MAR 19540001: PEACE RIVER

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PRELIMINARY REPORT

On

P E A C E   R I V E R   I R O N   O R E

- by -

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May 1954

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PURPOSE

The object of this report is to discuss what is known concerning the Peace River iron ore deposit at this date; to discuss what has been done; what is being done; and finally, the commercial aspects of the deposit are discussed.

ORIGINAL BASIS FOR EXPLORATION

Iron ore was originally encountered in four bore holes drilled for oil and natural gas in the Peace River country. These wells are Phil Can #1, in lsd 12, Section 29, Township 89, Range 4; Phil B #1, in lsd 2, Section 15, Township 91, Range 5; Phil C #1, in lsd 8, Section 23, Township 90, Range 5; and Phil Branch #1, in lsd 13, Section 9, Township 90, Range 4, all west of the 6th Meridian. From the catch samples from these wells there appeared to be a substantial thickness of an iron-bearing mineral which was suspected as being an iron carbonate (siderite). The ore occurred under variable overburden but realizing the amount of topographic relief in the area, it was hoped the deposit would occur close enough to the surface so a strip mining operation would be possible.

With this as a basis, negotiations were entered into with the government of Alberta. Mine staking regulations permitted claims of 160 acres to be staked but these regulations presupposed the fact that most mineral deposits occur over relatively small areas and have a large vertical component, while this deposit occurred in a relatively thin horizontal bed extending over a large area. For this reason the government of Alberta granted a permit entitling the holder to explore and prospect over an area covering 100,000 acres.

LOCATION

The deposit is approximately 60 miles northwest of the town of Peace River which in turn is approximately 250 miles northwest of Edmonton, Alberta. The area is 30 miles north of the town of

Hines Creek which is on the Northern Alberta Railway. The deposit lies on the east flank of the Clear Hills where the terrain is rolling and out by deep creek valleys. The entire area is covered with trees, some of timber quality. Little or no muskeg is present.

Natural gas occurs on the permit area. Two wells each having a potential of about 1.5 million cubic feet per day have been capped pending a market. It is known there is good quality coking coal to the west at various locations along the foothills. Limestone, sand and any other substance needed for satisfactory smelting operations is within reasonable distance from the deposit. It is possible to drive by car into the prospect area over a well-graded road built by the Phillips Petroleum Company north from Eureka River. Eureka River, in turn, is connected to Hines Creek by a good government road.

MARKETS

I would like to refer to two publications,
1. "The Past, Present and Future of the Canadian Steel Industry", by John Convey and S. L. Gertsman, published January, 1952, and
2. "Basic Industry for Alberta, A Study of Factors Affecting the Future of an Iron and Steel Industry in the Prairie Regions", by W. M. Goodwin.
Both papers are published by the Department of Mines and Technical Surveys, in Ottawa. These papers are optimistic about the possibilities of an iron and steel industry located in Alberta. It is their conclusion that an iron and steel industry at the present time is economically feasible and even, they infer, if ore has to be brought all the way from the Steep Rock mine in Ontario. The demand of a growing population and economy should not be ignored. The construction of oil and natural gas pipe lines are pending in the immediate future. This focuses the need for steel in the west at the present time. It is rumored that more than one company is currently investigating the possibilities of erecting a steel rolling mill in Edmonton.

CORE DRILL REPORT

i. General

The object of this preliminary core drill program was to obtain cores of the iron deposit, to find some idea of the probable thickness of the deposit, to determine to some extent the amount of glacial overburden, and to obtain some idea how much the overburden varies, but the program was not specifically designed to delineate the horizontal extent of the deposit or to find the minimum amount of overburden. The program of necessity was of short duration due to the pending spring break up period. Work began March 5, 1954 and lasted one month. A model 1500 Failing rig was contracted from Art Fast, drilling contractor in Edmonton. W. D. Glenn was hired as supervisor of the operation. In addition to the drill, two water trucks, a personnel carrier, a one-ton supply truck, a party chief's unit, and sleeping quarters, were provided. A total of eight men was employed on the job. A D4 tractor was contracted for the clearing out of bulldozed trails.

The main drilling problem encountered was that of lost circulation. On hole No.3, for instance, there appeared to be a cavity at the top of the iron formation. When the tools reached the top of the formation they dropped about 6 inches. An immediate loss of water resulted and it was impossible to regain circulation although sawdust, bentonite, cement, etc. were added. This loss of circulation proved to be a common occurrence in most of the holes drilled.

Some suspicion exists as to the accuracy of the surveying done in conjunction with the core hole program. The inaccuracy if it does exist will not exceed 20 feet in vertical elevation and will not appreciably change any of the structure maps submitted, and of course will have no effect on the isopach (thickness) map. This possible error will be checked as soon as possible.

ii. Map Discussion

Upper Cretaceous Plant Spore Horizon (Shaftesbury)

This map is submitted to show the regional strike and dip of the Upper Cretaceous sediments in the locale of the deposit. The data is from the seven bore holes drilled by the Phillips Petroleum Company. As noted, the regional dip is west-southwest and the gradient is about 8 feet per mile.

Top of Iron Bed

This horizon indicates the regional strike and dip of the ore bed which probably lies stratigraphically within the Kaskapau formation. Only data from the core holes are used in contouring but the data from the bore holes are also printed on the map. The elevations as calculated from the bore holes drilled by the Phillips Petroleum Company are not considered reliable due to lag of drill catch samples and in one or two cases probably improper sampling (Phil Can #1 and Phil Branch #1). Core hole E6 has a bracketted elevation as well, as the ore was present only in the base of the glacial till and in all probability is slump and glacially transported down the hill.

The dip on the iron bed is to the west-southwest at about 10 feet per mile. Small flexures are apparent as on the Plant Spore Horizon. The lines of cross-section, A - A' and B - B', are also shown.

The chief significance of this map is to show the conformability of the iron bed with regional sedimentation, a fact which further proves that the iron is a product of direct sedimentation.

The location of the two gas wells (Phil Can #1 and Phil Branch #1) should be noted. Each well has a potential of about 1.5 million cubic feet per day and are capped pending a market. This cheap natural gas will be invaluable in any preliminary concentration of the ore (see chemical analysis).

Isopach of Iron Bed

This map shows the thicknesses of the better grade iron ore as found in the various core holes. No thickness of the ore was calculated from the Phillips' bore holes as it was found to be inaccurate.

It is noted the approximate line of pinch-out of the ore to the west has been found by the survey. A northern "limit" is indicated by the erosion limit. Deposition undoubtedly continued some distance to the north but subsequent erosion has removed the ore from this limit northward.

No limit to the south and east has been found but again erosion will be the controlling factor.

The deposit before erosion was likely ellipsoidal in shape with the long axis trending south-southeast and lying east of the Phil B well.

In estimating the <u>tonnage reserves</u> which may be considered proven, the following calculations were used:

Proven area - 13 miles long
- 3.3 miles wide
= 42.9 square miles = $1,072.5 \times 10^6$ square feet

Average proven thickness of ore - 10 feet
Weight - approximately 11 cubic feet per ton

Total tonnage - $1,072.5 \times 10^6 \times 10 \times \frac{1}{11} = 975 \times 10^6$ tons

1,087,000,000 tons

This estimate of about one billion tons is considered a minimum tonnage. As no limit to the south is indicated and further extension (and thickening) to the east is probable, reserves greatly in excess of this will likely be proven upon further investigation.

It should be noted the minimum thickness of overburden under which the ore has been found is 75 feet. The maximum thickness found of good grade ore is 20 feet. Undoubtedly areas with less overburden can be found to the south and east and greater thicknesses of the ore may be expected to the east of where the preliminary work was done.

Cross Section A - A'

The cross-section shows the lithology (from the catch samples) of the section penetrated by the core drill. It illustrates the amount of topographic relief in the area and the variable amount of glacial till deposited. The iron bed is overlaid by shale and underlaid by a shale which is often silty. These sediments are soft and not indurated.

This section illustrates again that the iron deposit is a continuous sedimentary unit. No other stratigraphic correlations are apparent.

Cross Section B - B'

This section again illustrates the variations in topographic relief and thicknesses of glacial material. The pinchout of the iron bed to the west is apparent. No other correlations are made.

Log of Cores

The following is a detailed log of the cores from the various holes:

#E - 1	180'-185'	Rec. 2'9"	Oolitic iron ore, consisting of oolites (0.5 - 1 mm.) in matrix of dark brown - black sideritic material, possibly some chamositic mud. Oolites consist of concentric layers of light brown limonitic (?) material, frequently having a quartz fragment as a core.
	185'-189'	Rec. 5'	1' as above 2'8" as above but oolites changing to pale green, chamositic, with increase of quartz grains (becoming quite sandy). Some fossil remains and scattered pieces of what appears to be half rotten wood. 1'4" mainly shale, quite sandy, some scattered oolites. Some porous spots bleeding heavy oil slightly.
	189'-199'	Rec. About 2'	Mainly fine shale, friable sandstone tight, some patches of porosity in upper piece with heavy oil stain.

#E - 1 (Cont.)	240'-242'	Rec. 1'2"	Shale, light grey, plant remains
	242'-246'	Rec. Full	Shale as above, streaked silty
	246'-250'	Rec. Full	Grey shale
#E - 2	278'-282½'	Rec. 4'9"	Solid ore with scattered quartz (not too high in quartz %)
	282½'-286½'	Rec. 4'6"	as above
	286½'-288'	Rec. 1'	as above, little quartz
	288'-293'	Rec. 4'4"	(probably core is upside down) about 2' pyritic grey shale, remainder is quite sandy with scattered altered oolites, some oil bleeding in bottom few inches.
	293'-298'	Rec. 5'	Grey shale
	298'-303'	Rec. 5'	Grey shale
#E - 3A	93'- 98'	Rec. 4'2"	Solid-ore with very little quartz
	98'-103'	Rec. 5'	Solid-ore with negligible quartz as above.
	103'-108'	Rec. 5'	Approximately 2' of ore with dark oolites and considerable quartz. 3' as above, oolites becoming scattered and few and much quartz. Rounded fragments of white calcareous material (essentially a sandy shale).
	108'-110'	Rec. 3'	1'5" good ore 1'7" sandy shale
#E - 4	220'-223'	Rec. 1'6"	Solid ore. Oolites and matrix dark brown, very little quartz. Sp. G. higher than in other holes.
	223'-228'	Rec. 4'5"	3'9" ore as above. Some caved gravel. 8" sandy shale

#E - 4 (Cont.)	228'-232'	Rec. 3'4"	Solid heavy ore as above, (dark) possibly some oil stain. One large fragment of petrified wood (or coal).
	232'-233'	Rec. 1'	Fragments of above
	233'-238'	Rec. 5'	Dark crumbly ore
	238'-243'	Rec. 5'	Dark crumbly ore, altered appearance, quite heavy increased quartz
	243'-248'	Rec. 1'8"	Sandy oolitic shale
	248'-253'	Rec. 5'	Sandy shale with scattered pebbles
#E - 5	138'-141'	Rec. 2'	1' fragments ore with some greenish alteration of oolites 1' dark ore as in E-4
	141'-144'	Rec. 3'	Heavy dark ore, very little quartz
	144'-146'	Rec. 1'	as above
	146'-149½'	Rec. 2'11"	9" ore as above 1'7" soft shale (cavings in plugged barrel?) 7" ore as above
	149½'-154½'	Rec. 5'	Oolites becoming yellow-brown. Very little quartz
	154½'-157'	Rec. 2'6"	Shale, sandy with green altered oolites.
	157'-161'	Rec. 4'	Shale as above
#E - 9	82'- 84'	Rec. 0'6"	Dark brown ore, quartz rare

CHEMICAL ANALYSES

A total of 15 samples were submitted to the University of Alberta for chemical analysis. Each sample was over an approximate 5 foot interval. For this purpose the core was chipped at approximately 3 inch intervals for the making of a sample. Each sample was prefixed with the letter "E" denoting Eureka River, the second symbol indicates the number of the hole, and the third symbol refers to the footage interval of the core measured below the surface of the ground, as follows:

E 1A - from 180 feet to 185 feet
E 1B - from 185 feet to 188 feet
E 2A - from 278 feet to 282½ feet
E 2B - 282½ feet to 288 feet
E 3A - 93 feet to 98 feet
E 3B - 98 feet to 103 feet
E 3C - 103 feet to 110 feet
E 4A - 220 feet to 225½ feet
E 4B - 225 feet to 232 feet
E 4C - 232 feet to 238 feet
E 4D - 238 feet to 240½ feet
E 5A - 135 feet to 141 feet
E 5B - 141 feet to 145½ feet
E 5C - 146 feet to 151 feet
E 5D - 151 feet to 154½ feet

The following are letters that we received from the University of Alberta reporting on the chemical analyses:

University of Alberta
Department of Chemistry

April 26, 1954

Mr. D. B. McDougall
2, 901 - 8th Avenue West
Calgary, Alberta

Dear Mr. McDougall:

The following are the chemical analyses of the samples which you sent to me. The samples were dried at 110°C before analysis:

Sample Number	E 1A	E 3B	E 3C	E 4C	E 4D
Loss on ignition	13.64%	12.57%	12.52%	12.98%	12.63%
SiO_2	27.49	27.34	48.46	34.05	37.89
Fe_2O_3	50.10	50.58	28.02	41.55	35.47
Al_2O_3	6.11	5.95	6.00	6.55	7.70
MgO	2.62	2.34	2.68	2.63	3.30
CaO	0	0.19	0	0	0

Sample Number	E 1B	E 2A	E 2B	E 3A	E 4A
Loss on ignition	16.32%	12.80%	16.37%	15.35%	14.56%
SiO_2	23.18	31.68	19.93	21.52	23.80
Fe_2O_3	46.48	43.84	52.94	51.98	52.46
Al_2O_3	7.25	7.40	6.55	6.30	5.80
$MgO + CaO$*	4.68	2.53	2.87	1.31	1.60

Sample Number	E 4B	E 5A	E 5B	E 5C	E 5D
Loss on ignition	13.75%	12.93%	16.37%	15.24%	13.76%
SiO_2	27.34	26.14	25.57	24.70	27.36
Fe_2O_3	49.47	48.88	48.88	46.67	45.98
Al_2O_3	6.50	7.40	6.50	8.05	7.45
$MgO + CaO$*	2.06	2.64	1.66	3.32	2.95

* Calculated as MgO

If the percentage of iron (rather than iron oxide) is calculated on the ignited material the following results are obtained:

Sample Number	Percent Iron
E 1A	40.5
E 1B	38.8
E 2A	35.1
E 2B	44.3
E 3A	42.9
E 3B	40.4
E 3C	22.4
E 4A	42.9
E 4B	40.1
E 4C	33.4
E 4D	28.4
E 5A	39.2
E 5B	40.8
E 5C	38.4
E 5D	37.3

It would appear from the appreciable loss on ignition that part of the iron in the various samples is present as iron carbonate. Pure iron carbonate ignited to ferrous oxide would lose about 38% of its weight. Pure iron carbonate ignited to ferric oxide would lose about 31% of its weight. A sample of material containing 60% iron carbonate and ignited to ferric oxide would lose about 18 or 19% of its weight.

All of the samples have been examined spectroscopically by Dr. K. B. Newbound of the Physics Department. His findings indicate that there are no other metallic constituents present in appreciable amount. He will be sending you a report on this shortly. It should be noted that spectroscopic examination cannot reveal anything about the non-metallic components of the sample.

I trust that the above information is of the sort that you desire in connection with these samples.

Yours truly,

W. E. Harris

University of Alberta
Department of Physics

Edmonton, Alberta
April 25, 1954

SPECTROGRAPHIC EXAMINATION OF 15 SAMPLES

The samples were sparked using aluminium electrodes, potential of about 2000 volts (peak) and an L-C circuit with a relatively long time constant to enhance the arc-like phase of the spark. Since aluminium electrodes were used, this work does not give any indication as to the presence or absence of aluminium.

Due to difficulty in dissolving the materials in common acids and bases, the powdered samples were placed in depressions drilled in sheet aluminium. Exposures of two minutes and 10 minutes were taken on Kodak "Super Ortho Press" Plates using a Hilger "medium" quartz spectrograph.

The presence of such a large amount of iron and other materials which give rise to band spectra renders the examination for trace constituents of the samples difficult and uncertain with equipment available.

The following elements were found in all samples:

iron	-	major constituent
magnesium	-	less than 10%
silicon	-	lines weak, element difficult to excite
sodium	-	less than 1%
calcium	-	less than 1%
chromium	-	presence not definitely established, but possible

Sample E 5D contained tin (minor constituent).

K. B. Newbound,

Assoc. Prof. of Physics

MINERALOGICAL ANALYSES

The mineralogy of the deposit is extremely interesting. A fresh core has the appearance of jet black caviar. After exposure to the air there is a discernible change in coloration, with a yellowish tint becoming apparent. This change progresses over a period of days and even months until the weathered core has the appearance of a dark golden sand. It is believed, although not confirmed that the deposit is largely an amorphous iron carbonate which partly oxidizes on exposure to the air to limonite. Minor amounts of pyrite are also found in the basal part of the deposit.

Approximately 3 inches of core taken from the No. 3 hole was sent to the University of Alberta for mineralogical analysis. The following is a letter received in reply stating what their mineralogical analysis was:

University of Alberta
Department of Geology

Edmonton, Alberta
April 22, 1954

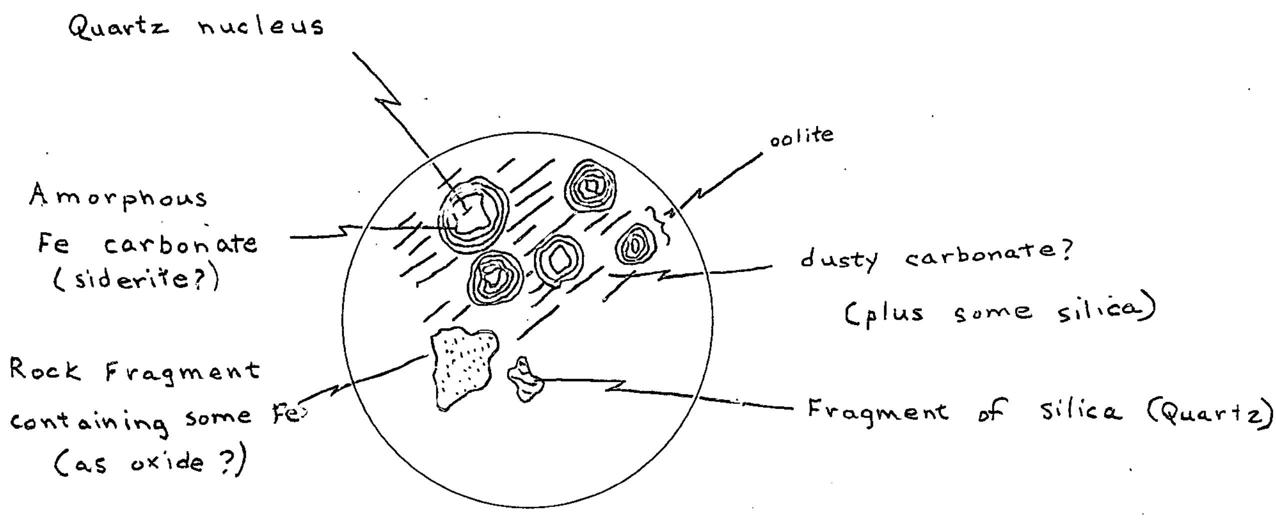
Mr. D. B. McDougall
2, 901 - 8th Avenue West
Calgary, Alberta

Dear Mr. McDougall:

Thank you for sending the sample of iron ore from the Peace River area, I found it quite interesting.

We had two thin sections prepared and insoluble residues were calculated on the material.

In thin section the ore appears similar to the Clinton iron ores of the eastern U. S. A. and might properly be called an oolitic iron ore. However there are two major differences in the Peace River ore and the Clinton ore. The major mineralogy of the Clinton ore is hematite (Fe_2O_3) whereas the major mineralogy of the Peace River ore appears to be an amorphous iron carbonate (possibly siderite - $FeCO_3$). Also the Peace River ore apparently contains a higher percentage of silica in the form of quartz. There is another carbonate present in the sample you sent which has a dusty appearance and may be a calcium carbonate containing some iron and magnesium. The following is a drawing to show the disposition of the various minerals:



For comparison purposes I should like to see a complete chemical analysis of the ore (including a carbonate, phosphate, Titanium, sulphur and silica analysis). This analysis would be necessary in order to make a more accurate appraisal of the mineralogy as the material was too dense for optical determinations.

Furthermore I should like to see other sections of the core to see if there is any major change in the mineralogy which would make the ore more valuable. All information will be kept in confidence.

There is a charge of $3.00 for the preparation of the thin sections which should be made payable to C. E. Moffat, Dep't of Geology, University of Alberta. Mr. Moffat had considerable difficulty in preparing the thin sections due to their crumbly nature. However if you send more material he is willing to attempt a plastic impregation technique.

Thank you again for the sample and I hope that the information is of some use to you.

Yours very truly,

C. P. Gravenor

ORIGIN OF THE DEPOSIT

What is the origin of the Peace River Iron Ore? Where did the iron come from? Why and how was it deposited in such a fashion?

The deposit lies on the east flank of the Alberta geosyncline. The surface is covered to a variable depth by a layer of glacial till. The consolidated sediments underlying this are of Upper Cretaceous Age. These beds gently dip to the west-southwest at about eight feet per mile. The total sedimentary section is ~~in~~ of the order of 8,500 feet thick. The area generally has been relatively quiet since Pre-Cambrian times. Tectonic movement has been on a very minor scale and largely confined to the

Paleozoics. It is inconceivable therefore that the ore bears any direct relationship or has its origin from the Pre-Cambrian as the possibilities of the circulating waters bringing up the iron in solution from the Pre-Cambrian along any hypothesised fracture plane can be ruled out. The deposit must have been formed as a function of the natural sedimentary process.

Iron is the second most abundant metal in the earth. The average content of iron in the earth's crust is 5.05%. It has been calculated that the portion of the earth's crust beneath the United States alone to a depth of 1,000 feet contains 275,000 billion tons of iron of which only about 0.1% has been concentrated into commercial deposits. Clearly, therefore, one need not look beyond the ordinary rocks for an adequate source of iron in deposits. The iron came from iron-bearing minerals in the surrounding sedimentary rocks and from the red coloring matter of the surrounding sedimentary rocks.

It is believed that the ore is a marine shallow water deposit. The oolitic character of the ore is considered to be diagnostic of marine conditions and to have been formed by colloidal processes. Such deposits give rise to the largest iron ore deposits in the world. The deposit is similar to the Jurassic Iron ores of England, the Clinton Beds of Alabama and the Luxemburg-Minette Iron Measures.

This area, at the time of deposition, was at the edge of a shallow sea. Slow moving, meandering streams with very little gradient passing over the land mass to the east and dissolving iron in their waters found their way to the sea where organic matter was abundant. Gradients of the streams were too low to permit much suspended matter to be transported and consequently little sedimentation accumulated with the ore except for very fine grained sand. These sluggish streams introduced the iron to the sea, the iron being carried in solution. Colloidal iron would be precipitated almost instantaneously upon contact with oppositely charged electrolytes of the sea water. The iron was deposited as an oolite usually around a grain of sand. Free oxygen was absent or limonite instead of iron carbonate would have been deposited. The oolitic structure is believed to be formed by successive layers of iron carbonate gel being deposited around a sand grain.

This theory of the origin of the deposition is supported by all known facts.

PRESENT STATUS OF DEVELOPMENT

1. A bulk sample of approximately 50 pounds has been sent to the Division of Mineral Dressing and Process Metallurgy, Department of Mines and Technical Surveys, Ottawa. They will attempt to carry out concentration tests.

2. Topographic maps showing elevations are being compiled from aerial photos.

3. A surface geological party will be in the area as soon as the weather permits. They will traverse the area trying to find if and where the ore outcrops. From a visual examination of the area while the snow was on the ground the impression was gained that there will be insufficient outcrop to satisfactorily map the area by surface geology.

SUMMARY OF RESULTS

The following conclusions can be drawn at this time:

1. There appears at first glance to be a sufficient market in Western Canada at the present time to warrant establishing an iron and steel industry in Alberta.

2. There are large tonnages in the Peace River iron ore deposit. A minimum estimate is one billion tons.

3. The ore occurs under sufficiently little overburden so a strip mining operation should be feasible. The deposit is located 30 miles from a railway.

4. The analyses of the samples indicates the deposit can be properly called a commercial iron ore.

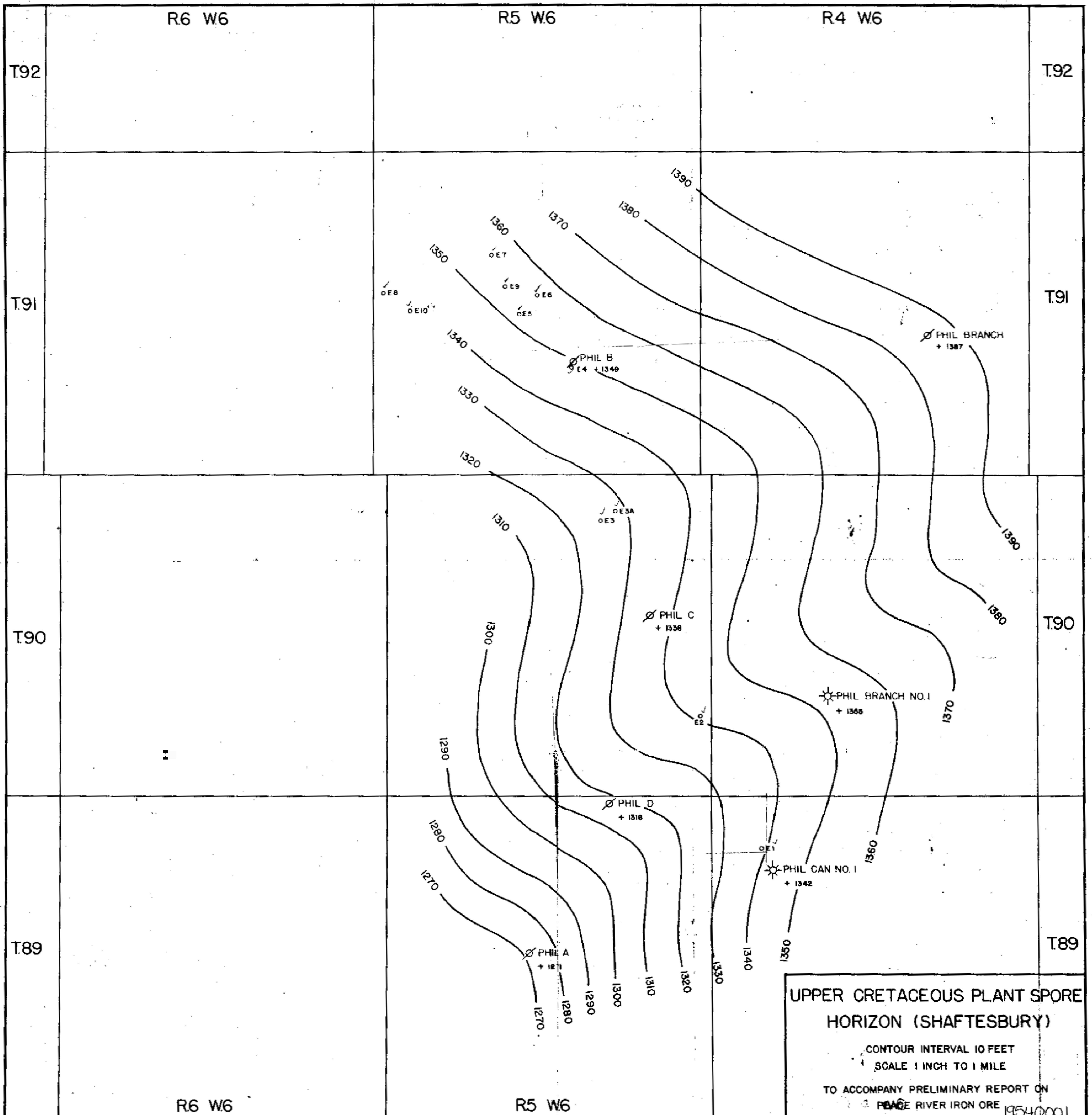
5. The presence of natural gas on the permit area will make the beneficiation of the ore (to a minimum grade of 41% iron) very cheap. The large amounts of good coking coal in Alberta is a further consideration for a cheap smelting operation.

Respectfully submitted,

[redacted]

D. B. McDougall

1954001
#1 of 6a



UPPER CRETACEOUS PLANT SPORE HORIZON (SHAFTESBURY)

CONTOUR INTERVAL 10 FEET

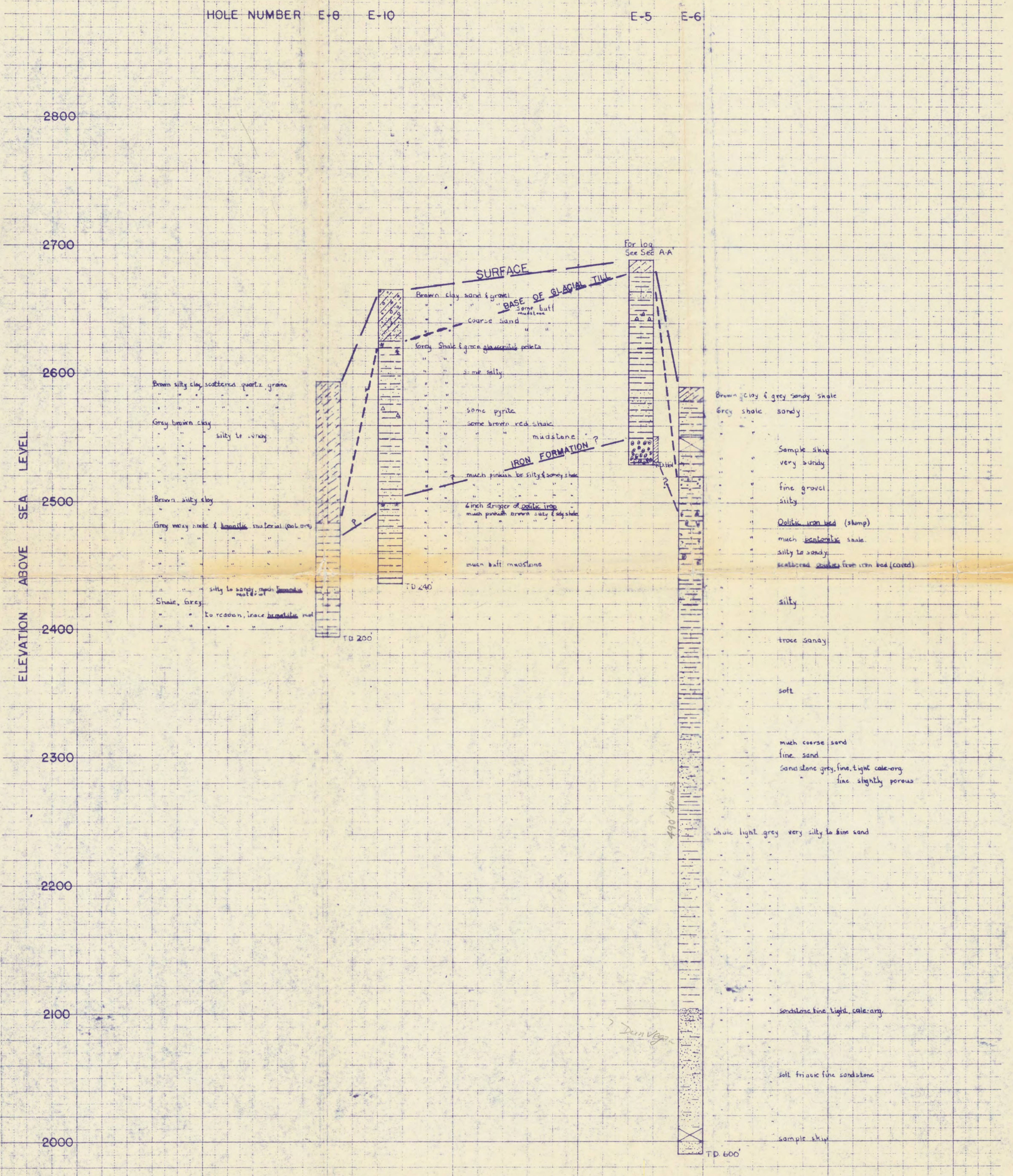
SCALE 1 INCH TO 1 MILE

TO ACCOMPANY PRELIMINARY REPORT ON PEACE RIVER IRON ORE

1954001
#1 of 6

CROSS SECTION B-B'

TO ACCOMPANY PRELIMINARY REPORT ON
PEACE RIVER IRON ORE
HORIZONTAL SCALE 2 INCHES TO 1 MILE

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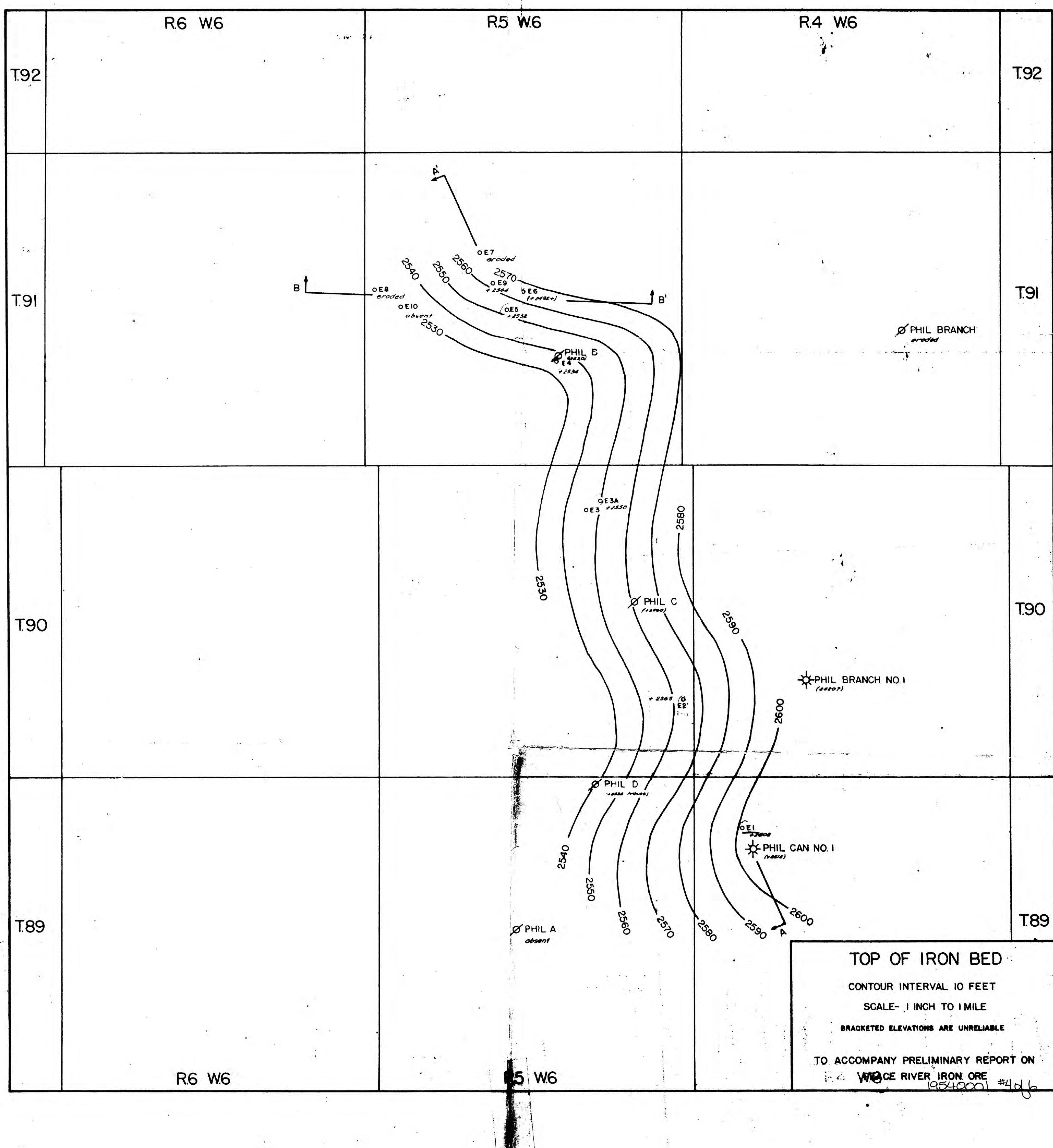
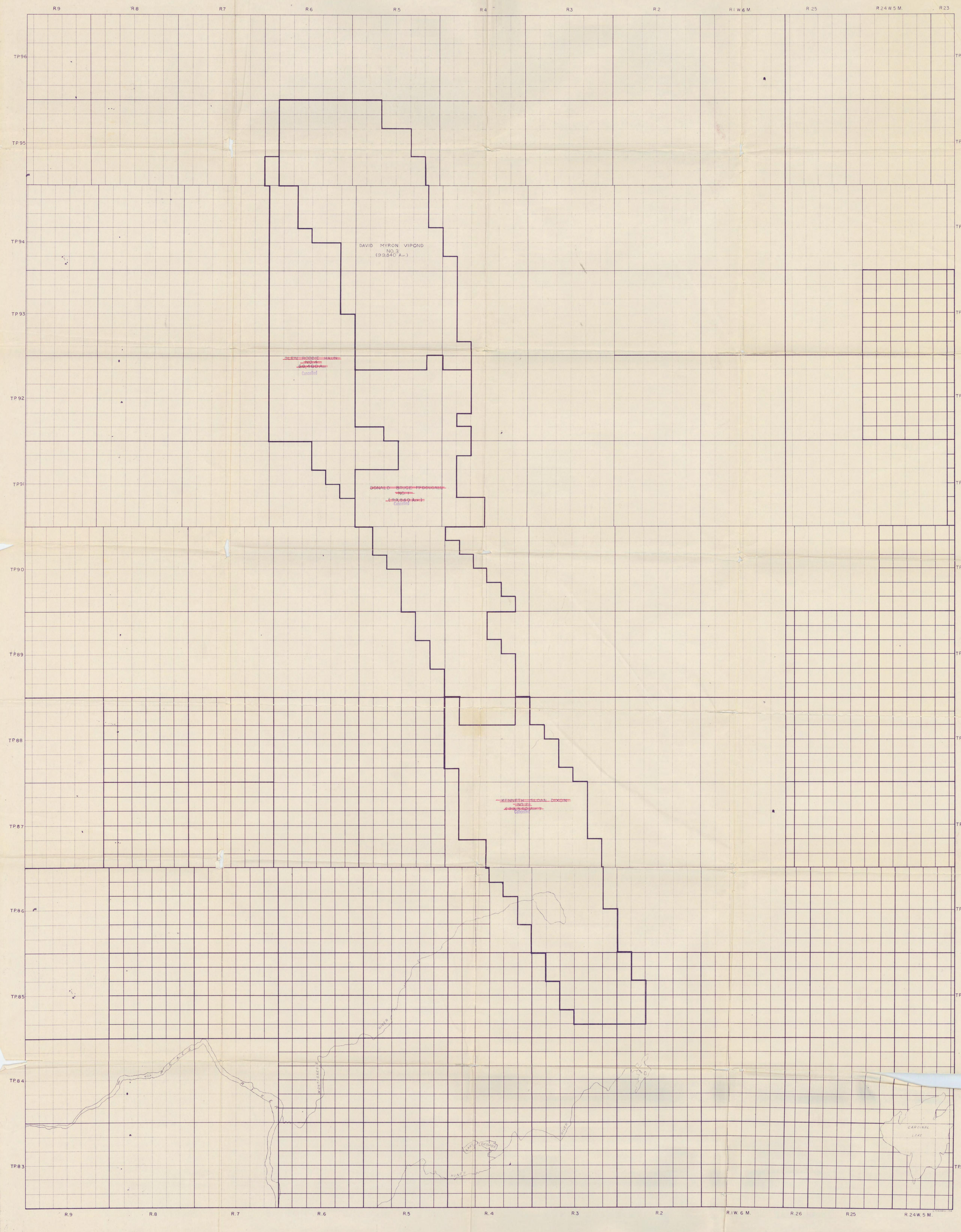
CROSS ECTION A-A'
TO ACCOMPANY PIELIMINARY REPORT ON
PEACE RIER IRON ORE
HORIZONTAL SCALE : INCHES TO I MILE
HOLE NUMBER E-1
E-2
E-3A
E-4
E-5
E-9
E-7
ELEVATION ABOVE SEA LEVEL
2800
2700
2600
2500
2400
2300
2200
2100
2000
SURFACE
BASE OF GLACIAL TILL
IRON FORMATION
Shale grey, silty
Oolitic iron bed
sample skip
shaley sandstone
Grey shale, sandy
silty to sandy
TD 600
Brown silty clay and loose sand. Trace fine gravel
Brownish red silty clay
Gravel, fine to coarse
Coarse sand
Fine to coarse gravel
Sample skip
Grey shale, some fine pebbles
Gravel, fine to coarse
Oolitic iron bed
Sample skip
Grey shale
pyrite
Sample skip
Poor sample
Grey shale, soft
Some coarse sand to gravel
TD 600
Gravel
Grey shale, trace sand
Samples missing, Oolitic iron bed
Grey shale with some green mud as above
TD 160
Shale grey, to brown, also pebbles
fine gravel
soft
silty
Oolitic iron ore bed
TD 293
Brown silty clay
Grey shale
Grey shale
Brown clay sand & gravel
Grey shale and fine sand
silty
Some fine sand & gravel
silty
TD 220

1954001
#4 of 6



19540001 #4 of 6



1954001
#5 of 6

LEGEND

Boundary of prospecting permit

MAP SHOWING

IRON PROSPECTING PERMITS

(DISTRICT WEST & NORTH OF PEACE RIVER)

Scale: 1/2 inch to one mile

MAP REFERENCE

Surveyed lines shown thus

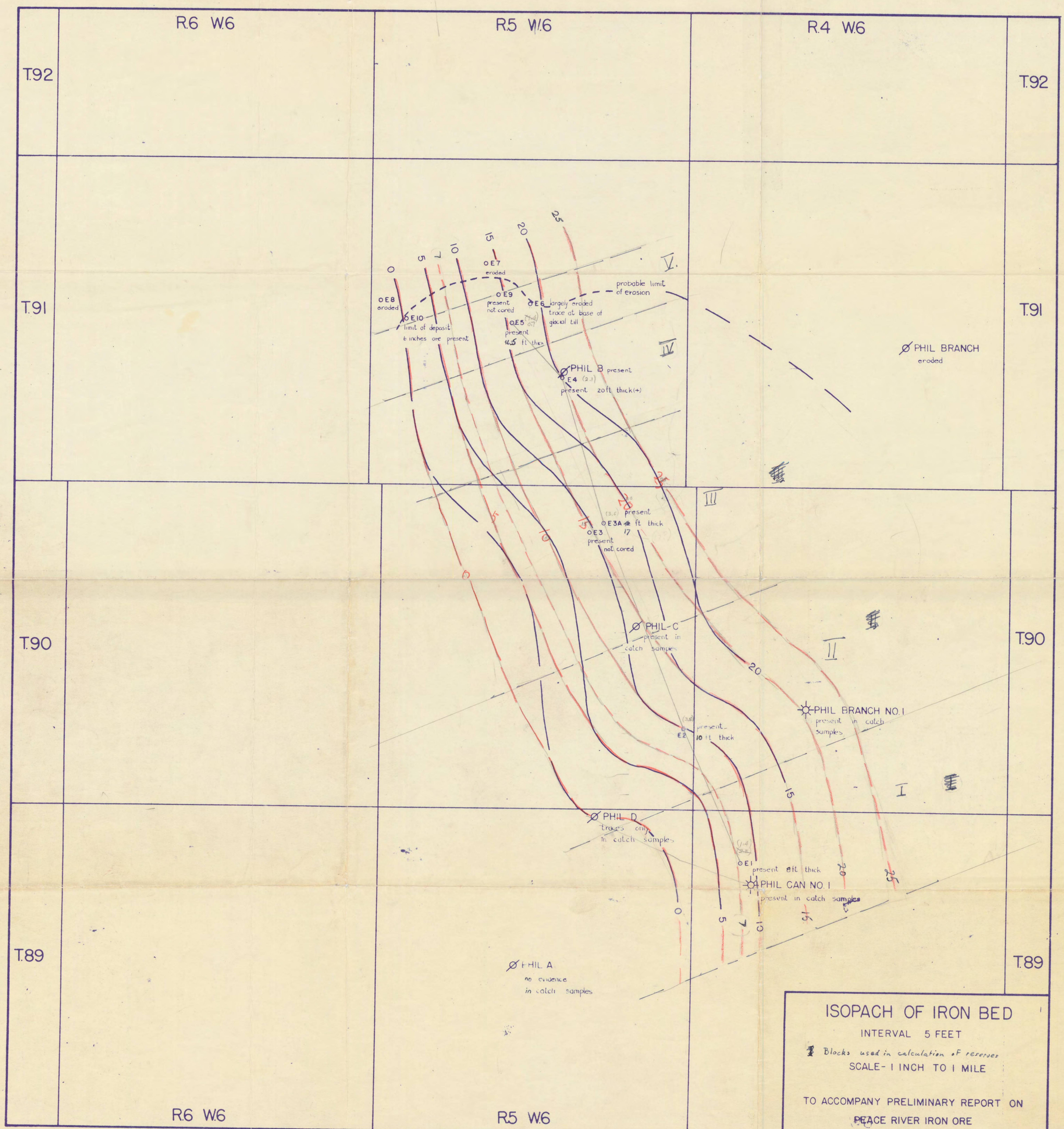
Unsurveyed lines shown thus

Rivers and Lakes

TECHNICAL DIVISION, DEPARTMENT OF MINES AND MINERALS

CHANGE OF DATE MAY 5 1954

1954001 #5 of 6


R6 W6
R5 W6
R4 W6
T.92
T.91
T.90
T.89
V.
IV
III
II
I
probable limit of erosion
OE8 eroded
OE7 eroded
OE9 present not cored
OE6 largely eroded trace at base of glacial till
OE10 limit of deposit 6 inches ore present
OE5 present 16.5 ft thick
PHIL B present
E4 (21) present 20ft thick (+)
PHIL BRANCH eroded
OE3A present ft thick 17
OE3 present not cored
PHIL-C present in catch samples
PHIL BRANCH NO. 1 present in catch samples
E2 present 10 ft thick
PHIL D traces only in catch samples
OE1 present 8ft thick
PHIL CAN NO. 1 present in catch samples
PHIL A no evidence in catch samples
0
5
7
10
15
20
25
ISOPACH OF IRON BED
INTERVAL 5 FEET
Blocks used in calculation of reserves
SCALE - 1 INCH TO 1 MILE
TO ACCOMPANY PRELIMINARY REPORT ON PEACE RIVER IRON ORE
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A54

84D/10+15

IRON PROSPECTING PERMIT No. 1