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CANADIAN JAVELIN LIMITED
ENGINEERING DEPARTMENT

JULIAN IRON CORPORATION
DIAMOND DRILLING - 1957
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DIAMOND DRILLING - 1957

Introduction

Under terms of the option agreement between Wabush Iron Co. (a Pickands Mather & Co. subsidiary) and Canadian Javelin Ltd., dated June 28, 1957, an exploration program for Canadian Javelin's Julian property was to be set up to outline the ore body on the property. This agreement called for a crude reserve sufficient to produce 50,000,000 tons of concentrates to be substantially proven prior to December 31, 1957, with certain provisions for choice of alternate areas should the exploration program fail to indicate this quantity of ore. This exploration program was to be supervised by Wabush Iron.

In August 1957 Javelin authorized Wabush Iron to proceed with a diamond drilling program to meet this provision of the Wabush option agreement, the understanding being that work would start on the property in August and be completed by December 1957. On this basis a contract was let to Boyles Brothers Eastern (Ontario) Ltd. covering the proposed work.

Boyles contract called for a minimum of 5000 ft. of drilling on ten or eleven holes. The sizes of casing and rods (Bx, Ax and Ex) were specified with cost of drilling to cover all expenses

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except diamond cost, cookery loss and transportation. The contractor was also required to make every effort to obtain a high core recovery, and also recover drill sludge for sampling.

Canadian Javelin maintained a qualified observer on the project who obtained the data for this report. All direct supervision was supplied by Wabush Iron Co. as set out in the terms of the Wabush option agreement.

The drilling program, originally scheduled to start in mid August, was not started until September 11, 1957. There were serious delays in getting equipment to the site which can be attributed to lack of supervision on the part of both the contractor and Wabush Iron.

The actual working period was 77 days between September 11 and November 27, 1957, at which time the project was closed down for the winter. Of this time days were actually used for drilling, the lost time being "down time" for to moving and setting up, together with a major loss of drilling time due to lack of service and equipment.

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Summary

The Julian Lake program, which was to start in mid August, did not get underway until September 11th. and lasted until November 27th. 1957, a total of 77 days. Four holes were drilled for a total of 1884 feet. Of these holes, only one (J-4) can be deepened, and has been left in condition for further drilling. It is at present 285 ft. Only one hole (J-2) reached a satisfactory depth (700 ft.) Core recovery in general was very poor. The best recovery was obtained from hole J-2, with an average 54.2%; the poorest recovery was in hole J-3, with an average 37.6%. Where possible, core recovery was supplemented by sludge sampling however water return and sludge recovery was also poor. A considerable amount of cementing was done to keep the holes from caving and improve drilling conditions.

The main problems at Julian Lake were not so much broken ground and poor drilling, but rather poor transportation, lack of proper equipment and lack of supervision by both the contractor and the supervising company.

Supervision

Supervision on the contract was the responsibility of Wabush Iron Co. who placed a resident geologist in charge supervised by head office staff in Montreal. Towards the end of the program, the drill contractor's chief field man was sent in to take personal charge of the work. At this time there were thirteen men in the camp, twelve on the contractor's payroll, one Wabush Iron geologist

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in charge, and one Javelin geologist as observer.

Of all the problems at the Julian Lake, the supervision was neglected the most, by both the contractor and Wabush Iron. It should be noted that towards the end of the program the contractor began to take a genuine interest in the problem, and sent in Mr. Konradson, their chief field man to take charge. Upon his arrival core recovery and footage drilled improved. Prior to Mr. Konradson's arrival, D. Ross visited the job twice. Mr. Cameron and Mr. Blair from their head office visited it once and stayed for a day discussing the program with the foreman.

Little effort was made by Wabush Iron to send in supervisory personnel, that is, personnel with power to order changes in the drilling. Mr. Kennedy and Mr. Hawkinson each visited the property once while the Javelin observer was there and stayed for a few hours. Mr. Robb visited the property three times during the same period but was unable to authorize any changes.

The Wabush Iron geologist appeared to have little authority beyond logging core and keeping records. Neither he nor the drill foreman had been given a copy of the contract for the drilling, their only information on the contract provisions being provided by the Javelin observers copy of the contract. Both the contractor's foreman and the Wabush geologist were seriously handicaped by failure of their superiors to answer requests for information, supplies and help promptly.

When further work is done on this project both the contractor

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and Wabush Iron should make certain that full information on duties and authority of personnel are clearly outlined. It is also important that the work be set up so problems of supply and operation will be handled by their companies without delay and information on what is being done sent to the job at once.

Equipment

Under terms of the drill contract Boyles were to supply two drills and all auxilliary equipment, including two small tractors, pumps, hose, casing, rods, tools, etc. The equipment sent in was in good condition, however, shipping and transportation to Seven Islands and from there north to the job site were poorly handled. This caused serious delays in the work and is one of the major reasons for their failure to complete the contract this year. Typical of this delay was their failure to provide the two tractors on time, making it necessary to borrow equipment from the Wabush Iron project.

At the beginning of the program it was planned to use three sizes of core, i.e., BX, AX and EX, as was called for in the contract. As the program progressed, it soon became obvious that to get holes to a reasonable depth, it was necessary to start drilling with NX equipment. This was done although no provisions were made for this equipment in the contract. The use of HX casing in the holes was seriously considered, but due to transportation problems late in the season, it was not feasible to get it to the job.

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Possibly the biggest single improvement in equipment was the use of a new type bit. This bit was actually a modification of an ordinary face injection type. Where ordinary face injection types were getting from 7 ft. to 12 ft. of drilling with little diamond recovery, the modified bits were getting a minimum of 22 ft. and a maximum of 43 ft. with improved diamond recovery.

When drilling starts again the drilling company plans some changes in the equipment to be used. These changes will include starting the holes with HX casing and NX core barrels. Changing the screw feed heads to friction drive types, and hydraulic jacks for pulling casing. Other changes will also be made in bits and core barrels used.

Service and Supply

An agreement covering service and supply for the Julian drilling from Ross Bay was made between the contractor and Wabush Iron. In general the Wabush Iron staff was to expedite material from Seven Islands to the job site. However satisfactory this arrangement appeared on paper it was a complete failure in practice as there seemed to be very little cooperation between the Wabush supply group and the contractor. In fact they gave the impression that they wished the job would fold up so they would not have to bother with it.

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Supply and service for the project proved to be one of the most serious problems of the entire program. Many times the drilling had to be suspended until the necessary materials were delivered. It is difficult to place the responsibility for this, however at the beginning of the program the drilling company did not have all the proper equipment on hand, particularly the required footage of casing, (see Contract, ApendixII), and non-rotating core barrels required for face injection bits which they were committed to use. When the foreman on the job saw this shortage existed, he ordered the proper equipment at once, but during shipment materials were delayed at Ross Bay and were not immediately brought to the job. The reason the material could not be brought to the site was that the helicopter was busy on other projects. When the barges were operating delays of this sort were not as frequent as later during the freeze-up period.

Once the job was at the mercy of the helicopter, trouble was encountered. Several times the drilling was held up while waiting for the helicopter to bring in parts. This was particulary true in the case of cement, which was at Ross Bay and Mile 15 for better than two weeks before any of it was delivered and when it arrived it was one or two bags at a time.

One particular instance which will show the poor service received, was when a rod tap was asked for from the Wabush job

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on October 26th. This piece of equipment was placed on the dock at Wabush on the day it was asked for but it was not until October 29th that it was delivered. There were also other instances of this sort.

When this job resumes provision must be made for better service.

Radio Communications

At the beginning of the program radio communications were practically non-existent. The radio put on the job was an RCAF Bendix transmitter-receiver type powered by two six-volt car batteries. This set was rented for $75.00 per month, including a generator for charging the batteries. The sent never functioned properly during the entire drilling period. Later in the program a portable TR4 set was sent to Julian Lake and this was found to be very satisfactory.

The real problem of communications at Julian Lake was the inability of the radio sets to reach Ross Bay. All messages sent and received had to be relayed via Wabush Lake. This naturally caused unnecessary errors and delay. When the program resumes it is suggested that a transmitter-receiver radio, powerful enough to reach Ross Bay be installed at Julian Lake.

Diamond Drilling

Four holes, numbered J-1 to J-4, were drilled during this period. Locations of these holes are given on the map attached to the report. Three of these holes were completed as far as

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possible, with the fourth hole left in good condition for further work. (The hole was cemented to the bottom and casing reamed and left free in the hole.) Only one hole reached the desired objective of 700 ft., the others were stopped short due to physical difficulties in drilling. A total of 1884 ft. was drilled, one-third of the footage originally planned.

Core recovery in general was very poor. The best average recovery was obtained in hole J-2, being 54.2%: and the worst in J-3, being 37.6%. Whenever possible core recovery was supplemented by sludge samples.

At the beginning of the program the holes were started with BX size core and casing. Later as the equipment became available, they were started with NX casing. Had the program continued the contractor planned to use NX core and if possible HX casing. Their supervisors feel that with the larger casing and core, there is a better possibility of reaching the desired depth with improved core recovery. As another measure to get depth, cementing was done. This procedure was used to keep the holes from caving. The contractor used this procedure without orders from Wabush Iron Co. as a means of fulfilling their commitment to obtain the best possible core recovery. They intend, however, to claim compensation for this work as it allowed a greater depth to be reached in the holes than would otherwise have been possible.

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One difficulty in the drilling was the necessity of blasting the casing free on completion of the holes to allow it to be pulled out. Due to the friable nature of the ore, the casing would pack tight and it would be impossible to jar it out. Blasting was necessary to obtain even a partial casing recovery.

Drilling in general progressed very slowly, the daily rate of advance averaged 12.8 feet for each machine. The drilling rate was governed by the nature of the ore, the drilling equipment available and the contract requirements. This poor footage pointed out to the contractor the necessity for improving his drilling methods, and the necessity for different types of bits and equipment. This experience may prove very helpful on further work of a similar nature on the property.

Various lengths of "core" runs were tried ranging from 1 to 10 feet. The percentage core recovery was invariably lower in the long runs than in the three and four foot runs. It is well to note that in every ten foot run tried, the core recovery never exceeded twenty percent.

Details of core recovery and runs are given in Apendix I. Data covers all holes drilled. Hole sections where sludge recovery was made are indicated on the charts in this section, though the actual percentage of sludge recovered is not given.

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SUMMARY

Hole J-1

Date Started .....Sept. 11, 1957

Date finished .....Oct. 24, 1957

Location .....105+00N - 100+00E

Dip ..... Vertical

Depth ..... 596 ft.

Elevation ..... 1939.88 ft.

Depth of overburden ..... 51.6 ft.

Total amount of cementing ..... 43 ft.

Sludge samples ..... 43 - 5 ft. samples

Average % core recovery 51.6%

Total number of days drilling 44

Actual number of days drilling 33

Average daily footage advance for total days worked ... 13.6

Average daily footage advance for actual days worked ... 18.1

Depths of various sizes of casing NX
BX ..... 0 - 150
AX ..... 0 - 368
EX ..... 0 - 498

Materials lost in hole BX ..... 51' casing
1 BX shoe P.M.
AX ..... 47' casing
1 AX shoe P.M.
EX ..... 25' casing
1 E x K bit (285)
1 5' core barrel
1 EX shoe P.M.

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Hole J-1 was started on September 11, 1957 and finished on October 24th, 1957. A major delay of four days occurred when no EX casing was available to continue the hole. This delay occurred between the days of October 11th to 15th. The hole was stopped when the EX rods became stuck in the cement. The rod loss was due to blasting that had to be done to loosen the rods and casing.

<u>Hole J-2</u> - Summary

Date started	Sept. 17, 1957
Date finished	November 4, 1957
Location	95+00N - 100+00E
Dip	Vertical
Depth	705
Elevation	1914.24 ft.
Depth of overburden	18 ft.
Total amount of cementing	59 ft.
Sludge samples	82 - 5 ft.samples
Average % core recovery	54.2%
Total number of days drilling	51
Actual number of days drilling	32
Average daily footage advance for total days drilling ...	13.8
Average daily footage advance for actual days drilling ...	22

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Depths of various sizes of casing ..... NX 0 - 20 ft.
BX 0 - 188 ft.
AX 0 - 489 ft.
EX 0 - 566 ft.

Materials lost in hole ..... BX - 122' casing
1 BX shoe No.50096 P.M.
AX - 302' casing
1 AX shoe No.12957 P.M.
EX 45' casing
1 EX shoe No.355 P.M.

This hole was started on September 17th, 1957 and was finished on November 4th, 1957. Two major delays of three days each were experienced on this hole. The first occurred from October 27th to October 29th when waiting for EX casing salvaged from J-1. The second delay occurred while waiting for a rod tap from Wabush Lake. It should be noted that this latter piece of equipment was ready at Wabush the first day it was asked for but due to the fact that the helicopter was not released to deliver it, drilling was held up for three days.

The hole was stopped at 705 ft. because core recovery was very poor and did not seem to be improving.

<u>Hole J-3</u> - Summary

Date started ..... November 2, 1957

Date finished ..... November 20, 1957

Location ..... 115+00N - 100+00E

Dip ..... Vertical

Depth ..... 318 ft.

Elevation ..... 1831.02 ft.

Depth of overburden ..... 47 ft.

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Total amount of cementing .....69 ft.

Sludge samples ..... 40 - 5' samples

Average % core recovery 37.6%

Total number of days drilling 20

Actual number of days drilling 17

Average daily footage advance for total days drilling ..15.9

Average daily footage advance for actual days drilling... 18.7

Depths of various sizes of casing ..... NX 0 - 42

BX 0 - 101

AX 0 - 228

EX 0 - 310

Materials lost in hole ..... BX 20' of casing
1 BX shoe
AX 67' of casing
1 AX shoe
EX 80' of casing
1 EX shoe

Total drilling time of hole J-3 was 20 days, and showed the poorest core reovery at 37.6% of all four holes. No major delays were encountered in this hole but drilling was exceedingly difficult. When the rods became stuck at 318 ft. in a shear zone, it was decided to stop the hole and move the machine to another setup. It was again necessary to blast the casing free.

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Hole J-4 - Summary

Date started	November 11, 1957
Date finished	November 29, 1957
Location	85+00N - 100+00E
Dip	Vertical
Depth	285 ft.
Elevation	1839.46
Depth of overburden	16 ft.
Total amount of cementing	205 ft.
Sludge samples	42 - 5 ft. samples
Average % core recovery	49.0
Total No. of days drilling	17
Actual No. of days drilling	14
Average daily footage advance for total days drilling	15.6
Average daily footage advance for actual days drilling	18.9
Depths of various sizes of casing	NX 0-3 BX 0-138 AX 0-265 EX

Of the four holes drilled to date this is the only hole which can be deepened. The hole was still being drilled when the work was closed down, and was left in good condition. Cement was poured to the bottom and casing reamed to 265 ft. To avoid the danger of the casing being stuck at the bottom, it was pulled up to 150 ft.

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SOURCE OF DATA

The data presented in this report was obtained from drill reports on the project by H. Mockler, the Javelin representative on the project.

Dates - September 11th, 1957 to

November 27th, 1957.

H. Mockler

Montreal, Que.
January 14th, 1958.

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CANADIAN JAVELIN LIMITED

ENGINEERING DEPARTMENT

APPENDIX I

FOOTAGE AND CORE RECOVERY

HOLES J-1 to J-4

1957 Drilling

JULIAN LAKE

FOOTAGE RUNS & % CORE RECOVERY FOR HOLE J-1

OTAGE	INS DR.	INS REC	%
0 - 3	COLLAR		
3 - 5 2	24	24	100
5 - 13 8	96	74	77
13 - 21 8	96	54	56
21 - 26 5	60	54	90
26 - 30 4	48	48	100
30 - 32 2	24	24	100
32 - 34 2	24	18	75
34 - 37 3	36	30	83
37 - 40 3	36	36	100
40 - 43 3	36	36	100
43 - 49 6	72	42	58
49 - 59	120	30	25
59 - 69	120	0	0
69 - 73 4	48	18	38
73 - 79 6	72	0	0
79 - 82 3	36	18	50
82 - 84 2	24	27	90
84 - 93 9	108	0	0
93 - 96 3	36	24	67
96 - 98 2	24	24	100
98 - 101 3	36	18	50
101 - 102 1	12	8	67
102 - 104 2	24	24	100
104 - 106 2	24	18	75
106 - 108 2	24	12	50
108 - 110 2	24	22	94
110 - 111 1	12	12	100
111 - 112 1	12	12	100
112 - 115 3	36	36	100
115 - 117 2	24	18	75
117 - 119 2	24	24	100
119 - 122 3	36	18	50
122 - 124 2	24	16	66
124 - 126 2	24	24	100
126 - 128 2	24	24	100

FOOTAGE	INS DR	INS REC	%
128 - 132 4	48	24	50
132 - 136 4	48	15	31
136 - 139 3	36	24	67
139 - 142 3	36	28	78
142 - 152 10	120	0	0
152 - 154 2	24	10	44
154 - 155 1	12	8	67
155 - 156 1	12	12	100
156 - 157 1	12	10	83
157 - 158 1	12	10	83
158 - 160 2	24	10	44
160 - 164 4	48	24	50
164 - 166 2	24	24	100
166 - 170 4	48	48	100
170 - 175 5	60	40	66
175 - 180 5	60	50	83
180 - 183 3	36	30	83
183 - 186 3	36	36	100
186 - 189 3	36	20	55
189 - 193 4	48	25	52
193 - 195 2	24	20	83
195 - 197 2	24	18	75
197 - 199 2	24	15	63
199 - 201 2	24	24	100
201 - 203 2	24	16	66
203 - 205 2	24	24	100
205 - 207 2	24	12	50
207 - 210 3	36	36	100%
210 - 213 3	36	36	100%
213 - 219 6	72	43	59
219 - 222 3	36	24	67
222 - 225 3	36	12	33
225 - 228 3	36	10	27
228 - 232 4	48	26	54
232 - 237 5	48	18	30
237 - 240 3	36	24	66

FOOTAGE	INS DR	INS REC	%
240 - 244 4	48	22	45
244 - 254 10	120	26	2
254 - 257 3	36	8	2
257 - 263 6	72	12	17
263 - 267 4	48	5	11
267 - 273 6	72	12	16
273 - 280 7	84	12	14
280 - 290	120	0	0
290 - 292 2	24	12	50
292 - 295 3	36	30	83
295 - 302 7	84	12	14
302 - 304 2	24	6	25
304 - 305 1	12	2	8
305 - 307 2	24	12	50
307 - 311 4	48	12	25
311 - 313 2	24	10	41
313 - 315 2	24	10	41
315 - 318 3	36	20	62
318 - 321 3	36	24	66
321 - 325 4	48	40	83
325 - 327 2	24	24	100
327 - 329 2	24	12	50
329 - 334 5	60	36	60
334 - 337 3	36	36	100
337 - 340 3	36	26	69
340 - 342 2	24	18	67
342 - 345 3	36	8	22
345 - 347 2	24	18	75
347 - 349 2	24	24	100
349 - 351 2	24	18	75
351 - 355 4	48	48	100
355 - 360 5	60	30	50
360 - 367 7	84	15	17
367 - 368 1	12	4	33
368 - 370 2	24	10	41
370 - 374 4	48	14	29

HOLE J-1 (CONT'D)

FOOTAGE	INS DR	INS REC	%
374 - 377	3	36	32	61
377 - 379	2	24	20	82
379 - 382	3	36	25	69
382 - 383	1	12	5	60
383 - 384	1	12	5	60
384 - 386	2	24	12	50
386 - 391	5	60	60	100
391 - 394	3	36	30	83
394 - 400	6	72	65	90
400 - 402	2	24	20	82
402 - 403	1	12	12	100
403 - 406	3	36	36	100
406 - 409	3	36	23	64
409 - 414	5	60	16	27
414 - 418	4	48	6	12
[illegible] - 422		48	25	59
422 - 425	3	36	30	83
425 - 429	4	36	40	88
429 - 435	6	72	8	11
435 - 440	5	60	8	11
440 - 443	3	36	15	41
443 - 446	3	36	12	33
446 - 450	4	48	30	48
450 - 455	5	60	6	10
455 - 457	2	24	6	25
457 - 459	2	24	12	50
459 - 462	3	36	28	44
462 - 464	2	24	24	100
464 - 467	3	36	12	33
467 - 471	4	48	21	44
471 - 474	3	36	18	50
474 - 477	3	36	8	25
[illegible] - 481	4	48	9	19
481 - 484	3	36	4	11
484 - 488	4	48	9	19
488 - 491	3	36	16	44

FOOTAGE	INS DR	INS REC	%
491 - 494	3	36	30	83
494 - 496	2	24	12	50
496 - 498	2	24	18	75
498 - 500	2	24	12	50
500 - 505	5	60	36	60
505 - 509	4	48	34	71
509 - 511	2	24	18	75
511 - 516	5	60	43	72
516 - 519	3	36	24	66
519 - 525	6	72	58	81
525 - 530	5	60	58	97
530 - 535	5	60	32	53
535 - 540	5	60	54	90
540 - 543	3	36	0	0
543 - 548	5	60	16	30
548 - 553	5	60	54	90
553 - 556	3	36	32	89
556 - 562	6	72	30	42
562 - 567	5	60	30	50
567 - 574	7	84	20	24
574 - 579	5	60	18	30
579 - 584	5	60	20	33
584 - 589	5	60	8	13
589 - 594	5	60	12	20
594 - 596	2	24	6	25

TOTAL INS/DRILL 7116
" " /REC 3673

% 51.6

FOOTAGE RUNS & % CORE RECOVERY FOR HOLE J-2

FOOTAGE		INS DRILL	INS REC	%
0 - 18		COLLAR		
18 - 25'		84	24	29
25 - 29	4	48	40	83
29 - 32	3	36	8	22
32 - 34	2	24	20	83
34 - 36	2	24	12	50
36 - 41	5	60	56	90
41 - 45'	4	48	36	75'
45' - 47	2	24	16	66
47 - 56	9	108	108	100
56 - 58	2	24	20	83
58 - 61	3	36	16	44
61 - 64	3	36	8	22
64 - 66	2	24	20	66
66 - 68	2	24	15'	63
68 - 69	1	12	12	100
[illegible] - 71	3	24	18	75
71 - 72	1	12	8	66
72 - 74	2	24	24	100
74 - 75'	1	12	12	100
75' - 77	2	24	24	100
77 - 78	1	24	12	50
78 - 81	3	36	36	100
81 - 83	2	24	24	100
83 - 84	1	12	8	66
84 - 85'	1	12	8	66
85' - 86	1	12	12	100
86 - 88	2	24	18	75'
88 - 90	2	24	24	100
90 - 91	1	12	12	100
91 - 93	2	24	24	100
93 - 94	1	12	12	100
94 - 95'	1	12	8	66
[illegible] - 97	2	24	24	100
97 - 99	2	24	18	75'
99 - 100	1	12	10	83

FOOTAGE		INS DR.	INS REC	%
100 - 102	2	24	16	66
102 - 103	1	12	12	100
103 - 105'	2	24	20	83
105' - 107	2	24	18	75'
107 - 109	2	24	24	100
109 - 111	2	24	24	100
111 - 118	7	84	0	0
118 - 121	3	36	20	56
121 - 123	2	24	18	75'
123 - 125'	2	24	24	100
125' - 127	2	24	16	66
127 - 128	1	12	12	100
128 - 131	3	36	12	33
131 - 134	3	36	8	22
134 - 136	2	24	4	17
136 - 138	2	24	18	75'
138 - 142	4	48	12	25'
142 - 145	3	36	8	22
145 - 150	5	60	15'	25'
150 - 152	2	24	12	50
152 - 153	1	12	8	66
153 - 160	7	84	18	21
160 - 165'	5	60	40	66
165' - 167	2	24	12	50
167 - 170	3	36	14	39
170 - 173	3	36	30	83
173 - 176	3	36	36	100
176 - 179	3	36	36	100
179 - 183	5	48	42	88
183 - 188	5	60	12	20
188 - 191	3	36	12	33
191 - 196	5	60	18	30
196 - 200	4	48	28	58
200 - 205'	5	60	12	20
205' - 207	2	24	24	100
207 - 211	4	48	28	58

FOOTAGE		INS DRILL	INS REC	%
211 - 214	3	36	36	100
214 - 215'	1	12	6	50
215 - 217	2	24	24	100
217 - 219	2	24	14	58
219 - 221	3	24	24	100
221 - 226	5	60	36	60
226 - 231	5	60	32	53
231 - 241	10	120	14	12
241 - 242	1	12	12	100
242 - 245'	3	36	16	44
245 - 247	2	24	20	83
247 - 250	3	36	32	89
250 - 254	4	48	36	75'
254 - 255'	1	12	12	100
255' - 257	2	24	12	50
257 - 260	3	36	36	100
260 - 263	3	36	22	61
263 - 264	1	12	8	50
264 - 271	7	84	30	36
271 - 274	3	36	4	11
274 - 280	6	72	60	83
280 - 284	4	48	24	50
284 - 286	2	12	18	75'
286 - 290	4	48	48	83
290 - 302	16	144	0	0
302 - 305'	3	36	36	100
305' - 308	3	36	28	78
308 - 309	1	12	12	100
309 - 310	1	12	8	66
310 - 311	1	12	8	66
311 - 313	2	24	24	100
313 - 316	3	36	28	78
316 - 321	5	60	48	80
321 - 323	2	24	18	75'
323 - 327	4	48	40	83
327 - 329	2	24	20	83

HOLE J-2 (CONT'D)

FOOTAGE	INS DR.	INS REC	%
321 - 331	2 24	14	58
331 - 335'	4 48	40	83
335 - 337	2 24	20	83
337 - 339	2 24	17	71
339 - 343	4 48	43	90
343 - 347	4 48	38	79
347 - 351	4 48	36	75
351 - 356	5 60	55	91
356 - 359	3 36	36	100
359 - 366	7 84	67	80
366 - 369	3 36	22	61
369 - 372	3 36	34	94
372 - 377	5 60	18	25
377 - 379	2 24	8	33
379 - 383	4 48	20	42
383 - 387	5 48	20	42
387 - 392	5 60	36	75
392 - 397	5 60	32	53
397 - 400	3 36	30	83
400 - 404	4 48	18	38
404 - 407	3 36	32	89
407 - 412	60	54	90
412 - 416	4 48	20	41
416 - 419	3 36	21	58
419 - 420	1 12	12	100
420 - 422	2 24	24	100
422 - 432	10 120	59	50
432 - 435	3 36	5	14
435 - 440	5 60	24	40
440 - 445'	60	7	11
445 - 450	60	21	35
450 - 455'	60	36	60
455' - 459	48	8	16
[illegible] - 460	12	3	25
460 - 465'	60	2	3
465' - 468	36	0	0

FOOTAGE	INS DR	INS REC	%
468 - 474	72	54	75
474 - 477	36	0	0
477 - 480	36	4	11
480 - 484	48	12	25
484 - 489	60	42	70
489 - 495'	72	42	58
495' - 505'	120	24	20
505' - 506	12	12	100
506 - 509	36	33	92
509 - 515'	72	48	67
515 - 521	72	12	17
521 - 527	72	48	67
527 - 532	60	48	75
532 - 535'	36	30	84
535' - 537	24	18	75
537 - 541	48	32	66
541 - 545'	48	32	66
545' - 551	72	35	50
551 - 555'	48	10	21
555' - 560	60	30	50
560 - 563	36	8	22
563 - 565'	24	6	25
565' - 566	12	12	100
566 - 568	24	18	75
568 - 570	24	20	83
570 - 576	72	70	96
576 - 578	24	20	83
578 - 589	132	20	15
589 - 595'	72	48	66
595 - 599	48	10	21
599 - 600	12	12	100
600 - 605'	60	18	30
605 - 607	24	18	75
607 - 610	36	9	25
610 - 613	36	6	17

FOOTAGE	INS DR	INS REC	%
613 - 616	36	8	22
616 - 619	36	6	17
619 - 622	36	14	38
622 - 626	48	28	58
626 - 628	24	18	75
628 - 631	36	28	78
631 - 634	36	12	33
634 - 637	36	24	66
637 - 639	24	16	66
639 - 640	12	12	100
640 - 642	24	16	66
642 - 645	36	12	33
645 - 650	60	24	40
650 - 652	24	8	33
652 - 655'	36	28	78
655 - 657	24	18	75
657 - 659	24	16	66
659 - 662	36	21	58
662 - 665	36	19	52
665 - 668	36	12	33
668 - 673	60	10	17
673 - 675'	24	12	50
675 - 678	36	15	42
678 - 681	36	5	14
681 - 683	24	5	28
683 - 687	48	8	17
687 - 692	60	6	10
692 - 697	60	3	5
697 - 700	36	4	11
700 - 702	24	2	7
702 - 705'	36	1	3

TOTAL INS. DR. 8244

TOTAL INS. REC 4460

% RECOVERY 54.2

Footage Runs & % Core Recovery for Hole F-3

Footage	Ins Drill	Ins Rec	%
47-50	36	30	83
50-60	120	6	5
60-65'	60	34	56
65'-70	60	38	63
70-75	60	36	60
75'-79	48	38	80
79-83	48	48	90
83-85	24	18	75
85'-90	60	60	100
90-95'	60	42	70
95'-102	84	70	83
102-104	24	22	91
104-107	36	29	83
107-110	36	29	83
110-111	12	6	50
111-112	12	6	50
112-113	12	9	75
113-114	12	9	75
114-118	48	18	37
118-123	60	30	50
123-125	24	10	41
125-129	48	26	55
129-133	48	28	60
133-134	12	10	83
134-135'	12	10	83
135'-137	24	14	59
137-138	12	12	100
138-141	36	30	83
141-143	24	16	66
143-145'	24	18	75
145'-150	60	12	20
150-154	48	6	12
154-157	36	18	50
157-162	60	7	11
162-164	24	4	16
164-169	60	18	30

Footage	Ins Drill	Ins Rec	%
169-175	72	30	41
175-182	84	10	11
182-183	12	4	33
183-185'	24	3	12
185'-186	12	6	50
186-187	12	9	75
187-190	36	6	16
190-195'	60	24	66
195'-198	36	5	14
198-200	24	0	0
200-205'	60	21	35
205'-210	60	54	90
210-214	48	14	29
214-218	48	0	0
218-221	36	0	0
221-225'	48	0	0
225'-230	60	32	53
230-234	48	10	20
234-238	48	7	14
238-240	24	2	8
240-247	84	2	2
247-252	60	15	25
252-254	24	0	0
254-259	60	1	2
259-264	60	21	35
264-267	36	26	71
267-270	36	15	41
270-275'	60	21	35
275-280	60	20	33
280-285	60	10	16
285'-290	60	6	10
290-295'	60	8	13
295'-300	60	10	16
300-305'	60	8	13
305-310	60	0	0
310-315'	60	0	0

Footage	Ins Drill	Ins Rec	%
315'-318	36	10	2

Total Ins. Dr. 3252

Total Ins Rec 1224

% Rec 37.6

FOR HOLE J-4

FOOTAGE	INS DRILL	INS REC	%
0-16	—	—	—
16-22	72	30	41
22-24	24	18	75
24-25	12	12	100
25-27	24	6	25
27-31	48	12	25
31-35	48	10	21
35-37	24	8	33
37-41	48	36	75
41-43	24	15	61
43-47	48	30	62
47-49	24	16	66
49-51	24	18	75
51-55	48	4	21
55-58	36	15	41
58-61	36	16	43
61-64	36	18	50
64-69	60	6	10
69-80	132	12	9
80-85	60	8	13
85-87	24	16	66
87-90	36	12	33
90-95	60	25	42
95-100	60	20	33
100-105	60	22	37
105-110	60	21	35
110-115	60	27	45
115-120	60	28	47
120-125	60	27	45
125-130	60	25	41
130-135	60	8	13
135-140	60	12	20
140-144	48	13	26
144-150	72	0	0
150-152	24	0	0
152-154	24	24	100

FOOTAGE	INS DRILL	INS REC	%
154-157	36	18	50
157-163	60	30	50
163-165	24	12	50
165-166	12	6	50
166-173	84	42	50
173-175	24	12	50
175-177	24	12	50
177-179	24	12	100
179-182	36	18	100
182-184	24	24	100
184-186	24	24	100
186-188	24	24	100
188-191	36	36	100
191-195	48	8	16
195-197	24	12	50
197-199	24	24	100
199-201	24	24	100
201-203	24	24	100
203-205	24	15	62
205-206	12	12	100
206-208	24	12	50
208-210	24	24	100
210-213	36	25	70
213-216	36	34	95
216-219	36	28	79
219-222	36	32	90
222-226	48	18	37
226-228	24	21	62
228-230	24	20	60
230-233	36	24	66
233-236	36	26	68
236-240	48	29	60
240-245	60	53	89
245-248.5	42	40	95
248.5-251	30	24	80
251-253	24	17	71

FOOTAGE	INS DRILL	INS REC	%
253-256	36	32	9
256-258	24	24	10
258-261	36	30	8
261-263	24	20	66
263-264	12	10	8
264-265	12	8	7
265-268	24	14	58
267-268	12	8	6
268-271	36	21	58
271-274	36	32	8
274-276	24	15	6
276-278	24	16	66
278-281	36	3	8
281-285	48	3	6

TOTAL INS. DR. 332

TOTAL INS REC 162.5

% REC 49.0

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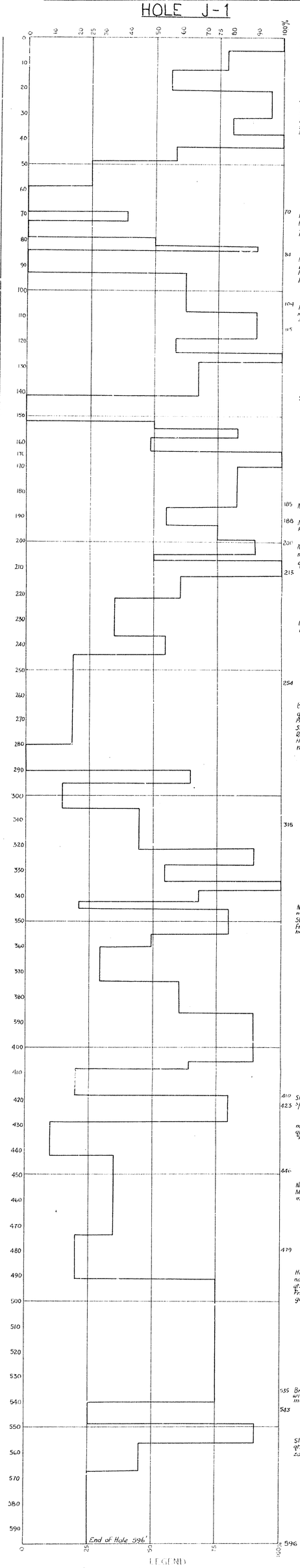
HISTOGRAM SHOWING % CORE RECOVERY
HOLE J-1



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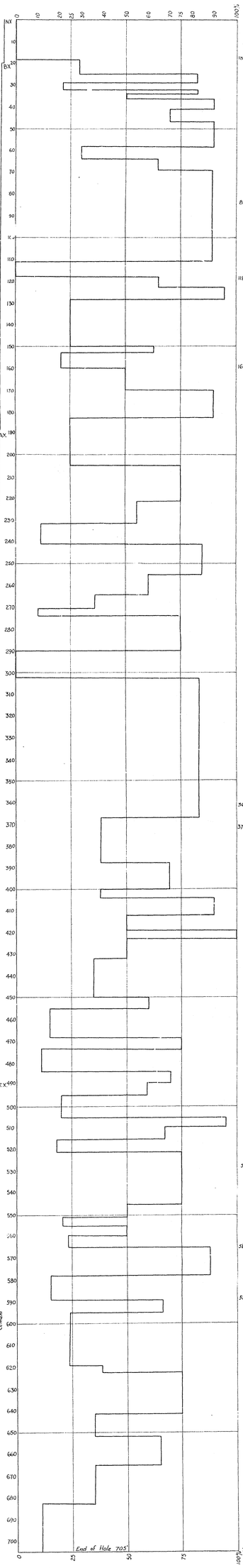
HISTOGRAM SHOWING % CORE RECOVERY

HOLE J-2



LEGEND

Location :——— 100+00 E 95+00 N

Date Started :——— 17th Sept. 1957

Date Finished :——— 4th Nov. 1957

Depth :——— 705 ft.

Percentage core recovery :— 54.2

1

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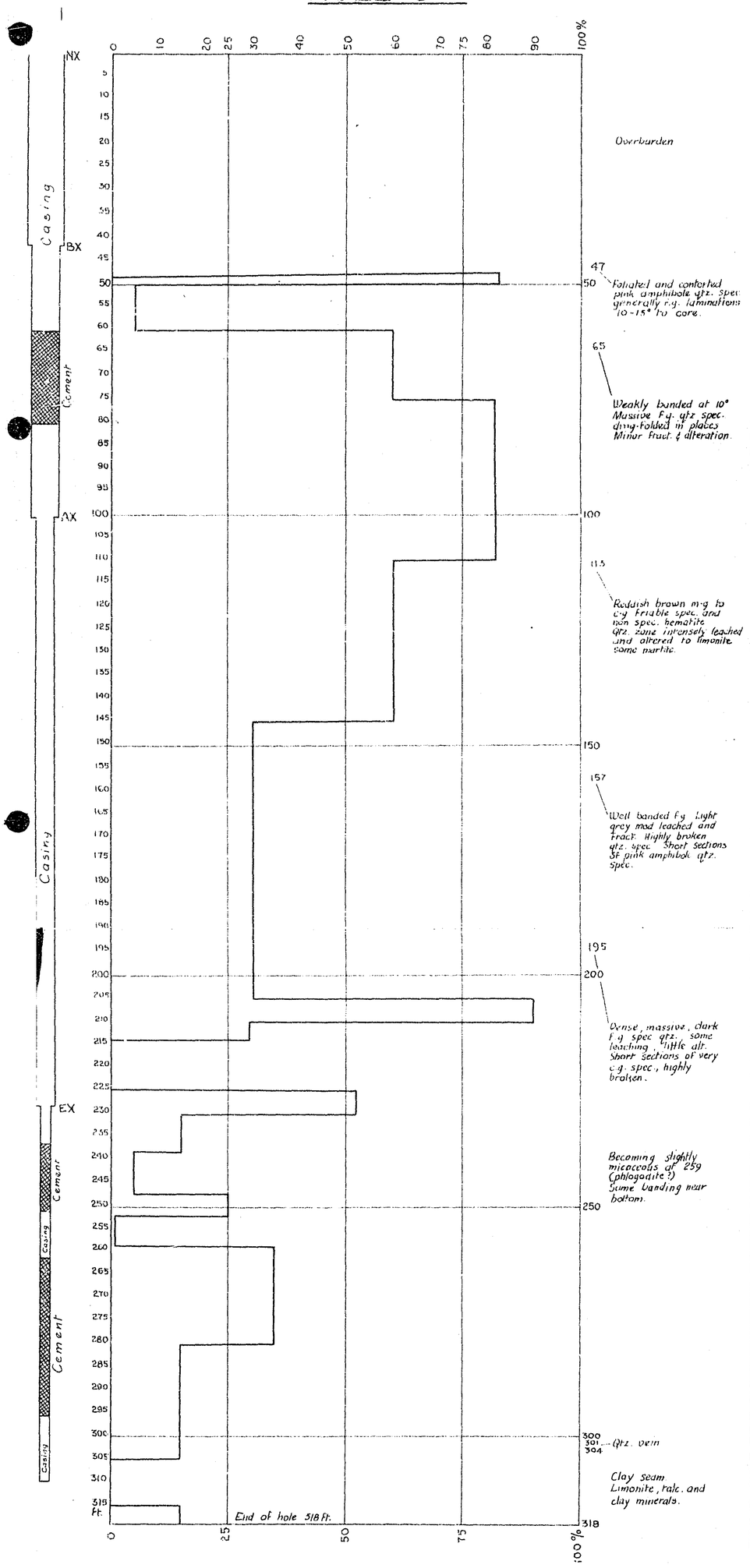
HISTOGRAM SHOWING % CORE RECOVERY

HOLE J-3



LEGEND

Location :——— 100 + 00 E 115 + 00 N.

Date Started :——— 2nd Nov 1957

Date Finished :——— 20th Nov., 1957

Depth :——— 318 ft.

Per-centage core recovery :——— 37·6

W.L.

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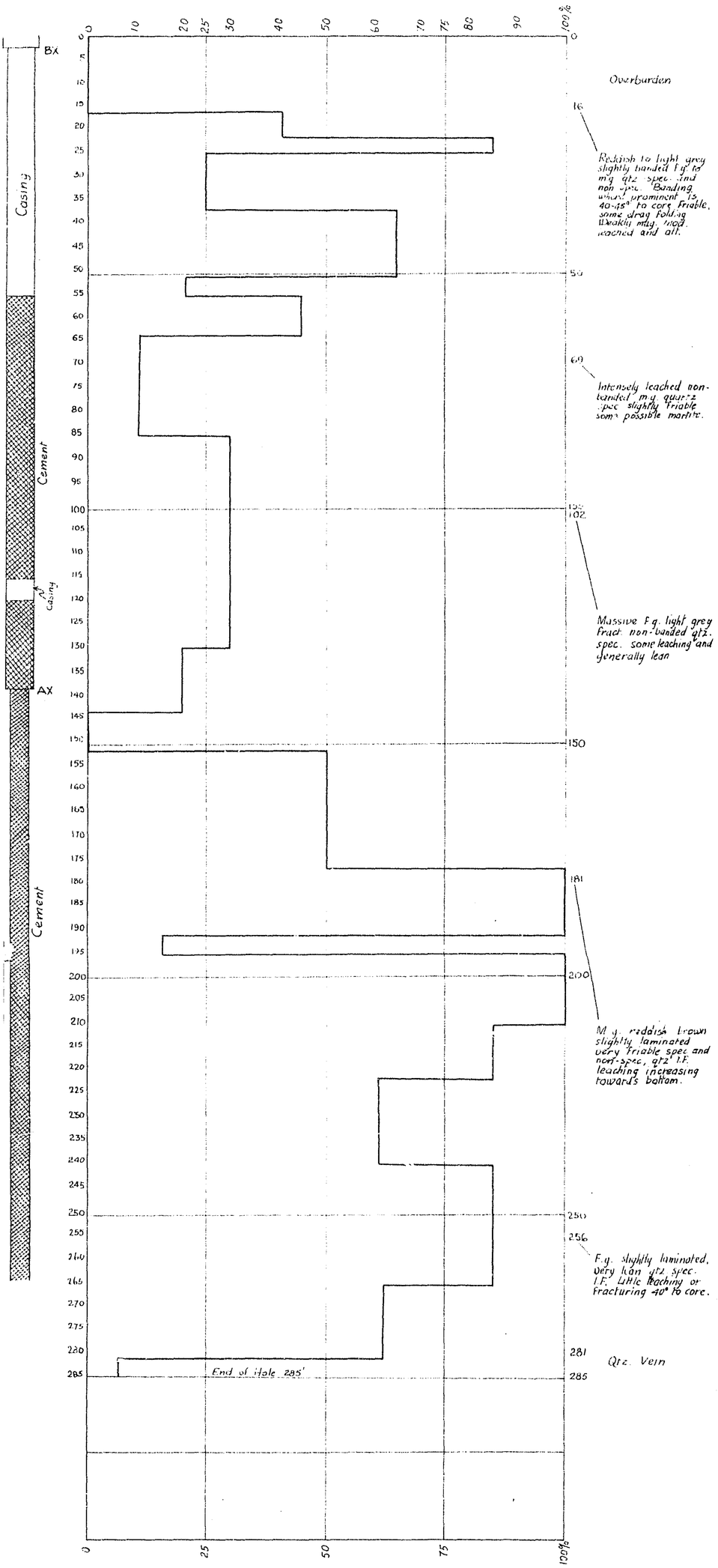
HISTOGRAM SHOWING % CORE RECOVERY

HOLE J-4



LEGEND

Location :- 100 + 00 E - 85 + 00 N

Date Started :- 11th Nov. 1957

Date Finished :- 29th Nov. 1957

Depth :- 285 ft.

Per-centage core recovery :- 49·0

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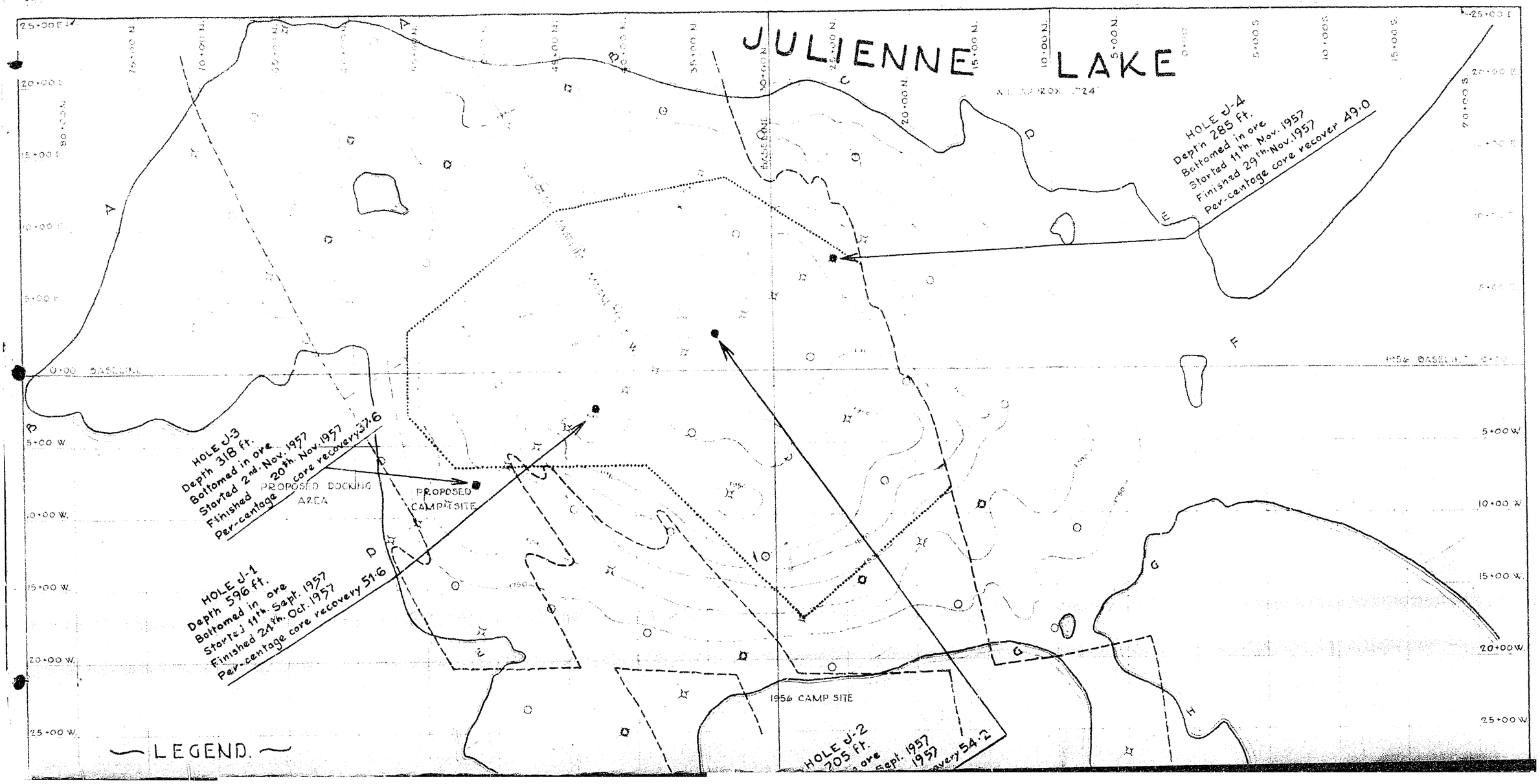

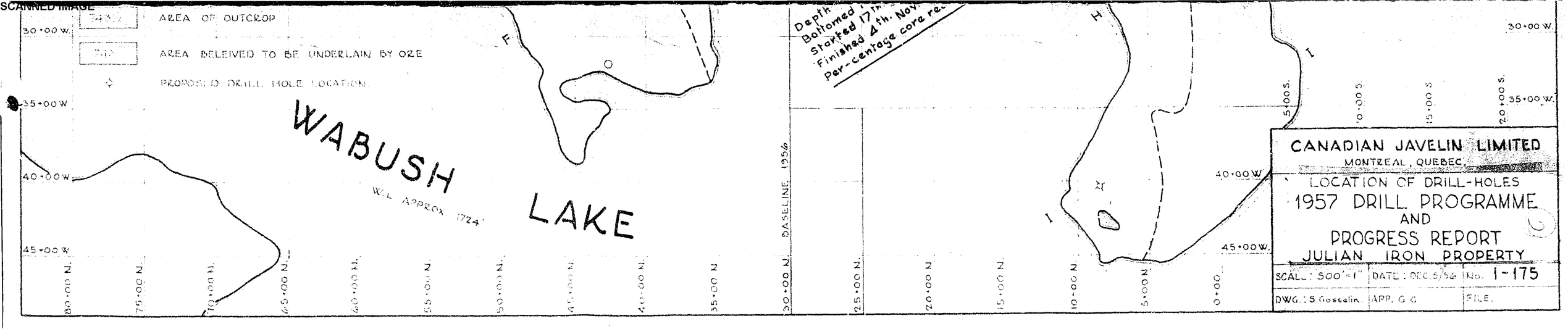
AREA OF OUTCROP
AREA BELEIVED TO BE UNDERLAIN BY ORE
PROPOSED DRILL HOLE LOCATION
WABUSH LAKE
W.L. APPROX 1724'
BASELINE 1956
Depth
Bottomed
Started 17th
Finished 4th. Nov
Per-centage core re
30+00 W.
35+00 W.
40+00 W.
45+00 W.
80+00 N.
75+00 N.
70+00 N.
65+00 N.
60+00 N.
55+00 N.
50+00 N.
45+00 N.
40+00 N.
35+00 N.
30+00 N.
25+00 N.
20+00 N.
15+00 N.
10+00 N.
5+00 N.
0+00
5+00 S.
10+00 S.
15+00 S.
20+00 S.
CANADIAN JAVELIN LIMITED
MONTREAL, QUEBEC
LOCATION OF DRILL-HOLES
1957 DRILL PROGRAMME
AND
PROGRESS REPORT
JULIAN IRON PROPERTY
SCALE: 500'=1"
DATE: DEC 5/56
No. 1-175
DWG.: S. Gosselin
APP. G.G.
FILE.

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APPENDIX II

COPY OF CONTRACT

BETWEEN

PICKANDS MATHER & CO.

and

BOYLES BROS. DRILLING (EASTERN) LTD.

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THIS AGREEMENT entered into this 18th day of July, by and between PICKANDS MATHER & CO., a partnership Located in Cleveland, Ohio, as Agent, Party of the First Part, hereinafter referred to as "Company", and BOYLES BROS. DRILLING (EASTERN) LTD., a Canadian corporation, hereinafter referred to as "Contractor";

W I T N E S S E T H :

1. Statement of Work:

Contractor agrees to do all of the work and furnish all supervision, labor, equipment, materials, supplies and facilities (except as herein otherwise specifically provided) for the performance of the Company's exploration drilling program as ordered and directed by the Company in the Julienne Lake area and/or the Wabush Lake area located approximately thirty-eight miles west of mile 224 on the Quebec-Labrador Railroad in the Dominion of Canada. Contractor agrees to complete the work to be performed hereunder without delay, it being understood that time is of the essence of this contract.

2. Drilling and Sampling Practice:

All drilling will be done in accordance with good and accepted drilling practices using chopping and rotating equipment. The rotating equipment (diamond drilling) will be used so long as and to the extent that the Company considers the core recovery therefrom to be adequate. Chopping equipment will be used upon direction of the Company when the Company does not consider the core recovery from rotating equipment to be adequate. The depth and location of the

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drill holes shall be directed by the Company provided, however, that should Contractor not be able to get any hole drilled down to the desired depth due to caving and friable material and should it deem that such conditions render further drilling therein impracticable, the Contractor will have the right to cease drilling on that particular hole and move to the next hole. Contractor will take and separate core samples from each five feet of drilling. All core samples will be properly marked, carefully preserved in core boxes furnished by the Contractor and delivered to the Company's representative. Contractor will not permit loss or waste of cuttings from diamond drilling or sludge from churn drilling. In the course of drilling, the casing shall be kept as close to the bottom of the hole as reasonably possible. The sampling and casing procedures shall be approved by the Company and no information whatsoever regarding the records or results of the drilling will be given by Contractor, its agents or employees to any party other than the Company.

3. Contractor's Equipment and Supplies:

Contractor agrees to furnish and put into operation as soon as possible, two suitable drill units to be equipped with B, A and E equipment which will include both chopping and rotating equipment, four hundred feet of each size of casing and drill rods per drill, three different types of core barrel assemblies, two small tractors for the moving of equipment from hole to hole, and all necessary pipe and pumping equipment. Contractor agrees to provide drill crews including capable, qualified and experienced drill operators, together with such supervisory personnel as may be necessary to the proper performance of the work under this contract. All equipment furnished by Contractor

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used in the performance of the work hereunder, shall be in first-class condition and Company may, at its option, inspect any of such equipment at any time for the purpose of determining whether it is sufficient or satisfactory for the said purpose. If, in Company's opinion, any equipment is not sufficient or satisfactory for the performance of the work hereunder, Contractor will make it so, or replace it with equipment which is.

4. Contractor's Compensation:

The Company agrees to pay Contractor the sum of Seven Dollars ($7.00) per foot for all drilling performed, which amount shall, except as hereinafter provided, constitute full compensation to Contractor for all work performed, including labor, equipment, materials, supplies, facilities, insurance, overhead and Contractor's profit. In addition to the aforementioned sum of Seven Dollars ($7.00) per foot, the Company shall also compensate Contractor for Contractor's actual cost of the following incurred in connection with the performance of the work hereunder:

(a) Cost of diamond loss in drilling.

(b) Diamond setting charges.

(c) Cost of transportation of men and equipment from Port Arthur and Kirkland Lake to the drill site and return, together with the cost of labor used during the transportation of equipment.

(d) Cost of labor required to move from any drill hole where there is less than 250' of drilling in such hole to the next drill hole and the cost of labor incurred by Contractor in moving more than 2,000' from one drill hole to the next drill hole.

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(e) The Contractor's cost of feeding Contractor's employees, including loss of Contractor's cookery and the wages of the cook and the cookie provided, however, that such cost shall be offset by the sum of $2.00 per day, which will be charged by Contractor to its men.

(f) Contractor's cost of core boxes which will be furnished to the Company as hereinabove in this contract provided.

With respect to the items enumerated above for which Contractor will be compensated by Company the Company reserves the right to examine any books, records, invoices or the like that it may choose for the purpose of substantiating the items claimed by the Contractor.

Should the Company elect to hold Contractor's equipment furnished to the work hereunder idle on the property thru the next winter season and until the next ensuing season in which such equipment may be worked, the Company shall pay to the Contractor one-half of one percent per month of the valuation of such equipment. The valuation of the equipment for the purposes of this paragraph shall be agreed upon by the Contractor and the Company at the time of the start of such idle period. It is understood that the Company shall have no responsibility for equipment during such period of time.

5. Payment to Contractor:

Contractor will render statements in triplicate as soon as possible after the first day of each month for work performed during the preceding calendar month, and payment for such work shall be made by Company within twenty days following the receipt of such statement. Before the final payment, and at any other time requested by Company, Contractor will furnish satisfactory evidence that all bills or claims

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in connection with the work hereunder have been paid. In the event any bills or claims against Contractor in connection with the work hereunder have not been paid, or there appears to be reasonable evidence that a claim or bill will be submitted to Contractor, Company may withhold from the amount due to Contractor hereunder the amount of such bills or claims, and at its discretion, pay the amount thereof directly to creditor or claimant with a proper deduction therefor from the contract price provided for herein. The decision of the Company as to when the work hereunder is complete and the contract fully performed shall be final.

6. Condition of Promises, Approval of Work, etc:

Contractor represents to Company by the execution hereof that it has examined the premises, understands the work to be done hereunder, and agrees that said work shall be performed at the rates specified hereinabove in accordance with the best drilling practices, at the Contractor's risk, and that complete and reliable samples from the drilling will be obtained. All work shall be subject to the approval of the Company, who shall have full power to reject any work which in its opinion does not conform to the provisions of this contract. The decision of the Company shall be final and conclusive, provided that it is consistent and in accordance with the provisions of this contract.

7. Lost Holes:

Contractor will not be paid for any work performed under this contract, nor for any labor, materials, equipment and supplies furnished and rendered useless in connection with footage or holes lost

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through the incompetence, fault or neglect of Contractor, its agents, or employees, or where such work does not conform with good practice. If any hole is lost because of caving and friable material, as hereinabove provided or if any footage or holes are lost for any other reasons beyond the control of Contractor, and the hole is ordered abandoned by the Company, Contractor shall be paid in full at the rates specified hereinabove for work performed, and labor, equipment, materials and supplies furnished.

8. Defaults:

If Contractor shall default in the performance of its obligations hereunder and shall not cure such default within ten days after notice thereof given by Company to Contractor, or if at any time Company shall become convinced that Contractor is not proceeding with such work in a diligent and workmanlike manner, so as to insure its completion within a reasonable time, Company may at its election and without derogation or impairment of any other right or remedy which it may have hereunder, terminate Contractor's right to proceed with the work under this contract. In such event, Company may take over the work and prosecute it to completion by contract or otherwise, and in the completion of such work use, or authorize others to use the machinery, equipment and supplies owned or contracted for by Contractor, as are located upon the premises and as are suitable in the performance of such work, and Contractor shall be liable to Company for, and agrees to promptly pay to Company the amount of any excess cost, loss or damage occasioned thereby. If Contractor shall be

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adjudicated a bankrupt or file a voluntary petition in bankruptcy or make a general assignment for the benefit of creditors, it shall be deemed to have defaulted hereunder, but this provision shall not exclude other defaults.

9. Indemnification, Insurance, etc:

In addition to all of the requirements of this contract, Contractor agrees that it will carry out the work hereunder in good and workmanlike fashion, diligently, in good faith and without waste, interruption or delay except for causes beyond its control. With respect to all claims or damages on account of loss of or damage to property, or injury to, or death of, any person or persons arising from or growing out of work or operations under this contract, Contractor is and shall be deemed to be an independent contractor, and solely liable therefor except as hereinafter provided, and Contractor agrees that it will indemnify and save the Company harmless from and against any and all liability for such loss, damage, injury or death, including any expenses, costs and attorneys' fees incurred in connection therewith, except such liability as may arise out of the sole negligence of the Company. Contractor agrees that it will comply with all of the laws and regulations of the Dominion of Canada and any province or local government in the Dominion of Canada, including social security laws, laws relating to labor relations, revenue laws with respect to the withholding of wages, unemployment compensation and workmen's compensation laws, and will furnish evidence to the Company of compliance with all specifically mentioned laws and such of the other

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applicable laws as the Company may direct; that it will furnish evidence to the Company that it is fully insured in amount and manner satisfactory to the Company against liability to employees under the workmen's compensation laws; that it will furnish evidence satisfactory to the Company that it and any end all sub-contractors carry liability insurance and property damage insurance (including insurance on all boilers, pressure vessels and automotive vehicles) in amounts approved by the Company and in responsible insurance companies satisfactory to the Company, and that it will indemnify and save the Company harmless from and against all claims and liens for labor, materials, supplies or equipment used in the performance of the work under this contract and will furnish evidence satisfactory to the Company of payment of all such claims. Contractor shall not assign this contract or sublet any of the work contemplated hereunder except as herein otherwise specifically provided.

10. Subject to the restrictions on the assignment contained herein, this contract shall extend to and be obligatory upon the successors and assigns of the parties hereto.

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the day and year first above written.

In the presence of:

_____

_____

_____

_____

PICKANDS MATHER & CO., AGENTS

By_____
Associate Managing Partner

BOILES BROS. DRILLING (EASTERN) LTD.

By_____