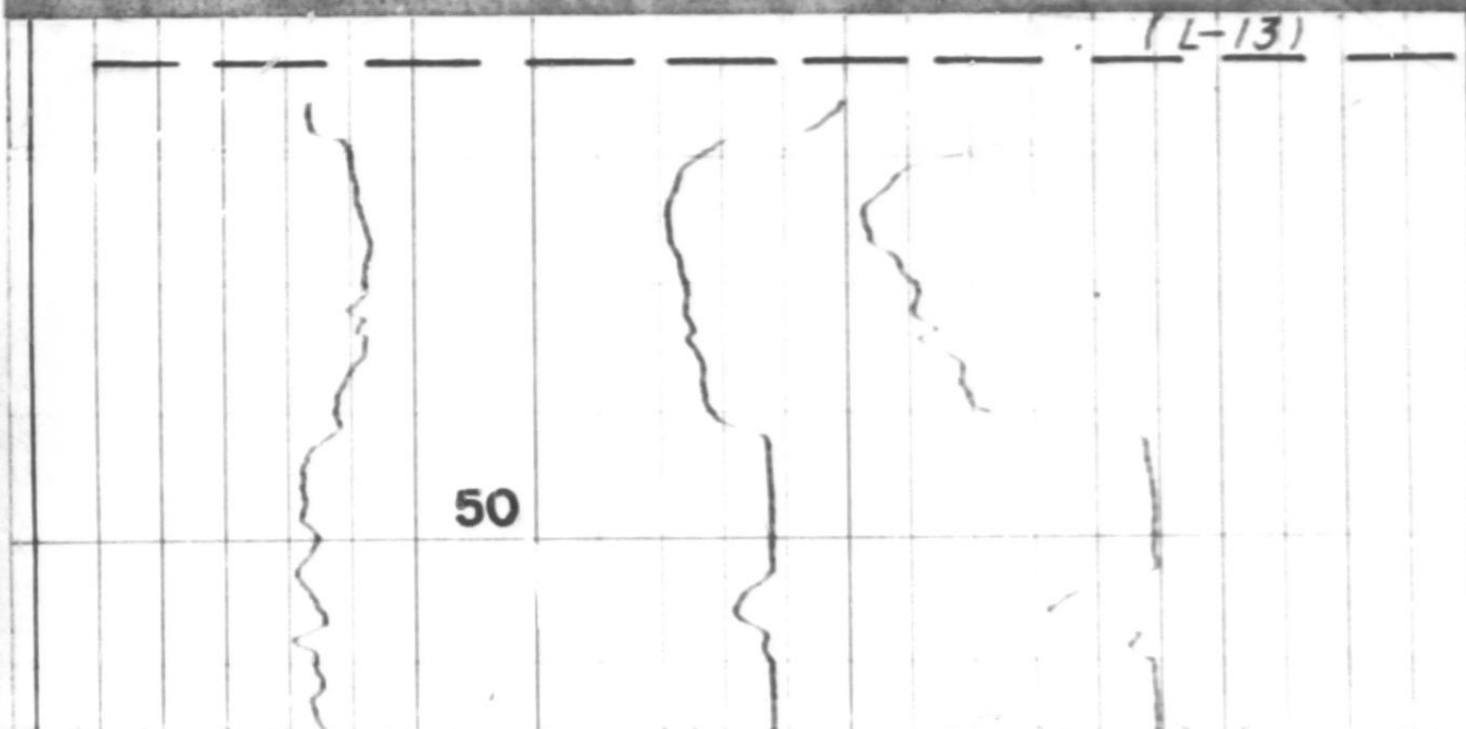
Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

10

REMARKS OR OTHER DATA
DEV. 1 3/4° AT 200'

POTENTIAL	40	210	RESISTANCE	70

(L-13)



Ph. _____

Resist. Ohms m2m _____ @ ___ °F ___ @ ___ °F _____

Loss ml/30 min _____

Max Temp _____

Recorded By E. MIER

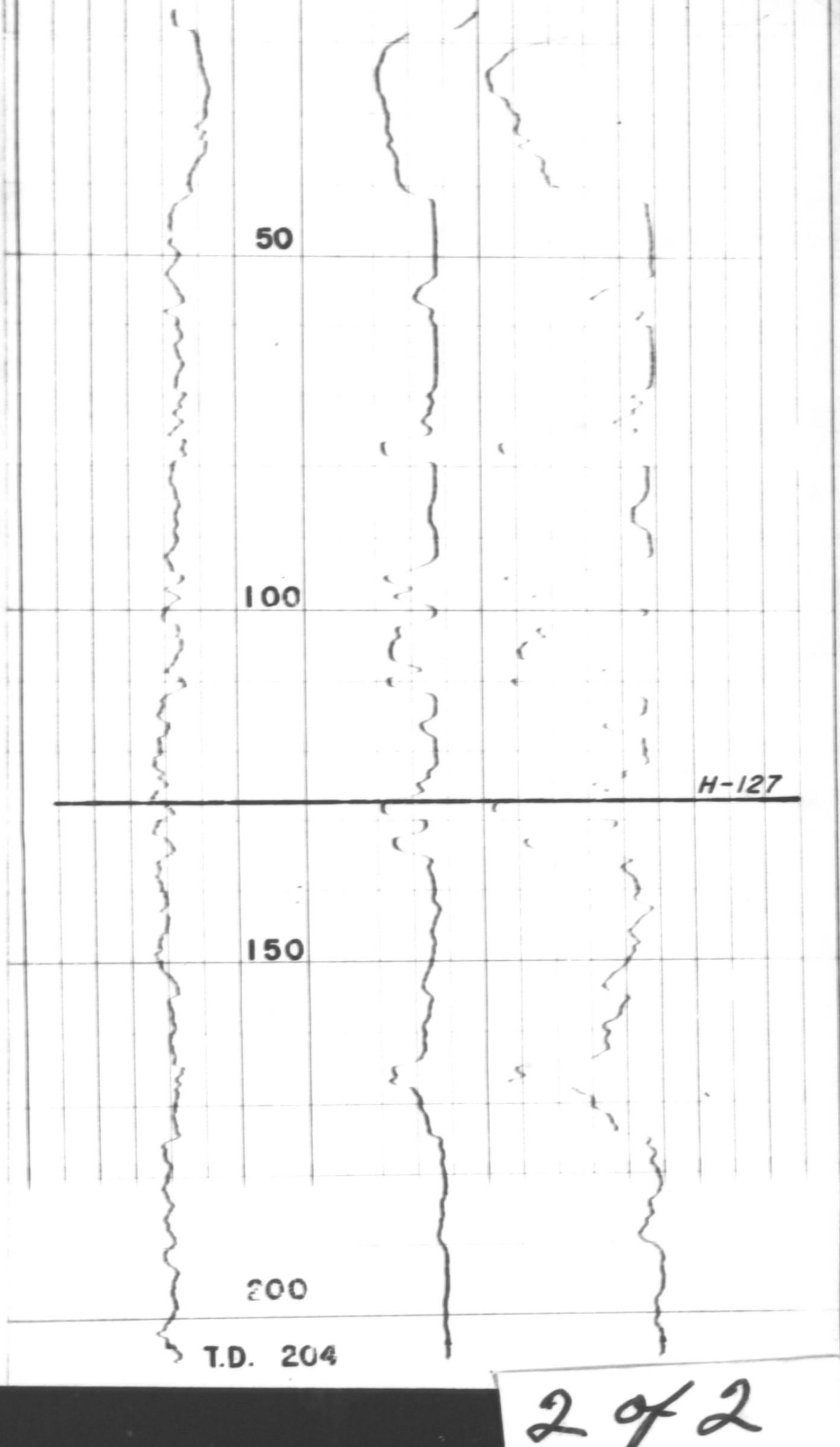
Witnessed By C. BULMER

REMARKS OR OTHER DATA

DEV. 1 3/4° AT 200'

POTENTIAL	40	210	RESISTANCE	70

(L-13)



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ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY. ALBERTA

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STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 72361'	WELL S.T. HOLE 8 FILE
E 86625'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G.L. Elevation 985.1

Run No. 1
Date MARCH 11, 1958
Footage Logged
Total Depth, Logged 205'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment

Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

10

REMARKS OR OTHER DATA

DEV. 2 1/2° AT 200'

POTENTIAL	40	210	RESISTANCE	70

L-52
(Above ground)

50

H-58

Viscosity _____

Ph. _____

Resist. Ohms m2m _____ @ ____ °F ____ @ ____ °F _____

Loss ml/30 min _____

Max Temp _____

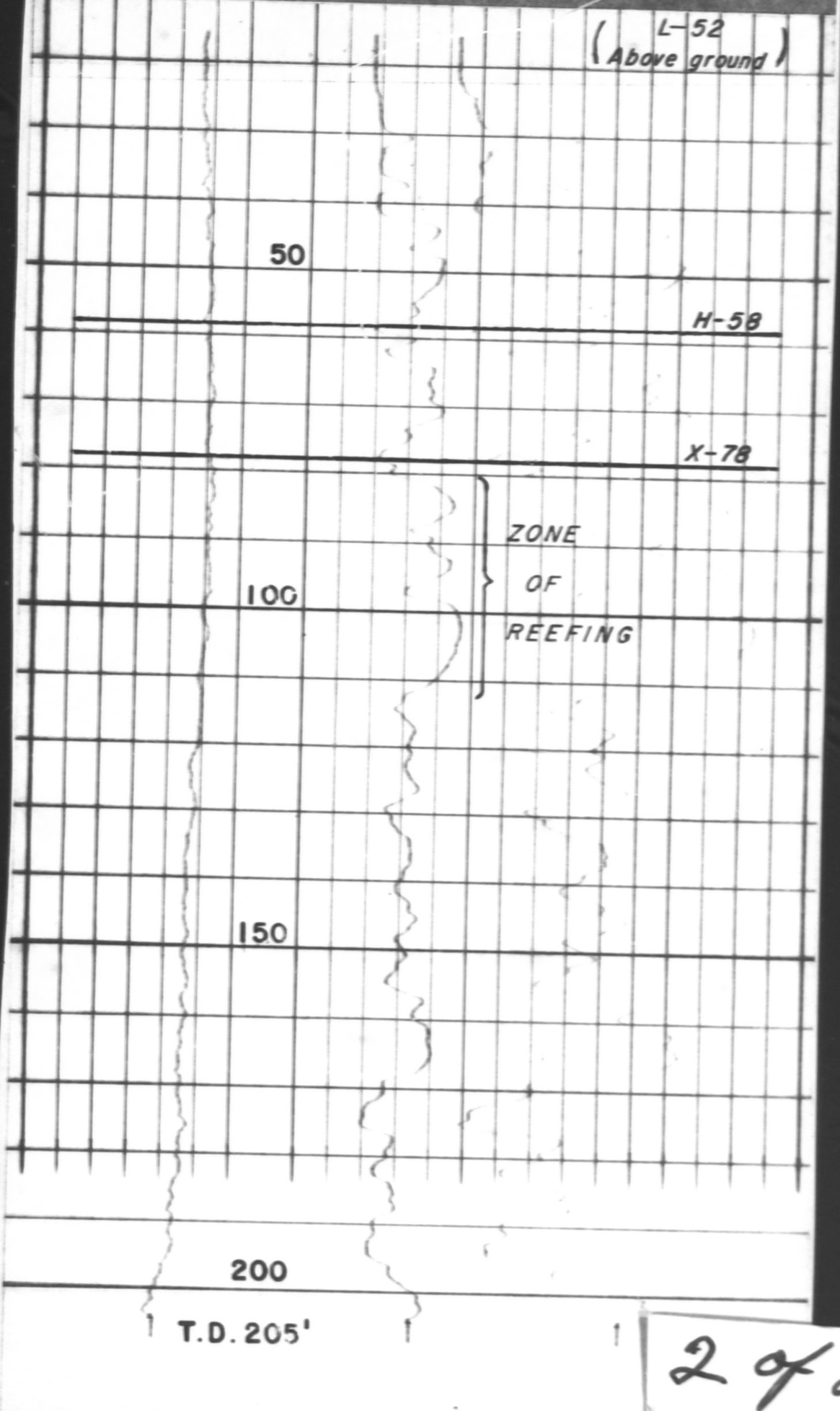
Recorded By E. MIER

Witnessed By C. BULMER

REMARKS OR OTHER DATA

DEV. 2 1/2° AT 200'

POTENTIAL	40	210	RESISTANCE	70



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ELECTRONIC Logging & Velocity Co. Ltd.

16 CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 112260'	WELL S.T. HOLE 6 FILE
E 85917'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 931·5

Run No. 1
Date MARCH 10, 1958
Footage Logged
Total Depth, Logged 205'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

19

REMARKS OR OTHER DATA
DEV. 3° AT 295'

POTENTIAL	40	210	RESISTANCE	70

(L-69 Above ground)

50

Mud Kind NATURAL

Treatment

Weight

Viscosity

Ph.

Resist. Ohms m2m @ °F @ °F

Loss ml/30 min

Max Temp

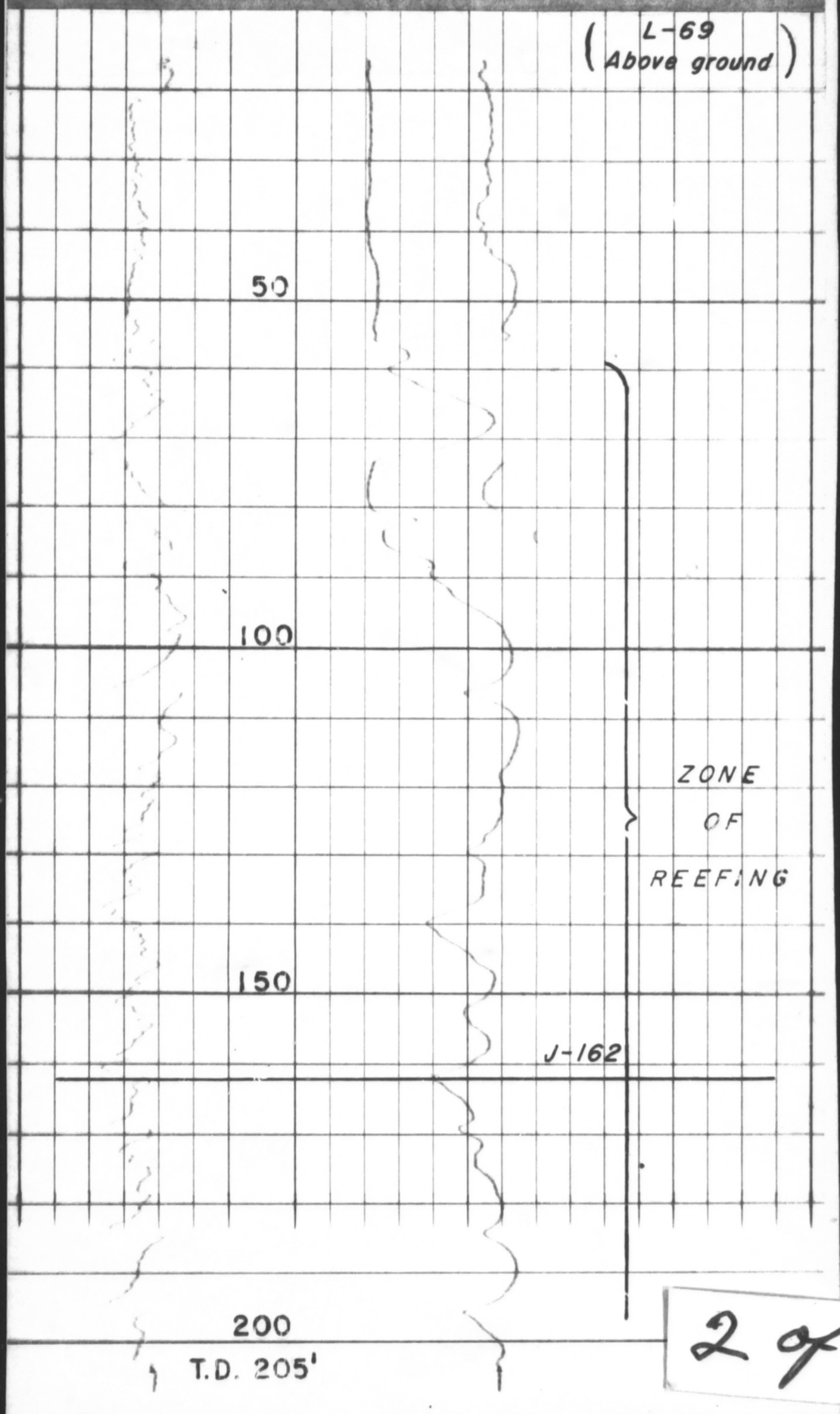
Recorded By E. MIER

Witnessed By C. BULMER

REMARKS OR OTHER DATA

DEV. 3° AT 295'

POTENTIAL	40	210	RESISTANCE	70



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ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 101330'	WELL S.T. HOLE 5 FILE
E 46376'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 964·6

Run No. 1
Date MARCH 2, 1958
Footage Logged
Total Depth, Logged 307'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

10

REMARKS OR OTHER DATA

DEV. 1 1/2° AT 295'

POTENTIAL | 60 | 210 RESISTANCE 70

50

K-67

100

G-136

150

L-152

Z-183

200

250

H-252

X-292

300

T.D. 307'

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ELECTRONIC
Logging & Velocity Co. Ltd.

CALGARY. ALBERTA

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STRUCTURE TEST HOLE SURVEY

Location

N 156188'
E 30001'
BDRY. MON.
267

COMPANY MURPHY CORPORATION

WELL S.T. HOLE 2 FILE

FIELD SOUTH TATHLINA LAKE

PROVINCE N. W. T. LSD

Sec. Twp. Rge. W

Log Measured From G. L. Elevation 986·7

Run No. 1
Date MARCH 6, 1958
Footage Logged
Total Depth, Logged 204'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment

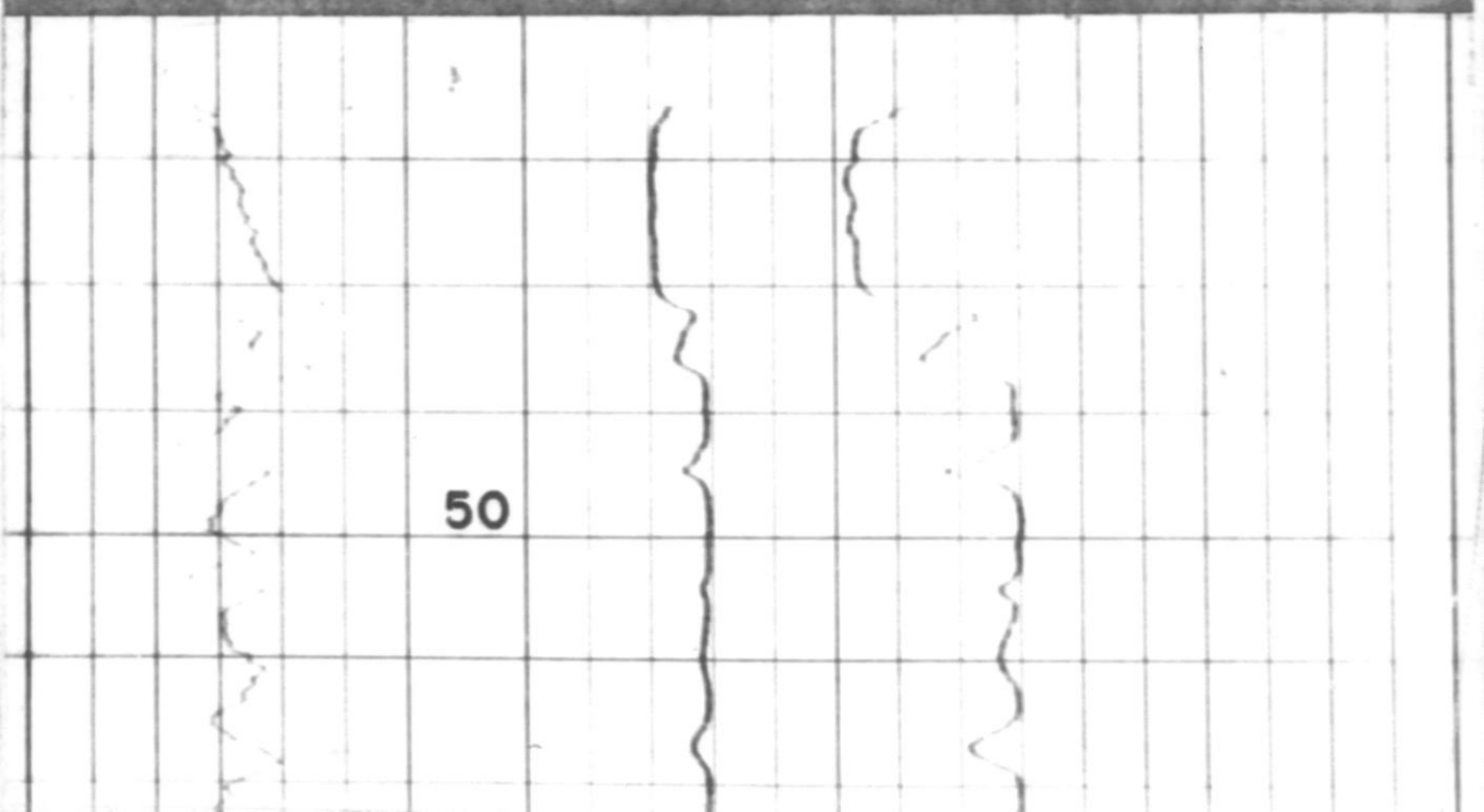
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

1 of

REMARKS OR OTHER DATA

DEV. 1 3/4° AT 190'

POTENTIAL	40	210	RESISTANCE	70

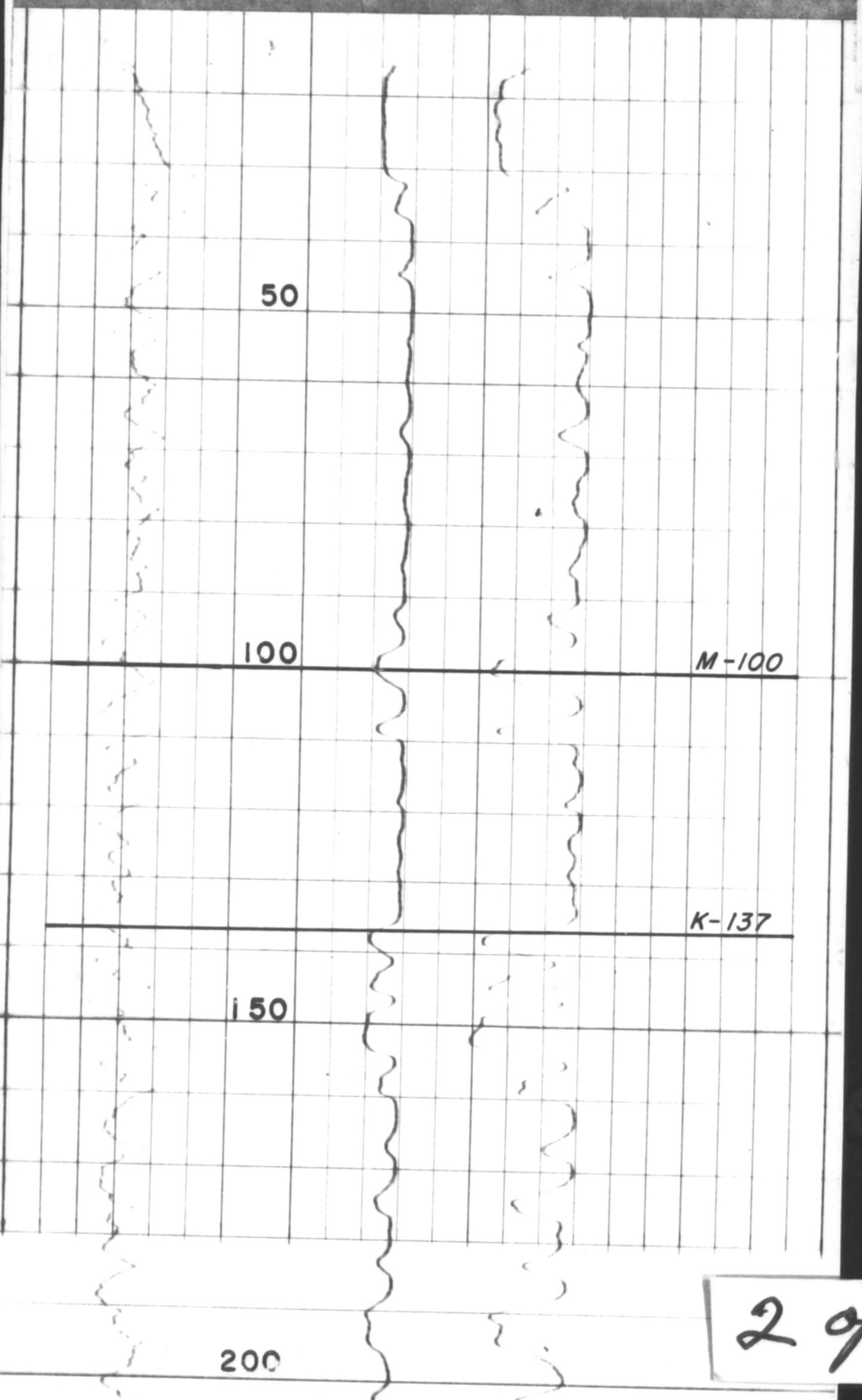


Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA

DEV. 1 3/4° AT 190'

POTENTIAL	40	210	RESISTANCE	70



29

T. D. 204'

(L-225)

ELECTRONIC Logging & Velocity Co. Ltd.

19 CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

Location

N 169652'
E 14573'
BDRY. MON.
267

COMPANY MURPHY CORPORATION

WELL S.T. HOLE 1 FILE

FIELD SOUTH TATHLINA LAKE

PROVINCE N. W. T. LSD

Sec. Twp. Rge. W

Log Measured From G. L. Elevation 1008·7

Run No. 1
Date MARCH 7, 1958
Footage Logged
Total Depth, Logged 272'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

10

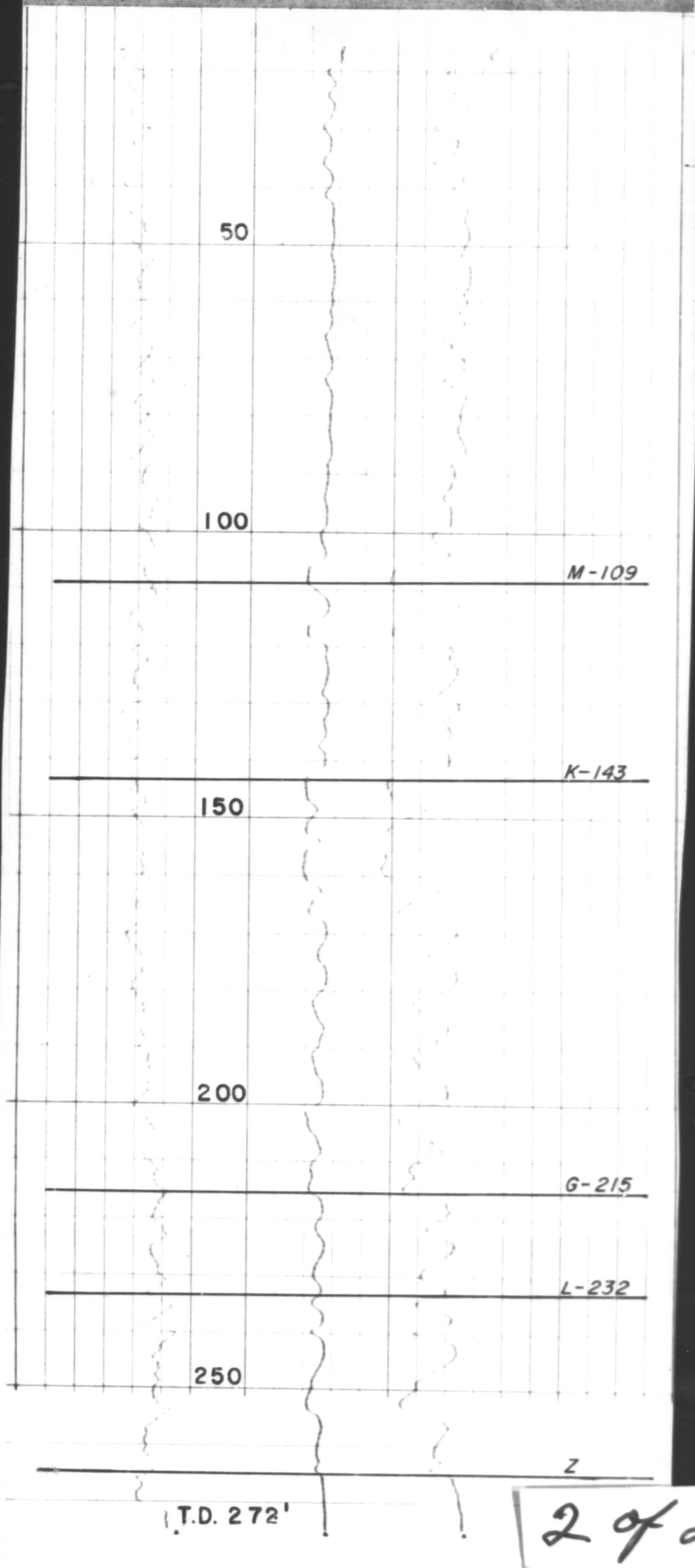
REMARKS OR OTHER DATA

DEV. 1 1/2° AT 260'

POTENTIAL	40	210	RESISTANCE	70

50

POTENTIAL | 40 | 210 | RESISTANCE



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63-14-4-3
OTTAWA

REPORT ON STRUCTURE TEST PROGRAM

P. & N. G. PERMITS NOS. 1397, 1399, 1400, 1402, 1403, 2467, 2468

SOUTH TATHLINA AREA, N.W.T.

Prepared For

Murphy Canada Oil Company

March 31, 1960

J. C. SPROULE & ASSOCIATES

OIL AND GAS ENGINEERING AND GEOLOGICAL CONSULTANTS

1009 FOURTH AVENUE WEST
CALGARY — ALBERTA

TELEPHONE
AMHERST 9-7951

REPORT ON STRUCTURE TEST PROGRAM

P. & N. G. PERMITS NOS. 1397, 1399, 1400, 1402, 1403, 2467, 2468

SOUTH KATHLEEN AREA, N.W.T.

Prepared For

Murphy Canada Oil Company

March 31, 1960

J. C. SPROULE & ASSOCIATES
GEOLOGICAL & EXPLORATION CONSULTANTS

CALGARY — ALBERTA

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P. & N. G. PERMITS NOS. 1397, 1399, 1400, 1402, 1403, 2467, 2468

SOUTH TATHLINA AREA, N.W.T.

INTRODUCTION

A structure test program was conducted during the latter part of December 1959, January and part of February, 1960, on Petroleum and Natural Gas Permits held by Murphy-Canada Oil Company in the south Tathlina area of the Northwest Territories. This program, which was supplementary to a structure test program conducted by Murphy Corporation in the same area in 1958, was designed to obtain additional structural information with a view to selecting locations for deep tests. The text of this report should be considered as a supplement to our two previous reports, "Geological Report, Murphy Corporation Permit Holdings, South Tathlina Area, N.W.T.," submitted February, 1958, and "Report on Structure Test Program, P. & N. G. Permits Nos. 1397 to 1403, South Tathlina Area, N.W.T.," submitted May, 1958.

The 1958 program included 19 structure tests, and several proposed additional tests were not completed due to break-up conditions. The 1959-60 program included the drilling and logging of an additional 19 structure tests. The locations of these tests are given in Table I.

The 1959-60 structure test holes were drilled by Seaman Engineering and Drilling Limited, with a Failing 2000 slim hole rig, using 2 7/8" drill stem and 4 3/4" rock bits. Gel mud was used throughout with the addition of bran for the control for lost circulation. Electric logging, hole location and elevation surveys for the program were conducted by Structure Test Ltd., under sub-contract to Seaman Engineering and Drilling Limited. Two Caterpillar tractors, a D-7 and a D-6, were used to cut survey lines and to clear access roads and drilling locations.

Angus G. MacKenzie, P. Eng., of J. C. Sproule & Associates, was field supervisor for the program.

This report is illustrated by two structure maps. The first, Figure I, is contoured on structure test marker "F", a distinctive electro-log feature in the Grumbler formation of the Upper Devonian. To give a wider structural picture, the contouring is extended to include the results of the structure tests of Union Oil Company of California and Merrill Petroleums Limited which were made available to Murphy-Canada Oil Company. The second illustration, Figure II, is also contoured on the "F" marker, but alternative "picks" are used for Structure Tests Nos. 23 and 28. Copies of the electro-logs for all structure tests drilled in 1959-60, with correlation markers indicated, are also included with this report.

Samples were collected for all holes, and sample descriptions for the deeper tests, Nos. 19, 21 and 28, appear as Appendices I to III.

STRUCTURE TEST DATA

The footage logged for the 19 holes totalled 6,742 feet, or an average of 355 feet per hole.

Correlations have been made chiefly by the use of the electric logs, but where necessary sample cuttings were examined to try to corroborate the picks so made. Markers "K", "F" and "V" are recorded on the structure test logs, but many additional markers were used in establishing the correlations. The values for "F" used for Figure I are essentially the same as those used in the preparation of the map which was the basis for selecting the locations of the deep tests, Murphy Alexandra Nos. 1 and 2. The main change has been an alteration of 35 feet in the "F" value of Structure Test No. 22, east of the proposed third deep test location.

Apparent reefoid development in the Upper Devonian beds has made structure test correlation difficult in two areas which are indicated on the accompanying maps. A degree of uncertainty regarding the correct correlations exists for Structure Tests Nos. 6, 18, 23 and 28. The alternate values of "F" which have been used in Figure II for Structure Tests Nos. 23 and 28 result from a correlation using Marker "V". This marker has been picked in Structure Test No. 28 and a value of 380 feet used for the interval "V" to "F" was obtained from an isopach sketch map of this interval using all available control for the thickness of the interval, including the Merrill No. 1 Structure Test.

The data for the structure test holes are given in the following two tables, the survey and drilling data in Table I and the marker data in Table II.

(See next page)

TABLE I

SURVEY DATA

STRUCTURE TEST PROGRAM

SOUTH TATHLINA AREA, N.W.T.

1959-60 S.T.No.	Latitude	Longitude	Elevation Feet	Footage Drilled	Footage Logged
19	60°07'33" N.	116°37'14" W.	975	894	893
20	60°03'58" N.	116°38'16" W.	966	264	263
21	60°00'55" N.	116°34'26" W.	982	918	917
22	60°02'58" N.	116°27'58" W.	975	206	204
24	60°06'43" N.	116°28'03" W.	985	201	196
25	60°11'59" N.	116°34'33" W.	971	263	263
26	60°16'00" N.	116°38'27" W.	957	304	302
27	60°19'39" N.	116°42'15" W.	991	300	283
28	60°19'26" N.	116°34'26" W.	954	912	910
29	60°30'36" N.	116°51'50" W.	946	200	200
30	60°30'12" N.	116°57'49" W.	956	301	300
31	60°27'10" N.	116°55'45" W.	1017	399	398
32	60°05'31" N.	116°44'00" W.	946	352	350
33	60°27'21" N.	116°51'36" W.	1001	350	341
34	60°03'15" N.	116°35'10" W.	986	263	262
35	60°16'13" N.	116°35'51" W.	949	155	154
36	60°15'30" N.	116°34'40" W.	953	157	156
37	60°03'15" N.	116°31'33" W.	988	201	200
38	60°07'32" N.	116°33'42" W.	991	151	150
Totals				6,791	6,742

1960 Corrections

1958 S.T.No.	Latitude	Longitude	Elevation Feet
1	60°27'53" N.	116°54'23" W.	-
2	-	-	995
3	-	-	997
4	-	-	999
5	-	-	968
7	-	-	938

TABLE II

SURVEY DATA

STRUCTURE TEST MARKER DATA

SOUTH TATHLINA AREA, N.W.T.

Structure Test No.	Ground Elevation Feet	Marker "K" Depth Feet	Marker "K" Elev. Feet	Marker "F" Depth Feet	Marker "F" Elev. Feet	Marker "Y" Depth Feet	Marker "Y" Elev. Feet	Logged Depth Feet
1958 Murphy Program								
1	1009	143	+866	297*	+712*			272
2	995	137	+858	286*	+709*			204
3	997	113	+884	263	+734			299
4	999	94	+905	238	+761			294
5	968	67	+901	208	+760			307
6	932			44?	+976?			205
7	938			62	+876			302
8	985			6*	+979*			205
9	949			155	+794			308
10	978			77	+901			204
11	982			85	+897			203
12	972	240	+732	398	+574	820	+152	1094
13	982			194	+788			307
14	984			92*	+892*	481	+503	824
15	991	262	+729	417*	+574*			315
16	983	222	+761	377*	+606*			297
17	960			121	+839			244
18	974			2?	+976?			248
23	933			(45?	+888?)	323	+610	394
				(+57?**	+990?**)			
1959-60 Murphy Program								
19	975			124	+851	528	+447	893
20	966			146	+820			263
21	982			87*	+895*	505	+477	917
22	975			+10*	+985*			204
24	985			38?	+947?			196
25	971			79	+892			262
26	957			98	+859			302
27	991	84	+907	224	+767			283
28	954			(60?	+894?)	420	+534	910
				(40?**	+914?**)			
29	946	56	+898	196	+750			198
30	956	186	+770	326*	+630*			300

*Interpreted marker.
**Alternate correlation.

TABLE II - Continued

Structure Test No.	Ground Elevation Feet	Marker "T" Depth Feet	Marker "T" Elev. Feet	Marker "T" Depth Feet	Marker "T" Elev. Feet	Marker "T" Depth Feet	Marker "T" Elev. Feet	Logged Depth Feet
31	1017	176	+841	318	+699			398
32	946			199	+747			350
33	1001	148	+853	291	+710			340
34	986			87*	+899*			262
35	949			42*	+907*			154
36	953			4*	+949*			156
37	988			18*	+970*			200
38	991			104	+887			150
Alexandra No. 1	986	82	+904	224	+762	624	+362	1870 (Wideo)
1957 Merrill Program								
1-57	863			35	+828	413	+450	481
2-57	887			162	+725			303
3-57	856			67	+789			163
4-57	893			129	+764			163
5-57	960	98	+862	200*	+710*			203
6-57	944	48	+896	198*	+746*			148
7-57	935			132	+803			153
8-57	922	128	+794	288*	+642*			153
9-57	872			47	+825			173
10-57	845			46	+799			203
11-57	844			127	+717			173
12-57	865			157	+708			283
13-57	857			+48	+905			303
14-57	852			+11*	+863*			163
15-57	853			15*	+838*			153
16-57	849			103	+746			153
17-57	864			106*	+758*			97

*Interpreted marker.
**Alternate Correlation.

GEOLOGICAL STRUCTURE

The 1959-60 structure test program has further defined the structural features which were discussed in our report on the 1958 structure test program. In general, it may be said that the additional work has accentuated the three features recognised at that time.

The first of these features is a southwest-trending linear nose or ridge in the northern part of Permit No. 1397 which is probably controlled by basement faulting. The drilling of Murphy Alexandra No. 1 on this feature found cavernous porosity in the Slave Point and Muskeg (Presqu'ile) formations, undoubtedly associated with reef development along a basement fault trend.

The second structural feature on which Murphy Alexandra No. 2 has been located is either a closed domal structure or a prominent west-dipping nose (depending on which electric log correlation is accepted) in the eastern part of Permit No. 1400. This feature may also be related to a basement fault zone. Apparent reefoid development is prominent in the shallow Upper Devonian beds.

The third prominent structural feature occurs in the boundary area between Permits Nos. 1403 and 2467. This feature is a strongly developed nose which appears to be related to a southwest-trending fault zone which is known from subsurface studies in northern Alberta (see Figures I and II). Reefoid development is also present in the Upper Devonian beds in the vicinity of this third structure.

CONCLUSIONS AND RECOMMENDATIONS

The 1959-60 structure test program has served to define three structural features to be tested by drilling.

Murphy Alexandra No. 1, which has been drilled on the first of three features, found abundant porosity in the Slave Point and Presqu'ile formations. A small gas show was encountered at the top of the Slave Point and oil staining was present in several parts of the section. The two best developed porous sections, however, returned salt water on drill stem tests.

Murphy Alexandra No. 2 is currently drilling on the second feature.

The third structural feature is probably the most promising, but drilling problems delayed the deep test program so that it was impractical to commence a test of this feature east of the Hay River this winter.

Discussions of the oil and gas possibilities have been included in previous reports. The discovery of excellent porosity in the Slave Point formation in Murphy Alexandra No. 1 must, however, be considered as very encouraging. The Slave Point formation usually has oil shows but is frequently "tight." In the N.W.T. Petroleum's Escarpment Lake tests, northeast of the Murphy area, high gravity oil was recovered from the Slave Point on drill stem test but the formation was too tight to produce commercially. Imperial Yates River No. 16-18, south of Murphy Permit No. 2467, yielded a reported 360 feet of oil and water on a drill stem test of the Slave Point.

In view of the known associations of Devonian structure and reef development with northeast-trending basement fault zones, it is recommended that structure test work be extended northeast and east into Permits Nos. 2467 and 2468 before any additional deep test drilling is considered. It is thought probable that the structural feature on which Murphy Alexandra No. 2 is being drilled and that which was proposed for a third deep test are located along northeast-trending fault zones, and that the structure along these fault zones should be further detailed. It is believed that structure tests drilled to depths of 400 to 600 feet in Permits Nos. 2467 and 2468 should encounter the correlatable beds of the interval below the "V" marker. These beds are underneath the main zone of reefing which made correlations difficult in the previous programs.

A. G. MacKenzie, P. Eng.

S. R. L. Harding, P. Eng.

March 28, 1960.
1009 Fourth Avenue S. W.,
Calgary, Alberta.

LITHOLOGICAL COMPARISON OF THREE STRUCTURE TESTS

MURPHY GRUMBLER

NO. 21	NO. 19	NO. 28
ELEV 982'	ELEV 975'	ELEV 954'

SOUTH — NORTH

Sand and Gravel

Pleistocene and Recent

Cretaceous Sandstone

Silty and Dolomitic Limestone

Clastic Limestone Facies

Crystalline Ls.

Sublithographic Lt

Silty and Dolomitic Limestone

420' (+534)

505' (+477)

"V" Marker Electric Logs

525' (+447)

Mottled Dolomite Facies

Silty Limestone and Siltstone Facies

900'

800'

700'

600'

500'

400'

300'

200'

100'

HORIZONTAL SCALE IN MILES

25 20 15 10 0

J.C. SPROULE & ASSOCIATES, CALGARY

MURPHY CRUMBLER STRUCTURE TEST NO. 19

Location: Latitude 60°07'33"
Longitude 116°37'14"

Spudded: January 15, 1960

Total Depth: 894'

Elevation: Ground Elevation 974.58'

Casing: None

Cored: None

Hole Size: 4 3/4"

Condition of Samples: The quality of samples from depths below approximately 550 feet is poor. The samples consist almostentirely of cavings, which obscure the true lithology in the bore hole. This has been the result of poor mud conditions.

SAMPLE STUDY

by R. deWit

Interval Feet	Description
	PLEISTOCENE AND RECENT
0-86	Glacial outwash sands and gravels.
86-113	Glacial sands and gravels, as above, with numerous fragments of Cretaceous sandstone. This sandstone is light brown to white, quartzose, very fine grained, soft and porous, and is associated with some carbonaceous siltstone and lignite. Glauconitic sandstone and coarse quartz grains, which are characteristic of the basal Cretaceous in this area, were not observed. It has been concluded that the quartzose sand noted in this interval forms a rubble of debris of Cretaceous sandstones which is mixed with the post-Pleistocene sands and gravels.
	DEVONIAN
	Crumbler Formation
113-120	Limestone - dolomitic, slightly silty, light brown, fine-grained; mottled zone.

Interval Feet	Description
120-130	Drift and Cretaceous sandstone, sample bag incorrectly labelled.
130-150	Limestone - light brown, finely crystalline, with dolomitic mottling; streaks of calcareous siltstone; rare glauconite and pyrite.
150-160	Limestone - as above, 40%; siltstone, as above, 60%; scattered fossil fragments.
160-200	Limestone - light brown, finely crystalline, fossiliferous, in part slightly dolomitic, 75%; siltstone, dolomitic, brown-grey to grey, 25%.
200-220	Limestone - as above, 20%; siltstone and silty limestone, 80%; streak of limestone, coarsely fragmental, fossiliferous, with red hematite staining.
220-230	Limestone - as above, 70%; siltstone, as above 30%.
230-260	Limestone - light brown to brown, finely crystalline to crystalline, fossiliferous, in part bioclastic, with fragments of brachiopods and bryozoa; scattered pyrite.
260-280	Limestone - as above, possibly reefal, with abundant coral(?) fragments.
280-380	Limestone - light brown, finely crystalline, finely clastic to bioclastic, with crinoid fragments and ostracods, few coral fragments.
380-410	Limestone - as above, poor samples.
410-450	Limestone - light brown, finely crystalline, 50%; limestone, light brown to brown-grey, dolomitic and silty, 50%; trace of green shale, trace of <u>porosity</u>.
450-460	Limestone - light brown, finely crystalline to crystalline, calcarenitic.
460-470	Limestone - as above, 70%; limestone, light brown, silty, 30%.
470-490	Limestone - dolomitic and silty, light brown-grey, finely granular.
490-500	Limestone - light brown, finely crystalline, 80%; limestone, silty, 20%.
500-570	Limestone - brown to light grey-brown, finely crystalline, with minor amount of silt.
570-580	Limestone - light brown to grey-brown, finely crystalline to crystalline, pyritic; possibly some dolomitic mottling.
580-640	Limestone - light brown, finely crystalline, scattered fossil fragments; some dolomitic mottling.

Interval Feet	Description
640-660	Limestone - as above; siltstone and green shale; poor samples.
660-690	Siltstone - calcareous, dolomitic, light grey to greenish grey; poor samples.
690-700	Limestone - silty, light brown, finely crystalline to crystalline, fossiliferous, 60%; siltstone, grey to greenish grey, in part shaly, 40%.
700-760	Limestone - as above, 60%; siltstone, as above, 40%; poor samples.
760-770	Sample missing.
770-894	Poor samples, consisting of glacial drift with light brown limestone and siltstone.

MURPHY GRUMBLER STRUCTURE TEST NO. 21

Location: Latitude 60°00'55"
Longitude 116°34'26"

Spudded: January 21, 1960

Total Depth: 918'

Elevation: Ground Elevation 981.82'

Casing: None

Hole Size: 4 3/4"

Condition of Samples: Except for a few intervals samples of this core hole appear to be fairly representative of the section.

SAMPLE STUDY

by R. deWit

Interval Feet	Description
	PLEISTOCENE AND RECENT
0-70	Sand and gravel.
	LOWER CRETACEOUS
70-80	Sandstone - salt and pepper, medium-grained, grains subangular to subrounded, fair porosity; in part tightly cemented with pyrite.
80-90	Sandstone - salt and pepper, medium-grained, with few large quartz grains, very glauconitic, in part fair porosity; streak of brown impure shale; few lignite fragments.
90-100	Sandstone - light grey, medium-grained, quartzose, very glauconitic, very porous.
100-110	Sandstone - light brown, medium-grained, quartzose, fair to poor sorting, no glauconite, 10% black grains, partly porous.
110-120	Sandstone - salt and pepper, medium-grained, glauconitic, kaolinitic.
120-140	Sandstone - as above, poor samples, mainly mud.
140-148	Sandstone - almost white, poorly sorted, fine- to coarse-grained, angular.

Interval Feet	Description
	UPPER DEVONIAN
	Grumbler Formation
148-170	Siltstone - calcareous and dolomitic, brown, granular, tight; and limestone, dolomitic, brown, finely crystalline, fossiliferous, minor pyrite.
170-240	Limestone - light brown to brown, crystalline to coarsely crystalline, finely bioclastic to calcarenitic; scattered fossil fragments.
240-250	Limestone - silty and dolomitic, brown, fine-grained; and siltstone, calcarenitic.
250-270	Limestone - light brown, finely crystalline, calcarenitic; some silty limestone.
270-300	Limestone - light brown to brown, crystalline, calcarenitic to bioclastic.
300-310	Sample missing.
310-320	Limestone - light brown, crystalline, calcarenitic; crinoid and brachiopod fragments.
320-330	Sample missing.
330-340	Limestone - silty and argillaceous, grey, fine-grained; and siltstone, calcareous and dolomitic, fine-grained, grey.
340-350	Limestone - light brown to brown-grey, finely crystalline 90%; siltstone, calcareous, micaceous, light grey, 10%.
350-360	Limestone - argillaceous, slightly silty, light grey, fine-grained.
360-370	Limestone - light brown, finely crystalline with mottling of dolomite.
370-380	Siltstone - dolomitic, light grey-brown, 80%; limestone, light brown, partly argillaceous 20%.
380-410	Limestone - silty, dolomitic, light brown-grey, 50%; limestone, light brown, finely crystalline to crystalline, with ostracods, 50%.
410-420	Limestone - light brown-grey, fine-grained, slightly dolomitic.
420-460	Siltstone - dolomitic, light grey to light brown-grey, 75%; limestone, light brown, 25%.

Interval Feet	Description
460-470	Siltstone - as above, 30%; limestone, as above with ostracods, 70%.
470-490	Siltstone - as above, 50%; limestone, as above, 50%.
490-510	Limestone - light brown to brown, finely crystalline to crystalline, clastic to bioclastic, 75%; limestone, silty, 25%.
510-520	Limestone - light brown-grey, slightly silty and argillaceous, finely crystalline.
520-540	Limestone - silty and argillaceous, light grey to brown-grey, 50%; limestone, light brown, finely crystalline, fossiliferous, 50%.
540-550	Limestone - light brown-grey, finely crystalline, 60%; limestone, silty, brown-grey, 40%.
550-570	Limestone - as above, 90%; limestone, silty, as above, 10%.
570-610	Limestone - light brown, finely crystalline, 50%; siltstone, dolomitic, grey, 50%.
610-640	Limestone - light brown, finely crystalline, with dolomitic mottling.
640-660	Limestone - light brown, finely crystalline, 35%; limestone, silty dolomitic, light brown to brown-grey, 65%.
660-720	Siltstone - argillaceous, calcareous, light grey, 50%; limestone, silty, dolomitic, brown-grey, 50%.
720-730	Limestone - light grey to grey-brown, finely crystalline, slightly silty; limestone, silty, as above.
740-740	Siltstone - dolomitic, light grey, 40%; limestone, silty, light brown-grey, 40%; limestone, light brown, finely crystalline, 20%.
740-800	Siltstone - dolomitic, light grey, 50%; limestone, silty, light brown, with ostracods, crinoid fragments and bryozoa.
800-840	Limestone - light grey-brown, finely crystalline with dolomitic mottling, 50%; limestone, silty, light grey to light brown, fine-grained, 50%; few brachiopod fragments, traces of pyrite.
840-880	Limestone - as above, 20%; limestone, silty, as above, 80%.
880-900	Siltstone - dolomitic, light grey to grey, slightly pyritic.
900-920	Limestone - silty, light brown to brown-grey, 40%; siltstone, dolomitic, light grey, 60%; trace of brown fossiliferous limestone.

MURPHY CRUMBLER STRUCTURE TEST NO. 2E

Location: Latitude 60°19'26"
Longitude 116°34'26"

Spudded: January 9, 1960

Total Depth: 912'

Elevation: Ground Elevation 953.63'

Casing: None

Cored: None

Hole Size: 4 3/4"

Condition of Samples: Difficulties with the mud conditions were experienced due to extreme cold and inadequate mud pit facilities. As a result the quality of the samples is poor below a depth of approximately 550 feet. All well samples have been examined, but those collected from 550 to 912 feet consist almost entirely of cavings and do not reflect the lithology within this interval.

SAMPLE STUDY

by R. deWit

Interval Feet	Description
	PLEISTOCENE AND RECENT
0-20	Sand and gravel, surface deposits.
	DEVONIAN
	Grumbler Formation
20-30	Limestone - light brown, microcrystalline to crystalline, fossiliferous; with siltstone, calcareous and dolomitic, light grey to light grey-brown, dense.
30-70	Samples missing.
70-80	Limestone - cream, sublithographic to finely crystalline, in part calcarenitic with birdseyes, tight; stromatoporoid fragments, scattered finely vuggy porosity; trace of grey calcareous siltstone.
80-90	Limestone - as above; trace of limestone, brown-grey with bright red hematite staining, finely crystalline, bioclastic.

Interval Feet	Description
90-100	Limestone - cream and light brown with streaks of red and light green staining, finely crystalline, granular, in part dolomitic; clastic particles in chalky matrix, in part bioclastic; scattered pin-point porosity.
100-110	Limestone - cream, calcarenitic, dense; and limestone, cream to light brown with mottling of finely disseminated dolomite crystals; rare pyrite.
110-200	Limestone - cream, sublithographic, dense, calcarenitic; traces of red and light green staining, pyrite and stylolites.
200-220	Limestone - as above, with trace of brown bituminous(?) staining and some granular, brown dolomitic limestone.
220-240	Limestone - cream, sublithographic, dense, with trace of intergranular porosity; trace of light greenish stained granular limestone.
240-250	Limestone - as above, with 5 percent grey-brown granular to crystalline limestone.
250-280	Limestone - cream, sublithographic, dense; minor pyrite.
280-310	Limestone - as above, with scattered intergranular porosity, rare dark grey-brown bituminous(?) staining.
310-330	Limestone - as above, tight.
330-350	Limestone - as above, with streaks of cream crystalline limestone.
350-400	Limestone - cream, sublithographic; in part crystalline limestone, slightly pyritic, with fair intergranular porosity.
400-410	Limestone - cream, in part pink, sublithographic; with 50 percent limestone, crystalline, brown-grey to light brown, slightly dolomitic.
410-430	Limestone - dolomitic, argillaceous, brown-grey, finely crystalline, fossiliferous, brachiopods; minor dolomite, grey-brown, finely sugary, porous.
430-450	Limestone - dolomitic, silty, argillaceous, finely crystalline to crystalline, 60%; dolomite, calcareous, silty, fossiliferous, 40%.
450-460	Limestone - dolomitic, silty, 60%; limestone, brown-grey, finely crystalline, fragmental, dense, 40%; minor green shale.
460-480	Limestone - light grey-brown to brown, crystalline, calcarenitic, slightly pyritic; with 25% cavings(?) of sublithographic cream limestone.

Interval Feet	Description
480-490	Limestone - cream, sublithographic, dense; limestone, argillaceous, grey to brown-grey, 20%.
490-500	Limestone - cream to light grey-brown, finely crystalline, dense; with mottling of disseminated dolomite.
500-530	Limestone - light grey crystalline, and light brown, finely crystalline, with dolomitic mottling; scattered fossils, pyrite; trace of dead oil staining.
530-540	Limestone - as above, with 10% silty and argillaceous limestone.
540-550	Limestone - cream to light grey, finely crystalline, finely fossiliferous, with dolomitic mottling; and limestone light grey, slightly argillaceous.
550-560	Limestone - light brown-grey, finely crystalline, finely detrital.
560-580	Limestone - as above, with streaks of light greenish grey silty shale and light green waxy shale.
580-590	Limestone - as above, very fossiliferous.
590-610	Limestone - light brown-grey to brown, finely crystalline, finely fragmental, with some dolomitic mottling; limestone, silty brown-grey, and calcareous siltstone.
610-910	Limestone - light brown-grey to grey, silty and argillaceous; with 15% to 25% of siltstone, calcareous, grey; scattered crinoid and brachiopod fragments, ostracods. Due to excessive caving the lithology cannot be differentiated within this interval.

118°00' 45' 30' 15' 117°00' 45' 30' 15' 116°00' 45' 30'

61°00'

45'

30'

15'

KAKISA LAKE

Kakisa River

RABBIT LAKE ROAD

BRIGGS - GREAT SLAVE LAKE 1

GREAT SLAVE LAKE

HAY RIVER

N.W.T. DESMARAIS LAKE 1

N.W.T. HEART LAKE

WILLS LAKE ROAD

BRIGGS - N.E TATHLINA

BRIGGS W. TATHLINA

WHITE BEAVER HAY R. 1

Sandy River

CMBS-G2

N.W.T ESCARPMENT LAKE 1,2,3

CMBS 1

HIGHWAY

TATHLINA LAKE

SHELL ALEXANDRA-5

UNION ALEXANDRA 6

TREND OF PINE POINT FAULT ZONE

MURPHY ALEXANDRA-1

UNION ALEXANDRA 5

+1250

+1000

+750

UNION ALEXANDRA

UNION ALEXANDRA 3

UNION ALEXANDRA 2

UNION ALEXANDRA 4

SHELL ALEXANDRA-2

Cameron River

P. 1397

MACKENZIE RIVER

MURPHY ALEXANDRA-2

10f

LAKE

TREND OF SUBSURFACE FAULT ZONE

30'

15'

SHELL ALEXANDRA-2

Cameron River

SHELL KAKISA R.-1

MURPHY ALEXANDRA-1

UNION ALEXANDRA

UNION ALEXANDRA 5

UNION ALEXANDRA 4

UNION ALEXANDRA 3

UNION ALEXANDRA 2

+1250

+1000

+750

MACKENZIE RIVER

HAY RIVER

MURPHY ALEXANDRA-2

P. 1397

P. 1399

P. 1400

P. 2468

P. 1402

P. 1403

P. 2467

SWAN LAKE

PROPOSED DEEP TEST

IMP. YATES RIVER 16-18

BUFFALO LAKE

Whitesand River

Yates River

60°00'

118°00'

45'

30'

15'

117°00'

116°00'

STRUCTURE MAP

HAY RIVER AREA, N.W.T.

Contours on Marker "F"

Contour Interval 50 ft. Datum: Sea Level

SCALE 1"=250,000'

Interpretation by S.R.L. Harding, A. MacKenzie

J.C. SPROULE & ASSOCIATES, CALGARY

- Abandoned Well
- Location or Drilling Well
- M7 Merrill Structure Test
- 7 Murphy Structure Test
- Elevation on Marker "F"
- 1064 Area of apparent reefoid development in Upper Devonian beds
- P. & N.G. Permits Outline

TREND OF SUBSURFACE FAULT ZONE

3522

2 of 2

FIGURE—I

FIGURE-II

118°00' 45' 30' 15' 117°00' 45' 30' 15' 116°00' 45' 30'

61°00'

45'

30'

15'

KAKISA LAKE

KAKISA River

RABBIT LAKE ROAD

KAKISA RIVER

BRIGGS - N.E TATHLINA

BRIGGS W. TATHLINA

TATHLINA LAKE

SHELL ALEXANDRA-2

Cameron River

BRIGGS - GREAT SLAVE LAKE I

N.W.T. DESMARAIS LAKE I

N.W.T. HEART LAKE

MILLS LAKE ROAD

GREAT SLAVE LAKE

HAY RIVER

WHITE BEAVER HAY R I

Sandy River

CMBS-G2

N.W.T ESCARPMENT LAKE 1,2,3

CMBS 1

HIGHWAY

SHELL ALEXANDRA-5

UNION ALEXANDRA 6

UNION ALEXANDRA 5

UNION ALEXANDRA

UNION ALEXANDRA 2

UNION ALEXANDRA 3

UNION ALEXANDRA

MURPHY ALEXANDRA-1

MURPHY ALEXANDRA-2

+750

+1000

+1250

R. 1397

MACKENZIE RIVER

TREND OF PINE POINT FAULT ZONE

10f

LAKE

SHELL ALEXANDRA-2

Comeaga River

SHELL KAKISA R.-1

MURPHY ALEXANDRA-1

UNION ALEXANDRA 5

UNION ALEXANDRA

UNION ALEXANDRA 4

UNION ALEXANDRA 3

UNION ALEXANDRA 2

P. 1397

MACKENZIE RIVER

MURPHY ALEXANDRA-2

HAY

P. 1399

P. 1400

P. 2468

SWAN LAKE

PROPOSED DEEP TEST

P1402

P1403

P. 2467

IMP. YATES RIVER 16-18

BUFFALO LAKE

Whitesand River

Yates River

30'

15'

60°00'

118°00'

45'

30'

15'

117°00'

45'

30'

15'

116°00'

45'

30'

60°00'

Abandoned Well

Location or Drilling Well

M7 *Merrill Structure Test*

7 *Murphy Structure Test*

Elevation on Marker "F"

1064 *Area of apparent reefoid development in Upper Devonian beds*

P & N.G. Permits Outline

TREND OF SUBSURFACE FAULT ZONE

STRUCTURE MAP

HAY RIVER AREA, N.W.T.

Contours on Marker "F"

Using alternate "picks" S.T. Nos. 23 and 28

Contour Interval 50 ft. Datum: Sea Level

5 0 5 10

SCALE 1"=250,000'

Interpretation by S.R.L. Harding, A. MacKenzie

272

3523

J.C. SPROULE & ASSOCIATES, CALGARY

FIGURE-II

REPORT ON STRUCTURE TEST PROGRAM

P. & N.G. PERMITS NOS. 1397 TO 1403

SOUTH TATHLINA AREA, N.W.T.

Prepared For

Murphy Corporation

May, 1958

J. C. SPROULE & ASSOCIATES
GEOLOGICAL & EXPLORATION CONSULTANTS

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CALGARY — ALBERTA

TELEPHONES
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AMHERST 2-4374

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P. & N.G. PERMITS NOS. 1397 TO 1403

SOUTH TATHLINA AREA, N.W.T.

INTRODUCTION

A structure test program was conducted during February and March, 1958 on the Petroleum and Natural Gas Permits held by Murphy Corporation in the South Tathlina area of the Northwest Territories. Previous regional studies by J. C. Sproule & Associates indicated anomalous structure might be expected in the Murphy Permit area. (See "Geological Report, Murphy Corporation Permit Holdings, South Tathlina Area, N.W.T." submitted February 1958). The structure test program was planned to locate structural trends anomalous to the regional structure and to check particularly those areas in which strong structural relief was suggested by the photogeological interpretation. No holes were located on Permits Nos. 1398 and 1401, as these Permits are topographically unfavorable for access, and deep holes involving difficult drilling conditions would be required to reach correlatable Devonian marker horizons.

The structure test holes were drilled by Accurate Exploration Ltd. during the period between February 16 to March 26, 1958. Altogether, 19 structure tests were drilled and logged. Four additional holes were planned and access roads for these were prepared, but the advent of spring weather prevented the drilling of these holes.

Electric logging, hole deviation surveying and location and elevation surveying for the program were conducted by Electronic Logging & Velocity Co. Ltd.

C. A. S. Bulmer, a geologist with J. C. Sproule & Associates, supervised the field geological aspects of the operation. By having a geologist in the field for the examinations and correlations of logs it was possible to save on footage costs by reducing the proposed depths for a number of the holes, and to permit a better selection of structure control points by taking advantage of the structural interpretations from currently drilling holes.

This report is illustrated by a structure map contoured on the Structure Test Marker "L", a distinctive electro-log feature in the Grumbler formation of the Upper Devonian. To give a wider structural picture, the contouring is extended to include the structure tests of Union Oil Company of California and Merrill Petroleums Limited, which have been made available to Murphy Corporation. Copies of the electric logs for all the holes drilled, with the correlation markers indicated, are also included with the report. Samples were taken for the deeper tests, and lithological descriptions for Structure Tests Nos. 1, 4, 12, 14 and 23 appear as Appendices I to V. The locations of Structure Tests and Structure Test Data are given in Tables I and II.

STRUCTURE TEST DATA

The footage drilled for the 19 holes totalled 6,526 feet, which averages 343 feet per hole.

Correlations have been made by the use of electric logs and lithology. Electric log markers are designated by letters. A number of these markers have been previously used by the authors in adjacent areas. For example, letters which are common to the logs of both Merrill Petroleums Limited and Murphy Corporation indicate the same marker horizons. The letters used for the Murphy logs are, in descending order, C, H, K, G, L, Z, H, X, J, P and Q.

The Murphy structure tests are mostly drilled and correlated in the Upper Devonian Grumbler formation. Two holes, Nos. 12 and 14, are believed to penetrate beds equivalent to the Alexandra formation which is beneath the Grumbler. The "Q" horizon is considered equivalent to the top of the Alexandra formation. This Upper Devonian formation occurs typically only in the vicinity of Alexandra Falls. Cretaceous shales and sandstones are present above the Devonian limestones in the southwest part of the drilled area.

Electric log correlations can be made with confidence on all holes except Nos. 23, 6 and 14. Reefing conditions which develop in the two eastern Permits cause this difficulty. Beds, which elsewhere have great lateral continuity with fairly constant character, change character rapidly in these few holes in the eastern Permits.

The locations in terms of latitude and longitude for the 19 holes drilled by Murphy Corporation in the South Tathlina area are given in Table I. Table II gives elevations, total depths, and depths and elevations for the correlation markers for the Murphy structure tests.

Note (8/4/60)
all depths measured
from ground level.

(See Table I on next page)

TABLE I

LOCATIONS OF STRUCTURE TESTS

S.T. No.	Location
1	Lat. 60° 27' ~~14~~ 53" N, Long. 116° 54' ~~30~~ 23" W.
2	Lat. 60° 25' 37" N, Long. 116° 49' 12" W.
3	Lat. 60° 23' 31" N, Long. 116° 46' 6" W.
4	Lat. 60° 21' 23" N, Long. 116° 45' 10" W.
5	Lat. 60° 16' 42" N, Long. 116° 43' 30" W.
6	Lat. 60° 18' 28" N, Long. 116° 39' 42" W.
7	Lat. 60° 13' 25" N, Long. 116° 36' 43" W.
8	Lat. 60° 12' 0" N, Long. 116° 30' 24" W.
9	Lat. 60° 8' 20" N, Long. 116° 41' 50" W.
10	Lat. 60° 8' 7" N, Long. 116° 30' 22" W.
11	Lat. 60° 4' 43" N, Long. 116° 33' 30" W.
12	Lat. 60° 2' 39" N, Long. 116° 51' 32" W.
13	Lat. 60° 0' 49" N, Long. 116° 39' 30" W.
14	Lat. 60° 0' 8" N, Long. 116° 30' 8" W.
15	Lat. 60° 8' 34" N, Long. 116° 54' 4" W.
16	Lat. 60° 15' 14" N, Long. 116° 51' 15" W.
17	Lat. 60° 10' N, Long. 116° 36' W.
18	Lat. 60° 14' N, Long. 116° 30.5' W.
20	Lat. 60° 16' 25" N, Long. 116° 33' ~~4~~ 21" W.

corr. - acc. 8/4/60

corrected Elev. (8/7/60) acc.

TABLE II

STRUCTURE TEST DATA

Structure Test No.:		1	2	3	4	5	6	7	8	9	10	11	12
Elevation (Feet) :		1009	~~987~~ 995	~~986~~ 997	~~978~~ 999	~~965~~ 968	932	~~935~~ 938	985	949	978	982	972
Total Depth (Feet):		272	234	299	294	307	205	302	205	308	204	203	1094
Marker "G"	Depth :												
	Elev. :												
Marker "H"	Depth :	109	100	74	52								188
	Elev. :	+900	+887	+912	+926								+784
Marker "K"	Depth :	143	137	113	94	67							240
	Elev. :	+866	+850	+873	+884	+898							+732
Marker "O"	Depth :	215		182	163	136				77			314
	Elev. :	+794		+804	+815	+829				+872			+658
Marker "L"	Depth :	232		200	182	152				95			333
	Elev. :	+777	+762*	+786	+796	+813	+1001*	+934*	+1037*	+854	+965*	+960*	+639
Marker "Z"	Depth :	265		233	213	183				129			369
	Elev. :	+744		+753	+765	+782				+820			+603
Marker "N"	Depth :				285	252		111	58	205	127	136	448
	Elev. :				+693	+713		+824	+927	+744	+851	+846	+524
Marker "X"	Depth :					292		143	78	245			490
	Elev. :					+673		+792	+907	+704			+482
Marker "J"	Depth :												
	Elev. :						162	280					619
							+770	+655					+353
Marker "P"	Depth :												730
	Elev. :												+242
Marker "Q"	Depth :												890
	Elev. :												+82

* Calculated value

Table II - Continued

Structure Test No.:		13	14	15	16	17	18	23
Elevation (Feet) :		982	984	991	983	960	974	933
Total Depth (Feet):		307	824	315	297	244	248	394
Marker "C"	Depth :			150	114			
	Elev. :			+841	+869			
Marker "M"	Depth :			218	180			
	Elev. :			+773	+803			
Marker "K"	Depth :			262	222			
	Elev. :			+729	+761			
Marker "G"	Depth :					36		
	Elev. :					+924		
Marker "L"	Depth :	130	142			58		
	Elev. :	+852	+842	+636*	+668*	+902	+1023*	+1017*
Marker "Z"	Depth :	165				90		
	Elev. :	+817				+870		
Marker "H"	Depth :	247	268			172	51	
	Elev. :	+735	+716			+788	+923	
Marker "X"	Depth :	288				207		
	Elev. :	+694				+753		
Marker "J"	Depth :		424				222	194
	Elev. :		+560				+752	+739
Marker "P"	Depth :							
	Elev. :							
Marker "Q"	Depth :		7704					
	Elev. :		+280					

GEOLOGICAL STRUCTURE

The accompanying map is, as is noted above, contoured on the "L" horizon of the Upper Devonian. This marker occupies a central position within the composite section encountered by the Murphy holes. Although it is generally desirable to map on the lowest usable correlation marker, the occurrence of fairly constant intervals between markers should make the use of the "L" horizon satisfactory within the project area.

Southwest-trending basement faults or flexures are dominant features of the regional structure in the general area south and southwest of Great Slave Lake. The reef development in the Middle Devonian in the Pine Point area, south of Great Slave Lake and east of the area of the accompanying map, for example, is controlled by a southwest-trending fault zone. Elsewhere, in both the Northwest Territories and northern Alberta, Devonian reef development also appears closely related to such trends. Other trends and structural features responsible for reefoid developments may be present but, if so, they have not been recognized to date.

From our regional structural knowledge of the general area south and west of Great Slave Lake it is anticipated that local structural features are closely related to the above-noted southwest basement trends. Our contouring of the structure test data is based on such an interpretation. The regional strike in the subject area is very close to north-south. Three southwest structural trends have been mapped in the Murphy Permit area. Faulting, transverse to the predominant regional fault trends, is also known in the general area and, if present in the Murphy Permit area, this could result in closed local structures on any of the three southwest trending structural features which have been mapped. Further detailing will be required to determine the presence of such closed structures. The original isolated reefoid developments along these faulted trends were probably much closer to horizontal than they are now and, subsequently, they have been tilted basinward. This could result in porosity traps along the major trends even if structural closure is not present. The three trends noted above will be discussed in order from north to south.

The most northerly anomalous structural feature, which is in Permit No. 1397, is based chiefly on Structure Test No. 1. This test hole is structurally 100 feet higher than regional. Four additional holes, which were planned to further define this feature, were not drilled because of the spring thaw.

A northeast-southwest linear feature is mapped close to the Hay River in Permit No. 1400 and in the north portion of Permit No. 1403. Local reefing of near-surface Devonian beds may be further evidence of the reflection of deeper structure. As correlated, Structure Test No. 23 indicates additional anomalous local structure. Marked undulations in the outcropping beds at this point serve to confirm the interpretation of near-surface reef development. Possible alternative correlations for Structure Tests Nos. 6 and 23 could modify slightly the mapped locally anomalous structure.

Potentially, the largest structural anomaly in the Murphy Permit area is in the southeast portion of Permit No. 1403. This anomaly is based on Structure Test No. 14 and a questionable correlation with the Imperial Yates River No. 16-18 deep test to the southeast in Alberta. Although an alternative correlation can be made for No. 14, both correlations suggest a structural anomaly of considerable magnitude. The change in facies, which makes Test No. 14 difficult to correlate, is in itself evidence of probable structural relief in the area. The anomalous area in this corner of Permit No. 1403 is on trend with a northeast-southwest subsurface fault in Alberta, which has been suggested on the basis of deep-test data.

CONCLUSIONS AND RECOMMENDATIONS

The structure test program, which has been conducted by Murphy Corporation on their South Tathlina area P. & N.G. holdings in the Northwest Territories, has indicated anomalous structure in the northern half of Permit No. 1397 and in the eastern portions of Permits Nos. 1400 and 1403. These indicated areas of anomalous structure coincide in general with predicted areas of high structural relief based on the previous photogeological interpretation.

Oil and gas shows in the Slave Point and Presqu'ile formations are prevalent in the general Great Slave Lake area. Reef developments in these formations are the principal prospective zones for oil and gas in the subject area. Such reef developments may be anticipated in areas where structural anomalies appear related to tectonic trends, such as those which have been indicated on the accompanying structure test map.

The following recommendations are proposed.

1. The acquisition of additional P. & N.G. Permits to the east of Permits Nos. 1400 and 1403 should be considered, as both reefing in near-surface beds and anomalous structure are present in this area. This recommendation was previously made in our letter of May 2, 1958 to Mr. F. Jacobsen, of Murphy Corporation, and we understand that a request has already been made for posting of two Permits on the east.

2. Further detailing of the structure in Permits Nos. 1400 and 1403 by structure test drilling should be undertaken this coming winter. This could be done in conjunction with the exploration of additional Permits, should Murphy Corporation be successful in obtaining them.

3. Structure Test Holes Nos. 19, 20, 21 and 22, which have been already located, should be drilled this coming winter to further evaluate the anomalous structural trend indicated by the relation of Structure Test Hole No. 1 to other control points.

4. Consideration of a deep test or tests should be postponed until additional structural exploration has been completed.

S. K. L. Harding

S. K. L. Harding, P. Eng.

R. deMit

R. deMit

901 - Eighth Avenue West,
Calgary, Alberta.
May 31, 1958.

APPENDIX I

SAMPLE DESCRIPTION

MURPHY CORPORATION - SOUTH TATHLINA LAKE S.I. NO. 1

Location: N. 169,652', E. 14,573' of Boundary Monument No. 267, N.W.T. P. & M. G. Permit No. 1397

Elevation: 1,003.7' (Ground)

Total Depth: 272'

Completed: March 7, 1958

Status: Dry and abandoned

Logged by: E. J. Tassonyi

Interval Feet	Description
UPPER DEVONIAN	
0 - 10	Limestone - silty, tan to buff, finely crystalline; in part slightly calcarenitic.
10 - 20	Limestone - silty, buff to greyish buff, dense to calcarenitic.
20 - 30	Limestone - silty, calcarenitic, with traces of minute calcite nodules. Some tan, fragmental dolomitic limestone with crinoid fragments and traces of brachiopods; in part dark mottled; residue slightly silty; trace of green, calcareous, silty shale (partings).
30 - 40	Limestone - silty, tan to light grey, calcarenitic. Light grey, and greenish-grey, argillaceous, micaceous, calcareous siltstone partings.
40 - 60	Limestone - generally very silty, tan to buff, dense, in part calcarenitic. Some fragmental limestone with crinoid fragments throughout; traces of dolomitic recrystallization at the base:

Interval Feet	Description
	trace of brachiopod fragments from 70 feet on. Trace of light brown, finely crystalline, silty limestone at 90 feet.
90 - 100	Limestone - silty, buff; dense, in part calcarenitic to sublithographic; brachiopod? fragments. Light grey, slightly micaceous, calcareous siltstone and silty limestone partings.
100 - 110	Limestone - silty, tan to buff, calcarenitic to sublithographic. Some pale grey, silty, sublithographic limestone.
110 - 120	Shale - calcareous, silty, light green, micromicaceous. Limestone, silty, buff; in part calcarenitic; trace of crinoid fragments.
120 - 130	Limestone, silty, buff; in part very silty; in part sublithographic to calcarenitic with fossil fragments. Trace of greenish-grey, very argillaceous, calcareous siltstone.
130 - 140	Limestone - silty, buff, calcarenitic to dense. Siltstone - calcareous, argillaceous, pale grey.
140 - 150	Siltstone - calcareous, light greenish-grey; in part micaceous; in part very argillaceous; grading into pale greyish green, very silty, calcareous shale. Limestone - silty, buff, very finely crystalline to calcarenitic; with brachiopods and a trace of algal? nodule. Some grey mottled tan limestone.
150 - 170	Limestone - tan, bioclastic; crinoid and brachiopod fragments embedded in a dense, sublithographic matrix. Trace of dark steel-grey, dense, pyritic limestone with brachiopod fragments at 160 feet; traces of dark mottling and minute calcite nodules at 170 feet; interbedded with pale grey, very calcareous siltstone.
170 - 180	Missing.
180 - 200	Limestone - silty, tan to buff, fossiliferous, fragmental; in part calcarenitic; trace of minute calcitic nodules at top of interval; subordinate light grey, calcareous siltstone and silty limestone interbeds.
200 - 220	Limestone - very silty, buff to light buff, dense, with fossil fragments.

Interval Feet	Description
	Limestone - silty, dense, pale grey. Siltstone - calcareous, pale greenish-grey; becoming micaceous toward the base.
220 - 250	Limestone - silty, tan to light grey; pyritic at 250 feet; interbedded with subordinate light grey, very calcareous siltstone. From 230 feet on some tan, finely crystalline and fossiliferous fragmental, slightly silty limestone with crinoid fragments.
250-270	Limestone - silty, buff to greyish-buff, dense; brachiopods. Trace of greyish buff and greenish grey calcareous siltstone.

APPENDIX II

SAMPLE DESCRIPTION

MURPHY CORPORATION - SOUTH TATHLINA LAKE S.T. NO. 4

Location: N. 130,366', E 42,060' of Boundary Monument No. 267 N.W.T. P. & N. G. Permit No. 1397

Elevation: 978.2' (Ground)

Total Depth: 294'

Completed: March 3, 1958

Status: Dry and abandoned

Logged by: E. J. Tassonyi

Interval Feet	Description
0-20	No samples. Glacial drift?
UPPER DEVONIAN	
20-40	Limestone - silty, buff to tan, finely crystalline to calcarenitic; grey mottling at 20'-30'; few light grey, very silty limestone partings. Brachiopods at the top of interval, brachiopod? fragments at the base. Some greyish tan, calcarenitic, silty limestone at the base.
40-60	Limestone - silty, buff to tan, calcarenitic; interbedded with some light greenish grey, very calcareous siltstone and greenish grey, dense, very silty limestone. Trace of green, micaceous, calcareous shale at 50' to 60'. Trace of light cream, microcrystalline, silty limestone at the base.
60-80	Limestone - silty, buff, calcarenitic; fossil fragments at the base; interbedded with subordinate light greenish grey very silty limestone and similar calcareous siltstone. Trace of light grey, microcrystalline, silty limestone.
80-90	Limestone - silty, buff and light buff, dense.
90-140	Limestone - silty, buff to light grey, calcafenitic to dense; pyritic at 120'. At 120' some buff, finely crystalline limestone with fossil fragments; in part recrystallised. Light grey, and greenish grey, in part micaceous and argillaceous, calcareous siltstone throughout (interbeds) with traces of carbonaceous specks at 120'. Brachiopods at 100'; few crinoid stems at 110'; brachiopods and crinoid fragments at the base.

Interval Feet	Description
140-150	Limestone - silty, buff, calcarenitic to dense; some microcrystalline with fossil fragments; interbedded with light grey, and greenish grey, very calcareous siltstone and creamish grey, silty limestone.
150-160	Limestone - silty, buff to tan, and some cream, dense; in part microcrystalling to sublithographic; interbedded with light grey and greenish grey, micaceous, calcareous siltstone and light grey, very silty limestone. (One pink, lithographic limestone fragment at the base?)
160-190	Limestone - buff, silty, microcrystalline to sublithographic; in part calcarenitic, Subordinate greenish grey calcareous siltstone with carbonaceous specks and scattered fine mica.
190-200	Limestone - silty, buff and greenish grey, dense to microcrystalline.
200-220	Limestone - buff to cream, finely crystalline, slightly silty; interbedded with greenish grey, micaceous, calcareous siltstone; prominent at 210'. Trace of cream, lithographic limestone at 220'.
220-240	Limestone - silty, buff to cream, microcrystalline; in part cryptocrystalline or calcarenitic. Trace of pale greenish grey very silty limestone and similar, very calcareous siltstone at the base.
240-260	Limestone - silty, light buff, dense with some buff microcrystalline to cryptocrystalline slightly silty limestone. Some pale grey, very silty limestone and light grey, calcareous siltstone. (Some (5%) coal with traces of fine, white, very fine grained sandy partings and a few fragments of very fine-grained, slightly glauconitic, quartzose sandstone. Coal prominent at the top, decreasing toward the base. The origin of the coal in the samples uncertain.)
260-270	Limestone - silty, cream to buff, dense to calcarenitic with traces of pale greenish grey, micaceous, very calcareous siltstone. (Abundant coal)
270-280	Limestone - buff, to cream, microcrystalline to cryptocrystalline, slightly silty. Trace of greenish grey calcareous siltstone. (Some coal)

Interval Feet	Description
280-290	Limestone - very silty, buff with some tan, dense, cryptocrystalline to microcrystalline, slightly silty limestone. Trace of light greenish grey, calcareous siltstone. (Some coal)

NOTE: The presence of the coal in the samples from 240' on appears to be inconsistent with the general lithology. It is probable, that it is contamination from the 0' - 20' horizon or from outside source.

APPENDIX III

SAMPLE DESCRIPTION

MURPHY CORPORATION - SOUTH TATILIMA LAKE S.T. NO. 12

Location: N. 15,595', E. 2,167' of Boundary Monument No. 267 N.M.T. P. & N. G. Permit No. 1402

Elevation: 972.2' (Ground)

Total Depth: 1094'

Completed: February 23, 1958

Status: Dry and abandoned

Logged by: E. J. Tassonyi

Interval Feet	Description
PLEISTOCENE AND HOLOCENE	
0-60	Glacial drift. Granule sand, conglomeratic.
CRETACEOUS	
60-70	Sandstone - calcareous, white, quartzose, glauconitic, fine-grained, subangular, poorly sorted. Trace of light grey, spore bearing shale. Interval may be reworked.
70-100	Sandstone - as above, strongly glauconitic.
100-110	Shale - greyish brown, very hard; abundant pyrite.
110-127	Sandstone and siltstone. Sandstone - slightly calcareous, white to light grey, quartzose, glauconitic, fine-grained, subangular, poorly sorted. Siltstone - slightly calcareous and argillaceous, light grey, glauconitic. Trace of black pyritic shale at the base.
UPPER DEVONIAN	
127-160	Limestone - slightly to moderately silty, light tan to buff, calcarenitic to finely crystalline to cryptocrystalline; trace of brachiopod fragments; calcite lined vugs at 130'; trace of grey coloration and indistinct dark mottling from 150' on. Greenish grey, silty, calcareous shale partings at 170'.

Interval Feet	Description
180-190	Limestone - as above; in part very silty with grey, argillaceous silty partings.
190-220	Limestone - generally very silty, buff, calcarenitic, fragmental with fossil fragments; bryozoa at 210'. Some light grey (greenish tinge) very calcareous siltstone throughout. (Trace of light grey glauconitic sandstone at 190' to 200', caving?)
220-240	Limestone - silty, tan to greyish tan, calcarenitic; fossil fragments; in part very silty; trace of crinoids at 240'. Trace of pale grey, pyritic, silty limestone at 220'.
240-250	Limestone - silty, tan, finely crystalline and calcarenitic. Trace of light grey, very silty limestone and light grey, very calcareous siltstone. Trace of bryozoa.
250-260	Limestone - tan to cream, sublithographic, slightly silty. Trace of greenish grey, calcareous siltstone.
260-280	Limestone - silty, pale grey to buff. Siltstone - calcareous, greenish grey. Trace of dark tan, lithographic limestone and pale green, very silty, calcareous shale at 280'. Brachiopod fragments at 270'.
280-300	Limestone - silty, pale grey to tan, finely crystalline; brachiopods at 290'. Siltstone - calcareous, light grey, slightly argillaceous.
300-330	Limestone -pale grey to tan, cryptocrystalline to microcrystalline, slightly silty. Abundant light grey calcareous siltstone at 310'; trace of pale greenish grey, silty, calcareous shale at 330'.
330-370	Limestone - silty, pale grey to tan, cryptocrystalline.
370-390	Limestone - silty, pale grey, in part calcarenitic to sublithographic.
390-400	Limestone - silty, buff to tan; traces of pyrite; abundant brachiopods.
400-410	Limestone - slightly silty, buff to tan, calcarenitic to dense. Pale greyish green, silty, calcareous shale partings.
410-440	Limestone - silty, tan, fragmental, calcarenitic; traces of green calcareous shale between 410' to 430'. Siltstone - calcareous, greenish grey.

Interval Feet	Description
440-450	Limestone - silty, buff to tan, calcarenitic; in part with traces of microscopic green silty mottling.
450-470	Limestone - silty, tan, fragmental, calcarenitic; traces of crinoids and brachiopods at the top; increasingly silty toward the base. Greenish grey, calcareous siltstone interbeds throughout. Greenish grey calcareous shale partings at 470'.
470-480	Limestone - marly, silty, pale greyish green; cryptocrystalline, some tan to buff, calcarenitic to sublithographic, very silty limestone.
480-490	Limestone - silty, pale greyish green to buff; interbedded with greenish grey, calcareous siltstone; brachiopods.
490-510	Limestone - tan, fragmental, slightly silty with some light grey and greyish tan, dense, slightly silty limestone at the base.
510-520	Siltstone - calcareous, light grey with greenish tinge, grading into limestone - silty, light grey, dense. Traces of pyrite and brachiopods. Some tan, calcarenitic, dense limestone.
520-530	Siltstone - as above. Limestone - silty, tan, fragmental to sublithographic.
530-570	Limestone - buff and tan, calcarenitic, dense with some sublithographic portions at the top; generally slightly silty. Traces of crinoid fragments at 540' with some fossiliferous fragmental limestone.
570-580	Limestone - grey, fragmental; traces of pseudo oolites? at the top. Limestone - tan, calcarenitic, in part silty; in part medium grained and partly recrystallized to dolomitic limestone.
580-600	Limestone - tan, calcarenitic to sublithographic; slightly silty. Some greenish grey, silty limestone throughout (contact with tan limestone observed). Trace of pyrite at 590'; greyish green very calcareous siltstone partings at 600'.
600-620	Limestone - silty, pale grey and greyish tan; in part mottled; fossiliferous-fragmental to calcarenitic. Pale greenish grey, calcareous siltstone partings.
620-650	Limestone - tan, calcarenitic to sublithographic; in part fossiliferous fragmental at 630'; generally slightly silty; trace of greenish grey calcareous siltstone at 640'.

Interval Feet	Description
650-690	Limestone - silty, tan, in part calcarenitic; in part sublithographic. Trace of green, calcareous shale at 660'; some greenish grey, very silty limestone at 680'; some dark tan, fragmental, dark mottled limestone at 690'.
690-710	Limestone - tan, calcarenitic and fossiliferous fragmental; slightly or very slightly silty.
710-720	Limestone - silty, fossiliferous-fragmental; crinoid fragments; green, calcareous shale partings.
720-750	Limestone - silty, tan, calcarenitic to sublithographic. Sample very poor at 730'; probably shale.
750-770	Limestone - silty, grey and greenish grey; dense, some tan fossiliferous-fragmental limestone with crinoid fragments at 770'. Siltstone - calcareous, light grey and greenish grey. Trace of green calcareous shale at 760'.
770-790	Siltstone - calcareous, light grey. Limestone - very silty, light grey, dense. Green, calcareous shale partings.
790-810	Limestone - very silty, light grey with greenish tinge, interbedded with light grey calcareous siltstone. (Abundant tan, fragmental limestone; recirculated sample?). Trace of green, calcareous shale.
810-820	Limestone - silty, pale grey; siltstone - as above.
820-840	Limestone - silty, pale grey, dense. Shale - calcareous, silty, green. Siltstone - calcareous, light grey.
840-860	Limestone - very silty, light grey; slightly argillaceous; interbedded with light grey, slightly argillaceous, very calcareous siltstone.
860-890	Limestone - very silty, pale grey; slightly argillaceous (40% clastic residue with very fine silt). Some similar calcareous siltstone and traces of green, calcareous shale throughout.
890-900	Limestone - silty, pale grey, dense.
900-910	Limestone - silty, tan, dense.
910-930	Limestone - buff and creamish buff, slightly silty, sublithographic to lithographic; some tan fragmental limestone.

Interval Feet	Description
930-940	Shale - calcareous, greenish grey. (Poor recirculated sample.)
940-950	Limestone - silty, pale greyish buff and greenish buff, dense to calcarenitic.
950-960	Siltstone and limestone. Siltstone - calcareous, light grey. Limestone - silty, light grey, dense. Trace of bright green, calcareous shale.
960-1020	Limestone - generally very silty, light grey and greyish buff, dense. Abundant (30% to 50%) grey and light grey, argillaceous, calcareous siltstone. Trace of bright green, micromicaceous, silty, calcareous shale at 1020'. (Poor samples.)
1020-1050	Limestone - silty, buff and pale grey, dense. Brachiopods at 1030'. Between 1030' to 1050', some siltstone and shale, as above. (Very poor, recirculated samples.)
1050-1060	Siltstone - very calcareous, light grey and greyish tan; interbedded with some pale grey and greyish cream, dense, very silty limestone.
1060-1094	Shale - calcareous, pale green; becoming greenish grey and silty. Siltstone - calcareous, light greenish grey. (Samples are very poor, contain abundant light grey and tan, silty limestone; probably recirculated.)

SAMPLE DESCRIPTION

HUSKEY CORPORATION - SOUTH TATHLINA LAKE S.T. NO. 1A

Location: N. 900', E. 159,109' of Boundary Monument No. 267, N.W.T. P. & N. G. Permit No. 1403

Elevation: 984.2' (Ground)

Total Depth: 823'

Completed: March 19, 1958

Status: Dry and abandoned

Logged by: E. J. Tassonyi

Interval Feet	Description
PLEISTOCENE AND HOLOCENE	
0 - 10	No sample
20 - 70	Glacial drift. Light brownish grey, slightly bentonitic clay with abundant glacial pebbles. Probably Cretaceous outwash in part.
CRETACEOUS	
70 - 80	Clay - as above. Sandstone - calcareous, white, quartzose, very fine-grained, glauconitic.
80 - 120	Clay - brownish grey, slightly bentonitic; some light brownish grey, calcareous shale at the base. Most of the fragments appear to be rolled.
120 - 130	Clay - as above; traces of white, very fine-grained, glauconitic calcareous sandstone.
UPPER DEVONIAN	
130 - 140	Limestone - buff, cryptocrystalline, very slightly silty.
140 - 150	Limestone - buff and greyish tan, cryptocrystalline, slightly silty and dolomitic.

Interval Feet	Description
150 - 160	Limestone - buff, cryptocrystalline, with fossil fragments; some buff sublithographic limestone; traces of dark grey mottling.
160 - 180	Limestone - buff, cryptocrystalline and calcarenitic, slightly silty; some light buff, dense, slightly silty limestone with fossil fragments; brachiopod shells and bryozoa common at the top; crinoids at the base; traces of dolomitic recrystallisation.
180 - 190	Limestone - buff, very fine-grained, calcarenitic to sublithographic, slightly silty; fossil fragments; numerous fine fractures filled with secondary calcite.
190 - 200	Limestone - buff, in part slightly silty, calcarenitic, dense with traces of dark microscopic mottling.
200 - 230	Limestone - silty, pale greyish-cream to cream; calcarenitic, dense; greenish tinge at the top. Some light brown to buff calcarenitic limestone with abundant fossil fragments. Siltstone - calcareous, pale greenish-grey; abundant at top of interval, decreasing toward the base. Trace of reddish brown shaly smear on cuttings at 220 feet.
230 - 240	Limestone - pale greyish-cream, slightly silty, calcarenitic and fossiliferous-fragmental, dense; in part pale greenish-grey, silty limestone with fossil fragments, grading into greenish-grey calcareous siltstone.
240 - 260	Limestone - tan and buff, silty, calcarenitic; sublithographic in part; fossil fragments abundant, chiefly crinoids and bryozoa, some brachiopods. At 250 feet some creamish-grey and greyish-cream, fragmental, in part sublithographic limestone; in part very silty, grading into calcareous siltstone. Trace of slightly calcareous, greenish-grey, very silty micromicaceous shale at 250 feet.
260 - 270	Limestone - buff and tan, silty, very fragmental; at the base some greyish-cream, dense, silty limestone, grading into light greenish-grey, calcareous siltstone.
270 - 290	Limestone - pale cream, dense, very slightly silty with fine silt; some buff, calcarenitic limestone with crinoid fragments. Trace of light greenish-grey, silty, calcareous shale at the top; pale grey (with greenish tinge) dense, silty, in part marly limestone at the base.

Interval Feet	Description
290 - 300	Limestone - pale cream, microcrystalline to lithographic with traces of silt; traces of dark mottling and minute calcite nodules.
300 - 320	Limestone - cream, finely crystalline to sublithographic, with traces of minute calcite nodules and calcite-filled vugs; rare grey mottling. Trace of greenish-grey silty limestone and light green, very silty, calcareous shale at 310 - 320 feet.
320 - 370	Limestone - cream, finely crystalline to sublithographic; minute calcite nodules common. At 350 feet some pale creamish-grey, microcrystalline limestone with traces of ostracods and pale greenish-grey, very calcareous siltstone partings. At 360 feet traces of bryozoa. At 370 feet traces (thin partings) of greenish-grey, calcareous siltstone.
370 - 380	Limestone - greyish cream, slightly silty; some buff microcrystalline to dense limestone.
380 - 420	Limestone - cream and buff, microcrystalline and finely crystalline with sublithographic portions; some creamish-grey, dense limestone throughout. At 390 - 400 feet the limestone is partly dolomitised.
420 - 430	Dolomitic limestone - cream, medium crystalline, dense; few scattered, isolated vugs; appear to be recrystallised calcarenitic limestone. Some pale cream microcrystalline to sublithographic limestone.
430 - 450	Limestone - pale cream to light buff, microcrystalline to sublithographic.
450 - 510	Limestone - light grey, silty, dense; some cream and buff, calcarenitic and microcrystalline, silty limestone from 480 feet on. Trace of grey, very calcareous siltstone throughout (partings); prominent at the top and from 480 feet on. Trace of grey, dense, pyritic limestone at 470 feet and brown, microcrystalline, pyritic limestone at 490 feet.
510 - 520	Limestone - greyish cream to buff, slightly silty, cryptocrystalline to dense; minor light grey, very silty limestone.

Interval Feet	Description
520 - 540	Limestone - buff to greyish-cream, slightly silty, micro-crystalline to cryptocrystalline; in part sublithographic. Some light grey, very silty limestone at the base.
540 - 550	Limestone - light greyish-cream to cream, slightly silty, cryptocrystalline to dense. Some grey, very silty-marly limestone and very calcareous siltstone.
550 - 560	Limestone - cream and buff, silty, cryptocrystalline to dense, with some greyish-cream, in part very silty limestone.
560 - 590	Limestone - slightly silty, dark buff; becoming cream and greyish-cream, cryptocrystalline or dense; in part very silty. Some cream sublithographic limestone at 580 feet.
590 - 600	Limestone - creamish-grey, slightly silty, microcrystalline; in part calcarenitic.
600 - 630	Limestone - light grey and creamish-grey, variably silty. Some dark tan and greyish tan, very silty limestone from 620 feet on. Trace of green, calcareous shale at 610 feet.
630 - 650	Limestone - silty, pale grey, to brownish-grey, cryptocrystalline to dense. NOTE: From 650 feet on samples are very bad, recirculated and caving samples.
650 - 670	Limestone - greenish cream to dark tan, silty; in part very silty.
670 - 710	Limestone - dark tan and grey, silty; in part very silty; siltstone - calcareous, grey. Green calcareous shale partings.
710 - 730	Limestone - tan to light grey, silty, finely crystalline to dense.
730 - 750	Limestone - light grey, silty, dense to cryptocrystalline; traces of greenish grey, very silty, calcareous shale and pale greenish-grey, marly, silty limestone.
750 - 760	Sandstone - light grey, very fine-grained. Siltstone - slightly calcareous, light grey; traces of green, micaceous, calcareous shale. Some limestone as above.

Interval Feet	Description
760 - 800	Caving samples. Sandstone - as above, with traces of green, slightly silty, micromicaceous shale; pale green, in part silty limestone. Electrical log indicates shale section.

APPENDIX V

SAMPLE DESCRIPTION

IMPERIAL OIL CORPORATION - SOUTH TAGLISH LAKE S.T. NO. 23

Location: N. 100,000', E. 77,396' of Boundary Monument No. 267, N.W.T. P. & N. G. Permit No. 1400.

Elevation: 932.5' (Ground)

Total Depth: 394'

Completed: March 25, 1958.

Status: Dry and abandoned

Logged by: E. J. Tasnonyi

Interval Feet	Description
PLEISTOCENE AND RECENT	
0 - 20	Glacial drift. Pebble conglomerate.
UPPER DEVONIAN	
20 - 50	Limestone - greenish-tan to buff, cryptocrystalline to sub-lithographic; some light tan, lithographic limestone at 40 feet with minute calcitic nodules and vugs. Traces of pale green and bright green calcareous shale partings.
50 - 60	Limestone - as above; abundant tan, microfragmental, very slightly silty limestone.
60 - 70	Limestone - tan to light tan, sublithographic; abundant dark tan, fragmental, silty limestone with crinoid fragments. Siltstone - calcareous, light greyish tan, with traces of red hematite? specks.
70 - 90	Limestone - silty, tan, calcarenitic to finely crystalline with recrystallised crinoid fragments; some gradations into sublithographic limestone. Traces of green shale.
90 - 110	Limestone - silty, light grey to greyish tan, calcarenitic, with abundant minute red specks (hematite? and/or detrital material. Some tan, coarsely crystalline, crinoidal and calcarenitic limestone (recirculated?).
110 - 120	Limestone - tan to buff, calcarenitic to fragmental; traces of

Interval Feet	Description
	traces of crinoids; subordinate disseminated fine silt; traces of dolomitization and some recrystallization. Trace of cream, lithographic limestone.
120 - 130	Limestone - tan to buff, in part fragmental, in part calcarenitic; trace of reddish finely disseminated (detrital?) specks. Trace of red, silty, calcareous shale (partings) at 120' to 130'. Some cream, sublithographic to microcrystalline limestone.
130 - 160	Limestone - light tan to creamish buff, generally calcarenitic; becoming fragmental with abundant crinoids at 150 to 160 feet. Trace of cream, lithographic limestone at the top; trace of grey, silty limestone with minute red specks at the base.
160 - 180	Limestone - buff and tan, calcarenitic to coarsely fragmental and crinoidal; prominently crinoidal toward the base.
180 - 190	Limestone - buff, calcarenitic with some lithographic limestone. Some silty, buff limestone with minute red specks and grey, fragmental, calcarenitic, silty limestone at the base.
190 - 200	Limestone - buff, fragmental, calcarenitic; in part silty with traces of red specks. Trace of light grey, calcareous siltstone.
200 - 210	Limestone - buff, fragmental, crinoidal; in part with abundant red specks. Some dark buff, calcarenitic, slightly silty and slightly dolomitic limestone.
210 - 230	Limestone - buff, sublithographic to lithographic with some calcarenitic limestone; traces of pinkish colouration. Trace of grey, silty, calcareous shale at the base.
230 - 250	Limestone - buff to creamish buff, sublithographic to lithographic; some tan, granular, very silty limestone at the top of interval; greyish brown, very calcareous siltstone at the base.
250 - 260	Limestone - tan, fragmental to sublithographic limestone; samples smeared with red, silty shale, indicating partings. Grey, calcareous siltstone and grey, argillaceous, silty limestone partings.
260 - 280	Limestone - argillaceous and silty, grey and greyish tan, dense; in part calcarenitic ; becoming dark tan and grey, locally very

Interval Feet	Description
	argillaceous with few fossil imprints and scattered minute red specks; some gray, calcareous siltstone at the base.
290 - 290	Limestone - argillaceous, silty, gray to dark tan, dense; in part calcarenitic; traces of minute red specks and carbonaceous? specks.
290 - 300	Limestone - as above, with some dark tan and cream, microcrystalline to sublithographic limestone.
300 - 320	Limestone - cream and tan, calcarenitic; some sublithographic limestone with minute calcite nodules; gray mottling at 310 feet. Subordinate tan, coarsely fragmental, recrystallized dolomite. Traces of reddish tan, fragmental limestone with abundant red specks and disseminated silty, shaly, hematitic material. Samples suggest extremely variable lithology.
320 - 350	Limestone - argillaceous, silty, grayish tan, dense; traces of dark tan, calcarenitic limestone with red specks. Traces of bright green calcareous shale from 340 feet on.
350 - 370	Limestone - argillaceous, silty, light gray and brownish gray, sublithographic.
370 - 390	Limestone - argillaceous, buff to greenish-cream, slightly silty.

ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3

Location

N 169652'
E 14573'
BDRY. MON.
267

COMPANY MURPHY CORPORATION
60° 27' 53" N, 116° 54' 23" W.
WELL S.T. HOLE 1 FILE
FIELD SOUTH TATHLINA LAKE
PROVINCE N. W. T. LSD
Sec. Twp. Rge. W

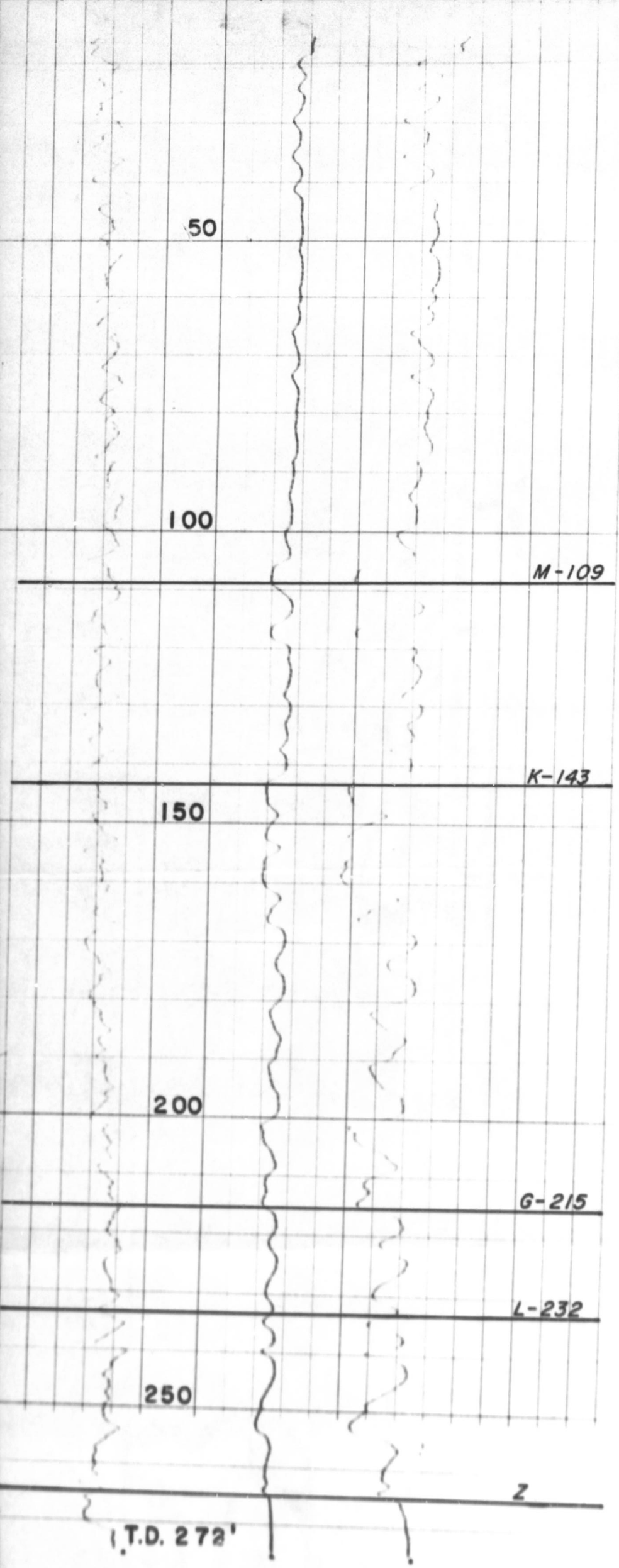
Log Measured From G. L. Elevation 1008·7

Run No. 1
Date MARCH 7, 1958
Footage Logged
Total Depth, Logged 272'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA
DEV. 1 1/2° AT 260'

POTENTIAL	40	210	RESISTANCE


50
100
M-109
K-143
150
200
G-215
L-232
250
Z
T.D. 272'

ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY. ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3.

Location

N 156188'

E 30001'

BDRY. MON. 267

COMPANY MURPHY CORPORATION

WELL S.T. HOLE 2 FILE

FIELD SOUTH TATHLINA LAKE

PROVINCE N.W.T. LSD

Sec. Twp. Rge. W

Log Measured From G. L. Elevation ~~986~~ 993 7

Run No. 1

Date MARCH 6, 1958

Footage Logged

Total Depth, Logged 204'

Total Depth, Driller

Csg Shoe, Logged Ø A

Csg Shoe, Driller

Csg Size

Bit Size 4 3/4

Mud Kind NATURAL

Treatment

Weight

Viscosity

Ph.

Resist. Ohms m2m @ °F @ °F

Loss ml/30 min

Max Temp

Recorded By E. MIER

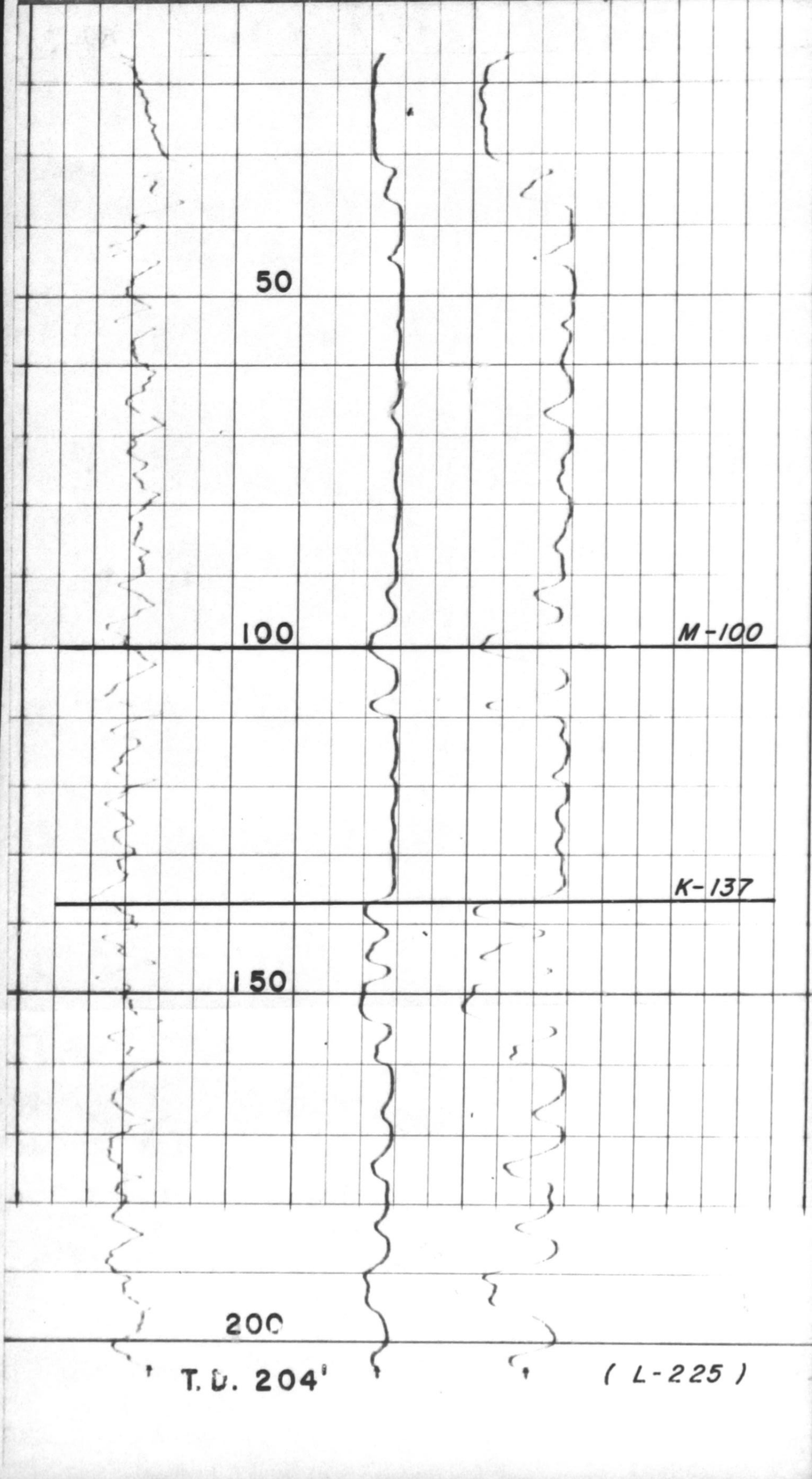
Witnessed By C. BULMER

Corrected 8/4/60 ATC

REMARKS OR OTHER DATA

DEV. 1 3/4° AT 190'

POTENTIAL	40	210	RESISTANCE	70


50
100
M-100
K-137
150
200
T. D. 204'
(L-225)

ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3

Location	
	COMPANY MURPHY CORPORATION
N 143252'	WELL S.T. HOLE 3 FILE
E 39246'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N.W.T. LSD
267	Sec. Twp. Rge. W

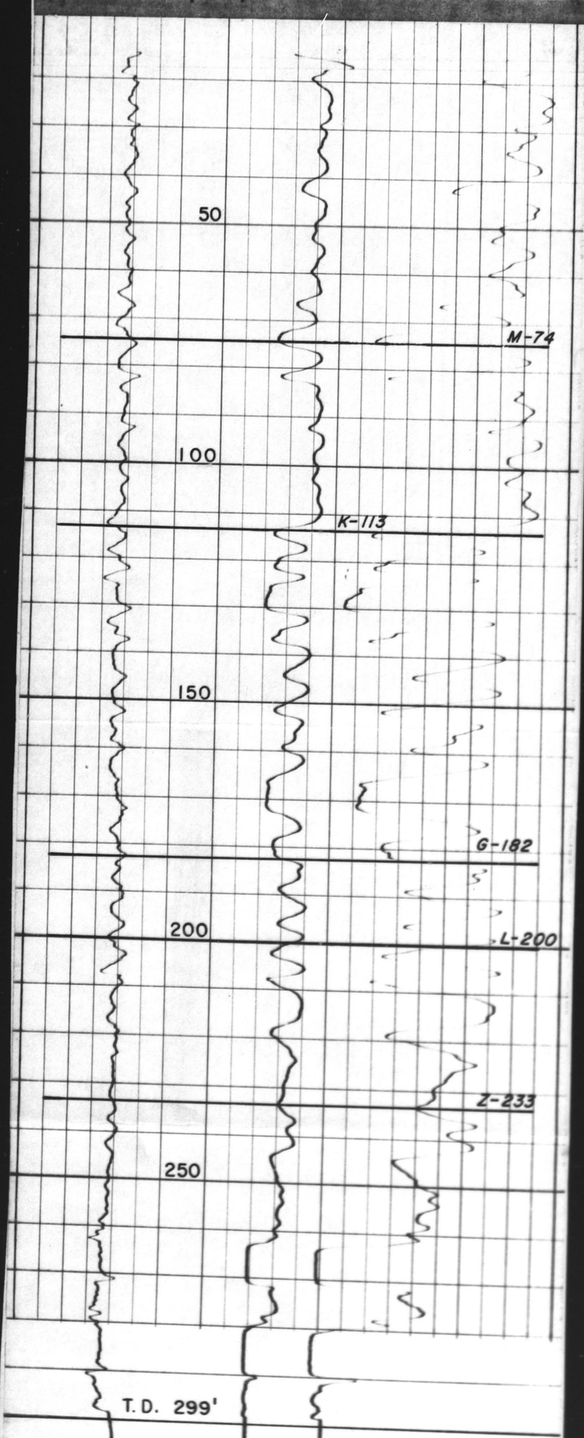
Log Measured From G. L. Elevation ~~997~~ 985.7

Run No.	1
Date	MARCH 5, 1958
Footage Logged	
Total Depth, Logged	299'
Total Depth, Driller	
Csg Shoe, Logged	Ø A
Csg Shoe, Driller	
Csg Size	
Bit Size	4 3/4
Mud Kind	NATURAL
Treatment	
Weight	
Viscosity	
Ph.	
Resist. Ohms m2m	@ °F @ °F
Loss ml/30 min	
Max Temp	
Recorded By	E. MIER
Witnessed By	C. BULMER

REMARKS OR OTHER DATA

DEV. 1° AT 295'

POTENTIAL | 60 | 210 | RESISTANCE 70



ELECTRONIC
Logging & Velocity Co. Ltd.

CALGARY, ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3.

Location

N 130366'
E 42060'
BDRY. MON.
267

COMPANY MURPHY CORPORATION

WELL S.T. HOLE 4 FILE

FIELD SOUTH TATHLINA LAKE

PROVINCE N. W. T. LSD

Sec. Twp. Rge. W

Log Measured From G.L. Elevation ~~978.2~~ 999

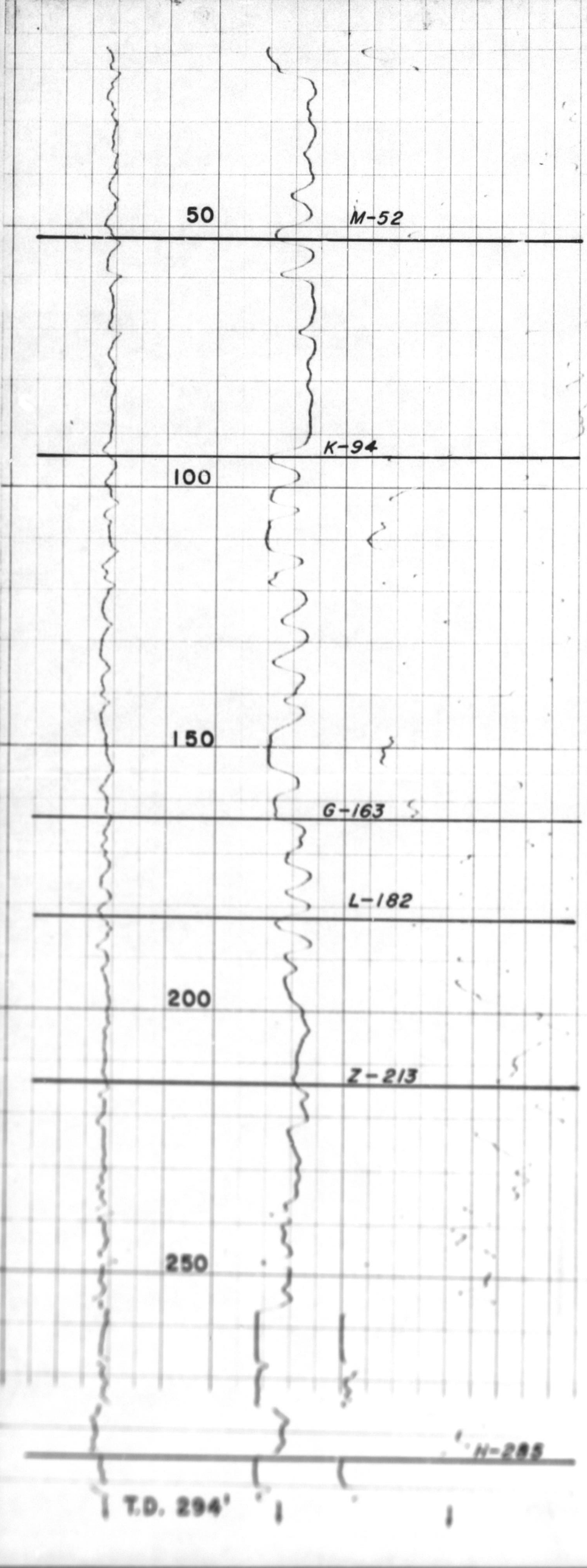
Run No. 1
Date MARCH 3, 1958
Footage Logged
Total Depth, Logged 294'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller 4C A
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA

DEV. 2 3/4° AT 290

POTENTIAL	60	300	RESISTANCE	70


50
M-52
K-94
100
150
G-163
L-182
200
Z-213
250
H-285
T.D. 294'

ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY, ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3

Location	
	COMPANY MURPHY CORPORATION
N 101330'	WELL S.T. HOLE 5 FILE
E 46376'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

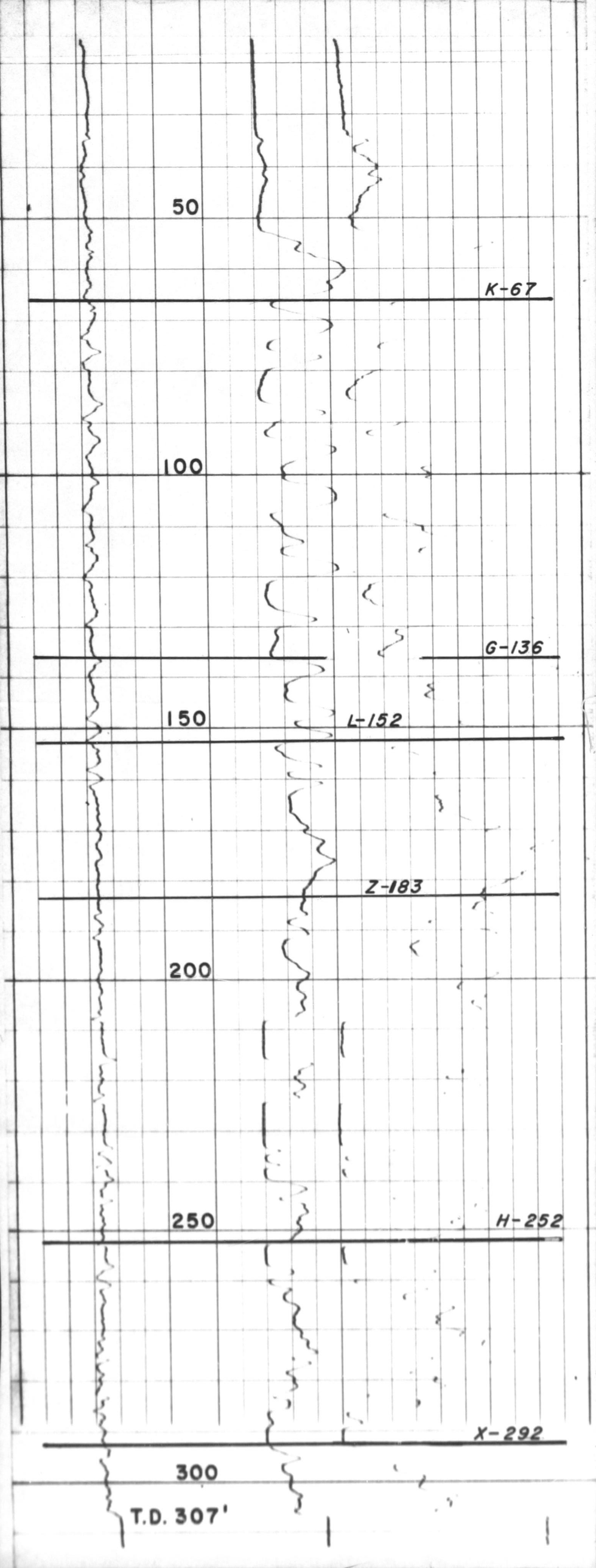
Log Measured From G. L. Elevation ~~964~~ 968 6

Run No.	1
Date	MARCH 2, 1958
Footage Logged	
Total Depth, Logged	307'
Total Depth, Driller	
Csg Shoe, Logged	
Csg Shoe, Driller	
Csg Size	
Bit Size	4 3/4
Mud Kind	NATURAL
Treatment	
Weight	
Viscosity	
Ph.	
Resist. Ohms m2m	@ °F @ °F
Loss ml/30 min	
Max Temp	
Recorded By	E. MIER
Witnessed By	C. BULMER

REMARKS OR OTHER DATA

DEV. 1 1/2° AT 295'

60	210	RESISTANCE	70


50
K-67
100
G-136
150
L-152
Z-183
200
250
H-252
X-292
300
T.D. 307'

ELECTRONIC
Logging & Velocity Co. Ltd.

CALGARY. ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3

Location	
	COMPANY MURPHY CORPORATION
N 112260'	WELL S.T. HOLE 6 FILE
E 85917'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 931·5

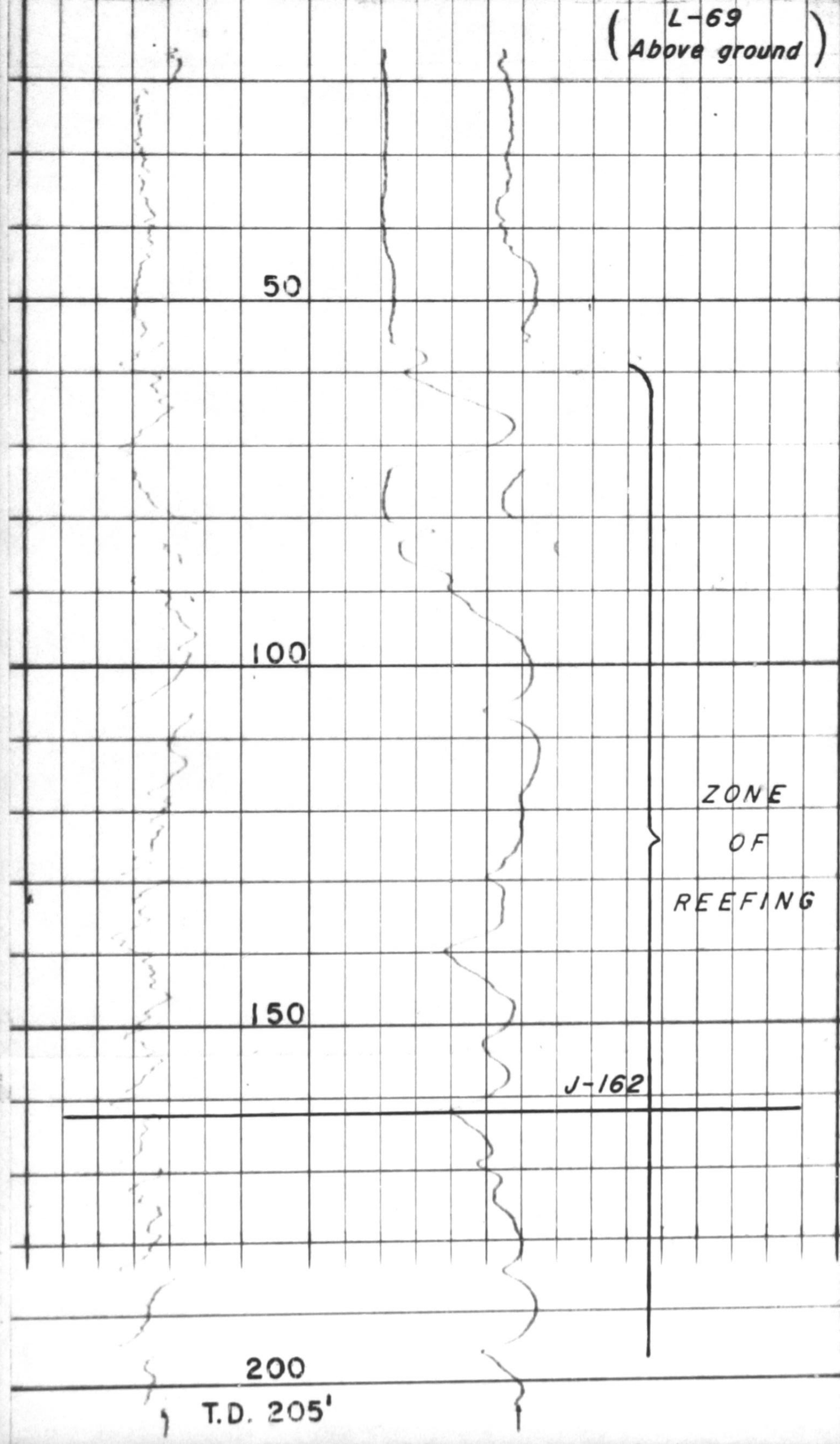
Run No. 1
Date MARCH 10, 1958
Footage Logged
Total Depth, Logged 205'
Total Depth, Driller
Csg Shoe, Logged 0 A
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA

DEV. 3° AT 295'

POTENTIAL	40	210	RESISTANCE	70


L-69
Above ground
50
100
ZONE
OF
REEFING
150
J-162
200
T.D. 205'

ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY, ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3

Location	
	COMPANY MURPHY CORPORATION
N 82097'	WELL S.T. HOLE 7 FILE
E 67562'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

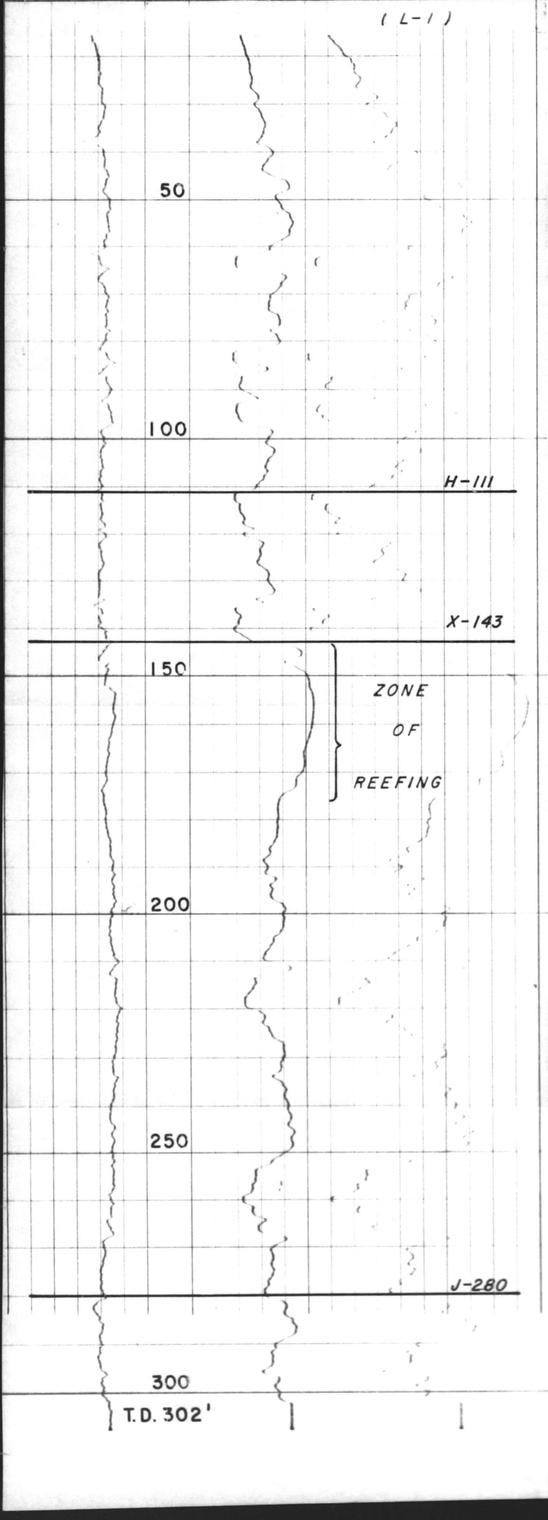
Log Measured From G. L. Elevation 938 935.2

Run No. 1
Date MARCH 8, 1958
Footage Logged
Total Depth, Logged 302'
Total Depth, Driller
Csg Shoe, Logged 4C A
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA
DEV. 3° AT 295'

POTENTIAL 40 210 RESISTANCE 70



ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY. ALBERTA

63-14-11-3

STRUCTURE TEST HOLE SURVEY

Location	
	COMPANY MURPHY CORPORATION
N 72361'	WELL S.T. HOLE 8 FILE
E 86625'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G.L. Elevation 985.1

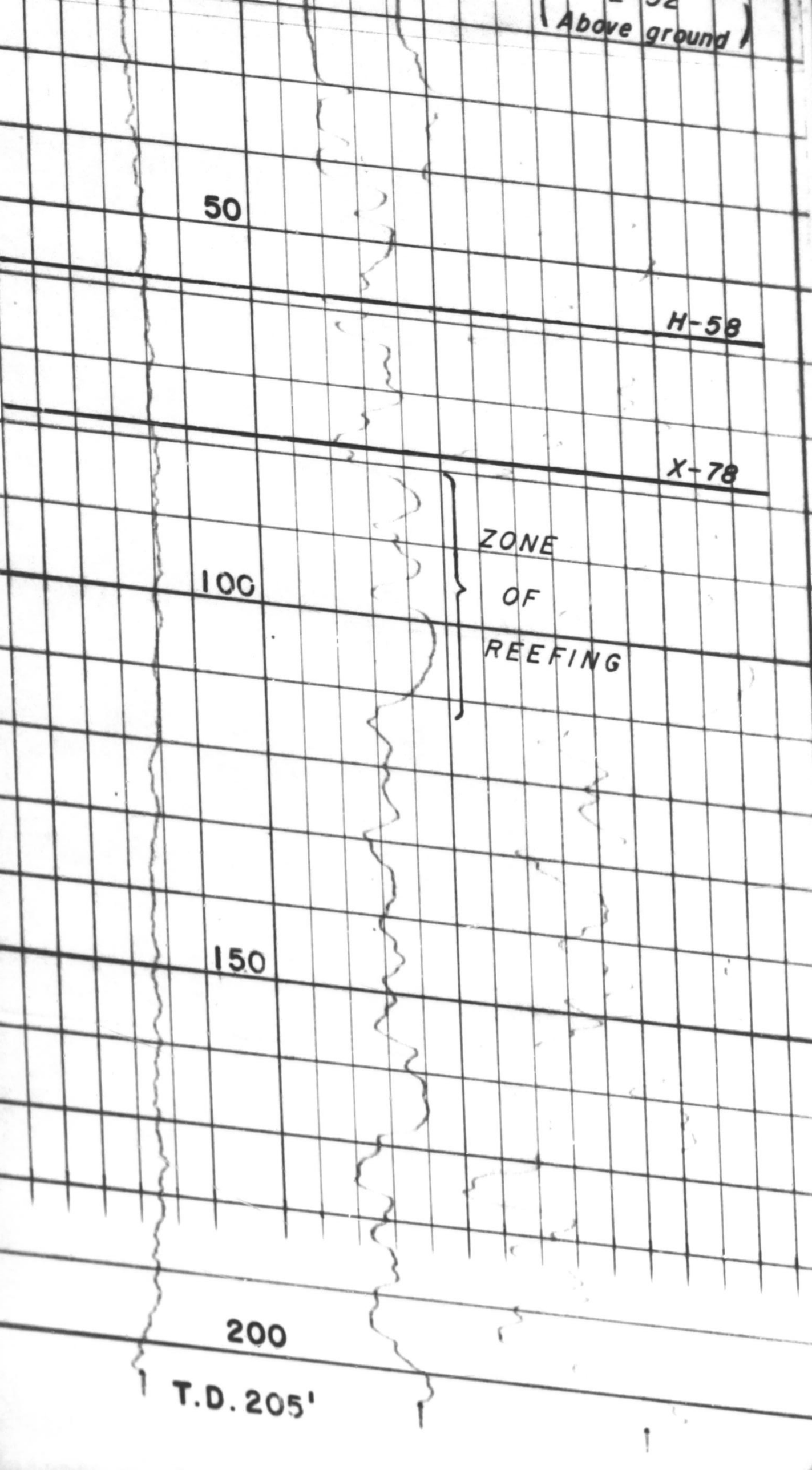
Run No. 1
Date MARCH 11, 1958
Footage Logged
Total Depth, Logged 205'
Total Depth, Driller
Csg Shoe, Logged N A
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA

DEV. 2 1/2° AT 200'

POTENTIAL	40	210	RESISTANCE	70


(Above ground)
50
H-58
X-78
ZONE
OF
REEFING
100
150
200
T.D. 205'

ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3

Location	
	COMPANY MURPHY CORPORATION
N 50988'	WELL S.T. HOLE 9 FILE 9
E 51953'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 949.4

Run No. 1
Date FEB. 25, 1958
Footage Logged
Total Depth, Logged 308'.
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA

DEV. 2 1/2° AT 295'

POTENTIAL	60	210	RESISTANCE	70


G-77
L-95
Z-129
H-205
X-245
50
100
150
200
250
300
T.D. 301'

ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3.

Location	
	COMPANY MURPHY CORPORATION
N 49159'	WELL S.T. HOLE 10 FILE
E 155065'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

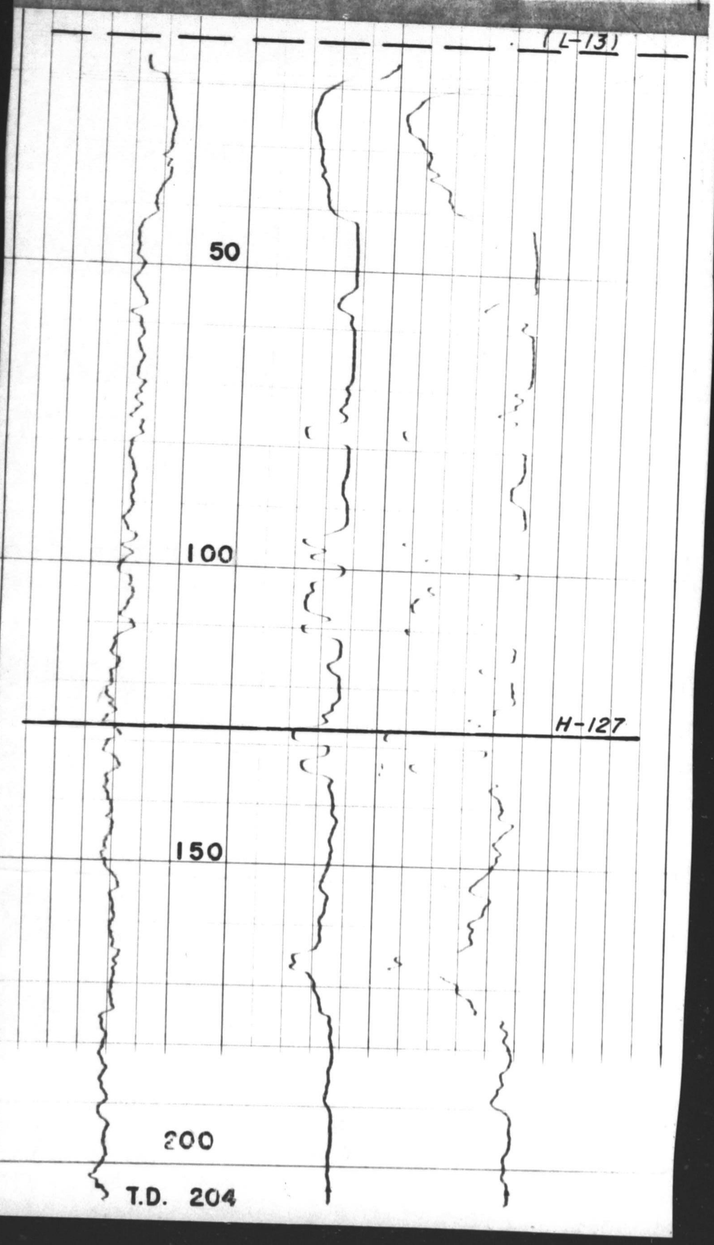
Log Measured From G. L. Elevation 978·4

Run No.	I
Date	MARCH 13, 1958
Footage Logged	
Total Depth, Logged	204'
Total Depth, Driller	
Csg Shoe, Logged	46
Csg Shoe, Driller	
Csg Size	
Bit Size	4 3/4
Mud Kind	NATURAL
Treatment	
Weight	
Viscosity	
Ph.	
Resist. Ohms m2m @ °F @ °F	
Loss ml/30 min	
Max Temp	
Recorded By	E. MIER
Witnessed By	C. BULMER

REMARKS OR OTHER DATA

DEV. 1 3/4° AT 200'

POTENTIAL	40	210	RESISTANCE	70



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CALGARY. ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3.

Location	
	COMPANY MURPHY CORPORATION
N 28652'	WELL S.T. HOLE 11 FILE
E 151983'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

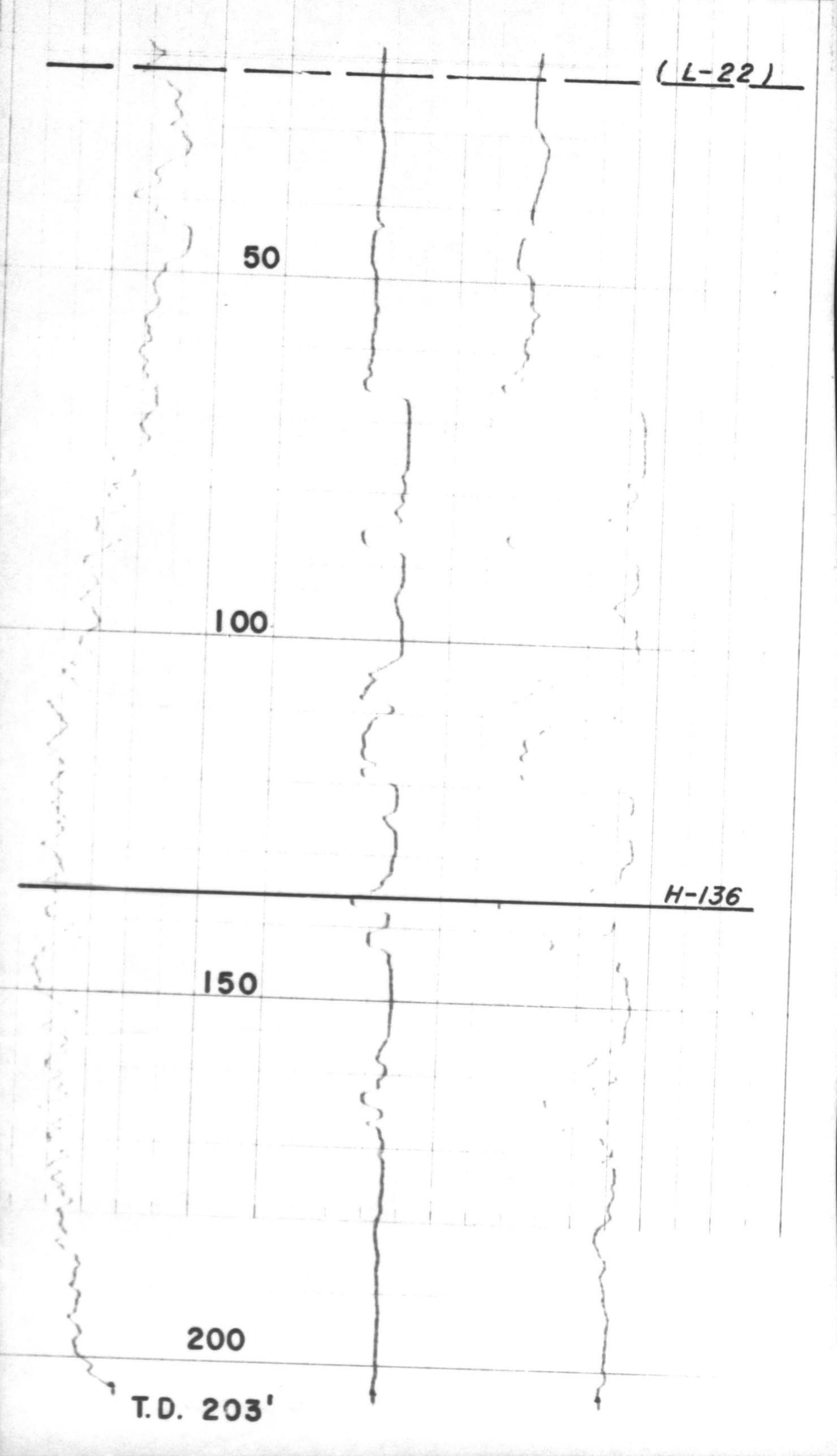
Log Measured From G. L. Elevation 982·2

Run No. 1
Date MARCH 14, 1958
Footage Logged
Total Depth, Logged 203'
Total Depth, Driller
Csg Shoe, Logged 4 L A
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA
DEV. 1 1/2 AT 200'

POTENTIAL	40	210	RESISTANCE	70


(L-22)
50
100
H-136
150
200
T.D. 203'

200

T.D. 203'

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CALGARY, ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3.

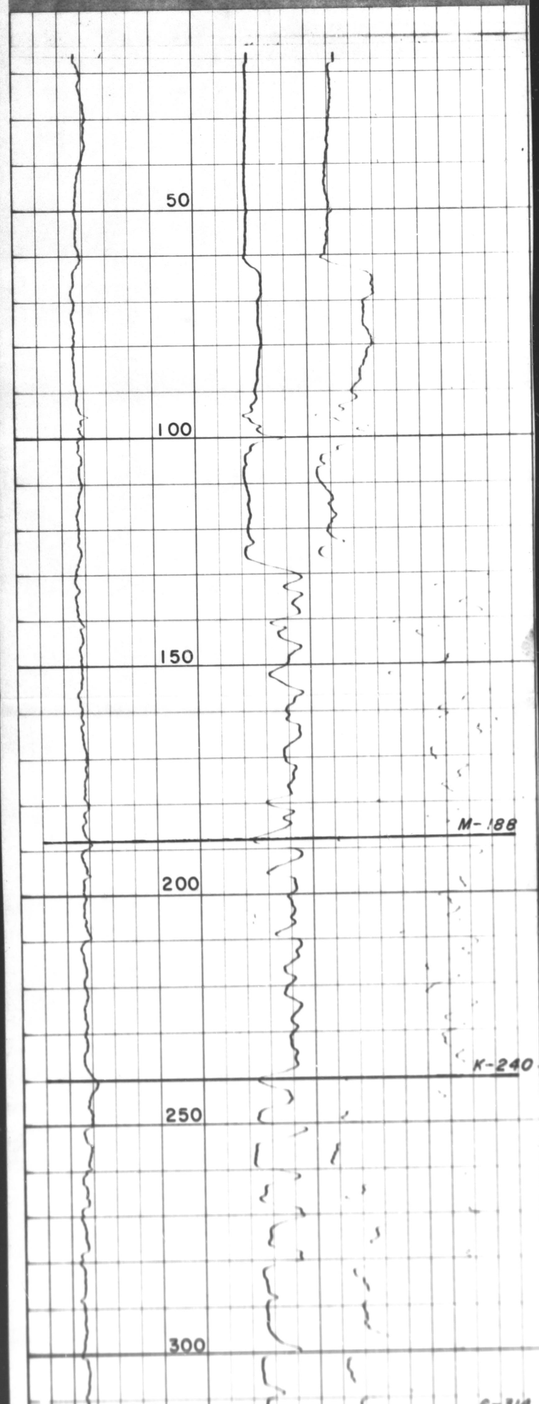
Location	
	COMPANY MURPHY CORPORATION
N 15595'	WELL S.T. HOLE 12 FILE
E 2167'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N.W.T. LSD
2 6 7	Sec. Twp. Rge. W

Log Measured From G.L. Elevation 972·2

Run No.	1
Date	FEB. 23, 1958
Footage Logged	
Total Depth, Logged	1094'
Total Depth, Driller	
Csg Shoe, Logged	SC A
Csg Shoe, Driller	
Csg Size	
Bit Size	4 3/4
Mud Kind	NATURAL
Treatment	
Weight	
Viscosity	
Ph.	
Resist. Ohms m2m	@ °F @ °F
Loss ml/30 min	
Max Temp	
Recorded By	E. MIER
Witnessed By	C. BULMER

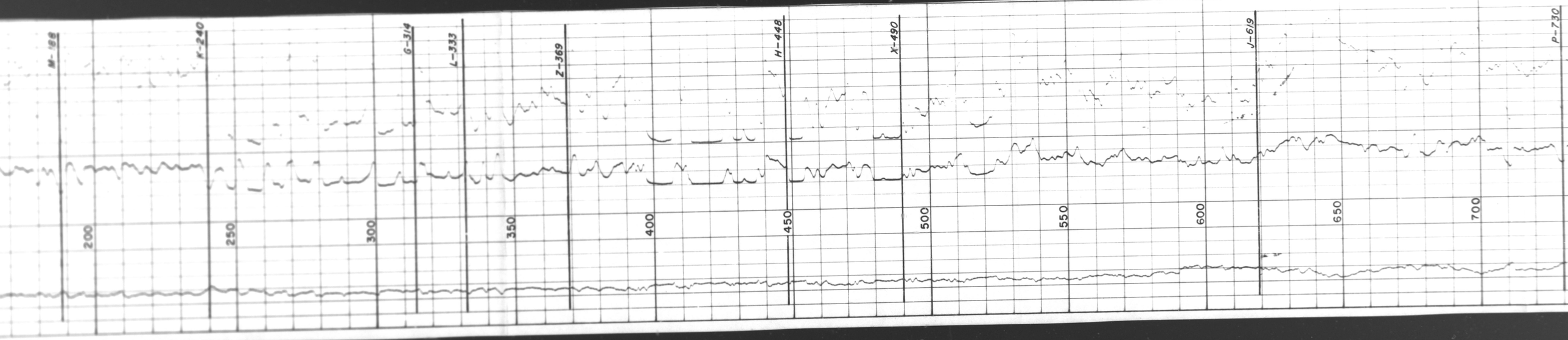
REMARKS OR OTHER DATA
DEV. 1° AT 1090' & 550'

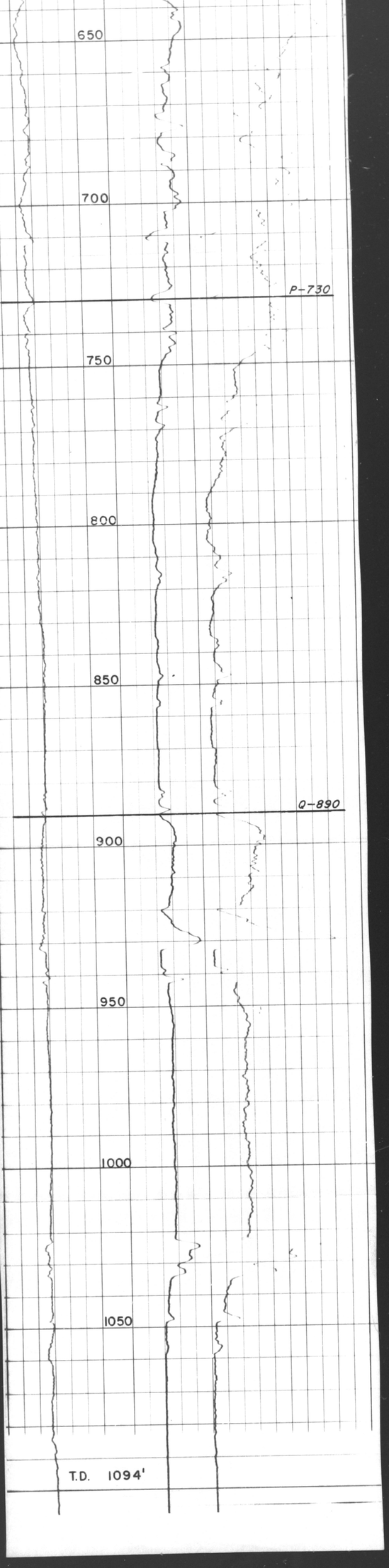
POTENTIAL 80 210 RESISTANCE 70



KODAK SAFETY FILM

N.W.T.


M-188
K-240
G-314
L-333
Z-369
H-448
X-490
J-619
P-730
200
250
300
350
400
450
500
550
600
650
700



ELECTRONIC
Logging & Velocity Co. Ltd.
CALGARY, ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3.

Location

COMPANY MURPHY CORPORATION

ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY, ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3.

Location	
	COMPANY MURPHY CORPORATION
N 3207'	WELL S.T. HOLE 13 FILE
W 7206'	FIELD SOUTH TATHLINA LAKE
BDRY. MON	PROVINCE N. W. T. LSD
251	Sec. Twp. Rge. W

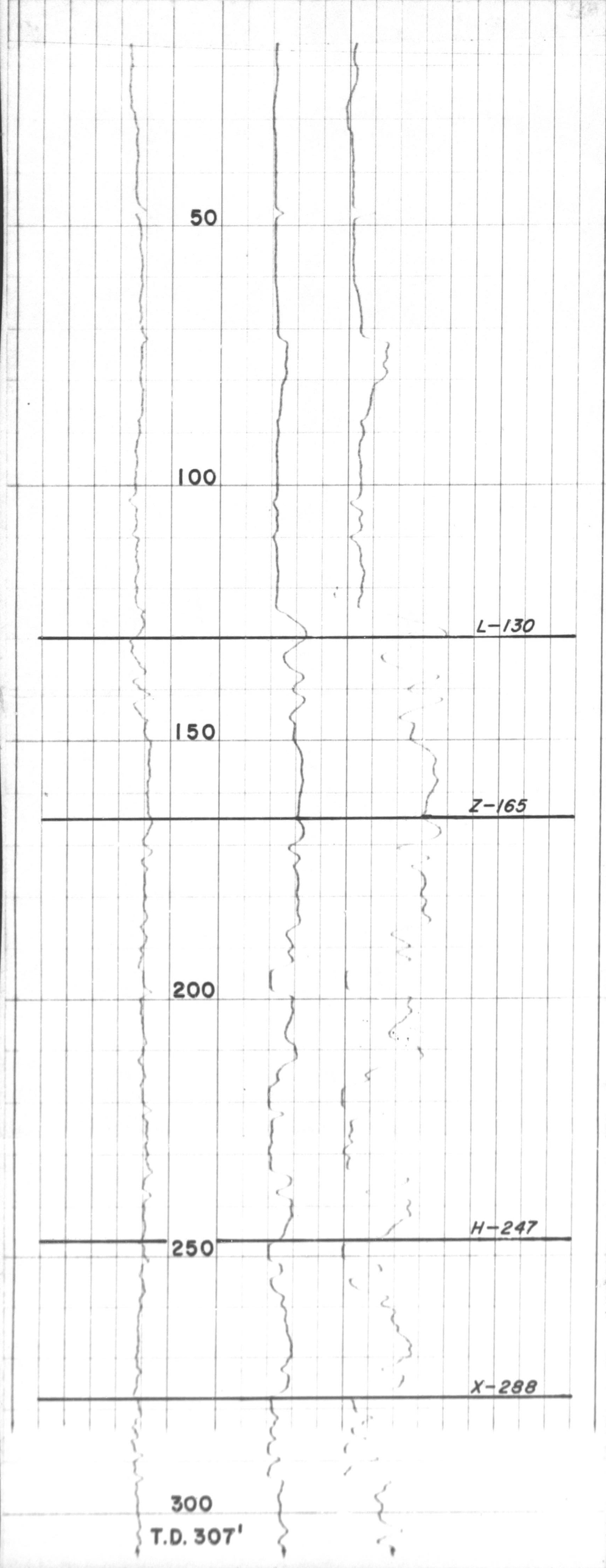
Log Measured From G. L. Elevation 982·4

Run No.	1
Date	MARCH 16, 1958
Footage Logged	307'
Total Depth, Logged	307'
Total Depth, Driller	
Csg Shoe, Logged	
Csg Shoe, Driller	
Csg Size	
Bit Size	4 3/4
Mud Kind	NATURAL
Treatment	
Weight	
Viscosity	
Ph.	
Resist. Ohms m2m	@ °F @ °F
Loss ml/30 min	
Max Temp	
Recorded By	E. MIER
Witnessed By	C. BULMER

REMARKS OR OTHER DATA

DEV. 1 1/2° AT 290'

POTENTIAL	40	210	RESISTANCE	70


50
100
L-130
150
Z-165
200
H-247
250
X-288
300
T.D. 307'

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CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3.

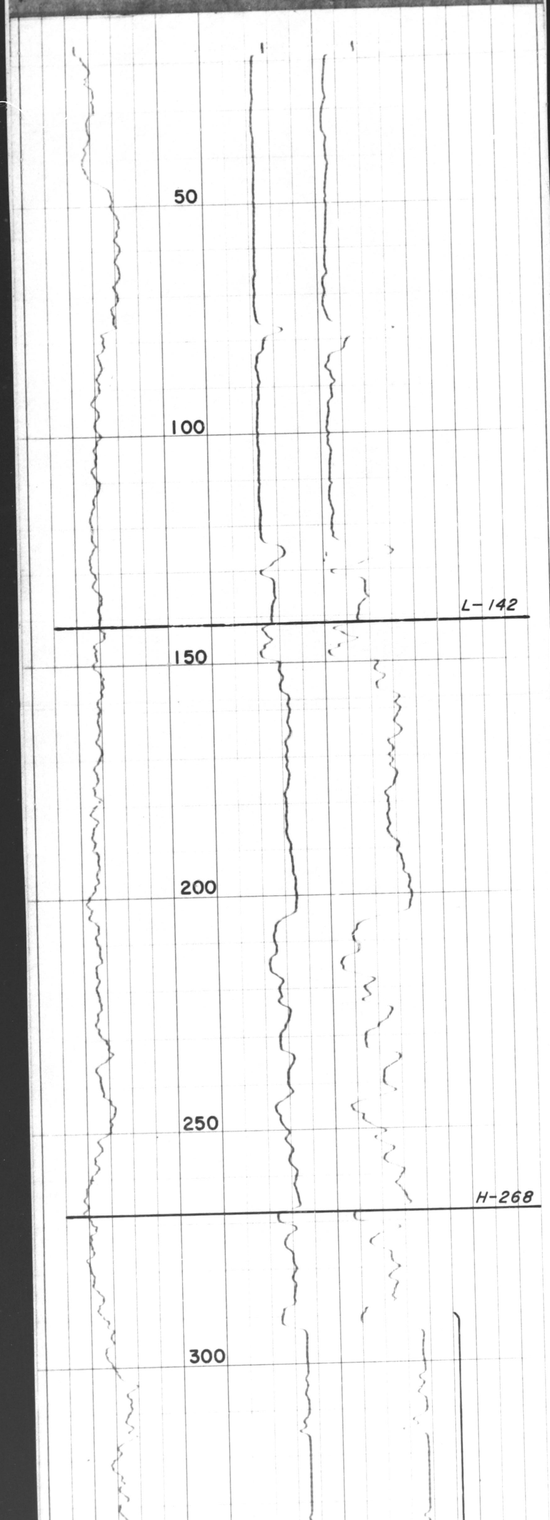
Location	
N 900'	COMPANY MURPHY CORPORATION
E 159109'	WELL S.T. HOLE 14 FILE
BDRY. MON. 267	FIELD SOUTH TATHLINA LAKE
	PROVINCE N. W. T. LSD
	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 984·2

Run No.	1
Date	MARCH 19, 1957
Footage Logged	
Total Depth, Logged	824'
Total Depth, Driller	
Csg Shoe, Logged	
Csg Shoe, Driller	
Csg Size	
Bit Size	4 3/4
Mud Kind	NATURAL
Treatment	
Weight	
Viscosity	
Ph.	
Resist. Ohms m2m @ °F @ °F	
Loss ml/30 min	
Max Temp	
Recorded By	E. MIER
Witnessed By	C. BULMER

REMARKS OR OTHER DATA
DEV. 1 1/2° AT 790'

POTENTIAL | 40 | 210 | RESISTANCE | 70



ELECTR
Log
CALG

STRUCTURE

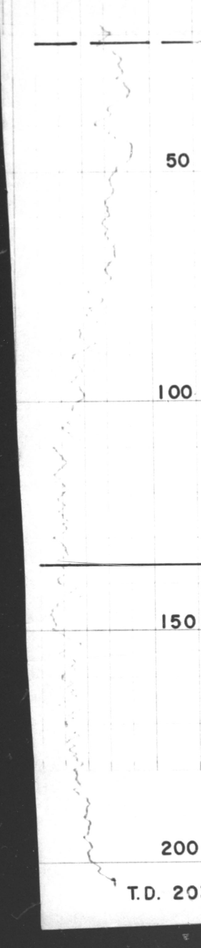
Location	
N 28652'	COMPAN
E 151983'	WELL
BDRY. MON. 267	FIELD
	PROVINC
	Sec.

Log Measured From

Run No.	
Date	
Footage Logged	
Total Depth, Logged	
Total Depth, Driller	
Csg Shoe, Logged	
Csg Shoe, Driller	
Csg Size	
Bit Size	
Mud Kind	
Treatment	
Weight	
Viscosity	
Ph.	
Resist. Ohms m2m	
Loss ml/30 min	
Max Temp	
Recorded By	
Witnessed By	

REM

POTENTIAL | 40



ELEC

STRUCT

Location	
N 15595'	CO
E 2167'	WE
BDRY. MON. 267	FIE
	PR
	Se

Log Measured From

Run No.	
Date	

STRUCTURE TEST

Location	
	COMPANY MURP
N 15595'	WELL S.T. H
E 2167'	FIELD SOUTH TAT
BDRY. MON.	PROVINCE N.W.T
2 6 7	Sec. Twp.

Log Measured From	G. L.
Run No.	I
Date	FEB.
Footage Logged	
Total Depth, Logged	1094'
Total Depth, Driller	
Csg Shoe, Logged	
Csg Shoe, Driller	
Csg Size	
Bit Size	4 3/4
Mud Kind	NATU
Treatment	
Weight	
Viscosity	
Ph.	
Resist. Ohms m2m @ °F	
Loss ml/30 min	
Max Temp	
Recorded By	E. MI
Witnessed By	C. BU

REMARKS OR OTH
DEV.

H-268

300

350

ZONE
OF
REEFING

400

J-424

450

500

550

600

650

700

O²-704

750

800

POTENTIAL | 80 | 210

50

100

150

200

250

300

350

ELECTRONIC Logging Velocity Co Ltd
CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

62-14-4-E

Location

N 52057'
E 14805'
BDRY. MON.

COMPANY MURPHY CORPORATION

WELL S.T. HOLE 15 FILE

FIELD SOUTH TATHLINA LAKE

PROVINCE N. W. T. LSD

Sec. Twp. Rge. W

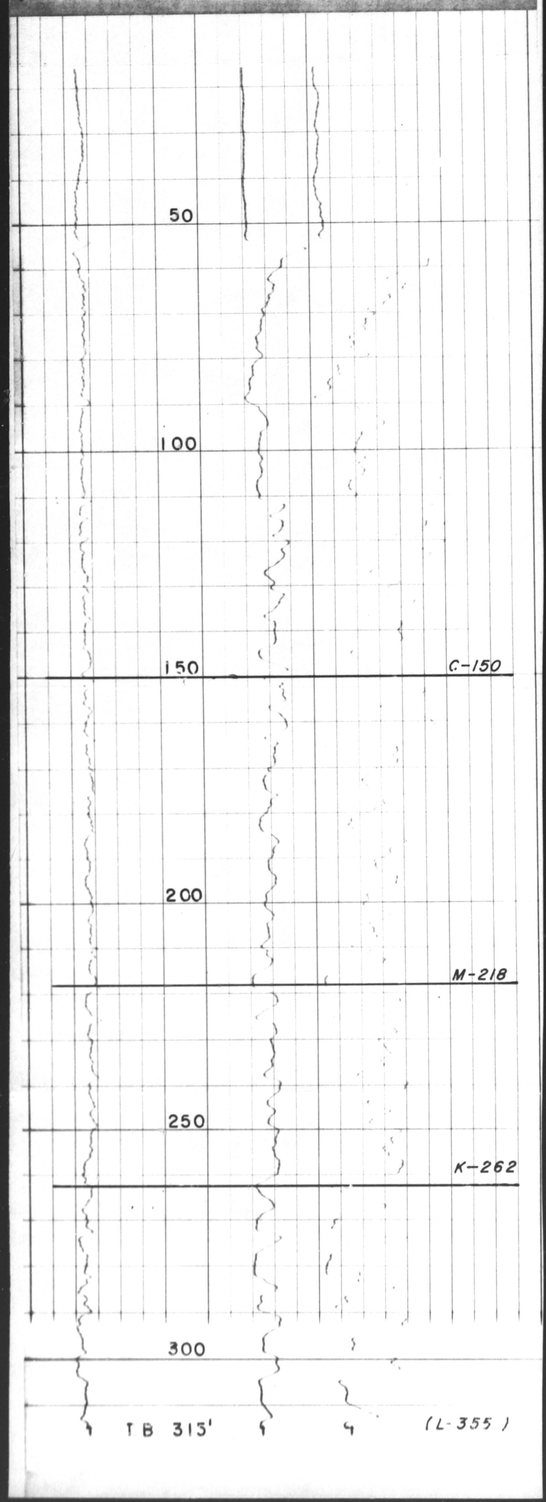
Log Measured From G. L. Elevation 991·2

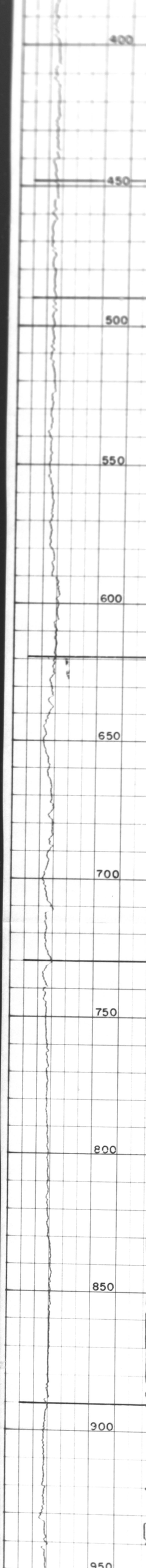
Run No. 1
Date FEB. 26, 1958.
Footage Logged
Total Depth, Logged 315'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA
DEV. 1° AT 295'

POTENTIAL	60	210	RESISTANCE	70





ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3.

Location	
	COMPANY MURPHY CORPORATION
N 93832'	WELL S.T. HOLE 16 FILE
E 23311'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 982.6

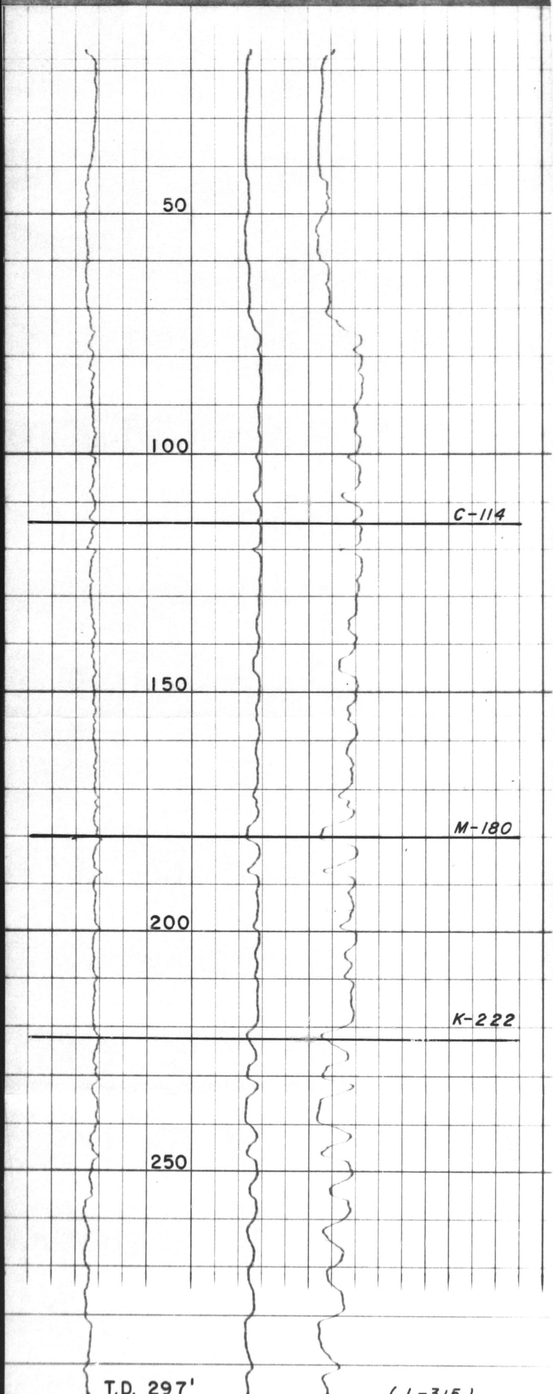
Run No. 1
Date FEB. 28, 1958
Footage Logged
Total Depth, Logged 297'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA

DEV. 3/4° AT 290'

POTENTIAL | 60 | 210 RESISTANCE 70



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CALGARY. ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3.

Location	
	COMPANY MURPHY CORPORATION
N 59945'	WELL S.T. HOLE 17 FILE
E 37639'	FIELD SOUTH TATHLINA LAKE
BDRY. MON.	PROVINCE N. W. T. LSD
267	Sec. Twp. Rge. W

Log Measured From G. L. Elevation 959·6

Run No. 1
Date MARCH 21, 1958
Footage Logged
Total Depth, Logged 244'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA

DEV. 2° AT 240'

POTENTIAL	40	210	RESISTANCE	70

G-36

50

L-58

Z-90

100

150

H-172

200

X-207

T.D. 244'

ELECTRONIC Logging & Velocity Co. Ltd.

CALGARY, ALBERTA

STRUCTURE TEST HOLE SURVEY

63-14-4-3

Location

N 91918'
E 86643'
BDRY. MON.
267

COMPANY MURPHY CORPORATION

WELL S.T. HOLE 18 FILE

FIELD SOUTH TATHLINA LAKE

PROVINCE N. W. T. LSD

Sec. Twp. Rge. W

Log Measured From G. L. Elevation 974·0

Run No. 1
Date MARCH 23, 1958
Footage Logged
Total Depth, Logged 248'
Total Depth, Driller
Csg Shoe, Logged
Csg Shoe, Driller
Csg Size
Bit Size 4 3/4

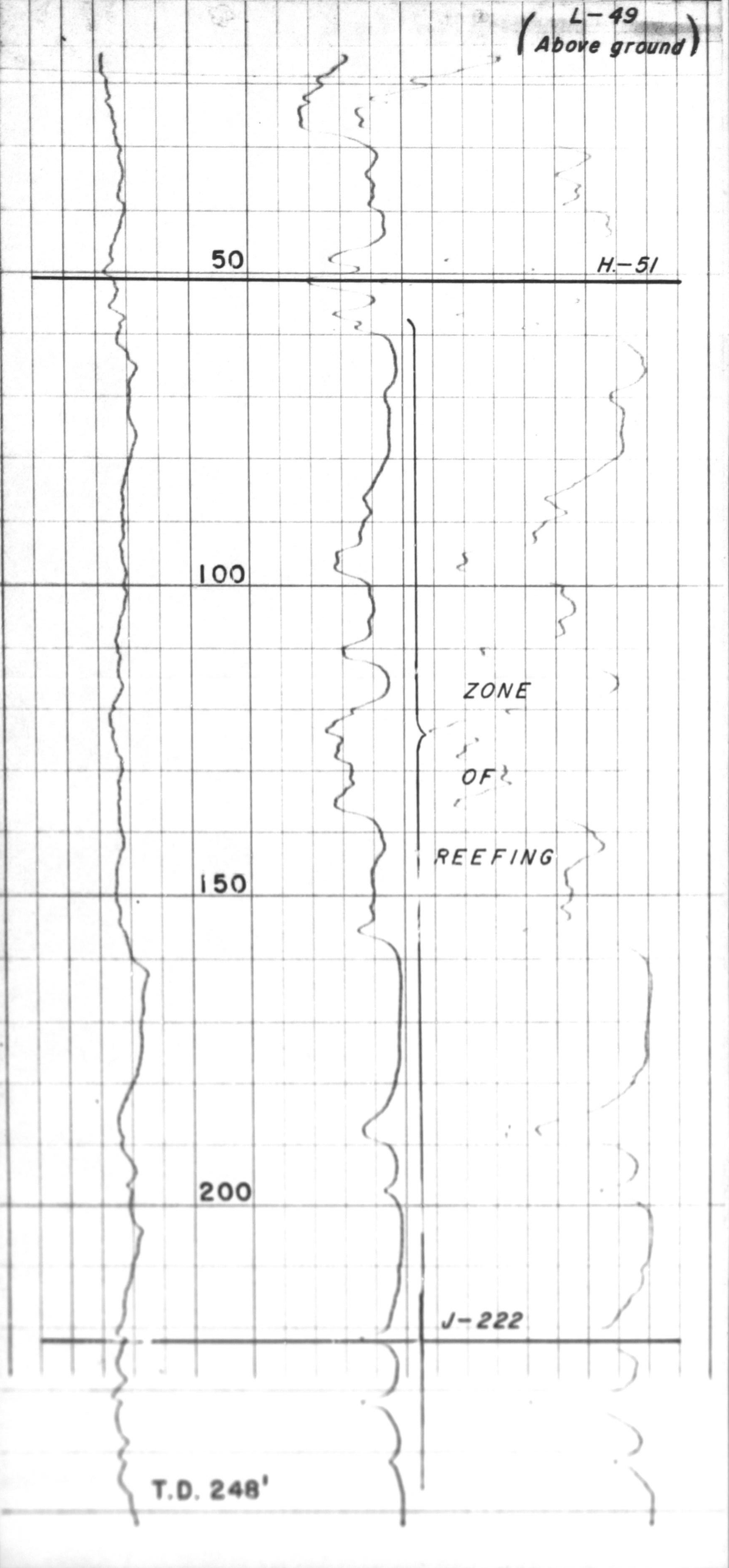
Mud Kind NATURAL
Treatment
Weight
Viscosity
Ph.
Resist. Ohms m2m @ °F @ °F
Loss ml/30 min
Max Temp
Recorded By E. MIER
Witnessed By C. BULMER

REMARKS OR OTHER DATA

NO DEV.

LOST TOOL IN THE HOLE

POTENTIAL	40	210	RESISTANCE	70


L-49
(Above ground)
50
H.-51
100
ZONE
OF
REEFING
150
200
J-222
T.D. 248'

ELECTRONIC Logging Velocity Co Ltd

CALGARY ALBERTA

STRUCTURE TEST HOLE SURVEY

62-74-4-2

Location

COMPANY MURPHY CORPORATION

60° 16' 25" N, 116° 33' 21" W.

N 100000'

E 77396'

BDRY. MON. 267

WELL S.T. HOLE 23 FILE

FIELD SOUTH TATHLINA LAKE

PROVINCE N. W. T. LSD

Sec. Twp. Rge. W

Log Measured From G. L. Elevation 932.5

Run No. 1

Date MARCH 25, 1958

Footage Logged

Total Depth, Logged 394'

Total Depth, Driller

Csg Shoe, Logged

Csg Shoe, Driller

Csg Size

Bit Size 4 3/4

Mud Kind NATURAL

Treatment

Weight

Viscosity

Ph.

Resist. Ohms m2m @ °F @ °F

Loss ml/30 min

Max Temp

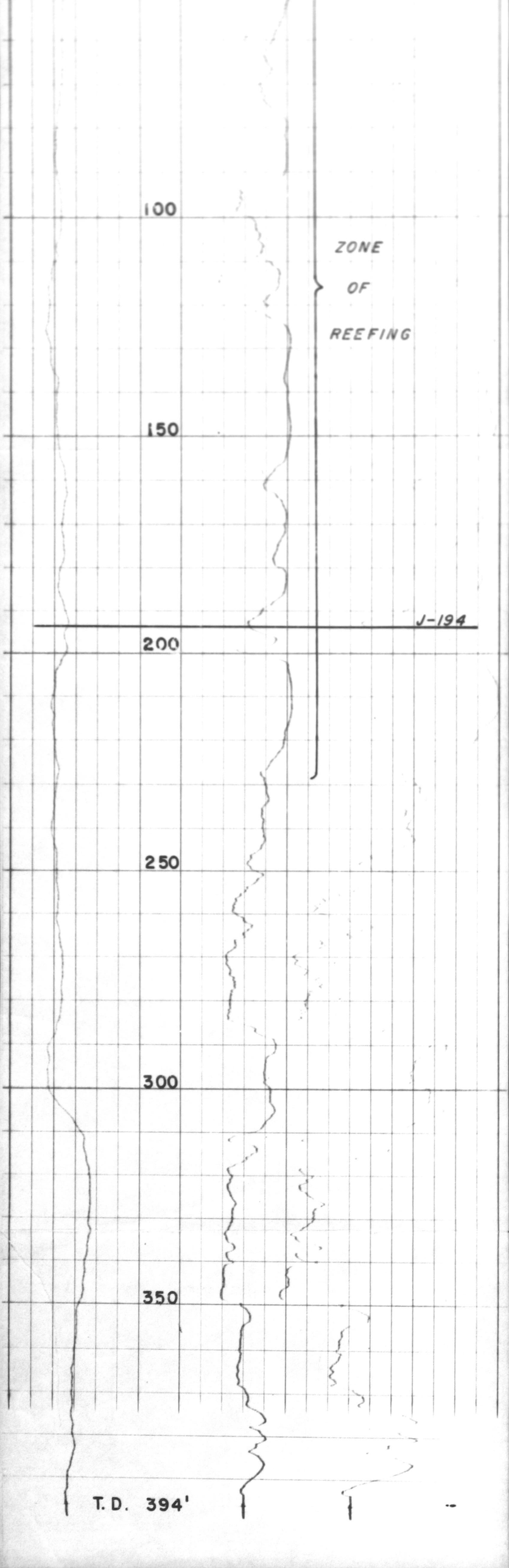
Recorded By E. MIER

Witnessed By C. BULMER

REMARKS OR OTHER DATA

NO DEV.

POTENTIAL	40	210	RESISTANCE	70


100
150
200
250
300
350
ZONE
OF
REEFING
J-194
T. D. 394'

To accompany Geological Report to Murphy Corporation, May 31, 1958

FIGURE-2

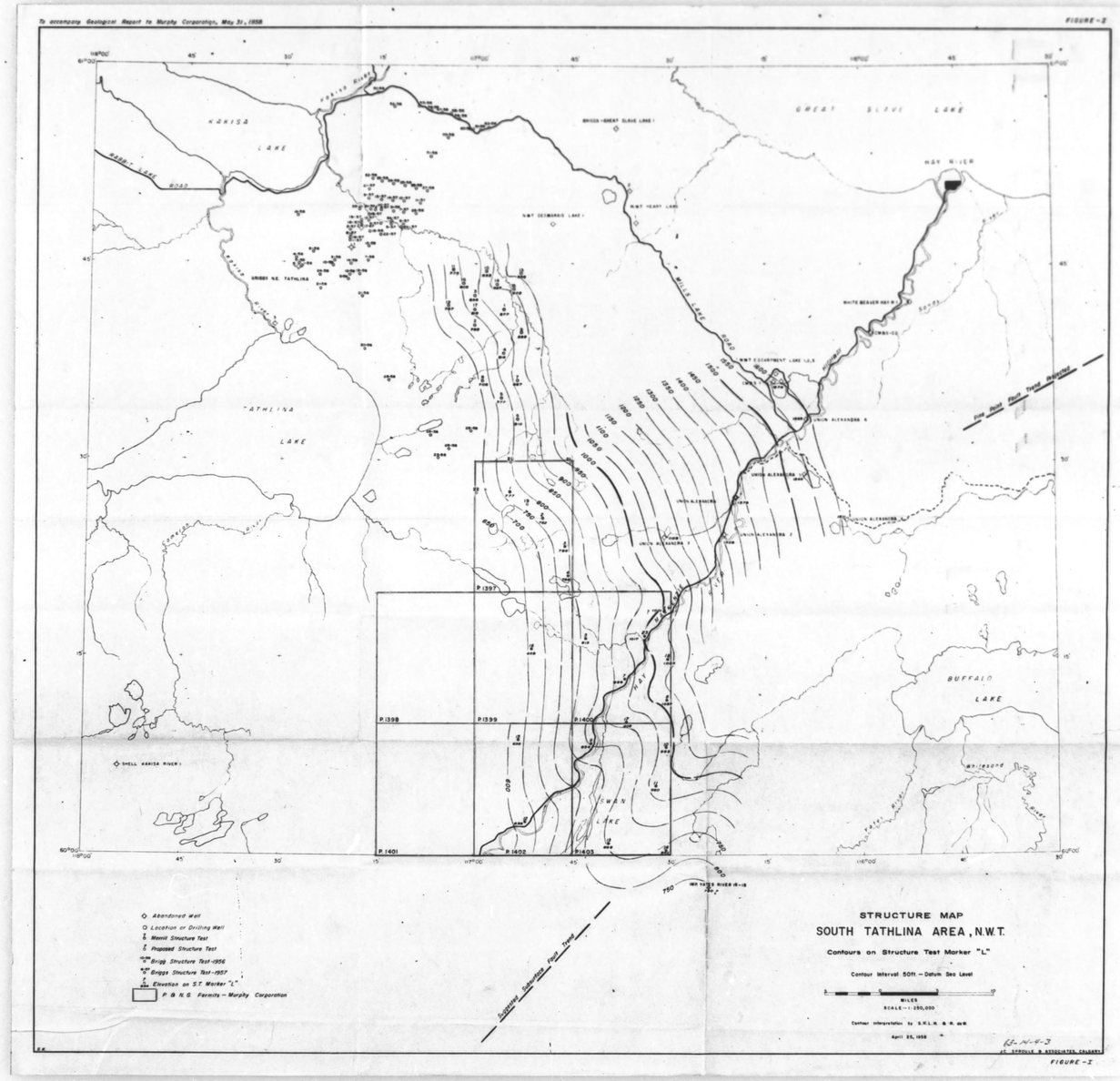


FIGURE-1