REPORT OF EXPLORATION

JULIAN ORE DEPOSIT

PICKANDS MATHER & CO.

1957 - 1958

Pickands Mather & Co.
2000 Union Commerce Building
Cleveland 14, Ohio

January 1958

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1957

The investigation of the Julian ore deposit was undertaken by Pickands Mather & Co., as agent for Canadian Javelin, Limited, effective July 1, 1957. During the balance of that year, the preliminary survey for a railroad connection into the property was completed, and a diamond drilling program was instituted, which also required the establishment of a camp in the area. In addition, the area was flown in order to obtain aerial photographs for mapping purposes. These items are discussed in more detail below.

PRELIMINARY SURVEY FOR ACCESS RAILROAD

Prior to July 1, 1957, Canadian Javelin personnel had been in the process of conducting a preliminary survey to locate a rail route from Mile 25 on the proposed Wabush Lake railroad to the Julian deposit. Thereafter, only sufficient work was done to establish a traverse line to the deposit, without any attempt to secure other data. The results of the work done after July 1st were submitted to Canadian Javelin by letter dated September 30, 1957.

DIAMOND DRILLING

A request to submit plans for a preliminary drilling program was received from Canadian Javelin on July 6th, and their formal authorization to proceed was given on August 15th. It was decided that the drilling contractor already selected for the drilling in the Wabush area would also be employed for this program; and Boyles Brothers Drilling (Eastern) Limited was notified on July 18, 1957, to furnish two drills for the Julian program. It was not until late August, however, that the drills could be shipped to Ross Bay.

In conjunction with representatives of Canadian Javelin, a drilling program was outlined as indicated on the map transmitted with this report. This program contemplated eleven holes for an approximate total of 5,000 feet of drilling.

A surveying crew was sent to the Julian deposit area on August 8th with instructions to lay out a new coordinate system to correspond with the general trend of the deposit. This crew also located and marked the locations where holes were to be drilled. A work crew followed shortly to construct a dock and camp site. The work crew remained in the area to assist in the unloading of drilling equipment and supplies which had been trucked from the siding at Mile 227 on the Quebec, North Shore and Labrador Railway to Mile 15 on the Wabush Lake railroad grade, and barged from that point to the Julian camp site. Fuel was brought to the camp site and stored in one 10,000-gallon tank and one 2,000-gallon tank, both of which had been barged in and erected by the work crew.

The first drill started operation on September 11, 1957, and the second drill was placed in operation about a week later. As drilling progressed, it was found that the same difficulties were encountered in drilling the formation that were being experienced in the Wabush drilling. Core recovery in some instances was inadequate and the loss of water from drill holes made recovery of the sludge difficult. Because of this, it was the recommendation of both the Canadian Javelin and the Pickands Mather & Co. engineers that every effort be made to keep the casing as close to the bottom of the hole as possible in order to minimize the loss of drill water and the consequent loss of sludge. While drilling, the casing was frequently obstructed in friable or broken material, resulting in a loss of drilling time while efforts were made to clear the casing. In many instances this required removal of the casing in order to ream the hole, which in turn required rereaming and even cementing of the holes before the casing could be returned to the bottom of the drill hole. Cementing of the holes in areas where water was lost was also attempted. Such action afforded only temporary relief, however, until another zone where the drill water was lost would be encountered.

Drilling continued through the first of December, at which time the program was halted by the drilling contractor, with the consent of Canadian Javelin, due to freezing water conditions. Three drill holes were completed and a fourth was at a depth of 285 feet when the decision to stop was reached. A total of 1,904 feet of drilling was completed.

At a meeting held with Canadian Javelin personnel on December 30th, a tentative decision was made to suspend any further drilling pending reconsideration at a later date.

The 1957 drilling program was under the direct supervision of Pickands Mather & Co. geologists whose responsibility it was to supervise drilling procedure and keep records of the drilling. Also present during the greater part of the program was a geologist representing Canadian Javelin, Limited who, although he did not assume responsibility for direction of the program, was available for discussion on the procedures to be followed.

The geologist supervising the program prepared geological logs of the drill cores and gave instructions to the sample crew on the intervals which were to be prepared as samples to be shipped for testing. The samples were then transported to the Wabush base camp where the core was measured, weighed and split. One half of the split core was then separated into designated sample intervals and crushed to 1/4 inch prior to shipment. A detailed and regular routine was followed at the sample shack to insure against mixing of samples. Sludge samples were taken for each five-foot interval where possible and then transported to the Wabush camp where they were dried and weighed prior to shipment. Where necessary, each sample was quartered with riffle splitters to make up a sample weighing between five and ten pounds. Samples were then transported to the Ross Bay camp where they were shipped by air freight to the Pickands Mather & Co. Research Laboratory at Hibbing, Minnesota.

LABORATORY TESTING

At the Hibbing Laboratory the core samples, which represented up to 20 feet of drilling, were crushed to 1/4 inch. Head samples were cut out of both the core and the sludge and sent to Lerch Brothers to be assayed for iron, silica, manganese and phosphorus.

Following receipt of the assay results, the Laboratory mineralogist examined the samples under the microscope and made up composites based on the mineralogical description and the chemical analysis. These composites represented up to 50 feet of drill hole length.

Approximately 1,500 grams of the composited core or sludge was cut from the material available. This sample was crushed through 35 mesh and passed over a two-stage, drum-type, wet magnetic separator. The magnetics, if present in sufficient quantity, were stage ground in a wet laboratory ball mill to 100 mesh and reconcentrated on the magnetic separator.

Tailings from both the first and second stage of magnetic separation were mixed and passed over a wet laboratory shaking table used for gravity concentration. The concentrates from the first stage of tabling were cleaned in a second pass representing the two stages of Humphreys spirals that would be involved in a commercial plant.

Samples of all products were submitted to Lerch Brothers for assaying. Recovery weights and assay results were reported in flow sheet form.

In some instances, particularly in the case of sludges, the samples received at the Laboratory would contain appreciable quantities

of grease picked up in drilling. At other times the recovery of core or sludge would be so small that the normal procedure could not be followed. In many of these cases, heavy liquid tests were conducted on a 35 gram sample, and Davis magnetic tube tests were substituted for wet magnetic drum tests. When these substitute test procedures were used, it was so indicated on the report. A much greater degree of interpretation must be applied to these substitute tests or any results where the presence of grease is noted. They are intended only to give a general indication of the make-up of the samples so run.

AERIAL PHOTOGRAPHY

Because it was necessary to fly the Wabush Lake area in order to prepare topographic maps, the suggestion was made to Canadian Javelin that the Julian area also be flown in order to benefit by the fixed cost of ferrying in men and equipment for this purpose. Following conversations with Canadian Javelin personnel, it was decided to complete the aerial photography of the Julienne Peninsula, although the maps will not be prepared until such time as they are required.

EXHIBITS

Attached to this report are the geological logs for the diamond drill holes and summaries of laboratory test results showing the analysis of the crude material and the analysis of the concentrate produced therefrom.

Transmitted separately but to be included as a part of this report are the following:

(1) Maps showing location of proposed diamond drill holes and holes actually drilled.

(2) Drill sheets showing the record of drilling, inches and weight of core recovered, weight of sludge and crude analyses of both the core and sludge.

(3) Cross sections at 8,500 east, 10,000 east and 11,500 east.

PICKANDS MATHER & CO.

FINAL CLASSIFICATION
OF
DRILL HOLE #J-1

Started: September 11, 1957

Finished: October 26, 1957

0'- 3'	Surface
3'- 73'	Non-magnetic gray mostly non-friable, slightly banded medium grained quartzose specular hematite iron formation. Goethite and limonite stains are present along fracture planes.
	△ Angle 30° @ 21' 42° @ 45' 35° @ 73'
73'- 79'	No core recovery.
79'- 94'	Non-magnetic, brown, schistose, quartzose specular hematite iron formation. Possibly in shear zone as evidenced by numerous fracture fillings of limonite.
94'- 93'	No core recovery.
93'-142'	Non-magnetic, mostly non-banded, black to light gray, non-friable, lean specular hematite iron formation. 96'-117' contains considerably more specularite than other footages. Some manganese is present. Some leaching is evident and limonite filled fractures are common. △ angle 40° @ 115'.
142'-152'	No core recovery.
152'-179'	Non-magnetic, slightly banded, fine to medium grained, lean quartzose specularite iron formation. Limonite and goethite present along fracture planes.

Drill Hole #J-1 (contd)

179'-213	Non-magnetic, rich, massive specular lematite iron formation. Moderately friable, coarse to medium grained with some banding. △ angle 40°.
213'-596'	Non-magnetic, nor-friable, slightly oxidized, slightly banded, lean quartz specular hematite iron formation. △ angle 35° to 45°. Some slightly richer zones from 496'-497', 516'-546' and 566'-596'. This zone has been leached and oxidized more than those above.

End of Hole.

FINAL CLASSIFICATION OF DRILL HOLE #J-2

Date Started: September 17, 1957

Date Finished: November 4, 1957

0'- 18'	Surface
18'- 20'	No core
20'- 61'	Non-magnetic, reddish brown, highly fractured and leached, specular and crystalline hematite iron formation. ∠ angle 60°.
61'- 68'	Ferruginous quartzite.
68'-167'	Non-magnetic, medium grained, specular and crystalline hematite iron formation. Considerable leaching and oxidation in upper portion. Some limontie and goethite fracture planes.
167'-214'	Non-magnetic, coarse grained, rich, specular hematite iron formation.
214'-379'	Non-magnetic, gray to reddish brown, moderately friable specular iron formation. Some crystalline hematite is present in narrow zones. Hematite and goethite occur along fracture planes. Some leaching and oxidation is evident from 214'215'. 343'-349'. Very little banding; ∠ angle 50° at 240' and 40° -50° at 302' to 343'.
379'-477'	Non-magnetic, medium grained, non-friable, banded specular and crystalline hematite iron formation. This zone is characterized by the banding and higher iron content. Some leaching and oxidation has taken place.
477'-566'	Non-magnetic, medium to coarse grained, non-friable quartz specular hematite iron formation with alternating zones of only slightly developed banding and wide irregular banding, leached with some oxidation. ∠ angle 60° at 500' and 35° - 40° at 550'

Drill Hole J-2 (contd)

566'-705' Non-magnetic, non-friable, non-banded to slightly banded, quartz specular hematite iron formation. This zone has been leached and oxidized. Some core exhibits a schistose alignment of the minerals revealing some folding. $\angle$ angle 45^{o}.

End of Hole

FINAL CLASSIFICATION
OF
DRILL HOLE#J-3

Started: November 1, 1957

Finished: November 21, 1957

0'- 42'	Surface
42'- 60'	Non-magnetic, thinly banded, slightly friable, schistose quartz specular hematite iron formation, with some amphibole present.
60'-108'	Non-magnetic, fine to medium grained, non-friable, unbanded, quartz specular hematite iron formation with occasional rich zones.
108'-301'	Non-magnetic, slightly banded, light gray, leach and oxidized specular hematite iron formation. Some iron silicates are present. angle 75°
301'-305'	Ferruginous quartzite.
305'-315'	No core recovery
315'-318'	Limonite clay with some talc zones.

End of Hole

FINAL CLASSIFICATION
OF
DRILL HOLE #J-4

Start : November 10, 1957

Finished: November 29, 1957

0'- 16'	Surface
16'- 69'	Fine to medium grained, slightly leached, slightly friable, weakly magnetic quartz specular hematite iron formation.
69'- 99'	Highly leached, unbanded, quartz, specular hematite, limonite, goethite iron formation.
99'-256'	Non-magnetic, slightly friable, leached quartz specular hematite iron formation.
256'-281'	Non-magnetic, slightly banded, non-friable, lean quartz specular hematite iron formation.
281'-285'	Ferruginous quartzite.

End of Hole

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JULIAN IRON CORPORATION

LABORATORY RESULTS

D.D.H. NO. J-1

CORE

From	To	Crude Iron	Crude Silica	Crude Phos.	Crude Mang.	Magnetic Conc. % Wt.	Magnetic Conc. Iron	Magnetic Conc. Silica	Magnetic Conc. Phos.	Magnetic Conc. Mang.	Table Conc. % Wt.	Table Conc. Iron	Table Conc. Silica	Table Conc. Phos.	Table Conc. Mang.	Remarks
3	15	38.19	41.75	.025	.37	2.70	56.27	17.36	.014	.27	43.80	64.78	6.25	.024	.27	
15	25	35.45	41.35	.020	.79	4.67	52.58	21.98	.011	.35	39,96	67.19	3.14	.021	.34	
25	45	36.80	45.35	.010	.10	3.40	50.17	27.60	.008	.15	45.07	65.91	5.05	.013	.06	
45	60	30.13	56.02	.006	.12	1.74	63.22	11.24	.004	.10	36.76	63.23	8.25	.009	.17	
60	80	31.52	54.08	.010	.15	Trace	(Through Roughers)				38.71	66.78	4.05	.008	.10	
80	100	40.23	41.06	.019	.14	Trace	"	"			49.10	68.64	2.02	.012	.12	
100	120	39.41	31.00	.03	7.31	1.28	69.47	2.31	.015	.51	49.98	58.84	3.68	.017	7.19	
120	136	31.75	53.30	.037	.25	Trace	(Through Roughers)				37.23	66.94	2.86	.037	.43	
136	157	27.82	58.65	.004	.20	0.76	"	"			15.73	66.29	4.88	.006	.10	
157	179	30.95	54.96	.019	.08	0.67	"	"			39.36	66.40	5.76	.031	.10	
179	200	46.25	27.26	.067	2.20	0.36	"	"			49.37	64.69	5.80	.039	1.26	
200	213	41.07	23.01	.021	11.20	0.25	"	"			63.09	57.14	5.67	.011	7.23	
213	248	39.16	42.94	.021	.20	0.21	"	"			49.55	67.10	3.33	.017	.23	
248	280	35.40	48.26	.025	.14	0.18	"	"			47.03	59.91	13.19	.019	.27	
280	290	No Sample														
290	311	36.36	45.80	.006	.15	0.09	"	"			42.06	66.89	3.84	.005	.12	
311	329	31.00	54.45	.007	.08	0.17	"	"			36.26	65.90	5.50	.008	.21	
329	377	30.16	56.73	.006	.12	1.97	61.68	13.63	.005	.10	38.75	60.39	12.23	.008	.15	
377	418	31.05	51.88	.008	.10	0.56	(Through Roughers)				32.97	60.63	11.09	.009	.12	
418	479	31.81	51.27	.008	.17	0.42	"	"			37.83	63.47	9.00	.011	.12	
479	497	43.08	37.87	.024	.14	0.43	"	"			56.35	60.92	12.51	.025	.11	
497	516	30.21	56.00	.022	.26	0.44	"	"			37.43	61.03	12.15	.030	.06	
516	546	40.03	39.66	.089	.44	1.12	"	"			51.50	60.38	11.70	.034	.74	
546	596	34.75	49.00	.014	.15	0.40	"	"			45.68	62.17	10.40	.025	.07	
SLUDGE																
15	30	33.94	47.57	.021	1.09	0.94	"	"			42.00	64.44	5.00	.008	.85	
30	35	37.51	44.70	.024	.64	3.12	"	"			45.60	61.88	9.50	.013	.54	Sample very small
45	75	20.55	69.68	.011	.11	1.05	62.89	12.14	.008	.09	14.04	61.09	11.17	.018	.24	
75	100	32.54	46.69	.009	.16	0.86	(Through Roughers)				8.82	65.64	4.97	.006	.04	Grease and Metallic Iron Contamination
100	115	39.65	24.95	.018	10.30	1.39	68.80	2.69	.014	.94	28.41	60.61	3.45	.015	6.21	Grease Contamination
110	140	38.37	39.48	.020	3.05	2.21	54.26	20.24	.010	1.29	47.51	56.16	14.22	.015	3.17	" "
140	170	34.68	43.10	.012	.14	1.45	59.07	11.82	.015	1.60	20.00	63.43	5.96	.015	.18	" "
165	180	30.30	46.90	.013	.17	2.93	59.39	14.74	.018	.12	13.56	58.91	14.65	.009	.17	Sample quite small
205	210	38.95	39.77	.039	1.78	5.20	64.19	10.10	(Tube Test)		55.28	56.51	13.08	.044	1.97	(Sink-Float Test) Sample Small
220	225	33.34	47.27	.040	2.88	6.66	58.13	17.36	.018	1.31	18.84	64.96	4.01	.007	1.92	
240	245	42.48	39.00	.046	.20	5.33	60.95	14.33	(Tube Test)		53.15	54.32	20.25	.048	.27	(Sink-Float Test) Small Sample
245	250)	31.74	52.81	.015	.20	1.61	60.36	14.86	.016	.24	8.00	52.42	22.76	.011	.43	Grease Contamination - Small Sample
265	270)															
270	275	35.59	48.07	.011	.21	2.51	60.18	15.19	.009	.18	18.92	64.32	6.73	.009	.16	Grease Contamination
280	290	35.75	47.76	.008	.17	1.27	64.98	8.62	.008	.17	41.41	68.02	2.34	.007	.14	
290	295)	36.95	46.80	.014	.15	1.33	56.33	19.94	.013	.14	27.94	63.91	7.97	.006	.15	
305	310)															

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JULIAN IRON CORPORATION

LABORATORY RESULTS

D.D.H. NO. J-2

CORE

From	To	Crude Iron.	Crude Silica	Crude Phos.	Crude Mang.	Magnetic Conc. % Wt.	Magnetic Conc. Iron	Magnetic Conc. Silica	Magnetic Conc. Phos.	Magnetic Conc. Mang.	Table Conc. % Wt.	Table Conc. Iron	Table Conc. Silica	Table Conc. Phos.	Table Conc. Mang.	Remarks
20	40	42.36	37.84	.006	.25	0.25	(Through Roughers)				57.94	65.99	5.20	.008	.08	
40	61	44.21	35.25	.006	.15	0.18	68.29	3.30			59.13	65.26	6.05	.008	.15	
61	69	14.28	78.74	.006	.10	0.94	)Through Roughers)				20.28	58.95	12.77	.021	.14	
69	84	42.82	38.78	.017	.20	0.43	65.46	8.33			62.85	62.42	9.27	.024	.27	
84	94	22.77	66.94	.017	.10	0.14	67.81	5.12			30.83	61.93	9.25	.034	.18	
94	102	11.94	74.04	.011	.12	Trace	(Through Roughers)				17.70	50.88	21.67	.055	.25	
102	118	14.61	68.00	.011	.06	0.88	"	"			12.69	64.23	6.70	.028	.12	
118	180	34.47	48.21	.008	.09	0.27	"	"			42.71	65.42	5.79	.008	.08	
180	242	39.40	43.40	.007	.09	0.18	"	"			49.31	65.43	5.98	.007	.08	
242	291	32.45	47.97	.012	.13	0.26	"	"			37.45	65.33	5.60	.013	.16	
291	300	49.18	26.58	.099	.20	0.20	"	"			50.40	67.27	2.70	.045	.14	
300	343	36.20	47.89	.013	.11	0.30	"	"			49.80	62.11	10.21	.011	.17	
343	379	34.60	50.01	.014	.10	0.52	"	"			46.22	63.57	8.68	.010	.14	
379	409	42.40	38.68	.020	.12	1.04	"	"			52.96	65.33	6.10	.019	.15	
409	455	36.50	47.16	.010	.15	0.30	"	"			45.55	66.58	3.75	.008	.15	
455	474	31.64	53.51	.010	.32	0.74	"	"			39.76	65.62	5.40	.005	.16	
474	477	30.91	55.33	.011	.12	Sample too small for testing										
477	489	32.12	53.49	.007	.10	1.19	(Through Roughers)				42.93	62.40	8.06	.005	.14	
489	505	37.53	45.54	.011	.13	0.20	"	"			48.78	64.68	8.45	.008	.12	
505	510	17.20	74.68	.008	.13	0.36	"	"			20.30	59.24	14.55	.014	.08	
510	566	45.33	35.30	.008	.15	0.81	"	"			62.85	66.06	5.30	.008	.06	
566	625	35.63	48.51	.007	.17	0.43	"	"			46.84	64.28	7.55	.007	.05	
625	705	39.06	44.45	.009	.15	0.42	"	"			53.57	64.11	7.87	.009	.06	
SLUDGE																
20	40	39.84	40.72	.007	.15	0.21	67.76	5.30	(Tube Test)		51.24	66.73	3.91	.007	.14	
35	120	36.37	47.88	.010	.15	0.17	(Through Roughers)				46.12	59.14	13.52	.010	.15	
125	135	40.40	42.02	.009	.15	2.69	65.50	8.66	.019	.40	21.72	67.86	2.67	.008	.12	Grease Contamination
130	150	37.33	45.66	.009	.21	2.23	58.51	16.37	.008	.20	19.25	65.85	5.20	.006	.18	" "
155	160	18.60	71.19	.009	.15						14.34	37.45	45.18	.008	.20	Sink Float Test - Sample small and Grease Contamination
155	190	42.36	38.22	.010	.15	8.44	58.87	17.14	.008	.17	23.56	57.87	16.10	.009	.16	Grease Contamination
190	200	41.28	40.00	.006	.15	4.15	63.82	11.18	.005	.18	25.71	63.19	8.75	.007	.15	" "
190	400	38.22	42.92	.011	.20	0.74	56.42	18.18	.016	.22	16.11	61.25	11.32	.006	.14	" "

SLUDGE (Contd)

From	To	Crude Iron	Crude Silica	Crude Phos.	Crude Mang.	Magnetic Conc. % Wt.	Magnetic Conc. Iron	Magnetic Conc. Silica	Magnetic Conc. Phos.	Magnetic Conc. Mang.	Table Conc. % Wt.	Table Conc. Iron	Table Conc. Silica	Table Conc. Phos.	Table Conc. Mang.	Remarks
310 325	315) 330)	46.33	31.02	.015	.27	4.13	70.54	1.69	.014	.21	39.36	67.22	3.01	.007	.18	
345 355	350(360(	34.30	49.31	.010	.17	3.47	63.43	10.12	.008	.11	18.14	54.81	29.74	.010	.15	

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JULIAN IRON CORPORATION

LABORATORY RESULTS

D.D.H. NO. J-3

CORE

From	To	Crude Iron	Crude Silica	Crude Phos.	Crude Mang.	Magnetic Conc. % Wt.	Magnetic Conc. Iron	Magnetic Conc. Silica	Magnetic Conc. Phos.	Magnetic Conc. Mang.	Table Conc. % Wt.	Table Conc. Iron	Table Conc. Silica	Table Conc. Phos.	Table Conc. Mang.	Remarks
47	60	38.74	44.32	.008	.13	0.39	(Through Roughers)				52.34	65.63	5.53	.009	.14	
60	108	31.67	53.95	.008	.12	0.26	"	"			42.57	66.11	5.13	.006	.08	
108	190	35.43	49.05	.007	.10	0.51	"	"			48.95	65.30	6.16	.009	.07	
190	301	32.79	52.68	.012	.08	0.96	"	"			40.08	65.31	6.34	.010	.08	
301	318	4.71	82.51	.038	.07											
SLUDGE																
30	40	60.38	13.44	.007	.06	0.94	(Through Roughers)				85.97	68.70	1.57	.007	.10	
45	60	36.36	46.41	.009	.12	2.18	51.62	25.72	.013	.21	38.22	65.39	5.79	.012	.24	Grease Contamination
60	100	37.98	45.09	.008	.08	0.89	(Through Roughers)				36.90	67.08	3.76	.010	.12	" "
110	145)															
155	160)	34.90	49.81	.010	.14	2.14	67.35				34.97	65.31	6.09	.014	.16	" "
170	170'3")						(Tube Test on Crude)									
190	208(															
210	225(															
230	245(	36.85	47.01	.011	.16	4.00	72.16				32.72	66.61	4.54	0.12	.12	" "
247	264(						(Tube Test on Crude)									
280	287(															
295	300(															
300	310	19.42	65.54	.025	.06	5.79	66.03	8.71	.027	.09	2.67	57.71	14.16	.047	.14	

JULIAN IRON CORPORATION

LABORATORY RESULTS

D.D.H. NO. J-4

CORE

From	To	Crude Iron	Crude Silica	Crude Phos.	Crude Mang.	Magnetic Conc. % Wt.	Magnetic Conc. Iron	Magnetic Conc. Silica	Magnetic Conc. Phos.	Magnetic Conc. Mang.	Table Conc. % Wt.	Table Conc. Iron	Table Conc. Silica	Table Conc. Phos.	Table Conc. Mang.	Remarks
16	69	30.19	56.66	.010	.06	0.45	(Through Roughers)				34.70	65.97	5.37	.006	.06	
69	99	36.85	46.77	.012	.05	1.38	"	"			45.48	57.03	3.62	.005	.12	
99	190	35.71	48.58	.011	.06	0.86	68.37	2.48	.009	.07	46.46	66.27	5.02	.007	.08	
190	256	29.22	57.71	.016	.09	1.22	(Through Roughers)				25.25	65.16	5.97	.011	.08	
256	281	27.92	59.64	.020	.10	0.53	"	"			17.16	67.27	2.95	.011	.10	
281	285	5.52	88.65	.030	.05											

SLUDGE

20	70	38.63	44.65	.007	.05	1.51	(Through Roughers)				36.69	67.24	3.62	.012	.08	Grease Contaminated
70	100	44.80	35.20	.009	.11	2.56	"	"			47.50	66.49	4.45	.011	.13	" "
100	110)															
115	145)	35.87	47.78	.010	.10	3.33	70.83				34.96	66.91	3.76	.012	.12	" "
150	175)					(Tube Test on Crude)										
180	190)															
190	210(															
220	225(	30.66	50.39	.011	.06	1.80	72.19				19.43	68.63	1.14	.012	.10	" "
235	240(					(Tube Test on Crude)										
245	255(															

Pickands Mather & Co.
2000 Union Commerce Building
Cleveland 14, Ohio

February 1959

REPORT OF EXPLORATION

JULIAN ORE DEPOSIT

1958

Investigation of the Julian ore deposit by Pickands Mather & Co. as agent for Canadian Javelin Limited continued in 1958 on a limited basis. The program was outlined in a meeting with Canadian Javelin geologists held on May 23, 1958, and authorized by letter from Canadian Javelin on May 26, 1958. Special authorization to proceed with the final hole was given on August 18, 1958.

Diamond drilling during the year amounted to 1,573 feet, bringing the total footage for the preliminary drilling program to 3,477 feet. In addition, topographic maps were prepared by Canadian Aero Service based on the aerial photographs taken during 1957. These items are discussed in more detail below.

While the investigations undertaken thus far have served to accomplish most of the field work necessary to permit an evaluation of the Julian property, metallurgical testing and studies of the drilling and mapping as required to complete a report on the tonnage, grade and economics of the property have not been included in the scope of the work to date.

DIAMOND DRILLING

The drilling program for 1958 included completion of one hole

(J-4) started in 1957 and five new holes (J-5 through J-9) as located on the map on page 3. The target depth of the holes was established at elevation 1,400', based on an assumed elevation of 1,724' for Wabush Lake, with such changes as might be indicated by drilling conditions. Emphasis was placed on core recovery.

Drilling was performed by Boyles Bros. Drilling (Eastern) under a new contract. Compensation was based on actual costs plus $1,000 per month per drill unit to cover management, insurance, depreciation, drill rental and profit.

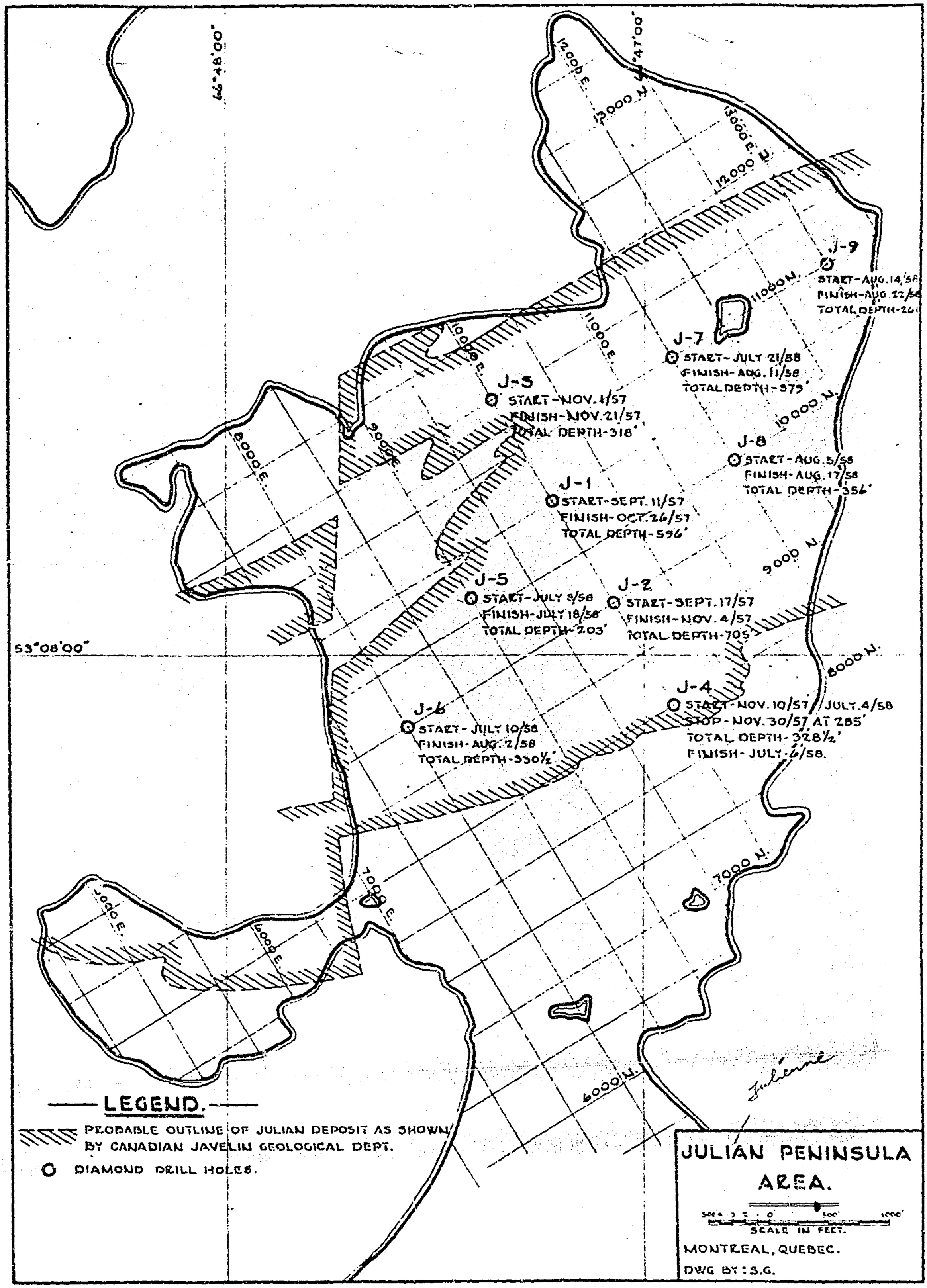
Contractor and Pickands Mather & Co. personnel arrived at the site on June 27, 1958. Several days were required to reactivate the camp and equipment. Drilling was started on July 4th under supervision of a Pickands Mather & Co. geologist. The program was terminated on August 25th, after completing six holes, for a total of 1,573 feet of drilling.

The cores were split and half sent to the Lerch Bros. Laboratory at Seven Islands for analysis. There the material was crushed to ¼", and determinations were made for iron and manganese content in the crude ore. The scope of the 1958 program did not include any concentration tests on the samples recovered.

Following is a brief resume of each drill hole. Detailed drill hole classifications and crude ore analyses will be found at the end of this report.

Drill Hole J-4. This hole, drilled to 285 feet in the 1957 program, was extended to 328½ feet. The footwall quartzite was encountered at 302 feet. The material above the quartzite from 285' to 302' was lean iron formation with an average analysis of 26.74% Fe and .20% Mn. The iron formation generally was non-magnetic, badly broken, lean and oxidized, with numerous quartz bands that exhibited evidence of shearing.

Drill Hole J-5. The location at 10160N/9000E was determined



after conducting a magnetometer survey along Section 9000E. The purpose of the magnetometer survey was to help determine the north limit of the iron formation along this section so that the hole could be spotted 200 feet south of the probable footwall contact. The hole was drilled at an angle of 50° below the horizontal and on a north bearing on Section 9000E. The angle of 50° was chosen because it formed a complementary angle with the 40° southerly dipping outcrops located along this section. The further purpose of this hole was three-fold in that it was hoped that footwall material could be established for geological structure control, confirm the north limit of the iron formation, and verify the lower magnetic values on northwestern positions of the property as area not underlain by iron formation. The required information was obtained by drilling to a depth of 203 feet. The generalized classification of the hole is as follows:

Footage	Material
0 - 12	Overburden
12 - 154	Iron Formation
154 - 199	Quartz Mica Schist
199 - 203	Quartzite

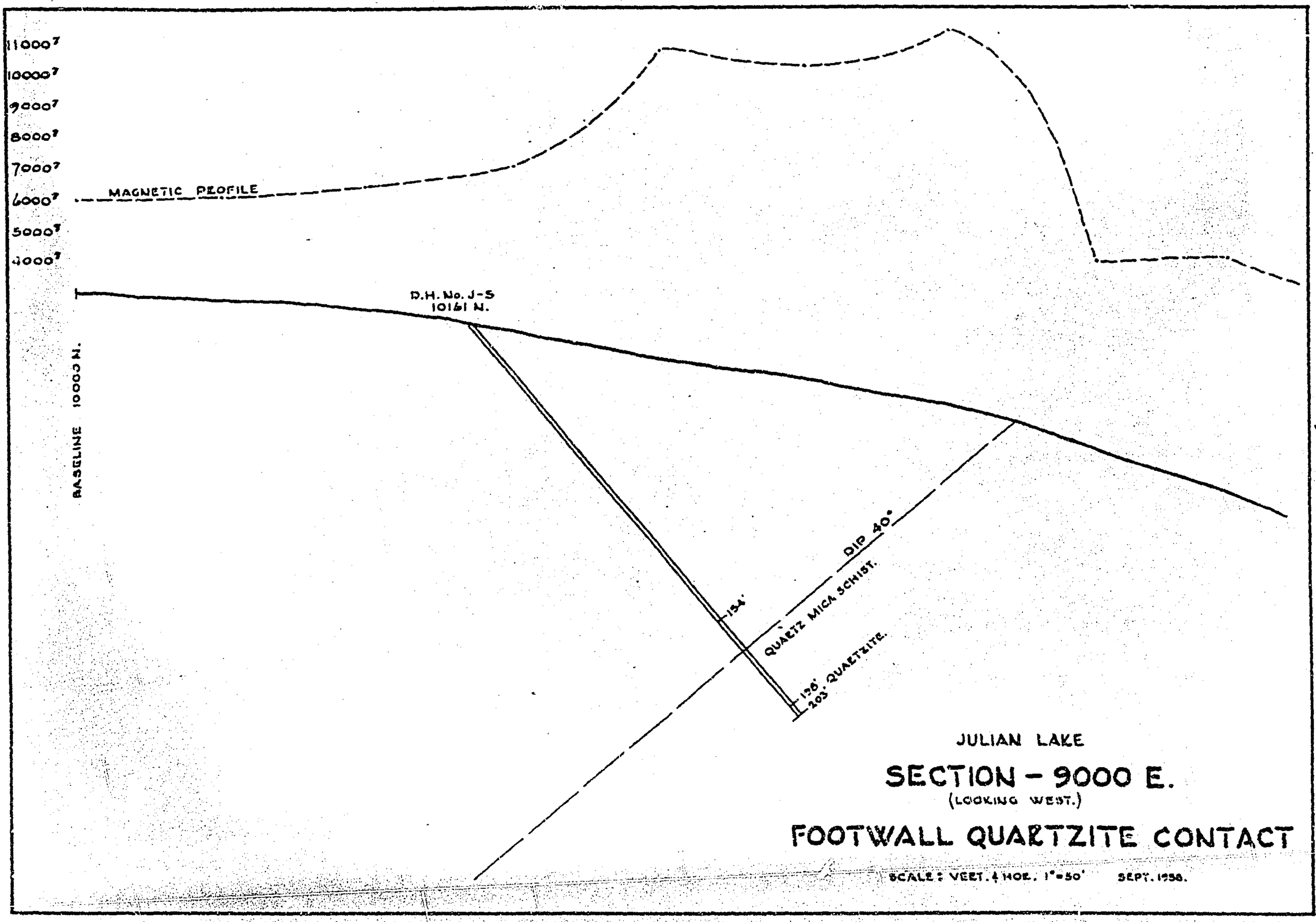
Average analysis of the iron formation was 39.34% Fe and .37% Mn. The material was non-magnetic, medium to fine grained, broken and oxidized mixed quartz specular hematite with considerable amounts of earthy hematite and iron silicate. The magnetic profile is plotted on the attached cross-section sheet of Drill Hole J-5 (page 5). The results suggest that the sharp drop in gamma values may support the belief that the low magnetics on the northwestern portions of the property represent material not considered to be iron formation.

Drill Hole J-6. This hole was located at 9500N/8000E and was drilled vertically to a depth of 330½ feet. This depth was 82 feet short of the hoped-for 1,400-foot elevation, but difficult drilling conditions and the inability to recover reliable samples indicated that the hole be stopped. Material encountered in this hole consisted of the following:

Footage	Material
0 - 10	Overburden
10 - 330½	Iron Formation

The iron formation analyzed 35.58% Fe and .16% Mn. It was generally medium to coarse grained, very friable, rich specular quartz hematite with scattered zones of oxidation to earthy type hematite. Core recovery was less than that desired due to the friable nature of the material and the scattered oxidized zones.

Drill Hole J-7. Located at 11000N/11500E, this and the next two



holes were positioned so as to form a grid pattern similar to previous drilling and give information that would be representative of the extent and grade of the area on the eastern portion of the property. The hole was drilled vertically to a depth of 379 feet. Material encountered in the drill hole was as follows:

Footage	Material
0 - 12	Surface
12 - 379	Iron Formation

The average crude analysis was 35.58% Fe, with .16% Mn. The iron formation was chiefly medium and fine grained, moderately friable, quartz specular hematite with scattered zones of oxidation and leaching. In physical appearance, the iron formation encountered in this hole was similar to that encountered in the central and western portions of the property.

Drill Hole J-8. This hole was located at 11500E/10000N and was drilled vertically to a depth of 356 feet. The material encountered was as follows:

Footage	Material
0 - 26	Overburden
26 - 356	Iron Formation

The average crude analysis was 30.65% Fe and .12% Mn. The iron formation in this hole appeared to be somewhat leaner than that observed in the previous holes. It was harder and more consolidated with few friable zones. The bulk of material was quartzose specular hematite, with a considerable area having remnants of iron silicates that had not been leached out. In addition, numerous narrow zones showed considerable oxidation.

Drill Hole J-9. The final hole, located at 11000N/13000E, was drilled vertically to a depth of 261 feet. Although this depth was 79 feet short of the desired elevation, the inability to case the hole satisfactorily precluded the recovery of reliable samples, and the hole was stopped in iron formation. The summary classification of this hole is as follows:

Footage	Material
0 - 136	Overburden
136 - 261	Iron Formation

The average crude iron analysis was 36.67% Fe and .10% Mn. The iron formation was medium to fine grained, badly broken and oxidized, mixed quartz hematite and earthy type hematite. Core recovery was poor and the recovered material so ground up that a good core description was impossible.

The material shipped to Lerch Bros. was returned for storage at the Wabush Iron Co. Office in Seven Islands. Other samples are stored at the property.

Cross-sections have been prepared to show all of the drilling completed in both 1957 and 1958 and are included with this report.

TOPOGRAPHIC MAPS

Topographic maps of the Julian deposit area were prepared by Canadian Aero Service, using the aerial photographs taken in 1957. While no ground control survey had been run in the area, reasonably accurate maps could be prepared since the area is relatively small and the water level elevations are known for the lakes that almost completely surround the mapped area.

A series of 17 map sheets covering approximately 6,000 acres were prepared, using a scale of 1" = 200' and with topographic contours at 5-foot intervals. Brown line sepia prints of all sheets have been turned over to the Canadian Javelin Office in Montreal. The linen tracings of all sheets are on file at the Wabush Iron Co. Limited office in Montreal.

DRILL HOLE CLASSIFICATIONS

and

METALLURGICAL RESULTS

DRILL HOLE CLASSIFICATION

Hole No. J-4
Elevation 1850
Coordinates 8500N/10000E
Angle Vertical

Footages From	To	
285	302	Non magnetic, badly broken and partially oxidized, lean quartz hematite iron formation with numerous quartz bands. Core exhibits evidence of shear. Vuggy zones present at 292', 294', 296' and 297'. Delta angle averages 60°.
302	328½	Quartzite - iron stained, coarse grained. Badly broken in places.

End of Hole.

METALLURGICAL RESULTS

Drill Hole J-4

Footage	Crude	
	Fe.	Mn.
285 - 302½	26.74	.20

DRILL HOLE CLASSIFICATION

Hole No.	J-5
Elevation	1937
Coordinates	10160N/9000E
Angle	50°
Bearing	North

Footages From	To	
0	10	Surface
10	23½	Non magnetic, medium to coarse grained, rich quartz specular hematite iron formation.
23½	47	Same as above except very friable. Delta angle = 70°.
47	70½	Non magnetic, medium grained, friable quartz specular hematite iron formation. Delta = 70°.
70½	90	Non magnetic, medium to coarse grained, badly broken, quartz specular hematite iron formation. Numerous friable zones encountered. Delta = 70°.
90	100	Non magnetic, medium to fine grained, badly broken and oxidized, reddish colored, mixed quartz specular hematite and earthy type hematite. No delta measurable.
100	111½	Non magnetic, medium to fine grained, dark grey colored, lean quartz specular hematite iron formation. Quartz vein 2" wide at 107'. Pitted zone at 102' filled with earthy hematite.
111½	131	Non magnetic, fine to medium grained, light grey colored, lean quartz specular hematite iron formation. Minor amounts of iron silicates present. Limonitic material present in narrow bands scattered throughout footage. Core slightly porous due to leaching.
131	145	Non magnetic, medium grained, dark grey colored, very badly broken, quartz specular hematite iron formation with considerable amount of iron silicates present and some narrow limonitic bands. Delta angle varies between 75° and 55°.
145	154	Non magnetic, badly broken and oxidized, red earthy hematite with minor amount of specular hematite.
154	162	No solid core. Material recovered light orange to pinkish in color. Very talcosic and muddy. Scattered small pieces of quartz present.
162	199	No solid core recovered. The material recovered was a mixture of gummy red clay with mica and very fine grained quartz sand. Material believed to be rotten quartz mica schist with narrow seams of talc.
199	203	Quartzite.
		End of Hole.

METALLURGICAL RESULTS

Drill Hole J-5

Footage	Crude Fe.	Crude Mn.
12 - 18	62.52	.96
18 - 37	64.40	1.25
37 - 56	35.96	.25
56 - 71	36.29	.12
71 - 93	34.52	.20
93 - 98	31.93	.29
98 - 119	32.42	.22
119 - 133	32.34	.12
133 - 145	32.58	.16
145 - 154	35.17	.24

DRILL HOLE CLASSIFICATION

Hole No. J-6 (Page 1 of 2 Pages)
Elevation 1812.82
Coordinates 9500N/8000E
Angle Vertical

Footages From	To	
0	10	Surface
10	21½	Non magnetic, medium to coarse grained, badly broken, mixed earthy and quartz specular hematite. No delta measurable as core too broken up.
21½	30½	Material recovered all ground up. Quartz grains and coarse grained specular hematite.
30½	47	Non magnetic, medium grained, badly broken, quartz specular hematite iron formation with seams of earthy type hematite scattered throughout footage. No delta angle measurable.
47	63	Same as above. Delta = 50° at 52 ft.
63	85½	Non magnetic, badly fractured and vuggy, mixed rich specular hematite and earthy hematite iron formation. Numerous narrow mud seams scattered throughout sample. Delta angle = 50°.
85½	96	Non magnetic, coarse to medium grained, dark grey colored highly fractured, quartz specular hematite iron formation. Earthy hematite present along fractures. Scattered vuggy zones present. Delta = 50°.
96	113	Same as above except no vuggy zones present. Iron formation becoming more quartzose.
113	134	Unconsolidated material made up of coarse grained specular hematite, quartz sand, and clay. Only one piece of core, 1" long was recovered that had a measurable delta which = 45°.
134	156	Non magnetic, medium to coarse grained, friable, quartz specular hematite iron formation with some red clayey bands present. Delta = 65° at 153 ft.
156	167	Unconsolidated material of quartz sand and specular hematite. No core.
167	189	Non magnetic, coarse grained, rich quartz specular hematite iron formation.
189	198	Same as above. A zone from 193 to 198 badly broken and oxidized. Talcosic seam from 197 to 198. Delta at 190 ft. = 68°.
198	216	Non magnetic, medium grained, dark grey colored, badly broken, rich quartz specular hematite iron formation. Delta = 68°.
216	236	Non magnetic, medium grained, badly broken and oxidized from 216 to 217 and 229 to 230, quartz specular hematite iron formation.

DRILL HOLE CLASSIFICATION

Hole No. J-6 (Page 2 of 2 Pages)

Footages From	To	
236	262	Unconsolidated material made up of quartz sand and specular hematite.
262	330½	Material recovered all ground up, consisting of quartz sand and specular hematite. A small piece of core at 322 had delta of 75°.

End of Hole

METALLURGICAL RESULTS

Drill Hole J-6

Footage	Crude Fe.	Crude Mn.
10 - 20	45.30	.10
20 - 25	47.71	.20
25 - 39	46.28	.09
39 - 56	40.85	.10
56 - 86	42.63	.16
86 - 95	37.69	.08
95 - 117	39.06	.10
117 - 134	30.63	.16
134 - 153	39.71	.08
153 - 167	41.41	.10
167 - 187	44.90	.18
187 - 197	49.92	.22
197 - 216	39.63	.10
216 - 230	46.11	.16
230 - 248	45.40	.14
248 - 275	27.68	.29
275 - 284	45.40	.24
295 - 308)		
314 - 323)	36.85	.15

DRILL HOLE CLASSIFICATION

Hole No. J-7 (Page 1 of 2 Pages)
Elevation 1757
Coordinates 11000/11500E
Angle Vertical

Footages From	To	
0	12	Surface
12	25	Non magnetic, coarse grained, rich quartz specular hematite iron formation. Core is moderately friable and has scattered vuggy zones. Delta = 60°.
25	55	Non magnetic, medium to coarse grained, slightly banded, slightly friable, rich quartz specular hematite iron formation. Core exhibits leachings along bedding planes giving it a vuggy appearance. Delta angle = 60°.
55	88	Non magnetic, medium to fine grained, banded, light grey colored, leaner quartz specular hematite iron formation. Evidence of leaching along bedding planes from 73 ft. on delta angle = 60° at 64' and 50° at 77'.
88	115	Same as above. Delta angle = 50° at 97' and 60° at 108'.
115	160	Non magnetic, medium to fine grained, grey colored, slightly banded moderate rich quartz specular hematite iron formation.
160	170½	Non magnetic, medium grained, grey colored, slightly friable, lean quartz specular hematite iron formation.
170½	180½	Non magnetic, coarse grained, dark grey to black colored rich quartz specular hematite iron formation.
180½	210	Non magnetic, medium to coarse grained, dark grey colored moderately rich quartz specular hematite iron formation. Delta angle = 45° at 195'.
210	235	Same as above except much of sample made up of unconsolidated material. Delta angle = 50° at 228'.
235	245	Non magnetic, medium grained, rich quartz specular hematite iron formation. Some leaching along bedding planes. Delta angle averages 60°.
245	283	Non magnetic, medium to fine grained, light grey colored, lean, highly quartzose specular hematite iron formation. Sand present from 257½ to 259. Lineated structure containing iron silicates present from 266 to 283. Delta angle = 50° at 255' and 265', and 45° at 278'.

DRILL HOLE CLASSIFICATION

Hole No. J-7 (Page 2 of 2 Pages)

Footages From	To	
283	304	Non magnetic, medium to fine grained, lean specular hematite iron formation with narrow bands. Lineated structure present to 297'. From 297' on not lineated but very siliceous with scattered seam of earthy type hematite. Delta = 50° at 285' and 40° at 299'.
304	324	Non magnetic, medium grained, badly broken and oxidized in places, mixed quartz specular hematite and earthy hematite iron formation. Material recovered from 310 to 324 was unconsolidated. Delta angle = 55° at 306'.
324	338	Non magnetic, fine grained, very badly broken lean quartz specular hematite iron formation. Delta = 55° at 324' and 65° at 334'.
338	362	Non magnetic, lean quartz specular hematite iron formation. Oxidized zone of red earthy type hematite and rotten quartz from 356' to 358'. Core increasing in quartz content. Delta angle averages 60°.
362	379	Non magnetic, ground up, quartz specular hematite iron formation.

End of Hole

METALLURGICAL RESULTS

Drill Hole J-7

Footage	Crude Fe.	Crude Mn.
12 - 32½	38.82	.18
32½ - 55	30.31	.16
55 - 76	27.80	.14
76 - 97	31.56	.14
97 - 110	31.89	.14
110 - 130	32.37	.16
130 - 140	30.75	.25
140 - 157	28.97	.25
157 - 170	32.70	.16
170 - 196	38.12	.20
196 - 212	38.69	.10
212 - 221	53.09	.08
221 - 245	39.74	.16
245 - 257)		
257 - 278)	39.85	.20
278 - 297)		
297 - 319)	36.60	.17
321 - 342)		
342 - 362)	32.95	.15
362 - 379	45.12	.11

DRILL HOLE CLASSIFICATION

Hole No. J-8 (Page 1 of 2 Pages)
Elevation 1760.0
Coordinates 11500E/10000N
Angle Vertical

Footages From	To	
0	26	Surface
26	53	Non magnetic, medium to fine grained, non friable, lean quartz specular hematite iron formation. Specular hematite occurring in narrow bands. Oxidation present from 35' to 37'. Leached & vuggy zone at 41'. High % of quartz throughout sample. Delta angles = 55° at 28' and 50° at 36' and 51'.
53	76	Non magnetic, lean, banded, very quartzose iron formation with only occasional zones of non friable, fine grained, disseminated specular hematite. Some leaching present at 58' and 76'. Delta = 55° at 59' and 74'.
76	107	Non magnetic, fine grained, light grey, non friable, banded, lean quartzose specular hematite iron formation. Many of the specular hematite bands have been oxidized and leached out giving core a pitted appearance. Limonitic stains present along fractures. Mud seam from 79' to 80'. Delta = 50° at 84', 103' and 107'.
107	147	Non magnetic, fine grained, hard, non friable, slightly banded, very lean quartz specular hematite iron formation. Most of iron leached out leaving only stains in core. Delta = 50° at 109 and 145', 40° at 123', and 55° at 147'.
147	195	Non magnetic, fine grained, lean, highly quartzose, slightly banded, quartz specular hematite iron formation. Many of the bands have been leached leaving behind only limonitic stains and pitted appearance. Only traces of specular hematite present. Delta angle = 45° at 150', 50° at 156' and 185', and 55° at 164' and 169'.
195	229	Non magnetic, fine grained, very quartzose, leached and pitted, hard iron formation with only scattered traces of hematite and numerous limonitic stained bands to depth of 218'. From 218 to 229 material encountered was medium grained, slightly friable, rich quartz specular hematite iron formation. A badly broken zone from 206 to 207 followed by a 1 foot mud seam was encountered suggesting a possible shear which could account for the abrupt change in the formation. Delta angle = 55° at 208', 60° at 225'.
229	244	Non magnetic, non friable, dark grey colored, pitted & leached in few places, quartz specular hematite iron formation. Massive specular hematite zone from 229' to 231'. Delta angle = 50° at 236'.
244	280	Non magnetic, medium grained, dark grey colored, moderately friable in places, quartz specular hematite iron formation. Mud

DRILL HOLE CLASSIFICATION

Footages From	To	
		seam present from 272' to 273'. Minor leaching present leaving pitted appearance to core in zones scattered throughout footage. Delta angle = 50° at 254', 60° at 265' and 272'.
280	324	Non magnetic, light grey colored, medium to coarse grained, moderately friable, badly broken, moderately rich quartz specular hematite iron formation to depth of 317 feet. From 317 on the formation is much leaner, less friable, and more quartzose with small leached zones leaving pitted appearance in core. A few bands are pinkish in color. Delta angle = 60° at 313' and 50° at 322'.
324	356	Non magnetic, non friable, narrowly banded, light grey to pinkish in color, medium to fine grained, quartz specular hematite iron formation. Scattered zones of leaching present throughout sample. Quartz content appears to be increasing.

METALLURGICAL RESULTS

Drill Hole J-8

Footage	Crude Fe.	Crude Mn.
26 - 46)		
46 - 66)	34.57	.15
66 - 86)		
86 - 105)		
105 - 125)	21.18	.13
125 - 145)		
145 - 165)		
165 - 185)	31.98	.15
185 - 205)		
205 - 225)		
225 - 245)	29.95	.11
245 - 265)		
265 - 285)	30.19	.04
285 - 291)		
302 - 322)		
322 - 342)	34.9[illegible]	.11
342 - 356	39.12	.17

DRILL HOLE CLASSIFICATION

Hole No.	J-9
Elevation	1745
Coordinates	11000N/13000E
Angle	Vertical

Footages From	To	
0	136	Surface
136	140	Quartz specular hematite iron formation (ground to sand size).
140	155	Non magnetic, medium grained, slightly friable, narrow bands, moderately rich quartz specular hematite iron formation. Soft earthy hematite zone encountered from 140 to 144'. Leached zone from 151 to 152'. Delta angle = 50° at 141', 155', 55° at 150'.
155	180	Non magnetic, medium to fine grained, banded, light grey colored in solid portions and reddish in the softer oxidized zones, quarts specular hematite iron formation. Material only slightly friable but badly broken from 166' to 180'. Delta angle = 55° at 158', 162', 168' and 178'.
180	215	Non magnetic, medium to fine grained, badly broken and oxidized, quartz specular hematite iron formation. Core recovery poor. No delta angles measurable.
215	234	Non magnetic, dark grey to reddish in places, medium grained, badly broken and oxidized in places, moderately friable, rich quartz specular hematite iron formation with some earthy type hematite zones scattered throughout sample. Mud seam encountered from 226' to 232'.
234	261	Non magnetic, dark grey to reddish colored in places, medium to coarse grained, friable, badly broken & oxidized, mixed rich quartz specular hematite and earthy type hematite iron formation. Mud seam present at 251'. Core recovery low. Delta angles = 55° at 237' and 50° at 251'.

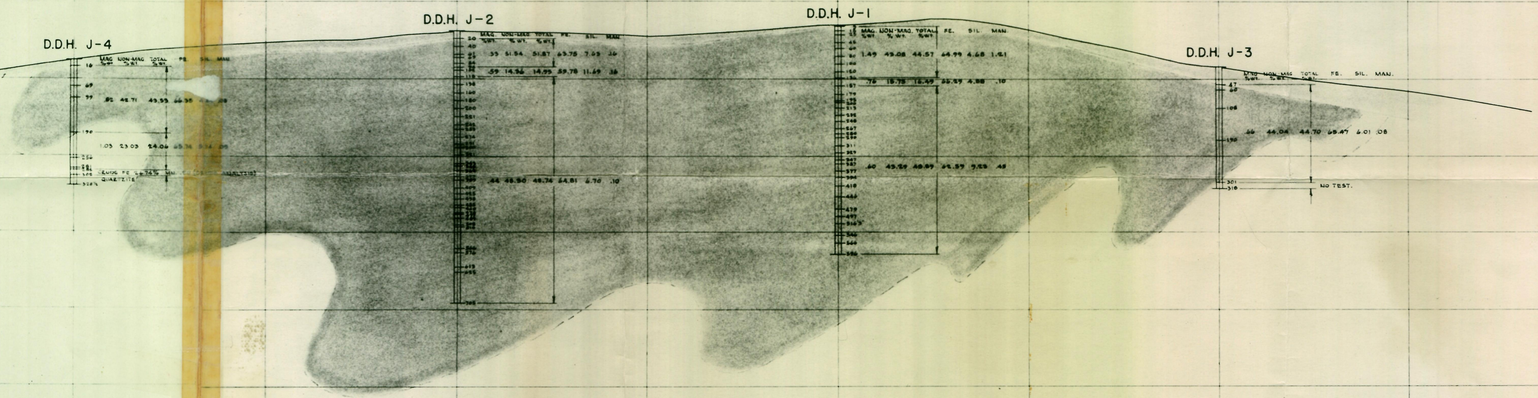
METALLURGICAL RESULTS

Drill Hole J-9

Footage	Crude Fe.	Crude Mn.
138 - 155	34.27	.13
155 - 176	34.91	.08
176 - 188	29.98	.08
188 - 208	37.50	.11
208 - 224	34.02	.11
224 - 243	40.49	.13
243 - 261	42.83	.08

10 000 E.

LOOKING WEST



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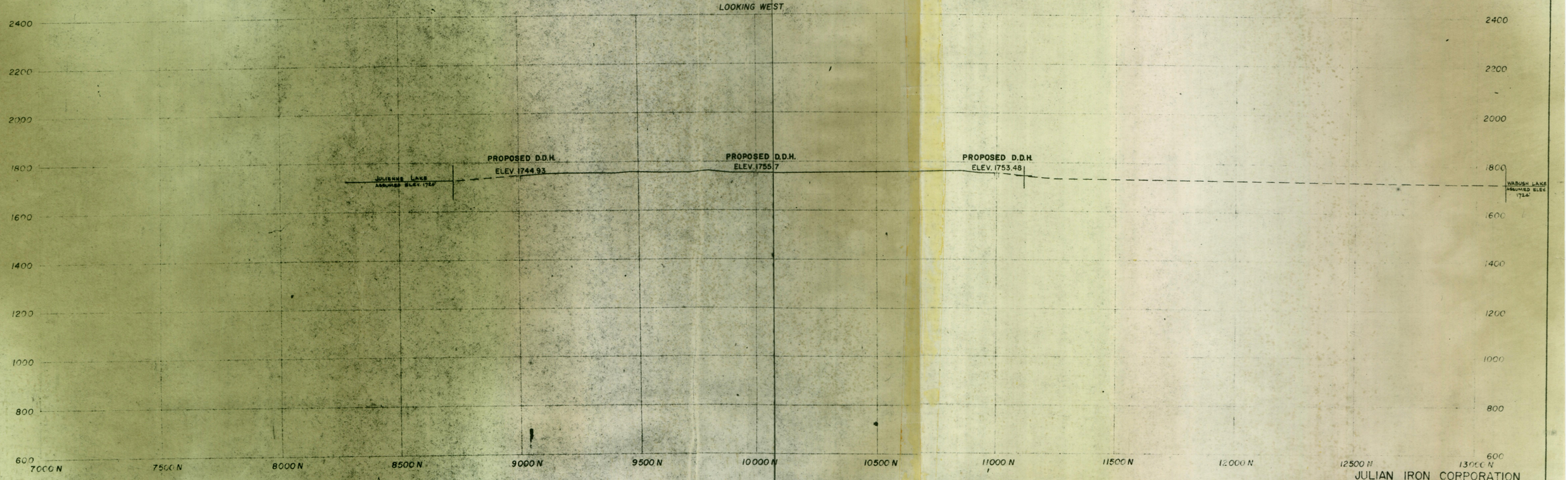
JULIAN IRON CORPORATION
JULIENNE PENINSULA

MONTREAL OFFICE
SCALE : 1" = 200'

11500 E.



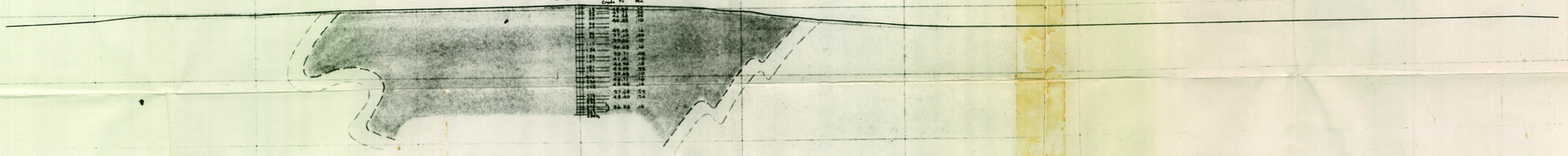
JULIAN IRON CORPORATION
JULIENNE PENINSULA

MONTREAL OFFICE

SCALE 1" = 200'

8 000 E.

LOOKING WEST



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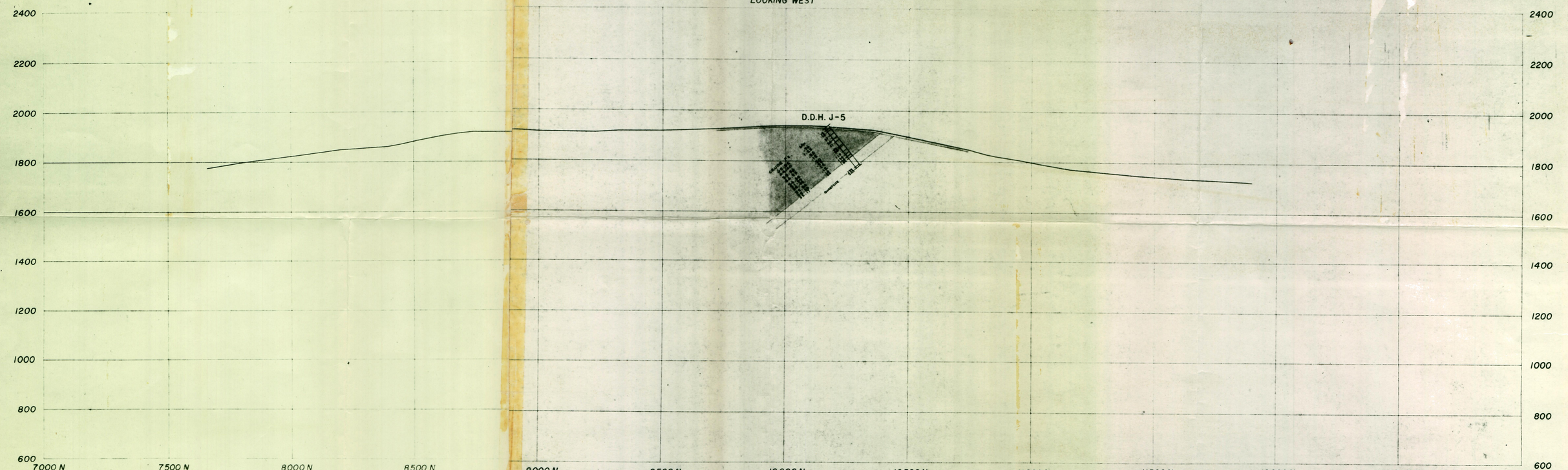
JULIAN IRON CORPORATION
JULIENNE PENINSULA

MONTREAL OFFICE

SCALE: 1" = 200'

9000 E.

LOOKING WEST

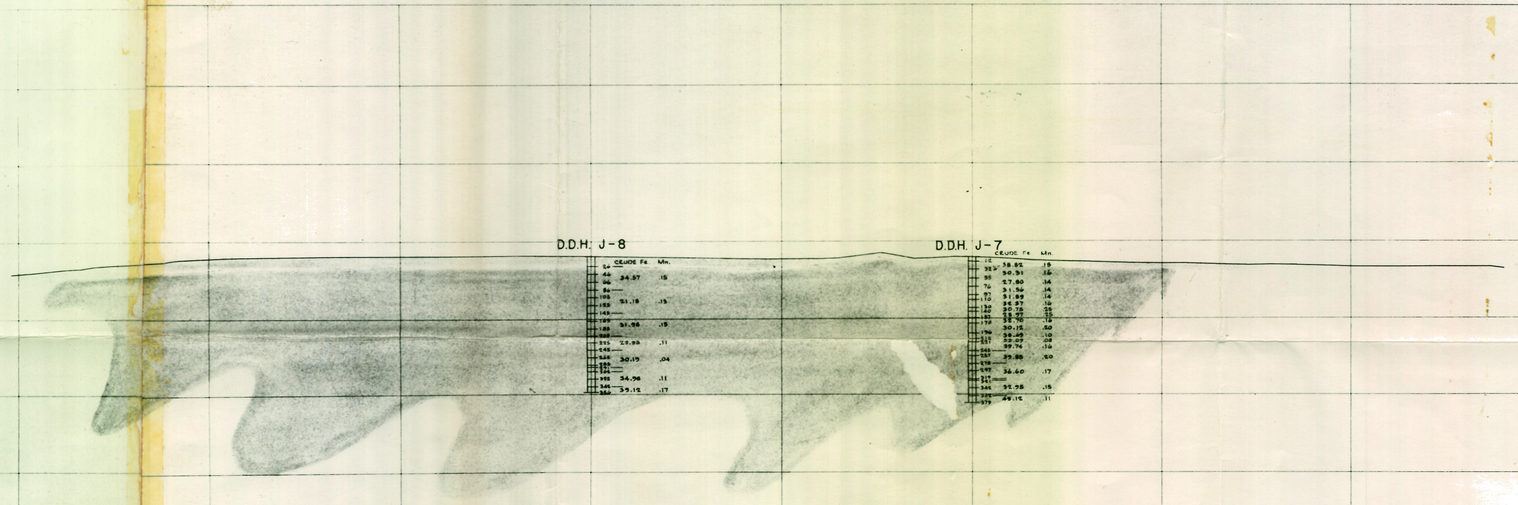


JULIAN IRON CORPORATION
JULIENNE PENINSULA

MONTREAL OFFICE

11500 E.

LOOKING WEST



2400
2200
2000
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7000 N
7500 N
8000 N
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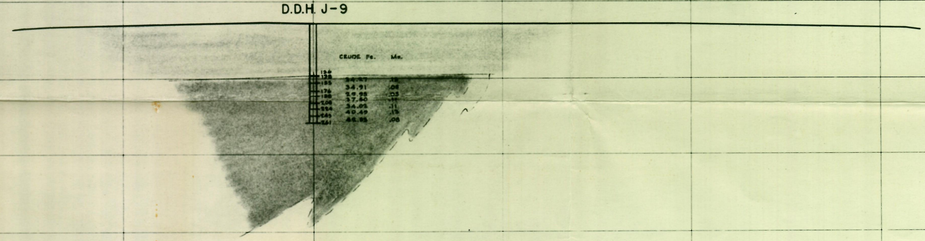
10000 N
10500 N
11000 N
11500 N
12000 N
12500 N
13000 N

JULIAN IRON CORPORATION
JULIENNE PENINSULA

MONTREAL OFFICE
SCALE : 1" = 200'

13 000 E.

LOOKING WEST



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11500 N
12000 N
12500 N
13000 N

JULIAN IRON CORPORATION
JULIENNE PENINSULA

MONTREAL OFFICE

SCALE : 1" = 200'

23 G 12(66)

J-1

FINAL CLASSIFICATION OF DRILL HOLE #1

0' - 10' Surface

10' - 81' Non-banded, medium to fine grained granular iron formation. Local alteration zones coated by limonite and give core a vuggy structure. Local zones of magnetite, weak to medium intensity and medium to strong 66' to 81'. Core recovery poor. Local zones of magnetite found in oxidized chert red silica matrix. Possible garnet development here also. Specular hematite disseminated throughout core with local friable partings.

81' - 152' White vitreous quartzite with alteration zones of limonite and MnO. MnO found in narrow stringers and along parting surfaces and locally. Core has a vuggy structure.

152' - 302' Poorly laminated, variable dark to light gray in color, locally slightly magnetic chert-specular, hematite iron formation. Local friable zones of specular hematite along parting surfaces. Martite is common in this section frequently as tetrahedrons and associated with limonite alteration zones. Limonite alteration extends through the core and gives it a laminated appearance on a fresh surface. Core badly broken from 225' to 242' and from 280' to 302'. Local surfaces of core have vuggy structure with limonite fillings and alteration. MnO found locally on parting surfaces and within voids.

INCOMPLETE

Delta of 70° - 28'
" " 68 - 122'
" " 65 - 172'
" " 75 - 219'
" " 70 - 275'
" " 70 - 373'
" " 65 - 415'
" " 60 - 475'
" " 55 - 525'
" " 40 - 540'
" " 50 - 570'
" " 45 - 600'

Wabush Lake
DRILL HOLE CLASSIFICATION

Drill Hole No. J-1
Elevation
Coordinates 10,500N/10,000E
Angle VERTICAL
Bearing

Property: JULIENNE LAKE
Sheet No. 1
Classified by: J. AASE
Date Started: 11 SEPT. 1957
Date Finished:

Footages From	Footages To	Description	Classification
0	3	CASING	SURFACE
3	11	NON-MAGNETIC, GRAY NON-FRABLE, SLIGHTLY BANDED MEDIUM GRAINED, DISSEMINATED SPECULARITE IN A QUARTZOSE GROUNDMASS. GOETHITE AND LIMONITE STAINS PRESENT ALONG FRACTURE PLANES.	
11	21	NON-MAGNETIC, DARK GRAY TO BLACKISH IN PLACES, MODERATELY FRIABLE, SLIGHTLY BANDED, MEDIUM GRAINED, QUARTZOSE SPECULAR HEMATITE. A FEW SCATTERED NARROW BANDS "½in" IN WIDTH ARE LIMONITIC STAINED. △ ANGLE = 30 DEGREES.	QUARTZ - SPECULAR HEMATITE
21	45	NON MAGNETIC, GRAYISH, MOSTLY NON FRIABLE, SLIGHTLY BANDED IN PLACES, MEDIUM TO FINE GRAINED, QUARTZOSE SPECULAR HEMATITE WITH SCATTERED TRACES OF NON-SPECULAR HEMATITE THROUGH OUT SAMPLE. GOETHITE & LIMONITE STAINS PRESENT ALONG FRACTURE PLANES. VUGGY ZONE FROM 27½ FT. TO 28½ FT. △ ANGLE = 42 DEGREES.	

D'

Wabush Lake
DRILL HOLE CLASSIFICATION

Drill Hole No. J-1
Elevation
Coordinates 10,500N./10,000E
Angle Vertical
Bearing

Property: Julienne Lake
Sheet No. 2
Classified by: J. Aubin
Date Started: 11 Sept. 1957
Date Finished:

Footages From	Footages To	Description	Classification
45	73	Non-Magnetic, light grey, medium grained, non-friable, very quartzose I.F. with few narrow bands of specular hematite. $\Delta = 35^{\circ}$	
73	79	No Core Recovery.	
79	82	Non-Magnetic, brownish, very schistose Quartz Spec. Hematite I.F. Core has appearance of having been along shear of core.	
82	84	Non-Magnetic, dark brown to black, numerous fracture fillings of limonite, slightly friable, mostly massive specular hematite.	
84	93	No Core Recovery	
93	96	Non-Magnetic, Nonbanded, non-friable, leached & pitted highly quartzose I.F. with only a very little spec. bar hematite present	
96	117	Non-Magnetic, slightly friable, Black	

Wabush Lake

DRILL HOLE CLASSIFICATION

Drill Hole No. J-1
Elevation.....
Coordinates 10,500 N. / 10,000 E
Angle Vertical
Bearing.....

Property: Julienne Lake
Sheet No. 3
Classified by: J. Dass
Date Started: 11 Sept. 1957
Date Finished:.....

Footages From	Footages To	Description	Classification
96 CONT.	117	medium to coarse grained, mostly massive with a few scattered bands of chert having a ∆ angle of 40° with specular hematite I.F. Traces of pyrrhotite (nm.O.) present.	
117	122	Non-Magnetic, greyish & reddish, coarse grained, non friable, very quartzose I.F. with few scattered bands of specular hematite. Some limonite & non specular or earthy type hematite present along fracture planes.	
122	128	Non-Magnetic, dark grey, mostly massive, fine grained, Some quartzose I.F. with some finely disseminated specular-hematite present. Non-Friable	
128	132	Same as above except lighter colored & slightly more friable.	
132	142	Non-Magnetic, light grey, medium grained, very quartzose with smallpoint of specular hematite present. Rusty around up to and sig	
142	152	No CORE RECOVERY.	

P. M. & Co. Form 241

Wabush Lake

DRILL HOLE CLASSIFICATION

Drill Hole No. J-1
Elevation
Coordinates 1050 N / 10,000 E
Angle VERTICAL
Bearing

Property: JULIENNE LAKE
Sheet No. 4
Classified by: J. AASE
Date Started: 11 SEPT. 57
Date Finished:

Footages From	Footages To	Description	Classification
152	157	Non Magnetic, Leans, Slightly banded, light grey, very quartzose F.F. with disseminated specular hematite. $\Delta = 40°$	Lt. Gy. Qtz Spec. Hem. Tite ✓
157	179	Non Magnetic, light grey, fine to medium grained, slightly banded with $\Delta = 35°$, quartz specular hematite F.F. limonite + goethite present along fracture planes and in small solution cavities.	
179	213	Non Magnetic, black, mostly rich massive specular hematite with a few narrow + scattered bands of quartz-specular hematite having a $\Delta = 40°$. Material through out sample only moderately friable. Coarse to medium grained Limonite + Goethite stains present along fracture planes.	
213	263	Non Magnetic, light to medium grey, medium grained, moderately friable, slightly banded with scattered leached zones replaced with non-specular hematite + limonite giving it a mottled appearance, Quartz specular hematite F.F.	

P. Bx. & Co. Form 841

Wabush Lake
DRILL HOLE CLASSIFICATION

Drill Hole No. J-1
Elevation
Coordinates 10,500 N. / 10,000 E.
Angle VERTICAL
Bearing

Property: JULIENNE LAKE
Sheet No. 5
Classified by: J. AASE
Date Started: 11 SEPT. 67
Date Finished:

Footages From	Footages To	Description	Classification
263	307	Non Magnetic, fine grained, slightly friable, reddish, highly oxidized, banded with Δ = 40 degrees, partially leached, mixed speculaite + non speculaite I.F. in a quartzose ground mass. At 307' cuts very schistose showing minor folding. Narrow shear zones scattered throughout sample.	
307	334	Non Magnetic, fine grained, light grey with a few yellowish brown streaks, slightly banded in places, lean, very quartzose speculaite hematite I.F. The speculaite is finely disseminate and leached out in places giving core a pitted appearance. Limonite + Goethite stains present on the pit surfaces.	
334	357	Non Magnetic, light grey, hard, non friable, fine grained, very slightly foliated, highly quartzose I.F. with minium amt of finely disseminated speculaite hematite. Numerous pits due to leaching with iron stains remaining. Very lean quartz speculaite hematite I.F. bordering on a pseudo quartzite.	

B & S LTD. Form 841

DRILL HOLE CLASSIFICATION

Drill Hole No. J-1
Elevation
Latitude 10500N
Departure 10000E
Location 90°

Property: JULIENNE LAKE
Sheet No. 6
Classified by: J. ABSE & J. ORSBO
Date: STARTED 11 SEPT. 57

Footages From	Footages To	Description	Classification
357	418	NON-MAG. MED. GD. LIGHT GRAY, MOD FRIABLE IN PLACES, SLIGHTLY BANDED WITH A ANGLE =45°. SCATTERED ZONES OF LOW CORE RECOVERY DUE TO WATER LOSS & GRINDING. QTZ. - SPEC. HEM. I.F	
418	425	NON-MAG. SLTLY BANDED, QTZ. SPEC. HEM. WITH CLAY-LIKE MATERIAL AND PROBABLE GROUND PHYLLITE. POSSIBLE SHEAR ZONE.	
425	446	NON-MAGNETIC, NON FRIABLE, BANDED, QTZ - SPEC. HEM. - A ANGLE 35°-40°. LOW CORE RECOVERY	
446	479	NON, MAG., NON-FRIABLE, REDDISH-BROWN LEACHED, SLTLY BANDED QTZ-SPEC. HEM. I.F.	
479	496	NON-MAG, SLIGHTLY BANDED, QTZ-SPEC. HEM. I.F. NON-FRIABLE, UNLEACHED. 2" BRECCIA ZONE @ 429.3'.	
496	497	MASSIVE SPEC. HEM. ZONE WITH OCCASIONAL MINOR QTZ.	
497		NON MAG, NON FRIABLE, LEAN QTZ - SPEC. HEM. I.F.	

B&S LTD. Form 341

DRILL HOLE CLASSIFICATION

Drill Hole No. J-1 DIP 90°
Elevation
Latitude 10,500 N
Departure 10,000 E
Location

Property: JULIENNE LAKE
Sheet No. 7
Classified by: J. OSBORN
Date: STARTED: 11 SEPT. 57
FINISHED: 26 OCT. 57

Footages From	Footages To	Description	Classification
497	516.4	NON-MAGNETIC, NON-FRIABLE, LEAN QTZ-SPEC. HEM. I.F. NOT PARTICULARLY BANDED.	
516.4	546	SAME BUT BECOMING IRREGULARLY BANDED; FINE GRAINED; MOD. RICH. FRACTURING AND SOME LEACHING. LIMONITE-GOETHITE FRACTURE FILLING BRECCIA 534.5'-538.8' AND 525.3'-526.6'	
546	566	NON-MAG. AND NON-FRIABLE ONLY SLIGHTLY BANDED LEAN QTZ.-SPEC. HEM I.F. LESS LEACHING & FRACTURES. NOT AS PROMINENTLY OXIDIZED IN MINOR FRACTURES. $\Delta = 40-45°$	
566	596	SAME AS ABOVE, BECOMING BANDED $\Delta = 60°$; RICHER SPEC. HEM.	
		E.O.H.	

PICKANDS MATHER & COMPANY

Hibbing Laboratory

Wabash Iron Company

Crude Ore Analysis

Drill Hole 1 Core

Footage	Assay % Iron	Silica	Mang.	Phos.	Classification
10-30	30.15	54.20	.16	.011	Fairly hard, cherty, fine specularite, little magnetite.
30-50	29.18	55.54	.94	.012	Fairly hard, cherty, fine specularite, some magnetite.
50-70	29.50	55.94	1.16	.003	Fairly hard, cherty, medium grained specularite, very little magnetite, some leaching, little manganese.
70-86	35.39	40.76	4.17	.010	Fairly hard, cherty, medium grained magnetite, specularite, some pyrolusite, little limonite.
153-173	36.79	34.40	6.78	.020	Hard, cherty, medium grained specularite, some manganese, little magnetite.
173-193	39.63	38.29	2.86	.021	Hard, cherty, fine specularite, some magnetite, limonite, little manganese.
193-213	29.74	52.56	2.37	.014	Hard, cherty, fine specularite, little manganese, magnetite.
213-233	30.80	51.23	2.66	.014	Hard, cherty, medium grained specularite, little manganese, very little magnetite, limonite.
233-253	31.53	51.08	2.29	.011	Semi-friable, cherty, medium grained specularite, little pyrolusite.
253-273	20.10	60.33	3.43	.016	Friable, very cherty, medium to fine grained specularite, some pyrolusite.
273-293	32.74	48.00	2.04	.009	Semi-friable, cherty, medium to fine grained specularite, little pyrolusite, magnetite.
293-313	37.44	42.75	1.27	.014	Semi-friable, cherty, medium grained specularite, little pyrolusite, magnetite.
313-333	34.77	48.49	.43	.011	Fairly hard, cherty, fine to medium grained specularite, little magnetite.
333-353	41.49	39.38	.35	.011	Semi-friable, cherty, fine to medium grained specularite.
353-373	41.66	38.74	.98	.012	Fairly hard, cherty, medium grained specularite, some magnetite.

PICKANDS MATHER & COMPANY

Hibbing Laboratory

Wabash Iron Company

Crude Ore Analysis

Drill Hole 1 Core

Footage	Assay % Iron	Silica	Mang.	Phos.	Classification
373-393	41.17	39.14	1.12	.011	Friable, cherty, medium grained specularite, little pyrolusite, very little magnetite.
393-413	40.68	38.24	1.57	.015	Friable, cherty, medium grained specularite, little pyrolusite, very little magnetite.
413-433	41.01	40.34	.45	.009	Semi-friable, cherty, medium grained specularite, very little magnetite.
433-453	35.98	47.19	.37	.013	Fairly hard, cherty, fine to medium grained specularite, little limonite. magnetite.
453-472	27.23	48.19	4.86	.070	Fairly hard, cherty, fine specularite, limonite, some manganese.
497-512	28.85	54.21	2.08	.013	Fairly hard, cherty, fine specularite, some magnetite, little limonite, manganese.
512-532	33.88	46.40	1.57	.026	Hard, cherty, fine specularite, limonite, little manganese, little leaching.
532-552	29.66	56.64	.20	.020	Hard, cherty, fine specularite, little amphibole, leaching
552-572	30.96	55.17	.22	.023	Hard, cherty, fine specularite, little amphibole, some leaching.
572-587	33.88	47.72	.51	.026	Hard, cherty, fine specularite, trace magnetite.
587-600	34.69	49.58	.29	.016	Fairly hard, cherty, fine specularite, little magnetite.

DRILL HOLE #J-1 (cont'd) **FINAL CLASSIFICATION**

OF

DRILL HOLE #J-1

173'-213' Non-magnetic, fine, massive specular hematite iron formation [illegible] banded [illegible] Angle 45°.

213'-220' Non-magnetic, non-friable, slightly chloritic, slightly [illegible] specular hematite iron formation. [illegible] and 205'-207'. [illegible] core has been taken.

Started: September 11 1957

Finished: October 26. 1957

0'- 3'	Surface
3'- 73'	Non-magnetic gray mostly non-friable, slightly banded medium grained quartzose specular hematite iron formation. Goethite and limonite stains are present along fracture planes. △ Angle 3° @ 21' 42° @ 45' 35° @ 73'
73'- 79'	No core recovery.
79'- 84'	Non-magnetic, brown, schistose, quartzose specular hematite iron formation. Possibly in shear zone as evidenced by numerous fracture fillings of limonite.
84'- 93'	No core recovery.
93'-142'	Non-magnetic, mostly non-banded, black to light gray, non-friable lean specular hematite iron formation. 96'-117' contains considerably more specularite than other footages. Some manganese is present. Some leaching is evident and limonite filled fractures are common. ∠ angle 40° @ 115'.
142'-152'	No core recovery.
152'-179'	Non-magnetic, slightly banded, fine to medium grained lean quartzose specularite iron formation. Limonite and goethite present along fracture planes.

Drill Hole #J-1 (contd)

Julian Iron Corporation

179'-213' Non-magnetic, rich, massive specular hematite iron formation. Moderately friable, coarse to medium grained with some banding. ∠ angle 40°.

213'-596' Non-magnetic, non-friable, slightly oxidized, slightly banded, lean quartz specular hematite iron formation. ∠ angle 35° to 45°. Some slightly richer zones from 496'-497', 516'-546' and 566'-596'. This zone has been leached and oxidized more than those above.

End of Hole.

[illegible]	100	40.21	41.05	.0
100	120	38.41	21.00	.[illegible]
120	140	31.15	53.10	.[illegible]
140	157	27.42	58.65	.04
157	179	38.55	54.75	.0
179	200	45.53	27.26	.[illegible]
200	219	41.07	23.01	.[illegible]
219	238	40.16	42.96	.0
238	260	33.40	46.26	.01
260	280	15 Samples		
280	311	38.36	49.80	.0
311	339	21.03	54.49	.[illegible]
339	377	35.16	50.73	.[illegible]
377	418	32.09	54.28	.[illegible]
418	479	31.01	51.27	.0
479	497	43.68	37.57	.[illegible]
497	516	30.21	56.20	.0
516	546	40.03	38.46	.0
546	596	34.75	49.80	.03

[illegible]

19	20	35.95	47.57	.0
20	39	37.51	43.70	.0 little very small
39	77	20.55	69.89	.0
77	100	30.50	46.49	.0 Lime and Metallic Iron Contamination
100	119	70.65	24.97	.0 Lime Contamination
120	140	38.97	39.49	.0 "
140	160	38.82	41.10	.0 "
160	180	30.35	46.90	.0 little white sand
180	200	30.55	39.77	.0 (1 ft. Iron Ore) Sandy Sand
200	220	33.34	47.27	.04
220	240	33.18	39.60	.0 (1 ft. Iron Ore) Sand Sand
240	260	31.74	58.51	.0 Very Calcareous + Sandy Sand
260	280			
280	300	35.37	43.07	.0 Less Calcareous
300	320	37.13	47.76	.0

J-1 Core

Footage	Total Feet	May Recovery	May Iron	Hem Rec.	Hem Iron
		0.42	70.23		
3-15	12	~~2.70~~	~~56.27~~	43.80	64.78
		0.28	71.52		
15-25	10	~~4.67~~	~~52.58~~	39.86	67.19
25-45	20	0.18	70.27	45.07	65.91
45-60	15	1.74	63.22	36.76	63.23
60-80	20	—	—	38.71	66.78
80-100	20	—	—	49.10	68.64
100-120	20	1.28	69.47	49.98	58.84
120-136	16	—	—	37.23	66.94
* 136-157	21	—	—	15.73	66.29
157-179	22	—	—	39.36	66.40
179-200	21	—	—	49.37	64.69
200-213	13	—	—	63.09	57.14
213-248	35	—	—	49.55	67.10
248-280	32	—	—	47.03	59.91
10' not sampled					
290-311	21	—	—	42.06	66.89
311-329	18	—	—	36.26	65.90
329-377	48	1.97	61.68	38.75	60.39
377-418	41	—	—	32.97	60.63
418-479	61	—	—	37.83	63.47
479-497	18	—	—	56.35	60.92
497-516	19	—	—	37.43	61.03
516-546	30	—	—	51.50	60.38
546-596	50	—	—	45.68	62.17
	562			43.24	63.21

3-136 = 133'
157-280 = 123
290-596 = 306
562

Sample	Hem Rec.	Hem Iron
3-136	43.24	63.21

136-157 = Lean material
280-290 = No Sample

Crude Fe

U-1 Core

3-15'	10	38.18
15-25'	10	35.45'
25'-45'	20	36.80
45'-60	15'	30.13
60-80	20	31.52
80-100	20	40.23
100-120	20	39.41
120-136	16	31.75'
136-157	21	27.82
157-179	22	30.95'
179-200	21	46.25'
200-213	13	41.07
213-248	35'	39.16
248-280	32	35.40
290-311	21	36.36
311-329	18	31.00
329-347	18	29.70
347-357	10/34'	31.57 35.38
357-377	20	29.86
377-394	17	29.54
394-418	24	32.12
418-446	28	34.45'
446-479	33	29.57
479-497	18	43.08
497-516	19	30.21
516-546	30	40.03
546-566	20	31.91
566-596	30	36.65'

U-1 Sludge

15'-30	15'	33.05'
30-35'	5'	37.57
45'-70	25'	20.57
70-75'	5'	20.77
75'-95'	20	38.68
95'-100	5'	19.98
100-110	10	39.65'
110-115	5	38.65'
110-140	30	38.37
140-165'	25'	35.60
165'-175	10	32.77
175-180	5'	25.36
180-205'	No Sample	
205'-210	5'	38.95'
210-220	10	No sample
220-225'	5'	33.34
225-240	15'	No sample
240-245'	5'	42.48
245'-250 } 265'-270	10	31.74
250-265'	15'	No sample
270-275'	5'	35.59
275'-280	No Sample	
280-290	10	35.75'
290-295' } 305'-310	10	36.45'
295'-305'	10	No Sample
310-315' } 325'-330	10	46.33
315'-325'	10	No Sample
330-345'	15'	No Sample
345'-350 } 355'-360	10	34.30
350-355'	5'	No sample

225 33.81

Fe to with D.H. U-1 ok PS

Note This data & Roger Butcher Jun 21 1957

Crude Fe

Core 3-357 (342' sampled) 35.38

Sludge 15-360 (225' sampled) 33.81

J-1 Sludge

15-30	15"	—	—	42.00	64.44
30-35"	5	—	—	45.60	61.88
35-45"	10	—	—	—	—
45"-75"	30	1.05"	62.59	14.04	61.09
(Contaminated) 75"-100	25"			8.82	65.64
100-115"	15"	1.39	68.80	28.41	60.61
110-140	30	2.21	54.26	47.51	56.16
140-170	30	1.45"	57.07	20.00	63.43
165"-180	15"	2.93	57.39	13.56	58.91
180-205"	25"	No sample			
205"-210				53.28	56.57
210-220	10	No sample			
220-225"	5"	6.66	58.13	18.84	64.76
225-240	15"	No sample			
240-245"	5"			53.15"	54.32
245"-250" 265"-270	10	1.61	60.36	8.00	52.42
270-275"	5"	2.51	60.18	18.92	64.32
280-290	10	1.27	64.98	41.41	68.02
290-295" 305"-310	10	1.33	57.33	27.94	63.81
310-315" 325"-330	10	4.13	70.54	39.36	67.22
345"-350" 355"-360	10	3.47	63.43	18.14	54.81

K. & Co. Form 841

Wabush Lake
DRILL HOLE CLASSIFICATION

Drill Hole No. J-2
Elevation
Coordinates 9500 N. / 10,000 E.
Angle Vertical
Bearing

Property: Julienne Lake
Sheet No. 1
Classified by: J. Aaab
Date Started: 17 Sept. 57
Date Finished:

Footages From	Footages To	Description	Classification
0	18	Casing Surface	Surface
18	20	No Recovery	Ledge
20	37	Non Magnetic, light brownish to reddish, slightly friable, badly broken & fractured, only slightly banded, very quartzose I.F. abundant non specular hematite & limonite along fracture planes. The specular hematite only present in few narrow bands.	QTZ. Spec. I.F.
37	43	Non Magnetic, Highly oxidized to a dark reddish brown color, slightly friable, very porous & muggy, mixed specular & non specular earthy hematite, with abundant quartz filling the fractures giving a brecciated appearence.	"
43	61	Same as above. ∠ angle = 60° banded only slightly.	"
61	68	Quartz vein material. Reddish Iron stain along fractures	"

P. M. & Co. Form 341

Wabush Lake
DRILL HOLE CLASSIFICATION

Drill Hole No. J-2
Elevation
Coordinates 9500N/10,000E.
Angle VERTICAL
Bearing

Property: JULIENNE LAKE
Sheet No. 2
Classified by: J. AASH
Date Started: Sept. 17, 1957
Date Finished:

Footages From	Footages To	Description	Classification
68	107	Non Magnetic, badly broken, slightly banded in places, mostly leached & highly oxidized non specular quartzose I.F. Some fine to medium grained disseminated specular pyrite. (Calc. in one section & qtz)	Li Li
107	142	Non Magnetic, grey, medium grained, quartz specular hematite I.F. with a few narrow zones of oxidation. Limonite stains present along fracture planes.	SPECULAR HEMATITE
142	167	Non Magnetic, brownish, slightly banded in places, mixed specular & non specular hematite I.F. Limonite & some goethite stains along fracture planes.	QUARTZ
167	214	Non Magnetic, blackish grey, coarse grained, slightly banded, rich quartz specular hematite I.F. with narrow zones of leaching & oxidation to non specular hematite.	

P. M. & Co. Form 141

Wabush Lake
DRILL HOLE CLASSIFICATION

Drill Hole No. J-2
Elevation
Coordinates 9500 N. / 10,000 E.
Angle VERTICAL
Bearing

Property: JULIENNE LAKE
Sheet No. 3
Classified by: J. AASE
Date Started: 17 SEPT. 1957
Date Finished:

Footages From	Footages To	Description	Classification
214	222	Non Magnetic, light grey, medium grained, non banded, non friable, very quartzose, specular hematite I.F. Leached zone from 214 to 215.	Iron Formation
222	248	Non Magnetic, dark grey with brownish red zones, moderately friable in places, slightly banded in places with $\Delta = 50°$, quartz specular hematite I.F. a few narrow zones of non-specular hematite.	Iron Formation
248	254	Non Magnetic, very light grey, highly quartzose I.F. with recrystallized lenses of non specular hematite along fracture planes. Small veggy zone at 250 feet.	Iron Formation
254	278	Non Magnetic, medium grained, reddish + blackish, moderately friable with a few narrow zones of very friable material, partly leached, quartz specular hematite I.F., slightly banded in places with hematite + non specular hematite stains along fracture planes	Iron Formation

Wabush Lake
DRILL HOLE CLASSIFICATION

Hole No. J-2
...vation
...oordinates 9500N./10,000E.
Angle VERTICAL
Bearing

Property: JULIENNE LAKE
Sheet No. 4
Classified by: J. Aaes.
Date Started: 17 SEPT. 1957
Date Finished:

Footages From	Footages To	Description	Classification
278	290	Non Magnetic, fine grained, non friable, very quartzose spec. hematite I.F.	
		Specularite & non specular hematite	I.F.
		disseminated thru out sample with	
		no evidence of banding.	Sil
290	302	Non Magnetic, badly broken & moderately friable, coarse to medium grained, reddish brown mixed quartz specular & non specular hematite I.F. with Limonite & Goethite stains along fracture planes.	Quartz Spec. Hem.

DRILL HOLE CLASSIFICATION

Drill Hole No. J-2
Elevation
Latitude Angle Vertical
Departure
Location 9,500 E/10,000E (sic)

Property: Julienne Lake
Sheet No. 5
Classified by: J. Base
Date: started Sept. 17/57

Footages From	Footages To	Description	Classification
302	343	Non-magnetic, medium-grained, light grey scattered reddish stains, non-friable, slightly banded in places with angle from 40 to 50 degrees. Quartz specular hematite with some non-specular hematite in minor quantities. Limonite and goethite stains present along fracture planes.	
343	349	Non-magnetic, badly broken and fractured, highly oxidized giving reddish appearance, core exhibits a pitted surface probably due to leaching, mixed specular and non-specular hematite iron formation.	
349	362	Non-magnetic, light grey, non-friable, disseminated quartz specular hematite with bands of massive coarse-grained irregular bands of specularite. Limonite and goethite stains present along fracture planes. No regular banding exhibited in ore.	
362	379	Non-magnetic, mostly light grey colour with numerous narrow red brown stained zones, partially oxidized and leached giving core a pitted and vuggy surface, leaner iron formation of mixed specular and non-specular hematite.	

DRILL HOLE CLASSIFICATION

Hole No. J-2
Location
Azimuth Angle Vertical
Departure
Location 9,500 E/10,000E

Property: Julienne Lake
Sheet No. 6
Classified by: J. Aase
Date: Started: 17 Sept. 1957

Footages From	Footages To	Description	Classification
379	389	Non-magnetic, medium to fine-grained, non-friable, dark brownish red, partially oxidized, highly banded with angle of 40 degrees, mixed quartz specular and non-specular iron formation.	
389	409	Non-magnetic, medium grained, non-friable, primarily grey coloured with few zones of reddish brown, banded quartz specular hematite iron formation with angle of 40 degrees. Limonite and goethite stains present along fracture planes.	
409	425	Same as above.	
425	438	Non-magnetic, reddish stained, slightly banded, badly broken and partially oxidized, non-friable, mixed quartz specular and non-specularite iron formation. Low core recovery.	
438	455	Non-magnetic, grey, coarse-grained, moderately friable in places, slightly banded, rich quartz specular hematite iron formation. Low core recovery. Bands have been partially leached and developed a pitted appearance.	

DRILL HOLE CLASSIFICATION

Hole No. J-2
Location
Azimuth
Departure Angle Vertical
Section 9,500 E/10,000 E

Property: Julienne Lake
Sheet No. 7
Classified by: J. Aase
Date: started: 17 Sept. 1957

Footages From	Footages To	Description	Classification
455	477	E.X. Core. Non-magnetic, medium to coarse-grained, wide irregularly banded, quartz specular hematite iron formation. Low recovery from 455 to 460 and 474 to 477 due probably to a shear zone in which clay and sand size material was encountered.	
477	489	Non-magnetic, medium to coarse-grained, non-friable, slightly banded, partially leached in places, quartz specular hematite iron formation.	

PICKANDS MATHER & COMPANY

Hibbing Laboratory

Wabush Iron Company

Crude Ore Analysis

Drill Hole J-2 Core

Footage	Assay % Iron	Silica	Mang.	Phos.	Classification
102-118	14.61	68.00	.06	.011	Fairly hard, fine grained, very cherty specularite. Pale reddish brown. 10 lbs. 13 oz. core. (No core 111'-118')
118-138	38.23	43.88	.07	.007	Hard, medium grained, cherty specularite, earthy hematite, Vuggy. Grayish red. 18 lbs. 5 oz. core.
138-160	24.18	59.57	.12	.008	Friable, medium grained, cherty specularite. Dark reddish brown. 5 lbs. core.
160-180	42.04	40.04	.08	.009	Fairly hard medium to coarse grained cherty specularite, some earthy hematite, goethite. Grayish red. 18 lbs. 3 oz. core.
180-200	38.79	42.67	.10	.008	Hard, medium grained cherty specularite, some earthy hematite, goethite. Vuggy. Grayish red. 7 lbs. core.
200-221	38.39	45.04	.07	.007	Fairly hard, medium grained, cherty specularite, some earthy hematite. Grayish red. 19 lbs. 5 oz. core.
221-242	40.98	42.45	.11	.006	Hard, medium grained, cherty specularite, some earthy hematite, somewhat vuggy. Grayish red. 7 lbs. 8 oz. core.
242-253	23.86	58.12	.09	.004	Hard, medium to fine grained, cherty specularite, some earthy hematite, Grayish red. 7 lbs. 2 oz. core.
253-274	39.04	41.72	.17	.006	Friable, medium grained, cherty specularite, some earthy hematite, goethite. Grayish red. 13 lbs. 4 oz. core.
274-291	29.87	49.11	.12	.026	Fairly hard, medium grained, cherty specularite, some earthy hematite, goethite. Grayish red. 13 lbs. 5 oz. core.
291-300	49.18	26.58	.20	.097	Hard, medium grained cherty specularite some goethite. Moderate brown. 10 lbs. 15 oz. core.
300-321	35.83	49.80	.12	.012	Hard, medium grained cherty specularite, some earthy hematite. Grayish red. 24 lbs. core.

PICKANDS MATHER & COMPANY

Hibbing Laboratory

Wabush Iron Company

Crude Ore Analysis

Drill Hole J-2 Core

Footage	Assay % Iron	Silica	Mang.	Phos.	Classification
321-343	36.55	46.06	.10	.14	Hard, medium grained cherty specularite, some earthy hematite, goethite, vuggy. Brownish gray. 25 lbs. 1 oz. core.
343-349	35.19	49.53	.10	.017	Hard medium to fine grained, cherty specularite, some earthy hematite, goethite, leaching. Grayish red. 6 lbs. 2 oz. core.
349-362	36.80	46.65	.10	.014	Hard, coarse to fine grained, cherty specularite, some earthy hematite, goethite, vuggy. Grayish red. 17 lbs. 8 oz. Core.
362-379	32.70	52.74	.10	.012	Hard, coarse to medium grained cherty specularite, some earthy hematite, goethite; leachings. Dark reddish red, 13 lbs. 12 oz. core.
379-389	45.20	34.85	.08	.032	Hard, medium to coarse grained cherty specularite, some botryoidal and crystalline, goethite, earthy hematite; leached and vuggy. Dark reddish brown. 6 lbs. 1 oz. core.
389-409	41.00	40.60	.14	.014	Hard, medium grained cherty specularite, earthy hematite. Some pieces show schistose structure. Some leaching. Dusky red. 19 lbs. 14 oz. core.
409-425	34.54	50.07	.24	.009	Hard, medium to fine grained, cherty specularite, some earthy hematite, occasional banding, leaching. Dusky red. 14 lbs. 3 oz. core.
425-438	33.25	51.86	.14	.010	Hard, medium to fine grained cherty specularite, some earthy hematite, occasionally schistose; leaching. Dusky red. 7 lbs. 2 oz. core.

PICKANDS MATHER & COMPANY

Hibbing Laboratory

Wabush Iron Company

Crude Ore Analysis

Drill Hole J-2 Core

Footage	Assay % Iron	Silica	Mang.	Phos.	Classification
438-455	40.84	40.83	.06	.012	Friable, medium to coarse, cherty specularite, some earthy hematite, schistose; leaching. Dusky red. 9 lbs. core.
455-460	36.40	47.24	.10	.007	Friable, medium grained cherty specularite, some earthy hematite, goethite; somewhat schistose. Brownish gray. 10 oz. core.
460-474	29.94	55.75	.40	.011	Friable, medium grained, leached, schistose, cherty specularite. Brownish gray. 4 lbs. 8 oz. core.
474-477	30.91	55.33	.12	.011	Friable, medium grained, schistose, cherty specularite. Brownish gray. 4 oz. core.
477-489	32.12	53.49	.10	.007	Friable, medium grained, schistose, leached, cherty specularite. Brownish gray. 3 lbs. 14 oz. core.

PICKANDS MATHER & COMPANY

Hibbing Laboratory

Wabush Iron Company

Crude Ore Analysis

Drill Hole J-2 Core

Footage	Assay % Iron	Silica	Mang.	Phos.	Classification
489-505	37.53	45.54	.13	.011	Semi-friable, cherty medium grained specularite, schistose, little leaching. Dark grayish red. Core redovery: 7 lbs. 1 oz. core.
505-510	17.20	74.68	.13	.008	Semi-friable, cherty, fine grained specularite. Medium gray. Core recovery: 5 lbs. 2 oz.
510-566	45.33	35.30	.15	.008	Same as 489-505, somewhat coarse grained. Core redovery: 36 lbs. 2 oz. core.
566-576	33.19	50.50	.13	.007	Hard, cherty, medium to fine grained specularite. Dark grayish red. Core recovery: 17 lbs. 9 oz. core.
576-613	36.33	47.97	.17	.007	Same as 489-505.
613-625	35.52	48.52	.19	.009	Same as 489-505, except in color. Dark gray.
625-705	39.06	44.45	.15	.009	Same as 489-505. Core recovery: 19 lbs. 13½ oz. core.
e.o.h.					

*No information was received on the inches of core recovered.

PICKANDS MATHER & COMPANY

Hibbing Laboratory

Wabush Iron Company

Crude Ore Analysis

Drill Hole J-2 Sludge

Footage	Assay % Iron	Silica	Mang.	Phos.	Classification
20-35	39.45	40.90	.16	.008	20-25, Coarse to medium grained, cherty specularite, magnetite, some goethite. Apricot colored quartz. 25-30, Same except non magnetic. 30-35, Same but slightly magnetic. 16 lbs. 9 oz. sludge. 14 lbs. 13 oz. core.
35-40	40.99	40.19	.10	.004	Coarse to medium grained, cherty specularite, hematite, goethitem barely magnetic, occasional Silicate. Apricot colored quarts. 6 lbs. sludge. 7 lbs. 1 oz. core.
35-120	36.37	47.88	.15	.010	Fine to very fine, cherty specularite, hematite, goethite. Apricot colored quartz. 78 lbs. 5 oz. sludge. 124 lbs. 9 oz. core.
125-135	40.40	42.02	.15	.009	Very fine cherty specularite, magnetite, some earthy hematite, goethite. Grayish red. 9 lbs. 9 oz. sludge. 5 lbs. core.
130-150	37.33	45.66	.21	.009	Very fine cherty, specularite, some magnetite, dark reddish brown. 11 lbs. 15 oz. sludge. 4 lbs. core.
155-160	18.60	71.19	.15	.009	Extremely fine cherty specularite. Dark reddish brown. 11 oz. sludge. 14 oz. core.
155-190	42.36	38.22	.15	.010	Very fine cherty specularite, magnetite. Blackish red. 15 lbs. 15 oz. sludge. 21 lbs. 5 oz. core.
190-200	41.28	40.00	.15	.006	Very fine cherty specularite, some magnetite. Grayish red. 13 lbs. 5 oz. sludge. 3 lbs. 12 oz. core.
190-400	38.22	42.12	.20	.011	Very fine grained cherty specularite. Brownish gray. 184 lbs. 9 oz. sludge. 176 lbs. core.

			Magnetite		Hematite	
	J-2 Core		% wt Fe		% wt	Fe
	20-40	20	—	—	57.94	65.99
	40-61	21	0.18	68.29	59.13	65.26
	61-69	8	—	—	20.28	58.95
	69-84	15	0.73	65.46	62.85	62.42
	84-94	10	0.14	67.81	30.83	61.93
hi 5.1	94-102	8	—	—	17.70	50.88
	102-118	16	—	—	12.69	64.23
	118-180	62	—	—	42.71	65.42
	180-242	62	—	—	49.31	65.43
	242-291	49	—	—	37.45	65.33
	291-300	9	—	—	50.40	67.27
	300-343	43	—	—	49.80	62.11
	343-379	36	—	—	46.22	63.57
	379-409	30	—	—	52.96	65.33
	409-455	46	—	—	45.55	66.55
	455-474	19	—	—	39.76	65.62
	474-477	No Sample				
	477-489	12	—	—	42.93	62.40
	489-505	16	—	—	48.78	64.68
Ni 5.1	505-510	5	—	—	20.30	58.24
	510-566	56	—	—	62.85	66.06
	566-625	59	—	—	46.84	64.28
	625-705	80	—	—	53.57	64.11
		650			49.01	64.76

20-61 = 41'
69-94 = 25'
118-474 = 356'
477-705 = 228'
650'

% wt	Fe
49.01	64.76

-20 No Sample
61-69 Lean Material
94-118 Lean Material
474-477 No Sample

J-2 Core

20-40	20	42.36
40-61	21	44.21
61-69	8	14.28
69-84	15	42.82
84-94	10	22.77
94-102	8	11.94
102-118	16	14.61
118-138	20	38.23
138-160	22	24.18
160-180	20	42.04
180-200	20	38.79
200-221	21	38.39
221-242	21	40.98
242-253	11	23.86
253-274	21	39.04
274-291	17	29.87
291-300	9	49.18
300-321	21	35.83
321-343	22	36.55
343-349	6	35.19
349-362	13	36.80
362-379	17	32.70
379-389	10	45.20
389-409	20/389	41.00
409-425	16	34.54
425-438	13	33.25
438-455	17	40.84
455-460	5	36.40
460-474	14	29.94
474-477	2	30.41
477-489	11	32.12
489-505	16	37.53
505-510	5	17.20
510-566	56	45.33
566-621	55	38.63

Crude Iron

J-2 Sludge

20-40	20	39.84
35-120	use 50	36.37
125-135	use 10	40.40
130-150	20	37.33
155-160	5	18.60
153-190	35	42.36
150-200	20	41.25
190-400	210/370	38.22/38.28

Crude Fe

Core 20-407 (387' sampled) 35.41

Sludge 20-400 (370' sampled) 36.28

Note
This data given to R. Batchelor Jan 20, 1957

37.5 24
35.41

J.2 Sludge

20-40	20	—	—	57.24	66.73
35-120	85			46.12	54.14
120-125	No Sample				
125-135	10	2.69	65.50	21.72	67.86
130-150	20	2.23	58.51	19.25	65.85
150-155	140	Sample			
155-160	5			14.34	37.45
155-190	35	8.44	58.87	23.56	57.87
190-200	10	4.15	63.82	25.71	63.19
190-400	210	0.74	56.42	16.11	61.25

Sink Float *

DRILL HOLE CLASSIFICATION

Drill Hole No. J-3
Elevation 1939.8ft
Latitude ~~10500N~~ 11500 N ?
Departure 10000E

Property: Julienne Lake
Sheet No. 1
Classified by: J. Orsborn
Date: started Nov. 1-57

Footages From	To	Description
0	42	Surface
42	47	Ground & lost core spec.hem.I.F. sludge
47	60	Thinly banded, reddish, slightly friable, "Schistose" alignment of minerals; qtz-spec. hem-Amphibole? I.F. (as in J-2 a 450' and 576'-603' and in J-1 a 74'-90')
60	108	Fine to med. grained, non-mag. non-friable, unbanded, qtz.-spec. hem. I.F. with occasional rich zones spec. hem. (6"-8")
108	190	Med. to crse. grained, lt. gray to reddish, only slightly banded, leached, vuggy and somewhat oxidized qtz-spec. hem. & non-spec. Hem.I.F. easily ground, considerable lost core. Slightly friable
190		Fine grained, massive, non-friable, non-mag. lt. gray qtz.-spec. Hem. I. F. occasional vug.

P. M. & Co. Form 841

DRILL HOLE CLASSIFICATION

Drill Hole No. V-3
Elevation 1939.88
Latitude 10.50 N
Departure 10000 E
Location

Property: JULIENNE LAKE

Sheet No. 2
Classified by: F. EFFINGER
Date: STARTED: Nov. 1, '57
ENDED: Nov 21, '57

Footages From	Footages To	Description	Classification
190	301	FINE GRAINED, MASSIVE, NON FRIABLE, No. 1 MAG, LT GRY, QTZ-SPEC. HEMATITE I.F, OCCASIONAL VUG. LEAN BRECCIA ZONE (2") @ 225' BEDDING BECOMES MORE APPARENT BELOW 262' SOME SILICATES PRESENT A-75°	
301	304	HEM. STAINED QUARTZ.	
304	305	HEM. CLAY	
305	315	NO CORE RECOVERY	
315	318	LIMONITIC CLAY. SOME WHITE AREAS, PROBABLY TALC	

PICKANDS MATHER & COMPANY

Hibbing Laboratory

Wabush Iron Company

Crude Ore Analysis

Drill Hole J-3 Core

Footage	Assay % Iron	Silica	Mang.	Phos.	Classification
47-60	3[illegible] 14	44.32	.13	.008	Semi-friable, medium grained, cherty, specularite, schistose, Dusky red. Core recovery: 5 lbs. 1 oz. core.
60-108	31.67	53.95	.12	.008	Medium to fine grained, semi-friable, cherty specularite, generally schistose. Dark gray. Core recovery: 69 lbs. 5 oz. core.
108-190	35.43	49.05	.10	.007	Semi-friable, cherty, medium to fine grained, specularite, somewhat schistose, some leaching. Dusky red. Core recovery: 31 lbs. 9 oz. core.
190-301	32.79	52.68	.08	.012	Hard, cherty, fine to medium grained specularite, some leaching. Dusky red. Core recovery: 24 lbs. 3 oz. core.
301-318	4.71	82.[illegible]1	.07	.038	Medium grained quartzite, talc, little magnetite, specularite. Pale red. Core recovery: 6½ oz. core.

* No information was received on the inches of core recovered.

PICKANDS MATHER & COMPANY

Hibbing Laboratory

Wabush Iron Company

Crude Ore Analysis

Drill Hole J-3 Sludge

Footage	Assay % Iron	Silica	Mang.	Phos.	Classification
45-50					Very fine cherty specularite.
50-55					Very fine cherty specularite, richer.
55-60					Fine cherty specularite, little amphibole.
60-65					Fine cherty, specularite, little metallic iron.
65-70					Very fine, cherty specularite, very little metallic iron.
70-75					Fine cherty specularite, trace goethite, very little metallic iron.
75-80					Very fine, same as 70-75, little grease.
80-85					Same as 75-80.
85-90					Same as 75-80.
90-95					Same as 65-70.
95-100					Same as 65-70, little grease.
110-115					Very fine cherty, specularite, greyish red, very little metallic iron.
115-120					Same.
120-125					Same.
125-130					Same.

PICKANDS MATHER & COMPANY

Hibbing Laboratory

Wabush Iron Company

Crude Ore Analysis

Drill Hole J-3 Sludge

Footage	Assay % Iron	Silica	Mang.	Phos.	Classification
130-135					Very fine, cherty, specularite, grayish red, very little metallic iron.
135-140					Same.
140-145					Very fine cherty specularite, dark gray, very little metallic iron.
155-160					Same as 140-145.
170-170'3"					Same as 140-145.
190-195					Very fine cherty specularite, very little metallic iron.
195-200					Same.
200-205					Very fine cherty specularite, little muscovite, very little metallic iron
205-208					Same as 190-195.
210-215					Same as 190-195.
215-220					Same as 190-195.
220-225					Same as 190-195.
230-235					Same as 190-195.
235-240					Same as 190-195.
240-245					Same as 190-195.

PICKANDS MATHER & COMPANY

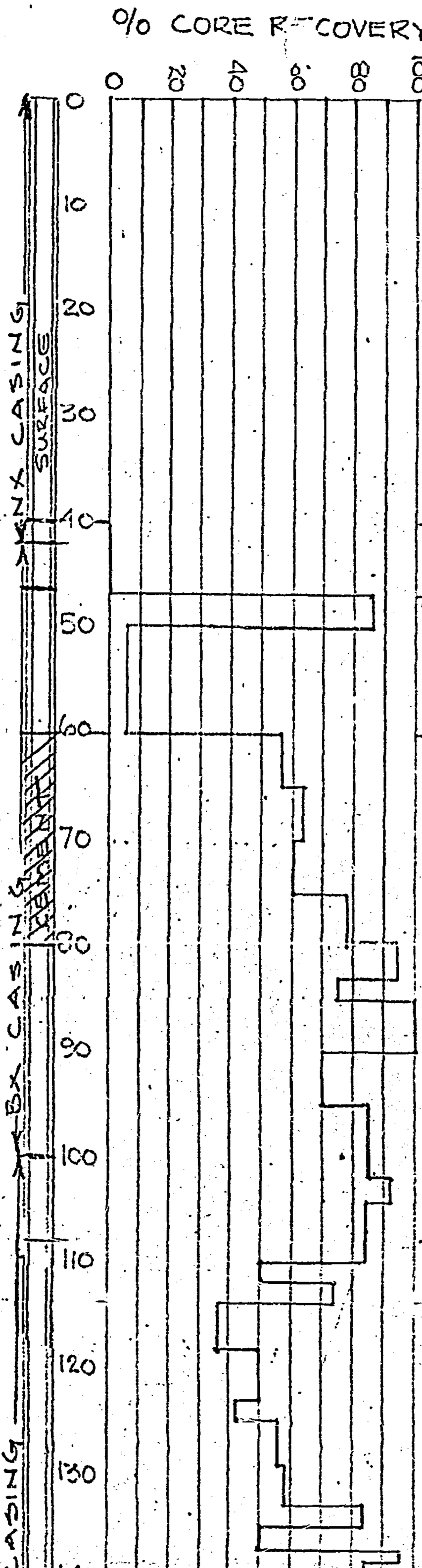
Hibbing Laboratory

Wabush Iron Company

Crude Ore Analysis

Drill Hole J-3 Sludge

Footage	Assay % Iron	Silica	Mang.	Phos.	Classification
247-250					Same as 190-195, plus trace muscovite.
250-252					Fine cherty specularite, trace metallic iron.
252-255					Same as 190-195.
255-260					Same as 190-195.
260-264					Same as 190-195, but greater amount of metallic iron, little grease.
280-285					Very fine cherty specularite, little muscovite, some metallic iron.
285-287					Very fine cherty specularite, little talc, some metallic iron.
295-300					Very fine cherty specularite, some metallic iron,



JOANNE LAKE
DH J-3
STARTED NOV. 1 1957
FINISHED " 1957
DEPTH OF HOLE ____ VERTICAL
CASING:
NX 42'
BX 100'
AX ____
EX ____

SURFACE
(SPEC. HEM. SAND)

GROUND & LOST CORE
SPEC. HEM. I.F. SLUDGE

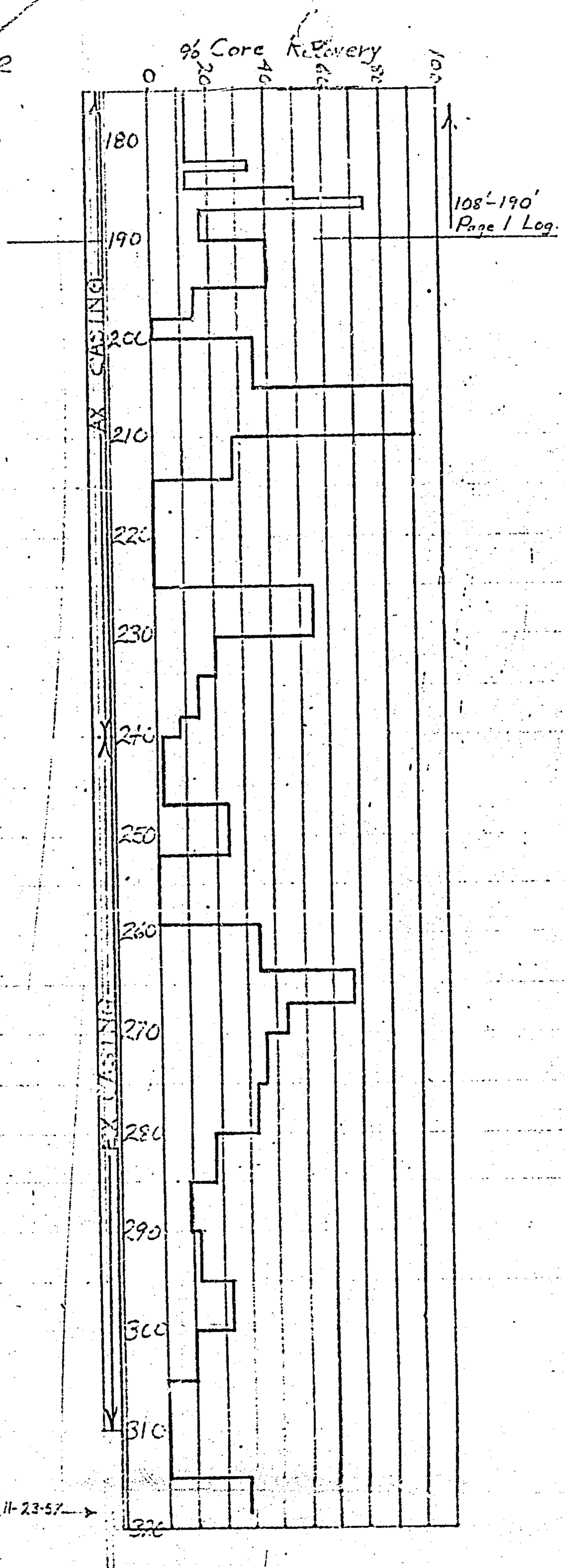
THINLY BANDED, REDDISH
SLIGHTLY FRIABLE,
"SCHISTOSE" APPEARANCE
QTZ-SPEC. HEM-AMPHIBOLE I.F.
(AS IN J-2 @ 576'-603' & 450 AND IN J-1 @ 74-90

FINE TO MED. GRAINED, NON MAG.
NON-FRIABLE, UNBANDED, QTZ-SPEC HEM
I.F. WITH OCCASIONAL RICH ZONES
SPEC. HEM (6"-8")

MEDIUM TO COARSE GRAINED
LT. GRAY TO REDDISH, ONLY SLIGHTLY
BANDED, LEACHED, VUGGY AND
OXIDIZED QTZ-SPEC. HEM & NON-SPEC. HEM. I.F.
EASILY GROUND. CONSIDERABLE LOST CORE.
SLTLY FRIABLE.

CONTINUED PAGE 2.

1225



Julienne Lake D.H. J-3

Started: Nov. 1, 1957

Finished: Nov. 23, 1957

Depth of Hole 318' Vertical

Casing: NX -42

BX -100

AX-240

EX-310

CONTINUED PAGE 2.

TIE ASSAY BREAK FOR DRILL HOLE J-3 JULIENNE LAKE

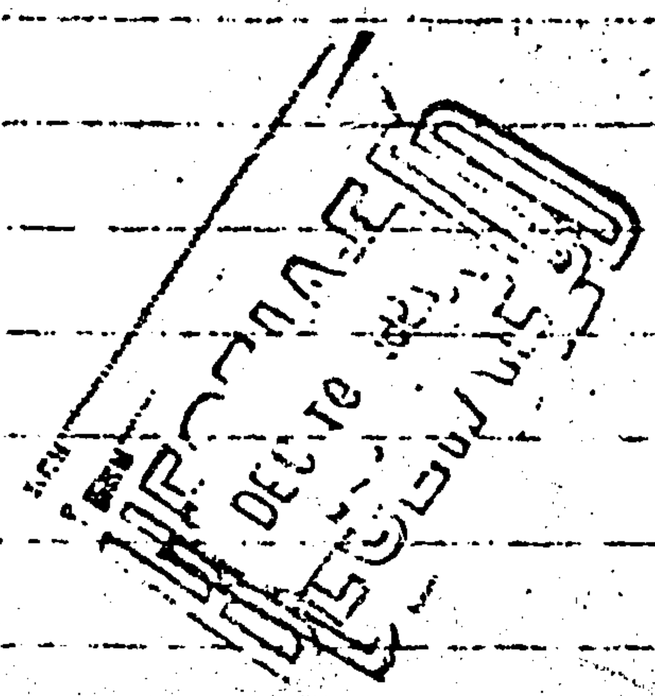
47 - 60

60 - 108

108 - 190

190 - 301

301 - 318.



B & S LTD. Form 841

DRILL HOLE CLASSIFICATION

Drill Hole No. J-4
Elevation 1839.46
Latitude 8500N
Departure 10000E
Location

Property: Julienne Lake

Sheet No. 1
Classified by: J. Orsborn F. Effing
Date: Started: Nov. 10 '57

Footages From	Footages To	Description	Classification
0	16	Overburden	
16	69	Fine to med. grained, Lt gray, only slightly leached, vabanded qtz-spec hem. I.F. Slightly friable with weakly mag. zones.	
69	99	Intensely leached, unbanded, m.g. qtz-spec.-limonite-goethite I.F. Spec is coarse in places. Slightly friable. Occas. short section of massive unleached, f.g. fractured qtz-spec. Very lean. Similar to J-2 (20'-84').	
99	190	Gray to reddish, non mag, qtz-spec-non spec hem I.F. f.g. to m.g., moderate leaching, slightly friable. Some bands almost entirely m.g. to c.g. spec., lean areas between bands contain med. to large grains. Folding at 164'-166'. Δ=45°.	
190	256	Reddish, non mag., mod. friable, qtz-spec.-non spec I.F. leached. Similar to above except for color & friable. Some sections very friable, leaner than above, containing no spec. bands. Fractured more than 99'-190'.	
256	281	Grayish f.g. non mag, little leaching, bedding more evident than above, less friable. Very lean I.F., toward bottom almost entirely chert. Little fracturing, no folding Δ=50°	
281	285	Quartz - approx c/248'-254' in J-2 (?)	

PICKANDS MATHER & COMPANY

Hibbing Laboratory

Wabush Iron Company

Crude Ore Analysis

Drill Hole J-4 Core

Footage	Assay % Iron	Silica	Mang.	Phos.	Classification
16-69	30.19	56.66	.06	.010	Friable cherty, medium to fine grained specularite, some leaching. Dusky red. Core recovery: 32 lbs. 14 oz. core.
69-99	36.85	46.77	.0[illegible]	.012	Friable, cherty, medium to coarse grained specularite, some leaching. Dark reddish brown. Core recovery: 16 lbs. 4 oz. core.
99-190	35.71	48.58	.06	.011	Friable, cherty, medium grained specularite, Dark grayish red. Core recovery: 43 lbs. 14 oz. core.
190-256	29.22	57.71	.09	.016	Same as 16-69. Core recovery: 37 lbs. 13 oz. core.
256-281	27.92	59.64	.10	.020	Same as 16-69. Core recovery: 14 lbs. 2 oz. core.
281-285	5.52	88.65	.05	.030	Semi-friable, quartzite with some fine specularite, Core recovery: 2 oz. core.

* No information was received on the number of inches of core recovered.

PICKANDS MATHER & COMPANY

Hibbing Laboratory

Wabash Iron Company

Crude Ore Analysis

Drill Hole J-4 Sludge

Footage	Assay % Iron	Silica	Mang.	Phos.	Classification
20-25					Fine cherty specularite, little metallic iron.
25-30					Same.
30-35					Fine, cherty specularite, little red hematite, trace metallic iron.
35-40					Same as 20-25.
40-45					Same as 30-35.
45-50					Very fine, cherty specularite, little red hematite, very little metallic iron.
50-55					Same.
55-60					Same.
60-65					Same as 30-35, but larger amount of metallic iron.
65-70					Same.
70-75					Fine, cherty specularite, little red hematite, some metallic iron.
75-80					Same, little grease.
80-85					Considerable grease probable the same.
85-90					Very fine, cherty specularite, little red hematite, little metallic iron.
90-95					Considerable grease, probable the same as 85-90.

PICKANDS MATHER & COMPANY

Hibbing Laboratory

Mahush Iron Company

Crude Ore Analysis

Drill Hole J-4 Sludge

Footage	Assay % Iron	Silica	Mang.	Phos.	Classification
95-100					Considerable, greasy, probably the same as 85-90.
100-105					Considerable. grease, fine cherty specularite, little metallic iron.
105-110					Same.
115-120					Same.
120-125					Fine, cherty specularite, little red hematite, some grease, smear.
125-130					Same, but little grease.
130-135					Very fine cherty specularite, little red hematite, very little grease.
135-140					Same.
140-145					Same, but no grease.
150-155					Very fine cherty specularite, little metallic iron.
155-160					Same.
160-165					Same.
165-170					Same, but less chert.
170-175					Same as 150-155.
180-185					Same as 150-155.

PICKANDS MATHER & COMPANY

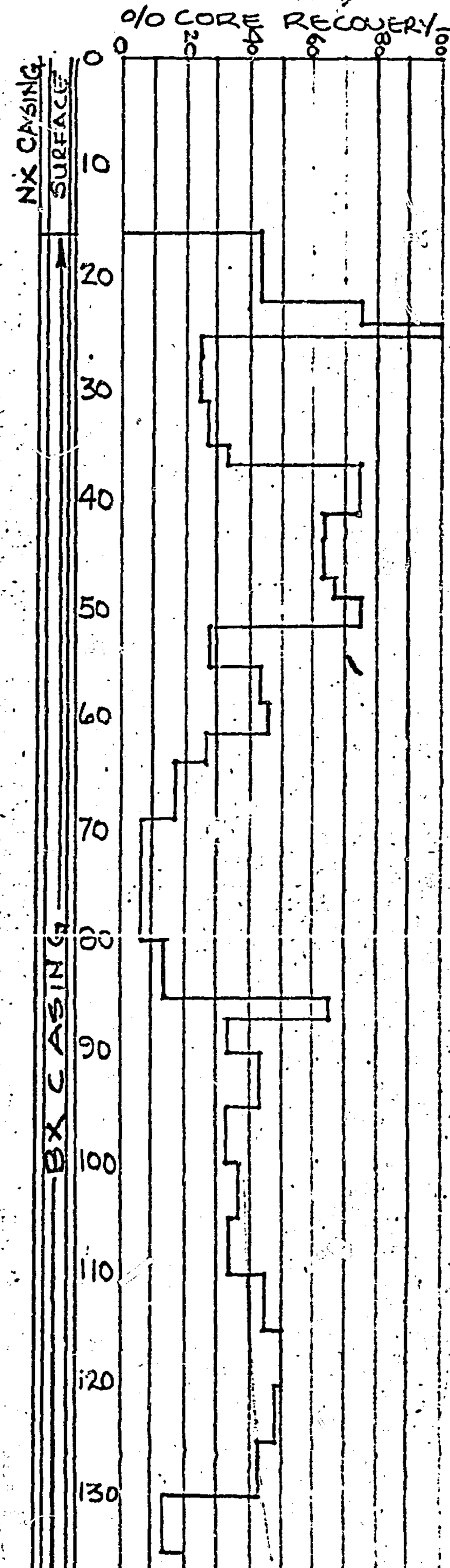
Hibbing Laboratory

Wabush Iron Company

Crude Ore Analysis

Drill Hole J-4 Sludge

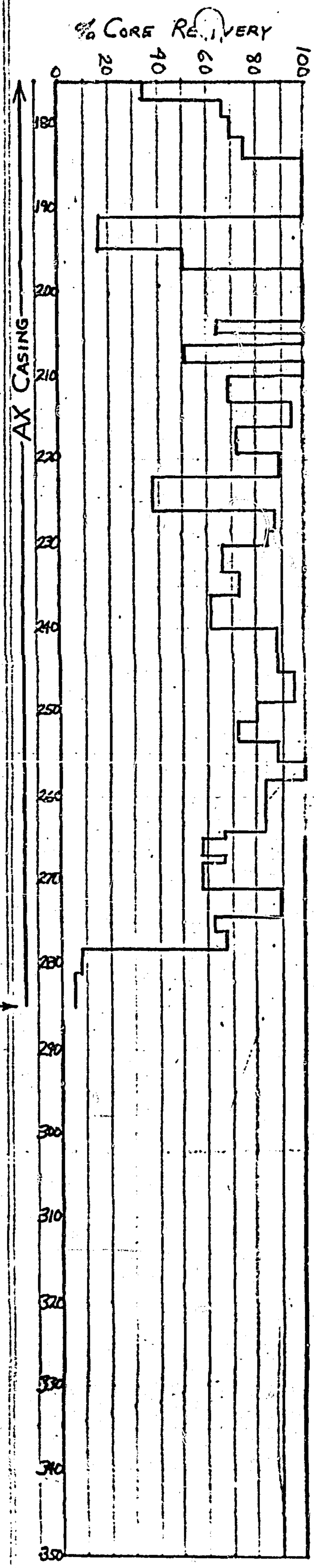
	Assay %				
Footage	Iron	Silica	Mang.	Phos.	Classification
185-190					Same as 150-155, plus little muscovite.



JULIENNE LAKE
DH J-4

STARTED: NOV. 10-'57
FINISHED: -57
DEPTH OF HOLE _____ VERTICAL

CASING:
NX=16
BX=140
AX=
EX=



Julienne Lake
DH J-4

Started: Nov. 10, '57

Finished:

Depth of Hole ____ Vertical

Casing
NX = 16'
BX = 140'
AX =
EX =

D.H. J-4

FTGE	"RUN	"CORE	% CORE REC.
16-22	72	30	42
22-24	24	18	75
24-25	12	12	100
25-27	24	6	25
27-31	48	12	25
31-35	48	10	28
35-37	24	8	33
37-41	48	36	75
41-43	24	15	63
43-47	48	30	63
47-49	24	16	67
49-51	24	18	75
51-55	48	14	29
55-58	36	15	42
58-61	36	16	45
61-64	36	10	28
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

TO DATE OF DEPARTURE

Julienne Lake

Core Recovery J-4 150'-285')

Run	Core (in.)	% Recov.
150-152	8	33.3
152-154	9	37.5
154-157	16	44.4
157-163	11	15.3
163-165	12	50
165-166	5	41.7
166-173	13	15.5
173-175	4	16.7
175-177	8	33.3
177-179	16	66.7
179-182	25	69.4
182-184	18	75
184-186	24	100
186-188	24	100
188-191	36	100
191-195	8	16.7
195-197	12	50
197-199	24	100
199-201	24	100
201-203	24	100
203-205	15	62.5
205-206	12	100
206-208	12	50
208-210	24	100
210-213	25	69.4
213-216	34	94.4
216-219	26	72.2
219-222	32	88.9
222-226	18	37.5
226-228	21	87.5
228-230	20	83.3
230-233	24	66.7
233-236	26	72.2
236-246	29	60.4
240-245	53	88.3

2

Core Recovery J-4 150'-285' Julienne Lake

Run	Core (In.)	% Recov.
245-248.5	40	95.2
248.5-251	24	80
251-253	17.	70.8
253-256	32	88.9
256-258	24	100
258-261	30	83.3
261-263	20	83.3
263-264	10	83.3
264-265	8	66.7
265-267	14	58.3
267-268	8	66.7
268-271	21	58.3
271-274	32	88.9
274-276	15	62.5
276-278	16	66.7
278-281	3	8.3
281-285	3	6.25

Stopped on 11-29-57