SUMMARY REPORT FOR 1983

ON

RYERSON GRAPHITE PROJECT'S

PROPERTY EXPLORATION

RYERSON TOWNSHIP, DISTRICT OF PARRY SOUND
ONTARIO

N.T.S. REFERENCE 31E/12

Toronto, Ontario, Canada
February 21, 1984

Melville William Rennick, P.Eng.
Consulting Geologist

TABLE (

Appendices

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Appendices

Appendix V	Diamond Drill Hole Log & Section, With Assay Results, Through Hole Number 83-1, by F.A. Hodgkinson, P.Eng.
Appendix VI	Diamond Drill Hole Logs & Section, With Assay Results, Through Holes Numbered 83-2 & 83-3, by F.A. Hodgkinson, P.Eng.
Appendix VII	List of Assay Results and copy of a letter by R.E. Lett, Ph.D., Chief Chemist, Barringer Magenta, describing the methodology of analysis for diamond drill core samples numbered 336 to 374 and 401 to 404, inclusive.
Appendix VIII	Report by C.W. Karkkainen, Senior Research Engineer, Institute of Mineral Research, Michigan Technological University, describing the methodology and results of tests and analyses on two surface bulk samples and diamond drill core samples numbered 301 to 335, inclusive, dated January, 1983.
Appendix IX	Report of STEM Analyses of Ore Samples for the Ryerson Graphite Project, by C.A. Ackerley, Department of Botany and Genetics, University of Guelph, Ontario.
Appendix X	Preliminary Evaluation Of The Ryerson Twp. Graphite Property of Ryerson Graphite J.V., by R.H. Clayton of Watts, Griffis and McOuat Limited, Consulting Geologists and Engineers, dated January 19, 1983.
Appendix XI	Report On A Visit To Ryerson Graphite Project Property, Ryerson Township, Ontario, by R.H. Clayton of Watts, Griffis and McOuat, Consulting Geologists and Engineers, dated February 24, 1983.

INTRODUCTION

Ryerson Graphite Project is a privately funded syndicate which was formed in 1982 to finance the exploration and development of a large flake graphite occurrence. Reports by this author dated December 9, 1982 and February 21, 1983 discuss: (A) the results of geophysical and geological surveys carried out over the property and (B) a diamond drilling and sampling programme carried out to the end of 1982.

On February 8, 1984, James W. Hughes commissioned the author to compile the results of work carried out on the property and in connection with the development of the property, during 1983. The scope of this report is to present a review and compilation of the results of the work completed. The purpose of the report is to provide recommendations for further exploration of the property.

This report is based on a physical examination of all diamond drill core and core samples recovered from the property, direct personal involvement in the geological mapping and geophysical surveying of the property, and a detailed review of all appendices to this report which were supplied to the author by Ryerson Graphite Project and which are believed to be authentic and reliable.

SOURCES OF INFORMATION

ACKERLEY, C.A. — Report of STEM Analyses Of Ore Samples For The Ryerson Graphite Project (Undated); Department of Botany And Genetics, University of Guelph, Ontario.

CLAYTON, R.H. — Preliminary Evaluation Of The Ryerson Graphite Property Of Ryerson Graphite J.V., January 19, 1983; Watts Griffis and McOuat Limited, Consulting Geologists And Engineers.

Report On A Visit To Ryerson Graphite Project Property, Ryerson Township, Ontario, January 28, 1983, February 24, 1983; Watts Griffis and McOuat Limited, Consulting Geologists And Engineers.

HODGKINSON, F.A. — Diamond Drill Logs And Sections, 1982 & 1983 Diamond Drilling Programme, February 1983.

KARKKAINEN, C.W. — Ryerson Project Bulk Samples, January, 1983; Institute Of Mineral Research, Michigan Technological University, Houghton, Michigan, U.S.A.

RENNICK, M.W. — *Report On Geological And Geophysical Surveys Over The Ryerson Graphite Project Property, Ryerson Township, District of Parry Sound, Ontario, December 9, 1982.

*Summary Report For 1982 On Ryerson Graphite Project, Diamond Drilling And Sampling Programme, Ryerson Township, District of Parry Sound, Ontario, February 21, 1983.

*These reports were previously submitted to the Government of Ontario in compliance with The Ontario Mineral Exploration Program Act, 1980 requirements.

SUMMARY

The Watts, Griffis and McQuat Limited reports (See Appendices X and XI) confirm the validity of the geophysical techniques employed on the property as well as the quality of both the geological and geophysical surveys. The report (Appendix X) presenting a preliminary evaluation of the property provides useful terms of reference should serious consideration be given to bring it into production in the near future.

The 1983 diamond drilling programme confirmed that flake graphite is associated with Conductors A and A-1.

Results from the application of standard analytical and testing methods, on recovered core and bulk surface samples, are only moderately encouraging. Similarly, the graphitic carbon content of a series of samples analysed utilizing Scanning Transmission Electron Microscopy (STEM) and Energy Dispersive Spectrometry (EDS) is only moderately encouraging because when the graphitic carbon contents of these samples are calculated there appears to be little difference between them and the graphitic carbon content established for similar samples by standard analytical techniques.

Based on the apparent tenor of the deposit, prognoses for the ultimate development of a mine are not good from a technical or economic point of view. However, on a strictly practical basis it must be remembered that only some 1,000 feet of a total strike length of almost 7,000 feet have been investigated along the main zone and the possibility still exists that somewhere along the unexplored 6,000 feet an economic concentration of graphitic carbon occurs, although the probability of such a concentration has been somewhat reduced. In addition, the presence of a second graphitic zone associated with Conductors A and A-1 has been established. This zone parallels the "main zone", to the south, has an indicated strike length of 4,600 feet and, except for two diamond drill holes put down some 1,770 feet apart, remains unexplored.

Although graphite occurrences on the property remain largely untested, sufficient data have been collected to determine the minimum carbon content and widths of two large graphite-bearing zones as well as the quality of the graphitic carbon. These data should be utilized to interest "end users" of carbon products in the property because while the development of a graphitic carbon deposit is a potentially rewarding venture, the marketing of products in quantities sufficient to sustain a mining operation is a difficult endeavour. Thus, no further work should be carried out on the property until such time as marketing agreements for potential products are secured. Ideally, these should also include direct participation by one or more "end user(s)" in any future exploration and development of the Ryerson deposits.

PROPERTY DESCRIPTION, LOCATION, ACCESSIBILITY

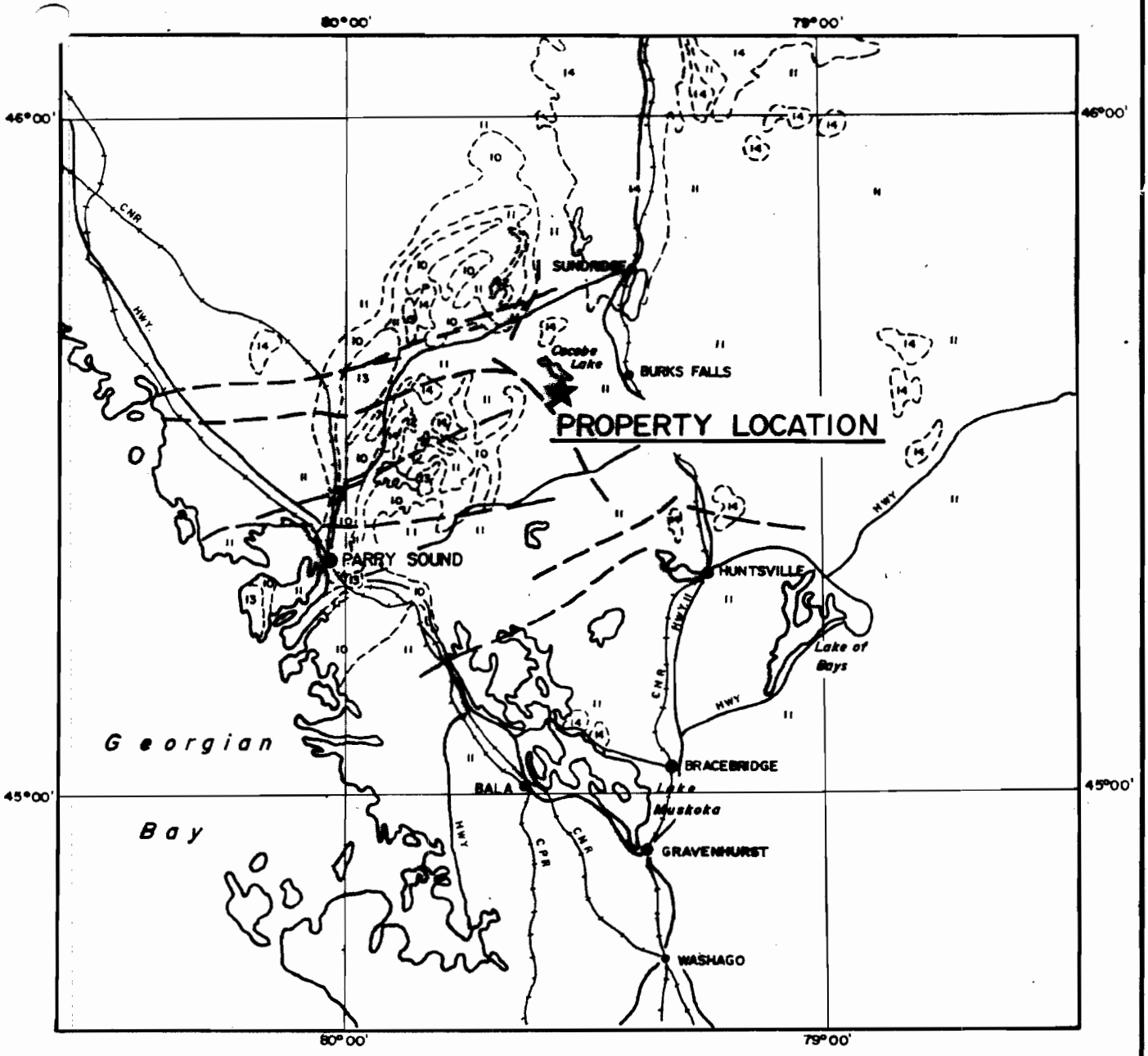
Ryerson Graphite Project's holdings are situated in the north-central part of Ryerson Township, District of Parry Sound, Eastern Ontario Mining Division, Province of Ontario. They cover approximately 575 acres comprising four complete lots, two half lots, and the largest portion of one other lot. The mineral and surface rights of all lots are held under patent, the lots are contiguous, and are described as follows: Lots 20, 22 and 23, Concession X; North Part, Lot 20, Concession IX; SW Part, Lot 20, Concession IX; Lot 21 Concession IX; North ½,Lots 22 and 23, Concession IX.

The property is located about 10 kilometers west from the Town of Burk's Falls via a secondary all-weather road which bisects it. Burk's Falls is situated on Provincial Highway No. 11, 90 kilometers south of the City of North Bay and 245 kilometers north of Metropolitan Toronto. The Great Lakes shipping terminal at Parry Sound, on the northeast shore of Georgian Bay, is 65 kilometers by all-weather road to the southwest.

Preliminary electric power requirements for any planned development could probably be met by tapping into a 550 volt transmission line which parallels the road through the property.

Adequate supplies of water are available from a large, natural, stream-fed pond located on Lots 23, Concessions IX and X. High ridges are covered with second growth hard maple, birch and poplar, and the lower ground supports a medium to heavy growth of spruce and balsam along with the usual varieties of alders and willows. Differences in elevation are about 45 metres (150 feet) throughout the subject area.

It must be noted that the above description of the property was precise only for the period during which the work discussed in this report was being carried out and that no check was made on the current status.



LEGEND

PRECAMBRIAN

14	Granodiorite, granite

GRENVILLE PROVINCE

13	Diorite, gabbro, peridotite
12	Carbonate Metasediments
11	Clastic Metasediments
10	Mafic to Felsic Metavolcanics
— —	Fault

NOTE: Geology from O.D.M Map 2197, Ontario Geological Map Southern Sheet, 1970

GENERAL GEOLOGY & LOCATION MAP

RYERSON GRAPHITE PROJECT

RYERSON TOWNSHIP PROPERTY

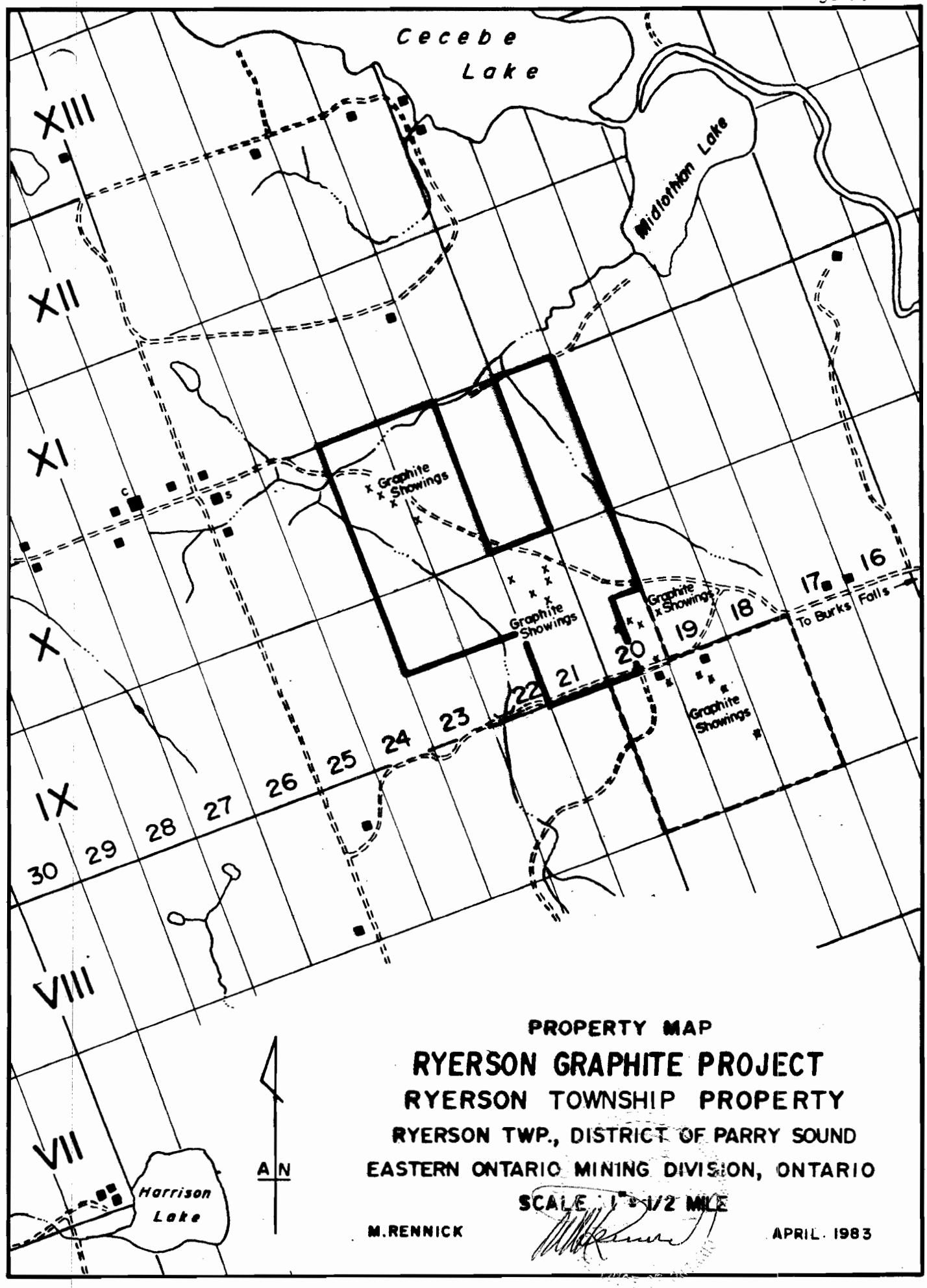
RYERSON TWP., DISTRICT OF PARRY SOUND

EASTERN ONTARIO MINING DIVISION, ONTARIO

SCALE: 1" = 16 MILES

M. RENNICK

APRIL 1983



PROPERTY MAP

RYERSON GRAPHITE PROJECT

RYERSON TOWNSHIP PROPERTY

RYERSON TWP., DISTRICT OF PARRY SOUND

EASTERN ONTARIO MINING DIVISION, ONTARIO

SCALE 1" = 1/2 MILE

M. RENNICK

APRIL. 1983

GEOLOGY

(i) General

The Ryerson Graphite Project property is entirely underlain by middle to late Precambrian rocks of the Grenville Supergroup or Series. Rock exposure is generally good but the mineralized zones or geophysical features which indicate the presence of mineralization are, for the most part, covered by overburden ranging in depth from a few inches to 20 feet or more.

Grenville rocks occupy a roughly rectangular section of the Canadian Shield, 1,100 miles long and 200 miles wide, with the long axis extending in a northeasterly direction from the east shore of Georgian Bay in Ontario to the northeast coast of Labrador. Rocks of the Grenville Series are characterized by moderate to high grade regional metamorphism and complex structural style. They host numerous economic occurrences of industrial minerals as well as base and precious metals. All of the more than 50 known graphite prospects, deposits and past producers in Ontario are situated in the Grenville Province.

(ii) Mineralization

Flake graphite occurs on the Ryerson property in a sinuous series of light to dark grey coloured, fine to medium grained, quartz-feldspar-biotite gneisses. The series has a general strike of N 60^{o}W and dips from -60^{o} to -85^{o} SW. The "main" graphite-bearing zone, the central part of which is defined by Conductor B (See Page 11), has an indicated width of 50 to more than 500 feet along a strike length of 6,900 feet. VLF-EM Conductors A and A-1 appear to represent a second, major, parallel zone of graphite-bearing gneisses up to 100 feet or more in width.

Within the mineralized zones, graphite occurs as seams or laminae of fine to coarse flakes and in microcrystalline form, in bands of varying concentrations estimated to run from one percent to more than 10 percent. These zones also carry appreciably more pyrite than the graphite-barren gneisses and often present a friable, dark brown to black coloured "burn" on outcropping surfaces.

HISTORY OF THE RYERSON GRAPHITE PROJECT PROPERTY EXPLORATION

During 1982, the entire property was geologically mapped along grid lines spaced at maximum 50 metre intervals. Magnetic and VLF electromagnetic surveys were carried out over the same grid and a horizontal loop electromagnetic survey employing an Apex Maxmin II instrument was carried out over selected portions of the grid. The results of this work were discussed by the author in a report dated December 9, 1982.

Diamond drilling commenced on November 19 and was suspended on December 19, 1982 for the Christmas - New Year holiday period. A total of seven holes comprising 2,842.5 feet of drilling were completed and 70 samples comprising 696.5 feet of core were split and bagged but, up to December 31, 1982, none was assayed for graphitic carbon content. Also, a bulk sample shipped to Michigan Technological University for testing did not arrive in time for processing before December 31. This work was discussed by the author in a report dated February 21, 1983.

Diamond drilling re-commenced on January 19, 1983 and by January 29 three additional holes totalling 802 feet of drilling were put down. Four samples comprising 57 feet of core were split and bagged and at this time, the diamond drilling programme was terminated.

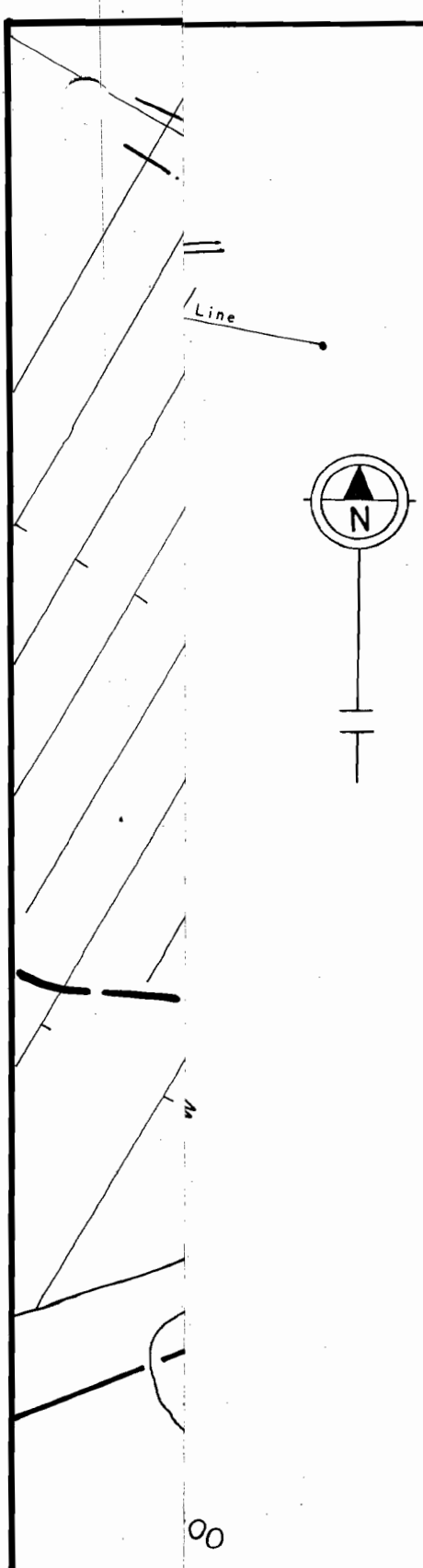
A second bulk sample was shipped to the Michigan Technological University early in January, 1983 and the results of tests on both this sample and one despatched late in 1982 form the basis of a report by C. W. Karkkainen (Appendix VIII).

Mr. Graham Ackerly, Project Manager for Ryerson Graphite Project, commissioned Watts, Griffis and McOuat Limited, Consulting Geologists and Engineers, to provide a preliminary evaluation of the property and, later, to visit and examine the property. The results of these two commissions are discussed in reports by R.H. Clayton dated January 19, 1983 and February 24, 1983, respectively, and are attached to this report as Appendices X and XI.

On March 1 and 2, 1983, the author visited the property and accompanied by F. A. Hodgkinson who logged and sampled the diamond drill core, conducted an inspection of all core. At the same time, arrangements were made for the analysis of a large number of samples which had not been submitted for assaying. Subsequently, all assay results were incorporated into the drill hole logs and plotted on geological sections (See Appendices I to VI, inclusive).

Finally, because the analytical results from several laboratories or testing facilities using state-of-the-art techniques did not support certain "visual estimates" of the graphitic carbon content of the samples submitted for analysis, a decision was made to employ a relatively new and highly sophisticated method of determining the total graphitic carbon content. This method employs Scanning Transmission Electron Microscopy (STEM) and Energy Dispersive Spectrometry (EDS). The methodology and test results obtained are the subject of a report by C.A. Ackerly, Department of Botony and Genetics, University of Guelph, Ontario (See Appendix IX).

By August 31, 1983, all technical or investigative work was terminated. However, efforts are still being made to interest one or more of the major "end users" of graphitic carbon to participate in additional investigation and the ultimate development of the property.



L E G E N D

SURFACE GEOLOGY

- D — Metagabbro
- Gf — Granitic quartz feldspar gneiss
- Gb — Quartz biotite gneiss
- Gbt — Quartz biotite brown garnet gneiss
- Gbr — Quartz biotite red garnet gneiss
- Gh — Hornblende quartz biotite gneiss
- g — Graphite
- Gneissosity
- Outcrop area
- Trench
- Pit
- 82-1 — Diamond drill hole
- VLF-EM conductor axis
- Core shack located at 635 W, 153 N

RYERSON GRAPHITE PROJECT

RYERSON TOWNSHIP PROPERTY

DIAMOND DRILL HOLE & TRENCH LOCATION MAP 1982 & 1983 PROGRAMME

RYERSON TWP., EASTERN ONTARIO MINING DIVISION

DATE : FEBRUARY, 1983 | SCALE : 1:2500

DWG. NO.

TABLE OF CORE SAMPLE ASSAY RESULTS FROM BARRINGER MAGENTA LIMITED

Hole No.	Sample No.	From	To	Sample Length in Feet	% Total Carbon
82-1	336	53	63	10	0.96
	337	63	73	10	0.28
	338	73	83	10	0.28
	339	83	93	10	1.16
	340	93	103	10	1.00
	341	103	113	10	0.76
	342	113	123	10	1.16
	343	123	133	10	1.16
	344	133	143	10	0.70
	345	143	149	6	0.16
82-2	358	64	74	10	0.48
	359	74	84	10	0.80
	360	84	94	10	1.24
	361	94	104	10	1.08
	362	104	114	10	1.16
	363	114	124	10	.88
	364	124	144	20	.46
	365	144	162	18	.96
82-3	346	67	77	10	0.28
	347	77	87	10	0.14
	348	87	97	10	1.74
	349	97	107	10	2.62
	350	107	117	10	0.92
	351	117	127	10	0.56
	352	127	137	10	0.64
	353	137	151	14	0.56
	354	263	273	10	0.32
	355	273	283	10	0.62
	356	283	293	10	1.32
	357	293	300	7	0.16
82-4	366	104	114	10	1.24
	367	114	124	10	0.50
	368	124	134	10	1.52
	369	134	140	6	1.24
82-7	370	50	60	10	1.16
	371	60	70	10	1.18
	372	70	80	10	0.40
	373	80	90	10	0.88
	374	90	100	10	0.44
83-1	401	129.5	142.5	13	2.24
	402	142.5	156.5	14	1.56
	403	156.5	171.5	15	0.36
	404	171.5	186.5	15	0.30

TABLE OF CORE SAMPLE ASSAY RESULTS FROM MICHIGAN TECHNOLOGICAL UNIVERSITY

Hole No.	Sample No.	From	To	Sample Length in Feet	% Total Carbon
82-5	301	19.5	25.0	5.5	1.43
	302	25	30	5	1.84
	303	30	35	5	0.95
	304	35	40	5	1.24
	305	40	45	5	1.40
	306	45	50	5	1.26
	307	50	55	5	0.96
	308	55	60	5	1.54
	309	60	67	7	1.64
	310	67	77	10	0.43
	311	77	87	10	0.46
	312	87	97	10	0.38
	313	424	439	15	0.63
82-6	314	191	201	10	1.98
	315	201	211	10	1.16
	316	211	221	10	0.81
	317	221	231	10	1.70
	318	231	241	10	1.55
	319	241	251	10	1.64
	320	251	261	10	1.48
	321	261	271	10	1.11
	322	271	281	10	0.33
	323	281	301	20	0.49
	324	301	321	20	0.37
	325	321	331	10	0.77
	326	331	341	10	1.71
	327	341	351	10	0.68
	328	351	361	10	1.52
	329	361	371	10	2.33
	330	371	381	10	2.91
	331	381	391	10	1.50
	332	391	401	10	1.15
	333	401	411	10	0.86
	334	411	421	10	0.49
	335	421	431	10	0.35

DISCUSSION OF PROGRAMME RESULTS

(i) Trenching, Sampling and Testing

A cursory examination of the first bulk sample indicated that it did not contain an economic amount of graphite so a testing programme for it was abridged and a second sample weighting 400 kilograms was sent to Michigan Technological University for testing. The first sample was taken from a 4.4M x 3M x 1M pit put down on line 700W at 35S. The second sample was taken from a 21M x 2M x 1.25M trench (Trench 4) put in along line 700W and crossing the formations in the vicinity of the original small pit (See Page 11). This work also included a small amount of stripping along the trench site. Thirty-five samples of split core were sent along with the second bulk sample for carbon analysis.

Tests on the bulk samples established the quality, flake sizes, etc. of the contained graphite. As well, the total graphitic carbon content of both the surface bulk and split core samples was determined. All results are tabled in Appendix VIII and indicate that the quality of recoverable material is excellent but that the overall graphitic carbon content is disappointingly low. Similar assay results were obtained for 43 additional samples consigned to Barringer Magenta Limited for analyses (See Tables Of Core Sample Assay Results, Pages 12 and 13).

(ii) STEM Analyses

The STEM analyses were carried out on 29 randomly selected samples composed of the remaining half of core splits previously assayed by Barringer Magenta or at Michigan Technological University. The methodology is described and the results of the analyses are tabulated in the Ackerley report (Appendix IX). The work was undertaken because of some conviction that standard assay techniques did not produce results comparable to "visual estimates" of what the carbon content should be - they were "much too low".

A cursory examination would indicate that the advocates of the STEM work were correct in their assessment of earlier results. However, a careful analysis of the STEM methodology and results indicates that their visual estimates of the graphitic carbon of whole rock samples were incorrect and that, when reduced to the total graphitic carbon content of whole rock samples, the STEM results are completely consistent with those obtained by the standard assay techniques. If one assumes (See Table 1, Appendix IX).

(A) that Flake Determination (% w/w)

$$= \frac{\text{wt. of flake} \times 100\%}{\text{wt. of sample}}$$

(B) that Graphitic Carbon Content (% w/w)

$$= \frac{\text{wt. of graphitic carbon} \times 100\%}{\text{wt. of flake}}$$

then the graphitic carbon expressed as a percentage of the whole rock sample

$$= \frac{\text{wt. of flake} \times \text{wt. of graphitic carbon}}{\text{wt. of sample (100\%)}}$$

Examination of the STEM results, based on the above assumptions and calculation, shows that of 29 samples analysed two or 6.9% of them had graphitic carbon contents greater than two percent, five samples or 17.25% of the total contained between one and two percent graphitic carbon, and 22 samples or 75.86% contained less than one percent graphitic carbon. Comparative results for 78 samples assayed by Barringer Magenta Limited (43) and at the facilities of Michigan Technological University (35) are as follows: four samples or 5.13% of them had a total graphitic carbon content exceeding two percent, 33 samples or 42.13% contained between one and two percent, and 41 samples or 55.56% contained less than one percent graphitic carbon.

Although Ackerley fails to correlate the sources of core samples referred to in his report with drill hole numbers and core intercepts, this lack of information is only of academic interest in view of the results obtained.

(iii) Diamond Drilling

Seven diamond drill holes were put down on the "main zone" during 1982. Each hole cut substantial widths of graphite-bearing material. Seventy samples were split and bagged from an aggregate of 696.5 feet but none was assayed by the end of 1982 so no comprehensive assessment of the significance of the drilling could be presented in the 1982 programme summary (Rennick, February 21, 1983).

During January, 1983, three additional holes totalling 802 lineal feet were drilled to check a second potential zone of graphite-bearing mineralization represented by VLF-EM conductors A and A-1. Four samples aggregating 57 feet were split from a wide zone of mineralization in Hole 83-1. Hole 83-2 was drilled down dip and failed to intersect any graphitic mineralization, and Hole 83-3 intersected a wide zone of sparse mineralization from which no samples were taken. Eventually all core samples were sent for analysis - 43 to Barringer Magenta Limited of Toronto, Ontario and 35 to facilities at Michigan Technological University.

Holes numered 82-1, 82-2 and 82-3 were drilled to cross section the "main zone" of mineralization in the vicinity of 600W (Appendix I). The section plot indicates that the "main zone" here is comprised of at least four mineralized sections or bands separated by sections that are either barren or contain extremely sparse mineralization. The indicated minimum width of the zone, assuming a formational dip of -65 degrees, is 395 feet and the cumulative true width of the four mineralized bands is 255 feet. The upper band was cut in Hole 82-3 and has an indicated true width of 78 feet of which 20 feet assayed 2.18% graphitic carbon. The third band was cut by Holes 82-1 and 82-2. It has an indicated true width of 85 feet. Two sections, each 20 feet wide, separated by lower grade material of less than one percent, were cut by Hole 82-1 and assayed 1.08% and 1.16% graphitic carbon,respectively. Directly below these sections, Hole 82-2 cut a 30 foot section in the third band of mineralization which assayed 1.16% graphitic carbon.

Hole number 82-4 was drilled along 550W to intersect the "main zone". It cut two bands of mineralization across a "zone width" of 100 feet. The

upper band contained only sparse mineralization across 44 feet. The lower band contained 1.42% graphitic carbon across its bottom 16 feet.

Holes number 82-5 and 82-6 were drilled to cross section the "main zone" along line 700W. Across this section, the zone appears to be 550 feet wide and consists of two main mineralized bands separated by 60 feet of barren rock, assuming a formational dip of -65 to -70 degrees. Hole 82-5 cut a 47.5 foot section near the top of the upper band which assayed 1.45% graphitic carbon and a 15 foot section of the lower band assayed 0.63%. None of the rest of the lower band, which has an apparent width of 200 feet,was sampled. Hole 82-6 cut two 45 foot sections, one near the top of the upper band and one near the bottom which assayed 1.5% and 1.88% graphitic carbon, respectively.

Hole 82-7 cut the "main zone" along line 850W. Upper, middle and lower bands of mineralization representing true widths of 62, 38 and 90 feet respectively, separated by wide sections of barren material, were intersected. The assumed dip here is -60 degrees. Only the top 50 feet of the upper band was sampled and, of this, only the upper 19 feet which assayed 1.17% contained more than one percent graphitic carbon.

Hole number 83-1 was drilled along line 200W to explore the source of VLF-EM Conductor A-1. The hole intersected 95 feet of graphitic mineralization, commencing at 130 feet, which represents a true width of 80 feet if a structural dip of -70 degrees is assumed. The best section, commencing at 130 feet and representing a true width of 24 feet, assayed 1.89% graphitic carbon. Two lower samples assayed less than one percent and the remainder of the band was not sampled.

Holes number 83-2 and 83-3 were drilled along line 700W to test Conductor A. 83-2 was drilled in the wrong direction - down dip - and produced no useful information. Hole 83-3 intersected a single band of mineralization with a true width of 105 feet, assuming a formational dip of -55 degrees. Although the presence of a graphite-bearing band was confirmed, mineralization appeared to be too sparse to warrant sampling and analysis.

(iv) Other

The visit to the property described by R.H. Clayton of Watts, Griffis and McOuat Limited,in Appendix XI,provided little in the way of new information or a better understanding of the mineral occurrences in general. This, however, must be largely attributed to the fact that the visit was made in January when severe snow conditions obscured all but the occasional rock outcrop.

The commissioning of the report by Clayton which comprises Appendix X must,at the very least,be considered precipitant. Inasmuch as, at the time, no tonnage was developed and no grades established for the mineralized sections intersected by diamond drilling, too many assumptions had to be included in the various calculations which form the body of the report to provide any realistic evaluation of the property. Subsequently, it was established that grades of mineralization are from two to four percent below the lowest assumed mining grade used in the report and that these grades occur across substantially narrower widths than those used in the evaluation calculations.

On the plus side, cost estimates, ore value calculations, pre-tax and after-tax return estimates provide realistic and useful terms of reference for any discussions aimed at the continuing exploration and development of the property in the near future.

CONCLUSIONS AND RECOMMENDATIONS

Exploration work to date has investigated only a small portion of the overall strike length of the "main" graphite-bearing zone and established the presence of a second, potentially large, parallel zone. However, it is concluded that sufficient data have been compiled to provide minimum expectant limits on width and grades of the mineralized zones, and on the quality of the recoverable graphitic products to demonstrate the property's possibilities. These data should be utilized to acquaint potential participants with the promise of the property and to encourage their participation in its further exploration and development. Accordingly, it is recommended that Ryerson Graphitic Project defers the commitment of any additional funds to the exploration of the property until product markets have been developed and one or more additional participants are committed to supporting the venture with both funds and technical expertise. Such participants would be, ideally, end users of graphitic carbon.

Standard, state-of-the-art analytical and testing methods appear to provide data as reliable as the more sophisticated and much less economical STEM method of testing and analysis for carbon content. Therefore, future tests and analyses should be conducted using standard techniques.

All of which is respectfully submitted for your information and consideration.

Toronto, Ontario, Canada
February 21, 1984

Melville William Rennick, P.Eng.
Consulting Geologist

CERTIFICATE

I, Melville William Rennick, of the Borough of East York, in the Municipality of Metropolitan Toronto, do hereby declare:

1. That I am a consulting Geologist residing at 234 Donlea Drive, Toronto, Ontario M4G 2N2.

2. That I am a graduate of the Provincial Institute of Mining, Haileybury, Ontario, in 1955 and have been continuously engaged as a practicing geologist since that time, and I am a Registered Professional Engineer in the Province of Ontario.

3. That the foregoing report is based on several sources of information including published reports and articles relating to graphite as well as results of the work discussed therein.

4. That I have worked on the subject property and visited it once during the course of the programme discussed in the foregoing report.

5. That I have no interest, direct or indirect, in Ryerson Graphite Project or any of its properties, nor do I expect to receive or acquire any such interest.

Toronto, Ontario, Canada
February 21, 1984.

Melville William Rennick, P.Eng.
Consulting Geologist

DRILL SECTION AND LOGS REMOVED - SEE FILE #63.4199

DRILL SECTION + LOGS REMOVED - SEE FILE #63.4199

DRILL SECTION AND LOGS REMOVED - SEE FILE # 63.4199

DRILL SECTION AND LOG REMOVED - SEE FILE # 63.4199

Appendix V

COMPANY
PROJECT RYERSON GRAPHITE PROJECT
Ryerson Twp., Ontario
DIAMOND DRILL LOG

DIP TEST - CORRECTED						
FOOTAGE	DEGREE					
COLLAR	45					

COMMENCED	Jan. 23/83
FINISHED	Jan. 24/83
CLAIM No.	Lot 1, Conc. 1X
LENGTH	186.0 feet
LATITUDE	187 S
DEPARTURE	700 W
ELEVATION	
AZIMUTH	210°
HOLE No.	83 - 2
SHEET No.	1 of 1
LOGGED BY	F.H.
TOTAL RECOVERY	157.0'

Drilled by: LANGLEY DRILLING Core Size: AX = 1.375"

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	FOOTAGE LENGTH	ASSAYS
0	29.0	Casing					
29.0	119.1	QUARTZ-FELDSPAR-BIOTITE GNEISS (with some hornblende) - light to medium grey - few scattered pink garnets - 35.0 - 37.0 - coarse grained - 51.5 - 53.0 - fracture parallel to core - 84.0 - 111.5 - increase in biotite; many sections of 70% dark minerals - 111.5 - 113.4 - dark grey, massive portion has sharp lower contact @ 65° (intrusive) - 113.4 - 119.1 - chloritic; hematized with many chloritic fractures					
119.1	123.2	QUARTZ-FELDSPAR-BIOTITE GNEISS - dark grey with greenish tinge - chloritized					
123.2	178.3	QUARTZ-FELDSPAR-BIOTITE GNEISS - minor hornblende -occasional pink garnet -128.0 - 128.5 meta gabbro -138.0 - 138.4 " " sheared -138.6 - 138.9 " " "					
178.3	186.0	QUARTZ-FELDSPAR-GARNETIFEROUS GNEISS - minor hornblende - light grey - 5% pink garnets					
	186.0	End of Hole					
		Angle of Foliation to Core Angle 35' - 35° 80' - 35° 140' - 45° 55' - 10° 100' - 40° 167' - 70°					

COMPANY RYERSON GRAPHITE PROJECT
PROJECT Ryerson Twp., Ontario
DIAMOND DRILL LOG

DIP TEST - CORRECTED						
FOOTAGE	DEGREE					
COLLAR	45°					

COMMENCED Jan. 27/83
FINISHED Jan. 29/83
CLAIM No. Lot 1, Conc. 1X
LENGTH 316.0 feet

LATITUDE 300 S
DEPARTURE 700 W
ELEVATION
AZIMUTH 30°

HOLE No. 83 - 3
SHEET No. 1 of 2
LOGGED BY F.H.
TOTAL RECOVERY 292.0'

Drilled by: LANGLEY DRILLING Core Size: 1AX = 1.375"

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	FOOTAGE LENGTH	ASSAYS
0	22.0	Casing					
22.0	108.3	QUARTZ-FELDSPAR-BIOTITE-HORNBLENDE GNEISS - light to medium grey - fine to medium grained - few pink garnets					
108.3	140.7	QUARTZ-FELDSPAR-BIOTITE GNEISS - medium to dark grey - indistinct foliation - 108.3 - 119.5 - fine grained, occasional narrow sections of quartz-feldspar lenses & blebs, poorly foliated; few pink garnets; minor hornblende - 119.5 - 140.7 - quartz lenses & blebs form 5% to 15% of core - 127.0 - 135.0 - numerous chloritic & pyritic fractures; core badly broken, 2.0' lost core - 135.0 - 140.7 - few narrow sections of quartz-feldspar-pyroxene gneiss. 151.2 to 152.9 - quartz layer					
140.7	152.9	QUARTZ-FELDSPAR-PYROXENE GNEISS - creamy buff colour - medium grained - many quartz-filled fractures - core badly broken - minor cubic pyrite					
152.9	188.0	QUARTZ-FELDSPAR-BIOTITE-CHLORITE GNEISS - 6" layer of quartz-feldspar on upper contact - fine grained, massive appearance - dark grey-green - disseminated pyrite; minor GRAPHITE - many hairlike chloritic fractures - core broken - 183.0 - 188.0 - few quartz-feldspar lenses					

COMPANY RYERSON GRAPHITE PROJECT
PROJECT Ryerson Twp., Ontario
DIAMOND DRILL LOG

DIP TEST - CORRECTED							COMMENCED	LATITUDE	HOLE No. 83-3
FOOTAGE	DEGREE						FINISHED	DEPARTURE	SHEET No. 2 of 2
COLLAR							CLAIM No.	ELEVATION	LOGGED BY F.H.
							LENGTH	AZIMUTH	TOTAL RECOVERY

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	FOOTAGE LENGTH	ASSAYS
188.0	205.0	QUARTZ-FELDSPAR-BIOTITE GNEISS					
		- hematized & chloritized					
		- minor disseminated pyrite					
		- minor GRAPHITE					
205.0	249.5	QUARTZ-FELDSPAR-BIOTITE GNEISS					
		- medium grey					
		- minor GRAPHITE in upper 30' of section					
		- occasional garnet					
		- 245.0 - 249.5 - fine grained & chloritic					
249.5	258.2	QUARTZ-FELDSPAR-BIOTITE GNEISS					
		- greenish grey					
		- finely foliated					
		- minor pyrite & GRAPHITE					
258.2	285.3	QUARTZ-FELDSPAR-BIOTITE GNEISS					
		- light to medium grey					
285.3	302.8	QUARTZ-FELDSPAR-MUSCOVITE GNEISS					
		- greenish grey					
		- chloritic					
		- few streaks of pyrite					
302.8	316.0	QUARTZ-FELDSPAR-BIOTITE GNEISS					
		- dark grey					
		- several narrow fractures, quartz carbonate filled & parallel to core					
	316.0	End of Hole					
		Angle of Foliation to Core Axis					
		@ 40' - 70° 200' - 80°					
		70' - 80° 225' - 80°					
		93' - 75°					

COMPANY: RYERSON GRAPHITE PROJECT
PROJECT: Ryerson Twp., Ontario
AMOND DRILL LOG

DIP TEST - CORRECTED

FOOTAGE	DEGREE
COLLAR	45°

COMMENCED Jan. 19/83
FINISHED Jan 21/83
CLAIM No. Lot 1, Conc. 1X
LENGTH 300.0 feet

LATITUDE 110 S
DEPARTURE 200 W
ELEVATION
AZIMUTH 30°

HOLE No. 83 - 1
SHEET No. 1 of 2
LOGGED BY F.H.
TOTAL RECOVERY 286.0'

Drilled by: LANGLEY DRILLING Core Size: AX = 1.375"

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	FOOTAGE LENGTH	ASSAYS % Total Carbon
0	12.0	Casing					
12.0	35.0	QUARTZ-FELDSPAR-BIOTITE-GARNET GNEISS					
		- light to medium grey					
		- biotite 5% - 40%					
		- 23.3 - 24.0 - pegmatite					
		- 30.4 - 30.9 "					
35.0	37.3	BIOTITE-HORNBLENDE GNEISS					
		- massive appearance					
		- dark grey to black					
		- tiny pink garnets					
		- 36.3 - 37.3 - quartz-feldspar layer					
37.3	45.0	QUARTZ-FELDSPAR-BIOTITE GNEISS (with some hornblende)					
		- dark grey					
45.0	74.5	BIOTITE-HORNBLENDE-GARNETIFEROUS GNEISS					
		45.0 - 64.5 - massive appearance					
		- dark grey to black					
		- 10% tiny pink garnets					
		64.5 - 74.5 - quartz-feldspar lenses plus 5% garnets					
74.5	129.5	METTA GABBRO					
129.5	156.5	GRAPHITE ZONE	401	129.5	142.5	13'	2.24
		QUARTZ-FELDSPAR-BIOTITE GNEISS - Chloritic	402	142.5	156.5	14'	1.56
		- 5% GRAPHITIC	403	156.5	171.5	15'	0.38
		- 1% disseminated pyrite	404	171.5	186.5	15'	0.30
		- fine grained					
		- finely foliated					
		- 139.5 - 141.5 - biotite-hornblende gneiss (no GRAPHITE) section contains 3 inches coarse quartz-feldspar					
		- lost core 154.5 - 156.5					

COMPANY
PROJECT RYERSON GRAPHITE PROJECT

DIAMOND DRILL LOG

DIP TEST - CORRECTED								
FOOTAGE	DEGREE					COMMENCED	LATITUDE	HOLE No. 83-1
COLLAR						FINISHED	DEPARTURE	SHEET No. 2 of 2
						CLAIM No.	ELEVATION	LOGGED BY F.H.
						LENGTH	AZIMUTH	TOTAL RECOVERY

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	FOOTAGE LENGTH	ASSAYS
156.5	223.2	QUARTZ-FELDSPAR-BIOTITE GNEISS (GRAPHITIC)					
		- minor GRAPHITE					
		- medium grey					
		- finely foliated; 5% quartz-feldspar lenses & blebs					
		- random pink garnet					
		- few biotite-rich sections; 5% garnet					
		- 161.5 - 165.5 - chloritic; 1% GRAPHITE					
		- 169.0 - 170.5 - " "					
		- 173.0 - 177.6 - " "					
		- 193.0 - 199.6 - " "					
		- 207.0 - 223.0 - hematized & chloritic					
		- 214.3 - 2" breccia - carbonate cemented (fault?)					
223.2	236.5	QUARTZ-FELDSPAR-BIOTITE-GARNETIFEROUS GNEISS (with some hornblende)					
		- light grey to medium grey; 5% garnets					
		- narrow quartz-feldspar lenses form 5% of core					
236.5	245.6	QUARTZ-FELDSPAR-BIOTITE-GARENTIFEROUS GNEISS (with some hornblende)					
		- fine zebra striped appearance					
		- pinkish grey					
		- 5% garnets					
245.6	300.0	QUARTZ-FELDSPAR-BIOTITE-HORNBLENDE GNEISS					
		- few garnets					
		- 264.0 - 300.0 - few flesh coloured lenses and blebs					
		- 253.5 - 3" pegmatite					
		- 281.0 - 282.0 - 80% flesh coloured					
	300.0	End of Hole					
		Angle of Foliation to Core Axis					
		@ 15' - 68°					
		30' - 80°					
		240' - 70° 280' - 65°					

Appendix VII

BARRINGER MAGENTA LIMITED
304 CARLINGVIEW DRIVE
METROPOLITAN TORONTO
REXDALE, ONTARIO
CANADA M9W 5G2
PHONE: 416-675-3870
TELEX: 06-989183

BARRINGER MAGENTA

March 10, 1983

Mr. M.W. Rennick
234 Donlea Drive
Toronto, Ontario
M4G 2N2

Dear Mel:

I enclose total carbon data and repeat analyses of the rock samples you submitted to our laboratory. The following method was employed for analysis of the drill core samples.

1) Whole core passed through a jaw crusher to approximately 1/4 inch size fragments.

2) Whole crushed sample split through a Jones splitter to approximately a 200 g subsample.

3) The 200 g subsample recrushed several times and finally reduced to a uniform 80 mesh size by carefully pulverizing material through a disc pulverizer (plates adjusted to roughly 80 mesh size). Crushed material passed through an 80 mesh screen.

4) Total carbon content determined by Leco Method (ignition of sample followed by analysis of CO_2 evolved volumetrically) using a 0.5 g subsample. Recheck analysis made on 1 g sample to establish effect of different subsample size from homogenized minus 80 mesh material.

I hope this information is sufficient for you and if you need any further details please feel free to contact me.

Yours truly

BARRINGER MAGENTA LIMITED

R.E. Lett, (Ph.D.)
Chief Geochemist

REL/pk

Encl.

BARRINGER MAGENTA

304 CARLINGVIEW DRIVE
REXDALE, ONTARIO
M9W 5G2
(416) 675-3870

3750 - 19TH STREET
SUITE 105
CALGARY, ALBERTA
T2E 6V2
(403) 276-9701

FILE: T3-0079
DATE: 28/02/83
MATRIX:

GEOSPHERE CONSULTANTS LTD. N. W. RENNICH WO NO: 83-0079 PAGE: 1

SAMPLE ID	C-TOTAL %	C-RPT %
336	.96	--
336A	.76	--
337	.28	--
338	.28	--
339	1.16	--
340	1.00	--
341	.76	--
342	1.16	--
343	1.16	--
344	.70	--
345	.16	--
346	.28	--
347	.14	.20
348	1.74	--
349	2.62	2.60
350	.92	--
351	.56	--
352	.64	--
353	.56	--
354	.32	--
355	.62	--
356	1.32	--
357	.16	--
358	.48	--
359	.80	--
360	1.24	--
361	1.08	--
362	1.16	--
363	.88	--
364	.46	--
365	.96	--
366	1.24	--
367	.50	--
368	1.52	--
369	1.24	--
370	1.16	--
371	1.18	--
372	.40	--
373	.88	--
374	.44	--
401	2.24	2.28
402	1.56	--
403	.36	--
404	.30	--

Appendix VIII

Michigan Technological University
houghton, michigan 49931

Division of Research
Institute of Mineral Research
906/487-2600

February 18, 1983

Mr. Roland R. Thompson
Trustee--Ryerson Graphite Project
The CAN/AM Group
376 Woolwich Street
Guelph, Ontario
N1H 37

Dear Mr. Thompson:

Enclosed herewith are three copies of our final report describing the treatment and analysis of the graphite ore samples supplied by your company.

I regret that the graphite content was less than you may have hoped but I am confident that the assays are accurate and are representative of the materials received.

Should you have any questions regarding the work performed we would be pleased to respond.

Sincerely,

C. W. Schultz, Director

CWS/lh

cc: D. W. Frommer

RYERSON GRAPHITE PROJECT
BULK SAMPLES

Report Submitted to:

The Can/Am Group
Project Administrator
376 Woolwich Street
Guelph, Ontario
N1H 3W7

IMR Project R-378

January 1983

Report Prepared by:

C. W. Karkkainen
Senior Research Engineer

Institute of Mineral Research
Michigan Technological University
Houghton, Michigan 49931

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INTRODUCTION

Two bulk samples from the Ryerson Graphite Project property were processed at the Institute of Mineral Research (IMR) to determine their carbon content. The property is located in Ryerson Township, District of Parry Sound, Ontario.

A proposed test program was outlined by D. W. Frommer, Consultant to Ryerson, and C. W. Schultz, Director of IMR, during the week of December 20, 1982. Roland R. Thompson, Trustee for the Ryerson Graphite Project, authorized IMR to perform the work in a telex on December 23, 1982.

The initial objectives of the program were to develop a procedure for determining the graphitic carbon content of a bulk surface sample, and to test means of concentrating the contained graphite. Because the graphite content of the initial sample was so low as to appear uneconomic the program was abridged at the sponsors request. A second sample was obtained by trenching at the site. Thirty five samples of split drill core were received along with the trench (second) sample.

This report describes the preparation methods and analytical procedures at IMR. Carbon analyses from two other laboratories are compared with the IMR analyses. Five assays for gold and silver are also reported for one of the bulk samples.

SUMMARY

The following comparison lists the percent carbon reported by three laboratories:

Bulk Sample 1	
Lab	% C
IMR	2.51
Leco	2.65
Asbury	2.38

Bulk Sample 2	
Lab	% C
IMR	1.75
Leco	1.71
Leco	1.81
Asbury	2.18

Gold and silver were not detected in bulk sample 1 by Skyline Labs.

BULK SAMPLES

Both bulk samples were collected from trenches along the mineralized zone. Concentrations of graphite in Ontario occur in silicated carbonated rocks.[1] The Grenville Supergroup in Ontario has been described as a late Precambrian metasedimentary deposit.[2] The largest individual rocks in these samples were about 10-15 cm by 25-30 cm.

Bulk sample 1 was received in Houghton on January 3 1983. This sample weighed 176 kilograms. Flake graphite was identified in a cursory microscopic examination of a dark band in one rock. Biotite, however, was the preponderant dark mineral in this particular band.

Bulk sample 2 was delivered to IMR on January 20, 1983. The 400 kilogram sample arrived in 12 bags.

---

1 Book-Industrial Minerals and Rocks; Chapter 20-Graphite; Page 460; Eugene N. Cameron; 1960.

2 Report on Geological and Geophysical Surveys over the Ryerson Graphite Project Property; Ryerson Township, District of Parry Sound, Ontario; NTS Reference 31 E/12; Page 5; M. W. Rennick; 12/9/82

PROCEDURES

Sample Preparation

The sample preparation flowsheet shown in Figure 1 was designed to produce a minimum of fines and to avoid breaking large graphite flakes. Most of the rocks were fed directly to a jaw crusher set to a 1.3 cm opening. A few larger rocks from each bulk sample were broken manually before crushing. Crusher product was sized on a 9.5 mm opening screen. Oversize from the screen was recycled to the crusher.

Minus 9.5 mm material was blended in a sealed drum. The drum was clamped to the IMR Tow Motor and slowly rotated in one direction 20 times. After the initial mixing, the drum was rotated in the opposite direction for another 20 revolutions.

A square shovel was used to split the blended minus 9.5 mm sample. Alternate shovelfuls were placed in two drums. One split sample was stored. The other split sample was processed in a screen-roll crusher circuit.

Material was screened at 10 mesh before roll crushing. Oversize from the screen was reduced in rolls set to a 3 mm opening initially. After each pass through the rolls the sample was screened and the oversize returned, the process was repeated until all of the oversize passed the screen. The rolls were set a little tighter after each pass.

After completion of the roll crushing the sample was blended in a sealed drum. The Tow Motor was used in the blending step. Blended material was split by the alternate shovel technique. One split sample was stored for testwork. The other split sample was riffled and blended further to remove a 75-100 gram cut for assay and a 400-500 gram cut for screen analysis. The assay sample was reduced to pass 100 mesh and blended

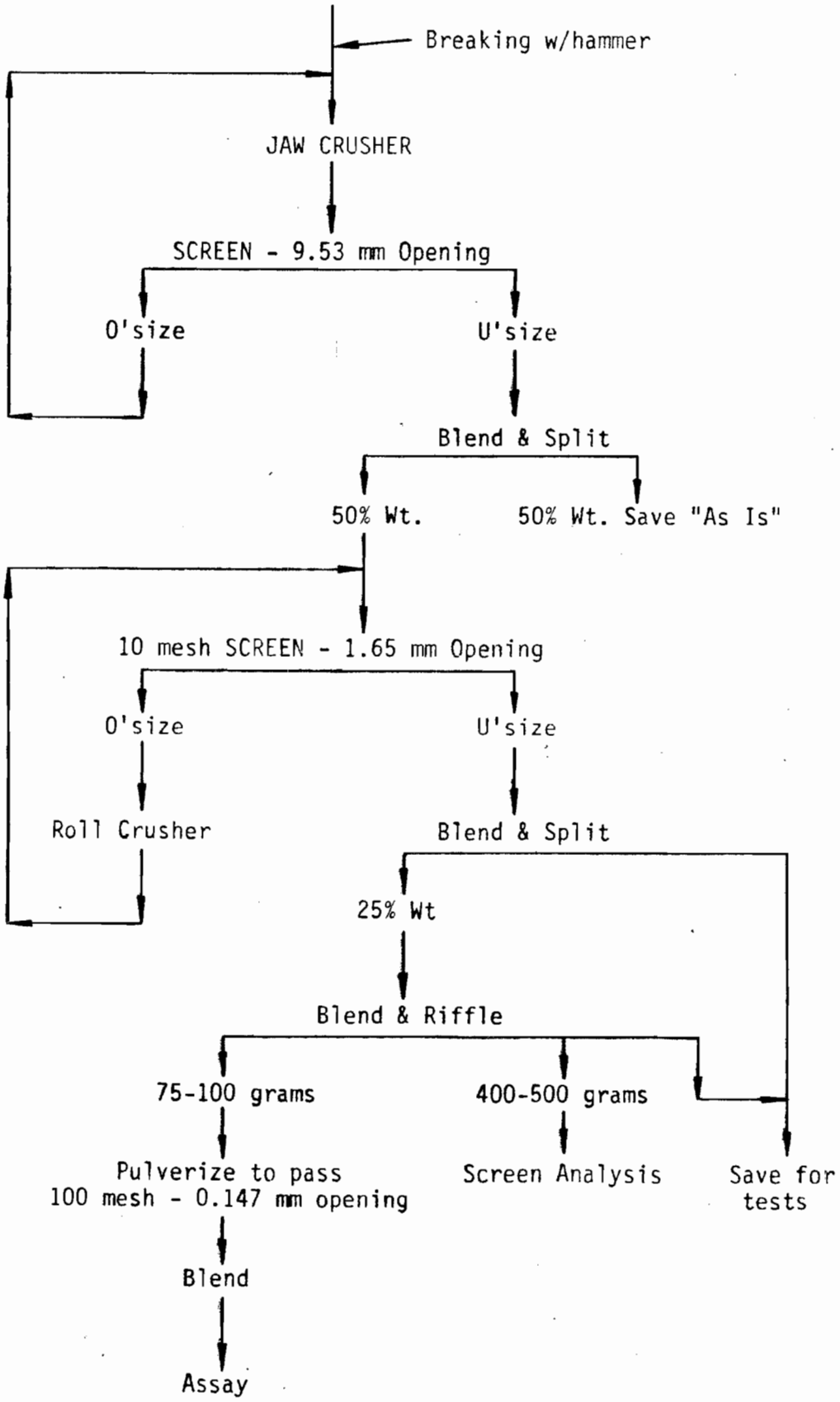


Figure 1 Sample Preparation Flowsheet

manually on a sheet of glazed paper.

Assays

Standard techniques were used for carbon analyses. The equipment included a Leco Model 521 induction furnace and a Leco Model 572-200 carbon analyzer.

Loss on Ignition (LOI) determinations are made at IMR by the following procedure. Samples weighing 0.5 to 1.0 gram are placed in previously ignited and weighed porcelain crucibles (40 mm x 25 mm). The crucibles are placed in an electric muffle. The temperature of the muffle is raised to 950°C and maintained at this temperature for at least one hour. Air is introduced at a 100-200 ml/min rate during ignition through the window opening on the furnace door. Upon completion of this phase, the crucibles are cooled partially and placed in a dessicator until they reach room temperature. After reaching room temperature, the crucibles are reweighed and percent weight loss is calculated.

Samples to Other Labs

Sample splits to other laboratories are listed below::

1. Head 1 represents bulk sample 1. After this sample was assayed at IMR, the dry chem lab pulp was reblended and riffled. One half was sent to Leco and the other half was sent to Asbury.
2. Bulk sample 2 was assayed at IMR. The dry pulp was shipped to Leco.
3. Head 2 was a separate cut from bulk sample 2. Riffled cuts of the blended minus 100 mesh pulp were shipped to Leco and Asbury.
4. A separate head sample and screen fractions from bulk sample 1 were prepared for fire assays at Skyline.

5. The combined 10 by 80 mesh and the minus 80 mesh fractions from a screen analysis of bulk sample 2 were prepared for assay and shipped to Leco.

RESULTS

Assays from the various laboratories are listed in Table 1.

Carbon contents reported for Head 1 (Bulk Sample 1) were IMR 2.51, Leco 2.65 and Asbury 2.38.

Size and carbon analyses for bulk sample 1 are presented in Table 2. About 95% of the carbon was in the 14 by 80 mesh fractions.

Results from Skyline showed that gold and silver were not present in Head 1 (Bulk Sample 1). Gold was not detected at a 0.005 oz/T level and silver was not detected at a 0.01 oz/T level.

Bulk sample 2 assayed 1.75% C at IMR and 1.71% C at Leco. A separate cut from this bulk sample, labelled Head 2, assayed 1.81% C at Leco and 2.18% C at Asbury.

Data from screen and carbon analyses on bulk sample 2 are shown in Table 3. About 93% of the carbon was in the 14 by 80 mesh fractions.

Assay results from other laboratories are included as appendices to this report.

Conclusions

All of the assays showed a low total carbon content for the two bulk samples.

TABLE 1

Ryerson Graphite Property
Assays from Various Laboratories

Sample	IMR % C	IMR % LOI	Leco % C*	Asbury % C	Asbury % Volatile	Skyline oz/T	Skyline oz/T
Head 1	2.51		2.65	2.38	1.53	.005	.01
Bulk Sample 2**	1.75	2.87	1.71				
Head 2**			1.81	2.18	1.03		

* Average of Two Assays

** Separate Cuts from Bulk Sample 2

TABLE 2

Ryerson Graphite Property
Size and Carbon Analyses

Bulk Sample 1

Mesh	% Wt.	Cum. % Wt.	Carbon Assay* %	Carbon Distribution %	Carbon Distribution Cum.
14	7.89	7.89	1.40	4.32	4.32
20	15.10	22.99	2.13	12.57	16.89
28	14.59	37.58	3.50	19.95	36.84
35	14.50	53.08	4.68	26.52	63.36
65	25.52	77.60	2.90	28.92	92.28
80	5.84	83.44	1.23	2.80	95.08
-80	16.56	100.00	0.76	4.92	100.00
Calc. Head	100.00		2.56	100.00	
Assay Head			2.51		

* Assays by IMR

TABLE 3

Ryerson Graphite Property
Size and Carbon Analyses

Bulk Sample 2

Mesh	% Wt.	Cum. % Wt.	Carbon Assay* %	Carbon Distribution %	Carbon Distribution Cum.
14	5.27	5.27			
20	9.77	15.04			
28	12.92	27.96			
35	16.17	44.13			
65	26.88	71.01			
80	6.15	77.16	2.28	93.11	93.11
-80	22.84	100.00	0.57	6.89	
Calc. Head	100.00		1.89	100.00	
Assay Head			1.81		

* Assays by Leco Corporation

TABLE 1

Ryerson Graphite Property
Assays from Various Laboratories

Sample	IMR % C	IMR % LOI	Leco % C*	Asbury % C	Asbury % Volatile	Skyline oz/T	Skyline oz/T
Head 1	2.51		2.65	2.38	1.53	.005	.01
Bulk Sample 2**	1.75	2.87	1.71				
Head 2**			1.81	2.18	1.03		

* Average of Two Assays

** Separate Cuts from Bulk Sample 2

TABLE 2

Ryerson Graphite Property
Size and Carbon Analyses

Bulk Sample 1

Mesh	% Wt.	Cum. % Wt.	Carbon Assay* %	Carbon Distribution %	Carbon Distribution Cum.
14	7.89	7.89	1.40	4.32	4.32
20	15.10	22.99	2.13	12.57	16.89
28	14.59	37.58	3.50	19.95	36.84
35	14.50	53.08	4.68	26.52	63.36
65	25.52	77.60	2.90	28.92	92.28
80	5.84	83.44	1.23	2.80	95.08
-80	16.56	100.00	0.76	4.92	100.00
Calc. Head	100.00		2.56	100.00	
Assay Head			2.51		

* Assays by IMR

TABLE 3

Ryerson Graphite Property
Size and Carbon Analyses

Bulk Sample 2

Mesh	% Wt.	Cum. % Wt.	Carbon Assay* %	Carbon Distribution %	Carbon Distribution Cum.
14	5.27	5.27			
20	9.77	15.04			
28	12.92	27.96			
35	16.17	44.13			
65	26.88	71.01			
80	6.15	77.16	2.28	93.11	93.11
-80	22.84	100.00	0.57	6.89	
Calc. Head	100.00		1.89	100.00	
Assay Head			1.81		

* Assays by Leco Corporation

APPENDIX

LECO CORPORATION
3000 Lakeview Ave.
St. Joseph, Michigan 49085
Phone 616 983-5531

ANALYSIS REPORT

Date 2-1-83

Company Michigan Technological University

P.O. No. MTU66349

Street Institute of Mineral Research

City Houghton State Mi. Zip 49931

Submitted by C.W. Karkkainen, MTU66349

Remarks:

Element Analyzed for:		Carbon Percent				
LECO Sample No.	Customer Sample No.					
83-642	Head #1	2.67				
		2.62				
83-643	Head #2	1.82				
		1.80				
83-644	10 x 80 mesh	2.28				
	Head #2	2.27				
83-645	-80 Mesh Head #2	.569				
		.565				
83-646	Bulk Sample #2	1.72				
		1.70				

WATER POWER MILLS ASBURY FOUNDED 1895

THE ASBURY GRAPHITE MILLS, INC.

MINERS, REFINERS, IMPORTERS & GRINDERS OF AMORPHOUS, CRYSTALLINE, FLAKE & ARTIFICIAL GRAPHITES

AREA CODE 201 537-2155

CABLE ADDRESS
GRAPHITE EASTON
PENNSYLVANIA
TELEX 834457

ASBURY, WARREN COUNTY, NEW JERSEY 08802

February 3, 1983

Mr. Carlo W. Karkkainen
Institute of Mineral Research
Michigan Technological University
Houghton, MI 49931

Dear Mr. Karkkainen:

Enclosed are the results of the samples which you sent to us for carbon analysis. As you can see the carbon content is very low. One sample was 2.38% and the other one was 2.18%. The volatile content was 1.53% and 1.03%. Therefore the fixed carbon is extremely low in this material.

Very truly yours,

THE ASBURY GRAPHITE MILLS, INC.

Wilfred M. Kenan
Vice President
Research & Technical Services

WMK:tk

Enclosure

e. Ryerson Project
R+D # 2046

ad Ryerson
head 1 + 2

APPENDIX B

R&D SAMPLE NO. 2064
DATE: 2-2-83

Michigan Technological University
Houghton, Michigan 49931

Carlo W. Hahtaine
906-487-2600

REPORT OF ANALYSIS

THOSE SPACES FILLED INDICATE ANALYSES PERFORMED

I 2.38% Fixed C
II 2.18% Fixed C

1. CARBON/ASH _____

2. SCREEN — (U. S. STD.)

( ) - _____
( ) - _____
(4) - _____
(6) - _____
(8) - _____
(10) - _____
(12) - _____
(14) - _____
(16) - _____
(18) - _____
(20) - _____
(30) - _____
(35) - _____
(40) - _____
(50) - _____
(60) - _____
(70) - _____
(80) - _____
(100) - _____
(120) - _____
(140) - _____
(170) - _____
(200) - _____
(230) - _____
(270) - _____
(325) - _____
(400) - _____
Pan - _____

3. A.P.D. - _____
@ - _____ Por.

4. SCOTT VOLUME _____

5. ELECTRICAL RESISTANCE - _____

6. VOLATILE CONTENT - I 1.53%
II 1.03%

7. MOISTURE - _____

8. SULFUR - _____

9. —20 MICRONS _____

10. NOT USED ON THIS FORM

11. pH - _____

12. OILY — _____

13. EXPANSION - _____

14. SURFACE AREA - _____

15. TRUE DENSITY - _____

16. POPPING - _____

17. PRESSED DENSITY - _____

18. OTHER — _____

SKYLINE LABS, INC.
SPECIALISTS IN EXPLORATION GEOCHEMISTRY
00 WEST 50TH PLACE • WHEAT RIDGE, COLORADO 80033 • TEL.: (303) 424-7718

REPORT OF ANALYSIS

JOB NO. NEH 012
January 14, 1983
P.O. NO: MTU 65813

Michigan Technological University
Institute of Mineral Research
MTU 65813
Houghton, Michigan 44931

Analysis of 6 Pulp Samples

ITEM	SAMPLE NO.	FIRE ASSAY Au (oz/T)	Ag (oz/T)
1	HEAD	<.005	<.01
2	-10M+20M	<.005	<.01
3	-20M+35M	<.005	<.01
4	-35M+65M	<.005	<.01
5	-65M+80M	<.005	<.01
6	-80M	<.005	<.01

Gordon H. VanSickle
Manager

ADDENDUM - DRILL CORE

Drill core samples were stage-crushed to pass 10 mesh. Minus 10 mesh core was blended and riffled. A 75-100 gram sample was prepared for assay.

Assay results are listed in Table 4. Carbon content of the core ranged from 0.3% to 2.9%.

TABLE 4

Ryerson Graphite Project Drill Core Carbon Analyses

Sample	% C	Sample	% C	Sample	% C
301	1.43	313	0.63	325	0.77
302	1.84	314	1.98	326	1.71
303	0.95	315	1.16	327	0.68
304	1.24	316	0.81	328	1.52
305	1.40	317	1.70	329	2.33
306	1.26	318	1.55	330	2.91
307	0.96	319	1.64	331	1.50
308	1.54	320	1.48	332	1.15
309	1.64	321	1.11	333	0.86
310	0.43	322	0.33	334	0.49
311	0.46	323	0.40	335	0.35
312	0.38	324	0.37		

Report of STEM Analyses of Ore Samples for the Ryerson Graphite Project

C.A. Ackerley

Department of Botany and Genetics

University of Guelph

Guelph, Ontario

N1G 2W1

Introduction

Atomic absorption spectrophotometry, volatile carbon determinations, and crucible fire assays have been used routinely to determine graphite content of ore samples. These methods provide questionable results. Graphite bearing ores, such as the Ryerson Township and most North American ore, have silicates in association with the graphite flake. These siliceous relationships would prevent the liberation of carbon at a defined temperature, an absolute must in the forementioned procedures. Thus, graphite content could be underestimated as was the case with the Ryerson materials.

Volumetric estimations of graphite flake content can be made on polished samples of core by using morphemetric methods. However, this can only be done on small samples of the ore and is thus not necessarily representative of the ore deposit. Morphometry does provide an indication of mineralization trends. Results obtained from analysis of the 200 mesh grindings of core samples are more representative since a larger sample is homogenized to provide the material. A reliable, accurate, determination is achieved by extracting the graphite material from the grindings and then determining the type, size, and elemental content of individual particles using Scanning Transmission Electron Microscopy (STEM) and Energy Dispersive Spectrometry (EDS).

Methodology

Gross Flake Determination

The volume of each ore sample was determined by water displacement. The samples were then oven dried and vacuum infiltrated with 3-Hydroxy

Butyl Methyl Methacrylate, a low viscosity plastic. They were left in liquid plastic for four days, placed in a pressure chamber for two hours, and polymerized for 90 minutes with γ radiation in a Co^{60} cell. The embedded samples were then cured for 3 days. The samples were cut with a diamond saw parallel to and at right angles to the lines of foliation, and polished. The polished faces were examined under a dissecting microscope fitted with a drawing tube. One field on each face of each sample was randomly chosen and the areas of flake material were drawn on paper. An estimate of the flake content as a percent of the total volume was determined from the drawings with the aid of an image analysis system using the longitudinal and cross-sectional values.

Extraction

A 0.1 g sample of each specimen was dispensed onto the surface of double distilled filtered water contained in an illuminated vessel on a white background. Material which had floated was recovered by suction onto a methanol soluble filter. The material which had not floated was over-dried and the procedure repeated. The filters were then dissolved in methanol and the suspension air dried. Samples were then washed several times. A second 0.1 g of each sample was treated in the same fashion and the extracts combined and weighed.

STEM Preparation

Extract materials were suspended in filtered double distilled water and ultrasonicated for 15 minutes. The suspensions were centrifuged in pairs at 2000 xg for 15 minutes onto glass coverslips. One coverslip

was then vacuum evaporated with a non-carbon containing substance and the other with carbon. Thin films were floated from the coverslip onto water and mounted on 200 mesh copper grids.

In addition, metallurgical grade graphite flake was obtained from known origin (Madagascar, Ceylon and China) as well as flake from the Ryerson property. One sample of each was vacuum-infiltrated with Epon 812 (an epoxide routinely used as an embeddent in electron microscopy preparations) and polymerized at 60°C for 48 hours. Ultrathin sections (about 150 nm) were cut and mounted on collodion coated grids. They were then coated with carbon to insure stability in the electron beam.

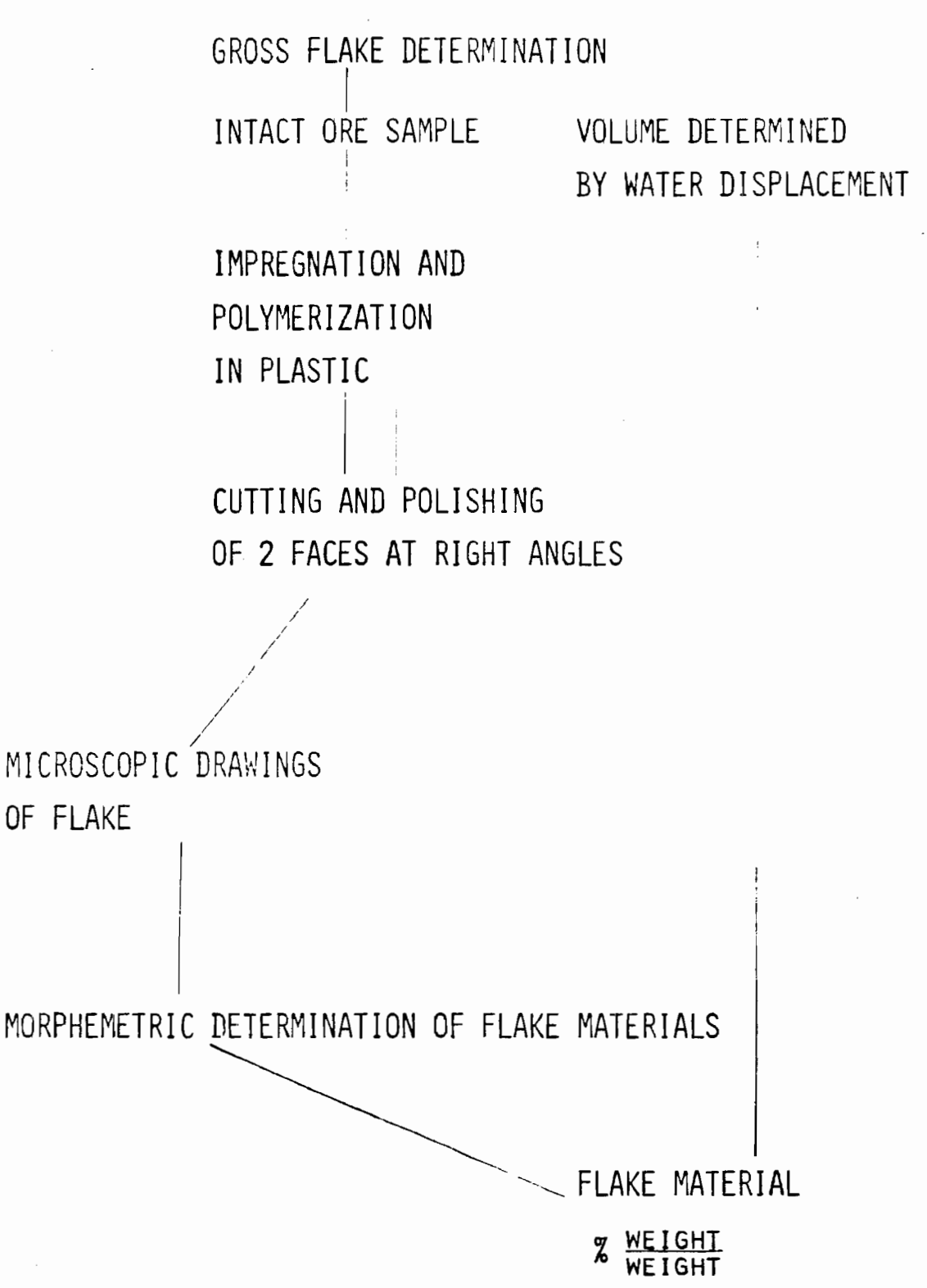
STEM Analysis

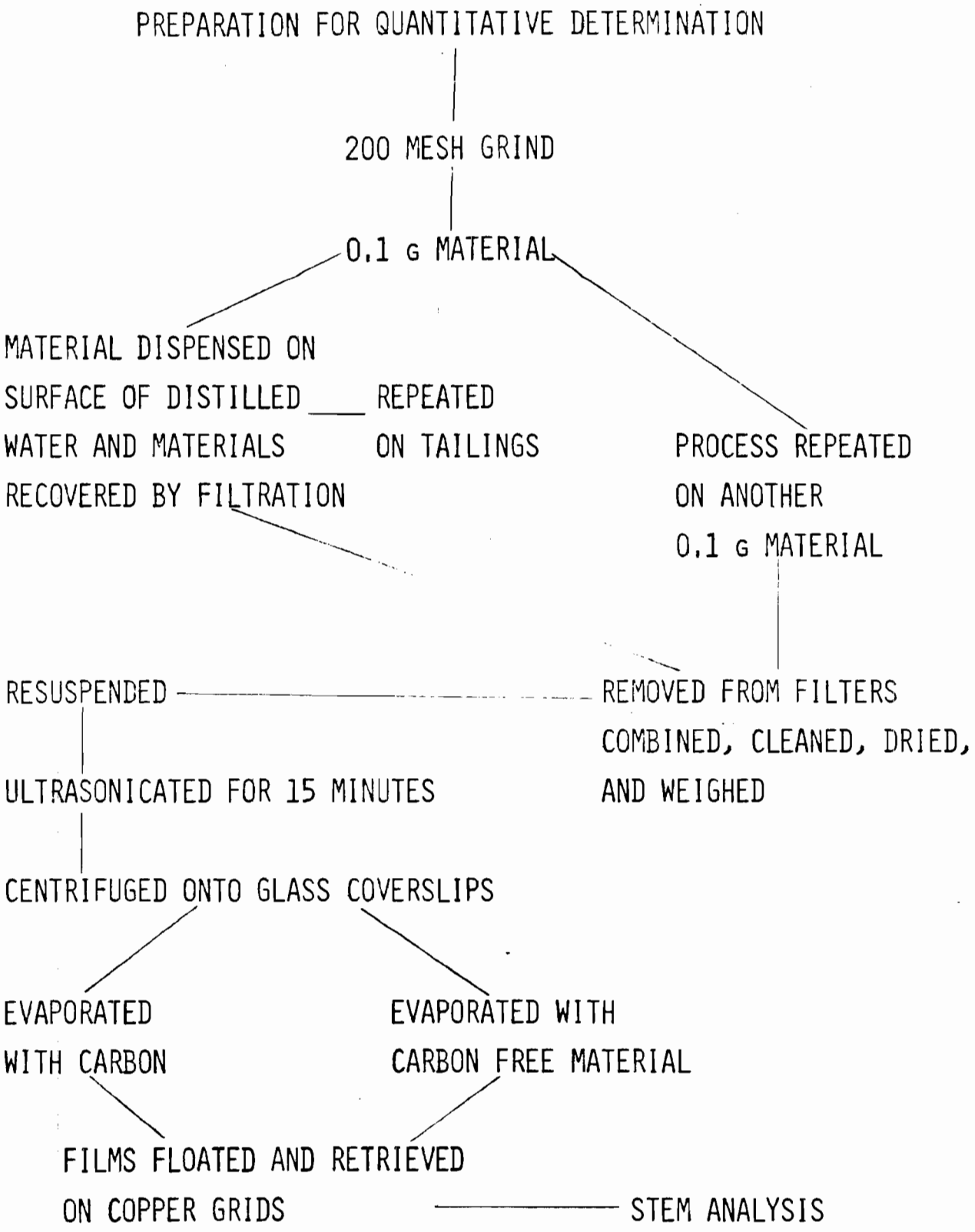
Particles on the non carbon films within 10 randomly chosen grid squares were counted, sized and submitted to either selected area or μ micro diffraction. Those on grid bars or in excess of 4 μm^2 were not counted. The particles were categorized according to the diffraction pattern as graphitic carbon or foreign. The volume of each particle was determined by tilting the specimen 60° to the incident beam and measuring them. The length to height ratio was calculated and found to be constant. The percent graphitic carbon was then calculated (% w/w).

Individual particles on carbon films which displayed a graphitic carbon diffraction pattern were submitted to 30 seconds live time of energy dispersive spectrometry (EDS) to check for the presence of silicon. The percent silicon bearing particles (% v/v) was then determined.

Ultrathin sectioned materials were subjected to 100 second silicon X-ray line profile scans across the widest portion of the flake cut in

each section. In addition EDS was performed with a static beam spot under standardized lens conditions throughout the flake to investigate the location of contaminate mineralization.


GROSS FLAKE DETERMINATION
INTACT ORE SAMPLE
VOLUME DETERMINED
BY WATER DISPLACEMENT
IMPREGNATION AND
POLYMERIZATION
IN PLASTIC
CUTTING AND POLISHING
OF 2 FACES AT RIGHT ANGLES
MICROSCOPIC DRAWINGS
OF FLAKE
MORPHEMETRIC DETERMINATION OF FLAKE MATERIALS
FLAKE MATERIAL
% WEIGHT / WEIGHT


PREPARATION FOR QUANTITATIVE DETERMINATION
200 MESH GRIND
0.1 g MATERIAL
MATERIAL DISPENSED ON SURFACE OF DISTILLED WATER AND MATERIALS RECOVERED BY FILTRATION
REPEATED ON TAILINGS
PROCESS REPEATED ON ANOTHER 0.1 g MATERIAL
RESUSPENDED
REMOVED FROM FILTERS COMBINED, CLEANED, DRIED, AND WEIGHED
ULTRASONICATED FOR 15 MINUTES
CENTRIFUGED ONTO GLASS COVERSLIPS
EVAPORATED WITH CARBON
EVAPORATED WITH CARBON FREE MATERIAL
FILMS FLOATED AND RETRIEVED ON COPPER GRIDS
STEM ANALYSIS

Volume Determination Protocol

size category	area (μ^2)	volume (area X height) (μ^3)	actual size (20,000 X mm)
1	0.1	0.01	2
2	0.3	0.033	6
3	0.5	0.055	10
4	0.75	0.083	15
5	1.0	0.11	20
6	1.3	0.14	26
7	1.5	0.17	30
8	1.75	0.19	35
9	2.0	0.22	40
10	2.3	0.26	46
11	2.5	0.28	50
12	2.75	0.31	55
13	3.0	0.33	60
14	3.5	0.39	70
15	4	0.44	80

height to length ratio = 1:9

Table 1

Sample	Flake determination (% w/w)	First extract (mg.)	Second extract (mg.)	Total (mg.)	Graphitic carbon content (% w/w)	Graphitic containing silicon (% v/v)
7401	35.12	28.0	24.3	52.4	22.71	11.11
7402	23.45	18.2	16.9	35.1	16.19	13.42
7403	4.99	11	14.2	25.2	8.3	6.2
7404	6.78	21.1	23.4	44.5	19.34	10.73
7405	1.09	6.1	3.4	9.5	4.12	15.5
7406	5.43	15.2	16.8	32	14.31	8.21
7407	3.72	8.1	11.3	19.4	9.2	7.9
7408	1.02	3	8.1	11.1	4.93	11.3
7409	3.59	14.2	8.5	22.7	9.42	5
7410	9.16	17.2	19.9	36.9	18.31	2.01
7411	4.28	13.4	16.3	2917	14.25	4.38
7412	1.08	7.3	4.2	11.5	5.2	11.41
7413	3.03	9.8	13.3	23.1	10.81	11.13
7314	10.82	11.3	21.1	32.4	14.58	0.11
7415	6.51	11.8	8.4	20.2	8.39	1.18
7416	8.92	15.1	15.7	30.8	13.2	1.3
7417	7.59	10.8	10.3	21.1	8.19	3.07
7418	3.22	11.1	4.9	15	6.88	5.13

Table 1 (continued)

Sample	Flake determination (% w/w)	First extract (mg.)	Second extract (mg.)	Total (mg.)	Graphitic carbon content (% w/w)	Graphitic containing silicon (% v/v)
7419	3.38	9.3	13.1	22.4	9.43	12.23
7420	1.16	3.5	1.8	5.3	2.16	16.13
7421	9.72	11.2	12.2	23.4	10.81	9.42
7422	5.79	9.7	9.9	19.6	9.28	11.19
7423	1.78	9.1	9.3	18.4	6.82	3.28
7424	6.27	11.1	12.5	23.6	11.29	7.4
7425	5.76	8.9	8.4	17.3	7.84	10.22
7426	1.36	0.6	1.8	2.4	0.53	29.42
7427	5.67	12.1	10	22.1	10.18	4.32
7428	1.96	3.5	3.9	7.4	3.22	6.21
7429	4.21	8	6.8	14.8	7.1	10.84

Table 2 Spot Analyses of Graphite Flake*

	Internal			Perimeter		
Sample	Al	Mg	Si	Al	Mg	Si
Ryerson	----	628±298	1986±247	2851±68	2800±154	2551±68
China	2103±415	1146±214	3942±873	2433±89	951±98	4141±927
Ceylon	3256±318	1489±298	4849±1142	3188±49	621±89	7203±2103
Madagascar	6432±2892	----	9431±2688	3450±692	----	3782±441

* M±SD of 20 readings on 3 flakes that have been ultrathin sectioned (net counts/60 seconds live time)

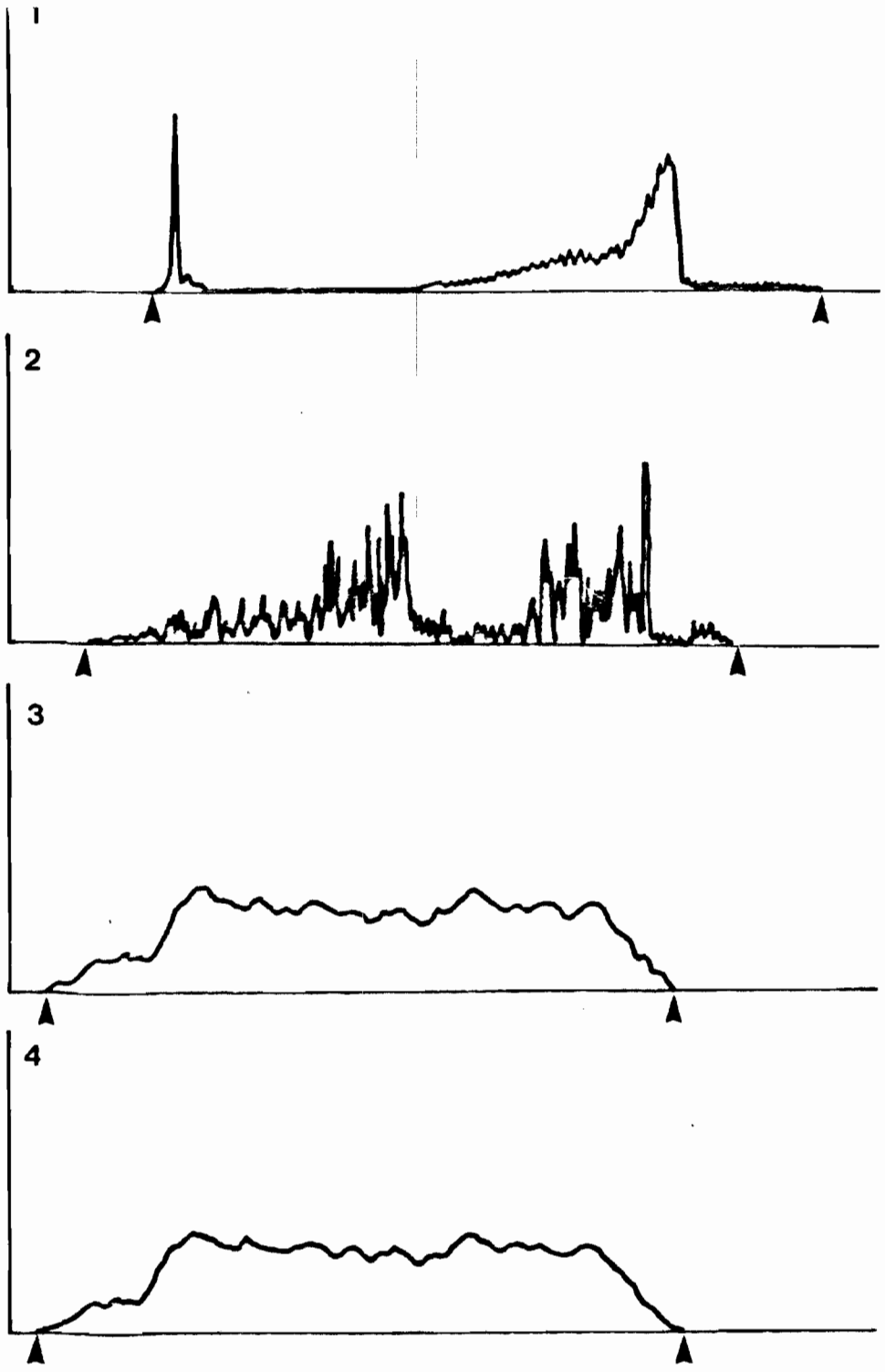


Fig. 1-4 Silicon x-ray line profile scans across ultrathin sectioned flake. Arrows indicate flake borders (4000X)

1 Ryerson
2 China
3 Ceylon
4 Madagascar

Results

The height to length ratio was found to be constant (1:9) and this was used in the volumetric determination of all graphitic carbon. The results of all determinative procedures appear in Table 1. Percent volume was calculated for silicon bearing particles as the density of these materials was not known.

Silicon X-ray line profile scans are presented in Figures 1-4. Spot analyses of silicon, aluminum, and magnesium within the graphite flake appear in Table 2.

Discussion

Silicon X-ray line profile scans across ultrathin sectioned flake revealed that mineralization within the Ryerson flake was confined to flake perimeters (Fig. 1). The spot analyses of graphite flake confirmed this. Although magnesium and silicon were present within the internal portions of the Ryerson flake this was a focal phenomena confirmed by the large standard deviaiton (Table 2). The silicon X-ray line profile scans (Fig. 2-4) and spot analyses (Table 2) on the other flake demonstrated endomorphic mineralization.

While preparing the material for the STEM, the flake has been disrupted by ultrasonication. Intact graphite flake would be too thick for the electron beam to penetrate therefore the particles examined were not an indication of flake size, only content.

Appendix X

Watts, Griffis and McOuat Limited

PRELIMINARY EVALUATION
OF
THE RYERSON TWP GRAPHITE PROPERTY
OF
RYERSON GRAPHITE J.V.

Toronto, Canada
January 19, 1983

Watts, Griffis and McOuat Limited
Consulting Geologists and Engineers

INTRODUCTION

At the request of Mr. Graham Ackerley a preliminary evaluation has been made of the graphite potential of a property in Ryerson Township, between Burk's Falls and Parry Sound.

Mr. Ackerley requested that evaluations be made on the assumptions that there is sufficient ore for twenty years at production rates of 500, 1,000 and 1,500 tons per day with recoverable grades of 5%, 7% or 9% graphite. The sizes of the graphite product are said to be 75% over 65 mesh, 15% between 65 and 85 mesh and 10% below 85 mesh.

INFORMATION

No visit was made to the property. The information available was as follows:

1. A geological map at a scale of 1:2500 showing the location of graphite-bearing outcrop and float, trenches and diamond drill holes.

2. Magnetic, VLF and horizontal loop surveys at a scale of 1:2500

3. A report by Melville Rennick covering the above surveys.

4. Some specimens of rock from the surface and drill core.

5. Some sketches of the first five holes drilled, with limited information except for the fact that, based upon visual estimates, graphite is present in significant quantities.

GEOLOGY AND GEOPHYSICS

The geological mapping and VLF survey appear to be of good quality. The horizontal loop survey is poor in parts, possibly because of unavoidable terrain problems, but enough of it is of good quality to corroborate the VLF in indicating that large conductors of low conductivity are present in Zones A, C and D. These zones have not been tested as yet. Graphite outcrop and float is mapped in their general vicinities, but the anomalies are, for the most part, covered by overburden. This is to be expected over graphitic rocks because graphite is soft and weathers easily.

Graphitic biotite schist outcrops at Zone B, but there is no significant geophysical anomaly. All the trenching and drilling done to date has been in Zone B.

ASSUMED RESERVES

Although there is a substantial amount of graphite-bearing rock on the property, it is not possible to calculate reserves at this stage. It might be possible to make a rough estimate of the tonnage drilled in Zone B, but the tonnage by itself is meaningless because the amount and value of the contained graphite is not known and cannot be known without a substantial amount of test work. However, it is necessary at this stage to have some idea of what tonnage and grade there is a reasonable chance of finding, and whether this tonnage would be profitable if it does, in fact, exist.

The ideal orebody would be amenable to open-pit mining with sufficient tonnage to supply the required output for 20 years, and with a low waste to ore ratio. The main factor governing the waste to ore ratio is the width of the orebody. In Zone B the overall width of graphite-bearing rock is about 100 m, but how much of this is of ore grade is not yet known. The strike length as drilled to date is about 300 m. The two main geophysical anomalies in Zone A suggest a conductor width of about 60 m and a length of about 500 m for each of the two best zones. For the purposes of this review it has been assumed that within these three targets two will contain bodies of mineable graphite ore 30 m wide and 500 m long.

We were asked by Mr. Ackerley to discuss operations at 500, 1000 and 1500 tons per day. An output of 500 tons per day for a year of 50 five-day weeks amounts to 125,000 tons. The requirements for 1000 tpd and 1500 tpd are 250,000 and 375,000 tons per year respectively. Over 20 years the requirement are 2,500,000, 5,000,000 and 7,500,000 tons respectively.

Two orebodies 500 m long and 30 m wide with a density of 2.78 would have 2,500,000 tons for every 30 m of depth. For a 500 tpd operation (to 30 m depth) the waste to ore ratio would be 0.75:1, for 1000 tpd (60 m depth) 1.15:1, and for 1500 tpd (90 m depth) 1.55:1.

If the overburden were 3 m deep on average, the overburden to be stripped, in addition to the waste rock, would be 225,0000, 350,000 and 500,000 cubic metres for 500 tpd, 1000 tpd and 1500 tpd.

At these waste to ore ratios, the mining cost would be a small part of the overall cost, so within reasonable limits, the actual width of the orebody is not critical.

The tonnages to be mined in 20 years are:

	Ore	Waste rock	Overburden m^3
500 tpd	2,500,000	1,880,000	225,000
1000 tpd	5,000,000	5,750,000	350,000
1500 tpd	7,500,000	11,625,000	500,000

These tonnages are reasonable assumptions and have at least some factual basis in the drilling and geophysical anomalies. The grades and value are hypothetical until assaying and test work are done. One can only say, looking at the hand specimen available, that grades between 5% and 9% recoverable graphite occur, whether this is average grade can only be determined with more work.

FINANCIAL ANALYSIS

Graphite Size Distribution

Mr. Ackerley has informed us that the material produced from a bulk sample was 75% above 65 M, 15% 85-65 M and 10% below 85 M.

Prices

Except for Sri Lanka graphite, which is in lump form rather than flake, there are no regular quotations of graphite prices; most graphite is sold on a contract basis. We have assumed that the Ryerson graphite is of high quality with over 92% carbon, but that it is not large enough to be No.1 flake. On this basis we have assumed a price of $700/tonne for the +65 material, and $300 and $100 for the two portions of finer material.

Return on Investment

In the following calculations the "Return on initial investment" is the estimated annual return as a percentage of the capital investment. It does not take into account the fact that amortization is included in the operating costs. This is not significant at high rates of return.

For lower incomes (5% graphite content) the discounted cash flow rate of return is also calculated.

The capital cost estimates do not include interest on pre-production expenditure, or on the cost of production up to the time that the first income is received (working capital). Also no allowances are made for taxes on the one hand and any government concessions or subsidies on the other. If 15% is arbitrarily added to the capital cost estimates for interest costs, and it is assumed that taxes to all governments net of concessions are 40%, the after tax returns are approximately as shown in Table IV.

TABLE 1 - COST ESTIMATES

Capital Cost

	500 tpd	1000 tpd	1500 tpd
Overburden stripping	$ 225,000	350,000	500,000
Mine equipment and preproduction	500,000	800,000	1,100,000
Tailings and waste disposal	100,000	150,000	200,000
Mill equipment and building*	2,800,000	4,550,000	6,300,000
Infrastructure	400,000	450,000	500,000
Miscellaneous and contingency	200,000	250,000	300,000
	$4,225,000	6,550,000	8,900,000

* Used equipment where possible

These costs do not include exploration costs nor interest or pre-production capital expenditures and working capital.

Operating cost/tonne ore

Mining - ore	$ 1.80	1.50	1.30
Mining - waste	1.35	1.75	2.02
Milling	9.00	8.00	7.50
Product preparation	2.00	2.00	2.00
Transportation, port or railhead	2.00	2.00	2.00
Sales, head office overheads	3.40	3.25	3.15
Amortization and depr.*	1.70	1.32	1.21
Misc. and contingency	3.25	3.23	3.02
	$24.50	23.05	22.20

* Straight line over 20 years.

TABLE II - ORE VALUE

Size	+65 M	85-65 M	-85 M	Total
Proportion	0.75	0.15	0.10	1.00
Price	$700.00	$300.00	$100.00	
Rec. graphite				
9%	$47.25	4.05	0.90	$52.20
7%	36.75	3.15	0.70	$40.60
5%	26.25	2.25	0.50	$29.00

TABLE III - PRE-TAX RETURN

9% Grade	500 tpd	1000 tpd	1500 tpd
Sales/tonne	$52.20	$52.20	$52.20
Cost/tonne	24.50	23.05	22.20
Profit	27.70	29.15	30.00
Profit/year ,000	3,452	7,287	11,250
Return on initial investment	83.8%	111.2%	126.4%
7% Grade			
Sales/tonne	40.60	40.60	40.60
Cost/tonne	24.50	23.05	22.20
Profit/tonne	16.10	17.55	18.40
Profit/year ,000	2,012	4,388	6,900
Return on initial investment	47.6%	67.0%	77.5%
5% Grade			
Sales/tonne	29.00	29.00	29.00
Cost/tonne	24.50	23.05	22.20
Profit/tonne	4.50	5.95	6.80
Profit/year ,000	562	1,487	2,550
Return on initial investment	13.3%	22.7%	28.6%
DCF rate of return	17.0%	27.0%	Over 30%

TABLE IV - ESTIMATED AFTER-TAX RETURN

Grade	500	1000	1500 tpd
9%	44%	58%	66%
7%	25	35	53
5%	9*	14*	28*

*DCF rate

Respectfully submitted,

R.H. Clayton

RHC:an

Appendix XI

Watts, Griffis and McOuat Limited

REPORT ON A VISIT TO
RYERSON GRAPHITE PROJECT PROPERTY
RYERSON TOWNSHIP, ONTARIO
JANUARY 28, 1983

Toronto, Canada
February 24, 1983

R. H. Clayton
Watts, Griffis and McOuat Limited
Consulting Geologists and Engineers

INTRODUCTION

At the request of Mr. Graham Ackerley on behalf of the Ryerson Graphite Project, a visit was made to the property on January 28, 1983. This report is an account of that visit.

WORK DONE

Geophysical traverses were carried out over Zones A-1, A-2, and B. Core was examined and samples were taken in the main trench in Zone B. No check was made on the claim boundaries or status.

MINERALIZATION

No mineralization could be seen in place in the trenches because of snow, broken rock, and other rubble, but considerable broken rock containing graphite was visible and samples were taken. Graphite grade is notoriously difficult to estimate, but it appeared that some of the rock contained enough graphite to be of economic interest, while some of it was of very low-grade, although very similar in appearance. The same was true of the core examined; some sections appeared to be of interest, but much of it was less than ore-grade.

GEOPHYSICS

Three vertical-loop traverses were made over Zone A-2, two over Zone A-1 and one over Zone B. There were no anomalies. A VLF traverse was made over Zone B and a weak anomaly was found centering near the south edge of the trench.

An induced polarisation survey would no doubt be effective, but it would be expensive, and it seems that the conductive zones have already been well located by means of the VLF survey.

The instruments used were a McPhar REM unit operating at 1,000 and 5,000 cycles per second and a Scintrex "Scopas" VLF unit tuned to Annapolis.

CONCLUSIONS

Bearing in mind that graphite content is very difficult to estimate visually, my impression is that much of the core in the graphitic sections are below ore-grade (assuming that around 5% would be economic); however, there do appear to be sections which are of higher-grade. The same may be true of the trenches; the grade varies considerably, but only broken rock can be seen at present, so it is not possible to see whether the higher-grade material is in mineable lenses.

RECOMMENDATIONS

Assuming that the assays determined so far are correct, it seems that there is a mixture of high-grade and low-grade rock on the property. If the high-grade rock occurs in continuous lenses, they might be mine profitable even if the lenses are

relatively narrow (3-5 m), because the additional cost of selective mining in an open-pit would be only a small fraction of total production cost. It is therefore recommended that the core be sampled in short lengths where the grade appears to be high.

If ore-grade material occurs in relatively small lenses, more diamond drillholes will be needed to delineate sufficient reserves. Given a limited footage, it would be advisable to drill shorter holes in order to increase the number of holes drilled. Apart from allowing more holes, this would also confine the drilling to shallower deposits more amenable to open-pit mining.

CON 0 60S 120S

SCALE 1" = 20' FIELD 1" = 10%
1" = 200' (1:2400)

RYERSON GRAPHITE
VLF TRAVERSE

● CONDUCTOR

I, Richard Hugh Clayton, certify:

1. That I am a member of the Association of Professional Engineers of Ontario.

2. That I have degrees and diplomas from the University of Wales (B.Sc.), the Imperial College of Science and Technology (D.I.C), and the Colorado School of Mines (M.Sc.).

3. That I have over 25 years experience in the mining industry.

4. That I do not have or expect to receive any interest in the Ryerson Graphite Project.

R. H. Clayton