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63A.159

REPORT ON THE FENSON PROPERTY,  
LORNE TOWNSHIP, SUDBURY DISTRICT

010

INTRODUCTION

The following is a summary report, dealing with the Fensom Property, a zinc-copper occurrence, located in Lorne Township, Sudbury Mining Division, and held under option by Teck Exploration Company Limited, from February 5th. 1952. The option is in force until February 5th. 1954. All work by Teck Exploration has ceased on this property, and this report is a description of the results obtained to date.

TERMS

The terms under which the two  $\frac{1}{2}$  lots, known as the Fensom property, were optioned, are as follows:-

1. \$ 300.00 on February 5th. 1952.
2. \$ 600.00 on February 5th. 1953.
3. \$29,100.00 on February 5th. 1954.

For this Teck Exploration receives a 100% interest in the property.

A second agreement was made with Mrs. Fensom, the vendor, in which she was granted the surface rights on 5 acres of land, on the shore of Ella Lake, for a summer cottage. For deeding Mrs. Fensom this ground, she agreed to bear the cost of having the 5 acres properly surveyed by an Ontario Land Surveyor, and when the boundaries have been established by this means, Mrs. Fensom is to pay the cost of having her 5 acres fences, should Teck Exploration require this.

For bringing the property to the attention of the Company, Mr. F.H. Jowsey was granted a 3% interest.

PROPERTY (See Map A)

The Fensom Property consists of two  $\frac{1}{2}$  lots, described in this way:-

1. The North one-half of Lot 10, Concession II
2. The south one-half of Lot 10, Concession II

All in Lorne Township, Sudbury Mining District.

The acreage involved is approximately 157 acres, in each  $\frac{1}{2}$  lot, or a total of 314 acres.

In addition Teck Exploration has acquired by staking, the following groups of claims adjoining the Fensom Property.



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Group 51-23 (9 claims)

These claims, numbers 59183 to 59191 (incl.), are located in Lots 8 and 9, Concession II, Lorne Township, adjoining the Fensom property on the east. They were recorded on December 17th. 1951, and in 1952 one diamond drill hole, T-4, was drilled on claims 59183 and 59191 in this group, with a core length of 408 feet. This work was recorded, giving 45.3 days work in on each of the 9 claims. These claims are therefore in good standing until December 15th. 1953. On this date they will come open, if no further work is done.

Group 52-6 (9 claims)

The claims, numbers 62633, 62634, 62638, 62639, 62640, 62641, 62665, 63666, and 63667, are located in Lots 10 and 11, Concession I, Lorne Township. They adjoin the Fensom Property immediately to the south. They were recorded on August 25th. 1952, and in 1952 and early 1953 two diamond drill holes, T-25 and T-28 were drilled on two claims, 62634 and 62639, with a total core length of 1116 feet. This work was recorded in February 1953, giving 124 days work on each of the 9 claims. These claims are therefore in good standing until August 25th. 1956. On this date they will come open if no further work is done.

Group 52-11 (3 claims)

These claims, numbers 62635, 62636 and 62637, are located in Lot 11, Concession I, Lorne Township. They are immediately to the west of, and tied onto Group 52-6 (above). They were recorded on August 25th. 1952, and in 1952 and early 1953 two diamond drill holes, T-26 and part of T-25, were drilled on claim 62635, with a total core length of 379 feet. This work was recorded in February 1953, giving 126.3 days work on each of the three claims. These claims are therefore in good standing until August 25th. 1956. On this date they will come open if no further work is done.

The total areage of Teck's holdings is therefore as follows:-

Fensom Proper	=	314 acres
21 claims @ 40 acres per claim	=	840 acres
Total	=	1,154 acres

GENERAL INFORMATION (See Location map facing this page)

Accessibility

The property may be reached by a fair gravel road, 2 miles long, from the Trans-Canada Highway, just south of Nairn Centre. Nairn Centre is located on the main line of the C.P.R. between Sudbury and Sault Ste Marie, and is about 32 miles west of Sudbury, both by rail and the Trans-Canada Highway.

In reaching the property by this road, the Vermillion River must be crossed. This is done by means of a cable ferry, for which the traveller supplies the power, i.e. pulls the ferry across the cable.

Another means of access is a very poor road from Espanola, which at present for 9 miles can only be used by jeep or horses. The remaining 6 miles to Espanola are by a good gravel road.

From these roads the workings are reached by a poor wagon road, which in the west seasons can only be used by jeep or tractor. This extends for a distance of about one mile.

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Three forms of transportation are available.

1. Highway - Good highways exist from Nairn to Sudbury, Sault Ste. Marie, Espanola, and Little Current.
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### Power

A power line, belonging to International Nickel's power system, crosses the Fensom Property. Whether power would be available from this line is not known but seems unlikely.

The main line of the Ontario Hydro from Sudbury to the new power developments on the Mississagi River, north of Thessalon, passes through Nairn, 4 miles north of the property.

### Wood

Practically no timber for fuel or mine timbers is available on the property or nearby. The trees on the property are nearly all small birch or poplar.

### Labour

The area is populated chiefly by Finnish people who are trying to make a living by farming in a country not well adapted to this. At certain seasons, when lumbering operations to the north are suspended, labour is plentiful. The proximity of the mines at Sudbury probably means that wages would tend to be high.

### Topography

The country is a mixture of rocky hills and farmlands. Differences in elevation are not greater than 200 feet. On the property itself, in the vicinity of the showing, the country is flat rolling land, which drops off fairly sharply to the south at Ella Lake.

Geology (See Maps A, and Map 291-A, Geol. Survey of Canada)

### General

The property itself, and the surrounding area is entirely underlain by a broad band of Mississagi quartzite, which is one of the older members of the Bruche Series, belonging to the Lower Huronian of the Pre-Cambrian. For the most part this consists of white to grey colored quartzite, containing some feldspar. Narrow bands of argillaceous material are often noted. Intruding the quartzites are large dikes and irregular masses of quartz diabase. The youngest rocks in the area are dikes of olivine diabase. These generally strike across the country in a northwest-southeast direction, and often extend for many miles.

### Fensom Property

The Fensom property and the Teck Claims are underlain chiefly by Quartzite. Several irregular masses of quartz diabase have been mapped. Two of the largest of these, occurring along the point extending into the south west arm of Ella Lake, and at the east boundary of the northeast Teck claims. A narrow dike of this rock, evidently striking northeast-southwest, but concealed by overburden, was encountered in D.D.H's T-1 and T-27.

A very conspicuous feature of the property is the wide dike, (over 200'), of olivine diabase, striking northwest through the north part of the Fensom property. This dike had previously been mapped as a quartz diabase, but petrographic studies made at the University of Toronto for Teck Exploration, show it to be an exceptionally fresh olivine diabase.

### Structure

#### Folding

The band of quartzite in which the deposit occurs is approximately 3 miles wide. Map 291-A the Espanola Sheet, published by the Geological Survey of Canada, shows that this formation is part of the north limb of a syncline, the axis of which strikes northeast, and lies some 2 miles to the south of the property. At the ore outcrop the quartzite beds dip at approximately 65° to the southeast, and strike about north 65° east.

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Faulting

Before any work was carried out on the property, aerial photographs were obtained, and these were studied with the stereoscope. Several interesting linears were noted, and three of these at least have definitely proven to be faults, by subsequent diamond drilling and mapping. The linears are shown on map A.

Two of these faults appear to have some bearing on the ore deposit. These are, one striking about N55° E, and a second striking N 25° E, across the Fensom property. They appear to join just east of the ore outcrop, and the mineralization appears to be concentrated within the wedge formed by their junction.

Further to the northeast, after these faults have joined, they displace the olivine diabase dike.

Another very prominent series of linears are the ones striking northeast through Ella Lake. D.D.H. T-28 intersected highly fractured and badly broken ground here, with several strong mud seams, indicating that a strongly faulted condition exists under the Lake. No mineralization of any significance was encountered in this hole.

ORE OCCURRENCES AND CHARACTER OF THE ORE

(See Map A, Longitudinal sections B and C, and Cross-section D)

The original showing on the Fensom property was exposed in a low rock outcrop, rising not more than 10 feet above the surrounding overburden. This exposed the main or central zone for a length of about 185 feet. At various places throughout this length rock trenches have been put across the zone. The zone strikes North 30° East and dips about 75° to the southeast. For a length of about 90 feet on surface the central zone consists of a band of massive sulphides, varying from nothing to three feet in width. The sulphides consist of massive sphalerite chiefly, with minor chalcopyrite and pyrite. In addition, on either side of the sulphide band, the wallrock contains stringers and disseminated sphalerite, chalcopyrite, and pyrite, over widths up to 17 feet. Both to the northeast and southwest the mineralization fades out beyond the 90 foot length mentioned above, but of this 90 feet only 45 feet can be considered to be ore on surface.

Surface channel samples gave good values, up to 7% in zinc, with copper values up to 0.68% over widths up to 17.8 feet.

Diamond drilling of the central zone indicated that the orebody seemed to rake downward to the southwest. In the holes which gave the better values, the occurrence appears to be a true replacement zone. The host rock, quartzite, has been highly brecciated and fractured. Carbonatization and silification have taken place. Mineralization consists of three types, massive over narrow widths, with stringers and disseminations over much greater widths. Sphalerite is the predominant sulphide, with minor chalcopyrite, pyrite, and pyrrhotite.

The central zone appears to lie on the northwest or footwall side of the fault or fracture zone, described above as striking N25°E. It is on the southeast or hanging-wall side of the fault zone, striking N55°E. It appears to lie close to, and just southwest of, the junction of these two faults.

In addition to the main or central zone, two diamond drill holes, T-3 and T-9, intersected a narrow parallel zone, known as the west "A" zone, lying 50 feet to the northwest of the central zone. These holes gave 5 feet at 2% zinc and 5 feet at 10% zinc respectively. Other holes gave low values in this zone, so it appears to be of limited extent.

Another zone which appears in many of the diamond drill holes, is a wide low-grade zone, known as the East "C" zone. This lies from 20 to 50 feet to the southeast of the central zone, and gave values and core lengths as these:-

55 feet at 0.47% Zinc  
10 feet at 1.65% Zinc  
25 feet at 0.86% Zinc

This of course is of no interest under present conditions.

There appears to be two possible theories that might account for the deposition of the mineralization at this location.

- A. The junction of the two faults suggests that the wedge-shaped block so formed suffered intense deformation, and subsequent fracturing and brecciation. Thus, if either or both of the faults were ore channels, the solutions might have found this highly crushed area a more favourable place for replacement and deposition than in the less intensely deformed areas nearby.
- B. The orebody appears to have the same strike as the fault zone, striking North 25° West. This suggests that it may be related to this fault alone and that the other fault had little bearing on its location. In this case there is a possibility that a certain bed or horizon in the quartzite has some physical or chemical characteristics that made it more receptive to the mineralizing solutions and the deposition of the sulphides, and that where this bed was cut by the N25°W fault was a favourable place for ore deposition. The rake of the orebody to the southwest lends some support to this theory, since the trace of the junction of this fault with one of the quartzite beds would have just such a rake.

In any case, it seems clear that the ore solutions came from below, or at depth from the northeast, since drilling to the southwest proved that values disappear in that direction.

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WORK DONE

The first work carried out on the property by Teck Exploration was a geochemical survey, performed by C.T. Bischoff of Rouyn Quebec, in May 1952. An area 2600 feet long by 2000 feet wide was covered by this work. This extended from 500 feet southwest on the surface showing to 1800 feet northeast of the showing on the strike of the zone, and 1000 feet on each side.

This work picked up some 15 anomalies, but of these only three were high enough to be of much significance.

Anomaly No. 1

This, which was by far the largest and highest anomaly, was over and surrounding the surface showing. It is obvious that an anomaly should appear here. One interesting feature of this anomaly is that it ends abruptly at the northeast end of the showing and extends in a long tail to the southwest. Subsequently, diamond drilling showed that the orebody did not extend east of the showing, but had a definite rake to the southwest. The geochemical anomaly indicated this feature very well.

Anomaly No. 2

This is a fairly high anomaly, 1200 feet east of the main showing, and just west of the olivine diabase dike. It was thought that this might indicate ore at the contact or in the dike here. With this in mind, (and to carry out some assessment work on the northeast Teck Claim Group), one hole, T-4, was drilled through the dike under the anomaly, but no mineralization was encountered. A topographical map was later made of this area and the contours indicate that the source of this anomaly may lie some distance to the south, rather than directly beneath the anomaly where mapped.

Anomaly No. 3

This is a much smaller anomaly, lying some 700 feet to the east of the No. 2 anomaly. It is the third highest anomaly shown in the survey, and appears to be the last one of any significance. The interesting feature of this anomaly is that if the strike of the quartzite beds is projected N65°E from the main showing, such a line would pass very close to the No. 2 anomaly and also to this, the No. 3 anomaly. This might be interpreted as giving some support to the theory that a favourable bed or horizon for ore deposition exists in the quartzite.

Following the completion of the geochemical survey, a program of diamond drilling was initiated, and the first hole was collared on June 21st 1952. This work was continued until January 22nd 1953, when all operations ceased. In all, 29 "A" core holes were drilled, for a total footage of 18,977 feet.

These holes may be divided into five groups. (See Plan B - 200 scale longitudinal section).

1. Exploring the main showing

Holes 1 and 3 (incl.) and 5 to 17 (incl.) 16 holes  
These holes explored the main showing for a length of 650 feet and to a vertical depth of 740 feet.

2. Exploring the main break on strike to the southwest

Holes 18 to 26 (incl.) 9 holes.

These holes were drilled 500 feet apart, except for the last jump, which was 1000 feet. In all, a length of 4100 feet of this structure, southwest of the main showing, was explored, and with the exception of T-18, 500 feet southwest of the main showing, values decreased to become negligible, as the drilling proceeded to the southwest.

3. Exploring the main break on strike to the northeast

Hole 27 - This hole was drilled 400 feet northeast of the main showing. Unfortunately it encountered the quartz diabase dike, just where the main zone should occur, and this may explain the fact that although a fracture was picked up on strike of the main break, no mineralization was present.

4. Exploring the ground under the No. 2 anomaly, near the olivine Diabase dike, 1200 feet east of the Main Showing

Holes 4 and 29 - 2 holes - 1 completed.

Hole No. 4 was drilled through the olivine diabase dike, directly under the geochemical anomaly. Subsequently a contour map made of this area indicated that the drainage would be to the north, and that the source of the anomaly probably lies some distance to the south of where it is mapped.

With this in mind, Hole 8-29 was collared to the south of the anomaly, drilling north to cut under the assumed location of the source of this anomaly. This hole was at 116 feet when the machine broke down, and unfortunately operations were suspended before it could be completed. This hole was also designed to cut the assumed extension of the possible favourable horizon in the quartzites mentioned above, as well as the source of anomaly No. 2, but was stopped before either of these features were explored.

5. Exploring the linears under Ella Lake

Hole 28 - This hole was drilled south from the shore of Ella Lake, to complete assessment work on some of the Teck Claims, and to check if there were faults under Ella Lake, and if so, if these carried



mineralization. This hole did encounter very strong faulting under the Lake, but was almost entirely in quartzite devoid of mineralization of importance.

VALUE AND TONNAGE OF ORE DEVELOPED

In order to estimate the value and tonnage of ore developed, the central zone only has been considered. This has been divided into two blocks of probable and possible ore. (See Longitudinal Section Plan C).

Probable Ore

The main block of probable ore has been divided into two blocks, "A" and "B", as outlined in red on Plan C.

Block "A"

Six diamond drill holes, Nos. 2, 3, 5, 8, 9, and 16, and two surface channel samples have been used here to give the following results:-

Average Grade	=	5.17% Zinc
	=	0.33% Copper
Average Width	=	8.86 feet (True width)
Tonnage	=	101,000 tons

Block "B"

Three diamond drill holes, Nos. 10, 12, and 15, have been used here to give the following results:-

Average Grade	=	5.17% Zinc
	=	0.24% Copper
Average Width	=	11.4 feet (True width)
Tonnage	=	55,300 tons

Total Probable Ore

This gives a total for probable ore of :-

Average Grade	=	5.17% Zinc	(103 lbs. per ton)
	=	0.30% Copper	( 6 lbs. per ton)
Total Tonnage	=	156,300 tons	

This is -           16,098,900 pounds of Zinc  
                          937,800 pounds of Copper

The gross value of this, taking zinc to 10 cents a pound and copper at 30 cents a pound, is as follows:-

Zinc	=	16,098,900 x 10¢	=	\$1,609,890
Copper	=	937,800 x 30¢	=	<u>281,340</u>
Gross Value			=	\$1,891,230 or \$12.10 per ton

The net value of this, taking 50% for the zinc and 80% for the copper, to allow for recovery, shipping, smelting, and marketing charges, is as follows:-

Zinc	=	\$ 804,945
Copper	=	225,072
		<hr/>
Net Value		\$1,030,017 or \$6.59 per ton

#### Possible Ore

This block is included because of the narrow rather low grade intersection obtained in the hole T-18. It is definitely a very uncertain quantity. It is outlined in blue on Plan "C".

Three diamond drill holes have been used here, Nos. 15, 16, and 18, to give the following results:- (Copper values are negligible).

Average Grade	=	4.79% Zinc	(96 lbs. per ton)
Average Width	=	5.30 feet	(True width)
Tonnage	=	49,600 tons	

This is	4,761,600	ounds of zinc
Gross value at 10¢ a pound	=	\$476,160 or \$9.60 per ton
Net value @ 50%	=	238,080 or \$4.80 per ton

In arriving at these figures, three factors should be noted, which definitely tend to make them very conservative.

1. In drilling zinc ore bodies it is well known that values tend to be lower in drill core assays than is found when the ore is actually mined, because of a certain amount of unavoidable core loss, due to the physical characteristics of sphalerite.
2. The assays used in the above calculations are those obtained from Thos Heys and Sons. Numerous checks assays made by the assay office at Teck-Hughes Gold Mines and at the Provincial Assay Office as a third check, indicate that Heys' results tend to be low in nearly all cases. It is therefore believed that there is a safety factor here of from 10% to 20%.
3. The price per pound for zinc has been taken at 10 cents, which is believed to be the very minimum price which can be expected for the next few years. Thus, if zinc should level off at 15 cents per pound, as many people think likely, the value of the ore would be much greater than as given above.

#### SUMMARY

1. The Fensom property has been given a very fair test, by means of a geochemical survey and a diamond drilling campaign, consisting of 18,977 feet of "A" core drilling in 29 holes.

2. This work has indicated a low-grade body of Zinc-Copper bearing material, not quite large enough to warrant the expense of development under present conditions.

3. This material can be divided into two categories as follows:-

Probable Ore:- containing 156,000 tons with a gross value of \$1,891,230 or \$12.10 per ton, or a net value of \$1,030,017, or \$6.59 per ton.

Possible Ore:- containing 49,600 tons, with a gross value of \$476,160 or \$9.60 per ton, or a net value of \$238,080, or \$4.60 per ton.

Grand total of 205,900 tons, with a gross value of \$2,367,390, or a net value of \$1,268,097.

4. Should the price of zinc be increased to 15 cents per pound, these figures would be increased by nearly 50%.

5. The future of the property depends on two factors:-

i) A substantial increase in the price of Zinc, which would make the proposition more attractive.

ii) The finding of a much greater tonnage of ore. There appears to be three possibilities in this regard.

a) At depth below the known orebody. There are open areas here, not yet eliminated by diamond drilling.

b) In the vicinity of the junction of the main fracture zone with the olivine diabase dike to the northeast.

c) Assuming that a certain horizon or bed in the quartzites is more favourable for ore deposition, this bed might be checked on strike. Some support is given to this by the geochemical anomalies which appear to the east of the main showing on the strike of the quartzite beds. Where these anomalies occur would obviously be the most likely place to look for additional orebodies, if this theory is to be tested.

6. It is not considered that the testing of the area below the known orebody can be done satisfactorily by surface diamond drilling, without incurring great expense.

10 Feb. 1953.

JRB/HSB

J. B. Bridger  
Chief Geologist  
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### Structures:

#### Foldings:

The band of quartzite in which the deposit occurs is approximately 3 miles wide. Map 291-A, the Espanola Sheet, published by the Geological Survey of Canada, shows that this formation is part of the north limb of a syncline, the axis of which strikes northeast, and lies some 2 miles to the south of the property. At the ore outcrop the quartzite beds dip at approximately  $65^{\circ}$  to the southeast, and strike about north  $65^{\circ}$  east.

#### Faultings:

Before any work was carried out on the property, aerial photographs were obtained, and these were studied with the stereoscope. Several interesting linears were noted, and three of these at least have definitely proven to be faults, by subsequent diamond drilling and mapping. The linears are shown on map A,

Two of these faults appear to have some bearing on the ore deposit. These are, one striking about N  $55^{\circ}$  E, and a second striking N  $25^{\circ}$  P, across the Fenson property. They appear to join just east of the ore outcrop, and the mineralization appears to be concentrated within the wedge formed by their junction.

Further to the northeast, after these faults have joined, they displace the olivine diabase dike.

Another very prominent series of linears are the ones striking northeast through Ella Lake. D.D.H. T-28 intersected highly fractured and badly broken ground here, with several strong mud seams, indicating that a strongly faulted condition exists under the Lake. No mineralization of any significance was encountered in this hole.

## ORE OCCURRENCES AND CHARACTER OF THE ORE

(See map A, Longitudinal sections B and C, and Cross-section D)

The original showing on the Fenson property was exposed in a low rock outcrop, rising not more than 10 feet above the surrounding overburden. This exposed the main or central zone for a length of about 185 feet. At various places throughout this length rock trenches have been put across the zone. The zone strikes North 30° East and dips about 75° to the southeast. For a length of about 90 feet on surface the central zone consists of a band of massive sulphides, varying from nothing to three feet in width. The sulphides consist of massive sphalerite chiefly, with minor chalcopyrite and pyrite. In addition, on either side of the sulphide band, the wall rock contains stringers and disseminated sphalerite, chalcopyrite, and pyrite, over widths up to 17 feet. Both to the northeast and southwest the mineralization fades out beyond the 90 foot length mentioned above, but of this 90 feet only 45 feet can be considered to be ore on surface.

Surface channel samples gave good values, up to 7% in zinc, with copper values up to 0.68% over widths up to 17.8 feet.

Diamond drilling of the central zone indicated that the orebody seemed to rake downward to the southwest. In the holes which gave the better values, the occurrence appears to be a true replacement zone. The host rock, quartzite, has been highly brecciated and fractured. Carbonatization and silicification have taken place. Mineralization consists of three types, massive over narrow widths, with stringers and disseminations over much greater widths. Sphalerite is the predominant sulphide, with minor chalcopyrite, pyrite, and pyrrhotite.

The central zone appears to lie on the northwest or footwall side of the fault or fracture zone, described above as striking N 25° E. It is on the southeast or hanging-wall side of the fault zone, striking N 55° E. It appears to lie close to, and just southwest of, the junction of these two faults.

In addition to the main or central zone, two diamond drill holes, T-3 and T-9, intersected a narrow parallel zone, known as the west "A" zone, lying 50 feet to the northwest of the central zone. These holes gave 5 feet at 2% zinc and 3 feet at 10% zinc respectively. Other holes gave low values in this zone, so it appears to be of limited extent.

Another zone which appears in many of the diamond drill holes, is a wide low-grade zone, known as the East "C" zone. This lies from 20 to 50 feet to the southeast of the central zone, and gave values and core lengths as these:-

55 feet at 0.47% zinc.  
10 feet at 1.65% zinc.  
25 feet at 0.86% zinc

This of course is of no interest under present conditions.

There appears to be two possible theories that might account for the deposition of the mineralization at this location.



- A. The junction of the two faults suggests that the wedge-shaped block so formed suffered intense deformation, and subsequent fracturing and brecciation. Thus, if either or both of the faults were ore channels, the solutions might have found this highly crushed area a more favourable place for replacement and deposition than in the less intensely deformed areas nearby.
- B. The ore body appears to have the same strike as the fault zone, striking North 25° West. This suggests that it may be related to this fault alone and that the other fault had little bearing on its location. In this case there is a possibility that a certain bed or horizon in the quartzite has some physical or chemical characteristics that made it more receptive to the mineralizing solutions and the deposition of the sulphides, and that where this bed was cut by the N 25° W fault was a favourable place for ore deposition. The rake of the ore body to the southwest lends some support to this theory, since the trace of the junction of this fault with one of the quartzite beds would have just such a rake.

In any case, it seems clear that the ore solutions came from below, or at depth from the northeast, since drilling to the southwest proved that values disappear in that direction.

#### WORK DONE:

The first work carried out on the property by Teck Exploration was a geochemical survey, performed by C.F. Bischoff of Rouyn Quebec, in May 1952. An area 2600 feet long by 2000 feet wide was covered by this work. This extended from 500 feet southwest on the surface showing to 1800 feet northeast of the showing on the strike of the zone, and 1000 feet on each side.

This work picked up some 15 anomalies, but of these only three were high enough to be of much significance.

#### Anomaly No 11

This, which was by far the largest and highest anomaly, was over and surrounding the surface showing. It is obvious that an anomaly should appear here. One interesting feature of this anomaly is that it ends abruptly at the northeast end of the showing and extends in a long tail to the southwest. Subsequently, diamond drilling showed that the ore body did not extend east of the showing, but had a definite rake to the southwest. The geochemical anomaly indicated this feature very well.

#### Anomaly No 21

This is a fairly high anomaly, 1200 feet east of the main showing, and just west of the olivine diabase dike. It was thought that this might indicate ore at the contact or in the dike here. With this in mind, (and to carry out some assessment work on the northeast Teck Claim Group), one hole, T-4, was drilled through the dike under the anomaly, but no mineralization was encountered. A topographical map was later made of this area and the contours indicate that the source of this anomaly may lie some distance to the south, rather than directly beneath the anomaly where mapped.

### Anomaly No 31

This is a much smaller anomaly, lying some 700 feet to the east of the No 2 anomaly. It is the third highest anomaly shown in the survey, and appears to be the last one of any significance. The interesting feature of this anomaly is that if the strike of the quartzite beds is projected N 65° E from the main showing, such a line would pass very close to the No 2 anomaly and also to this, the No 3 anomaly. This might be interpreted as giving some support to the theory that a favourable bed or horizon for ore deposition exists in the quartzite.

Following the completion of the geochemical survey, a program of diamond drilling was initiated, and the first hole was collared on June 21st, 1952. This work was continued until January 22nd, 1953, when all operations ceased. In all, 29 "A" core holes were drilled, for a total footage of 18,377 feet.

These holes may be divided into five groups. (See Plan B - 200 scale longitudinal section).

#### 1. Exploring the main showing:

Holes 1 and 3 (inc.) and 5 to 17 (inc.) 16 holes.

These holes explored the main showing for a length of 650 feet and to a vertical depth of 740 feet.

#### 2. Exploring the main break on strike to the southwest:

Holes 18 to 26 (inc.) 9 holes.

These holes were drilled 500 feet apart, except for the last jump, which was 1000 feet. In all, a length of 4100 feet of this structure, southwest of the main showing, was explored, and with the exception of T-18, 500 feet southwest of the main showing, values decreased to become negligible, as the drilling proceeded to the southwest.

#### 3. Exploring the main break on strike to the northeast:

Hole 27 - This hole was drilled 400 feet northeast of the main showing. Unfortunately it encountered the quartz diabase dike, just where the main zone should occur, and this may explain the fact that although a fracture was picked up on strike of the main break, no mineralization was present.

#### 4. Exploring the ground under the No 2 anomaly, near the olivine Diabase dike, 1200 feet east of the Main Showing:

Holes 4 and 29 - 2 holes - 1 completed.

Hole No 4 was drilled through the olivine diabase dike, directly under the geochemical anomaly. Subsequently a contour map made of this area indicated that the drainage would be to the north, and that the source of the anomaly probably lies some distance to the south of where it is mapped.

With this in mind, Hole T-29 was collared to the south of the anomaly, drilling north to cut under the assumed location of the source of this anomaly. This hole was at 116 feet when the machine broke down, and unfortunately operations were suspended before it could be completed. This hole was also designed to cut the assumed extension of the possible favourable horizon in the quartzites mentioned above, as well as the source of anomaly No 2, but was stopped before either of these features were explored.

#### 5. Exploring the linears under Ella Lake

Hole 28 - This hole was drilled south from the shore of Ella Lake, to complete assessment work on some of the Teek Claims, and to check if there were faults under Ella Lake, and if so, if these carried mineralization. This hole did encounter very strong faulting under the Lake, but was almost entirely in quartzite devoid of mineralization of importance.

#### VALUE AND TONNAGE OF ORE DEVELOPED

In order to estimate the value and tonnage of ore developed, the central zone only has been considered. This has been divided into two blocks of probable and possible ore. (See Longitudinal Section Plan C.).

#### Probable Ore

The main block of probable ore has been divided into two blocks, "A" and "B", as outlined in red on Plan C.

#### Block "A"

Six diamond drill holes, Nos. 2, 3, 5, 8, 9, and 16, and two surface channel samples have been used here to give the following results:-

Average Grade	= 5.17% Zinc.
	= 0.33% Copper.
Average width	= 8.86 feet (True width)
Tonnage	= 101,000 tons.

#### Block "B"

Three diamond drill holes, Nos. 10, 12, and 15, have been used here to give the following results:-

Average grade	= 5.17% Zinc.
	= 0.24% Copper.
Average width	= 11.4 feet. (True width)
Tonnage	= 55,300 tons.

#### Total Probable Ore

This gives a total for probable ore of :-

Average grade	= 5.17% Zinc.	(103 lbs. per ton)
	= 0.30% Copper.	( 6 lbs. per ton)
Total Tonnage	= 156,300 tons.	

This is - 16,098,900 pounds of Zinc.  
937,800 pounds of copper.

The gross value of this, taking zinc at 10 cents a pound and copper at 30 cents a pound, is as follows:-

Zinc =	16,098,900 X 10 ¢	= \$ 1,609,890.
Copper =	937,800 X 30 ¢	= \$ 281,340.
Gross value		= \$ 1,891,230. or \$ 12.10 per ton.

The net value of this, taking 50% for the zinc and 80% for the copper, to allow for recovery, shipping, smelting, and marketing charges, is as follows:-

Zinc =	\$ 804,945.
Copper =	\$ 225,072.
Net value =	\$ 1,030,017. or \$ 6.59 per ton.

### Possible ore

This block is included because of the narrow rather low grade intersection obtained in hole T-18. It is definitely a very uncertain quantity. It is outlined in blue on Plan "C".

Three diamond drill holes have been used here, Nos. 15, 16, and 18, to give the following results:- (Copper values are negligible).

Average grade =	4.79% Zinc	(96 lbs. per ton)
Average width =	5.30 feet	(True width)
Tonnage =	49,600 tons.	

This is =	4,761,600 pounds of zinc.
Gross value at 10¢ a pound =	\$ 476,160. or \$ 9.60 per ton.
Net value @ 50% =	\$ 238,080. or \$ 4.80 per ton.

In arriving at these figures, three factors should be noted, which definitely tend to make them very conservative.

1. In drilling zinc ore bodies it is well known that values tend to be lower in drill core assays than is found when the ore is actually mined, because of a certain amount of unavoidable core loss, due to the physical characteristics of sphalerite.
2. The assays used in the above calculations are those obtained from The Heys and Sons. Numerous check assays made by the assay office at Teck-Hughes Gold Mines and at the Provincial Assay Office as a third check, indicate that Heys' results tend to be low in nearly all cases. It is therefore believed that there is a safety factor here of from 10% to 20%.
3. The price per pound for zinc has been taken at 10 cents, which is believed to be the very minimum price which can be expected for the next few years. Thus, if zinc should level off at 15 cents per pound, as many people think likely, the value of the ore would be much greater than as given above.

SUMMARY:

1. The Fenecon Property has been given a very fair test, by means of a geochemical survey and a diamond drilling campaign, consisting of 18,977 feet of "A" core drilling in 29 holes.
2. This work has indicated a low-grade body of Zinc-Copper bearing material, not quite large enough to warrant the expense of development under present conditions.

3. This material can be divided into two categories as follows:-

Probable Ore- containing 156,000 tons with a gross value of \$ 1,891,230. or \$ 12.10 per ton, or a net value of \$ 1,030,017., or \$ 6.59 per ton.

Possible Ore- containing 49,600 tons, with a gross value of \$ 476,160. or \$ 9.60 per ton, or a net value of \$ 238,080., or \$ 4.60 per ton.

Grand total of 205,900 tons, with a gross value of \$ 2,367,390., or a net value of \$ 1,268,097.

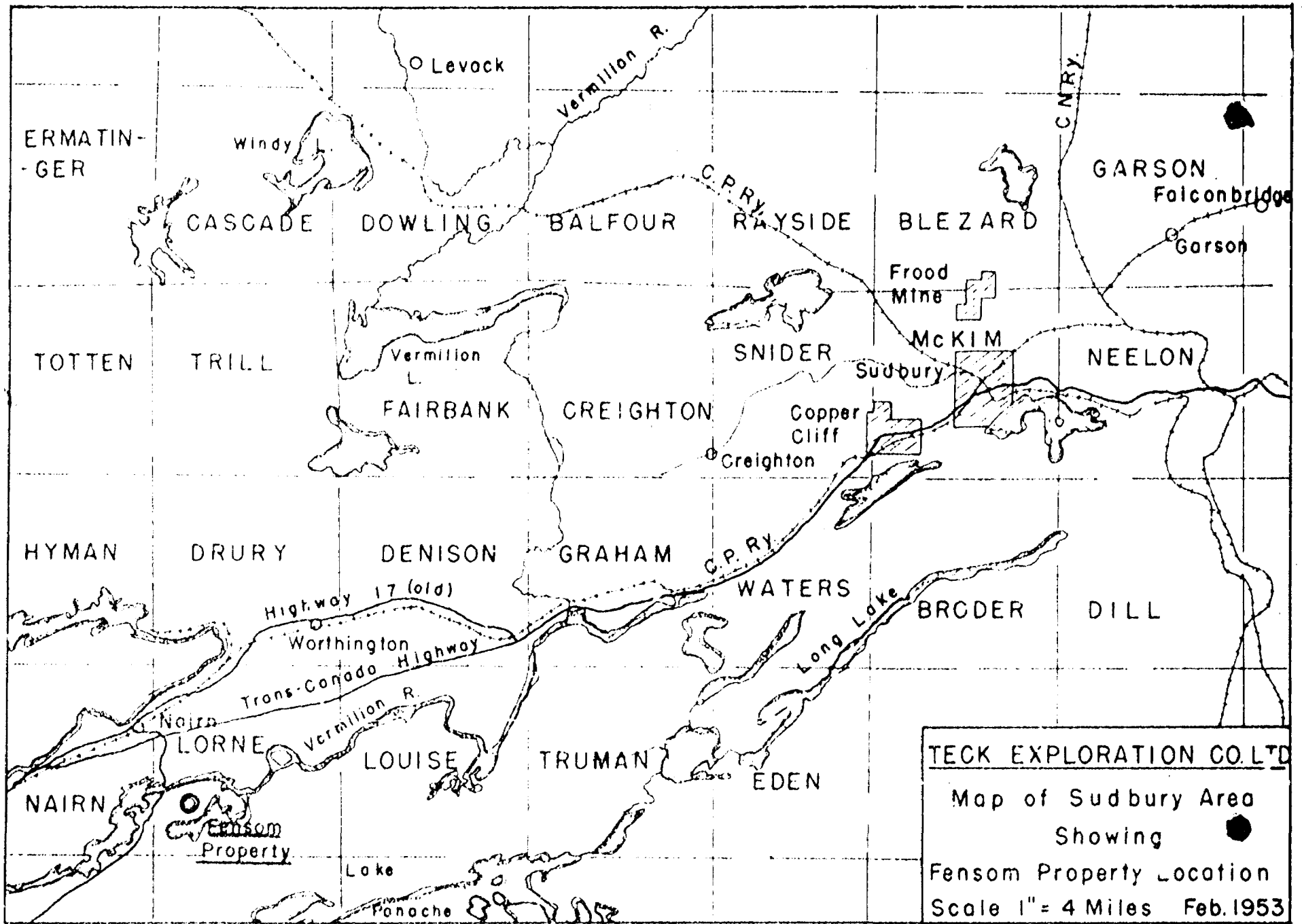
4. Should the price of zinc be increased to 15 cents per pound, these figures would be increased by nearly 30%.
5. The future of the property depends on two factors:-
  - (1) A substantial increase in the price of zinc, which would make the proposition more attractive.
  - (11) The finding of a such greater tonnage of ore. There appears to be three possibilities in this regard.
    - (a) At depth below the known ore body. There are open areas here, not yet eliminated by diamond drilling.
    - (b) In the vicinity of the junction of the main fracture zone with the olivine diabase dike to the northeast.
    - (c) Assuming that a certain horizon or bed in the quartzites is more favourable for ore deposition, this bed might be checked on strike. Some support is given to this by the geochemical anomalies which appear to the east of the main showing on the strike of the quartzite beds. Where these anomalies occur would obviously be the most likely place to look for additional ore bodies, if this theory is to be tested.
6. It is not considered that the testing of the area below the known ore body can be done satisfactorily by surface diamond drilling, without incurring great expense.

*J. R. Bridger*

J. R. Bridger,  
Chief Geologist.

10 Feb. 1953.

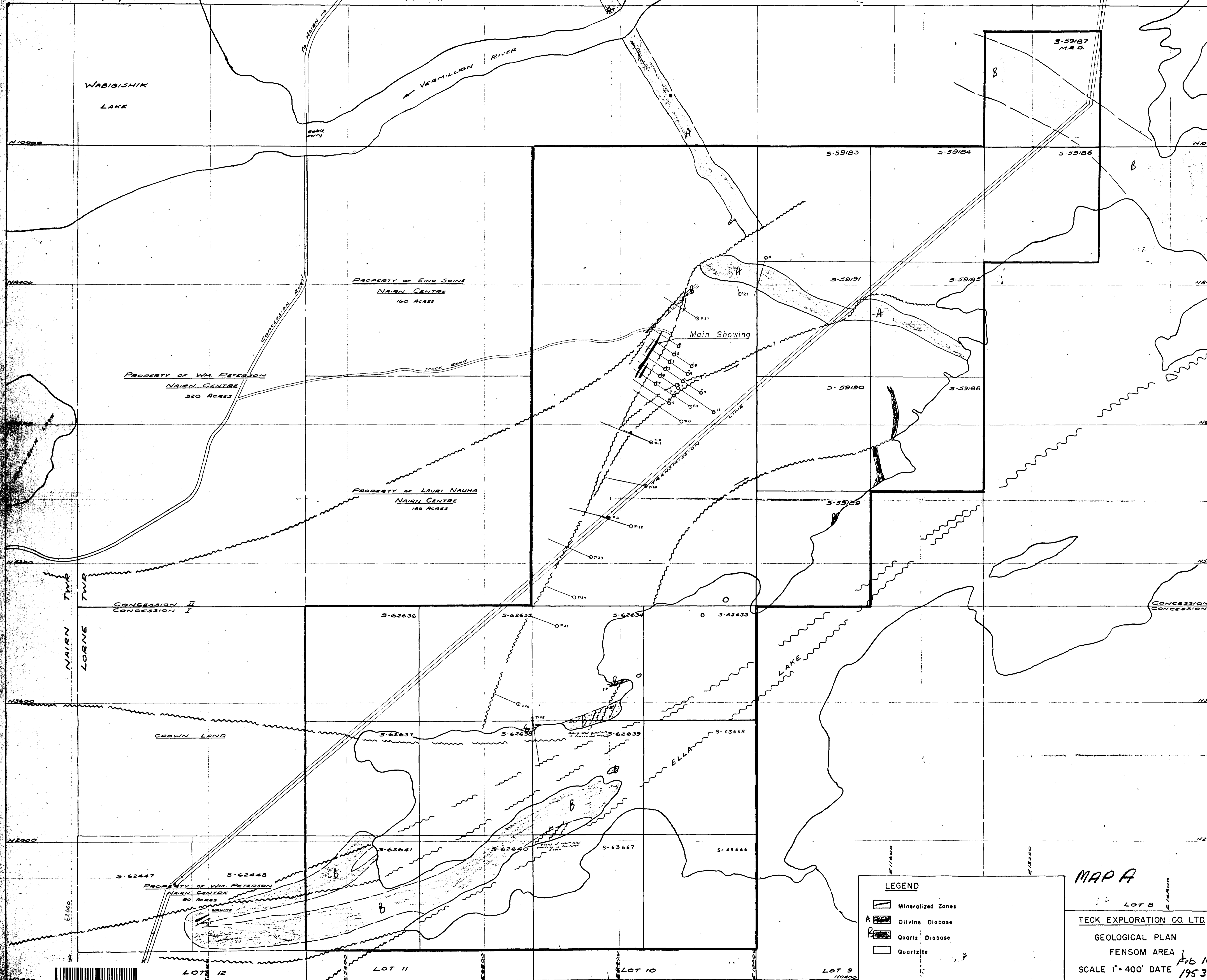
JRB/HAB



FOR ADDITIONAL  
INFORMATION

SEE MAPS:

LORNE - 0014-A1 #1  
#2  
#3  
#4



**LEGEND**

- Mineralized Zones
- A Olivine Diabase
- B Quartz Diabase
- Quartzite

**MAP A**

LOT 8

TECK EXPLORATION CO. LTD.

GEOLOGICAL PLAN

FENSOM AREA

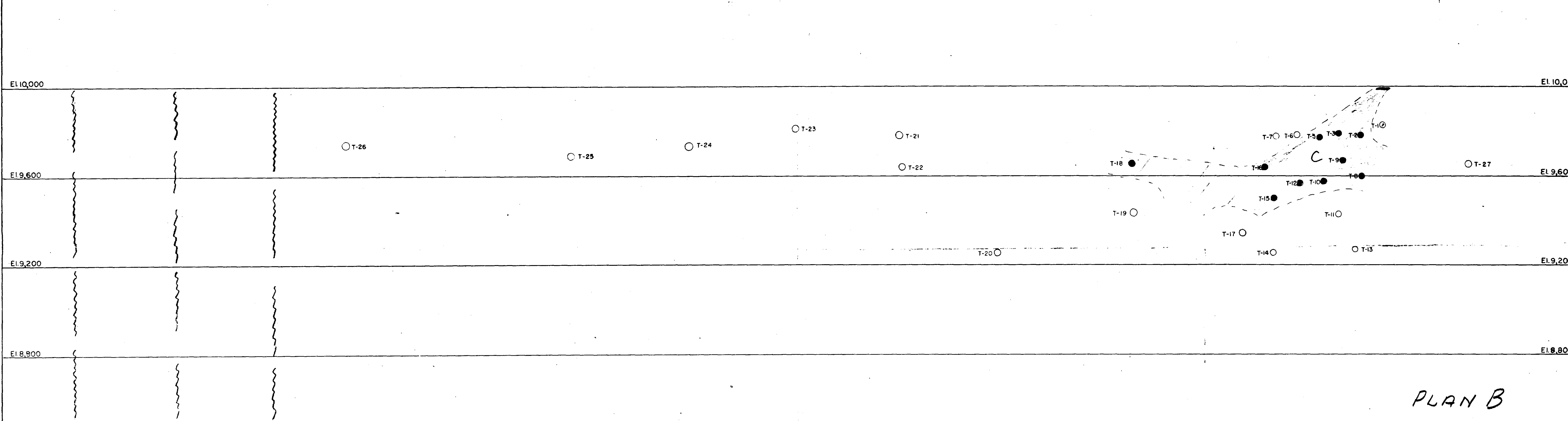
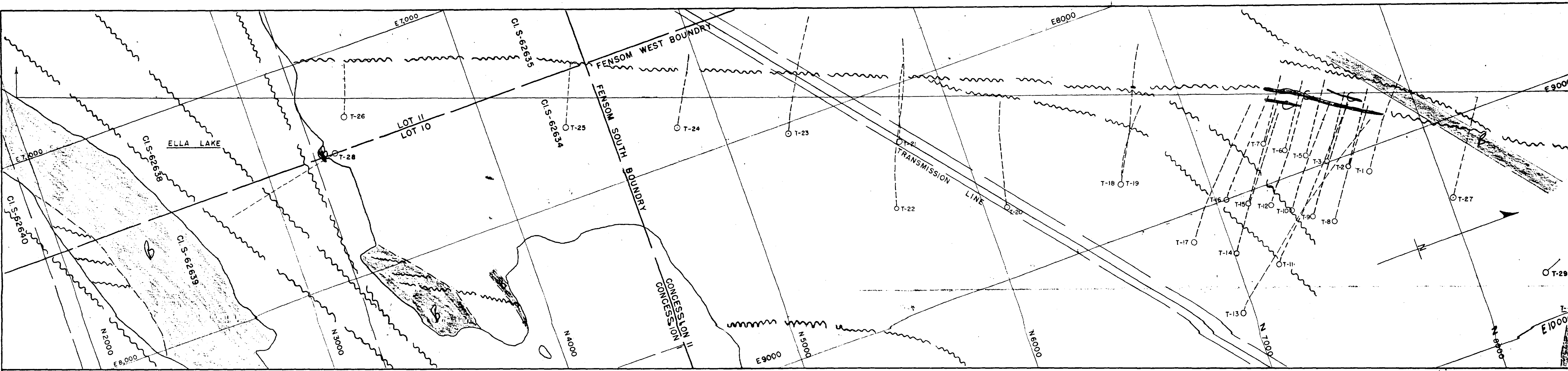
SCALE 1" = 400' DATE Feb 1953

LORNE-0014-A1 #1



200



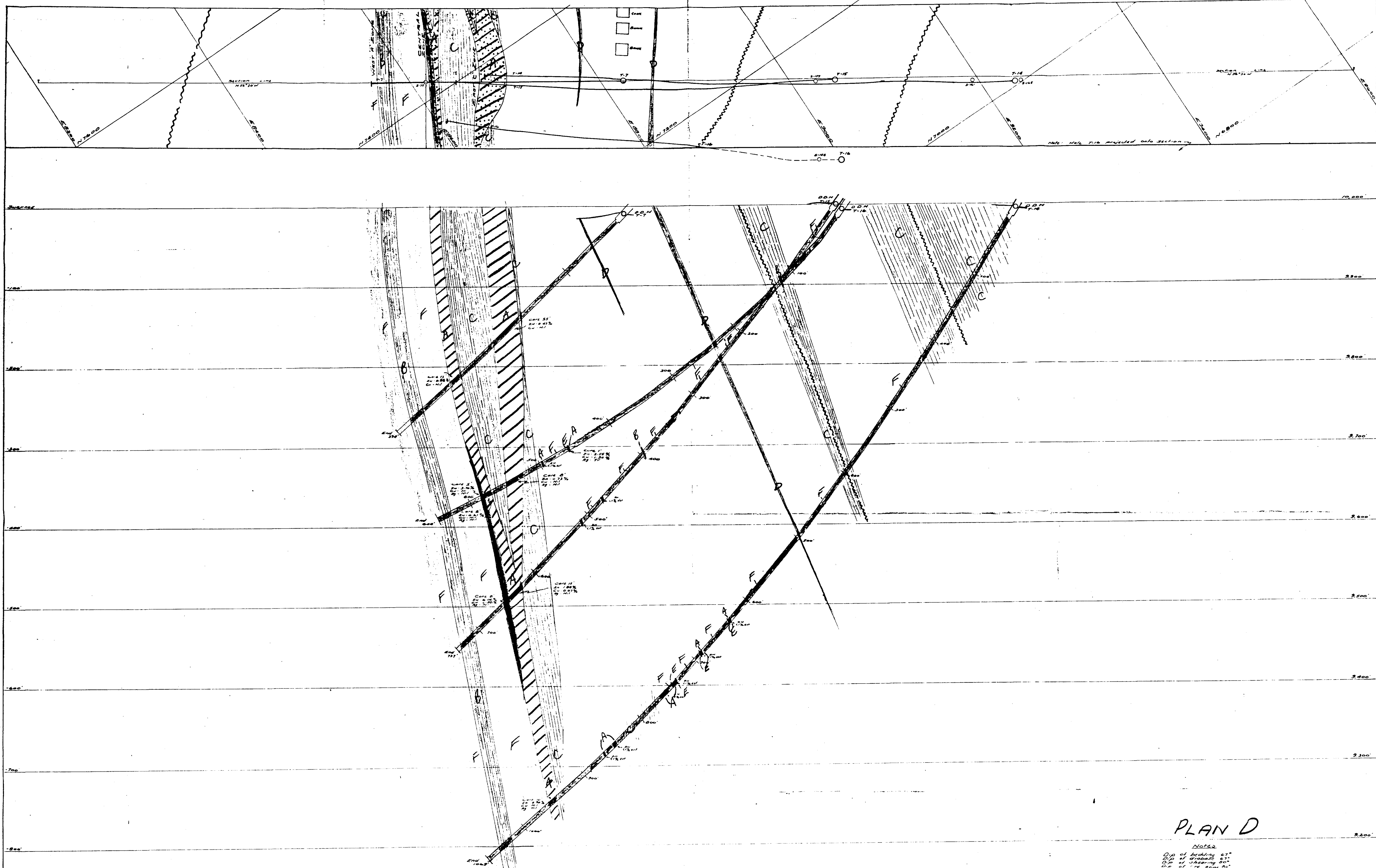


PLAN B

- LEGEND
- A Olivine Diabase
  - B Quartz Diabase
  - C Sediments (Quartzite)

TECK EXPLORATION CO. LTD.  
 FENSOM OPTION  
 PLAN AND  
 LONGITUDINAL SECTION  
 SCALE 1" = 200' DATE Feb. 195





**PLAN D**

Notes  
 Dip of bedding 47°  
 Dip of diabase 47°  
 Dip of schistosity 60°  
 Dip of the zone A'

The intensity of mineralization appears to depend on the intensity of schistosity and degree of alteration of the quartzite and occurs on the verging and residual margins of the schistosity in contact with massive quartzite (Down effect)

The mineralized zones are always heavily altered with some quartz carbonate replacement. The unaltered quartzite matrix is generally darker and finer grained than the altered zones.

Disseminated hematite also occurs in gneiss massive quartzite with quartzite in some areas.

The shear zones shown at the top of the plan appear to have resulted from late folding and may be responsible for the central zone which contains the 1/2" to 1" quartz veins. The central zone appears to be a zone of quartzite schistosity and may be related to the schistosity of the late folding.

LEGEND	
A	Mineralized Zone - Ore Zone
B	Quartz Carbonate
C	Altered Brecciated Zone
D	Diabase (Quartzite)
E	Gneiss (altered quartzite)
F	Massive quartzite
G	Faulted Shear Zone

TECK EXPLORATION COMPANY LTD.  
 ERINSON OPTION  
 Cross Section through DDH's T-7, T-14, T-15  
 Revisited to Common Section  
 Line  
 Scale: 1" = 50' Date: 11/14/52 JSM



